HOLE NO.	LD - 1
AREA	LUSHUKU
DATE DRILLED	DEC. 3, 1983 - DEC. 13, 1983 FEB. 16, 1984 - FEB. 25, 1984
TOTAL DEPTH	371.13m
ELEVATION	+298m
COORDINATE	X=2,927,020 Y=-77,000

UNITED NATIONS 国連開発計画事業団 15156 国際協力事業団 図書資料室蔵書

JAPAN INTERNATIONAL COOPERATION AGENCY

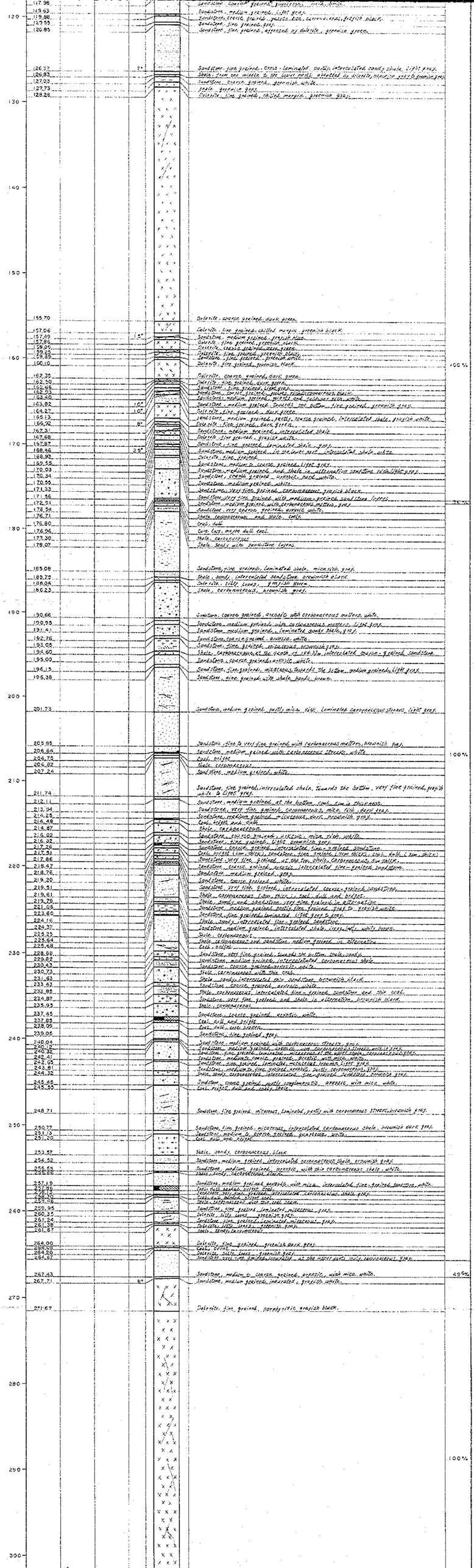
Borehole Log LD - 1

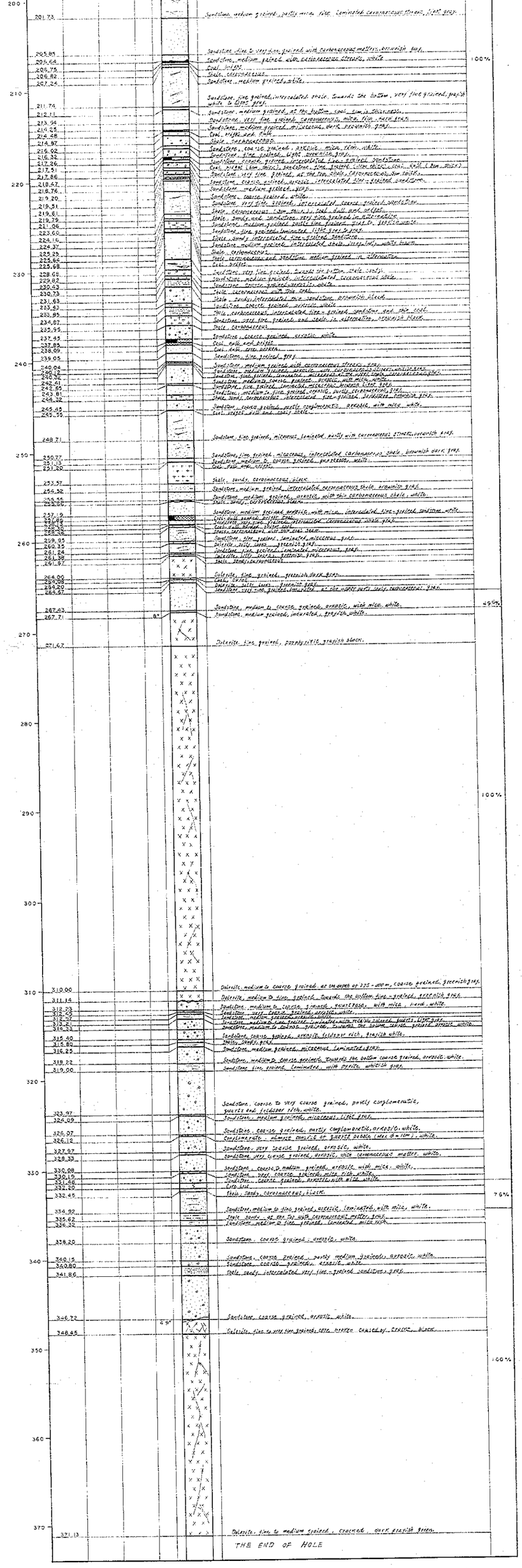
Dep. 40 Scale 1 : 200

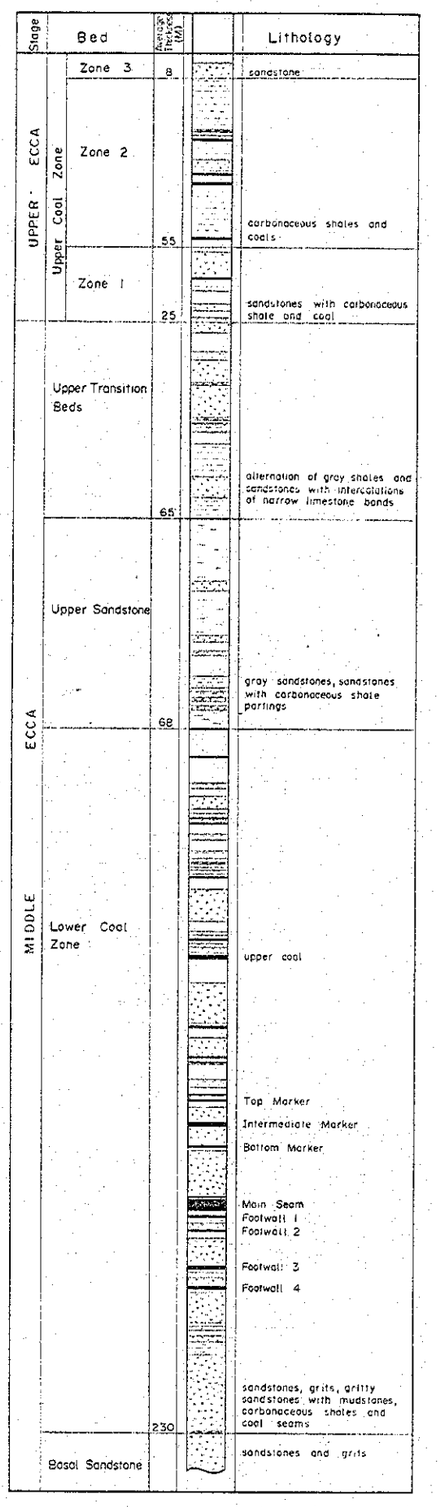
Date Sep. 1984 Prepared by N. Inviare, S. Morikawa

Depth of Bore hole	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Core Recovery
0.75					Soil, brownish black	Non-Core Drilling
3.75					Sandstone, medium to coarse grained, arkosic, brown, the grey.	
10.30					Shale and sandstone, medium to coarse grained.	
14.25					Shale, black	
15.00					Sandstone, coarse grained and hard.	
17.88					Sandstone, coarse grained, white	
24.80					Sandstone, coarse grained, quartz and feldspar rich, white	
32.29					Sandstone and shale with mica in alternation, irregularly, towards the lower parts, shale rich, partly intercalated siliceous hard coarse-grained sandstone, partly with pyrite. Light gray to greyish black.	
33.85					Sandstone, coarse grained, feldspar, hard, intercalated shale, irregularly white.	
37.50			8°		Shale, sandy and sandstone, coarse grained in alternation, greyish white.	
40.59					Sandstone, coarse grained, arkosic, hard, partly intercalated sandy shale.	
			8°			
44.31			15°		Sandstone, coarse grained, arkosic, hard, and shale in alternation, sandstone rich.	
44.78			15°		Dolerite, silty lens, greyish green.	
66.35					Shale, sandy, intercalated sandstone layer, very light gray.	
66.54					Sandstone, coarse grained, intercalated shale.	
68.69					Shale, sandy, calcareous, white sandstone.	
70.40					Sandstone, very coarse grained, quartzose, partly intercalated thin shale, (quartz-subangular), white.	
71.5					Sandstone, medium to fine grained, intercalated thin shale, gray.	
72.57					Sandstone, medium grained, partly intercalated shale and carbonaceous matter, light gray.	
75.39					Sandstone, coarse grained, quartz and feldspar rich, with carbonaceous stones, white.	
76.00					Sandstone, medium grained, with mica, light gray.	
78.57					Sandstone, coarse grained, quartz and feldspar rich, white.	
						100 %
91.07			9°		Sandstone, fine grained, micaceous, partly medium grained, towards the bottom, intercalated shale, light gray.	
91.60					Sandstone, medium grained, quartz rich, white.	
95.45					Sandstone, coarse grained, arkosic, intercalated carbonaceous shale, white	
98.87					Sandstone, medium grained, with carbonaceous shale, irregularly, light gray.	
100.82					Sandstone, very coarse grained, quartzose, subangular to angular (0 - max. 5mm), white	
101.51					Sandstone, fine grained, with rich shale, light gray to greyish white.	
104.10					Sandstone, fine grained.	
105.02					Sandstone, medium grained, white.	
105.23					Shale, carbonaceous.	
106.33					Sandstone, medium grained, with pieces of carbonaceous matter, white.	
109.70					Sandstone, medium to fine grained and shale, carbonaceous in alternation, towards the bottom, shale, carbonaceous rich.	
112.28			1.5°		Sandstone, coarse grained, towards the bottom medium grained, intercalated carbonaceous shale, white.	
113.62					Sandstone, very fine grained, carbonaceous, greyish black.	
114.73					Shale, carbonaceous with fine grained sandstone layer, black.	
116.23					Sandstone, fine grained, intercalated carbonaceous shale, light gray.	
116.77					Sandstone, medium grained, with pieces of carbonaceous matter.	
117.38					Shale, carbonaceous, black.	
117.98					Sandstone, coarse grained, quartzose, hard, white.	
119.63					Sandstone, medium grained, light gray.	
119.88					Sandstone, coarse grained, quartz rich, carbonaceous, greyish black.	
120.55					Sandstone, fine grained, gray.	
120.85					Sandstone, fine grained, affected by dolerite, greenish green.	
126.37			7°		Sandstone, fine grained, cross-laminated, partly intercalated sandy shale, light gray.	
126.82					Shale, from the middle to the lower part affected by dolerite, bluish green to greyish green	
127.03					Sandstone, coarse grained, greenish white	
127.73					Shale, greenish gray.	
128.28					Dolerite, fine grained, schistose, greenish gray.	
133.70					Dolerite, coarse grained, dark green.	
137.05					Shale,	

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150


117.98 Sandstone, coarse grained, arkosic, white.
119.63 Sandstone, medium-grained, light gray.
120 119.98 Sandstone, coarse grained, arkosic with carbonaceous, greyish black.
120.55 Sandstone, fine grained, gray.
120.85 Sandstone, fine grained, appeared of calcite, greenish green.
126.37 2" Sandstone, fine grained, cross-laminated, partly intercalated sandy shale, light gray.
126.93 Shale, from the middle to the lower part, affected by calcite, olive or yellowish green.
127.03 Sandstone, coarse grained, greenish white.
127.73 Shale, greenish gray.
128.26 Diabase, fine grained, chilled margin, greenish gray.
130
140
150
155.70 Diabase, coarse grained, dark green.
157.06 Diabase, fine grained, chilled margin, greenish black.
157.49 1.5" Sandstone, medium grained, grayish blue.
157.86 Diabase, fine grained, greenish black.
158.37 Diabase, coarse grained, dark green.
159.55 Diabase, fine grained, greenish black.
159.89 Sandstone, fine grained, greenish white.
160 160.10 Diabase, fine grained, greenish black. 100 %
162.35 Diabase, coarse grained, dark green.
162.50 Diabase, fine grained, dark green.
162.95 Sandstone, fine grained, light gray.
163.23 Sandstone, fine grained, partly carbonaceous, black.
163.90 Sandstone, medium grained, arkosic and calcareous, white.
163.92 1.0" Sandstone, medium grained, brownish red bottom, fine grained, greenish gray.
164.27 1.0" Diabase, fine grained, dark green.
165.13 Sandstone, medium grained, partly coarse grained, intercalated shale, grayish white.
166.92 6" Diabase, fine grained, dark green.
167.3 Sandstone, medium arkosic, intercalated shale.
167.68 Diabase, fine grained, grayish white.
170 167.87 Sandstone, fine grained, laminated shale, gray.
168.66 2.5" Sandstone, medium grained, to pebbly, intercalated shale, white.
168.92 Diabase, fine grained.
169.55 Sandstone, medium to coarse grained, light gray.
170.03 Sandstone, medium grained, and shale in alternation sandstone reddish gray.
170.34 Sandstone, coarse grained, arkosic, dark white.
170.55 Sandstone, medium grained, white.
171.33 Sandstone, very fine grained, carbonaceous, grayish black.
171.56 Sandstone, very fine grained with medium grained sandstone layers.
172.91 Sandstone, medium grained, with carbonaceous matter, gray.
173.54 Sandstone, very coarse, grained, arkosic white.
176.71 Shale, carbonaceous, and shale, coal.
180 176.80 Coal, dull.
176.96 Coal, bright, major dull coal.
177.30 Shale, carbonaceous.
178.07 Shale, black with sandstone layers.
185.08 Sandstone, fine grained, laminated shale, micaceous, gray.
183.75 Shale, sandy, intercalated sandstone, brownish black.
185.06 Coal, bright, layer 3 cm/100 cm thick.
186.23 Shale, carbonaceous, brownish gray.
190 190.66 Sandstone, coarse grained, arkosic with carbonaceous matters, white.
190.93 Sandstone, medium grained, with carbonaceous matter, light gray.
191.41 Sandstone, medium grained, laminated sandy shale, gray.
192.76 Sandstone, coarse grained, arkosic, white.
193.05 Sandstone, fine grained, calcareous, brownish gray.
195.60 Shale, carbonaceous, at the depth of 195.3 m, intercalated coarse-grained sandstone.
195.90 Sandstone, coarse grained, arkosic, white.
196.13 Sandstone, fine grained, calcareous, coarse at the bottom, medium grained, light gray.
196.38 Sandstone, fine grained, with shale layer, brown.
200
201.73 Sandstone, medium grained, partly micaceous, laminated carbonaceous streaks, light gray.
205.95 Sandstone, fine to very fine grained, with carbonaceous matters, brownish gray.
206.64 Sandstone, medium grained, with carbonaceous streaks, white. 100 %
206.73 Coal, bright.
206.82 Shale, carbonaceous.
207.26 Sandstone, medium grained, white.
210
211.74 Sandstone, fine grained, intercalated shale, towards the bottom, very fine grained, grayish white & light gray.
212.11 Sandstone, medium grained, at the bottom, coal, cm is thickness.
213.34 Sandstone, very fine grained, carbonaceous, micaceous, dark gray.
214.25 Sandstone, medium grained, calcareous, dark brownish gray.
214.48 Coal, major dull, bright.
214.87 Shale, carbonaceous.
216.02 Sandstone, coarse grained, arkosic, micaceous, white.
216.32 Sandstone, fine grained, little brownish gray.
217.26 Sandstone, coarse grained, intercalated fine-grained sandstone.
217.51 Coal, major (1 cm thick), sandstone, fine grained (1 cm thick), coal, dull (1 cm thick)
217.86 Sandstone very fine grained, at the top, shale, carbonaceous, fine shale.
218.57 Sandstone, coarse grained, arkosic, intercalated fine-grained sandstone.
218.76 Sandstone, medium grained, gray.
219.20 Sandstone, coarse grained, white.
219.51 Sandstone, very fine grained, intercalated coarse-grained sandstone.
219.61 Shale, carbonaceous, 1 cm thick, coal, dull and bright.
219.79 Shale, sandy and sandstone, very fine grained in alternation.
221.06 Sandstone, medium grained, partly fine grained, gray to grayish white.
223.60 Sandstone, fine grained, laminated, light gray to gray.
224.16 Shale, sandy, intercalated fine-grained sandstone.
224.37 Sandstone, medium grained, intercalated shale, greenish white, brown.
225.13 Shale, carbonaceous.
225.64 Sandstone, carbonaceous and sandstone, medium grained, in alternation.
225.68 Coal, bright.
230 228.88 Sandstone, very fine grained, towards the bottom, shale, sandy.
229.82 Sandstone, medium grained, intercalated carbonaceous shale.
230.43 Sandstone, coarse grained, arkosic, white.
230.73 Shale, carbonaceous with thin coal.
231.43 Shale, sandy, intercalated thin sandstone, brownish black.
233.43 Sandstone, coarse grained, arkosic, white.
234.95 Shale, carbonaceous, intercalated fine-grained sandstone and thin coal.
234.97 Sandstone, very fine grained, and shale in alternation, brownish black.
235.93 Shale, carbonaceous.
237.65 Sandstone, coarse grained, arkosic, white.
237.85 Coal, dull and bright.
238.99 Coal, dull, major bright.
239.05 Sandstone, fine grained, gray.
240
240.04 Sandstone, medium grained, with carbonaceous streaks, gray.
240.32 Sandstone, medium grained, arkosic, with carbonaceous streaks, white.
240.92 Sandstone, fine grained, laminated, intercalated of the upper part, carbonaceous, gray.
242.41 Sandstone, medium to coarse grained, arkosic, with mica, white.
242.95 Sandstone, fine grained, laminated, intercalated thin shale, light gray.
243.81 Sandstone, medium to fine grained, arkosic, partly carbonaceous, gray.
244.32 Shale, sandy, carbonaceous, intercalated fine grained sandstone, brownish gray.
245.46 Sandstone, coarse grained, partly conglomeratic, arkosic, with mica, white.
245.55 Coal, major, dull and rarely bright.
248.71 Sandstone, fine grained, micaceous, laminated, partly with carbonaceous streaks, brownish gray.
250
250.77 Sandstone, fine grained, micaceous, intercalated carbonaceous shale, brownish dark gray.
251.15 Sandstone, medium to coarse grained, quartzose, white.
251.40 Coal, major, dull, bright.
253.57 Shale, sandy, carbonaceous, black.
254.52 Sandstone, medium grained, intercalated carbonaceous shale, brownish gray.
255.65 Sandstone, medium grained, arkosic, with thin carbonaceous shale, white.
255.80 Shale, sandy, carbonaceous, black.
257.19 Sandstone, medium grained, arkosic, with mica, intercalated fine-grained sandstone, white.
257.95 Coal, major, major dull.
258.13 Sandstone, fine grained, laminated, intercalated carbonaceous shale, gray.
258.40 Coal, major, major dull.
259.08 Shale, carbonaceous, with thin coal seam.
260
260.95 Sandstone, fine grained, laminated, micaceous, gray.
260.27 Siltstone, thin band, greenish gray.
261.24 Sandstone, fine grained, laminated, micaceous, gray.
261.38 Siltstone, light gray, intercalated, gray.
261.57 Shale, sandy, carbonaceous.
264.00 Diabase, fine grained, greenish dark gray.
264.10 Coal, major.
264.20 Siltstone, dark band, greenish gray.
264.27 Sandstone, very fine grained, laminated, at the upper part, rarely carbonaceous, gray.
267.43 Sandstone, medium to coarse grained, arkosic, with mica, white. 49 %
267.71 6" Sandstone, medium grained, laminated, grayish white.
270
271.67 Diabase, fine grained, porphyritic, grayish black.
280
290 100 %
300


200
201.73
Sandstone, medium grained, partly white fine laminated carbonaceous streaks, light grey.
205.85
Sandstone, fine to very fine grained with carbonaceous matter, greenish black.
205.66
Sandstone, medium grained with carbonaceous streaks, white
100%
206.75
Coal, black
206.82
Shale, carbonaceous
207.24
Sandstone, medium grained, white.
210
Sandstone, fine grained, intercalated shale. Towards the bottom, very fine grained, greyish white to light grey.
211.74
Sandstone, medium grained, at the bottom, coal seam is discovered.
212.11
Sandstone, very fine grained, carbonaceous, mica rich, dark grey.
213.94
Sandstone, medium grained, micaceous, dark greenish grey.
214.23
Coal, black, hard, soft
214.28
Shale, carbonaceous
214.97
Sandstone, coarse grained, arkosic, mica rich, white.
215.92
Sandstone, fine grained, light greenish grey.
216.32
Sandstone, coarse grained, intercalated fine grained sandstone
216.46
Coal, black, soft, shale, sandstone, fine grained, light greenish black.
217.31
Sandstone, very fine grained, at the top, shale, carbonaceous, soft black.
217.86
Sandstone, coarse grained, arkosic, intercalated fine grained sandstone.
220
218.67
Sandstone, medium grained, white.
218.76
Sandstone, coarse grained, white.
219.20
Sandstone, very fine grained, intercalated coarse grained sandstone.
219.31
Shale, carbonaceous, soft black, soft, coal, shale and, soft black.
219.61
Shale, sandy and sandstone, very fine grained in alternation
219.79
Sandstone, medium grained, shale fine grained, light, greenish white.
221.06
Sandstone, fine grained, laminated, light greenish grey.
223.60
Shale, sandy intercalated fine grained sandstone.
224.16
Sandstone, medium grained, intercalated coal seam (w), white black.
224.37
Shale, carbonaceous
225.25
Shale, carbonaceous and sandstone, medium grained in alternation
225.64
Coal, black
225.68
Sandstone, very fine grained, towards the bottom, shale, light.
230
228.65
Sandstone, medium grained, intercalated carbonaceous white.
229.82
Sandstone, coarse grained, arkosic, white.
230.63
Shale, carbonaceous with the coal.
230.73
Shale, sandy, intercalated fine sandstone, greenish black.
231.63
Sandstone, coarse grained, arkosic white.
233.63
Shale, carbonaceous, intercalated fine grained sandstone and the coal.
233.85
Sandstone, very fine grained and shale in alternation, greenish black.
234.87
Shale, carbonaceous.
235.95
Sandstone, coarse grained, arkosic white.
237.65
Coal, soft, soft, black.
237.85
Coal, hard, very black.
238.69
Sandstone, fine grained, grey.
239.05
240
240.04
Sandstone, medium grained with carbonaceous streaks, grey.
240.12
Sandstone, medium grained, arkosic, with carbonaceous streaks, white grey.
240.32
Sandstone, fine grained, laminated, intercalated at the upper zone, carbonaceous streaks.
242.41
Sandstone, medium grained, arkosic, with mica, white.
242.65
Sandstone, fine grained, laminated, micaceous, light grey.
243.81
Sandstone, medium to fine grained, arkosic, partly carbonaceous streaks.
246.32
Shale, sandy, carbonaceous, intercalated fine grained, sandstone, greenish grey.
265.45
Sandstone, coarse grained, partly conglomerate, arkosic, with mica, white.
265.79
Coal, black, with and, soft, shale
248.71
Sandstone, fine grained, micaceous, laminated, partly with carbonaceous streaks, greenish grey.
250
250.77
Sandstone, fine grained, micaceous, intercalated carbonaceous shale, greenish dark grey.
251.10
Sandstone, medium to coarse grained, arkosic, white.
251.20
Coal, soft, soft, black.
253.57
Shale, sandy, carbonaceous, black.
254.32
Sandstone, medium grained, intercalated carbonaceous shale greenish grey.
255.55
Sandstone, medium grained, arkosic, with thin carbonaceous shale, white.
255.80
Shale, sandy, carbonaceous black.
257.15
Sandstone, medium grained arkosic, with mica, intercalated fine grained sandstone, white.
257.49
Coal, soft, soft, black, bottom, black.
258.15
Sandstone, very fine grained, intercalated carbonaceous shale, grey.
258.40
Coal, soft black, bottom, black, soft.
258.55
Shale, carbonaceous, with the coal seam.
260
259.95
Sandstone, fine grained, laminated, micaceous, grey.
260.35
Dolerite, fine grained, greenish grey.
261.24
Sandstone, very fine grained, laminated, micaceous, grey.
261.30
Dolerite, fine grained, greenish grey.
261.97
Shale, sandy, carbonaceous.
264.00
Dolerite, fine grained, greenish dark grey.
264.08
Coal, black
264.20
Dolerite, fine grained, greenish grey.
264.57
Sandstone, very fine grained, laminated, at the upper part, partly carbonaceous, grey.
267.43
Sandstone, medium to coarse grained, arkosic, with mica, white.
49%
267.71
Sandstone, medium grained, indurated, greyish white.
270
271.62
Dolerite, fine grained, porphyritic greyish black.
280
100%
290
300
310
310.00
Dolerite, medium to coarse grained, at the depth of 325.00 m, coarse grained, greenish grey.
311.14
Dolerite, medium to fine grained, towards the bottom fine grained, greenish grey.
312.23
Sandstone, medium to coarse, shale, yellowish, with mica, dark, white.
312.47
Sandstone, very fine grained, arkosic white.
312.57
Sandstone, very fine grained, arkosic white.
312.7
Sandstone, medium to fine grained, arkosic with rich mica, quartz, light grey.
313.33
Sandstone, medium to coarse, yellow, towards the bottom, shale, arkosic, arkosic, white.
315.40
Sandstone, coarse grained, arkosic feldspar rich, greyish white.
315.80
Shale, sandy, grey.
316.25
Sandstone, medium grained, micaceous, laminated, grey.
318.22
Sandstone, medium to coarse grained, towards the bottom coarse grained, arkosic, white.
319.00
Sandstone, fine grained, laminated, with arkosic, greenish grey.
320
Sandstone, coarse to very coarse grained, partly conglomeratic, quartz and feldspar rich, white.
323.97
326.09
Sandstone, medium grained, micaceous, light grey.
326.07
Sandstone, coarse grained, partly conglomeratic, arkosic, white.
326.12
Conglomerate, almost consist of coarse debris (max 8 mm), white.
327.97
Sandstone, very coarse grained, arkosic, white.
328.33
Sandstone, very coarse grained, arkosic, with carbonaceous matter, white.
330
330.08
Sandstone, coarse to medium grained, arkosic, with mica, white.
330.19
Sandstone, very coarse grained, mica rich, white.
331.48
Sandstone, coarse grained, arkosic, with mica, white.
332.20
Coal, black
332.45
Shale, sandy, carbonaceous, black.
76%
336.92
Sandstone, medium to fine grained, arkosic, laminated, with mica, white.
337.62
Shale, sandy, at the top with carbonaceous matter, grey.
338.32
Sandstone, medium to fine grained, laminated, mica rich.
338.20
Sandstone, coarse grained, arkosic, white.
340
340.15
Sandstone, coarse grained, partly medium grained, arkosic, white.
340.80
Sandstone, coarse grained, arkosic, white.
341.80
Shale, sandy, intercalated very fine grained, sandstone, grey.
346.22
Sandstone, coarse grained, arkosic, white.
348.45
Dolerite, fine to very fine grained, sets herein, consist of, arkosic, black.
350
100%
360
370
371.13
Dolerite, fine to medium grained, cracked, dark greyish green.
THE END OF HOLE



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JAPAN INTERNATIONAL COOPERATION AGENCY

Type Geologic Columnar Section of the Lubhuku Area

Dwg.	3	Scale	1 : 1,000
Date	Sep., 1985	Prepared by	H. Nozaki, S. Morikawa, H. Watanabe

HOLE NO. : LD2

AREA : LUBHUKU

DATE DRILLED : 18. JUL. 1984 ~ 9. AUG. 1984

TOTAL DEPTH : 355.10m

ELEVATION : +284m

COORDINATE : X = + 2,927,009, Y = - 78,000

15156

JAPAN INTERNATIONAL COOPERATION AGENCY

Borehole Log LD2

Dwg 4b | Scale 1 : 200

Date Sep. 1985 | Prepared by S. Morikawa, H. Watanabe

Depth of Borehole (M)	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Core Recovery
(M) 0						
4.00					Soil, brown	non-coring
6.00					Sandstone, medium grained, weathered, dark brownish gray	
8.72					Sandstone, coarse grained, weathered, light brownish gray	100%
9.35					Shale, weathered, dark gray	
10						
11.00					Sandstone, coarse grained, weathered, light gray	
11.76					Shale, dark gray, interbedded sandstone, fine grained, moderately weathered	
12.03					Sandstone, medium grained, weathered, brownish gray, core broken	
12.69					Shale, dark gray, weathered	
13.23					Sandstone, coarse grained, weathered, brownish light gray	
13.80					Sandstone, fine to medium grained, brownish light gray	
14.65			5°		Shale, dark gray	
15.76					Sandstone, coarse to very coarse grained, brownish dark gray	
16.73					Sandstone, medium grained, weathered, brownish light gray	
18.72					Sandstone, very fine grained, laminated, brownish gray	
18.95					Sandstone, very coarse grained, brownish gray	
20						
19.37					Shale, carbonaceous	
19.24					Shale, sandy, dark gray	
19.55					Sandstone, very coarse grained, light gray	
21.40					Sandstone, medium to coarse grained, light gray	non-coring
22.02					Sandstone, very fine grained, laminated, light gray	
25.61					Sandstone, fine grained, partly included carbonaceous matter, light gray	
28.52					Sandstone, fine grained, laminated, light gray	
28.62					Shale, sandy, laminated, gray	
30						
29.62					Sandstone, very fine to fine grained, laminated, gray	100%
29.75					Shale, sandy, dark gray	
31.18					Sandstone, very fine to fine grained, laminated, gray	
31.55					Shale, sandy, laminated, dark gray	
31.62					Shale, partly carbonaceous, dark gray	
32.18					Shale, sandy, dark gray	
33.20					Sandstone, medium grained, gray	
34.35					Sandstone, fine grained, laminated, light gray	
36.20					Sandstone, medium grained, light gray with pyrite veins partly interbedded shale, particles included carbonaceous matter irregularly	
37.64					Sandstone, medium to coarse grained, light gray	
39.77					Sandstone, fine grained, water bedded, gray	
40						
39.95					Conglomerate, max = 3mm, pebble colored mineral rich	
40.17					Sandstone, fine to medium grained, light gray	
40.36					Conglomerate, max = 3mm, pebble colored mineral rich	
45.10					Sandstone, very fine to fine grained, laminated, light gray	
45.27					Shale, dark gray	
47.40					Sandstone, medium grained, partly interbedded thin shale, dark gray	
48.22					Shale, dark gray and sandstone, fine grained, light gray in alternation	
49.50					Sandstone, medium grained, laminated, gray	
50						
49.00					Shale, dark gray	100%
49.89					Shale, dark gray and sandstone, fine grained, light gray in alternation	
50.36					Sandstone, medium grained, light gray	
51.30					Shale, dark gray and sandstone, medium grained, in alternation	
53.51					Sandstone, very fine to fine grained, laminated, light gray	
54.15					Sandstone, medium grained, with carbonaceous matter, light gray	
56.03					Sandstone, fine grained, laminated, partly indurated, gray	
56.50					Shale, carbonaceous	
56.97					Shale, sandy, partly carbonaceous	
58.18					Sandstone, medium grained, with carbonaceous matter, light gray	
58.85					Dolerite, fine grained, light greenish gray	
60						
58.95					Sandstone, medium grained, laminated, light gray	
59.69					Shale, dark gray	
62.25					Sandstone, medium to coarse grained, laminated, light gray	
64.95					Sandstone, fine grained, laminated, micaceous, gray	
65.23					Shale, sandy, dark gray	
65.75					Sandstone, fine grained, laminated, gray	
67.02					Dolerite, fine grained, greenish gray	
67.35					Sandstone, medium grained, indurated, light greenish gray	
69.55					Sandstone, fine grained, laminated, micaceous, gray	
70						
69.95					Shale, dark gray	100%
70.34					Sandstone, fine to medium grained, light gray	
71.33					Shale, partly sandy, black, carbonaceous at the upper part	
71.68					Dolerite, very fine grained, light greenish gray	
72.85					Sandstone, medium grained, partly with carbonaceous matter, light gray	
75.36					Sandstone, fine to very fine grained, indurated at the upper part, partly with carbonaceous matter, gray to light gray	
78.48					Shale, sandy, dark gray	
79.60					Sandstone, medium grained, partly interbedded thin shale, sandy, gray	
80						
80.72			15°		Shale, sandy, dark gray	
81.29					Sandstone, coarse grained, light gray	
81.77					Sandstone, fine to medium grained, with carbonaceous matter gray	
84.62					Sandstone, coarse grained, light gray	
84.77					Shale, dark gray, core broken	
87.25					Sandstone, fine grained, laminated, micaceous, gray	
88.20					Sandstone, medium to coarse grained, partly laminated, gray	
90						
90.41					Sandstone, fine grained, laminated, micaceous, gray	100%
92.14					Sandstone, coarse grained, light gray	
93.50					Sandstone, medium grained, laminated, light gray	
93.95					Sandstone, very fine grained, gray	
94.80					Sandstone, medium grained, gray	
95.30					Sandstone, very fine grained, with carbonaceous matter, gray	
98.05					Sandstone, medium grained, light gray	
98.54					Sandstone, fine grained, laminated with carbonaceous matter, gray	
98.84					Shale, partly sandy, black	
100						
99.89					Sandstone, coarse grained, partly with carbonaceous matter, light gray	
100.27					Sandstone, fine grained, micaceous, gray	
100.41					Shale, pyrite rich, lenticular gray	
100.91					Sandstone, medium to coarse grained, whitish gray	
103.43					Sandstone, coarse grained, partly medium grained arkosic, whitish gray	
103.77					Sandstone, fine to medium grained, with thin coal, gray	
106.96					Sandstone, very fine to fine grained, laminated, micaceous, gray	
107.77					Sandstone, medium grained, laminated, gray	
110						
110.23					Sandstone, very fine to fine grained, laminated, micaceous, gray	100%
115.00					Sandstone, fine to medium grained, arkosic, partly laminated, whitish gray	
117.94					Sandstone, fine grained, arkosic, with mica, laminated toward the bottom, partly cross laminated, whitish gray	
118.00					Coal, bright with shale	
119.55					Sandstone, fine grained, micaceous, with carbonaceous matter, gray	
120						
124.59					Sandstone, fine to medium grained, arkosic, with mica, partly laminated, white	
124.64					Coal, shale with weight	
124.77					Shale, sandy, carbonaceous	
125.86			7°		Sandstone, fine grained, arkosic, with mica, whitish gray	
125.90					Coal, bright and shale	
126.35					Shale, carbonaceous	
129.40					Sandstone, medium grained, arkosic, with mica, white	
130						
129.55					Shale, carbonaceous with thin coal	100%
130.30					Sandstone, fine grained, arkosic, whitish gray	
131.14					Shale, carbonaceous with sandstone, fine grained, brownish gray	
131.24					Coal, bright and shale	
135.82					Sandstone, fine grained, arkosic with mica, well laminated toward the bottom, partly cross laminated, whitish gray	
137.05					Shale, carbonaceous	
138.10					Sandstone, fine grained, with thin coal, laminated, gray	
138.44					Sandstone, medium grained, gray	
140.12					Sandstone very fine to fine grained, laminated, gray	
140.59					Shale, sandy, dark gray	
140						
141.08					Sandstone, medium grained, partly laminated, light gray	
141.32					Shale, sandy, dark gray	
141.81					Sandstone, medium grained, partly laminated, light gray	
145.58					Sandstone, very coarse grained, partly conglomeratic, light gray	
146.43					Shale, with thin coal, dark gray	

Depth	Description
128.35	Shale, carbonaceous
129.40	Sandstone, medium grained, arkosic, with mica, white
129.55	Shale, carbonaceous with blue coal
130.50	Sandstone, fine grained, arkosic, whitish gray
131.10	Shale, carbonaceous with sandstone, fine grained, greenish gray
131.24	Coal, bright and dull
135.82	Sandstone, fine grained, arkosic, with mica, well laminated toward the bottom, partly cross laminated, whitish gray
137.05	Shale, carbonaceous
138.10	Sandstone, fine grained, with thin coal laminated, gray
138.46	Sandstone, medium grained, gray
140.12	Sandstone very fine to fine grained, laminated, gray
140.50	Shale, sandy, dark gray
141.08	Sandstone, medium grained, partly laminated, light gray
141.32	Shale, sandy, dark gray
141.81	Sandstone, medium grained, partly laminated, light gray
145.58	Sandstone, very coarse grained, partly conglomeratic, light gray
146.40	Shale, with blue coal, dark gray
147.04	Sandstone, fine to medium grained, partly laminated, light gray
150.40	Shale, partly sandy, bluish gray
151.00	Shale dark gray and sandstone, very fine grained, in alternation
151.35	Sandstone, coarse grained, light gray
151.78	Shale, sandy, dark gray
152.63	Coal, bright and dull
153.09	Shale, sandy, bluish gray
153.95	Shale, carbonaceous, with peat layer
157.43	Sandstone, fine to very coarse grained, light gray
157.86	Sandstone fine grained, gray
158.25	Sandstone, coarse grained, light gray
158.86	Shale, carbonaceous, partly sandy, with blue coal
161.20	Sandstone, fine grained, laminated, micaceous, gray
161.05	Sandstone, medium grained, gray
164.25	Sandstone fine grained, laminated, gray
167.95	Sandstone, medium grained, partly laminated, whitish gray
168.20	Sandstone fine grained, laminated, gray
168.76	Coal, bright and dull, with shale, sandy
169.10	Shale, carbonaceous
169.86	Sandstone, fine grained and shale in alternation
170.35	Sandstone, medium grained, laminated, gray
171.58	Coal, bright and dull, with sandstone, fine grained
171.63	Shale, carbonaceous
173.56	Sandstone, fine to medium grained, gray
174.00	Sandstone, very fine grained, laminated, gray
174.22	Shale, carbonaceous
174.36	Shale, sandy
174.68	Shale, carbonaceous
175.30	Coal, dull with bright
175.60	Shale, sandy, carbonaceous
176.86	Shale, carbonaceous, with blue coal
177.24	Sandstone, fine grained, partly conglomeratic, laminated, gray
177.94	Sandstone medium to coarse, massive, light gray
182.80	Sandstone coarse grained, whitish gray
182.76	Conglomerate, $\varnothing_{max}$=5mm, subangular
182.80	Shale, bluish gray
183.10	Coal bright with dull
183.59	Shale, carbonaceous
184.32	Sandstone, coarse grained, whitish gray
184.73	Sandstone, fine to medium grained, gray
193.05	Sandstone, very coarse grained, whitish gray
195.07	Conglomerate, $\varnothing_{max}$=5mm, subangular quartz, feldspar rich
197.05	Sandstone, very coarse grained, conglomeratic, whitish gray
197.47	Sandstone, medium grained, gray
198.84	Sandstone, very coarse grained, partly with carbonaceous matter, gray
198.97	Coal, bright and dull
199.35	Shale, carbonaceous partly sandy
200.00	Shale, sandy, bluish gray
200.30	Sandstone, medium grained, laminated, gray
201.65	Sandstone coarse to very coarse grained, whitish gray
202.00	Shale, partly sandy, with pyrite, dark gray
205.84	Sandstone, fine grained, laminated, gray
206.39	Shale, sandy, banded, dark gray
207.02	Sandstone, fine grained, gray
207.81	Coal, dull with sandstone, very fine grained
208.06	Shale, sandy, bluish gray
209.22	Sandstone, coarse to very coarse grained, partly conglomeratic, whitish gray
209.33	Sandstone fine grained, gray
210.24	Sandstone, very coarse grained, whitish gray
210.48	Sandstone, fine to medium grained, dark gray
210.90	Sandstone, very coarse grained, whitish gray
211.40	Conglomerate, $\varnothing_{max}$= 10mm, subangular, partly with carbonaceous matter
212.02	Shale, with thin coal, carbonaceous at the upper part
212.40	Coal, dull with bright
212.64	Shale, sandy, dark gray, carbonaceous at the upper part
212.90	Sandstone, fine grained, laminated, gray
213.50	Sandstone, medium grained, light gray
214.78	Sandstone, coarse to very coarse grained, whitish gray
215.06	Sandstone, medium grained, micaceous, gray
218.95	Sandstone, very coarse grained, partly conglomeratic, whitish gray
220.28	Coal, dull with bright
220.54	Shale, carbonaceous
223.95	Sandstone, coarse to very coarse grained, micaceous, gray
224.50	Conglomerate, $\varnothing_{max}$= 10mm, subangular quartz, feldspar rich
224.91	Sandstone, coarse to very coarse grained, micaceous, gray
225.95	Conglomerate, $\varnothing_{max}$= 10mm, subangular, arkosic, gray
228.04	Sandstone, very coarse grained, micaceous, gray
228.56	Coal, dull with bright
229.70	Sandstone, very coarse grained, micaceous, gray
243.42	Sandstone, very coarse grained, arkosic, whitish gray
245.65	Dolerite, silty lower, chilled margin, gray
247.60	Dolerite, very fine to fine grained, basaltic dark gray
259.00	Dolerite, coarse grained, with calcite veins, partly serpentinization along small cracks, dark greenish gray
264.00	Dolerite very coarse grained, with calcite veins, dark greenish gray
273.20	Dolerite, coarse grained, greenish gray
283.96	Dolerite, medium grained, partly serpentinization along cracks, dark greenish gray
287.16	Dolerite, medium grained, basalt, core broken, dark gray
289.10	Dolerite, medium to coarse grained, dark greenish gray
290.50	Dolerite, medium grained, basalt, core broken, dark greenish gray

Depth scale: 130, 140, 150, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310

Core recovery: 100%, 100%, 100%, 100%, 100%, 100%, 100%, 100%

Depth	Description
184.32	Shale, carbonaceous
184.73	Sandstone, coarse, gravel, whitish gray
	Sandstone, fine to medium grained, gray
190	
193.65	Sandstone, very coarse grained, whitish gray
195.07	Conglomerate, 4mm-5mm, subangular, quartz, feldspar rich
197.05	Sandstone, very coarse grained, conglomeratic, whitish gray
197.87	Sandstone, medium grained, gray
198.84	Sandstone, very coarse grained, partly with carbonaceous matter, gray
198.97	Coal, bright and dull
199.35	Shale, carbonaceous, partly sandy
200.00	Shale, sandy, brownish gray
200.30	Sandstone, medium grained, laminated, gray
201.85	Sandstone, coarse to very coarse grained, whitish gray
202.00	Shale, partly sandy, with pyrite, dark gray
200	
205.84	Sandstone, fine grained, laminated, gray
206.30	Shale, sandy, banded, dark gray
207.62	Sandstone, fine grained, gray
207.81	Coal, dull with sandstone very fine grained
208.06	Shale, sandy, bluish gray
209.22	Sandstone, coarse to very coarse grained, partly conglomeratic, whitish gray
209.33	Sandstone, fine grained, gray
210.24	Sandstone, very coarse grained, whitish gray
210.49	Sandstone, fine to medium grained, light gray
210.50	Sandstone, very coarse grained, whitish gray
211.40	Conglomerate, 4mm-10mm, subangular, partly with carbonaceous matter
212.02	Shale, with thin coal, carbonaceous at the upper part
212.40	Coal, dull with bright
212.64	Shale, sandy, dark gray, carbonaceous at the upper part
212.90	Sandstone, fine grained, laminated, gray
213.50	Sandstone, medium grained, light gray
214.78	Sandstone, coarse to very coarse grained, whitish gray
215.06	Sandstone, medium grained, micaceous, gray
216.95	Sandstone, very coarse grained, partly conglomeratic, whitish gray
220.28	Coal, dull with bright
220.54	Shale, carbonaceous
220	
223.65	Sandstone, coarse to very coarse grained, micaceous, gray
224.50	Conglomerate, 4mm-10mm, subangular, quartz, feldspar rich
224.81	Sandstone, coarse to very coarse grained, micaceous, gray
225.08	Conglomerate, 4mm-10mm, subangular, arkosic, gray
228.04	Sandstone, very coarse grained, micaceous, gray
228.56	Coal, dull with bright
229.70	Sandstone, very coarse grained, micaceous, gray
230	
240	
245.42	Sandstone, very coarse grained, arkosic, whitish gray
245.85	Dolerite, silty texture, chilled margin, gray
247.60	Dolerite, very fine to fine grained, basaltic dark gray
250	
259.00	Dolerite, coarse grained, with calcite veins, partly serpentinization along small cracks, dark greenish gray
260	
264.00	Dolerite, very coarse grained, with calcite veins dark greenish gray
270	
273.20	Dolerite, coarse grained, greenish gray
280	
285.66	Dolerite, medium grained, partly serpentinization along cracks, dark greenish gray
287.16	Dolerite, medium grained, loose, core broken, dark gray
289.10	Dolerite, medium to coarse grained, dark greenish gray
290	
290.50	Dolerite, medium grained, loose, core broken, dark greenish gray
300	
310	
315.97	Dolerite, medium grained, partly with calcite veins, dark greenish gray
317.88	Dolerite, fine grained, basaltic, dark greenish gray
318.13	Dolerite, silty texture, light gray, chilled margin
318.22	Shale, partly carbonaceous, burnt, dark gray
318.66	Coal, bright and dull, shale, coal
319.57	Shale, sandy, partly burnt, bluish gray
320.10	Sandstone, fine grained, micaceous, dark gray
320.56	Shale, carbonaceous
320.95	Coal, bright and dull
322.83	Sandstone, coarse grained, micaceous, gray
323.03	Sandstone, medium grained, gray
325.37	Sandstone, fine grained, rhythmic laminated with shale, gray
325.79	Coal, bright and dull, shale, coal
326.21	Shale, sandy, rhythmic, with sandstone, with thin coal
326.89	Sandstone, coarse grained, gray
327.92	Sandstone, very fine grained, rhythmic, dark gray
328.70	Sandstone, fine to medium grained, light gray
330	
334.50	Sandstone, coarse grained, partly conglomeratic, arkosic, whitish gray
334.65	Shale, sandy, laminated, gray
335.12	Coal, bright with dull, shale, coal
336.15	Shale, sandy, rhythmic, with thin coal, dark gray
339.36	Sandstone, fine grained, partly, medium grained, gray
339.98	Sandstone, medium grained, with carbonaceous matter, light gray
340.93	Coal, dull with bright, with sandstone bands
341.57	Sandstone, very fine grained, laminated, micaceous, dark gray
344.77	Sandstone, coarse to very coarse grained, arkosic, whitish gray
345.02	Sandstone, medium grained, arkosic, light gray
345.44	Conglomerate, 4mm-8mm, subangular, arkosic, whitish gray
345.90	Sandstone, medium grained, micaceous, light gray
346.82	Sandstone very coarse grained, hard, arkosic, light gray
347.65	Coal, dull with bright, shale coal
348.10	Core lost, may be coal
348.90	Sandstone, fine grained, gray
350.76	Sandstone, fine to medium grained, micaceous, gray
350	
355.10	Sandstone, coarse to very coarse grained, arkosic, light gray
	End of Hole

100%
100%
100%
100%
100%
100%
100%
100%
100%

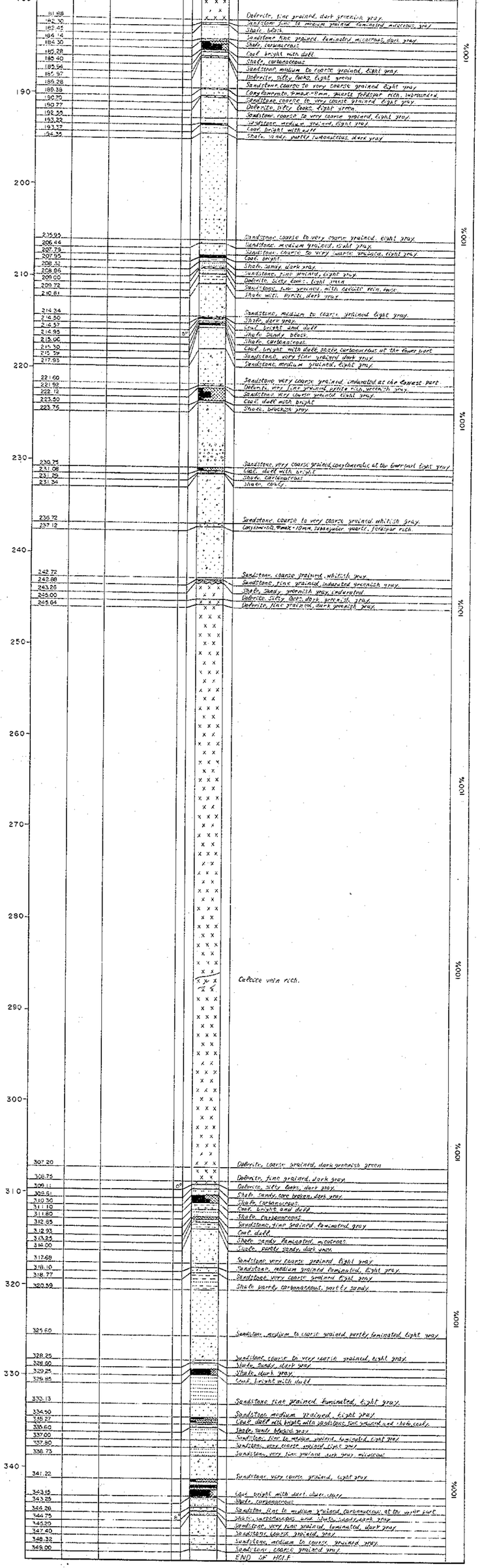
HOLE NO.	:	LD3
AREA	:	LUBHUKU
DATE DRILLED	:	27. JUN. 1984 ~ 17. JUL. 1984
TOTAL DEPTH	:	349.00m
ELEVATION	:	+280 m
COORDINATE	:	X=+2,927,000, Y=-79,079

JAPAN INTERNATIONAL COOPERATION AGENCY			
Borehole Log LD 3			
Dwg	4c	Scale	1 : 200
Date	Sep 1985	Prepared by	S. Morikawa, H. Watanabe

Depth of Borehole (M)	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Coring Recovery
0						
1.00					Top soil, partly sandy gravel	
3.00					Sandstone, fine to medium grained, greenish gray	100% Coring
3.70					Shale, dark greenish gray	
3.93					Sandstone, coarse grained, light gray	
4.25					Core lost, may be shale, sandy	
8.37					Sandstone, coarse grained, light gray	100%
8.70					Shale, sandy, dark greenish gray	
9.35					Sandstone, coarse to very coarse grained, light gray	
9.70					Shale, dark gray	
13.94					Sandstone, coarse to very coarse grained, light gray	
16.60					Sandstone, very fine to fine grained, dark brownish gray	100%
17.02					Shale, sandy, dark brown	
18.51					Sandstone, coarse grained, light gray	
20.10					Sandstone, fine grained gray	
21.02					Sandstone, medium grained, laminated, light gray	
21.40					Shale, thin interbedded sandstone medium grained	
21.88					Sandstone, medium grained light gray	
30						
32.40					Sandstone, fine grained laminated, partly included carbonaceous matter, light gray	
34.05			7°		Shale sandy, well laminated, micaceous, gray	
35.22					Sandstone, very fine grained and shale, carbonaceous, interbedded	100%
36.27					Sandstone, medium grained, light gray	
40						
40.80					Sandstone, coarse grained, light gray	
42.18					Sandstone, very fine grained, dark gray	
42.98					Conglomerate, φ max 40mm, to boulder, quartz, feldspar rich	
43.51					Sandstone, medium to coarse grained, light gray	
45.92					Sandstone very fine to fine grained, well laminated, gray	
46.52					Sandstone, coarse grained, light gray	
49.00					Sandstone, fine grained, partly medium grained, light gray	
50						
50.46					Sandstone, fine grained, well laminated, partly medium to coarse grained	
50.84					Shale sandy, partly carbonaceous	
52.23					Sandstone, fine grained, light gray	
52.88					Shale, carbonaceous and sandstone, medium grained in alternation	
54.27					Sandstone, coarse grained, light gray	
56.76					Sandstone very fine to fine grained, well laminated carbonaceous matter rich, gray	
58.38					Shale, sandy, carbonaceous, dark gray	
58.92					Sandstone, medium grained, light gray	
60						
62.56					Sandstone very fine grained, micaceous, partly interbedded shale gray	100%
63.06			20°		Sandstone, medium grained, light gray, small fault at the lowest part	
63.35					Sandstone, coarse grained, light gray	
68.86					Sandstone, very fine to fine grained, well laminated, gray	
70						
71.75			7°		Shale, black and shale, sandy, partly carbonaceous, dark gray	
72.84					Sandstone, medium to coarse grained light gray	
79.73					Sandstone, very fine to medium grained, partly interbedded thin shale sandy, gradual, bedding reflected, gray	
80						
80.64					Shale, sandy, blackish gray	
81.54					Sandstone, medium to coarse grained, light gray	
81.94					Sandstone, very fine to fine grained, carbonaceous matter rich	
83.52					Sandstone, coarse grained, white	
83.96					Shale, sandy, dark gray	
84.26					Coal, bright with dull, coal dust, and shale roofs	100%
84.70					Shale black	
85.25					Sandstone, very fine grained, with shale, black	
90						
90.30			45°		Sandstone, coarse grained, light gray	
90.75					Dolerite, silty, fine, dark greenish gray	
94.00					Calcite vein rich at the upper part	
94.25			50°		Dolerite fine grained, dark greenish gray	
96.83					Dolerite, silty, fine, dark greenish gray	
100					Sandstone coarse grained light gray	
100.20					Dolerite, fine grained, greenish gray	
101.70					Dolerite, silty, fine, with sandstone, medium grained, calcite vein rich, greenish gray	
110						100%
114.30					Dolerite, fine grained, with calcite vein, greenish gray	
					Dolerite, very fine grained, dark greenish gray	
120						
125.00					Dolerite, fine grained, greenish gray	
125.50					Dolerite, silty, fine, dark gray	100%
126.72					Sandstone, very fine grained well laminated gray	
130						
131.93					Sandstone, coarse to very coarse grained, light gray	
131.95					Coal, burnt	
132.00					Shale carbonaceous	
132.30					Mudstone, medium grained, gray	
132.38					Shale carbonaceous	
133.98					Sandstone coarse to very coarse grained light gray	
134.13			25°		Shale, sandy, dark gray	
134.21					Coal, bright and duff	
134.28					Shale, sandy	
137.20					Sandstone very fine to fine grained laminated gray	
138.35			70°		Shale, sandy sandstone, dark gray, interbedded	

Depth	Lithology
90.30	Sandstone, coarse grained, light gray
90.75	Doleritic, silty flake, dark greenish gray, calcite vein rich at the upper part
94.00	Doleritic, fine grained, dark greenish gray
94.25	Doleritic, silty, hard, dark greenish gray
96.92	Sandstone, coarse grained light gray
100.20	Doleritic, fine grained, greenish gray
101.20	Doleritic, silty flake, with sandstone, medium grained, calcite vein rich, greenish gray
114.30	Doleritic, fine grained, with calcite vein, greenish gray
	Doleritic, very fine grained, dark greenish gray
125.00	Doleritic, fine grained, greenish gray
125.50	Doleritic, silty, flake, dark gray
126.72	Sandstone, very fine grained well laminated gray
131.93	Sandstone, coarse to very coarse grained, light gray
131.96	Coal burnt
132.02	Shale, carbonaceous
132.20	Sandstone, medium grained, gray
132.36	Shale, carbonaceous
133.96	Sandstone, coarse to very coarse grained light gray
134.13	Shale, sandy, dark gray
134.21	Coal bright and dull
134.28	Shale, coaly
137.22	Sandstone, very fine to fine grained laminated gray
138.35	Shale, sandy sandstone, dark gray, interbedded
140.36	Doleritic, silty flake, dark gray
141.00	Sandstone, coarse to very coarse grained, light gray
142.10	Doleritic, silty flake, gray
143.66	Sandstone, coarse to very coarse grained light gray
145.20	Sandstone, medium grained, light gray
146.82	Sandstone, coarse to very coarse grained, with shale, sandy
148.04	Shale, blackish gray
148.81	Sandstone, fine to medium grained, light gray
149.31	Shale, with sandstone very fine grained, greenish gray
149.82	Sandstone, very fine grained, well cemented, gray
151.73	Shale, sandy well laminated with shale blackish gray
153.01	Sandstone, very fine to fine grained, well laminated
153.48	Sandstone coarse grained, light gray
154.32	Coal bright with dull
154.48	Shale carbonaceous
155.15	Sandstone coarse to very coarse grained light gray
155.51	Sandstone, medium grained, bad sorting, partly micaceous
171.30	Sandstone, coarse to very coarse grained, partly conglomeratic, light gray
171.73	Sandstone, medium grained, light gray
172.00	Coal bright with dull
172.70	Shale, blackish gray
174.13	Sandstone, fine to medium grained, well laminated
175.48	Sandstone, medium to coarse grained light gray
176.30	Sandstone, fine grained, well laminated, micaceous, gray
176.92	Sandstone, medium grained, light gray
177.35	Coal bright and dull, shale, coaly
177.51	Shale carbonaceous
177.79	Sandstone, fine grained, well laminated, micaceous, gray
181.88	Doleritic, fine grained, dark greenish gray
182.30	Sandstone fine to medium grained, laminated, micaceous, gray
182.45	Shale, black
184.14	Sandstone fine grained, laminated, micaceous, dark gray
184.30	Shale, carbonaceous
185.28	Coal bright with dull
185.40	Shale, carbonaceous
185.94	Sandstone, medium to coarse grained, light gray
185.97	Doleritic, silty flake, light green
189.28	Sandstone coarse to very coarse grained light gray
189.38	Conglomerate, 8mm x 4mm, quartz feldspar rich, subrounded
190.70	Sandstone coarse to very coarse grained light gray
190.77	Doleritic, silty flake, light green
192.55	Sandstone, coarse to very coarse grained, light gray
193.22	Sandstone, medium grained, light gray
193.37	Coal bright with dull
196.35	Shale, sandy, partly carbonaceous, dark gray
205.95	Sandstone, coarse to very coarse grained, light gray
206.44	Sandstone, medium grained, light gray
207.79	Sandstone, coarse to very coarse grained, light gray
207.95	Coal bright
208.32	Shale, sandy, dark gray
208.86	Sandstone, fine grained, light gray
209.00	Doleritic, silty flake, light green
209.72	Sandstone, fine grained, with calcite vein, hard
210.81	Shale with pyrite, dark gray
214.34	Sandstone, medium to coarse grained light gray
214.50	Shale, dark gray
214.57	Coal bright and dull
214.95	Shale sandy black
215.06	Shale carbonaceous
215.30	Coal bright with shale shale carbonaceous at the lower part
215.79	Sandstone, very fine grained dark gray
217.93	Sandstone, medium grained, light gray
221.00	Sandstone, very coarse grained, conglomerate at the lower part light gray
221.92	Doleritic very fine grained, pyrite rich, greenish gray
222.12	Sandstone very coarse grained light gray
223.50	Coal dark with bright
223.76	Shale, blackish gray
230.75	Sandstone, very coarse grained, conglomeratic at the lower part light gray
231.08	Coal dull with bright
231.29	Shale carbonaceous
231.34	Shale, coaly
236.72	Sandstone, coarse to very coarse grained, whitish gray
237.12	Conglomerate, 7mm x 10mm, subangular, quartz feldspar rich
242.72	Sandstone, coarse grained, whitish gray
242.86	Sandstone, fine grained, indurated, greenish gray
243.26	Shale, sandy, greenish gray, indurated
245.00	Doleritic, silty, flake, dark greenish gray
245.64	Doleritic fine grained, dark greenish gray

Core recovery: 100%


91.88 Dolerite, fine grained, dark greenish gray.
92.30 Sandstone fine to medium grained, laminated micaceous, gray
182.45 Shale, black.
186.12 Sandstone fine grained, laminated micaceous, dark gray.
186.30 Shale, carbonaceous.
185.28 Coal bright with dull
185.60 Shale, carbonaceous
185.96 Sandstone medium to coarse grained, light gray.
187.97 Dolerite, silty flecks, light gray.
189.28 Sandstone, coarse to very coarse grained light gray
189.39 Conglomerate, 4max=8mm, quartz feldspar rich, unconsolid.
190.70 Sandstone coarse to very coarse grained light gray.
190.77 Dolerite, silty flecks, light green.
192.35 Sandstone, coarse to very coarse grained, light gray.
192.32 Sandstone medium grained, light gray.
193.37 Coal bright with duff
194.35 Shale, black, partly carbonaceous, dark gray
235.95 Sandstone coarse to very coarse grained, light gray.
236.44 Sandstone medium grained, light gray.
237.79 Sandstone coarse to very coarse grained, light gray.
237.95 Coal bright
238.32 Shale, sandy, dark gray.
238.86 Sandstone, fine grained, light gray.
239.00 Dolerite, silty flecks, light green
239.72 Sandstone fine grained, with radiolarite veins, white.
240.81 Shale with pyrite, dark gray
244.34 Sandstone, medium to coarse grained light gray.
244.50 Shale, dark gray.
245.57 Coal bright and duff
246.95 Shale, sandy, black.
247.06 Shale, carbonaceous.
247.30 Coal bright with dull, shale carbonaceous at the lower part
247.59 Sandstone, very fine grained dark gray.
247.95 Sandstone medium grained, light gray.
281.00 Sandstone very coarse grained, unconsolid at the lowest part
281.95 Dolerite, very fine grained, pyrite rich, greenish gray.
282.12 Sandstone, very coarse grained light gray.
283.50 Coal dull with bright
283.75 Shale, brownish gray.
289.74 Sandstone, very coarse grained, conglomeratic at the lower part light gray
291.08 Coal dull with bright
291.29 Shale, carbonaceous
291.34 Shale, sandy.
296.72 Sandstone coarse to very coarse grained whitish gray.
297.12 Conglomerate, 4max=10mm, subangular quartz, feldspar rich.
342.72 Sandstone, coarse grained, whitish gray.
342.88 Sandstone, fine grained, indurated greenish gray.
343.28 Shale, sandy greenish gray, indurated
345.00 Dolerite, silty, dark, dark green, gray.
345.64 Dolerite, fine grained, dark greenish gray.
Calcite vein rich.
307.20 Dolerite, coarse grained, dark greenish green
308.75 Dolerite, fine grained, dark gray.
309.11 Dolerite, silty flecks, dark gray.
309.51 Shale, sandy, core broken, dark gray.
310.30 Shale carbonaceous
311.10 Coal bright and duff
311.80 Shale, carbonaceous
312.85 Sandstone, fine grained, laminated gray
312.93 Coal dull
313.25 Shale, sandy, laminated, micaceous
314.00 Shale, partly sandy, dark green
317.69 Sandstone very coarse grained light gray
318.10 Sandstone, medium grained laminated, light gray.
318.77 Sandstone very coarse grained light gray
320.39 Shale partly carbonaceous, partly sandy.
325.60 Sandstone, medium to coarse grained, partly laminated light gray
328.25 Sandstone, coarse to very coarse grained, light gray.
328.60 Shale, sandy, dark gray
329.24 Shale, dark gray.
329.85 Coal bright with dull
333.13 Sandstone fine grained, laminated, light gray.
334.50 Sandstone medium grained, light gray
335.27 Coal dull with bright, with sandstone fine grained and shale seam.
335.60 Shale, sandy, black gray
337.00 Sandstone fine to medium grained, laminated light gray
337.80 Sandstone, very coarse, conglom light gray
338.73 Sandstone, very fine grained, dark gray, micaceous
341.22 Sandstone, very coarse, grained, light gray
343.15 Coal bright with dull, shale, dark
343.25 Shale, carbonaceous
346.28 Sandstone fine to medium grained, carbonaceous at the upper part.
346.75 Shale, carbonaceous and shale, sandy, dark gray
346.20 Sandstone very fine grained, laminated, dark gray
347.40 Sandstone, coarse grained, gray
348.32 Sandstone medium to coarse grained gray
348.90 Sandstone coarse grained gray
END OF HOLE
100%
100%
100%
100%
100%
100%
100%
100%
100%
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340

開発調査未返却
15156
開発調査部

HOLE NO : LD4

AREA : LUBHUKU

DATE DRILLED : 25. JUN. 1984. ~ 23 JUL. 1984

TOTAL DEPTH : 423.35m

ELEVATION : + 297m

COORDINATE : X =+2,927,000,Y= -80,002

JAPAN INTERNATIONAL COOPERATION AGENCY

Borehole Log LD4

Dwg	4d	Scale	:	200
Date	Sep 1985	Prepared by	S. Morikawa, H. Watanabe	

Depth of Borehole (M)	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Core Recovery
(M) 0						non-coring
8.65					Silt, weathered, brownish gray	
9.45					Silt, weathered, brownish gray	
10.20					Sandstone, very fine grained, weathered, light brownish gray	100%
11.75					Sandstone, medium grained, little weathered, arkosic, brownish white	
12.40					Sandstone, very fine grained, weathered, light brownish gray	
14.05					Sandstone, medium grained, diverse weathered, brownish white	
17.25					Sandstone, fine to very fine grained, weathered, micaceous, core broken, light brownish gray	
18.65					Shale, interbedded sandstone, very fine grained, weathered, brownish gray	
24.45					Sandstone, medium grained, little weathered, arkosic, brownish white	
25.40					Sandstone, very fine grained, weathered, light brownish gray	
26.20					Shale, interbedded sandstone, very fine grained, weathered, dark brownish gray	
30.00					Shale or shale sandy, dark gray	non-coring
32.80					Shale, interbedded sandstone, very fine grained	100%
33.10					Shale, weathered, dark brownish gray	
35.76					Sandstone, medium grained, weathered, core broken, light brownish gray	
36.30					Shale, interbedded sandstone medium grained little weathered brownish gray	
37.08					Sandstone, medium grained, pearlitic, brownish white	
38.03					Sandstone, fine grained, arkosic little weathered, light brownish gray	
39.25					Shale, sandy and sandstone, very fine grained, in alternation light gray	
45.00					Shale, dark gray	non-coring
48.13					Sandstone, medium grained, little weathered arkosic, brownish white	100%
48.50					Sandstone, medium to coarse grained, arkosic, brownish white	
48.74					Shale, interbedded sandstone, fine grained, little weathered, dark gray	
54.40					Sandstone, medium grained, partly coarse grained, arkosic, quartz rich, brownish white	
56.40			5°		Sandstone, medium grained, arkosic, white	
58.06					Sandstone, coarse grained, arkosic, quartz rich, white	
58.30					Shale, sandy interbedded sandstone, fine grained, dark gray	
58.80					Sandstone, medium grained, arkosic, white	
58.77			8°		Shale, sandy, dark gray	
60.40					Sandstone, coarse grained, partly interbedded shale, arkosic, white	
60.62					Shale, interbedded sandstone fine grained, unaltered, light gray	
61.23			15°		Sandstone, coarse grained, arkosic, quartz rich, white	
63.60			10°		Dolerite, very fine grained, basaltic, with thin calcite veins, greenish gray	
73.25			15°		Dolerite, fine to medium grained, partly with cracks, dark greenish gray	
73.65					Sandstone, fine grained, unaltered, arkosic, white	
74.23					Shale at the bottom interbedded sandstone, fine grained, light gray	
74.90					Sandstone, medium grained, quartzose, partly interbedded shale, white	
78.55					Sandstone, coarse grained, quartz rich, arkosic, white	
79.97					Sandstone, very coarse grained, conglomeratic, quartz rich, massive	
81.45					Sandstone, medium grained, partly coarse grained, arkosic, white	
84.05					Shale, interbedded shale sandy, gray to dark gray	
85.25			15°		Sandstone, medium grained, arkosic, white	
85.05					Shale, at the bottom sand rich, gray to dark gray	
86.80					Sandstone, medium grained, arkosic, white	
91.20					Sandstone, fine grained, laminated, micaceous light gray	
91.85					Sandstone, medium grained, with carbonaceous matter, white	
92.13					Sandstone and shale, carbonaceous in alternation, partly irregular, whitish gray	
92.35					Shale, carbonaceous light gray	
93.13					Sandstone fine grained, micaceous light gray	
93.80					Sandstone fine grained, micaceous laminated, light gray	
101.70					Sandstone, fine to very fine grained, arkosic, white	
101.81					Sandstone, fine to very fine grained, with carbonaceous matter, white	
107.70					Sandstone, fine grained, laminated, whitish gray	
108.72					Shale, interbedded sandstone, very fine grained, gray to light gray	
110.20					Sandstone, medium grained, arkosic, with mica, white	
110.35					Shale, interbedded sandstone fine grained, gray	
115.65					Sandstone medium grained, arkosic, partly with carbonaceous matter, white	
116.00					Sandstone coarse grained, arkosic, quartz rich, white	
118.35			65°		Sandstone, medium to fine grained, arkosic, white	
120.20					Dolerite, fine grained, partly with thin calcite veins along cracks, dark greenish gray	100%
131.00					Dolerite, fine grained, basaltic, dark greenish gray	
134.00					Dolerite, fine to medium grained, porphyritic, partly with cracks, greenish gray	
144.00					Dolerite, medium grained, greenish gray	
144.15					Dolerite, fine grained, greenish gray	
144.70			55°		Dolerite, fine grained, chilling margin, interbedded sandstone	
146.36					Sandstone, medium grained, arkosic, unaltered, greenish white	
146.93					Shale, sandy, at the bottom sand rich, light gray	
147.05			0°		Sandstone, medium grained, arkosic, white	
[illegible]					Dolerite, [illegible]	

Depth	Dip	Description
115.60		Sandstone, medium grained, arkosic, wacke, with carbonaceous matter, white
116.00		Sandstone, coarse grained, arkosic, quartz rich, white
118.35	65°	Sandstone, medium to fine grained, arkosic, white
120.20		Dolerite, fine grained, partly with thin calcite veins along cracks, dark greenish gray
131.00		Dolerite, fine grained, basaltic, dark greenish gray
134.00		Dolerite, fine to medium grained, porphyritic, partly with cracks greenish gray
144.00		Dolerite, medium grained, greenish gray
144.15		Dolerite, fine grained, greenish gray
144.70	55°	Dolerite, fine grained, chilled margin, intercalated Sandstone
146.38		Sandstone medium grained arkosic intercalated greyish white
146.53		Shale, sandy at the bottom band rich, light gray
147.05	0°	Sandstone, medium grained, arkosic, white
148.70		Dolerite, silty peak, chilled margin, dark greenish gray
167.20		Dolerite, fine to medium grained, greenish gray
167.65	0°	Dolerite, very fine grained, basaltic, dark gray
169.90		Sandstone, fine grained, micaceous, laminated, greyish white
170.60		Sandstone, fine grained, micaceous, partly laminated, light gray
170.90		Shale, carbonaceous, dark gray
171.30		Sandstone, fine grained, micaceous, laminated, light gray
172.20		Sandstone fine grained, micaceous semi cut intercalated shale sandy gray
172.75		Shale, sandy, carbonaceous, dark gray
174.27		Sandstone, fine grained, micaceous, laminated, light gray
174.31		Shale, carbonaceous
175.05		Sandstone, fine to medium grained, arkosic, white
181.00		Sandstone, fine grained, micaceous laminated, partly with pyrite, light gray
182.85		Sandstone, coarse grained, arkosic, partly carbonaceous, white
183.40		Sandstone, fine grained laminated, micaceous, light gray
185.85		Sandstone coarse grained, arkosic, partly carbonaceous, white
187.70		Sandstone, medium grained, arkosic with mica, greyish white
187.95		Sandstone coarse grained, arkosic, with mica, white
188.25		Shale, sandy, carbonaceous, blackish gray
190.00		Sandstone, coarse grained, arkosic, with mica, white
190.10		Coal dull and shale coal
190.75		Sandstone medium grained, arkosic, with mica, light gray
190.77		Coal dull and bright
190.89	0°	Shale, sandy, carbonaceous, blackish gray
192.18		Sandstone, fine grained, with shale, sandy, carbonaceous
193.10	0°	Dolerite, silty peak, chilled margin, blackish gray
205.80		Dolerite, fine to medium grained, basaltic, blackish gray
206.00	65°	Dolerite, very fine grained, basaltic, blackish gray
207.10		Sandstone, fine grained, laminated, partly cross laminated, light gray
207.20		Shale, coal, with lower blackish gray
207.70		Sandstone, medium grained, partly intercalated shale carbonaceous white
208.70		Shale, toward to the top sandy, partly carbonaceous, blackish gray
209.85		Sandstone, fine grained, with mica, laminated, whitish gray
210.10		Shale carbonaceous
210.65		Sandstone, medium grained, arkosic with mica, white
210.87		Shale, carbonaceous, at the bottom thin coal seam
211.20		Sandstone, fine grained, cross laminated, arkosic whitish gray
212.60		Shale carbonaceous, blackish gray
213.35	0°	Sandstone, coarse grained, arkosic, light gray
214.40		Dolerite very fine grained, basaltic, blackish gray
216.85		Dolerite, fine grained, partly, intercalated thin coal seam greenish gray
216.84		Shale, indurated, at the top coal burnt, light gray
217.80		Sandstone medium grained, arkosic, with mica, white
219.05		Dolerite, silty peaks, with calcite veins, serpentinization along cracks, greenish gray
221.90		Dolerite, fine to medium grained, serpentinization along cracks, greenish gray
223.05	0°	Dolerite, silty peaks, dark gray to blackish gray
223.30		Sandstone, fine grained, indurated, light gray
227.40		Sandstone, medium grained, partly coarse grained, arkosic, white
232.55		Sandstone, medium grained, arkosic, with mica, white
233.20		Sandstone, medium grained, feldspar rich, light gray
235.00		Sandstone, medium grained, arkosic, with mica, white
235.05		Conglomerate, coarse pebble recite-0.5~0.7cm, white
241.15		Sandstone, medium grained, arkosic, with mica, white
241.23		Shale sandy, at the bottom sandstone, light gray
241.29		Dolerite, silty grained, light greenish gray
241.63		Sandstone, very coarse grained, arkosic, conglomeratic, white
244.05		Sandstone medium grained, arkosic, with mica, white
244.32		Shale, sandy, light gray
245.17		Sandstone, medium grained, arkosic with mica, white
245.30		Sandstone, fine grained, toward the bottom shale carbonaceous rich, light gray
246.50	0°	Shale, sandy, indurated, light gray
249.00		Dolerite, fine grained, calcite veins along cracks, greenish gray
252.00		Dolerite, medium grained, greenish gray
268.00		Dolerite, fine grained, with cracks, greenish gray
269.80	50°	Dolerite, silty peaks, chilled margin, with calcite vein, light gray
273.33		Sandstone, medium grained, arkosic, white
273.80		Shale, light gray, indurated
277.50		Sandstone medium grained, arkosic with calcite veins, white
277.60		Conglomerate, quartz pebble rich, white
279.45		Sandstone, medium grained, arkosic with mica, white
280.20	0°	Sandstone, fine grained, arkosic, with mica, light gray
280.43		Dolerite, silty peaks, chilled margin, light gray
287.32	0°	Dolerite, fine grained, greenish gray
287.70		Sandstone, fine grained, indurated, light gray
288.00		Shale, at the top indurated, gray
290.10		Sandstone fine grained, arkosic, with mica, white
292.30		Sandstone, medium grained, partly coarse grained, arkosic, white
293.45		Sandstone, very coarse grained, conglomeratic, arkosic white
293.60		Conglomerate, subangular, quartz rich, 0.1~0.3 - 7mm
295.10		Sandstone medium to coarse grained, arkosic white
295.40	0°	Conglomerate, subangular rich, subangular, 0 max - 15cm

100 %

100 %

Depth	Dip	Description
268.00		Dolerite, fine grained, with cracks greenish gray
269.80	50°	Dolerite, very dark, chilled margin, with calcite vein light gray
273.35		Sandstone medium grained, arkosic, white
273.80		Shale, light gray, indurated
277.50		Sandstone, medium grained, arkosic with calcite veins, white
277.60		Conglomerate, quartz pebble rich, white
279.45		Sandstone, medium grained, arkosic with mica, white
289.20	0°	Sandstone fine grained, arkosic, with mica, light gray
290.43		Dolerite, very dark, chilled margin, light gray
287.32	0°	Dolerite, fine grained, greenish gray
287.70		Sandstone, fine grained, indurated, light gray
288.00		Shale, at the top indurated, gray
290.50		Sandstone fine grained, arkosic, with mica, white
292.40		Sandstone, medium grained, partly coarse grained, arkosic, white
293.45		Sandstone, very coarse grained, conglomeratic, arkosic white
293.60		Conglomerate, rounded quartz rich, (max) - 7mm
295.10		Sandstone, medium to coarse grained, arkosic white
295.40	6°	Conglomerate, feldspar rich, rectangular, (max) - 25cm
295.45		Shale, coaly
295.72		Coal, bright and dull
295.82		Shale, sandy, carbonaceous
298.90		Sandstone, coarse grained, arkosic, feldspar rich, greenish white
299.10		Sandstone, fine grained, micaceous, light gray
301.10		Sandstone, medium grained, arkosic quartz rich with mica, white
302.10		Sandstone, very coarse grained, arkosic, feldspar rich, white
302.30		Sandstone, very fine grained, indurated, greenish gray
302.85		Sandstone, medium grained, with carbonaceous matter, feldspar rich, greenish white
304.30		Sandstone, coarse grained greenish white
304.50		Sandstone medium grained, with carbonaceous matter, mica rich, greenish white
304.80		Shale, sandy, carbonaceous, with mica, dark gray
305.10		Sandstone, coarse grained, feldspar rich, greenish white
305.75		Sandstone very fine grained, micaceous, dark gray
308.50		Sandstone, coarse grained, towards the bottom conglomeratic greenish white
314.45		Sandstone, very coarse grained, conglomeratic, arkosic white
316.45		Sandstone, medium grained, arkosic quartz rich, with mica, white
317.47	0°	Sandstone fine grained, laminated, indurated, brownish light gray
318.40		Dolerite, very fine grained, chilled margin, partly greenish light gray
323.00		Dolerite, fine to medium grained, with calcite veins, greenish gray
		Calcite vein.
		Calcite vein.
363.25		Dolerite, medium to coarse grained, greenish gray
364.25		Dolerite medium grained, core broken, with many cracks, greenish gray
378.20		Dolerite, medium grained, greenish gray
379.00		Dolerite, fine grained, sazedric greenish gray
379.40		Dolerite, very grained, chilled margin, greenish gray
379.58		Coal, dull with bright, burnt
380.80		Shale, sandy, carbonaceous, bluish gray
380.90		Coal bright and dull
381.23		Shale carbonaceous, toward the bottom sandy, bluish gray
383.70		Sandstone, fine grained, partly medium grained, whitish gray
384.10		Shale, sandy, carbonaceous, bluish gray
384.55		Coal bright and dull with shale, coaly
385.70		Sandstone very fine grained, interbedded shale, carbonaceous dark gray
392.25		Sandstone, medium grained, arkosic, with mica, white
394.70		Sandstone, coarse grained, arkosic, with mica, white
395.10		Sandstone, medium grained, with mica, whitish gray
394.30		Coal, dull and shale, coaly
395.75		Coal, dull with bright
395.90		Shale, carbonaceous
398.30		Sandstone, fine grained, micaceous, brownish light gray
398.62		Sandstone, medium grained, arkosic with mica, white
398.75		Shale, partly carbonaceous, bluish gray
399.00		Sandstone, fine grained, micaceous, brownish light gray
399.13		Coal, burnt
400.75		Sandstone fine grained, micaceous, hard, brownish light gray
401.55		Coal, dull with bright
401.80		Shale, carbonaceous
402.58		Sandstone, fine grained, micaceous, gray
405.98		Sandstone coarse grained, arkosic, with mica, white
407.51		Coal, dull with bright and shale coaly
408.10		Coal, bright with dull with shale coaly
408.70		Coal, bright and dull with shale, coal
409.11		Sandstone fine grained, interbedded shale, micaceous, gray
409.41	5°	Shale, carbonaceous
409.81		Sandstone, fine grained, interbedded shale, micaceous, gray
411.43		Sandstone, fine grained, micaceous, partly with pyrite, light gray
416.50		Sandstone, medium grained, arkosic, with mica, white
417.63		Sandstone, fine grained, arkosic, with mica, white
417.94		Sandstone, very fine grained, micaceous carbonaceous gray
418.94	3°	Shale carbonaceous, with thin sandy partings, bluish gray
420.30		Shale carbonaceous and sandstone, fine grained, in alternation
422.15		Sandstone, medium grained, partly coarse grained arkosic white
423.00		Sandstone, coarse grained, conglomeratic arkosic with mica, white
423.35		Sandstone, medium grained, arkosic with mica, white
		End of Hole

100%

100%

HOLE NO : LD - 5
AREA : LUBHUKU
DATE DRILLED : JAN. 11, 1984 - FEB. 15, 1984
TOTAL DEPTH : 453.63m
ELEVATION : +260m
COORDINATE : X=+2,927,000 Y=-80,871

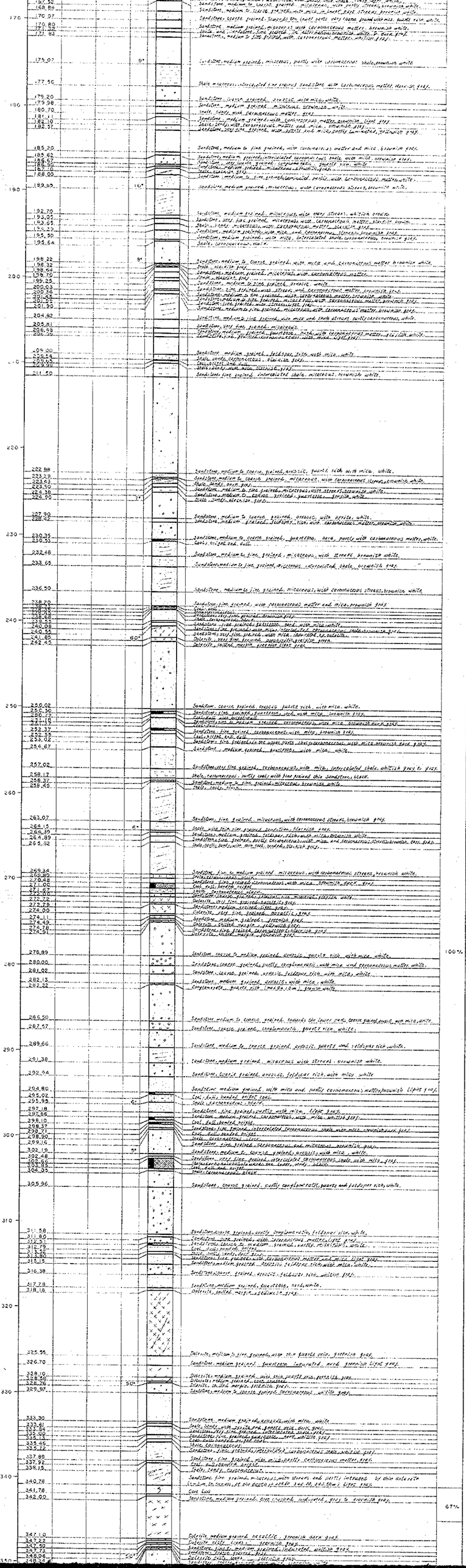
国際協力事業団
15156
調査資料室蔵書

JAPAN INTERNATIONAL COOPERATION AGENCY

Borehole Log LD - 5

Sheet 40 Scale 1 : 1,200
Date Sep 1986 Prepared by Nishimoto, S.Morikawa

Depth of Bore hole	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Column Section	Rock Description	Core Recovery
0.70					Soil. Starting point.	Non - Core Drilling
9.20					Shale weathered. greyish green & purple grey.	
11.90					Shale. weathered. greyish purple.	
13.30					Shale. weathered. brownish grey.	
14.60					Shale. weathered. greenish grey and reddish, medium strength, weathered yellowish grey.	
21.05					Sandstone. medium grained. weathered. light brown.	
26.95					Shale. weathered. carbonaceous. dark grey & black.	
29.48					Shale. weathered. greenish dark grey.	
31.84					Shale. brownish grey.	
32.03					Shale. carbonaceous. black. with thin coal beds. (0.1m ~ 0.5m)	
32.73					Coal. thick coal seam.	
34.60					Shale. in parts weathered. brownish grey.	
35.10					Shale. black. with carbonaceous matter.	
35.43					Shale. greenish grey.	
36.67					Shale. black. with carbonaceous matter.	
36.95					Shale. grey.	
38.00					Sandstone. medium to fine grained. interbedded shale with pyrite.	
39.40					Sandstone. coarse grained. massive. white.	
41.60					Sandstone. medium - fine grained. massive. white.	
41.88					Shale. carbonaceous. black.	
42.00					Shale. black. with carbonaceous.	
42.34					Shale. black. with pyrite.	
42.85					Shale. black.	
43.40					Sandstone. fine grained. massive. white.	
44.40					Sandstone. fine grained. with carbonaceous matter. white.	
45.80					Sandstone. coarse grained. fine grained. with pebbles. massive. white.	
46.05					Sandstone. fine grained. light greenish grey.	100%
47.60					Sandstone. coarse & medium grained. massive. white.	
47.73					Sandstone. coarse grained. white.	
49.72					Sandstone. coarse grained. massive with pyrite. white.	
50.37					Sandstone. fine grained. milky white.	
52.48			18°		Sandstone. coarse grained. massive. hard. with pyrite. white.	
53.55					Shale. carbonaceous. black.	
53.55					Shale. carbonaceous. sandstone. thin coal seam. black.	
53.62					Shale. black.	
54.00					Shale. dark and light. with pyrite.	
55.10					Shale. black. with thin coal seam. black.	
56.30					Shale. and sandstone. fine grained. in alternation. greenish grey.	
57.93					Shale. intercalated fine grained sandstone. thinner & the bottom sandstone rich. dark grey.	
58.65					Sandstone. medium - grained. microscopic. light grey.	
59.05					Shale. carbonaceous.	
59.00					Sandstone. medium to fine grained. greyish white.	
59.00					Sandstone. medium grained. greenish grey. intercalated shale. grey.	
61.77					Sandstone. fine grained. with shale streaks. brownish grey.	
62.40					Shale. sandy. grey.	
63.32					Sandstone. fine grained. with shale streaks. greenish grey.	
64.22					Sandstone. medium grained. with shale streaks white.	
65.00					Sandstone. medium grained. partly intercalated shale. greyish white.	
65.00					Sandstone. medium grained. with carbonaceous streaks white.	
69.33					Sandstone. medium to fine grained. microscopic. brownish grey.	
72.12					Shale. in parts bended fine-grained sandstone. grey.	
73.70					Shale. intercalated sandstone. fine grained. with micas. greenish grey.	
75.0					Sandstone. medium to fine grained. feldspar rich. white. grey.	
77.75					Shale. partly bended fine grained sandstone layer. irregularly. in parts with pyrite. grey.	
78.00					Sandstone. medium grained. intercalated shale. greyish white	
78.45					Sandstone. fine grained. microscopic. white. grey.	
79.42					Sandstone. medium grained. intercalated shale with micas. white and grey.	
79.77					Shale. bended sandstone. fine grained. layer. grey.	
79.87					Sandstone. medium grained. feldspar rich. greyish white.	
81.47					Shale and sandstone. fine grained. in alternation. grey.	
85.68					Shale. sandy. light grey.	
87.30					Shale and sandstone. fine to medium grained. greenish grey.	
89.59					Sandstone. coarse grained. towards the upper parts. very coarse grained. arkosic. partly with pyrite. white.	
90.87					Sandstone. fine to medium grained. with mica and thin shale layer. white.	
93.81					Sandstone. coarse grained. with mica. and in parts thin shale layer. quartz rich. white.	
94.16					Sandstone. medium grained. microscopic. greenish white.	
94.75					Sandstone. medium grained. very fine. with mica. partly thin shale layer. white.	
96.52					Sandstone. very coarse grained. conglomerate. quartz rich. white	
97.35					Sandstone. medium grained. feldspar rich. white.	
100.91					Sandstone. coarse grained. quartzose. hard. white.	
103.30					Sandstone. medium grained. quartzose. partly with pyrite. white.	
105.95			20°		Sandstone. medium grained. microscopic. white.	
106.15					Shale. with bended sandstone. fine grained. layer. greenish grey.	
107.45					Sandstone. coarse to medium grained. feldspar rich. white.	
109.72					Sandstone. medium to fine grained. partly with pyrite. and carbonaceous streaks irregularly. white.	
112.50					Sandstone. fine grained. in parts with carbonaceous streaks and pyrite. white.	
116.18					Shale and sandstone. fine grained. in alternation with pyrite.	
117.20					Shale. sandy. in parts microscopic. with bended fine-grained sandstone. light grey.	
117.31					Shale. calcareous. white. grey.	
121.55					Shale. sandy. partly microscopic. with pyrite. bended sandstone. light grey.	
121.57					Sandstone. medium grained. quartz rich. with mica. white.	
122.07					Shale. sandy. and sandstone. fine grained. in alternation. light grey.	
122.20					Shale. sandy. light grey.	
123.32					Sandstone. very coarse grained. quartzose. with pyrite. white.	
124.75					Sandstone. coarse grained. quartzose. hard. intercalated shale. sandy. greyish white.	
125.00					Shale with thin sandstone layer. grey.	
126.12					Sandstone. coarse - grained. quartzose. hard. partly with shale streaks. white.	
126.44					Sandstone. fine grained. laminated. grey.	
127.57					Sandstone. medium grained. microscopic. partly with carbonaceous matter. brownish grey.	
128.87					Shale. intercalated sandstone. fine grained. irregularly. light grey.	
129.12					Sandstone. medium grained. quartzose. white.	
134.90					Shale. sandy. partly bended fine grained sandstone. light grey.	
136.77					Sandstone. coarse grained. microscopic. with carbonaceous matter. white.	
136.89					Shale. dark grey.	
138.15					Shale. partly bended with fine grained thin sandstone layer. light grey.	
138.89					Sandstone. coarse grained. with mica. white.	
139.00					Sandstone. coarse grained. quartz rich. white.	
139.88					Shale. with thin sandstone layer. grey.	
140.80					Sandstone. coarse grained. quartz rich. white.	
142.24			12°		Sandstone. coarse grained. with shale streaks. white.	
146.00					Sandstone. medium grained. microscopic. with shale streaks and carbonaceous matter. brownish grey.	
149.20					Sandstone. medium grained. with mica. brownish grey.	
149.90					Sandstone. medium grained. in part with coarse. quartz rich. brownish grey.	
150.20					Sandstone. coarse grained. quartzose. dark. white.	100%
158.60					Sandstone. medium grained. microscopic. partly with carbonaceous matter. brownish grey.	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209.00
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211.50
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273.73
274.00
274.11
274.49
274.78
274.91
276.89
280.00
281.02
282.13
282.22
285.50
287.57
289.66
291.30
292.04
294.80
295.02
295.95
297.18
297.86
298.10
298.37
298.71
298.90
299.16
302.19
302.48
302.89
305.33
305.95
310
311.58
311.80
312.25
312.79
313.30
313.80
315.75
316.38
317.29
318.18
320
325.55
326.70
328.10
328.90
329.97
333.30
333.84
334.25
335.19
335.55
336.32
337.80
337.92
338.15
340
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342.00
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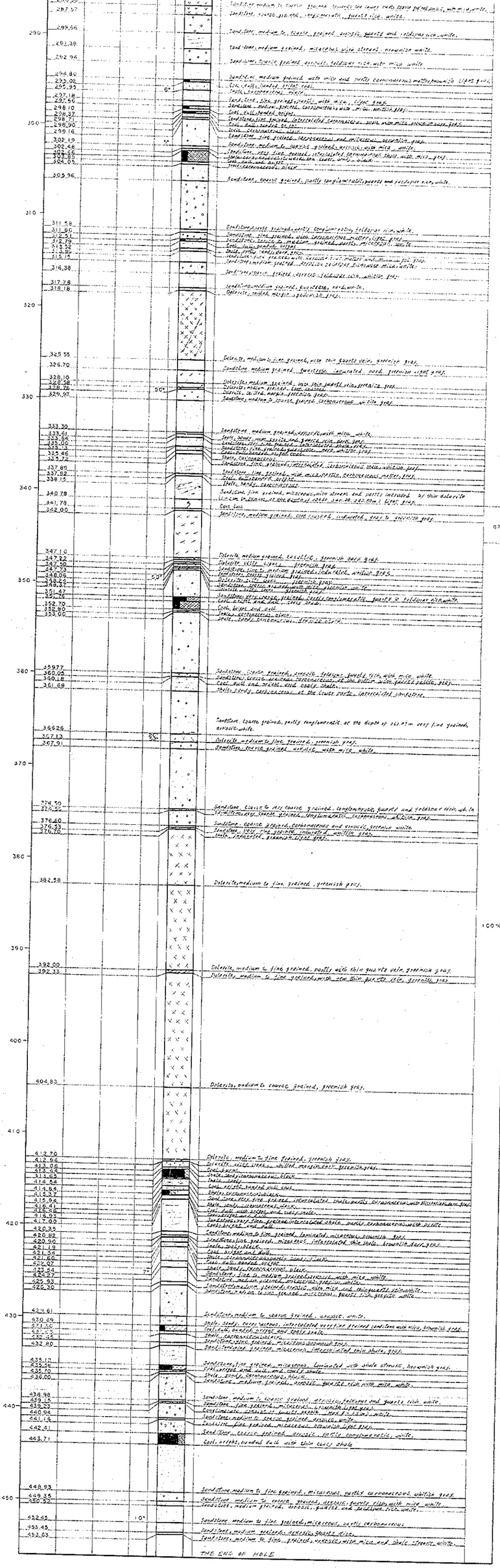
347.52
347.90
348.73
348.84
349.36
350
100%
67%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415.96
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416.66
416.93
417.00
420.35
420.82
420.90
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430.30
433.61
434.09
437.30
437.55
438.35
438.80
439.61
439.75
440.70
440.90
441.18
442.41
443.71
448.93
449.35
450.52
452.45
453.45
453.53
THE END OF HOLE

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HOLE NO. : LD6

AREA : LUBHUKU

DATE DRILLED : 11. AUG. 1984 ~ 23. AUG. 1984

TOTAL DEPTH : 304.95m

ELEVATION : +300m

COORDINATE : X = +2,928,000, Y = -77,070

JAPAN INTERNATIONAL COOPERATION AGENCY

Borehole Log LD6

Dwg	41	Scale	1 : 200
Date	Sep. 1985	Prepared by	S. Morikawa, H. Watanabe

(M) Depth of Borehole (M)	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Core Recovery
0						Non coring
2.40					Surf. brown	
2.75					Sandstone, fine grained, laminated, weathered, light brownish gray	
3.50					Sandstone, medium to coarse grained, weathered, light brownish gray	
3.85					Sandstone, medium grained, weathered, light brownish gray	
4.45					Sandstone, medium to coarse grained, light brownish gray	
5.13					Sandstone, medium to coarse grained, micaceous, weathered, brownish light gray	
8.43					Sandstone, medium grained, arkosic, weathered, light brownish gray	
9.08					Sandstone, fine grained, laminated, weathered, brownish gray	
10 — 9.30					Sandstone, medium grained, weathered, light brownish gray	
10.62					Dolerite, very fine grained, basaltic, dark gray	
13.03					Sandstone, fine to medium grained, arkosic, light brownish gray	
13.38					Sandstone, fine grained, laminated, weathered, brown	
13.70					Sandstone, coarse grained, partly cross laminated, little weathered, light brownish gray	
14.47					Sandstone, medium grained, with carbonaceous matter, whitish gray	
20 — 20.00					Sandstone, medium grained, laminated, partly weathered, whitish gray	100%
22.34					Sandstone, fine grained, well laminated, micaceous, partly weathered, gray	
24.95					Sandstone, very fine grained, micaceous, partly weathered, gray	
25.28					Sandstone, very fine grained, and shale, sandy, gray	
25.47					Sandstone, very fine grained, gray	
26.22					Shale, sandy, partly cross laminated, partly weathered, dark gray	
28.95					Sandstone, coarse grained, arkosic, white	
29.68					Sandstone, fine grained, with carbonaceous matter, light gray	
30 — 33.72					Sandstone, medium grained, arkosic, partly with carbonaceous matter, whitish gray	
34.28					Sandstone, fine grained, light gray	
34.55					Sandstone, medium grained, arkosic, white	
34.64					Sandstone, fine grained, light gray	
35.34					Sandstone, medium to coarse grained, whitish gray	
35.95					Sandstone, fine grained, laminated, light gray	
36.80					Sandstone, medium to coarse grained, arkosic, white	
40 — 42.02					Sandstone, fine grained, laminated, partly with carbonaceous matter, gray	
42.22					Sandstone, medium grained, arkosic, white	
42.49					Shale, carbonaceous, partly interbedded sandstone, medium grained	
43.70					Sandstone, medium grained, partly laminated, light gray	
43.93					Sandstone, fine grained, laminated, gray	
47.90					Shale, sandy, cyclic laminated with thin sandstone layer, light gray	100%
48.67					Sandstone, very fine to fine grained, gray	
50 — 50.45					Shale, carbonaceous	
50.65			62°		Shale, sandy, core broken	
51.22					Sandstone, medium grained, arkosic, white	
53.35					Sandstone, fine grained, laminated, gray	
57.38					Sandstone, very fine grained, interbedded thin shale, carbonaceous micaceous, dark gray	
57.68					Sandstone, very fine grained, gray	
57.90					Sandstone, very fine grained, interbedded thin shale, carbonaceous, dark gray	
58.28			69°		Shale, sandy, micaceous, gray	
59.89					Shale, interbedded sandstone, medium grained, indurated, gray	
60 — 60.58					Dolerite very fine grained, basaltic, dark gray	
62.32					Sandstone, fine grained, arkosic, indurated, white	
62.51					Shale, sandy with pyritic, gray	
64.33					Sandstone, fine to medium grained, indurated, whitish gray	
64.55					Sandstone, coarse grained, indurated, gray	
64.70			0°		Dolerite, very fine grained, basaltic, dark gray	
65.90					Dolerite, fine grained, basaltic, dark gray	
66.87					Dolerite, medium grained, dark greenish gray	
70 — 78.80					Dolerite coarse grained, serpentinization along crack, dark greenish gray	100%
80 — 82.53					Dolerite, medium grained, serpentinization along cracks, dark greenish gray	
83.40					Dolerite, fine grained, dark gray	
85.30					Dolerite, very fine grained, basaltic, dark gray	
85.66					Sandstone, fine grained, indurated, light gray	
87.71					Dolerite, very fine grained, basaltic, dark gray	
90 — 90.62					Sandstone, fine to medium grained, interbedded shale, sandy, partly cross laminated, gray	
91.72					Shale, sandy, dark gray	
92.05					Sandstone, medium grained, arkosic, white	
92.45					Sandstone, fine grained, micaceous, dark gray	
92.90					Sandstone, medium grained, arkosic, white	
93.22					Sandstone, coarse grained, arkosic, white	
95.75					Shale, carbonaceous	
95.79					Dolerite, silty dacite, light green	
96.06					Shale, carbonaceous	
96.58					Sandstone, fine to medium grained, partly with carbonaceous matter, gray	
96.64					Dolerite, silty dacite, light green	
100 — 96.95					Sandstone, medium grained, arkosic, light gray	
97.32					Sandstone, coarse grained, micaceous, gray	
98.41			33°		Dolerite, silty dacite, gray	
102.61					Sandstone, coarse grained, partly with carbonaceous matter, white	
102.90					Dolerite, silty dacite, light green	
103.90					Sandstone, coarse to very coarse grained, arkosic, white	
104.20					Sandstone, fine grained, laminated with mica, light gray	100%
106.92					Sandstone, very coarse grained, partly conglomeratic, arkosic, white	
108.88					Sandstone, medium to coarse grained, partly laminated, light gray	
110 — 112.33					Sandstone, coarse grained, arkosic, white	
112.70					Sandstone, fine grained, laminated with mica, gray	
116.30					Sandstone, coarse to very coarse grained, arkosic, partly included carbonaceous matter, feldspar, white	
116.65					Conglomerate, max. 5mm, subangular quartz, feldspar rich	
120 — 120.60					Sandstone, coarse grained, partly laminated, arkosic, white	
120.79					Coal, dull with bright	
121.62					Sandstone, fine grained, laminated, gray	
121.88					Shale, sandy, micaceous, dark gray	
125.10					Sandstone, fine grained, laminated, with mica, light gray	
125.14					Dolerite, silty dacite, light green	
125.90					Sandstone, fine grained, interbedded thin shale with mica, dark gray	100%
128.33					Sandstone, very fine grained, partly rhythmic laminated with thin shale layer, gray	
130 — 131.65					Sandstone, medium grained, arkosic, white	
131.88					Coal, bright and dull	
132.58					Sandstone, fine grained, with carbonaceous matter, irregularly, light gray	
134.95					Sandstone, fine grained, laminated, light gray	
135.45					Sandstone, fine grained, arkosic, white	
136.75					Sandstone, fine grained laminated with mica, gray	
137.62					Sandstone, fine to medium grained, micaceous, dark gray	
137.64					Coal, bright	
139.37					Sandstone, very fine to fine grained, micaceous, dark gray	
140 — 140.18					Sandstone, medium grained, calcareous, light gray	
140.46					Coal, bright and dull with shale, sandy	
141.00					Sandstone, fine to medium grained, light gray	
142.06					Siltstone, medium grained, arkosic, with mica, whitish gray	
142.29					Coal, bright and dull	
142.79					Shale, sandy, at the upper part, carbonaceous	
144.10					Sandstone, fine to medium grained, laminated, gray	
144.40					Shale, sandy, dark gray	
144.51					Coal, bright and dull	
144.72					Shale, sandy, carbonaceous	

Depth	Recovery	Description
132.98		Sandstone, fine grained, with carbonaceous matter throughout, light gray.
134.95		Sandstone, fine grained, laminated, light gray.
135.45		Shale, black, fine grained, arkosic, white.
136.75		Sandstone, fine grained, laminated, with micas, gray.
137.52		Sandstone, fine to medium grained, micaceous, dark gray.
137.64		Coal, bright.
139.37		Sandstone, very fine to fine grained, micaceous, dark gray.
140.18		Sandstone, medium grained, [illegible], light gray.
140.49		Coal, bright and dull with shale, crack.
141.00		Sandstone, fine to medium grained, light gray.
142.06		Sandstone, medium grained, arkosic, with micas, whitish gray.
142.39		Coal, bright and dull.
142.75		Shale, sandy, at the upper part carbonaceous.
144.10		Sandstone, fine to medium grained, laminated, gray.
144.40		Shale, sandy, dark gray.
144.51		Coal, bright and dull.
144.72		Shale, sandy, carbonaceous.
145.03		Sandstone, fine grained, light gray.
148.33	50	Sandstone, fine grained, laminated with micas, gray.
148.87		Shale, sandy, laminated, dark gray.
150.16		Shale, partly carbonaceous, dark gray.
150.95		Dolerite, very fine grained, basaltic, dark gray.
152.28		Sandstone, fine grained, gray.
154.04	50	Sandstone, very fine grained, laminated, gray.
154.65		Sandstone, fine to medium grained, cross laminated, gray.
154.77		Shale, sandy, core broken.
154.92		Shale, carbonaceous.
154.95		Coal, dull, core broken.
155.53		Sandstone, medium grained, with micas, gray.
155.74		Shale, dark gray.
155.84		Shale, carbonaceous.
156.61		Shale, sandy, micaceous, laminated, dark gray.
156.90		Sandstone, very fine grained, laminated, with carbonaceous, [illegible]
157.90		Shale, sandy, laminated, dark gray.
158.06		Shale, carbonaceous.
158.23		Shale, sandy, dark gray.
159.25		Sandstone, coarse grained, arkosic, white.
159.51		Shale, sandy, laminated, dark gray.
160.05		Coal, bright and dull.
160.48		Shale, sandy, laminated, micaceous, dark gray.
172.38		Sandstone, coarse to very coarse grained, arkosic, white, partly conglomeratic (4 max - 8mm), white.
173.18		Sandstone, fine to medium grained, laminated, gray.
173.48		Sandstone, coarse grained, arkosic, white.
174.10		Sandstone, fine grained, laminated, rythmites, gray.
174.78		Sandstone, fine grained, gray.
175.95		Sandstone, fine grained, laminated, rythmites, gray.
176.12		Shale, sandy, laminated, dark gray.
176.34		Sandstone, medium grained, with carbonaceous matter, light gray.
176.67		Coal, bright and dull.
176.95		Shale, carbonaceous.
177.10		Shale, sandy, carbonaceous.
177.20		Sandstone, very fine grained, rythmites, dark gray.
178.05		Sandstone, fine grained, partly laminated, with micas, gray.
178.68		Sandstone, very fine grained, rythmites, dark gray.
179.01		Sandstone, fine grained, partly laminated, with micas, gray.
179.51		Coal, bright with dull.
179.68		Sandstone, very fine grained, rythmites, gray.
179.95		Coal, bright with dull.
181.42		Sandstone, very fine to fine grained, rythmites, gray.
187.33		Sandstone, coarse to very coarse grained, arkosic, white.
188.32		Coal, bright and dull, partly spotted at the upper part.
188.50		Shale, sandy, carbonaceous.
189.24		Sandstone, fine grained, laminated, micaceous, gray.
196.11		Sandstone, coarse grained, arkosic, white.
196.46		Coal, bright, with dull.
197.15	50	Shale, carbonaceous.
197.55		Sandstone, medium grained, with micas, gray.
198.12		Sandstone, very fine grained, saturated, gray.
206.08		Sandstone, coarse to very coarse grained, arkosic, partly conglomeratic, white.
207.38		Conglomerate, 4 max - 10mm, subangular, arkosic, white.
211.77		Sandstone, coarse to very coarse grained, arkosic, white.
211.91		Coal, bright and dull.
212.27		Shale, sandy, carbonaceous.
212.98		Sandstone, fine grained, laminated, micaceous, gray.
215.40		Sandstone, coarse to very coarse grained, arkosic, partly intercalated thin shale, carbonaceous, white.
215.90		Shale, sandy, carbonaceous.
216.71		Sandstone, fine grained, laminated, micaceous, gray.
218.03		Sandstone, medium grained, light gray.
219.51		Sandstone, fine grained, rythmites with shale, gray.
220.22		Shale, sandy, rythmites with sandstone, dark gray.
220.51		Sandstone, medium grained, gray.
220.62		Coal, dull with bright.
221.06		Shale, sandy, carbonaceous.
221.55		Sandstone, very fine to fine grained, rythmites, dark gray.
223.29		Sandstone, coarse grained, arkosic, whitish gray.
223.66		Shale, carbonaceous.
224.04		Shale, sandy, carbonaceous.
224.42		Coal, dull with bright.
225.16		Sandstone, very fine grained, carbonaceous matter, micas, dark gray.
228.76		Sandstone, medium grained, gray.
228.75		Sandstone, coarse grained, arkosic, white.
229.62		Coal, dull with bright.
229.95	50	Shale, sandy, carbonaceous.
234.50		Sandstone, coarse to very coarse grained, light gray.
234.67		Conglomerate, 4 max - 15mm, subrounded, arkosic.
235.09		Sandstone, fine to medium grained, gray.
236.96		Sandstone, coarse grained, arkosic, whitish gray.
237.63		Coal, bright and dull.
237.95		Shale, carbonaceous.
253.47		Sandstone, coarse to very coarse grained, arkosic, partly conglomeratic, white.
256.11		Sandstone, medium to fine grained, rythmites, gray.
256.62		Shale, carbonaceous.
256.71		Coal, bright and dull, shale carbonaceous.
256.75		Coal, dull with bright, shale, coaly.
256.87		Coal, dull with bright.
257.09		Coal, bright.
257.52		Coal, dull with bright.
258.26		Shale, sandy, carbonaceous.
258.95		Coal, dull with bright, shale carbonaceous, partly pyrite spotted.
258.92		Shale, sandy, carbonaceous.
260.60		Coal, dull with bright.
261.10		Shale, sandy, carbonaceous.
261.83		Sandstone, medium grained, gray.
267.05		Sandstone, coarse to very coarse grained, arkosic, white.
267.95		Shale, sandy, dark gray.
268.05		Shale, carbonaceous.
268.19	50	Dolerite, very fine grained, basaltic, dark gray.
271.30		Dolerite, fine grained, basaltic, dark gray.
273.65		Dolerite, fine grained, basaltic, serpentinized along cracks, dark gray.
277.10		Dolerite, fine grained, basaltic, dark gray.
276.35	50	Dolerite, very fine grained, basaltic, dark gray.
276.56		Shale, carbonaceous, dark gray.
276.65		Shale, carbonaceous.
279.94		Sandstone, fine grained, laminated with micas, gray.
280.70		Coal, dull.
281.05		Shale, carbonaceous.
287.67		Sandstone, coarse to very coarse grained, partly medium grained, light gray.
288.23		Coal, dull with bright.
289.01		Coal, bright and dull.
290.22		Sandstone, medium grained, laminated, with micas, gray.
291.12		Sandstone, coarse grained, with micas, light gray.
291.31		Coal, dull.
291.50		Shale, sandy, carbonaceous.
298.73		Sandstone, coarse to very coarse grained, light gray.
299.37		Sandstone, very fine grained, laminated, micaceous, gray.
300.08		Shale, sandy, greenish gray.
301.05		Shale, carbonaceous.
301.72		Sandstone, medium grained, with carbonaceous matter, light gray.
302.00		Sandstone, coarse grained, light gray.
302.16		Shale, sandy, greenish gray.
304.15		Sandstone, coarse grained, arkosic, whitish gray.
304.32		Shale, sandy, with micas, gray (Core: 70.5%, dip: 30°)
304.95	50	Sandstone, coarse grained, arkosic, whitish gray.
		End of Hole.

Depth scale: 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300

Recovery: 100%, 100%, 100%, 100%, 100%

HOLE NO. : LD7

AREA : LUBHUKU

DATE DRILLED : 4. SEP. 1984 ~ 19.SEP.1984

TOTAL DEPTH : 337.90m

ELEVATION : +284m

COORDINATE : X=+2,928,000, Y=78,050

国際協力事業団
15156
図書資料室

INTERNATIONAL COOPERATION AGENCY

Borehole Log LD7

Dwg. 49 Scale 1 : 200

Date Sep. 1985 Prepared by S. Morikawa, H. Watanabe

Depth of Borehole (M)	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Core Recovery
0						
4.00					Soil, brown	non-coring
6.00					Sandstone, medium grained, weathered, brownish gray.	
10.30					Sandstone medium grained, weathered, bromnish gray core broken.	100%
12.50					Dolerite, silty dark, weathered, brownish gray, core broken.	
16.17					Dolerite fine grained, basaltic, with phenocrysts of feldspar, little weathered, dark gray	
16.38					Dolerite, weathered, reddish brown.	
16.70					Dolerite, fine grained, dark gray.	
17.00					Dolerite, weathered, reddish brown.	
20						
25.90					Dolerite, fine grained, basaltic, with phenocryst of feldspar, partly weathered along crack, dark gray.	
27.47			80°		Dolerite, fine grained, with many cracks, calcite vein at the lower contact, dark gray.	
29.35					Sandstone, fine grained, laminated, with calcite veins, gray.	
28.90					Dolerite, silty dark, with phenocrysts of feldspar, gray.	
29.60					Dolerite, very fine grained, with phenocrysts of feldspar, gray	
30						
34.40					Dolerite, fine grained, basaltic, with phenocrysts of feldspar, partly serpentinization along cracks, dark gray	
34.95					Dolerite, fine grained, basaltic, serpentinization along cracks, dark gray	
40						
46.00					Dolerite, fine grained, basaltic, with phenocrysts of feldspar, dark gray.	
46.60			60°		Dolerite, very fine grained, basaltic, dark gray.	
47.90					Shale, dark gray and sandstone, fine grained, rythmites, partly with pyrite	100%
50						
50.53					Sandstone, arkosic, whitish gray	
51.25					Sandstone, very fine grained, with mica, gray.	
51.66					Sandstone, fine grained, laminated, micaceous, gray.	
52.18					Sandstone, medium grained, light gray.	
53.68					Sandstone, very fine grained, with mica.	
54.64					Shale, sandy, partly carbonaceous, blackish gray.	
55.56					Sandstone fine grained, with mica, gray.	
55.75					Sandstone, coarse grained, arkosic, whitish gray.	
56.60					Sandstone, medium grained, with mica, gray.	
56.70					Shale, carbonaceous with thin coal, black.	
58.92					Sandstone, coarse grained, arkosic, white.	
59.70					Sandstone, medium grained, arkosic, whitish gray.	
60						
60.80					Sandstone, coarse grained, whitish gray.	
61.15			75°		Sandstone, fine grained, laminated, micaceous, gray.	
61.47					Sandstone, very fine grained, micaceous gray.	
63.46			30°		Sandstone, very fine grained, rythmic laminated with thin shale layer, dark gray.	
64.17					Dolerite, very fine grained basaltic, with phenocryst of feldspar, dark gray.	
65.39					Shale, dark gray and sandstone, very fine grained, micaceous, rythmites	
65.52					Shale, carbonaceous, partly fazzy with clay.	
66.20					Sandstone, medium grained, fe-oxidated (rrey-yellow), gray.	
66.39					Shale, sandy, laminated, micaceous, blackish gray.	
66.63					Shale, blackish gray.	
67.17					Shale, sandy, blackish gray.	
70						
70.91					Sandstone, medium grained, light gray.	
71.82					Sandstone, medium grained, partly interbedded shale, sandy, light gray.	
72.06					Sandstone, fine grained and shale, micaceous, rhythmite, dark gray.	
74.09					Sandstone, medium grained, interbedded thin shale, light gray.	
75.09					Sandstone very fine grained, gray.	
75.36					Shale, sandy laminated, dark gray.	
75.77					Sandstone, medium to coarse grained, arkosic, white.	
76.30					Sandstone, medium grained, gray.	
76.85					Sandstone, coarse grained, arkosic white	
77.88					Sandstone, coarse grained, with carbonaceous matter, light gray	
78.54					Sandstone, coarse grained, arkosic, white	
78.69					Shale, carbonaceous.	
78.77					Coal, bright.	
79.64					Shale, sandy, laminated, dark gray.	
79.83					Sandstone, very fine grained, laminated, rythmites, micaceous, gray.	
80.54					Shale, sandy, laminated, blackish gray	
85.05					Sandstone, coarse grained, arkosic, partly laminated, white.	
85.86					Conglomerate, 4mm~5mm, colonquartz, quartz, feldspar rich, whitish gray.	
87.68					Sandstone, coarse grained, arkosic, white.	
90						
92.90					Sandstone, medium grained, arkosic, whitish gray.	
93.16					Sandstone, fine to medium grained, gray.	
95.37			45°		Sandstone coarse grained, arkosic whitish gray	
95.86					Dolerite, silty dark, light greenish gray.	
96.75					Sandstone medium grained, laminated, gray	
96.94					Shale, carbonaceous	
97.78					Sandstone medium grained, indurated, light gray.	
98.36					Dolerite very fine grained, amyzdoidal, dark gray	
99.04					Dolerite very fine grained, dark greenish gray.	
100						
100.31					Sandstone, coarse grained, arkosic, whitish gray.	
100.46					Coal, bright and dull	
100.88					Sandstone, medium grained, micaceous, gray	
104.91					Sandstone, medium grained, laminated, micaceous, with carbonate nodules at the upper part, light gray.	
105.20					Sandstone, coarse grained, arkosic, partly with carbonaceous matter, white	
107.62					Sandstone, very fine grained, gray	
110						
110.14					Sandstone, medium grained, arkosic, with mica, white	
112.26					Sandstone, fine grained, laminated, light gray.	
112.59					Dolerite, silty dark, light greenish gray.	
113.81					Sandstone, fine grained, laminated, micaceous, light gray	
115.22					Sandstone, medium grained, laminated, light gray.	
116.20					Sandstone, fine grained, laminated, gray	
116.61					Sandstone, medium grained, arkosic, white	
118.35					Sandstone, fine grained, laminated, micaceous, gray.	
118.90					Sandstone, medium grained, arkosic, white	
120						
119.09					Sandstone medium grained, with thin coal at the top, dark gray.	
123.73					Sandstone, coarse to very coarse grained, partly interbedded thin shale carbonaceous, white.	
125.90					Coal, bright with shale	
126.13					Sandstone, fine grained, laminated, micaceous, brownish gray.	
126.26					Coal bright and dull with shale carbonaceous.	
128.00					Sandstone, fine grained, laminated, micaceous gray	
129.70					Sandstone, medium grained, partly laminated, light gray.	
130						
130.00			45°		Dolerite, silty dark, light greenish gray.	
130.26			37°		Sandstone, medium grained, gray.	
130.54					Dolerite, silty dark, light greenish gray	
130.90					Sandstone, fine grained, laminated, with mica, gray.	
133.14					Sandstone very fine grained, laminated, micaceous, shale rich towards the bottom	
134.23					Shale carbonaceous at the lower part, with sandstone, brownish gray.	
134.55					Sandstone, fine to medium grained, gray.	
138.60					Sandstone, very fine grained, micaceous, light gray.	
138.79					Sandstone, medium grained, light gray.	
139.03					Sandstone, fine grained, micaceous, gray.	
139.32					Shale, carbonaceous	
140						
140.03					Sandstone, fine grained, laminated, micaceous with thin shale, gray.	
140.49					Sandstone, coarse grained, arkosic, with mica, whitish gray.	
141.29					Shale carbonaceous, sandy at the lower part.	
141.72					Sandstone, fine grained, indurated, laminated with calcite veins, gray.	
142.00					Sandstone very fine grained and shale, rythmites, dark gray.	
142.29					Sandstone fine grained, laminated gray	

Depth	Recovery	Lithology
		Shale, black, with pyrite, micaceous, gray.
104.91		Sandstone, medium grained, laminated, micaceous, with carbonate breaking at the upper part, light gray.
105.20		Sandstone, coarse grained, arkosic, partly with carbonaceous matter, white.
107.62		Sandstone, very fine grained, gray
110.14		Sandstone, medium grained, arkosic, with mica, white.
112.26		Sandstone, fine grained, laminated, light gray.
112.50		Dolerite, silty dark, light greenish gray
113.81		Sandstone, fine grained, laminated, micaceous, light gray.
115.22		Sandstone, medium grained, laminated, light gray
116.20		Sandstone, fine grained, laminated, gray
116.61		Sandstone, medium grained, arkosic, white
118.35		Sandstone, fine grained, laminated, micaceous, gray
118.99		Sandstone, medium grained, arkosic, white
119.99		Sandstone, medium grained, with thin coal at the top, dark gray.
125.75		Sandstone, coarse to very coarse grained, partly interbedded thin shale, carbonaceous, white.
125.90		Coal, bright with duff
126.13		Sandstone, fine grained, laminated, micaceous, brownish gray.
126.26		Coal, bright and duff, with shale carbonaceous
128.00		Sandstone, fine grained, laminated, micaceous, gray
129.70		Sandstone, medium grained, partly laminated, light gray
130.00	22	Dolerite, silty dark, light greenish gray
130.29	9	Sandstone, medium grained, gray
130.54		Dolerite, silty dark, light greenish gray.
130.90		Sandstone, fine grained, laminated, with mica, gray.
133.14		Sandstone, very fine grained, laminated, micaceous, dark, rich layers, the bottom
136.23		Shale, carbonaceous at the lower part, with sandstone, frequently, bluish gray.
136.55		Sandstone, fine to medium grained, gray.
138.50		Sandstone, very fine grained, micaceous, light gray
138.79		Sandstone, medium grained, light gray.
139.03		Sandstone, fine grained, micaceous, gray
139.52		Shale, carbonaceous.
140.03		Sandstone, fine grained, laminated, micaceous, with thin shale, gray.
140.49		Sandstone, coarse grained, arkosic, with mica, whitish gray
141.29		Shale, carbonaceous, sandy at the lower part
141.72		Sandstone, fine grained, indurated, laminated, with calcite veins, gray.
142.00		Sandstone, very fine grained and shale, carbonaceous, dark gray.
142.29		Sandstone, fine grained, laminated, gray.
142.66		Sandstone, very fine grained and shale, carbonaceous, dark gray.
143.26		Shale, coaly.
144.31		Shale, sandy, dark gray.
144.64		Sandstone, fine grained, with mica, gray.
145.54		Sandstone, coarse grained, light gray.
145.86		Coal, bright with duff
146.60		Coal, bright and duff
147.01		Shale, carbonaceous.
149.30		Sandstone, coarse grained, partly with carbonaceous matter, arkosic, whitish gray
149.50		Sandstone, medium to coarse grained, gray.
149.90		Sandstone, coarse to very coarse grained, arkosic, whitish gray.
150.02		Sandstone, coarse grained, with carbonaceous matter, brownish
150.48		Sandstone fine grained, laminated, with calcite veins, gray.
150.80		Shale, indurated, dark gray.
151.65		Sandstone, coarse grained, laminated, with carbonaceous streaks, light gray
152.23		Sandstone, coarse grained, arkosic, with calcite veins, white.
152.45		Sandstone, coarse grained, indurated, light gray.
152.55		Dolerite, silty dark, dark greenish gray
152.93		Dolerite, very fine grained, basaltic, with many cracks, dark gray.
154.79		Dolerite fine grained, basaltic, dark gray
155.50		Sandstone, medium grained, indurated, light greenish gray.
155.51		Shale, indurated, gray.
155.89		Sandstone fine grained, indurated, light gray.
155.97		Shale, indurated, gray.
156.50		Sandstone, medium to coarse grained, indurated, light greenish gray.
157.47		Dolerite, fine grained, amygdaloidal, gray.
159.40		Dolerite, fine to medium grained, dark greenish gray.
159.85		Dolerite, medium grained, serpentinization along cracks, dark greenish gray
171.07	50	Dolerite, coarse grained, dark greenish gray.
171.60	50	Shale, indurated, dark gray.
171.80	20	Dolerite, coarse grained, dark greenish gray.
172.32	50	Shale, indurated, dark gray.
174.50		Dolerite, coarse grained, dark greenish gray, partly serpentinization.
174.70		Shale, indurated.
175.20		Dolerite, coarse grained, dark greenish gray.
175.06	62	Shale, indurated, dark gray.
182.27	70	Dolerite, coarse grained, serpentinization along cracks, dark greenish gray.
184.57	70	Shale, indurated, partly with pyrite, dark gray.
188.00		Dolerite, coarse grained, dark greenish gray.
188.11		Shale, indurated, dark gray.
204.90		Dolerite, medium to coarse grained, greenish gray, partly with calcite veins.
206.70		Dolerite, fine grained, basaltic, dark gray.
206.93		Dolerite, very fine grained, basaltic, dark gray.
207.20		Dolerite, silty dark, dark gray, chilled margin.
207.40		Sandstone, fine to medium grained, indurated, gray.
208.10		Dolerite, silty dark, gray, chilled margin.
208.50		Sandstone, fine grained, laminated, indurated, gray.
208.56		Shale, sandy, dark gray.
209.07		Dolerite, silty dark, chilled margin, gray.
209.47		Shale, sandy, indurated, dark gray.
209.85		Dolerite, silty dark, greenish gray, chilled margin.
210.04		Shale, dark gray.
210.90		Dolerite, silty dark, chilled margin, gray.
211.38		Shale, sandy, indurated, dark gray.
212.35		Dolerite, silty dark, chilled margin, gray.
212.60		Sandstone, very fine grained, dark gray
212.70		Coal, bright and duff, shale coaly.
212.96		Shale, dark gray.
213.90		Dolerite, silty dark, chilled margin, gray.
214.10		Shale, blackish gray.
215.60		Dolerite, silty dark, partly included sandstone, chilled margin.
215.80		Sandstone, fine to medium grained, laminated, indurated, gray.
216.80		Sandstone, medium to coarse grained, arkosic, indurated, whitish gray
217.55		Dolerite, silty dark, basaltic, dark greenish gray.
220.65		Dolerite, fine grained, basaltic, dark gray.
221.00		Dolerite, silty dark, dark gray.
222.17		Dolerite, fine grained, basaltic, dark greenish gray
222.55		Dolerite, silty dark, dark gray.
223.07		Dolerite, fine grained, basaltic, dark gray.
223.53		Dolerite, fine grained, included sandstone, carbonaceous, light greenish gray.
232.55		Dolerite, fine grained, partly silty dark, basaltic, dark greenish gray
235.53		Dolerite, very fine to fine grained, basaltic, greenish gray.
235.87		Sandstone, medium grained, arkosic, indurated, light gray.
236.50		Dolerite, fine grained, dark greenish gray
236.82		Shale, indurated, dark gray.
240.43		Dolerite, very fine to fine grained, dark greenish gray.
241.02		Shale, indurated, dark gray
242.02		Dolerite, very fine to fine grained, dark greenish gray
243.27		Shale, indurated, dark gray.
244.65		Dolerite, silty dark, with shale fragments, dark gray.
245.12		Shale, indurated, dark gray.
246.00		Dolerite silty dark, with shale fragments, dark gray.
250.10		Dolerite, very fine to fine grained, basaltic, dark gray.
250.24		Dolerite silty dark, dark gray.
266.06	45	Dolerite, fine to medium grained, basaltic, partly serpentinization, dark gray.
267.24		Sandstone, coarse grained, arkosic, indurated, white.
267.77		Dolerite, silty dark, with many cracks, light gray.
267.98		Sandstone, coarse grained, arkosic, indurated, white.
268.08		Dolerite, silty dark, greenish gray.
268.63		Dolerite, fine grained, basaltic, dark greenish gray.
269.75		Dolerite, very fine grained, basaltic, dark greenish gray.
272.30	70	Sandstone, coarse grained, arkosic, white.
275.35	60	Dolerite, very fine to fine grained, basaltic, dark gray.
276.19		Sandstone, very coarse grained, conglomeratic, light gray.
276.56		Sandstone, fine grained, laminated, with mica, gray
276.90		Sandstone, very coarse grained, gray.
277.19		Coal, bright and duff
277.49		Shale, sandy, blackish gray
277.95		Dolerite, silty dark, light greenish gray.
278.30		Shale, sandy, carbonaceous
283.40		Sandstone, very coarse grained, with mica and carbonaceous matter, light gray.
283.80		Dolerite silty dark, gray.
285.50		Sandstone, coarse to very coarse grained with mica, light gray.

100%

100%

100%

Depth	Dip	Description	
174.70		Shale, indurated.	
175.00		Dolerite, coarse grained, dark greenish gray.	
175.06	60°	Shale indurated, dark gray.	
180			
182.27	70°	Dolerite, coarse grained, serpentinization along cracks, dark greenish gray.	
184.57	70°	Shale, indurated, partly with pyrite, dark gray.	
188.00		Dolerite, coarse grained, dark greenish gray.	
188.11		Shale, indurated, dark gray.	
190			
200			100%
204.90		Dolerite, medium to coarse grained, greenish gray, partly with calcite veins.	
206.70		Dolerite, fine grained, basaltic, dark gray.	
206.93		Dolerite, very fine grained, basaltic, dark gray.	
207.30		Dolerite, silty flecks, dark gray, chilled margin.	
207.40		Sandstone, fine to medium grained, indurated, gray.	
208.10		Dolerite, silty flecks, gray, chilled margin.	
208.50		Sandstone, fine grained, ferruginated, indurated, gray.	
208.95		Shale sandy, dark gray.	
209.07		Dolerite, silty flecks, chilled margin, gray.	
209.47		Shale, sandy, indurated, dark gray.	
209.85		Dolerite, silty flecks, greenish gray, chilled margin.	
210.04		Shale, dark gray.	
210.90		Dolerite, silty flecks, chilled margin, gray.	
211.38		Shale, sandy, indurated, dark gray.	
212.35		Dolerite, silty flecks, chilled margin, gray.	
212.40		Sandstone very fine grained, dark gray.	
212.70		Coal, bright and duff, shale roofs.	
212.95		Shale, dark gray.	
213.90		Dolerite, silty flecks, chilled margin, gray.	
214.10		Shale, blackish gray.	
215.50		Dolerite very fine, partly including sandstone, chilled margin.	
215.80		Sandstone fine to medium grained, ferruginated, indurated, gray.	
216.80		Sandstone, medium to coarse grained, arkosic, indurated, whitish gray.	
217.55		Dolerite, silty flecks, basaltic, dark greenish gray.	
220.65		Dolerite, fine grained, basaltic, dark gray.	
221.00		Dolerite, silty flecks, dark gray.	
222.17		Dolerite, fine grained, basaltic, dark greenish gray.	
222.55		Dolerite, silty flecks, dark gray.	
223.07		Dolerite, fine grained, basaltic, dark gray.	
223.53		Dolerite, fine grained, included sandstone xenoliths, light greenish gray.	
230			
232.55		Dolerite, fine grained, partly silty flecks, basaltic, dark greenish gray.	
235.55		Dolerite, very fine to fine grained, basaltic, greenish gray.	
235.87		Sandstone, medium grained, arkosic, indurated, light gray.	
236.50		Dolerite, fine grained, dark greenish gray.	
236.85		Shale, indurated, dark gray.	
240			
240.43		Dolerite, very fine to fine grained, dark greenish gray.	
241.02		Shale, indurated, dark gray.	
242.82		Dolerite, very fine to fine grained, dark greenish gray.	
243.27		Shale, indurated, dark gray.	
244.85		Dolerite, silty flecks, with shale fragments, dark gray.	
245.12		Shale, indurated, dark gray.	
246.90		Dolerite, silty flecks, with shale fragments, dark gray.	
250			
250.10		Dolerite, very fine to fine grained, basaltic, dark gray.	100%
250.34		Dolerite, silty flecks, dark gray.	
260			
260.06	45°	Dolerite, fine to medium grained, basaltic, partly serpentinization, dark gray.	
267.24		Sandstone, coarse grained, arkosic, indurated, white.	
267.77		Dolerite, silty flecks, with many cracks, light gray.	
267.98		Sandstone, coarse grained, arkosic, indurated, white.	
268.08		Dolerite, silty flecks, greenish gray.	
270			
269.69		Dolerite, fine grained basaltic, dark greenish gray.	
269.79		Dolerite, very fine grained, basaltic, dark greenish gray.	
272.30	70°	Sandstone, coarse grained, arkosic, white.	
275.35	75°	Dolerite, very fine to fine grained, basaltic, dark gray.	
276.19		Sandstone, very coarse grained, conglomeratic, light gray.	
276.50		Sandstone, fine grained, laminated, with mica, gray.	
276.80		Sandstone, very coarse grained, gray.	
277.10		Coal, bright and duff.	
277.45		Shale, sandy, blackish gray.	
277.55		Dolerite, silty flecks, light greenish gray.	
278.30		Shale, sandy, carbonaceous.	
283.40		Sandstone very coarse grained, with mica and carbonaceous matter, light gray.	
283.80		Dolerite, silty flecks, gray.	
285.50		Sandstone, coarse to very coarse grained, with mica, light gray.	
285.64		Shale, shale carbonaceous, blackish gray.	
290			
293.90		Sandstone, coarse to very coarse grained, arkosic with mica light gray to whitish gray.	
294.05		Coal, bright with duff.	
295.05		Shale, sandy, with carbonaceous matter, brownish gray.	
297.45		Sandstone, medium grained, arkosic, with mica, white, partly with pebbles shale.	
297.63		Shale, sandy, carbonaceous, bituent gray.	
298.50		Sandstone, fine grained, laminated, micaceous, light gray.	
300			
299.80		Dolerite, very fine grained, porphyritic, greenish gray.	100%
302.30		Sandstone, fine grained, laminated, with mica, light brownish gray.	
302.65		Dolerite, silty flecks, including coal fragments, dark greenish gray.	
303.45		Dolerite, very fine grained, porphyritic, greenish gray.	
303.50		Shale, carbonaceous, blackish gray.	
306.46		Sandstone, medium to coarse grained, light gray.	
307.02	7°	Shale, carbonaceous, with thin coal.	
307.34		Shale, sandy, laminated, with carbonaceous matter.	
307.71		Coal, bright and duff.	
308.07		Sandstone, very fine grained, with carbonaceous matter, dark gray.	
310			
312.30		Sandstone, coarse grained, with mica, light gray.	
312.80		Sandstone, very coarse grained, conglomeratic, light gray.	
314.12		Sandstone, coarse grained, with mica, light gray.	
314.64		Coal, duff with bright.	
315.66		Coal, bright and duff.	
319.65		Sandstone, coarse to very coarse grained, with carbonaceous matter, gray.	
320			
320.66		Sandstone, very coarse pebbly sandstone, with carbonaceous matter, light gray.	
321.04		Sandstone, fine grained, gray.	
322.98		Sandstone coarse to very coarse grained, light gray.	
323.64		Coal, bright and duff.	
324.01		Shale carbonaceous.	
330			
330.50		Sandstone coarse to very coarse grained, partly laminated, light gray.	
330.80		Sandstone, medium grained, micaceous, gray.	
333.50		Sandstone coarse to very coarse grained, with mica, light gray.	
334.20		Sandstone, medium grained, micaceous, gray.	
337.32		Sandstone coarse to very coarse grained, laminated, with mica light gray.	100%
337.90		Sandstone, medium grained, laminated, with carbonaceous matter, gray.	
		End of Hole.	

HOLE NO. : LD8

AREA : LUBHUKU

DATE DRILLED : 20. SEP.1984 ~ 17. OCT.1984

TOTAL DEPTH : 371.55m

ELEVATION : +267 m

COORDINATE : X = 2,928,000, Y = -79,000

国際協力事業団 15156 JAPAN INTERNATIONAL COOPERATION AGENCY

JAPAN INTERNATIONAL COOPERATION AGENCY

Borehole Log LD8

Dwg	4h	Scale	1 : 200
Date : Sep. 1985	Prepared by	S. Morikawa, H. Watanabe	

(M) Depth of Borehole (M)	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Core Recovery
0						
3.00					Soil brown	non-coring
6.00					Sandstone, medium grained, brownish gray	
10 — 10.50					Sandstone, medium grained, arkosic, weathered, light brownish gray	
12.10					Sandstone, coarse grained, arkosic, weathered, light brownish gray	
12.25					Sandstone, fine to medium grained, laminated, weathered, brownish gray	
13.22					Sandstone, coarse to very coarse grained, weathered, light brownish gray	
13.43					Sandstone, very fine to fine grained, laminated, weathered, brownish gray	
14.70					Sandstone, coarse grained, arkosic, weathered, light brownish gray	
14.98					Shale, sandy, intercalated with sandstone, weathered	
16.50					Sandstone, coarse to very coarse grained, weathered, light brownish gray	
17.50					Shale, sandy, partly with sandstone, weathered, dark brownish gray	
17.73					Sandstone, medium grained, arkosic, weathered, light brownish gray	
18.58					Shale and clay and sandstone, fine grained, in alternation, weathered	
20 — 18.90					Sandstone, medium grained, arkosic, little weathered, light brownish gray	100%
20.20					Shale, dark gray and sandstone, fine grained, in alternation, weathered	
20.85					Sandstone, medium grained, weathered, light brownish gray	
23.50					Shale, sandy, with bioturbation, dark gray	
24.00					Dolomite, silty, hard, gray	
26.33					Dolomite, very fine grained, with small phenocrysts, gray	
26.79					Dolomite, silty, hard, with many calcite veins	
29.30					Shale, dark gray and sandstone medium grained, in alternation	
30 — 30.20					Sandstone, coarse grained, arkosic, whitish gray	
30.55					Shale, sandy, dark gray	
30.97					Sandstone, coarse grained, arkosic, whitish gray	
32.38					Shale, sandy, dark gray, with pyrite veins	
32.48					Shale, sandy, calcareous, gray	
37.36			15°		Shale, sandy, rhythmic laminated with thin sandstone layer, dark gray	
37.82					Sandstone, medium grained with shale, sandy, calcareous, light gray	
37.99					Shale, sandy, dark gray	
38.35					Sandstone, coarse to very coarse grained, indurated, siliceous, light gray	
40 — 38.6					Shale, sandy, dark gray	100%
39.20					Sandstone, coarse to very coarse grained, indurated, siliceous, light gray	
40.29					Shale, sandy, dark gray	
40.35					Sandstone, medium grained, arkosic, whitish gray	
41.97					Shale, sandy, dark gray	
44.00					Sandstone, coarse grained, arkosic, whitish gray	
44.20					Shale, sandy, dark gray	
45.23					Sandstone, coarse grained, arkosic, whitish gray	
46.78					Shale, dark gray	
47.13					Sandstone, medium grained, light gray	
47.80					Sandstone, medium grained, with bioturbation, light gray	
50 — 50.40					Sandstone, medium grained, light gray	
52.94					Sandstone, fine grained, with thin shale, rhythmic, gray	
53.78					Sandstone, coarse grained, arkosic, whitish gray	
55.70					Sandstone, medium grained, arkosic, whitish gray	
56.27					Sandstone, fine to medium grained, partly laminated, light gray	
57.85					Sandstone, medium grained, arkosic, whitish gray	
58.07					Sandstone, medium grained, partly with calcite veins, arkosic, whitish gray	
60 — 64.52					Sandstone, fine grained, massive, light gray	100%
70 — 70.08					Sandstone, fine grained, rhythmic laminated with thin shale layer at the lower part, gray to dark gray	
73.20					Sandstone coarse grained, partly bioturbated, light gray	
75.50					Sandstone, fine to medium grained, arkosic, with mica, white.	
76.55					Sandstone, fine grained, with carbonaceous matter, little bioturbated, light gray	
77.35					Sandstone, medium grained, arkosic, with mica, white.	
80 — 81.20					Sandstone, fine grained, laminated, partly arkosic, white to brownish white.	100%
81.52			6°		Sandstone, medium grained, with carbonaceous matter, light gray	
81.85					Shale, carbonaceous, partly interbedded thin sandstone, light gray	
82.47					Sandstone, medium grained, with carbonaceous matter, light gray	
85.45					Sandstone, fine grained, laminated, light gray.	
87.90					Sandstone, medium grained, arkosic with mica, white.	
90 — 91.65					Sandstone, fine to medium grained, bioturbated, light gray	
92.20					Shale, partly with thin sandstone layer, dark gray	
93.00					Sandstone, coarse grained, arkosic, white.	
93.75					Sandstone, fine grained, bioturbated, light gray	
94.05					Sandstone, coarse grained, arkosic with mica, white	
94.45					Sandstone, medium grained, and shale, sandy in alternation	
97.05					Sandstone, medium grained, arkosic, with mica, white	
100 — 99.68					Sandstone, fine grained, micaceous, laminated, brownish gray	100%
101.39					Shale, sandy, partly interbedded thin sandstone layer, gray	
101.84					Shale, partly sandy, dark gray	
102.60					Shale, sandy, dark gray	
103.35					Shale, dark gray	
105.15					Sandstone, medium grained, with cracks, light gray	
106.23					Sandstone, fine to medium grained, indurated at the upper part, gray	
107.50					Sandstone, fine grained, bioturbated, gray	
108.10					Sandstone, fine to coarse grained, with pyrite veins, light gray	
110 — 110.75					Sandstone, medium grained, with thin shale, rhythmic laminated	
111.80					Shale, sandy, bioturbated, gray	
112.97					Sandstone, medium grained, bioturbated, light gray	
114.53					Sandstone, coarse grained, arkosic, whitish gray	
115.20					Shale, sandy, carbonaceous with thin coal layer	
115.53					Sandstone, fine grained, laminated, gray	
116.00					Dolomite, very fine grained, pasaltic, dark gray	
116.75					Sandstone, medium grained, little laminated, light gray	
118.61					Sandstone, coarse grained, arkosic whitish gray	
119.82			10°		Sandstone, medium to coarse grained, laminated, with mica, light gray	
120 — 126.67					Sandstone, coarse grained, partly conglomeratic, arkosic, whitish gray	100%
129.89					Sandstone, medium grained, partly laminated, light gray	
130 — 130.28					Sandstone, very fine grained, with thin shale, carbonaceous, gray	
130.63					Sandstone medium grained, with carbonaceous matter, gray	
133.63					Sandstone, medium grained, partly bioturbated, gray.	
134.92					Sandstone, fine to medium grained, laminated, bioturbated, gray.	
136.23					Sandstone, medium grained, arkosic, light gray.	
137.98					Sandstone, coarse grained, arkosic, whitish gray	
138.36					Sandstone, medium grained, to minated, gray	
140 — 142.10					Sandstone, very fine to fine grained, rythmic laminated with thin shale layer, gray.	100%
144.05					Sandstone, fine grained, partly bioturbated, gray	
146.02					Sandstone, medium grained, with mica, light gray	
147.35					Sandstone, coarse grained, light gray	
148.12					Sandstone, fine to medium grained, laminated, light gray	

Depth	Description	Core %
114.53	Sandstone, coarse grained, arkosic, whitish gray	
115.20	Shale, sandy, carbonaceous with thin coal layer	
115.53	Sandstone, fine grained, laminated, gray	
116.00	Dolerite, very fine grained, basaltic dark gray	
116.25	Sandstone, medium grained, little laminated, light gray	
118.41	Sandstone coarse grained, arkosic whitish gray	
118.82	Sandstone, medium to coarse grained, laminated, with whitish gray	
120		100%
126.63	Sandstone, coarse grained, partly conglomeratic, arkosic whitish gray	
129.90	Sandstone, medium grained, partly laminated light gray	
130.28	Sandstone, very fine grained, with thin shale carbonaceous, gray	
130.63	Sandstone medium grained, with carbonaceous matter, gray	
133.83	Sandstone medium grained, partly bioturbated, gray	
134.92	Sandstone, fine to medium grained, laminated, bioturbated, gray	
136.23	Sandstone, medium grained, arkosic, light gray	
137.98	Sandstone, coarse grained, arkosic, whitish gray	
138.36	Sandstone, medium grained, laminated, gray	
140		100%
142.10	Sandstone, very fine to fine grained, rythmic laminated with thin shale layer, gray	
144.65	Sandstone, fine grained, partly bioturbated, gray	
146.02	Sandstone, medium grained, with mica, light gray	
147.55	Sandstone, coarse grained, light gray	
148.12	Sandstone, fine to medium grained, laminated, light gray	
150		
151.03	Sandstone, medium to coarse grained, arkosic, with thin dolerite intrusions at the lower part, whitish gray.	
152.11	Sandstone, very fine to fine grained, laminated, indurated, light gray	
152.63	Dolerite, very fine grained, basaltic, greenish gray	0%
153.15	Sandstone, very fine grained, indurated, light gray	
153.39	Shale, carbonaceous, very thin layers, indurated	
153.65	Sandstone, fine grained, indurated, laminated, light gray	
154.42	Dolerite, very fine grained, basaltic, greenish gray	
155.46	Sandstone, fine grained, laminated, indurated, gray	30%
156.63	Dolerite, slightly fault, greenish gray	
159.20	Dolerite, very fine grained, light gray	
160		100%
171.30	Dolerite, fine to medium grained with some cracks, greenish gray	0%
171.96	Sandstone, medium grained, indurated at the boundary	
173.00	Dolerite, very fine grained, basaltic, greenish gray	0%
178.85	Dolerite fine to medium grained, porphyritic, greenish gray	
180		100 %
180.20	Dolerite, slaty part, greenish gray with thin sandstone layer.	
180.54	Sandstone, medium grained, indurated, whitish gray	
181.23	Dolerite, fine grained, basaltic, greenish gray	
181.99	Sandstone, medium grained, indurated, quartzitic, white.	
183.65	Dolerite, fine to medium grained, greenish gray	
184.87	Dolerite, very fine to fine grained, and sandstone fine grained, contaminated.	0%
185.67	Sandstone, medium grained, indurated, quartzose, white	
186.10	Dolerite, fine grained greenish gray	
186.35	Sandstone, fine grained, indurated, quartzitic, white.	
186.83	Dolerite, fine grained, greenish gray	
186.85	Sandstone, fine grained, indurated, quartzose, white	
186.94	Dolerite, slaty dark, greenish gray	
187.61	Sandstone, medium grained, with dolerite shale, indurated, white	
189.32	Dolerite, fine to medium grained, greenish gray	
191.70	Sandstone, medium to coarse grained, arkosic with mica, white	
193.48	Sandstone coarse grained, partly conglomeratic, with mica white.	
193.70	Shale, sandy, carbonaceous with thin coal layer	
194.42	Sandstone, fine to medium grained, laminated, micaceous with thin coal layer	
195.85	Dolerite, fine grained, greenish gray	
196.51	Sandstone, fine grained, laminated, micaceous, brownish gray	
197.55	Sandstone, coarse grained, arkosic, with mica, white	5%
197.86	Shale carbonaceous with thin coal layer	
198.34	Sandstone, medium grained, micaceous, brownish white	
199.09	Sandstone, fine grained, micaceous laminated, brownish gray	
200.45	Sandstone very fine grained, with carbonaceous matter light gray	100%
203.43	Shale, sandy and sandstone, medium grained dark gray, with shale carbonaceous at the top part.	
203.87	Dolerite, fine grained, greenish gray	
204.83	Sandstone, fine grained with thin shale layer, laminated, whitish gray	
207.85	Sandstone, medium grained, grading arkosic, with mica, white.	
209.27	Shale partly sandy with thin coal layer, bluish gray	
210.51	Sandstone medium grained, arkosic, with mica white.	
211.05	Shale, partly sandy carbonaceous with thin coal layer	
212.89	Sandstone, fine grained, laminated, micaceous, brownish gray	
213.21	Shale, sandy, with thin sandstone, rythmitic dark gray	
213.65	Shale, carbonaceous	
214.10	Dolerite, silty part, basaltic, greenish gray.	
214.55	Shale, sandy gray	
214.78	Sandstone, fine grained, laminated, light gray	
215.20	Sandstone, coarse grained, arkosic, white	
215.75	Coal dull with bright	
216.31	Shale, sandy carbonaceous, with mica.	
217.85	Sandstone, fine grained, laminated, micaceous, brownish white.	15%
219.02	Dolerite, fine grained, greenish gray	5%
221.95	Sandstone, coarse grained, arkosic, with mica, white.	60%
222.60	Dolerite, fine grained, with serpentinization along cracks, greenish gray	15%
224.23	Sandstone, fine to medium grained, laminated, with mica, gray.	
224.80	Dolerite, fine grained, with some calcite veins along cracks, greenish gray	
229.40	Sandstone, medium grained, laminated, micaceous, partly with thin dolerite intrusions, gray	65%
229.75	Coal, dull with bright, and shale, sandy	
230.05	Shale, sandy, carbonaceous	
231.08	Sandstone, fine grained, laminated, micaceous, gray	
231.82	Dolerite, fine grained, with calcite veins, greenish gray	20%
231.95	Shale, carbonaceous with thin coal seam.	
232.41	Shale, sandy, gray	
232.63	Coal, bright and burnt	
233.17	Dolerite, fine grained, greenish gray	
233.70	Sandstone, fine grained, with thin shale layer, gray	
234.15	Sandstone, coarse grained, arkosic, with mica, white	
235.39	Sandstone, fine grained, with thin shale, gray	
235.65	Dolerite fine grained greenish gray	
235.95	Shale, carbonaceous, with shale sandy	
236.82	Dolerite, fine grained greenish gray	
236.95	Coal burnt with bright	
239.02	Dolerite, fine grained partly with serpentinization along cracks	
239.63	Shale, sandy, carbonaceous with mica	
239.85	Sandstone, fine grained, with mica, gray	
243.95	Dolerite, fine to medium grained partly with calcite veins, greenish gray	0%
247.03	Sandstone, coarse grained, arkosic, with mica, white	
247.61	Dolerite, very fine grained, basaltic, gray	0%
249.15	Dolerite fine grained, greenish gray	0%
250.85	Sandstone, medium to coarse grained, arkosic, with mica, white	
251.30	Sandstone, fine grained, indurated, with mica, gray	
251.63	Coal, bright and dull, burnt, with dolerite	
252.39	Shale, sandy, carbonaceous	
258.85	Sandstone, coarse grained, partly fine grained, arkosic, white, thin dolerite intrusions at the middle part	
258.99	Coal, dull with bright	
259.35	Shale, sandy carbonaceous	
259.70	Dolerite fine grained, greenish gray	
264.81	Sandstone, coarse grained, arkosic, with mica, white.	
265.02	Sandstone, fine grained, micaceous, brownish gray	
265.44	Sandstone, very coarse grained, conglomeratic (>2mm) quartzite	10%
266.21	Dolerite, fine grained, with serpentinization along cracks, greenish gray	10%
269.17	Sandstone coarse grained, arkosic, with mica, white.	
269.32	Coal, bright with dull	
269.61	Shale, sandy, carbonaceous	
270.71	Sandstone, medium grained, arkosic, indurated at the lower part.	
277.89	Dolerite, fine grained, partly with fine sandstone, lenticular, greenish gray	
279.85	Sandstone fine to medium grained, laminated, indurated, brownish white	
280.61	Sandstone, very fine grained, micaceous, dark gray	
281.78	Shale, sandy, dark gray	
284.54	Dolerite, very fine to fine grained, partly with thin layer of burnt coal and fine sandstone, greenish gray	
284.80	Shale, carbonaceous with thin coal layer at the bottom	7%
285.20	Sandstone, very fine to fine grained, gray	
285.55	Shale, with thin coal layer at the bottom, dark gray	
289.58	Dolerite very fine grained, basaltic, dark greenish gray	
290.85	Sandstone, medium grained, laminated, gray	
292.85	Sandstone, coarse grained, arkosic, with mica, white.	
294.60	Dolerite, fine grained, with serpentinization along cracks, gray	

Depth	Description
207.85	Sandstone, medium grained, grading arkosic, with mica, white
209.27	Shale, partly sandy with thin coal layer, blackish gray
210.51	Sandstone, medium grained, arkosic, with mica, white
211.09	Shale, partly sandy, fossiliferous with thin coal layer
212.85	Sandstone, fine grained, laminated, micaceous, brownish gray
213.21	Shale, sandy, with thin sandstone, rhythmites dark gray
213.85	Shale carbonaceous
214.10	Laterite, siltstone, basaltic, greenish gray
214.35	Shale, sandy gray
214.78	Sandstone, fine grained, laminated, light gray
215.20	Sandstone, coarse grained, arkosic, white
215.75	Coal, dull with bright
216.31	Shale, sandy, carbonaceous, with mica
217.82	Sandstone, fine grained, laminated, micaceous, brownish white
219.02	Laterite, fine grained, greenish gray
221.95	Sandstone, coarse grained, arkosic, with mica, white
222.60	Laterite, fine grained, with serpentinization along cracks, greenish gray
224.23	Sandstone, fine to medium grained, laminated, with mica, gray
224.80	Laterite, fine grained, with some calcite veins along cracks, greenish gray
229.40	Sandstone, medium grained, laminated, micaceous, partly with thin laterite intrusion, gray
229.75	Coal, dull with bright, and shale seam
230.03	Shale, sandy, carbonaceous
231.08	Sandstone, fine grained, laminated, micaceous, gray
231.82	Laterite, fine grained, with calcite veins, greenish gray
231.95	Shale, carbonaceous, with thin coal layer
232.41	Shale, sandy, gray
232.62	Coal, bright and burnt
233.17	Laterite, fine grained, greenish gray
233.70	Sandstone, fine grained, with thin shale layer, gray
234.15	Sandstone, coarse grained, arkosic, with mica, white
235.39	Sandstone, fine grained, with thin shale, gray
235.65	Laterite, fine grained, greenish gray
235.95	Shale, carbonaceous, with shale coal
236.82	Laterite, fine grained, greenish gray
236.95	Coal, burnt with bright
239.02	Laterite, fine grained, partly with serpentinization along cracks
239.63	Shale, sandy, carbonaceous, with mica
239.85	Sandstone, fine grained, with mica, gray
243.95	Laterite, fine to medium grained, partly with calcite veins, greenish gray
247.03	Sandstone, coarse grained, arkosic, with mica, white
247.61	Laterite, very fine grained, basaltic, gray
249.15	Laterite, fine grained, greenish gray
250.85	Sandstone, medium to coarse grained, arkosic, with mica, white
251.30	Sandstone, fine grained, laminated, with mica, gray
251.63	Coal, bright and dull, burnt, with charcoal
252.38	Shale, sandy, carbonaceous
258.85	Sandstone, coarse grained, partly fine grained, arkosic, white, thin laterite intrusions at the middle part
258.99	Coal, dull with bright
259.39	Shale, sandy, carbonaceous
259.70	Laterite, fine grained, greenish gray
264.81	Sandstone, coarse grained, arkosic with mica, white
265.02	Sandstone, fine grained, micaceous, greenish gray
265.44	Sandstone, very coarse grained, conglomeratic (max. 1 cm), quartz rich
265.21	Laterite, fine grained, with serpentinization along cracks, greenish gray
269.17	Sandstone, coarse grained, arkosic, with mica, white
269.32	Coal, bright with dull
269.61	Shale, sandy, carbonaceous
270.71	Sandstone, medium grained, arkosic, laminated at the lower part
277.85	Laterite, fine grained, partly with fine sandstone, lenticular, greenish gray
279.85	Sandstone, fine to medium grained, laminated, laminated, brownish white
280.61	Sandstone, very fine grained, micaceous, dark gray
281.78	Shale, sandy, dark gray
284.54	Laterite, very fine to fine grained, partly with thin layer of burnt coal and fine sandstone, greenish gray
284.89	Shale, carbonaceous with thin coal layer at the bottom
285.26	Sandstone, very fine to fine grained, gray
285.55	Shale, with thin coal layer at the bottom, dark gray
289.38	Laterite, very fine grained, basaltic, dark purplish gray
290.85	Sandstone, medium grained, laminated, gray
292.85	Sandstone, coarse grained, arkosic, with mica, white
294.60	Laterite, fine grained, with serpentinization along cracks, gray
295.87	Sandstone, very coarse grained, partly conglomerate, white
298.30	Coal, dull with bright, shale seam
298.86	Shale, carbonaceous
304.95	Sandstone, coarse to very coarse grained, partly conglomeratic (2 max × 1 cm) arkosic, with mica, white
305.11	Sandstone, fine grained, micaceous, brownish gray
305.82	Coal, bright and dull, shale seam
305.90	Shale, carbonaceous
306.71	Sandstone, fine grained, few, calcareous, light gray
311.04	Sandstone, coarse grained, arkosic, with mica, white
312.56	Sandstone, very coarse grained, conglomeratic (4 max × 6 cm), white
315.52	Sandstone, coarse grained, arkosic, with mica, white
316.03	Sandstone, fine to medium grained, gray
316.20	Coal, bright and dull
316.64	Sandstone, fine to medium grained, laminated, light gray
316.92	Shale, with calcite veins along cracks, dark gray
317.61	Laterite, silty, basaltic, greenish gray
318.17	Sandstone, very fine to fine grained, gray
319.57	Laterite, fine to very fine grained, greenish gray
321.25	Coal, bright and dull, partly burnt, shale seam
324.70	Laterite, very fine grained, basaltic, dark gray
325.05	Sandstone, fine grained, laminated, greenish gray
325.51	Sandstone, fine grained, carbonaceous matter rich, blackish gray
326.09	Coal, bright and dull, shale seam
326.20	Shale, carbonaceous
326.75	Sandstone, fine grained, carbonaceous matter rich, blackish gray
327.30	Shale, carbonaceous
327.62	Coal, bright with dull
327.77	Shale, carbonaceous
330.24	Shale, sandy, carbonaceous
334.85	Sandstone, coarse grained, with mica, arkosic, light gray
335.21	Sandstone, medium grained, laminated, micaceous, gray
336.85	Sandstone, coarse grained, arkosic, with mica, light gray
336.91	Shale, sandy carbonaceous
337.42	Coal, bright with dull
337.84	Shale, carbonaceous
338.45	Sandstone, fine to medium grained, with mica, gray
340.88	Sandstone, medium grained, partly cross laminated, with mica, gray
342.64	Sandstone, coarse grained arkosic, with mica, light gray
342.98	Sandstone, coarse grained, with carbonaceous matter, light gray
343.83	Coal, dull with bright
344.42	Shale, sandy, carbonaceous
345.22	Sandstone, medium grained, with mica, gray
350.74	Sandstone, coarse grained, arkosic, with mica, partly with carbonaceous matter, light gray
352.55	Coal, bright with dull, shale carbonaceous
353.21	Sandstone, fine grained, with carbonaceous matter, dark gray
353.33	Shale sandy with dull coal
353.79	Sandstone, fine to medium grained, laminated, dark gray
354.20	Shale, sandy, carbonaceous
358.81	Sandstone, coarse grained, conglomeratic at the lower part, mica rich, light gray
358.84	Shale, sandy, carbonaceous, with thin coal layer
360.64	Sandstone, very fine grained, laminated, micaceous, dark brownish gray
361.85	Shale, sandy, with fine sandstone lenticular, dark gray
362.95	Sandstone, fine grained, laminated, micaceous, brownish gray
363.75	Sandstone, coarse grained, laminated, with mica, light gray
366.19	Sandstone, very fine grained, laminated, carbonaceous matter rich, dark gray
370.66	Sandstone, coarse grained, arkosic, with mica, light gray
371.55	Shale, sandy, dark gray
	End of Hole

Scale: 1 cm = 1 m

Core recovery: 100%

HOLE NO. : LD9

AREA : LUBHUKU

DATE DRILLED : 25 JUL 1984 ~ 3 SEP. 1984

TOTAL DEPTH : 360.75 m

ELEVATION : +285 m

COORDINATE : X = +2,928,005, Y = - 80,010

JAPAN INTERNATIONAL COOPERATION AGENCY

Borehole Log LD9

Dwg. 4 | Scale 1 : 200

Date : Sep 1985 | Prepared by S. Mori, Y. Nakanishi, M. Kajiyama

Depth of Borehole (M)	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Core Recovery
10.30					Soil, brown.	non-coring
12.05					Soil, brown	100%
13.40					Laterite, weathered, partly, core broken, grayish brown	
17.50					Laterite, little weathered, core broken, brownish gray	
20.00					Laterite, little weathered, partly core broken, brownish gray	
21.00			0°		Laterite, weathered, grayish brown.	
21.50					Shale, weathered, with clay, light brownish gray	
24.00					Sandstone, fine grained, interbedded thin shale, little weathered, with mica, brownish gray to light brownish gray	
25.00					Sandstone, coarse grained, arkosic, little weathered, brownish white	
27.00					Shale, weathered, with clay, dark grayish brown, core broken.	
29.40					Sandstone, fine grained, little weathered, with mica, partly interbedded thin shale, grayish brown	
32.80					Sandstone, coarse grained, little weathered, arkosic, with mica, partly reddish iron rich, brownish white	
39.05					Sandstone, coarse grained, arkosic, white.	
40.35					Shale, carbonaceous, with shale coal.	
41.22					Sandstone, very fine grained, laminated, micaceous, gray	
41.65					Sandstone, medium grained, light gray	
43.70					Sandstone, coarse grained, partly with carbonaceous matter, light gray	
44.15					Sandstone, fine grained, laminated, micaceous, light gray	
45.20					Sandstone, fine grained, light gray	
46.56					Sandstone, fine grained, laminated, micaceous, arkosic, gray	
51.70					Sandstone, very fine grained, laminated, micaceous, interbedded thin carbonaceous shale, light brownish gray	100%
53.50					Sandstone, fine grained, with carbonaceous matter, whitish gray	
54.46					Sandstone fine grained, arkosic, laminated with mica, whitish gray	
54.82					Sandstone, interbedded thin shale, light gray	
55.57					Sandstone, medium grained, with mica, white	
56.20					Sandstone, fine grained, with carbonaceous matter, light gray	
60.85					Shale, interbedded thin sandstone, gray	
61.80					Sandstone, fine grained, with carbonaceous matter, arkosic, white	
64.85					Shale, interbedded thin sandstone, gray	
66.80					Sandstone fine grained, arkosic, with fenestrater shale, white.	
67.85					Shale, interbedded thin sandstone at the top irregularly.	
72.85			8°		Sandstone, medium to coarse grained, arkosic, partly with fenestrater shale white	100%
73.14					Shale, calcareous.	
76.10					Shale, interbedded thin sandstone, toward the bottom sandstone rich, gray	
77.85					Sandstone and shale in alternation, partly irregular, gray	
78.50					Sandstone, coarse grained, arkosic, white.	
85.75					Sandstone, fine to medium grained, arkosic, with little carbonaceous matter, white	
87.50					Sandstone, medium grained, arkosic, quartz rich, partly with shale, white.	
96.14					Sandstone, medium to coarse grained, at the bottom interbedded thin shale, arkosic, white.	100%
96.87					Shale, with fenestrater sandstone, includes pyrite, gray	
98.36					Sandstone coarse grained, arkosic, white	
99.80					Shale, dark gray	
99.50					Sandstone, coarse grained, arkosic, with pyrite, white.	
100.25					Shale, with fenestrater sandstone, includes pyrite, gray	
100.95					Sandstone, coarse grained, toward the bottom conglomeratic, white	
101.44					Shale, interbedded thin sandstone, with pyrite, gray	
101.77					Sandstone, coarse grained, arkosic, white	
113.15					Shale, partly interbedded thin sandstone, gray	
113.60					Sandstone, medium grained, arkosic, white.	
115.35					Shale, gray	
116.40					Sandstone medium grained, with shale intercalated, arkosic, white	100%
116.60			41°		Shale intercalated, whitish gray	
123.42					Sandstone, medium grained, arkosic, with mica, white	
124.90					Shale, dark gray	
125.10					Sandstone and shale in alternation, dark gray	
125.87					Shale, dark gray	
131.45					Sandstone medium grained, arkosic, partly with carbonaceous matter, white	100%
136.28					Sandstone, fine to medium grained, interbedded thin shale.	
141.18					Sandstone, medium grained, arkosic, partly with carbonaceous matter, white.	

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Depth	Dip	Description
191.20		Sandstone, fine grained, with carbonaceous matter, whitish gray
191.42	8°	Shale, carbonaceous, black
192.22		Sandstone, fine grained, interbedded thin shale, gray
193.02	5°	Sandstone, medium grained, indurated, whitish gray
195.04		Dolerite, fine grained, basaltic, greenish gray
197.08		Sandstone, fine grained, indurated, arkosic, whitish gray
198.40	70°	Sandstone, fine grained, with little carbonaceous matter, gray
201.70		Dolerite, very fine grained sandstone, partly porphyritic greenish gray
203.40		Sandstone, fine grained, indurated interbedded thin shale whitish gray
203.98		Shale sandy carbonaceous at the bottom indurated, bluish gray
206.40		Dolerite, fine grained, porphyritic, greenish gray
207.30		Sandstone fine grained at the upper part indurated, gray
207.70		Dolerite, fine grained, basaltic, greenish gray
208.04	2°	Sandstone, fine grained, indurated whitish gray
208.90		Dolerite, very fine grained, greenish gray
209.70		Sandstone, medium grained, indurated, whitish gray
209.90		Shale, carbonaceous, blackish gray
210.46		Coal, bright with dust
210.86		Shale, sandy carbonaceous blackish gray
211.05		Sandstone, fine grained, laminated, indurated, whitish gray
212.45		Dolerite, fine grained, amygdaloidal, greenish gray
212.90		Sandstone fine grained, laminated, light gray
213.70		Sandstone, medium grained, feldspar rich, light gray
216.10		Sandstone, medium grained, arkosic, indurated, white
225.80		Dolerite, fine grained, porphyritic, with phenocryst of feldspar, greenish gray
228.85		Dolerite, fine grained, with calcite veins, greenish gray
239.35		Dolerite, fine grained, with calcite veins, greenish gray
240.05	70°	Dolerite, brecciated, core broken, greenish gray
249.70		Sandstone, fine to medium grained, arkosic, white
252.20		Dolerite, fine grained, with phenocrysts of feldspar, greenish gray
252.65		Sandstone, medium grained, indurated, whitish gray
254.60		Dolerite, fine grained, greenish gray
257.00		Sandstone, very fine grained, with many calcite veins at the lower part, core broken, gray
257.20		Coal, dull, fine grained, gray
257.65		Shale, sandy, dark gray, core broken
258.10		Shale, sandy, dark gray
258.60		Shale, indurated, dark gray
258.85		Shale and shale, sandy brecciated and fault breccia calcite, dark gray
260.20	0°	Dolerite brecciated and fault ray with calcite veins
262.20		Dolerite very fine grained, with phenocrysts of feldspar, many cracks gray
265.43	0°	Dolerite, fine grained, with phenocrysts of feldspar, calcite veins dark gray
266.15	70°	Sandstone, medium grained, light gray
267.90		Dolerite, fine grained, with phenocrysts of feldspar calcite veins rich, gray
269.20		Shale, with pyrite at the lower part, indurated, dark gray
270.88		Sandstone, fine grained, laminated, light gray
271.30		Shale, carbonaceous, burnt, indurated
272.00		Sandstone fine grained, laminated, gray
272.42		Sandstone, medium grained, arkosic, whitish gray
272.66		Sandstone, very fine grained, indurated, gray
273.65		Sandstone, fine grained, laminated, with calcite veins, gray
277.60	0°	Sandstone, medium grained, arkosic, whitish gray
278.05		Dolerite, silty cracks, gray
278.55		Dolerite, very fine grained, with phenocrysts of feldspar, gray
278.90		Sandstone, medium grained, light gray
281.20		Dolerite, fine grained, with many calcite veins, gray
281.95		Dolerite, fine grained, with phenocrysts of feldspar, gray
283.90		Dolerite, with phenocrysts of feldspar, many calcite veins, dark gray
		Calcite vein.
293.70		Dolerite, fine grained, with phenocrysts of feldspar, dark gray
		Calcite vein
299.15		Dolerite, fine grained, basaltic, serpentinization along cracks, dark gray
300.08		Sandstone, fine grained, gray
300.90		Dolerite, very fine grained, basaltic, dark gray
302.55	80°	Dolerite, silty cracks, dark gray
302.92		Sandstone medium grained, light gray
302.75		Sandstone very fine grained, laminated, gray
303.04		Coal, dark
303.66		Sandstone very fine grained, laminated, gray
303.86		Coal, dull with bright, shale, coals
304.25		Sandstone very fine grained laminated with carbonaceous matter dark gray
305.05		Sandstone medium grained, whitish gray
307.12	4°	Sandstone, very fine to fine grained, laminated, gray
307.32		Coal, dull, shale, coals and sandstone very fine grained
307.85		Coal, dull
308.25		Coal, bright and dull
308.80		Sandstone very fine grained, dark gray
310.25		Sandstone, medium grained, with mica, gray
315.81		Sandstone, coarse grained, partly medium grained or conglomeratic, arkosic, whitish gray
316.19		Sandstone fine grained, laminated, gray
317.63		Sandstone very coarse grained, arkosic, whitish gray
318.01		Coal, bright with dull
318.29		Shale carbonaceous, and shale, sandy
319.10		Sandstone fine to medium grained, light gray
319.65		Sandstone coarse grained, light gray
320.17		Sandstone fine grained with mica, gray
321.24		Sandstone coarse grained, arkosic, whitish gray
321.42		Sandstone fine grained, gray
323.56		Sandstone coarse grained, whitish gray
323.62		Coal, dull
324.74		Sandstone fine grained, with mica, gray
327.27		Sandstone coarse grained, arkosic, whitish gray
327.95		Sandstone fine to medium grained, with mica, light gray
333.10		Sandstone, coarse to very coarse grained, arkosic, whitish gray
333.21	5°	Coal, bright
334.37		Sandstone very fine grained, micaceous, dark gray
334.88		Sandstone fine grained, gray
335.38		Sandstone, coarse grained, arkosic, whitish gray
335.45		Shale carbonaceous
340.75		Sandstone fine grained, partly medium grained, with mica light gray
341.25		Sandstone very fine grained, laminated, micaceous, gray
341.70		Shale, sandy carbonaceous
341.98		Coal, bright and dull
342.22		Shale, sandy carbonaceous
342.67		Sandstone, coarse to very coarse grained, light gray
342.00		Shale, carbonaceous
343.45		Sandstone very fine grained, micaceous, gray
343.74		Shale, carbonaceous
344.17		Coal, dull with bright
344.51		Shale, sandy, with pyrite at the upper part, dark gray
349.46		Sandstone, coarse to very coarse grained, arkosic, whitish gray
349.55		Conglomerate, limestone, quartz, feldspar rich
350.65		Coal, dull with bright
353.00		Sandstone, coarse grained, gray with chloritization along cracks
353.27		Sandstone, medium grained, gray
353.63		Sandstone, coarse grained, gray core broken with clay
353.75		Conglomerate, limestone, quartz, feldspar rich
354.83		Sandstone, coarse to very coarse grained, light gray
355.15		Coal, bright with dull, shale coals
355.40		Sandstone, fine grained, with carbonaceous matter, gray
357.56		Sandstone, coarse to very coarse grained, arkosic, whitish gray
357.98		Sandstone fine grained, micaceous, laminated gray
358.42		Sandstone coarse grained, arkosic, whitish gray
359.70		Sandstone, coarse grained, arkosic, whitish gray
360.10		End of Hole

100%

15156

HOLE NO : LD10

AREA : LUBHUKU

DATE DRILLED : 18. JAN. 1985 ~ 28 FEB. 1985

TOTAL DEPTH : 439.85m

ELEVATION : +282 m

COORDINATE : X= +2,928,000, Y= -81,000

JAPAN INTERNATIONAL COOPERATION AGENCY

Borehole Log LD10

D=5	4	Scale	1 : 200
Date: Sep. 1985	Prepared by: S. Morikawa, H. Watanabe		

Depth of Borehole (M)	Apparent Thickness of Strata (M)	True Thickness of Strata (M)	Dip of Strata	Columnar Section	Rock Description	Core Recovery
(M) 0						
10						
12.00					Soil and weathered sandstone, brown.	
20						
21.00					Shale, partly carbonaceous, weathered, dark brownish gray	
24.00					Shale, carbonaceous, with coal, bright, weathered.	
27.90					Shale, carbonaceous, weathered.	
30						non-coring
39.00					Sandstone, fine to medium grained, partly coarse grained weathered, brownish gray.	
40						
48.00					Shale, carbonaceous, with coal bright.	
50						
50.50					Shale, carbonaceous weathered.	
60						100%
61.75					Shale, carbonaceous, with thin coal seam	
63.37					Coal, bright with dull shale, carbonaceous	
64.46					Shale, carbonaceous	
64.84					Coal, bright with dull	
65.18					Shale, carbonaceous	
66.24					Shale, sandy, micaceous, gray	
67.08					Sandstone fine grained, laminated micaceous, gray.	
67.80					Sandstone, medium grained, arkosic, whitish gray	
69.72					Sandstone, fine grained, rythmic laminated micaceous, gray.	
70						
71.85					Sandstone, medium grained, arkosic, whitish gray	100%
80						
80.00					Sandstone, coarse grained, arkosic, whitish gray	
80.15					Coal, dull, and shale, carbonaceous	
80.40					Shale, carbonaceous	
81.15					Shale, carbonaceous, and coal, bright, partly with pyrite lenses	
83.73					Shale, carbonaceous with thin pyrite vein at the lower part.	
83.88					Shale, carbonaceous with coal, bright	
85.14					Shale, carbonaceous, partly with thin coal band.	
86.58					Coal, dull with bright, with shale, carbonaceous	
90						
91.58					Shale, carbonaceous, partly intercalated thin coal layer.	100%
92.27					Shale, carbonaceous, with thin coal layer.	
92.91					Shale, carbonaceous, partly fossil	
93.96					Shale, dark gray	
94.32					Shale, carbonaceous, with pyrite veinlets at the top	
96.10					Shale, carbonaceous, fossil, partly with thin coal layer	
98.25					Sandstone, fine to medium grained, well sorting, cuttaroons, dark gray	
100						
107.35					Sandstone, coarse grained, partly medium grained, arkosic, whitish gray	
108.28					Shale, indurated, with calcite vein, gray	
110						
110.70					Shale, sandy, indurated, with calcite vein, light gray	100%
111.27					Shale, carbonaceous, with pyrite patch and calcite vein, black	
112.50					Dolerite, very fine grained, with many calcite veins, dark gray	
120						
130						100%
135.85					Dolerite, fine grained, partly with serpentinization along calcite vein, dark gray	
140						