

Depth of Borehole (m)	Apparent Thickness of Strata (m)	True Thickness of Strata (m)	Dip (°)	Column of Strata Section	Rock Description
1.00					Soft clay
3.00					Soft clay and gravel claystone, gray
6.00					Claystone, weathered
7.00					Sandstone, very fine grained, mica rich, weathered
8.00					Sandstone, medium to coarse grained, weathered, quartz rich
9.00					Sandstone, coarse grained, quartz rich, light gray
10.00					Sandstone, coarse grained, quartz rich, light gray
11.00					Claystone, weathered
13.00					Claystone, gray
14.00					Claystone and sandstone, very fine grained, weathered
15.00					Sandstone, fine grained, light brown, weathered
16.00					Sandstone, medium to fine grained, weathered
21.00					Sandstone, coarse grained, weathered, feldspar rich
24.00					Sandstone, medium to coarse grained
25.00					Sandstone, medium grained, partly coarse grained, weathered
26.00					Claystone
30.00					Shale and siltstone, sandy, micaceous, weathered
31.00					claystone
33.00					Sandstone, medium grained, mica rich, slightly weathered
34.00					Sandstone, coarse grained
35.00					Shale, micaceous, dark gray
36.00					Sandstone, medium grained with siltstone, white to light gray
37.00					Sandstone, medium grained, white
38.00					Sandstone, fine grained, colorless, thin siltstone, light gray
39.00					Sandstone, medium grained, quartz and feldspar rich, white
40.00					core loss
42.00					Shale with thin sandstone bands
43.00					Sandstone, medium to fine grained, white
44.00					Sandstone, fine grained, silty with thin calcareous streaks
45.00					Siltstone with thin sandstone bands
46.00					Sandstone, calcareous, hard, white
50.00					Sandstone, fine grained, partly, mica rich, in the lower part, colored siltstone, grayish, white
52.00					Shale and sandstone, medium to coarse grained in alternation
53.00					Sandstone, coarse grained, mica rich
54.00					Sandstone, calcareous, hard, white
55.00					Shale with thin sandstone bands
56.00					Sandstone, medium grained, calcareous, mica rich
57.00					Sandstone, medium grained, mica rich, coarse grained, with pyrite
58.00					Sandstone, medium grained and shale in alternation, sandstone rich
60.00					
62.00					Sandstone, coarse grained, quartz rich
64.00					Sandstone, medium grained to fine grained, white
66.00					
68.00					Sandstone, medium to fine grained with silt bands
70.00					Shale & sandstone, medium grained in alternation
72.00					Sandstone, medium grained, mica rich, dark gray
74.00					Sandstone, medium grained, mica rich, at the depth of 68.78 to 74.00 m, vertical
76.00					Sandstone, medium grained, mica rich, coarse grained, irregularly bedded
78.00					Sandstone, coarse grained, quartz rich
80.00					Sandstone, medium grained, mica rich, coarse grained, white
82.00					Sandstone, medium to fine grained with silt bands
84.00					Shale & sandstone, medium grained in alternation
86.00					Sandstone, medium grained, mica rich, dark gray
88.00					Sandstone, medium grained, mica rich, coarse grained, white
90.00					Shale with sandstone bands and pyrite, dark gray
92.00					
94.00					Shale with very thin sandstone bands, dark gray
96.00					Sandstone, coarse grained, mica rich, coarse grained, white
98.00					Shale, dark gray
100.00					Sandstone, coarse grained, mica rich, coarse grained, white
102.00					Sandstone, medium to coarse grained, quartz rich, in part
104.00					Sandstone, coarse grained, quartz rich, hard, white
106.00					Sandstone, coarse grained, quartz rich, hard, white
108.00					Sandstone, medium to coarse grained, quartz rich, hard, white
110.00					Shale, dark gray
112.00					Shale, dark gray
114.00					Sandstone, medium grained, in part, later bedded shale, irregularly bedded in lower part, fine grained
116.00					Shale & sandstone, fine grained in alternation
118.00					
120.00					
122.00					Shale & sandstone, fine grained in alternation
124.00					
126.00					Sandstone, medium to fine grained, white
128.00					Sandstone, fine grained with micaceous strata
130.00					
132.00					Sandstone, coarse grained, quartz rich, white
134.00					Sandstone, medium grained, white
136.00					Sandstone, coarse grained, quartz rich, white
138.00					Sandstone, coarse grained, quartz rich, white
140.00					Sandstone, coarse grained, quartz rich, white
142.00					Sandstone, coarse grained, quartz rich, white
144.00					Sandstone, coarse grained, quartz rich, white
146.00					Sandstone, coarse grained, quartz rich, white
148.00					Sandstone, coarse grained, quartz rich, white
150.00					Sandstone, coarse grained, quartz rich, white
152.00					Sandstone, fine grained, micaceous
154.00					Shale, dark gray, core broken
156.00					Sandstone, fine grained in part, later bedded shale, at the bottom, core broken
158.00					Sandstone, fine grained, mica rich, coarse grained, white
160.00					Sandstone, coarse grained, quartz rich, white
162.00					Sandstone, coarse grained, quartz rich, white
164.00					Sandstone, coarse grained, quartz rich, white
166.00					Sandstone, coarse grained, quartz rich, white
168.00					Sandstone, coarse grained, quartz rich, white
170.00					Sandstone, coarse grained, quartz rich, white
172.00					Sandstone, coarse grained, quartz rich, white
174.00					Sandstone, coarse grained, quartz rich, white
176.00					Sandstone, coarse grained, quartz rich, white
178.00					Sandstone, coarse grained, quartz rich, white
180.00					Sandstone, coarse grained, quartz rich, white
182.00					Sandstone, coarse grained, quartz rich, white
184.00					Sandstone, coarse grained, quartz rich, white
186.00					Sandstone, coarse grained, quartz rich, white
188.00					Sandstone, coarse grained, quartz rich, white
190.00					Sandstone, coarse grained, quartz rich, white
192.00					Sandstone, coarse grained, quartz rich, white
194.00					Sandstone, coarse grained, quartz rich, white
196.00					Sandstone, coarse grained, quartz rich, white
198.00					Sandstone, coarse grained, quartz rich, white
200.00					Sandstone, coarse grained, quartz rich, white

Non-Core Drilling

Depth of Bore (m)	Apparent Thickness of Strata (m)	True Thickness of Strata (m)	Dip Column	Rock Description
1.00				shale and sandstone, medium grained, weathered.
2.00				sandstone, medium grained, weathered, shaly.
3.00				sandstone, coarse grained, weathered.
5.00				sandstone, coarse grained, white.
18.00				shale, weathered, brownish, grey.
20.00				shale, carbonaceous, weathered, dark brown.
21.00				shale, carbonaceous, and coal.
26.00				shale, dark grey.
27.00				shale, carbonaceous, and coal.
28.00				shale, dark, and coal.
29.00				shale, carbonaceous, and thin coal.
31.00				shale, dark, and coal, thin.
32.00				shale, carbonaceous.
33.00				sandstone, coarse grained, weathered, white.
34.00				sandstone, coarse grained, weathered, white, and black.
36.00				shale, dark, and coal, thin, with sandstone, coarse grained.
38.00				shale, carbonaceous, and coal.
39.00				shale, carbonaceous, with coal, streaked.
39.37				coal, thin, black, and grey.
41.00				shale, carbonaceous, and coal, thin, weathered, dark brown.
52.10				sandstone, coarse grained, white.
52.80				coal, thin, black, and grey.
53.00				shale, dark, and coal, thin, weathered, dark brown.
53.38				shale, carbonaceous, and coal, thin.
53.58				shale, carbonaceous, and coal, thin.
53.75				shale, dark, and coal, thin, weathered, dark brown.
54.55				shale, carbonaceous.
55.00				shale, dark, and coal, thin, weathered, dark brown.
55.35				shale, carbonaceous.
57.00				sandstone, medium grained, weathered, dark brown.
58.00				shale, weathered, brownish, grey.
58.85				shale, carbonaceous, and coal, thin, weathered, dark brown.
59.18				shale, carbonaceous.
59.48				shale, carbonaceous.
61.30				shale, carbonaceous.
61.82				shale, dark, and coal, thin, weathered, dark brown.
63.00				shale, carbonaceous.
63.85				sandstone, medium grained, weathered, dark brown.
64.00				shale, carbonaceous.
64.10				shale, carbonaceous.
64.20				shale, carbonaceous.
64.30				shale, carbonaceous.
64.40				shale, carbonaceous.
64.50				shale, carbonaceous.
64.60				shale, carbonaceous.
64.70				shale, carbonaceous.
64.80				shale, carbonaceous.
64.90				shale, carbonaceous.
65.00				shale, carbonaceous.
65.10				shale, carbonaceous.
65.20				shale, carbonaceous.
65.30				shale, carbonaceous.
65.40				shale, carbonaceous.
65.50				shale, carbonaceous.
65.60				shale, carbonaceous.
65.70				shale, carbonaceous.
65.80				shale, carbonaceous.
65.90				shale, carbonaceous.
66.00				shale, carbonaceous.
66.10				shale, carbonaceous.
66.20				shale, carbonaceous.
66.30				shale, carbonaceous.
66.40				shale, carbonaceous.
66.50				shale, carbonaceous.
66.60				shale, carbonaceous.
66.70				shale, carbonaceous.
66.80				shale, carbonaceous.
66.90				shale, carbonaceous.
67.00				shale, carbonaceous.
67.10				shale, carbonaceous.
67.20				shale, carbonaceous.
67.30				shale, carbonaceous.
67.40				shale, carbonaceous.
67.50				shale, carbonaceous.
67.60				shale, carbonaceous.
67.70				shale, carbonaceous.
67.80				shale, carbonaceous.
67.90				shale, carbonaceous.
68.00				shale, carbonaceous.
68.10				shale, carbonaceous.
68.20				shale, carbonaceous.
68.30				shale, carbonaceous.
68.40				shale, carbonaceous.
68.50				shale, carbonaceous.
68.60				shale, carbonaceous.
68.70				shale, carbonaceous.
68.80				shale, carbonaceous.
68.90				shale, carbonaceous.
69.00				shale, carbonaceous.
69.10				shale, carbonaceous.
69.20				shale, carbonaceous.
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69.90				shale, carbonaceous.
70.00				shale, carbonaceous.
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70.70				shale, carbonaceous.
70.80				shale, carbonaceous.
70.90				shale, carbonaceous.
71.00				shale, carbonaceous.
71.10				shale, carbonaceous.
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71.60				shale, carbonaceous.
71.70				shale, carbonaceous.
71.80				shale, carbonaceous.
71.90				shale, carbonaceous.
72.00				shale, carbonaceous.
72.10				shale, carbonaceous.
72.20				shale, carbonaceous.
72.30				shale, carbonaceous.
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72.60				shale, carbonaceous.
72.70				shale, carbonaceous.
72.80				shale, carbonaceous.
72.90				shale, carbonaceous.
73.00				shale, carbonaceous.
73.10				shale, carbonaceous.
73.20				shale, carbonaceous.
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73.60				shale, carbonaceous.
73.70				shale, carbonaceous.
73.80				shale, carbonaceous.
73.90				shale, carbonaceous.
74.00				shale, carbonaceous.
74.10				shale, carbonaceous.
74.20				shale, carbonaceous.
74.30				shale, carbonaceous.
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74.50				shale, carbonaceous.
74.60				shale, carbonaceous.
74.70				shale, carbonaceous.
74.80				shale, carbonaceous.
74.90				shale, carbonaceous.
75.00				shale, carbonaceous.
75.10				shale, carbonaceous.
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75.70				shale, carbonaceous.
75.80				shale, carbonaceous.
75.90				shale, carbonaceous.
76.00				shale, carbonaceous.
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76.70				shale, carbonaceous.
76.80				shale, carbonaceous.
76.90				shale, carbonaceous.
77.00				shale, carbonaceous.
77.10				shale, carbonaceous.
77.20				shale, carbonaceous.
77.30				shale, carbonaceous.
77.40				shale, carbonaceous.
77.50				shale, carbonaceous.
77.60				shale, carbonaceous.
77.70				shale, carbonaceous.
77.80				shale, carbonaceous.
77.90				shale, carbonaceous.
78.00				shale, carbonaceous.
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78.80				shale, carbonaceous.
78.90				shale, carbonaceous.
79.00				shale, carbonaceous.
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79.80				shale, carbonaceous.
79.90				shale, carbonaceous.
80.00				shale, carbonaceous.
80.10				shale, carbonaceous.
80.20				shale, carbonaceous.
80.30				shale, carbonaceous.
80.40				shale, carbonaceous.
80.50				shale, carbonaceous.
80.60				shale, carbonaceous.
80.70				shale, carbonaceous.
80.80				shale, carbonaceous.
80.90				shale, carbonaceous.
81.00				shale, carbonaceous.
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81.60				shale, carbonaceous.
81.70				shale, carbonaceous.
81.80				shale, carbonaceous.
81.90				shale, carbonaceous.
82.00				shale, carbonaceous.
82.10				shale, carbonaceous.
82.20				shale, carbonaceous.
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82.80				shale, carbonaceous.
82.90				shale, carbonaceous.
83.00				shale, carbonaceous.
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83.50				shale, carbonaceous.
83.60				shale, carbonaceous.
83.70				shale, carbonaceous.
83.80				shale, carbonaceous.
83.90				shale, carbonaceous.
84.00				shale, carbonaceous.
84.10				shale, carbonaceous.
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84.70				shale, carbonaceous.
84.80				shale, carbonaceous.
84.90				shale, carbonaceous.
85.00				shale, carbonaceous.
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85.50				shale, carbonaceous.
85.60				shale, carbonaceous.
85.70				shale, carbonaceous.
85.80				shale, carbonaceous.
85.90				shale, carbonaceous.
86.00				shale, carbonaceous.
86.10				shale, carbonaceous.
86.20				shale, carbonaceous.
86.30				shale, carbonaceous.
86.40				shale, carbonaceous.
86.50				shale, carbonaceous.
86.60				shale, carbonaceous.
86.70				shale, carbonaceous.
86.80				shale, carbonaceous.
86.90				shale, carbonaceous.
87.00				shale, carbonaceous.
87.10				

142.70		shale, interbed thin sandstone, dark grey.
150.80		sandstone, medium grained with shale streaks, white to light grey.
153.40		sandstone, coarse grained, in part, quartz and talciferous, rich white.
155.75		sandstone, medium grained, white to light grey.
158.00		sandstone, very fine grained, micaceous, light grey.
158.55		shale to shale sandy, interbedded thin sandstone, dark grey.
171.00		sandstone, fine to medium grained, with shale, irregularly bedded.
175.70		sandstone, coarse to medium grained with calcareous streaks in part, micaceous.
178.10		sandstone, coarse, micaceous, in part, quartz and talciferous, rich white.
178.80		shale and sandstone, very fine grained, in alternation, dark grey.
184.00		sandstone, fine to very fine grained, interbedded with thin sandstone, micaceous.
184.75		shale and sandstone, very fine grained, in alternation, sandstone micaceous.
189.70		sandstone, medium grained, light grey.
190.90		shale to shale sandy, dark grey.
192.65		shale, sandy, micaceous.
193.07		sandstone, calcareous, micaceous.
194.50		sandstone, medium grained, micaceous, the calcareous streaks irregularly bedded.
197.37		sandstone, coarse to medium grained, in part, quartz and talciferous, rich white.
198.80		sandstone, medium grained with thin calcareous streaks, light grey.
199.00		sandstone, coarse, micaceous, in part, quartz and talciferous, rich white.
199.55		sandstone, very fine grained, micaceous, grey.
201.65		shale, sandy, micaceous, dark grey.
204.00		shale to shale sandy, micaceous, very thin sandstone, dark grey.
204.30		sandstone, calcareous, micaceous, in part, quartz and talciferous, rich white.
204.60		shale to shale sandy, micaceous, thin sandstone, dark grey.
204.90		shale, calcareous, micaceous.
205.00		sandstone, coarse grained, with very fine shale, irregularly bedded.
207.90		sandstone, medium grained, micaceous, in part, quartz and talciferous, rich white.
208.30		shale, calcareous, micaceous.
208.95		sandstone, medium to fine grained with very thin shale, irregularly bedded.
211.25		sandstone, fine to very fine grained with thin sandstone, micaceous, irregularly bedded.
212.85		shale, sandy, dark grey.
212.90		sandstone, coarse grained, in part, quartz and talciferous, rich white.
213.55		sandstone, fine grained, in part, quartz and talciferous, rich white.
215.80		sandstone, fine grained, dark shale, sandy, in alternation, dark grey.
216.45		sandstone, very fine grained, grey.
217.45		sandstone, coarse to medium grained, with calcareous streaks.
217.85		sandstone, fine to medium grained, micaceous, very thin shale, micaceous, irregularly bedded.
218.95		sandstone, medium to fine grained with very thin shale, irregularly bedded.
221.10		sandstone, coarse grained, in part, quartz and talciferous, rich white.
221.58		shale, sandy, dark grey.
222.84		shale, medium grained, dark grey.
223.32		shale, sandy, micaceous.
224.32		shale, sandy, dark grey.
227.07		sandstone, coarse to medium grained, with very thin shale, irregularly bedded.
227.35		shale, sandy, dark grey.
229.80		sandstone, medium grained, white.
231.66		sandstone, medium grained, dark green.
233.10		shale, very fine grained, dark grey, in part, quartz and talciferous, rich white.
236.40		shale, in part, micaceous, dark grey.
237.80		sandstone, medium grained, light grey.
238.80		sandstone, very fine grained, micaceous, dark grey.
239.74		sandstone, coarse grained, dark, micaceous, in part, quartz and talciferous, rich white.
240.08		shale, very fine grained.
241.90		sandstone, coarse grained, quartz and talciferous, rich white.
247.90		sandstone, very fine grained, dark grey.
248.15		shale, medium grained, dark grey.
248.78		shale, calcareous, micaceous.
249.80		shale to shale, sandy, dark grey.
249.83		sandstone, fine grained, dark grey.
249.90		shale, in part, micaceous, dark grey.
257.28		sandstone, medium grained, with very thin shale.
257.37		shale, sandy, dark grey.
257.47		sandstone, coarse grained, micaceous, in part, quartz and talciferous, rich white.
261.62		sandstone, very fine grained, micaceous, in part, quartz and talciferous, rich white.
264.80		shale to shale, sandy, dark grey.
265.70		sandstone, very fine grained, in part, micaceous, with calcareous streaks.
269.60		shale, calcareous, micaceous, dark grey.
269.67		sandstone, medium grained, light grey.
269.67		sandstone, fine to very fine grained, micaceous, light grey.
269.67		shale, calcareous, micaceous, in part, quartz and talciferous, rich white.
269.67		shale, calcareous, micaceous.
269.67		shale, calcareous, micaceous.
269.67		sandstone, coarse to medium grained, micaceous, light grey.
269.67		shale, calcareous, micaceous, in part, quartz and talciferous, rich white.
269.67		sandstone, fine to very fine grained, with calcareous streaks.
302.90		shale, calcareous, micaceous, in part, quartz and talciferous, rich white.
304.25		sandstone, very fine to shale, sandy, micaceous, grey.
305.15		shale, calcareous, micaceous, with sandstone bands, black.
309.85		shale, sandy, micaceous.
310.56		sandstone, coarse grained, micaceous.
312.04		shale, calcareous, micaceous.
313.30		sandstone, medium grained, in part, quartz and talciferous, rich white.
313.88		shale, calcareous, micaceous, and shale, sandy.
314.32		shale, sandy, micaceous, in part, quartz and talciferous, rich white.
315.37		sandstone, fine grained, in alternation.

140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320

JAPAN INTERNATIONAL COOPERATION AGENCY
 Borehole Log DD29
 Date: 1982.12.31
 Scale: 1:200
 Date: 1982.12.31

HOLE NO. : DD29
 AREA : LUBHUKU
 DATE DRILLED : DEC.3,1981 - JAN.20,1982
 TOTAL DEPTH : 465.22m
 ELEVATION : +238.0m
 COORDINATE : X=2,933,000 Y=-80,810

Depth of Borehole (m)	Apparent Thickness of Strata (m)	True Thickness of Strata (m)	Dip of Strata (M)	Column of Strata	Rock Description
2.00					Silt, weathered, brownish gray.
5.00					Shale weathered.
6.00					Shale and sandstone weathered.
8.00					Shale weathered.
10.00					Sandstone, coarse grained, yellowish brown.
12.00					Sandstone and shale, carbonaceous.
13.00					Coal and shale, carbonaceous, coal rich.
14.00					Shale, carbonaceous and fragments of coal.
15.00					Shale gray.
17.00					Sandstone, fine to medium grained, beige.
24.00					Sandstone, medium to coarse grained, white.
27.00					Sandstone, coarse grained and shale, sandstone rich.
28.00					Shale gray.
28.98					Sandstone, fine grained, micaceous, white.
30.00					Shale and sandstone, fine grained, micaceous, white.
31.00					Shale, carbonaceous, micaceous, white.
31.58					Shale, carbonaceous, micaceous, white.
34.08					Sandstone, medium to fine grained, in part, micaceous, shale.
35.73					Shale and sandstone, fine grained, micaceous, shale.
42.87					Sandstone, medium to fine grained, micaceous, shale.
45.36					Shale, micaceous, sandstone, in part, contact with underlying shale.
45.90					Sandstone, fine grained.
48.14					Sandstone, medium grained.
51.92					Sandstone, medium grained, micaceous, shale, irregularly.
53.34					Shale, micaceous, sandstone, coarse-grained, micaceous, shale rich.
54.92					Sandstone, coarse grained.
55.37					Sandstone, medium grained, micaceous, shale, micaceous, shale.
58.35					Shale.
60.70					Sandstone, medium grained and shale, in alternation.
63.92					Sandstone, medium grained.
64.39					Sandstone, very fine grained, silty, micaceous, carbonaceous shale, irregularly.
66.12					Sandstone, medium grained, micaceous, shale.
67.75					Shale, micaceous, sandstone.
69.38					Sandstone, fine grained, gray.
71.05					Sandstone, fine grained to shale, sandy.
73.81					Shale, micaceous, sandstone, micaceous, shale.
75.38					Sandstone, coarse grained.
77.32					Shale, micaceous, sandstone.
78.19					Sandstone, fine grained, micaceous, shale, in alternation.
79.32					Sandstone, fine grained, micaceous, shale.
80.99					Shale.
81.92					Sandstone, medium grained.
82.17					Sandstone, silty, fine grained, dark green.
83.00					Sandstone, medium grained.
84.49					Sandstone, silty, medium, dark green.
85.86					Sandstone, medium grained, quartz, fine.
86.85					Sandstone, fine grained.
88.88					Sandstone, fine grained.
90.85					Sandstone, fine grained.
92.17					Sandstone, medium to fine grained, (part part to silty, white).
93.95					Sandstone, very fine grained, silty, bluish gray, core micaceous.
94.58					Sandstone, coarse grained, micaceous, shale.
95.58					Sandstone, fine grained, gray.
96.15					Sandstone, fine grained, gray.
96.45					Sandstone, fine grained.
98.81					Sandstone, medium grained.
101.11					Sandstone, fine grained.
102.17					Sandstone, medium to fine grained, (part part to silty, white).
103.95					Sandstone, coarse grained, micaceous, shale.
105.58					Sandstone, fine grained, gray.
106.45					Sandstone, fine grained.
108.42					Sandstone, medium grained, micaceous, shale, in alternation.
110.08					Sandstone, medium grained, micaceous, shale, in alternation.
110.82					Sandstone, medium grained, micaceous, shale, in alternation.
111.35					Sandstone, medium grained, micaceous, shale, in alternation.
112.80					Sandstone, medium grained, micaceous, shale, in alternation.
114.82					Sandstone, medium grained, micaceous, shale, in alternation.
120.80					Sandstone, medium to coarse grained, micaceous, shale, in alternation.
126.35					Sandstone, fine to silty, micaceous.
127.57					Sandstone, coarse grained, micaceous.
135.55					Sandstone, fine grained.
137.60					Sandstone, coarse grained, micaceous, shale, in alternation, fragments of debris.
138.40					Sandstone, fine grained, gray.
139.57					Shale, sandy, micaceous, sandstone.
139.86					Sandstone, silty, micaceous.
140.06					Sandstone, fine grained.
141.35					Shale, sandy.
142.74					Sandstone, silty, micaceous, shale, in alternation.
143.46					Sandstone, silty, micaceous, shale, in alternation.
144.85					Sandstone, medium grained, micaceous, shale, in alternation.
146.86					Sandstone, medium grained, micaceous, shale, in alternation.
148.85					Sandstone, medium to coarse grained.
149.20					Sandstone, fine grained, white.
149.33					Sandstone, silty, fine grained.
149.79					Shale, micaceous, sandstone, shale, micaceous, shale.
150.11					Sandstone, fine grained, micaceous, shale.
151.90					Sandstone, medium grained, micaceous, shale, in alternation.
153.32					Sandstone, medium grained, micaceous, shale, in alternation.
155.32					Sandstone, medium grained, micaceous, shale, in alternation.

Notes - Core

127.00		sandstone, fine grained with thin carbonaceous shale. Irregularly white to light gray.
128.15		Shale, sandy to sandstone, very fine grained, in parts micaceous gray.
131.57		shale to shale, sandy with sandstone bands, micaceous, dark gray.
132.80		Sandstone, very fine to fine grained with carbonaceous streaks, light gray.
134.00		shale, sandy to sandstone.
141.35		shale, coarse grained, dark gray.
145.00		Sandstone, fine grained, in parts, micaceous, light gray.
147.80		Sandstone, fine grained with carbonaceous streaks, light gray.
150.00		shale, carbonaceous and sandstone, very fine grained in some places to dark gray.
150.83		Sandstone, medium grained, carbonaceous, dark gray.
151.00		shale, sandy with thin carbonaceous matter, dark gray.
152.80		Sandstone, medium to coarse grained, laterally black, carbonaceous.
153.25		shale, sandy to shaly, carbonaceous, dark gray.
155.52		shale, carbonaceous with thin sandstone, black.
155.55		shale, sandy with thin carbonaceous streaks, irregularly, dark gray.
157.27		Sandstone, fine grained, micaceous, light gray.
158.58		shale, sandy, sandy, micaceous, dark gray.
159.30		Sandstone, medium grained, laterally thin, shaly, white to light gray.
161.92		Sandstone, coarse grained, in parts, quartz and feldspar rich, white to light gray.
162.10		shale, sandy, light gray, black.
172.50		shale, coarse grained, dark gray.
174.20		shale, fine grained, gray, light gray.
175.00		Sandstone, medium grained, carbonaceous, dark gray.
177.85		Sandstone, coarse grained, micaceous, light gray.
179.00		shale, sandy with thin carbonaceous streaks, dark gray.
179.95		shale, carbonaceous and sandstone, very fine grained in alternate dark.
181.60		shale, carbonaceous, black.
182.00		shale, sandy with thin sandstone, laterally, dark gray.
182.45		Sandstone, fine to very fine grained with thin shaly, irregularly, light gray.
182.50		shale, sandy with thin carbonaceous streaks, dark gray.
187.00		shale, laterally thin sandstone, dark gray.
188.60		shale, sandy to sandstone, very fine grained.
189.76		shale, sandy, light gray, black.
193.77		Sandstone, coarse to medium grained, in parts, quartz and feldspar rich, white to light gray.
193.80		shale, carbonaceous.
194.00		shale, sandy, sandy, dark gray.
194.70		shale, sandy, sandy, carbonaceous, light gray.
195.80		Sandstone, medium coarse, micaceous, white to light gray.
197.55		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
198.00		shale, micaceous, carbonaceous, black.
199.70		Sandstone, very fine grained, laterally thin, sandy, white, light gray.
202.70		Sandstone, very fine grained and shaly in alternate, carbonaceous, dark gray.
205.12		shale, carbonaceous and sandstone, very fine grained, in alternate, dark gray.
208.41		Sandstone, coarse to medium grained, in parts, quartz and feldspar rich, white to light gray.
208.77		shale, sandy, light gray.
211.10		Sandstone, coarse grained, in parts, quartz and feldspar rich.
214.95		Sandstone, medium grained with carbonaceous streaks, light gray.
218.15		Sandstone, coarse to medium grained, in parts, quartz and feldspar rich, white to light gray.
218.00		Sandstone, medium to fine grained, white.
220.40		Sandstone, fine grained, at the bottom, shaly, light gray.
222.20		Sandstone, coarse to medium grained, in parts, quartz rich, white to light gray.
222.35		shale, carbonaceous, black.
223.85		Sandstone, coarse grained, in parts, quartz and feldspar rich, white to light gray.
232.00		shale, fine grained, grayish green, core broken.
238.18		Sandstone, coarse grained, in parts, feldspar rich, white to light gray.
238.25		Sandstone, fine grained with thin carbonaceous streaks, light gray.
238.33		shale, carbonaceous, black.
238.38		shale, sandy, light gray.
239.43		Sandstone, coarse grained, in parts, quartz and feldspar rich.
239.58		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
240.08		Sandstone, medium grained.
240.17		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
240.20		shale, sandy, light gray.
240.30		shale, sandy, light gray.
240.35		shale, sandy, light gray, core broken.
242.20		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
242.35		shale, sandy, light gray.
243.32		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
245.60		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
246.40		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
246.75		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
247.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
247.35		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
248.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
249.24		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
257.54		shale, fine grained, grayish green, core broken.
258.25		Sandstone, fine grained with thin carbonaceous streaks, light gray.
258.33		shale, carbonaceous, black.
258.38		shale, sandy, light gray.
259.43		Sandstone, coarse grained, in parts, quartz and feldspar rich.
259.58		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
260.08		Sandstone, medium grained.
260.17		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
260.20		shale, sandy, light gray.
260.30		shale, sandy, light gray.
260.35		shale, sandy, light gray, core broken.
262.20		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
262.35		shale, sandy, light gray.
263.32		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
265.60		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
266.40		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
266.75		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
267.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
267.35		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
268.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
269.24		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
272.20		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
272.35		shale, sandy, light gray.
272.38		shale, sandy, light gray.
273.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
282.20		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
282.35		shale, sandy, light gray.
283.32		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
285.60		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
286.40		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
286.75		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
287.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
287.35		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
288.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
289.24		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
292.20		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
292.35		shale, sandy, light gray.
293.32		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
295.60		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
296.40		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
296.75		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
297.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
297.35		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
298.00		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
299.24		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
300.65		Sandstone, coarse grained, quartz and feldspar rich, white to light gray.
301.50		Sandstone, coarse to medium grained, quartz and feldspar rich, white to light gray.
301.70		shale, sandy, light gray.
301.80		shale, sandy, light gray.

HOLE NO. : DD34
 AREA : LUBHUKU
 DATE DRILLED : NOV.17-NOV.18,1981, NOV.23-DEC.5,1981
 TOTAL DEPTH : 321.27 m.
 ELEVATION : +276.9 m
 COORDINATE : X = +2,939,000 Y = -77,450
 JAPAN INTERNATIONAL COOPERATION AGENCY
 Borehole Log DD34
 Date: 3rd. 1982 Prepared by: N. Iwano, N. Kikuchi
 Scale: 1:200

Depth of Borehole Strat. (m)	Apparent Thickness of Strata (m)	True Thickness of Strata (m)	Dip or Section	Core	Rock Description
1.00					shale
3.00					sandstone, medium grained, weathered, reddish brown
6.00					sandstone, coarse grained, weathered
9.00					sandstone, medium to coarse grained, white
11.00					sandstone, coarse grained, light grey
15.00					sandstone, coarse grained and shale
18.00					sandstone, medium to coarse grained, weathered, brownish grey
20.00					sandstone, coarse grained, and shale
25.00					sandstone, medium grained and shale
28.00					shale and sandstone, coarse to medium grained
31.20					shale
33.00				XXXX	
35.00				XXXX	
37.00				XXXX	
39.00				XXXX	
41.00				XXXX	
43.00				XXXX	
45.00				XXXX	
47.00				XXXX	
49.00				XXXX	
51.00				XXXX	
53.00				XXXX	
55.00				XXXX	
57.00				XXXX	
59.00				XXXX	
61.00				XXXX	
63.00				XXXX	
65.00				XXXX	
67.00				XXXX	
69.00				XXXX	
71.00				XXXX	
73.00				XXXX	
75.00				XXXX	
77.00				XXXX	
79.00				XXXX	
81.00				XXXX	
83.00				XXXX	
85.00				XXXX	
87.00				XXXX	
89.00				XXXX	
91.00				XXXX	
93.00				XXXX	
95.00				XXXX	
97.00				XXXX	
99.00				XXXX	
101.00				XXXX	
103.00				XXXX	
105.00				XXXX	
107.00				XXXX	
109.00				XXXX	
111.00				XXXX	
113.00				XXXX	
115.00				XXXX	
117.00				XXXX	
119.00				XXXX	
121.00				XXXX	
123.00				XXXX	
125.00				XXXX	
127.00				XXXX	
129.00				XXXX	
131.00				XXXX	
133.00				XXXX	
135.00				XXXX	
137.00				XXXX	
139.00				XXXX	
141.00				XXXX	
143.00				XXXX	
145.00				XXXX	
147.00				XXXX	
149.00				XXXX	
151.00				XXXX	
153.00				XXXX	
155.00				XXXX	
157.00				XXXX	
159.00				XXXX	
161.00				XXXX	
163.00				XXXX	
165.00				XXXX	
167.00				XXXX	
169.00				XXXX	
171.00				XXXX	
173.00				XXXX	
175.00				XXXX	
177.00				XXXX	
179.00				XXXX	
181.00				XXXX	
183.00				XXXX	
185.00				XXXX	
187.00				XXXX	
189.00				XXXX	
191.00				XXXX	
193.00				XXXX	
195.00				XXXX	
197.00				XXXX	
199.00				XXXX	
201.00				XXXX	
203.00				XXXX	
205.00				XXXX	
207.00				XXXX	
209.00				XXXX	
211.00				XXXX	
213.00				XXXX	
215.00				XXXX	
217.00				XXXX	
219.00				XXXX	
221.00				XXXX	
223.00				XXXX	
225.00				XXXX	
227.00				XXXX	
229.00				XXXX	
231.00				XXXX	
233.00				XXXX	
235.00				XXXX	
237.00				XXXX	
239.00				XXXX	
241.00				XXXX	
243.00				XXXX	
245.00				XXXX	
247.00				XXXX	
249.00				XXXX	
251.00				XXXX	
253.00				XXXX	
255.00				XXXX	
257.00				XXXX	
259.00				XXXX	
261.00				XXXX	
263.00				XXXX	
265.00				XXXX	
267.00				XXXX	
269.00				XXXX	
271.00				XXXX	
273.00				XXXX	
275.00				XXXX	
277.00				XXXX	
279.00				XXXX	
281.00				XXXX	
283.00				XXXX	
285.00				XXXX	
287.00				XXXX	
289.00				XXXX	
291.00				XXXX	
293.00				XXXX	
295.00				XXXX	
297.00				XXXX	
299.00				XXXX	
301.00				XXXX	
303.00				XXXX	
305.00				XXXX	
307.00				XXXX	
309.00				XXXX	
311.00				XXXX	
313.00				XXXX	
315.00				XXXX	
317.00				XXXX	
319.00				XXXX	
321.00				XXXX	

Non-core Drilling

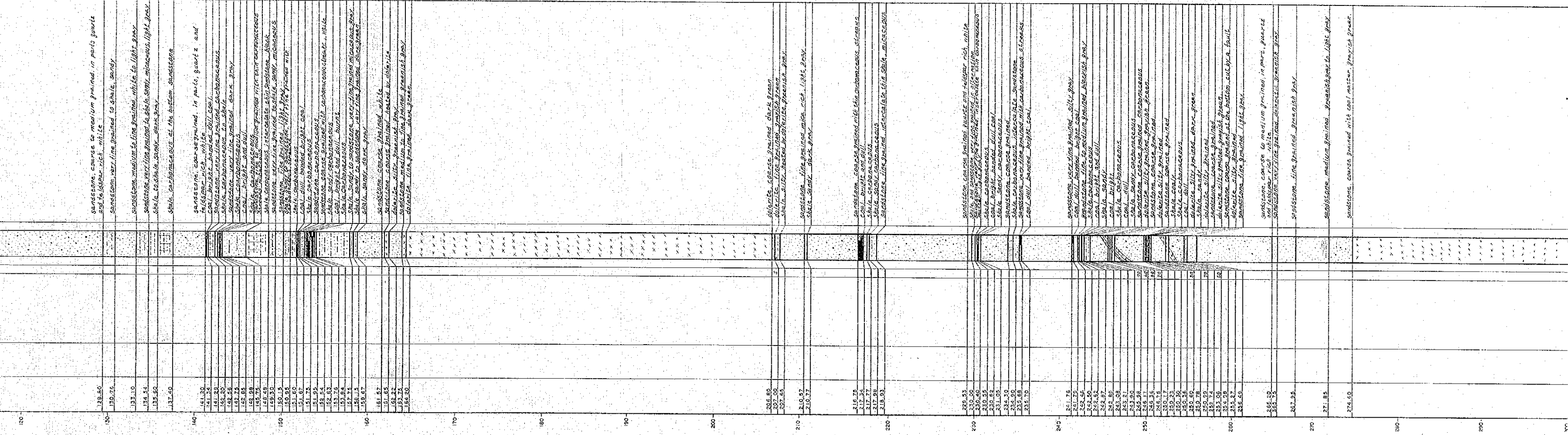
shaly, medium to coarse grained, calcite, reddish reddish
 shale, effused by calcite, fossils, coarse fine
 sandstone, medium grained
 shale, silty and sandstone, fine grained in alternation, shale
 with argill. imp.
 sandstone, coarse grained, white
 sandstone, fine grained, white
 sandstone, coarse grained, white
 sandstone, fine grained, white
 sandstone, fine grained, white
 sandstone, fine grained, white
 sandstone, medium grained, towards the bottom, coarse grained
 shaly, fine grained, towards the bottom

JAPAN INTERNATIONAL COOPERATION AGENCY
Borehole Log DD36
Date: Sep. 1982 Prepared by: M. Hatakeyama

HOLE NO. DD36
AREA LUBHUKU
DATE DRILLED NOV. 5, 1981 - DEC. 7, 1981
TOTAL DEPTH 362.80 m
ELEVATION +250.0 m
COORDINATE X +2,939,000 Y +79,000

Depth of Borehole (m)	Apparent Thickness of Strata (m)	True Thickness of Strata (m)	Dip Column of Strata Section	Rock Description
5.00				Soil
9.00				Shale, dark gray
11.00				Shale, weathered
20.00				Shale, dark gray
24.00				sandstone, medium grained, weathered, brownish gray
30.00				Shale, dark gray
36.00				loess
38.30			80	chert, fine grained at the bottom calcite shale, intercalate, weathered, disturbed by chert
39.56				sandstone, medium grained, weathered
41.44				sandstone, coarse grained, white
45.00			45	chert, fine grained sandstone, medium grained
48.52				shale, sandy in the upper part, intercalate sandstone coarse grained, irregularly
48.10				sandstone, medium grained with carbonaceous streaks
50.32				sandstone, coarse grained, quartz and feldspar rich
50.75				sandstone, fine grained, light gray
52.52				sandstone, medium grained
56.55				sandstone, fine grained, intercalate shale
58.55				sandstone, coarse grained
59.32				sandstone, very fine grained, to shale, sandy
60.02				sandstone, fine grained, carbonaceous
60.90				shale, sandy
62.55				shale, with sandstone beds
64.07				shale, sandy, towards the bottom, shale
67.32				sandstone, fine grained, carbonaceous with carbonaceous matter
67.75				sandstone, medium grained, white
69.12				sandstone, fine to medium grained with carbonaceous streaks
69.52				shale, sandy, light gray
71.12				shale, sandy, light gray, coarse brown
73.12				sandstone, fine to very fine grained, intercalate
73.13				thin shale, mica, rich light gray
74.92			80	sandstone, very fine grained, intercalate thin shale, light brown
75.33				shale, carbonaceous
75.60				sandstone, very fine grained, to shale, sandy
78.25				calcite, fine grained, grayish green, with calcite
78.82				sandstone, carbonaceous with sandstone streaks
79.75				sandstone, fine to medium grained with calcite
82.80				shale, sandy, to shale, dark gray
83.90				sandstone, fine grained, intercalate thin shale, light gray
85.37				sandstone, fine grained, intercalate thin shale, light gray
86.35				sandstone, coarse grained, with thin sandstone
86.57				shale, carbonaceous
86.95				shale, sandy with carbonaceous streaks
88.90				sandstone, fine to medium grained
89.50				sandstone, very fine grained, intercalate shale
89.85				sandstone, fine to medium grained, mica rich, light gray
89.95				sandstone, coarse grained, brown, green, sandstone, light gray
90.45				sandstone, very fine grained, intercalate thin carbonaceous, light gray
93.00				sandstone, fine grained, intercalate thin shale, light gray
95.33			40	sandstone, fine grained
95.50				calcite, fine grained, yellow-green
96.30				shale, with thin sandstone, dark gray
98.80				shale, sandy, to sandstone, very fine grained, dark gray
100.00				sandstone, medium grained, light green
101.90				sandstone, medium grained, white
102.02				shale, sandy
102.84				shale, carbonaceous
103.07				calcite, fine grained, brownish gray
103.85				shale, sandy, dark gray
102.83				sandstone, carbonaceous
110.00				sandstone, medium grained in part, quartz and feldspar rich, white to light gray
110.55				shale, sandy, to sandstone, very fine grained, dark gray
111.75				sandstone, fine grained, intercalate thin carbonaceous
120.80				sandstone, coarse to medium grained, in part, quartz and feldspar rich, white
130.75				sandstone, very fine grained, to shale, sandy
131.10				sandstone, medium to fine grained, white to light gray
134.54				sandstone, very fine grained, to shale, sandy, micaceous, light gray
135.60				shale, to shale, sandy, dark gray
137.40				shale, carbonaceous at the bottom, sandstone
141.80				sandstone, coarse grained, in part, quartz and feldspar rich, white
141.82				calcite, bright, banded, dull gray
142.80				sandstone, very fine grained, carbonaceous
142.85				shale, carbonaceous, to shale, sandy, dark gray
143.25				sandstone, carbonaceous
143.85				calcite, bright, and dull
142.85				shale, carbonaceous, to shale, sandy, light gray

Non-Core Drilling



128.50 sandstone, coarse to medium grained, in part quartz and mica rich, yellowish white
 130.75 sandstone, very fine grained to shale, sandy
 133.10 sandstone, medium to fine grained, white to light gray
 134.55 sandstone, very fine grained to silty, micaeous, light gray
 135.50 shale to silty, sandy, earthy gray
 137.50 shale, carbonaceous at the bottom sandstone

141.30 sandstone, coarse grained, in part quartz and mica rich, yellowish white
 141.35 coal, block bedded, dull coal
 142.00 sandstone, very fine grained, carbonaceous
 142.50 sandstone, very fine grained, earthy gray
 143.75 shale, carbonaceous
 145.85 coal, bright and dull
 146.50 sandstone, medium to fine grained, very fine grained, carbonaceous
 148.30 shale, carbonaceous, interbedded with sandstone, black
 149.50 sandstone, very fine grained, micaeous, light gray
 151.60 shale, silty, greenish gray
 151.80 sandstone, coarse grained, in part quartz and mica rich, yellowish white
 152.24 coal, bright and dull, burnt
 153.75 shale, carbonaceous
 153.84 shale, sandy, carbonaceous
 157.15 shale, carbonaceous
 159.57 shale, silty, earthy gray

161.57 sandstone, coarse grained, white
 161.65 sandstone, coarse grained, bedded by dolerite
 162.42 dolerite, silty, greenish gray
 163.75 sandstone, medium to fine grained, greenish gray
 164.60 dolerite, fine grained, dark green

208.80 dolerite, coarse grained, dark green
 209.00 dolerite, fine grained, pinkish green
 209.85 shale, silty, bedded by dolerite, greenish gray
 210.57 sandstone, fine grained, mica, rich, light gray
 210.77 shale, sandy, dark gray

214.75 sandstone, coarse grained, with thin carbonaceous streaks
 215.54 shale, carbonaceous
 217.77 shale, sandy, carbonaceous
 217.98 sandstone, fine grained, interbedded with shale, micaeous
 218.93 shale, sandy, light gray

228.55 sandstone, coarse grained, quartz and mica rich, white
 230.00 shale, silty, greenish gray, bedded by dolerite, carbonaceous
 230.40 shale, carbonaceous
 230.55 coal, bright, bedded, dull coal
 230.62 shale, silty, carbonaceous
 231.05 sandstone, coarse grained
 232.50 shale, carbonaceous, interbedded with sandstone
 233.85 sandstone, coarse grained, with carbonaceous streaks
 235.70 coal, dull, brown, lumpy coal

241.75 sandstone, coarse to fine grained, silty, gray
 241.79 coal, dull, bedded, bright coal
 242.56 sandstone, fine to medium grained, bedded, light gray
 243.90 shale, carbonaceous
 244.82 coal, bright, and dull
 245.80 shale, sandy
 245.84 shale, carbonaceous
 245.89 shale, silty
 245.92 sandstone, coarse grained, carbonaceous
 245.98 dolerite, silty, greenish gray
 246.75 dolerite, silty, greenish gray
 246.77 sandstone, coarse grained
 246.80 shale, carbonaceous
 246.82 dolerite, silty, greenish gray
 246.84 shale, sandy
 246.86 sandstone, coarse grained
 246.88 dolerite, silty, greenish gray
 246.90 shale, sandy
 246.92 sandstone, coarse grained
 246.94 dolerite, silty, greenish gray
 246.96 shale, sandy
 246.98 sandstone, coarse grained
 247.00 dolerite, silty, greenish gray
 247.02 shale, sandy
 247.04 sandstone, coarse grained
 247.06 dolerite, silty, greenish gray
 247.08 shale, sandy
 247.10 sandstone, coarse grained
 247.12 dolerite, silty, greenish gray
 247.14 shale, sandy
 247.16 sandstone, coarse grained
 247.18 dolerite, silty, greenish gray
 247.20 shale, sandy
 247.22 sandstone, coarse grained
 247.24 dolerite, silty, greenish gray
 247.26 shale, sandy
 247.28 sandstone, coarse grained
 247.30 dolerite, silty, greenish gray
 247.32 shale, sandy
 247.34 sandstone, coarse grained
 247.36 dolerite, silty, greenish gray
 247.38 shale, sandy
 247.40 sandstone, coarse grained
 247.42 dolerite, silty, greenish gray
 247.44 shale, sandy
 247.46 sandstone, coarse grained
 247.48 dolerite, silty, greenish gray
 247.50 shale, sandy
 247.52 sandstone, coarse grained
 247.54 dolerite, silty, greenish gray
 247.56 shale, sandy
 247.58 sandstone, coarse grained
 247.60 dolerite, silty, greenish gray

265.30 sandstone, coarse to medium grained, in part, quartz and mica rich, yellowish white
 265.35 sandstone, very fine grained, carbonaceous
 267.95 sandstone, fine grained, greenish gray
 271.85 sandstone, medium grained, bedded, light gray
 274.60 sandstone, coarse grained, with coal matrix, grayish green

