GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-2 (SHEET 2 OF 4)

LOCATION	DAM	DEPTH OF HOLE	70.00 m	COMMENCED	2 - 9 - 1987
ELEVATION	510.834 m	DEPTH OF OVERBURDEN	17.00 m	COMPLETED	17 - 9 - 1987
COORDINATE	X. 452,695.19 Y. 4,178,850.45	LENGTH OF ROCK DRILLING	53.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	58.75 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	83.9 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
20m			0→100%									0m	490.834m
1	Peridotite	V		486 mm	Dark gray	2	2	2	20.5m: Calsite vein 2mm wide along 25° dip crack.	Lu = (14) Po max. = 8.0 kg/cm²	1.30	1	
								3	21.0		1.30		
									21.3				
2								2	21.0~21.3m: Serpentine 1mm wide along several cracks.	Lu = (34) Po max. = 8.0		2	
3		V							23.0			3	
								3	21.9m: Calsite vein 1mm wide.				
4									24.0			4	
5		V						2	23.0m: Calsite vein 1mm wide.	Lu = (44) Po max. = 8.0		5	
6									26.0			6	
								3	26.3				
7		V							26.0m: Calsite vein 1mm wide.	Lu = (45) Po max. = 8.0		7	
									27.6m: 45° dip crack, no serpentine.		1.30		
8											1.30	8	
9		V								Lu = (22) Po max. = 8.0		9	
30												0	
1								1		Lu = 23 Po max. = 10.0		1	
								5					
2								2				2	
3		V								Lu = 0 Po max. = 10.0		3	
											1.30		
4											1.30	4	
5		V								Lu = 0 Po max. = 10.0		5	
6												6	
7		V								Lu = 0 Po max = 10.0		7	
									37.5	37.5m: Serpentine 1mm wide along 45° dip crack.	1.30		
8								2			1.30	8	
									38.8	38.8~39.0m: Fragment core, no serpentine.			
9		V						4	39.0	Lu = 0 Po max. = 10.0		9	
40								3				0	470.834

core loss
RQD

▶ driller's note ◀
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT HOLE No. SK-2 (SHEET 3 OF 4)

LOCATION	DAM	DEPTH OF HOLE	70.00 m	COMMENCED	2 - 9 -1987
ELEVATION	510.834 m	DEPTH OF OVERBURDEN	17.00 m	COMPLETED	17 - 9 -1987
COORDINATE	X: 452,695.19 Y: 4178,050.45	LENGTH OF ROCK DRILLING	53.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	58.75 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	83.9 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
40m			0→100%									0m	470.834m
								3	40.5				
1		V							41.5m and 44.5m : 45° dip cracks, no filling.	Lu = 0, Po max = 10.0		1	
2												2	
3		V								Lu = 0, Po max = 10.0		3	
4											1.30	4	
											1.30		
5		V						1		Lu = 1.2, Po max = 10.0		5	
6								1				6	
7		V						2		Lu = 2.2, Po max. > 10.0		7	
8												8	
9		V							48.7m : 45° dip crack, no filling. 49.1m : Serpentine less than 1mm wide along 15° dip crack.	Lu = 0, Po max = 10.0		9	
50	Peridotite			86 mm	Dark gray	2	2				1.30	0	
1		V								Lu = 0, Po max. = 10.0	1.30	1	
2									52.2m : Serpentine 1mm wide along 35° dip crack.			2	
3		V								Lu = 0, Po max. = 10.0		3	
4									54.0			4	
5		V								Lu = 0, Po max. = 10.0		5	
6								2			1.30	6	
											1.30		
7		V								Lu = 0, Po max. = 10.0		7	
8												8	
9		V							58.5	Lu = 0, Po max. = 10.0		9	
								1	59.3m : Serpentine 1mm wide along 70° dip crack.				
60								2	60.0			0	450.834

core loss
RQD
▶ driller's note ◀
1 (rock), 2 (subrock), 3 (piece), 4 (fragment), 5 grain
1 (hard) – 5 (soft)
1 (fresh) – 5 (decomposed)

Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-2 (SHEET 4 OF 4)

LOCATION	DAM	DEPTH OF HOLE	70.00 m	COMMENCED	2 - 9 -1987
ELEVATION	510.834 m	DEPTH OF OVERBURDEN	17.00 m	COMPLETED	17 - 9 -1987
COORDINATE	X. 452,695.19 Y. 4,178,050.45	LENGTH OF ROCK DRILLING	53.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	58.75 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	83.9 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
60m			0 → 100%									0m	450.834m
1	Peridotite				Dark gray	2	2	2 4 2	60.8 60.8~63.0m : Serpentine 61.0 1~2mm wide along many cracks.	Lu = 0 Po max. = 10.0	1.30	1	
2											1.30	2	
3								2	63.0	Lu = 0 Po max. = 10.0		3	
4								2 3	64.0			4	
5				φ86 mm				1 1 2		Lu = 0 Po max. = 10.0		5	
6								3	66.0 66.0~66.4m : Serpentine 66.4 1mm wide along several cracks.	Lu = 0 Po max. = 10.0		6	
7								1 1 2			1.30 1.30	7 8	
8									R·Q·D (Av.) = 86%	Lu = 0 Po max. = 10.0		9	
9									End of drill hole		1.30	0	440.834
70													
1												1	
2												2	
3												3	
4												4	
5												5	
6												6	
7												7	
8												8	
9												9	
0												0	

core loss
RQD
▶ driller's note ◀
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)

Water table after drilling 0.30
Water table before drilling 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK - 3 (SHEET 1 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	25 - 8 -1988
ELEVATION	607.609 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	11 - 9 -1988
COORDINATE	X. 452,559.74 Y. 4177,954.03	LENGTH OF ROCK DRILLING	100.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	100.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	100.0 %		

DEPTH	ROCK NAME	L·O·G	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
0m			0⇒100%									0m	607.609m
1	Peridotite	V		φ86mm	Dark gray	2	2	3 / 4 / 1.5 / 2	No surface soil. 0~1.5m : Piece~fragment cores. 1.9m : Oxidization crack, 80° dip. 2.1m : Oxidization crack, 70° dip. 3.5~3.9m : Serpentine 2~3mm wide along several cracks (65° dip). 4.7m and 5.0m : Serpentine 2~3mm wide along 65° dip cracks. 5.3m : Serpentine 2mm wide along 20° dip crack. 6.1m : Serpentine 2mm wide along 70° dip crack 7.5~7.7m : Fragment cores, oxidization. 12.0~14.8m : Serpentine 1~2mm wide along vertical crack. 14.0~14.2m : Piece cores, no serpentine. 15.8m : Serpentine 1~2mm wide along 45° dip crack.	Lu = (40) Po max. = 3.0 kg/cm²			
								3.0 / 3.2 / 3.5 / 3 / 3.9		Lu = (41) Po max. = 3.0			
						2		2 / 4.7 / 3 / 5.0		Lu > 100 Po max. = 3.0			
								2			5.00 / 5.50		
								6.8 / 3 / 7.0 / 2 / 7.5 / 3~4 / 7.7		Lu = (33) Po max. = 5.0			
								2		Lu = (6) Po max. = 5.0			
							2	9.8 / 3 / 10.0			7.00 / 7.50		
								1 / 1 / 2		Lu = 5.1 Po max. = 10.0			
										Lu = 24.0 Po max. = 10.0	9.00 / 12.20		
						2		14.0 / 3 / 14.2		Lu = 5.5 Po max. = 10.0			
								1 / 1 / 2		Lu = 6.0 Po max. = 10.0	13.55 / 17.00		
										Lu = 5.0 Po max. = 10.0	15.00	0	587.609
20													

▶ driller's note 4

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) – 5 (soft)

1 (fresh) – 5 (decomposed)

core loss

RQD

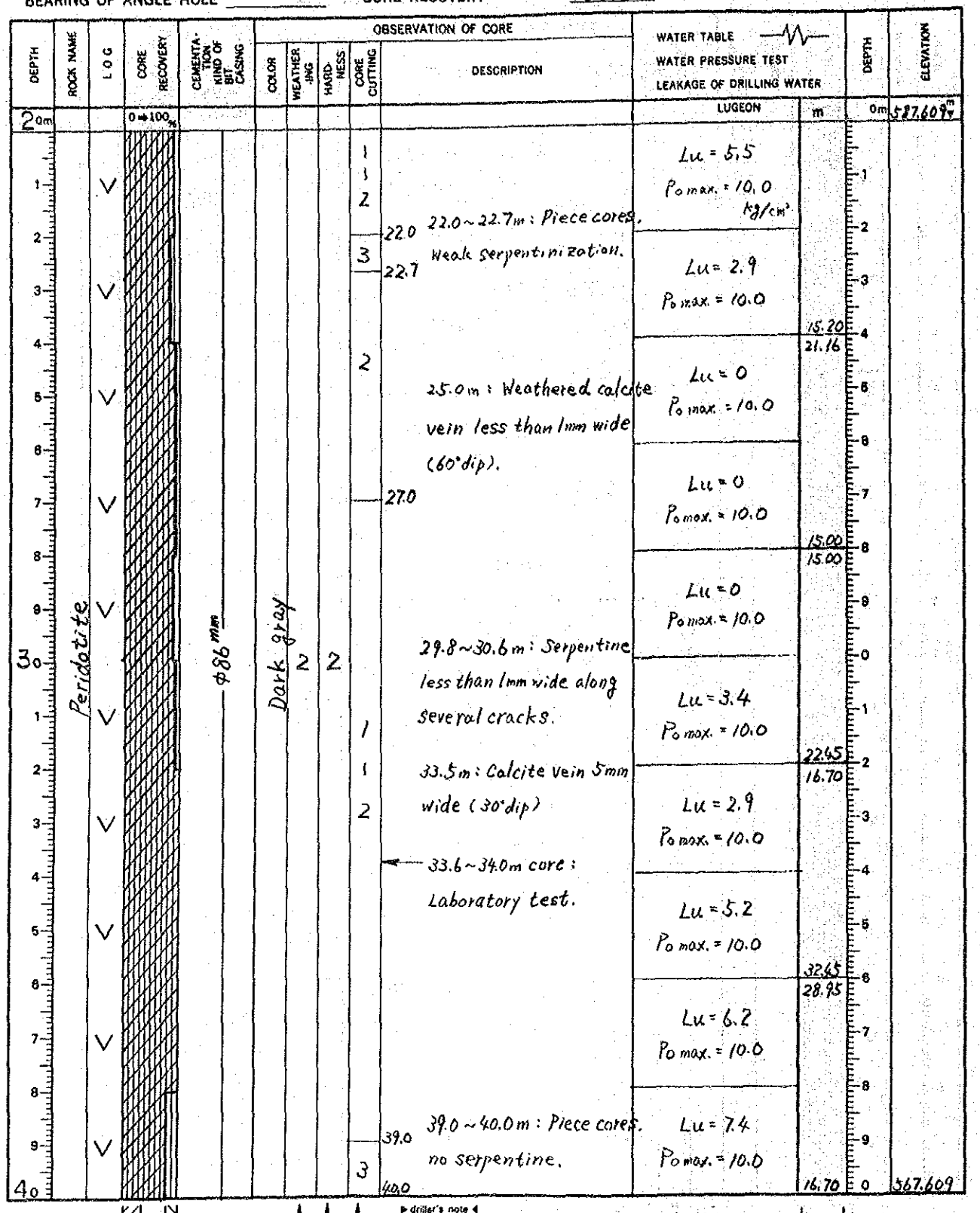
Water table after drilling → 0.30

Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK - 3 (SHEET 2 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	25 - 8 -1988
ELEVATION	607.609 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	11 - 9 -1988
COORDINATE	X 452,559.74 Y 4,177,956.03	LENGTH OF ROCK DRILLING	100.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	100.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	100.0 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-3 (SHEET 3 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	25 - 8 -1988
ELEVATION	607.609 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	11 - 9 -1988
COORDINATE	X 452,559.74 Y 4,137,956.03	LENGTH OF ROCK DRILLING	100.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	100.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	100.0 %		

OBSERVATION OF CORE: COLOR | WEATHERING | HARDNESS | CORE CUTTING | DESCRIPTION

WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER — LUGEON

DEPTH (m)	ROCK NAME	LOG	CORE RECOVERY (0→100%)	CEMENTATION / KIND OF BIT / CASING	COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	LUGEON	DEPTH (m)	ELEVATION (m)
40m			0→100%								0m	567.609
1	Peridotite	V		φ86 mm	Dark gray	2	2	1	40.0m : Serpentine 1mm wide along 45° dip crack.	Lu = 0, Po max. = 10.0 kg/cm²	34.60	
2								1		Lu = 0, Po max. = 10.0		
3		V						2			25.98	
4											25.98	
5		V							Serpentinization is weak. Scattered serpentine less than 1mm wide.	Lu = 0, Po max. = 10.0		
6										Lu = 0, Po max. = 10.0	27.50	
7		V									41.36	
8										Lu = 0, Po max. = 10.0		
9		V										
50						2	2	49.5				
1								2		Lu = 0, Po max. = 10.0		
2		V						51.0			31.70	
3										Lu = 0, Po max. = 10.0	31.70	
4		V						1	Continued stick ~ substick cores.			
5								1		Lu = 0, Po max. = 10.0		
6		V						2			28.90	
7										Lu = 0, 57.15, Po max. = 10.0	41.60	
8		V										
9										Lu = 0, Po max. = 10.0		
60		V						60.0			31.55	547.609

Water table after drilling → 0.30
Water table before drilling → 0.50

core loss
RQD
▶ driller's note 4
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK - 3 (SHEET 4 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	25 - 8 - 1988
ELEVATION	607.609 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	11 - 9 - 1988
COORDINATE	X 452,559.74 Y 4177,956.03	LENGTH OF ROCK DRILLING	100.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	100.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	100.0 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION
60m			0 ⇒ 100%						
60.0	Peridotite			486 mm	Dark gray	2	2	2	
65.5								3	65.5~65.7 m : Piece ~ fragment cores, weak serpentinization.
65.7								2	
67.5								1	
72.0								2	73.0 m and 73.2 m : Serpentine 1mm wide along 50° dip cracks. 74.5 m : Serpentine 1~2 mm wide along 50° dip crack.
75.0								1	
79.0								2	
80									

WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER — LUGEON

DEPTH (m)	Lugeon	Pomax (kg/cm²)
31.55	Lu = 0	10.0
27.70	Lu = 0	10.0
38.90	Lu = 0	10.0
27.10	Lu = 0	10.0
27.10	Lu = 0	10.0
32.10	Lu = 0	10.0
46.70	Lu = 0	10.0
34.90	Lu = 0	10.0
34.90	Lu = 0	10.0
34.95	Lu = 0	10.0

DEPTH (m): 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 0 – 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 0

ELEVATION: 547.609 m — 527.609

core loss / RQD

▶ driller's note ◀ : 1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

Water table after drilling → 0.30

Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK - 3 (SHEET 5 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	25 - 8 -1988
ELEVATION	607.609 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	11 - 9 -1988
COORDINATE	X 452,359.74 Y 4177,954.03	LENGTH OF ROCK DRILLING	100.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	100.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	100.0 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	DEPTH m	ELEVATION
80m			0 → 100%								0m	527.609m
1		V								Lu = 0 Po max. = 10.0	43.05	
2												
3		V								Lu = 0 Po max. = 10.0		
4											45.80	
5		V								Lu = 0 Po max. = 10.0	45.80	
6									86.3m : Serpentine 1mm wide along 45° dip crack.			
7		V								Lu = 0 Po max. = 10.0		
8								2			30.00	
9	Peridotite	V		φ86 mm	Dark gray	2	2		88.6~89.1m core : Laboratory test.	Lu = 0 Po max. = 10.0	33.00	
90									89.5m : Serpentine 1~2 mm wide along 30° dip crack.	Lu = 0 Po max. = 10.0		
1		V									44.70	
2									91.1m : Serpentine 1~2 mm wide along horizontal crack.	Lu = 0 Po max. = 10.0	44.70	
3		V										
4									92.4m : Serpentine and calcite vein less than 1mm wide.	Lu = 0 Po max. = 10.0		
5		V										
6											47.80	
7		V								Lu = 0 Po max. = 10.0	49.70	
8								98.0				
9		V						1 1 2	R.Q.D (Av.) = 91%	Lu = 0 Po max. = 10.0		
100								100.0	End of drill hole		55.60	507.609

core loss / RQD

driller's note: 1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

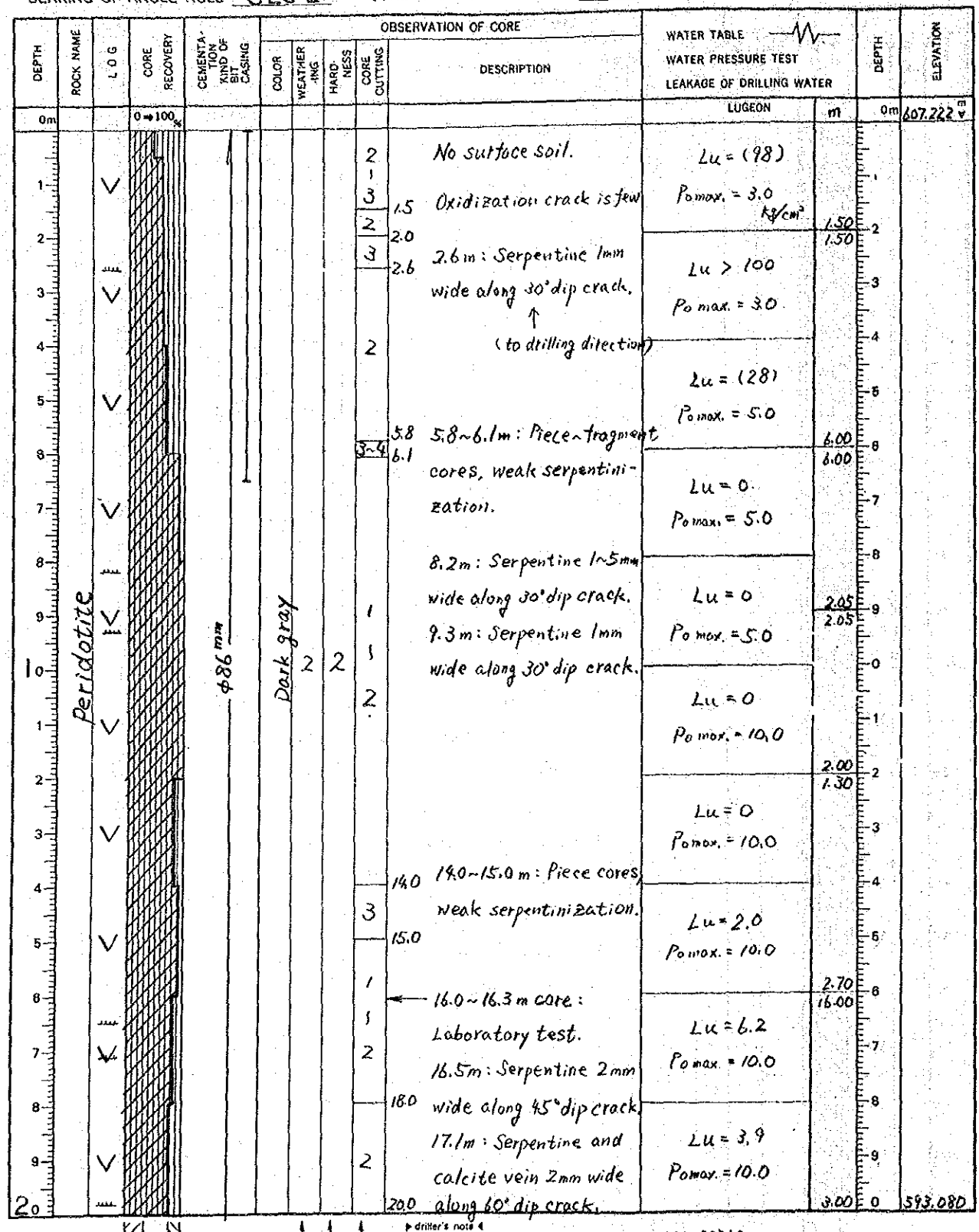
Water table after drilling — 0.30

Water table before drilling — 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-4 (SHEET 1 OF 4)

LOCATION	DAM	DEPTH OF HOLE	80.00 m	COMMENCED	10-8-1988
ELEVATION	607.222 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	24-8-1988
COORDINATE	X. 452,560.15 Y. 4,177,955.30	LENGTH OF ROCK DRILLING	80.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	45 °	TOTAL LENGTH OF CORE	80.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S25°E	CORE RECOVERY	100.0 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-4 (SHEET 2 OF 4)

LOCATION	DAM	DEPTH OF HOLE	80.00 m	COMMENCED	10-8-1988
ELEVATION	607.222 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	24-8-1988
COORDINATE	X 452,560.15 Y 4 177,955.30	LENGTH OF ROCK DRILLING	80.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	45°	TOTAL LENGTH OF CORE	80.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S25°E	CORE RECOVERY	100.0 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION, KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
20m			0 → 100%								3.00	0m	583.080 m
1		V						1	19.8 m : Serpentine 1~5 mm wide along 30° dip crack.	Lu = 2.9 Pomax = 10.0 kg/cm²		1	
2								1	22.0~22.5 m : Weak serpentinization.			2	
								2	22.0 / 22.5				
3		V						1		Lu = 3.8 Pomax = 10.0		3	
4								5			10.60	4	
								2			13.00		
5		V						2		Lu = 0.4 Pomax = 10.0		5	
								3	25.5 / 26.0				
6									25.5~26.0 m : Piece cores, 80° dip crack with thin serpentine.			6	
7		V							26.8 m : Serpentine 1mm wide	Lu = 3.0 Pomax = 10.0		7	
8											17.00	8	
9		V								Lu = 0 Pomax = 10.0	17.00	9	
30	Peridotite			φ86 mm	Dark gray	2	2					0	
1		V						1	30.6 m : Serpentine 1~5 mm wide along 20° dip crack.	Lu = 1.3 Pomax = 10.0		1	
2								1			13.76	2	
								2			29.10		
3		V								Lu = 0.4 Pomax = 10.0		3	
4												4	
5		V								Lu = 3.0 Pomax = 10.0		5	
6											18.70	6	
									37.3m, 37.4m and 37.7m : Serpentine 1mm wide along 55° dip cracks.		18.70		
7		V								Lu = 4.8 Pomax = 10.0		7	
8												8	
9		V								Lu = 1.2 Pomax = 10.0		9	
40											17.15	0	578.938

core loss
RQD
▶ driller's note 4
1 (stick), 2 (substick), 3 (piece), 4 (freqment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)
Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-4 (SHEET 3 OF 4)

LOCATION	DAM	DEPTH OF HOLE	80.00 m	COMMENCED	10-8-1988
ELEVATION	607.222 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	24-8-1988
COORDINATE	X 452.560.15 Y 4177.955.30	LENGTH OF ROCK DRILLING	80.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	45°	TOTAL LENGTH OF CORE	80.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S25°E	CORE RECOVERY	100.0 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION
4 0m			0 → 100%						
1		V						1	42.1m : Serpentine 1mm wide along 30° dip crack.
2								1	
3		V						2	
4									
								44.5	
5		V							
6									47.5m : Calcite vein 1mm wide, 60° dip.
7		V							
8								2	48.8 m : Serpentine 1mm wide along 30° dip and 45° dip cracks.
9		V							
5 0	Peridotite			φ86 mm	Dark gray	2	2		50.4m : Serpentine 1mm wide.
1		V							
2									51.7~52.0 m core : Laboratory test.
3		V							
								53.5	53.5~54.3m : Piece cores, thin meshy serpentine.
4								3	
								54.3	
5		V						2	
								55.0	
								3	
6								56.0	56.0m : Calcite vein 2 cm wide and Serpentine 5mm wide along 35° dip crack.
								2	
								56.5	
7		V						2	
								1	
8								3	
								58.5	57.2 m : Serpentine 1mm wide along 20° dip crack.
9		V						2	
6 0									

WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER — LUGEON	DEPTH m	DEPTH 0m	ELEVATION
	38.50	0	568.938
Lu = 1.6 Pomax. = 10.0 kg/cm²		1	
Lu = 15.0 Pomax. = 10.0		2	
		3	
	18.20	4	
	18.20		
Lu = 4.0 Pomax. = 10.0		5	
		6	
Lu = 6.3 Pomax. = 10.0		7	
	21.70	8	
	44.30		
Lu = 0.4 Pomax. = 10.0 49.80 M		9	
Lu = 0 Pomax. = 10.0		0	
		1	
	22.10	2	
	22.10		
Lu = 0 Pomax. = 10.0		3	
		4	
Lu = 0 Pomax. = 10.0		5	
	16.90	6	
	48.40		
Lu = 0 Pomax. = 10.0		7	
		8	
Lu = 0 Pomax. = 10.0		9	
	17.15	0	564.796

core loss
ROD

▶ driller's note 4
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

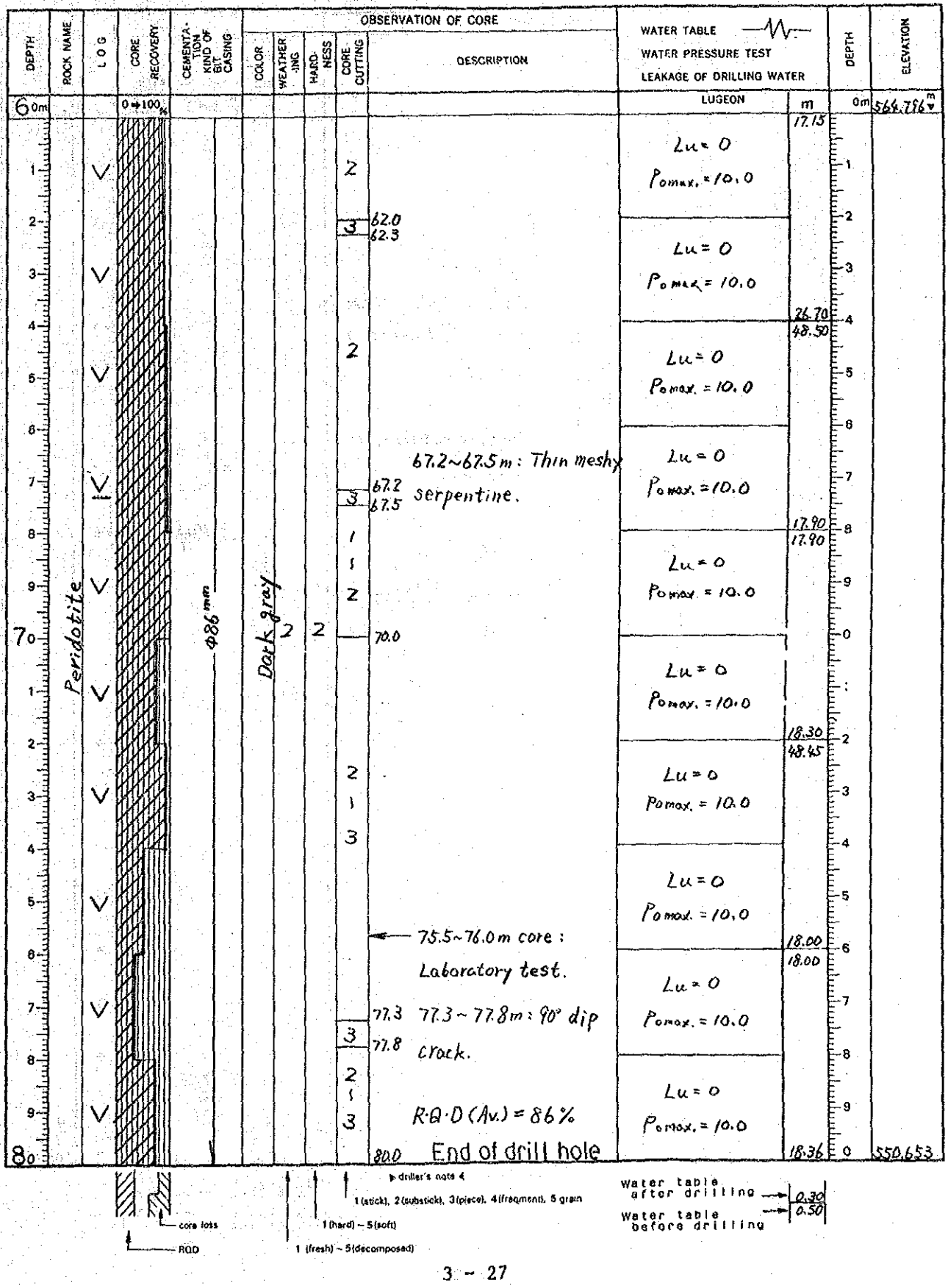
1 (fresh) ~ 5 (decomposed)

Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-4 (SHEET 4 OF 4)

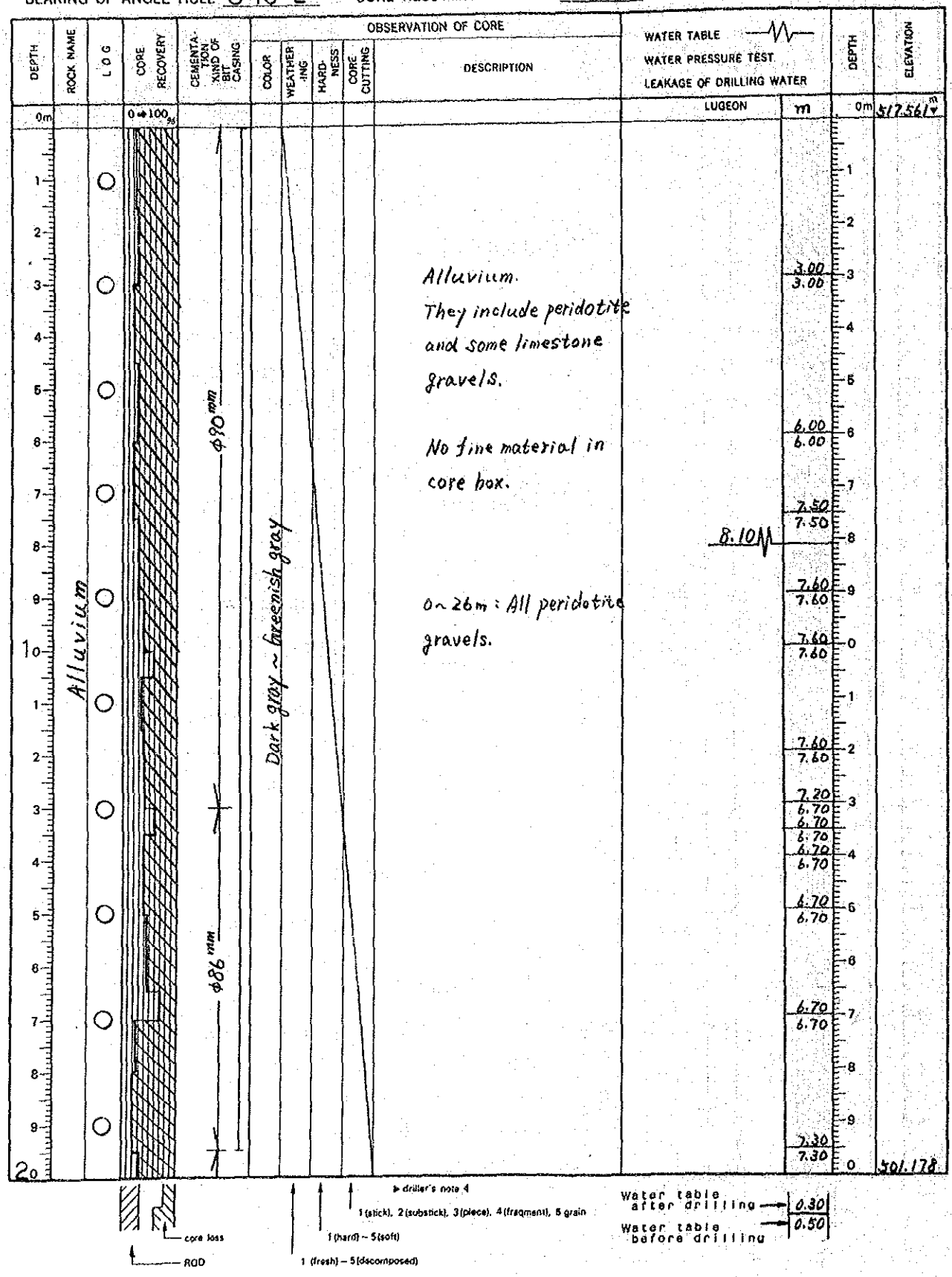
LOCATION	DAM	DEPTH OF HOLE	80.00 m	COMMENCED	10-8-1988
ELEVATION	607.222 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	24-8-1988
COORDINATE	X 452,560.15 Y 4177,955.30	LENGTH OF ROCK DRILLING	80.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	45°	TOTAL LENGTH OF CORE	80.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S25°E	CORE RECOVERY	100.0 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-5 (SHEET 1 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	14 - 7 -1988
ELEVATION	517.561 m	DEPTH OF OVERBURDEN	39.00 m	COMPLETED	6 - 9 -1988
COORDINATE	X. 452,534.29 Y. 4,178,057.82	LENGTH OF ROCK DRILLING	61.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	55 °	TOTAL LENGTH OF CORE	69.97 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S40°E	CORE RECOVERY	69.97 %		



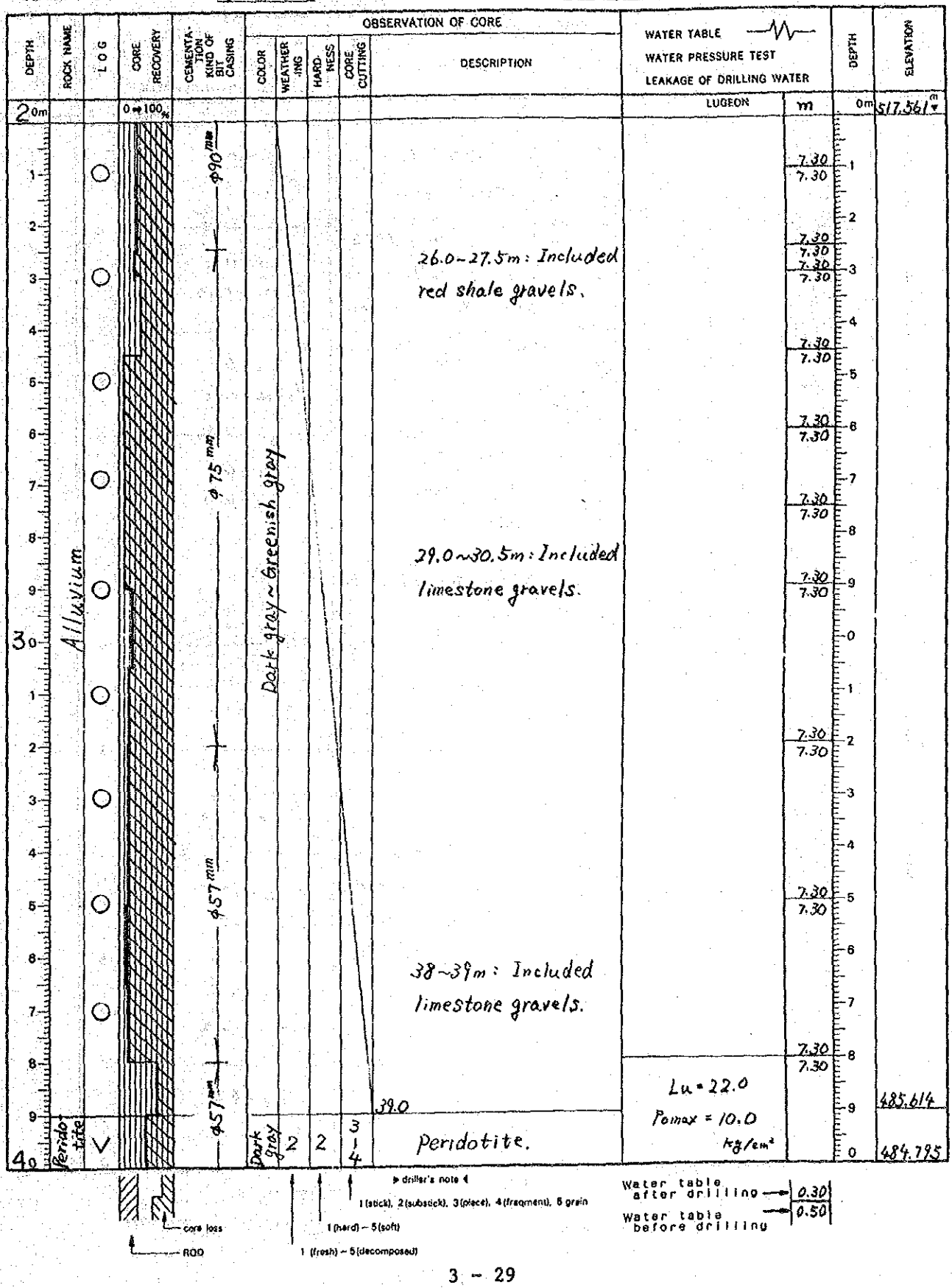
core loss
RQD
▶ driller's note ◀
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)

Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-5 (SHEET 2 of 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	14 - 7 -1988
ELEVATION	517.561 m	DEPTH OF OVERBURDEN	39.00 m	COMPLETED	6 - 9 -1988
COORDINATE	X 452,534.29 Y 4178,057.82	LENGTH OF ROCK DRILLING	61.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	55 °	TOTAL LENGTH OF CORE	69.97 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S 40° E	CORE RECOVERY	69.97 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-5 (SHEET 3 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	14 - 7 -1988
ELEVATION	517.561 m	DEPTH OF OVERBURDEN	39.00 m	COMPLETED	6 - 9 -1988
COORDINATE	X 452,534.29 Y 4178,057.82	LENGTH OF ROCK DRILLING	61.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	55 °	TOTAL LENGTH OF CORE	69.97 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S 40° E	CORE RECOVERY	69.97 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
40m			0 ⇒ 100%									0m	484.795
1		V						3 1 4	39.0~42.0m: Piece ~ fragment cores.	Lu = 0 Pomax. = 10.0 kg/cm²	7.30	1	
2								42.0	41.5m, 42.0m and 42.2m: calcite vein 1mm wide.		7.30	2	
3		V						3	42.1m: Serpentine 1mm wide.	Lu = 0 Pomax. = 10.0		3	
4								44.0				4	
5		V						2		Lu = 0 Pomax. = 10.0		5	
6								45.5			7.30 8.15	6	
7		V						3		Lu = 0 Pomax. = 10.0		7	
8												8	
9	Peridotite	V		φ57 mm	Dark gray	2	2		48.8m: Serpentine 3mm wide.	Lu = 0 Pomax. = 10.0		9	
50								49.5	50.5m: Serpentine lens, diameter 1cm.			0	
1		V						2		Lu = 0 Pomax. = 10.0		1	
2								51.5			8.15 8.15	2	
3		V						2 1 3		Lu = 0 Pomax. = 10.0		3	
4								54.3	54.3~54.5m and 54.8~55.2m: Fragment cores, weak serpentinization.			4	
5		V						4 54.5 3 54.8 4 55.2		Lu = 19.0 Pomax. = 10.0		5	
6											8.15 8.00	6	
7		V						2 1 3		Lu = 16.1 Pomax. = 10.0		7	
8											8.00 8.15	8	
9		V								Lu = 4.8 Pomax. = 10.0		9	
60												0	468.412

core loss — RQD

▶ driller's note ◀ 1 (stick), 2 (subastick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

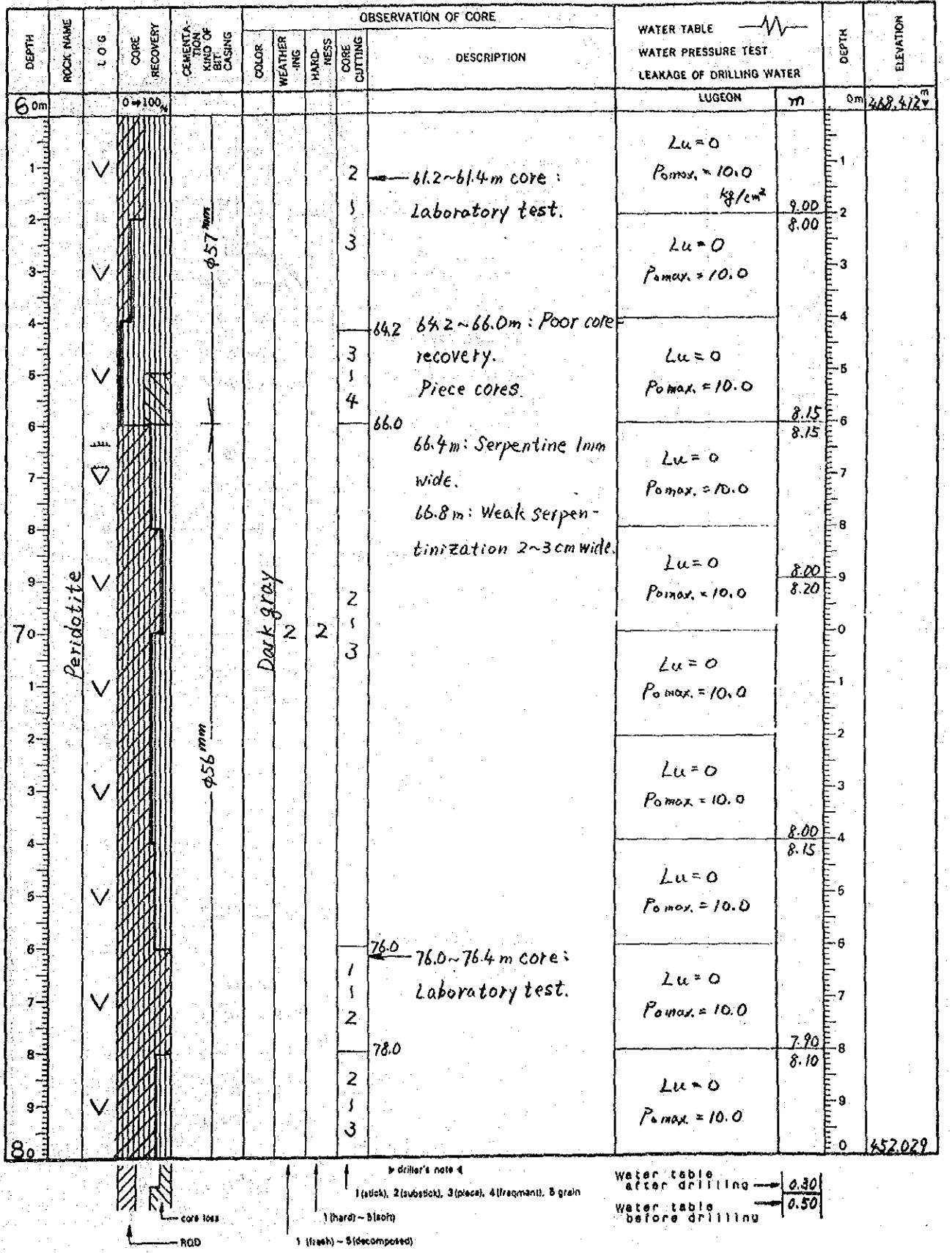
Water table after drilling → 0.30

Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-5 (SHEET 4 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	14 - 7 -1988
ELEVATION	517.561 m	DEPTH OF OVERBURDEN	39.00 m	COMPLETED	6 - 9 -1988
COORDINATE	X 452,534.29 Y 4178,057.82	LENGTH OF ROCK DRILLING	61.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	55 °	TOTAL LENGTH OF CORE	69.97 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S 40° E	CORE RECOVERY	69.97 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-5 (SHEET 5 OF 5)

LOCATION	DAM	DEPTH OF HOLE	100.00 m	COMMENCED	14 - 7 -1988
ELEVATION	517.561 m	DEPTH OF OVERBURDEN	39.00 m	COMPLETED	6 - 9 -1988
COORDINATE	X 452,534.29 Y 4178,057.82	LENGTH OF ROCK DRILLING	61.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	55 °	TOTAL LENGTH OF CORE	69.97 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	S 40° E	CORE RECOVERY	69.97 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
8 0m			0 ⇒ 100%									0m	452.029
1		V						2		Lu = 0 Pomax. = 10.0 kg/cm²		1	
2								1			8.00	2	
								3			8.05		
3		V							84.0m : Slickenside 60° dip.	Lu = 0 Pomax. = 10.0		3	
4								3-4	84.4 ~ 84.7m : Piece ~ fragment cores, thin serpentine.			4	
5		V								Lu = 0 Pomax. = 10.0		5	
6								1			8.00	6	
								1			8.00		
7		V						2		Lu = 0 Pomax. = 10.0		7	
8												8	
									89.0 ~ 89.5m : Piece cores no serpentine.	Lu = 0 Pomax. = 10.0			
9	Peridotite	V		φ56 mm	Dark gray	2	2	3			8.15	9	
0											8.15	0	
1		V								Lu = 0 Pomax. = 10.0		1	
2								1				2	
3		V						1		Lu = 0 Pomax. = 10.0		3	
4								2			8.10	4	
											8.10		
5		V								Lu = 0 Pomax. = 10.0		5	
6									← 95.6 ~ 96.0m core : Laboratory test.			6	
7		V								Lu = 0 Pomax. = 10.0		7	
8									98.0 ~ 100.0m : Weak serpentinization.		8.00	8	
								98.0			8.15		
9		V						2		Lu = 0 Pomax. = 10.0		9	
10								3	R.Q.D (Av.) = 53 %				
								100.0	End of drill hole		8.10	0	435.646

core loss / RQD

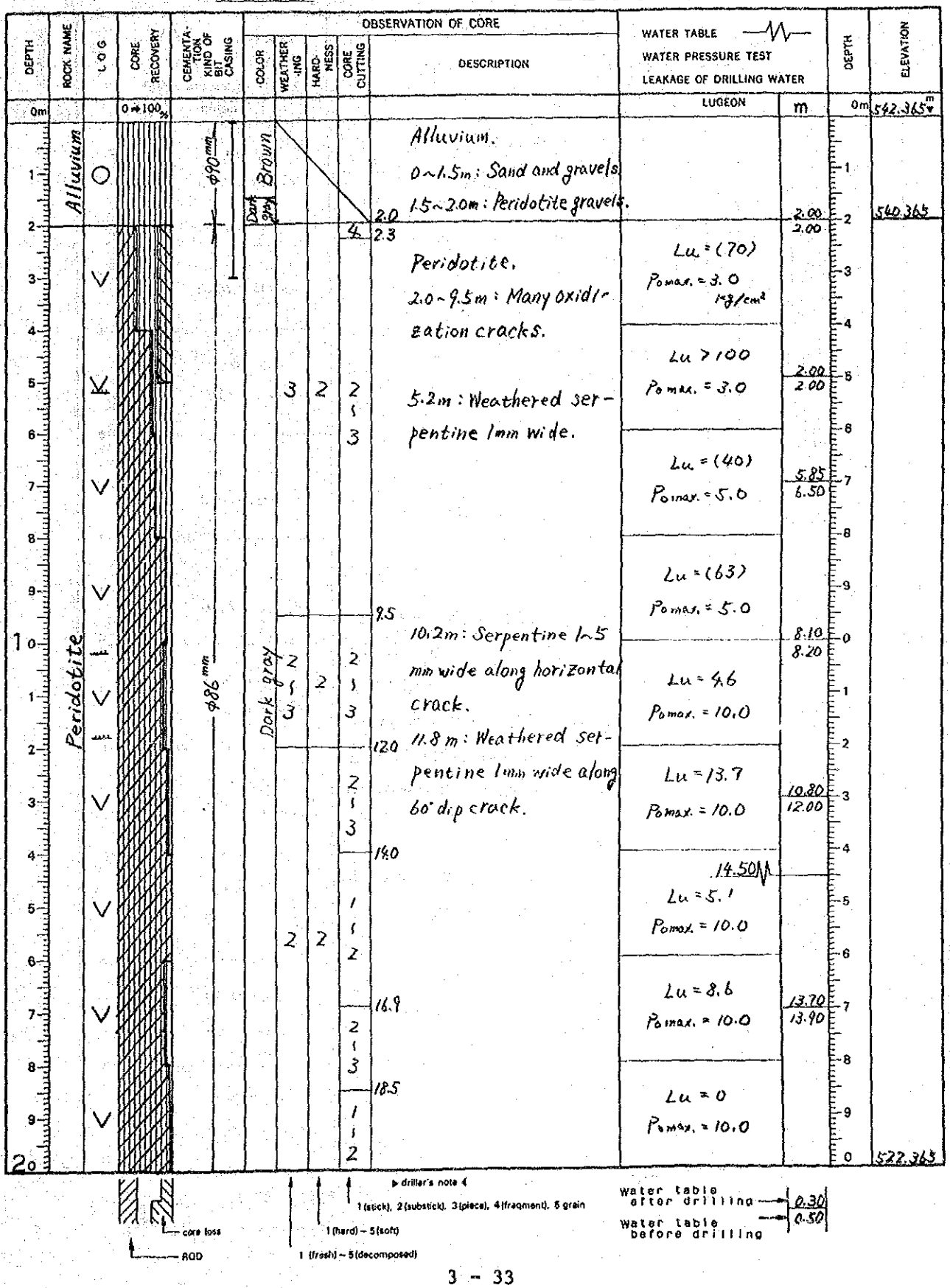
▶ driller's note ◀
1 (rock), 2 (subrock), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)

Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK - 6 (SHEET 1 OF 5)

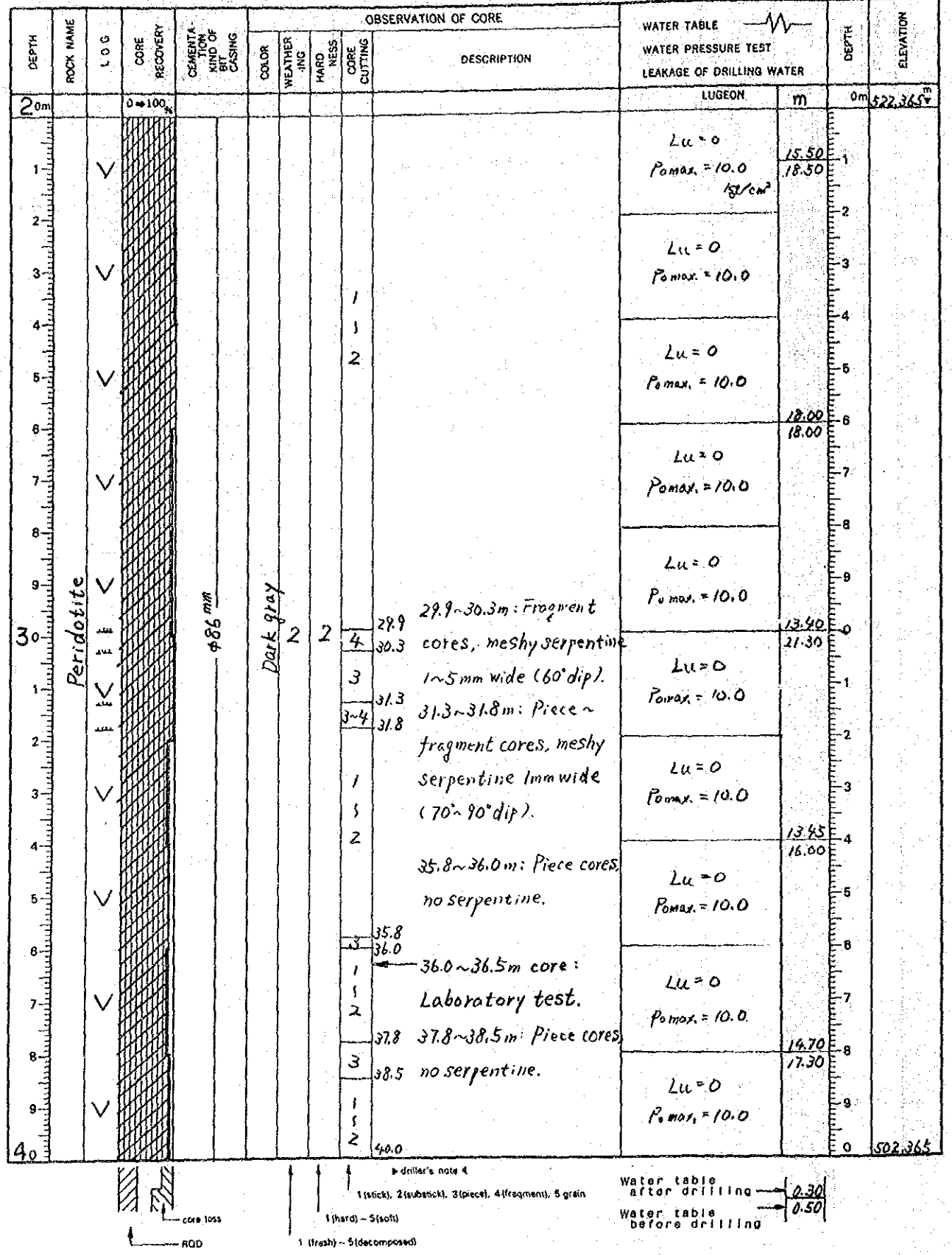
LOCATION	DAM	DEPTH OF HOLE	90.00m	COMMENCED	11 - 8 -1988
ELEVATION	542.365 m	DEPTH OF OVERBURDEN	2.00m	COMPLETED	1 - 9 -1988
COORDINATE	X 452,510.97 Y 4,178,092.07	LENGTH OF ROCK DRILLING	88.00m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	89.23m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.1 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK - 6 (SHEET 2 OF 5)

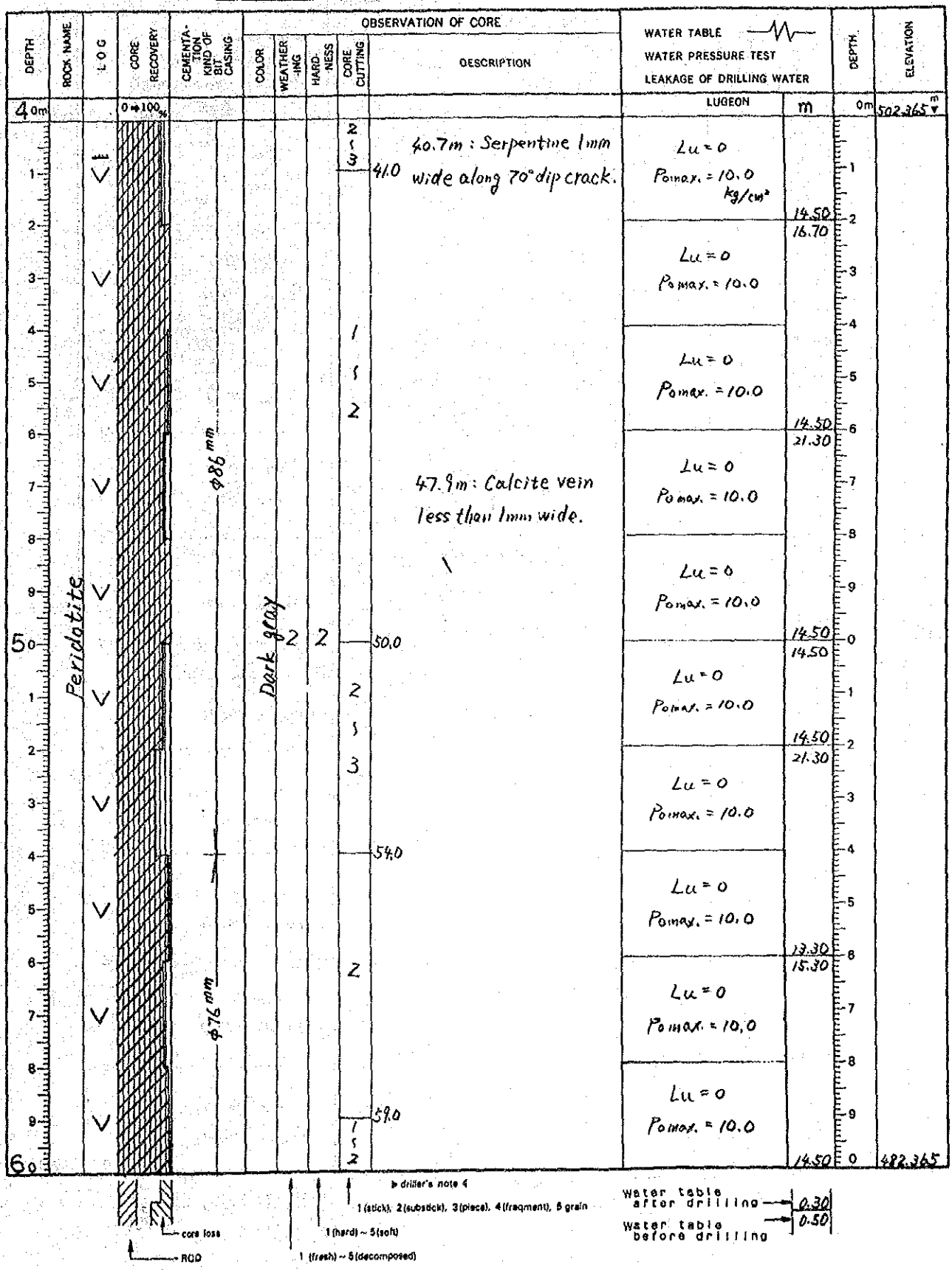
LOCATION	DAM	DEPTH OF HOLE	90.00 m	COMMENCED	11 - 8 -1988
ELEVATION	542.365 m	DEPTH OF OVERBURDEN	2.00 m	COMPLETED	1 - 9 -1988
COORDINATE	X. 452,510.97 Y. 4,178,097.07	LENGTH OF ROCK DRILLING	88.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	89.23 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	--	CORE RECOVERY	99.1 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK - 6 (SHEET 3 OF 5)

LOCATION	DAM	DEPTH OF HOLE	90.00 m	COMMENCED	11 - 8 -1988
ELEVATION	542.365 m	DEPTH OF OVERBURDEN	2.00 m	COMPLETED	1 - 9 -1988
COORDINATE	X. 452.516.97 Y. 4178.097.07	LENGTH OF ROCK DRILLING	88.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	89.23 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.1 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-6 (SHEET 4 OF 5)

LOCATION	DAM	DEPTH OF HOLE	90.00 m	COMMENCED	11 - 8 -1988
ELEVATION	542.365 m	DEPTH OF OVERBURDEN	2.00 m	COMPLETED	1 - 9 -1988
COORDINATE	X. 452,510.97 Y. 4,178,097.07	LENGTH OF ROCK DRILLING	88.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	89.23 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.1 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION
6 0m			0 → 100%						
1	Peridotite	V		φ76 mm	Dark gray	2	2	1	67.1m : Calcite vein and serpentine less than 1mm wide (50° dip).
2		V						1	
3		V						2	
4									
5		V							
6									
7		V							
8		V							
9		V							
7 0		V							
1									
2		V							
3									
4		V							
5									
6		V							
7									
8		V							
9									
8 0									

WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER

LUGEON	m	DEPTH 0m	ELEVATION 482.365m
	27.00		
Lu = 0, Pomax. > 10.0 kg/cm²		1	
Lu = 0, Pomax. = 10.0		2	
Lu = 0, Pomax. = 10.0		3	
		4	
		5	
	14.00	6	
	14.00		
Lu = 0, Pomax. = 10.0		7	
Lu = 0, Pomax. = 10.0		8	
Lu = 0, Pomax. = 10.0		9	
		0	
Lu = 0, Pomax. = 10.0		1	
	14.20	2	
	20.00		
Lu = 0, Pomax. = 10.0		3	
Lu = 0, Pomax. = 10.0		4	
		5	
Lu = 0, Pomax. = 10.0		6	
		7	
	14.00	8	
	14.60		
Lu = 0, Pomax. = 10.0		9	
		0	462.365

core loss
RQD
driller's note: 1(stick), 2(substick), 3(piece), 4(fragment), 5 grain
1 (hard) ~ 5(soft)
1 (fresh) ~ 5(decomposed)
Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK - 6 (SHEET 5 OF 5)

LOCATION	DAM	DEPTH OF HOLE	90.00m	COMMENCED	11 - 8 -1988
ELEVATION	542.365 m	DEPTH OF OVERBURDEN	2.00m	COMPLETED	1 - 9 -1988
COORDINATE	X 452,510.47 Y 4178,097.07	LENGTH OF ROCK DRILLING	88.00m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	89.23 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	99.1 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
8 0m			0→100%									0m	462.365m
1	Peridotite	V			Dark gray	2	2	1	86.5m: Meshy serpentine 10cm wide, weak serpentinization.	Lu = 0 Pomax = 10.0 kg/cm²	14.50	1	
2		V						1			21.30	2	
3		V						1		Lu = 0 Pomax = 10.0		3	
4								1				4	
5		V						1		Lu = 0 Pomax = 10.0		5	
6								2			14.30	6	
7		V								Lu = 0 Pomax = 10.0	14.50	7	
8									89.4~89.8m core : Laboratory test. R·Q·D (Av.) = 91%			8	
9		V								Lu = 0 Pomax = 10.0		9	
90.0									End of drill hole		14.50	0	452.365
1												1	
2												2	
3												3	
4												4	
5												5	
6												6	
7												7	
8												8	
9												9	
0												0	

core loss
RQD

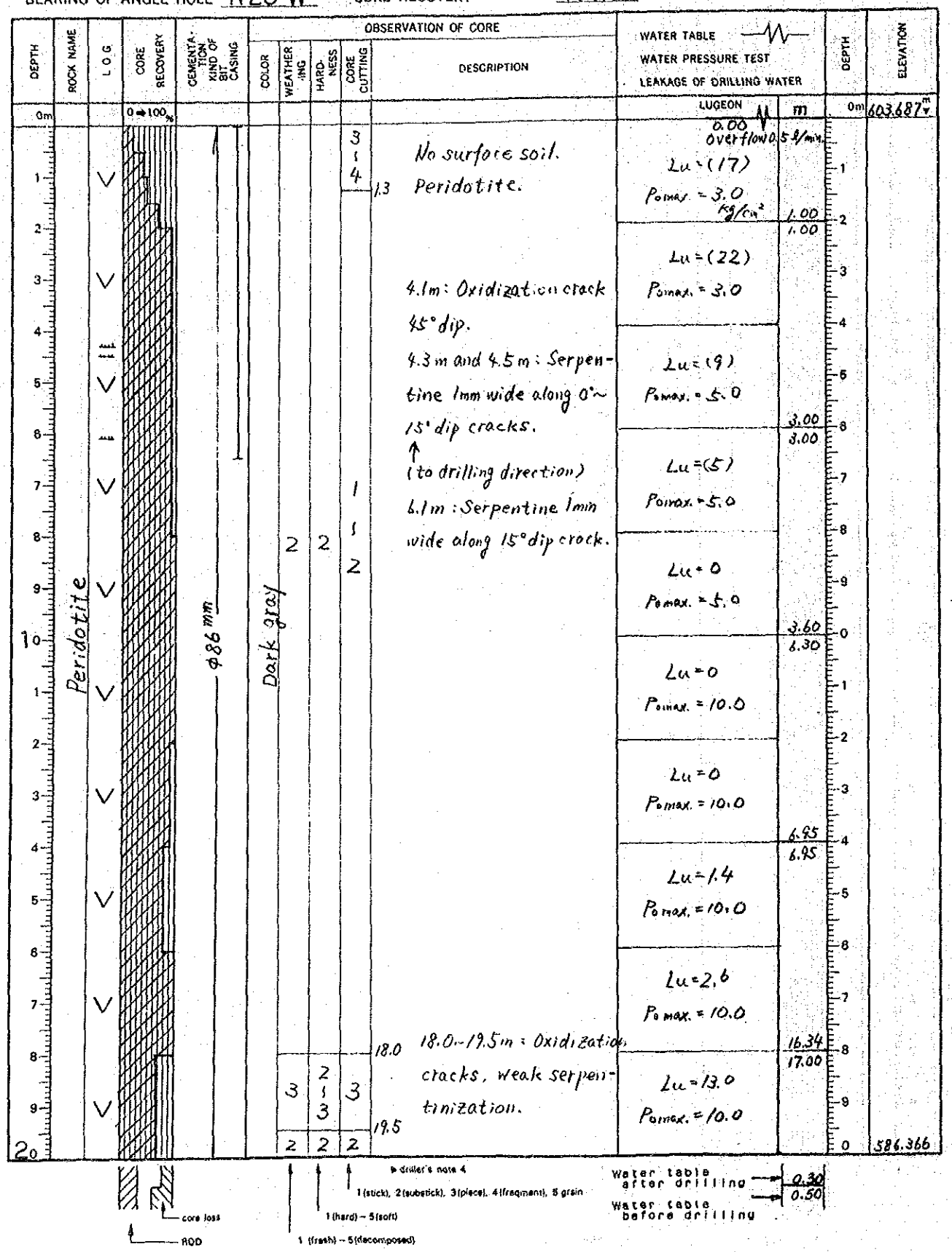
▶ driller's note 4
1 (stick), 2 (substick), 3 (place), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)

Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-7 (SHEET 1 OF 4)

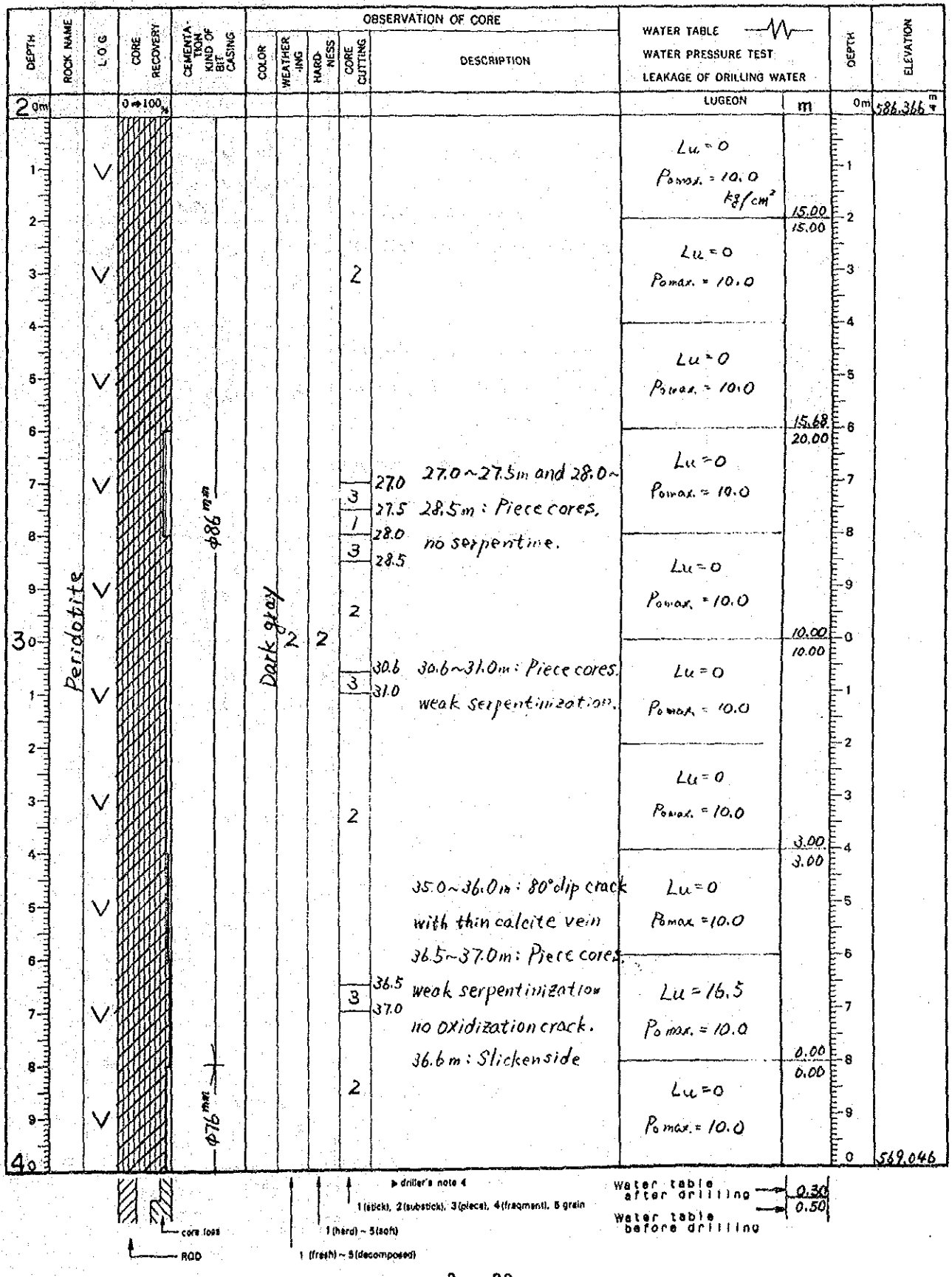
LOCATION	DAM	DEPTH OF HOLE	80.00 m	COMMENCED	23 - 9 -1988
ELEVATION	603.687 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	6 - 10 -1988
COORDINATE	X 452,439.67 Y 4178,108.32	LENGTH OF ROCK DRILLING	80.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	60 °	TOTAL LENGTH OF CORE	80.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	N25°W	CORE RECOVERY	100.0 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-7 (SHEET 2 OF 4)

LOCATION	DAM	DEPTH OF HOLE	80.00 m	COMMENCED	23 - 9 -1988
ELEVATION	603.687 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	6 - 10 -1988
COORDINATE	X 452439.67 Y 4178168.32	LENGTH OF ROCK DRILLING	80.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	60 °	TOTAL LENGTH OF CORE	80.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	N 25° W	CORE RECOVERY	100.0 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-7 (SHEET 3 OF 4)

LOCATION	DAM	DEPTH OF HOLE	80.00 m	COMMENCED	23 - 9 -1988
ELEVATION	603.687 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	6 - 10 -1988
COORDINATE	X. 452,439.67 Y. 4173,108.32	LENGTH OF ROCK DRILLING	80.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	60 °	TOTAL LENGTH OF CORE	80.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	N 25° W	CORE RECOVERY	100.0 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
40m			0 → 100%									0m	569.046 m
1	Peridotite	V		φ76 mm	Dark gray	2	2	2	42.5~44.5 m : Thin serpentine along 70°~80° dip crack.	Lu = 0, Pomax. = 10.0 kg/cm²	0.00	1	
2								42.5			0.00	2	
3		V					2	3		Lu = 0, Pomax = 10.0		3	
4								44.5	45.0~45.6 m : Serpentine 1 mm wide along 40° dip crack.	Lu = 0, Pomax. = 10.0		4	
5		V						2 45.0				5	
6								3 45.6			0.00	6	
7		V						2	47.1~47.4 m : Calcite vein 2~3 mm wide, serpentine 1 mm wide and talc less than 1 mm wide. Meshy.	Lu = 0, Pomax. = 10.0	0.00	7	
8							3	3-4 47.1 47.4		Lu = 0, Pomax. = 10.0		8	
9		V										9	
50									47.9~51.5 m : Serpentine 1 mm wide along many cracks.	Lu = 0, Pomax. = 10.0	0.00	0	
1											0.00	1	
2												2	
3		V					2	2		Lu = 0, Pomax. = 10.0		3	
4											0.00	4	
5		V							54.8 m : Serpentine 1 mm wide along 40° dip crack.	Lu = 0, Pomax. = 10.0	0.00	5	
6									57.2 m : Meshy serpentine 1 mm wide.	Lu = 0, Pomax. = 10.0		6	
7		V										7	
8									58.1 m : Serpentine 1 mm wide along 30° dip crack.		0.00	8	
9		V								Lu = 0, Pomax. = 10.0	0.00	9	
60												0	551.725

core loss
RQD
▶ driller's note 4
1 (rock), 2 (substick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)
water table after drilling 0.30
water table before drilling 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SK-7 (SHEET 4 OF 4)

LOCATION	DAM	DEPTH OF HOLE	80.00 m	COMMENCED	23 - 9 -1988
ELEVATION	603.687 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	6 - 10 -1988
COORDINATE	X 452,439.67 Y 4178,108.32	LENGTH OF ROCK DRILLING	80.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	60 °	TOTAL LENGTH OF CORE	80.00 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	N25°W	CORE RECOVERY	100.0 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
6 0m			0 → 100%									0m	551.725 m
	Peridotite			φ76 mm	Dark gray	2	2	2	60.3m: Serpentine 1mm wide along 30° dip crack. 62.7m: Serpentine 1mm wide along 10° dip crack.	Lu = 0 Pomax. = 10.0 kg/cm²	0.00		
										Lu = 0 Pomax. = 10.0	0.00		
										Lu = 0 Pomax. = 10.0			
										Lu = 0 Pomax. = 10.0	0.00		
										Lu = 0 Pomax. = 10.0	0.00		
									67.5				
								1		Lu = 0 Pomax. = 10.0			
7 0								1		Lu = 0 Pomax. = 10.0	0.00		
								2		Lu = 0 Pomax. = 10.0	0.00		
									72.0				
									73.1m and 73.7m: Serpentine 1mm wide along 70° dip crack.	Lu = 0 Pomax. = 10.0			
										Lu = 0 Pomax. = 10.0	0.00		
								2		Lu = 0 Pomax. = 10.0	0.00		
										Lu = 0 Pomax. = 10.0	0.00		
										Lu = 0 Pomax. = 10.0	0.00		
									RQD (Av.) = 91%				
8 0									80.0 End of drill hole		0.00	0	534.405

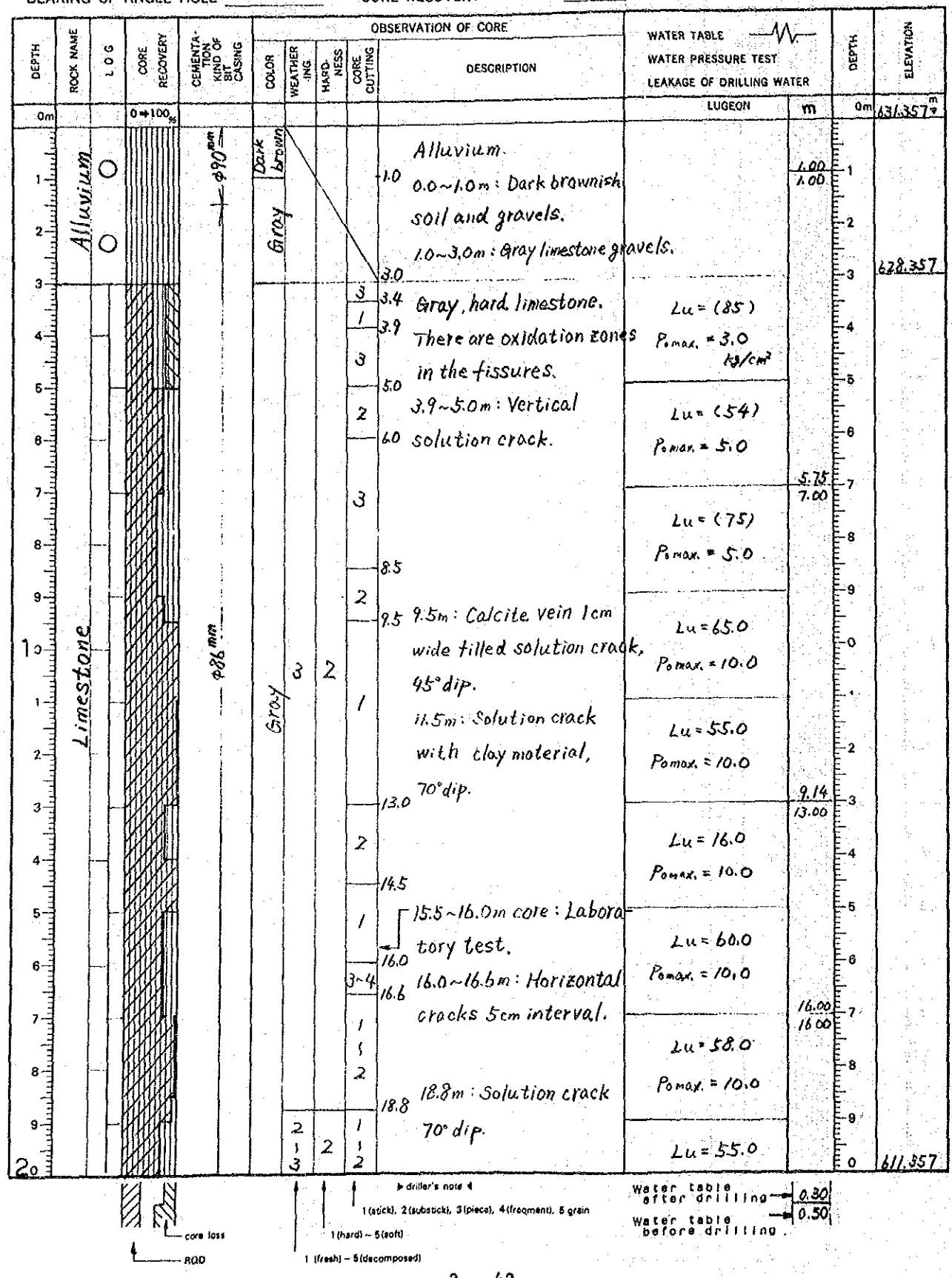
▶ driller's note ◀
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain
1 (hard) – 5 (soft)
1 (fresh) – 5 (decomposed)
core loss
RQD

Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-1 (SHEET 1 OF 5)

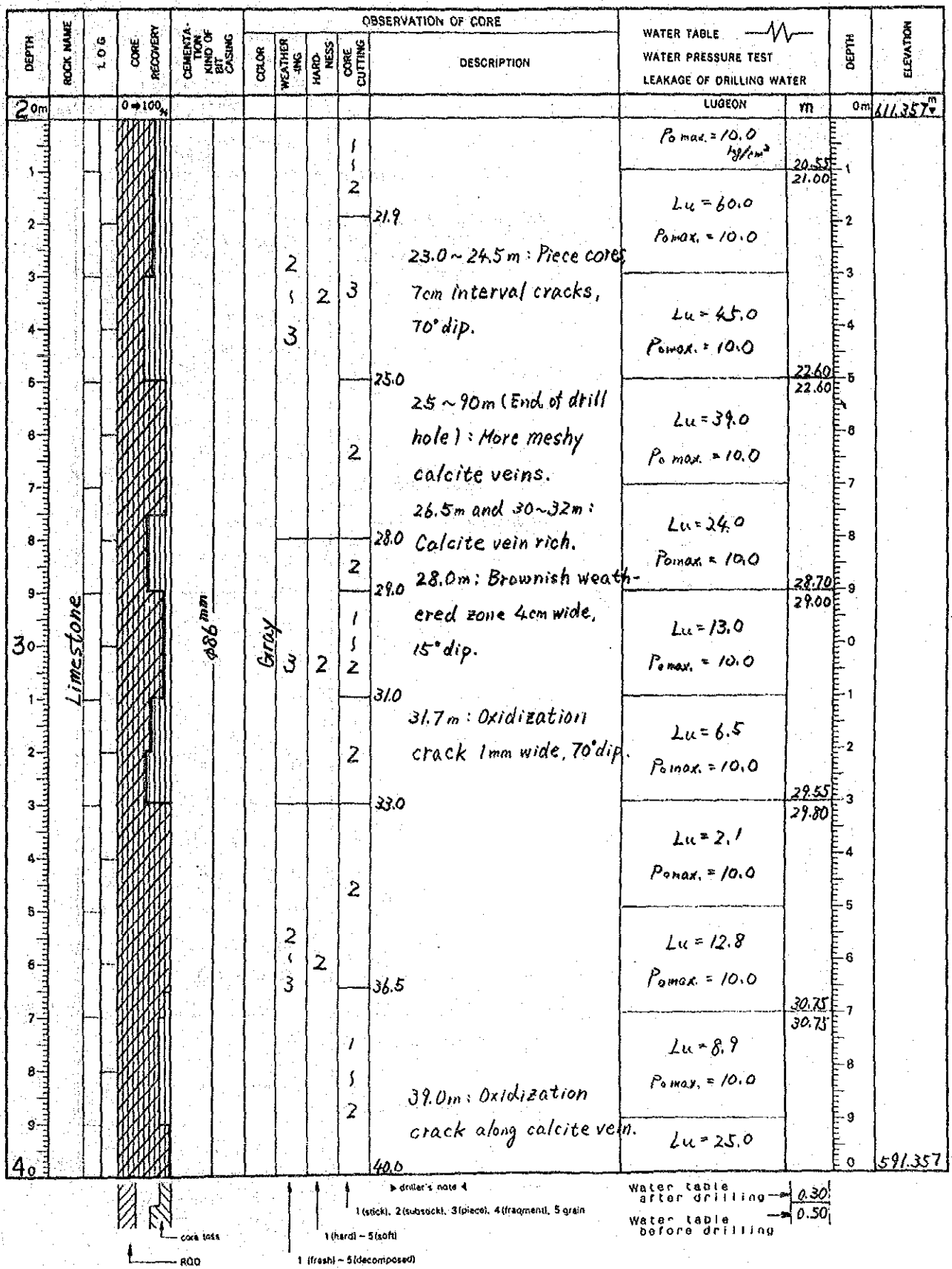
LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	90.00 m	COMMENCED	4 - 5 -1988
ELEVATION	631.357 m	DEPTH OF OVERBURDEN	3.00 m	COMPLETED	8 - 6 -1988
COORDINATE	X. 455,757.98 Y. 4172,232.91	LENGTH OF ROCK DRILLING	87.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	89.50 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.4 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-1 (SHEET 2 OF 5)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	90.00 m	COMMENCED	4 - 5 -1988
ELEVATION	631.357 m	DEPTH OF OVERBURDEN	3.00 m	COMPLETED	8 - 6 -1988
COORDINATE	X 455,751.98 Y 4,172,232.91	LENGTH OF ROCK DRILLING	87.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	89.50 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.4 %		



23.0 ~ 24.5 m : Piece cores, 7cm interval cracks, 70° dip.

25 ~ 90m (End of drill hole) : More meshy calcite veins.

26.5m and 30~32m : Calcite vein rich.

28.0m : Brownish weathered zone 4cm wide, 15° dip.

31.7m : Oxidization crack 1mm wide, 70° dip.

39.0m : Oxidization crack along calcite vein.

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-1 (SHEET 3 OF 5)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	90.00 m	COMMENCED	4 - 5 -1988
ELEVATION	631.357 m	DEPTH OF OVERBURDEN	3.00 m	COMPLETED	8 - 6 -1988
COORDINATE	X 455,751.98 Y 4172,232.91	LENGTH OF ROCK DRILLING	87.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	89.50 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.4 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
40m			0→100%									0m	591.357m
1	Limestone (bituminous)				Dark gray	2	2	1	40.0 40.0~57.0 m Limestone (bituminous). 40.0m : Solution crack with clay material.	Pomax. = 10.0 kg/cm²	33.45	1	
											39.25		
2										Lu = 0 Pomax. = 10.0		2	
3												3	
4										Lu = 0 Pomax. = 10.0		4	
5											35.45	5	
											35.45		
6										Lu = 0 Pomax. = 10.0		6	
7									← 46.85~47.0m core : Microscopic observation.			7	
8										Lu = 0 Pomax. = 10.0	35.60	8	
											39.30		
9												9	
50										Lu = 0 Pomax. = 10.0		0	
1											34.40	1	
											39.20		
2										Lu = 0 Pomax. = 10.0		2	
3												3	
4										Lu = 0 Pomax. = 10.0		4	
5											33.40	5	
											33.40		
6										Lu = 0 Pomax. = 10.0		6	
7									57.0			7	574.357
8	Limestone				Gray	2-3	2	1-2	Gray, hard limestone. 57.5m : Solution crack 70° dip.	Lu = 0 Pomax. = 10.0		8	
9											33.00	9	
											31.25		
60										Lu = 12.7		0	531.357

Water table after drilling → 0.30
Water table before drilling → 0.50

core loss
ROD

▶ driller's note 4
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) – 5 (soft)
1 (fresh) – 5 (decomposed)

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-1 (SHEET 4 OF 5)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	90.00 m	COMMENCED	4 - 5 -1988
ELEVATION	631.357 m	DEPTH OF OVERBURDEN	3.00 m	COMPLETED	8 - 6 -1988
COORDINATE	X. 455,751.98 Y. 4172,232.91	LENGTH OF ROCK DRILLING	87.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	89.50 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.4 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	Lu	DEPTH	ELEVATION
6 0m			0 ⇒ 100%									0m	631.357m
	Limestone			φ86 mm	Gray	2 1 3	2	1 1 2	60m: Small cavities rich. 62.0m: Calcite vein 1cm wide filled solution crack.	Pomax = 10.0 kg/cm²			
								3	62.0 62.4	Lu = 29.0 Pomax. = 10.0		57.20	
								2	63.5	63.50		57.20	
								3 1 4	62.0~69.0m: More oxidization zone. Many solution cracks with clay material.	Lu = 38.0 Pomax. = 10.0			
						3	2		65.2	Lu = 28.0 Pomax. = 10.0		58.06	
								2	63.5~65.2m: Fragment cores caused by two direction solution cracks.	Lu = 30.0 Pomax. = 10.0		59.25	
									69.0	Lu = 7.9 Pomax. = 10.0			
7 0						2 1 3	2	2		Lu = 0 Pomax. = 10.0		58.10	
										Lu = 0 Pomax. = 10.0		58.10	
									75.0			58.20	556.357
	Limestone (bituminous)				Dark gray	2	2 1 3	2	75.0~90.0m (End of drill hole): Limestone (bituminous).	Lu = 1.1 Pomax. = 10.0		59.80	
									77.0	Lu = 0 Pomax. = 10.0			
								1 1 2				58.40	
8 0										Lu = 0		58.40	511.357

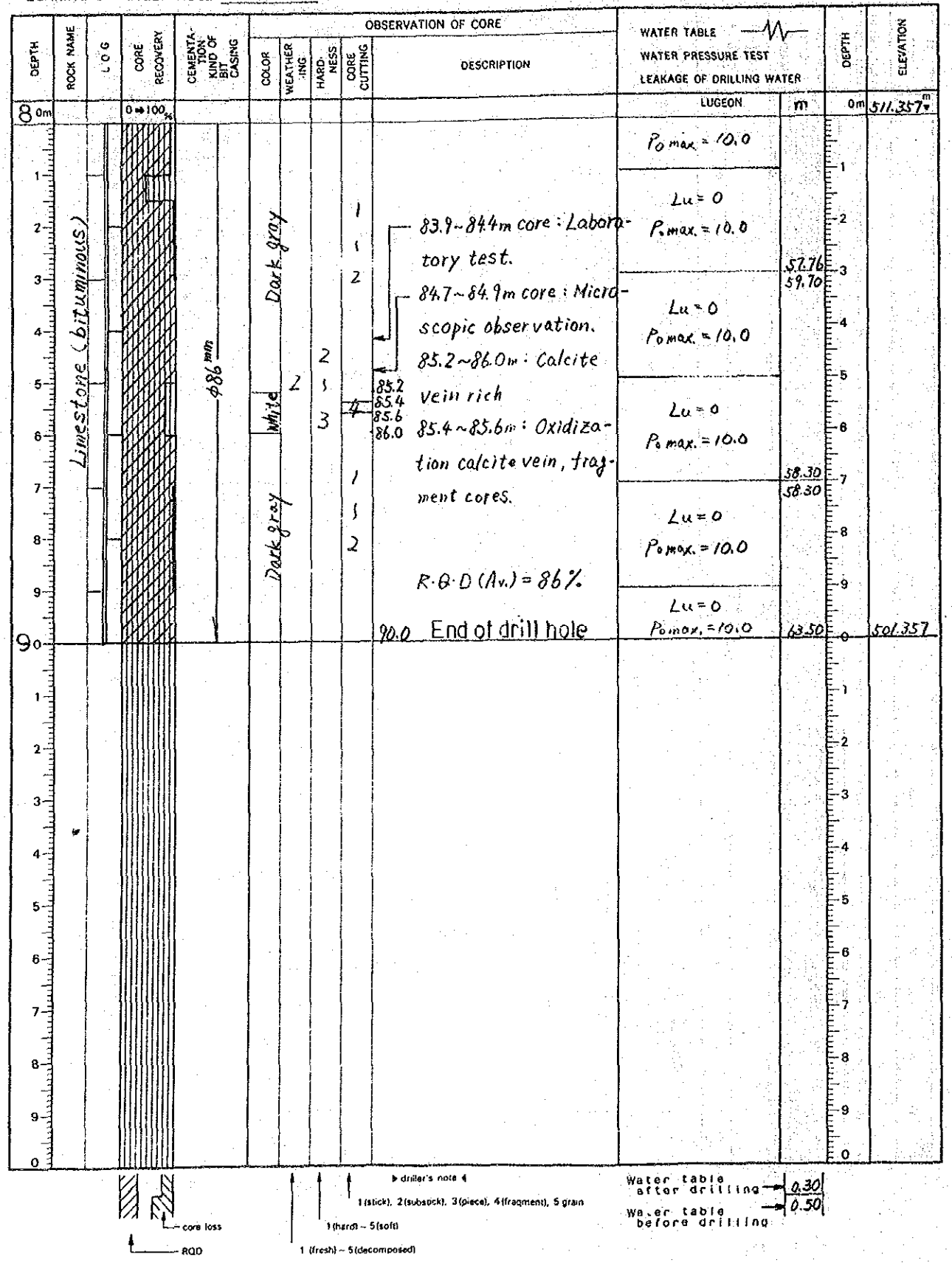
core loss
RQD
▶ driller's note ◀
1 (stick), 2 (subastick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)

Water table after drilling — 0.30
Water table before drilling — 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-1 (SHEET 5 OF 5)

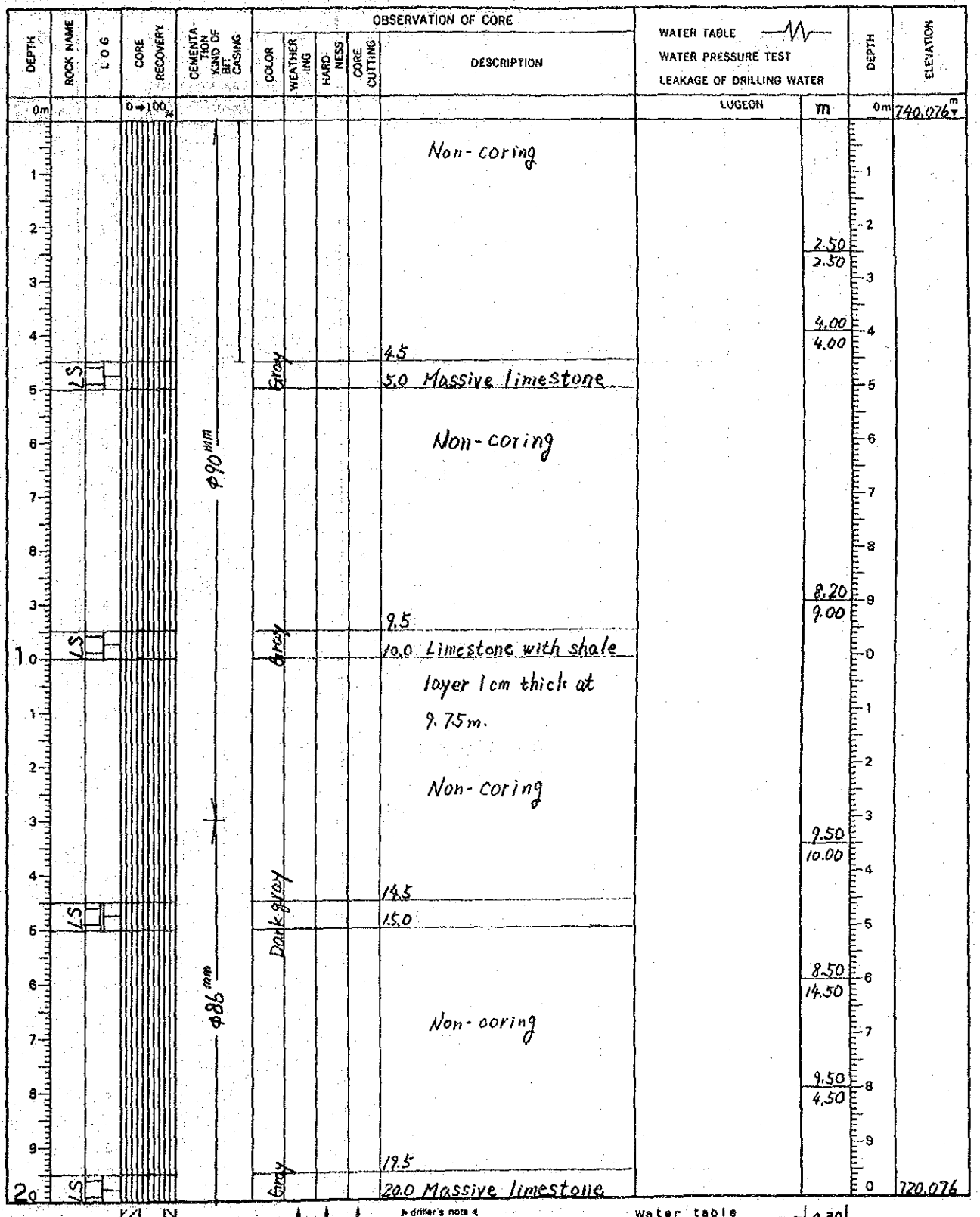
LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	90.00 m	COMMENCED	4 - 5 -1988
ELEVATION	631.357 m	DEPTH OF OVERBURDEN	3.00 m	COMPLETED	8 - 6 -1988
COORDINATE	X 455,731.93 Y 4,172,232.91	LENGTH OF ROCK DRILLING	87.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	89.50 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	--	CORE RECOVERY	99.4 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 1 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X. 460,825.80 Y. 4,168,053.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	81.2/910 = 89.2 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 2 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X 460,825.80 Y 4168,653.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 ·	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	81.2/910 = 89.2 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	DEPTH m	ELEVATION
20m			0 → 100 %								0m	720.076 m
1									Non-coring		5.00 12.50	
2												
3												
4									24.5			
5	LS				Gray				25.0 Massive limestone		5.65 6.50	
6									Non-coring			
7												
8												
9									29.5			
30	LS			φ86 mm	Gray				30.0 Massive limestone		8.00 28.00	
1									Non-coring			
2												
3												
4									34.5			
5	LS				Gray				35.0 Massive limestone		6.00 6.50	
6									Non-coring			
7												
8												
9									39.5			
40	LS				Gray				40.5 Massive limestone		7.00	700.076

Water table after drilling 0.30
Water table before drilling 0.50

core loss
RQD
▶ driller's note 4
1 (stick), 2 (subastick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 3 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X 460,825.80 Y 4168,653.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	812/910 = 89.2 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
4 0m			0→100%								33.00	0m	700.076 m
1									Non-coring			1	
2												2	
3												3	
4												4	
	LS				Gray				44.5 50.0 Massive limestone			5	
5									Non-coring			6	
6											7.15 7.30	7	
7												8	
8												9	
9												0	
	LS			φ86 mm	Gray				49.5 50.0 Massive limestone				
5 0													
1									Non-coring			1	
2												2	
3											10.50 36.70	3	
4												4	
	LS				Gray				54.5 55.0 Massive limestone			5	
5												6	
6									Non-coring			7	
7												8	
8												9	
9											22.00 38.50	0	
	LS				Gray				59.5 60.0 Massive limestone				680.076
6 0													

core loss
RQD
▶ driller's note 4
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain
1 (hard) – 5 (soft)
1 (fresh) – 5 (decomposed)

Water table after drilling 0.30
Water table before drilling 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 4 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X. 460.825.80 Y. 4168.053.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 ·	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	81.2/91.0 = 89.2 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION
60m			0→100%						
64.5	LS			486 mm	Gray				65.0 Massive limestone
									Non-coring
69.5	LS				Gray				70.0 Massive limestone
									Non-coring
74.5	LS				Gray				75.0 Massive limestone
									Non-coring
79.5	LS				Gray				80.0 Massive limestone

WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER — LUGEON

DEPTH m	ELEVATION m
0m	740.076
32.00	
56.50	
26.40	
28.00	
27.00	
59.50	
26.50	660.076

Water table after drilling — 0.30 / 0.50

Water table before drilling

core loss

RQD

▶ driller's note 4

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 5 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X 460,325.80 Y 4168,553.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	81.2/910 = 89.2 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION
8 0m			0 ⇒ 100 %						
									Non-coring
									84.5
	LS				Gray				85.0 Massive limestone
									Non-coring
									89.5
9 0	LS			φ86 mm	Gray				90.0 Massive limestone
									Non-coring
									94.5
	LS				Gray				95.0 Massive limestone
									Non-coring
									99.5
10 0	LS				Gray				100.0 Massive limestone

WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER — LUGEON

DEPTH m	DEPTH 0m	ELEVATION
	0m	660.076 m
27.00		
28.00		
68.00		
60.55		
68.00		
68.50		
68.50		
45.00		
46.00		
76.00	0	640.076

core loss
ROD
▶ driller's note ◀
1 (stick), 2 (subsstick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)
Water table after drilling 0.30
Water table before drilling 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 6 OF 10)

LOCATION HEADRACE TUNNEL — DEPTH OF HOLE 190.00 m — COMMENCED 10 - 5 -1988
ELEVATION 740.076 m — DEPTH OF OVERBURDEN 0 m — COMPLETED 19 - 7 -1988
COORDINATE X 460,825.80 Y 4168,653.59 — LENGTH OF ROCK DRILLING 190.00 m — DRILLED BY DSI
ANGLE FROM HOLIZONTAL 90° — TOTAL LENGTH OF CORE 81.20 m — LOGGED BY JICA
BEARING OF ANGLE HOLE — — CORE RECOVERY 81.2/91.0 = 89.2 %

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION, KIND OF BIT, CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
10 0m			0 → 100%								74.50	0m	640.076
1									Non-coring			1	
2												2	
3												3	
4									104.5 ~ 105.0m core : Microscopic observation.			4	
5	LS				Gray				104.5 105.0 Massive limestone		71.50 97.90	5	
6									Non-coring			6	
7												7	
8												8	
9									109.5			9	630.576
11 0	Limestone			φ86 mm							76.30 79.30	0	
1									Gray, hard limestone.	Lu=0.5		1	
2									112.5m : Oxidization crack.	Po max. = 10.0 kg/cm²		2	
3					Gray	2	2	1 1 2	112.6 ~ 113.1m core : Laboratory test.	Lu=0 Po max. = 10.0	79.30 97.00	3	
4									113.85 ~ 114.0m core : Microscopic observation.	Lu=0 Po max. = 10.0		4	
5									115.8			5	624.276
6	Limestone (bituminous)							3 1 4	115.8 ~ 136.0m : Limestone (bituminous)	Lu=0		6	
7								4	117.0 117.2	Po max. = 10.0	73.50 74.00	7	
8					Dark gray	2	3	2 1 3	117.0 ~ 117.2m : Fragment cores.	Lu=0 Po max. = 10.0		8	
9												9	
12 0												0	620.076

Water table after drilling 0.30 / 0.50 Water table before drilling

core loss — RQD

▶ driller's note ◀ 1 (rock), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) – 5 (soft)

1 (fresh) – 5 (decomposed)

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 7 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X. 460,825.80 Y. 4,168,053.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	81.2/91.0 = 89.2 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
12 0m			0 → 100 %									0m	620.076
	Limestone (bituminous)			φ86 mm	Dark gray	2	3	2 - 3	121.5 No oxidization crack.	Lu = 0, Pomax. = 10.0 kg/cm²		73.40	
							3	3		Lu = 0, Pomax. = 10.0		86.00	
									124.6~124.78m core: Microscopic observation. 125.0	Lu = 0, Pomax. = 10.0		67.00	
							2 - 3	2		Lu = 0, Pomax. = 10.0		67.00	
									127.6~128.0m: Re-consolidated fracture zone, 15° dip. 127.6 128.0	Lu = 0, Pomax. = 10.0			
						3	3	3		Lu = 0, Pomax. = 10.0		67.05	
13 0								1	129.5	Lu = 0, Pomax. = 10.0		67.05	
						2	2 - 3	2	No solution crack.	Lu = 0, Pomax. = 10.0		86.00	
										Lu = 0, Pomax. = 10.0		86.00	
									136.0	Lu = 0, Pomax. = 10.0		63.00	604.076
	Quartz Sandstone			φ76 mm	Light gray	2 - 3	2	3 - 4	136.0~149.0m Quartz sandstone. 138.0	Lu = 0, Pomax. = 10.0		63.00	
								2	139.5~140.3m: Piece~fragment cores. 139.5	Lu = 0, Pomax. = 10.0		65.10	600.076
14 0								3~4					

Water table after drilling 0.30 m
Water table before drilling 0.50 m

core loss
RQD
driller's note 4
1 (stick), 2 (subsick), 3 (piece), 4 (fragment), 5 grain
1 (hard) – 5 (soft)
1 (fresh) – 5 (decomposed)

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 8 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X. 460,825.80 Y. 4168,453.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	81.2/910 = 89.2 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	DEPTH m	ELEVATION m
14 0m			0 → 100 %								63.00	600.076 m
1	Quartz sandstone				Light gray	2	2	3-4	140.3	Lu = 0 Po max. = 10.0 kg/cm²	1	
2								2			2	
3								3	142.4		3	
									142.7 ~145.5m : Fragment cores. oxidization cracks.	Lu = 0 Po max. = 10.0	65.40	
4								2			4	
								4	144.4		87.50	
									144.6			
5								2	← 144.6~145.1m core : Laboratory test.	Lu = 0 Po max. = 10.0	5	
									145.1			
								4	145.5			
6								2	← 146.5~146.7m core : Microscopic observation.	Lu = 0 Po max. = 10.0	6	
7								1			7	
								3				
8											75.30 8	
											76.00	
9									149.0			591.076
								4	149.2	Lu = 0 Po max. = 10.0	9	
15 0	Sandy limestone				Dark gray	2	2		149.0~180.0m : Sandy limestone.		77.00 0	
1								2			67.00 1	
2									152.0	Lu = 0 Po max. = 10.0		
								4	152.3 ← 152.0m core : Microscopic observation.		2	
3								2		Lu = 0 Po max. = 10.0	3	
4											78.00 4	
											76.20	
5									← 154.5~155.0m core : Laboratory test.	Lu = 0 Po max. = 10.0	5	
									155.0			
6											77.00 6	
											156.00	
7								2	No oxidization crack.	Lu = 0 Po max. = 10.0	7	
								1				
8								3			8	
9										Lu = 0 Po max. = 10.0	9	
16 0									160.0		88.00 0	580.076

core loss — RQD

▶ driller's note 4

1 (rock), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

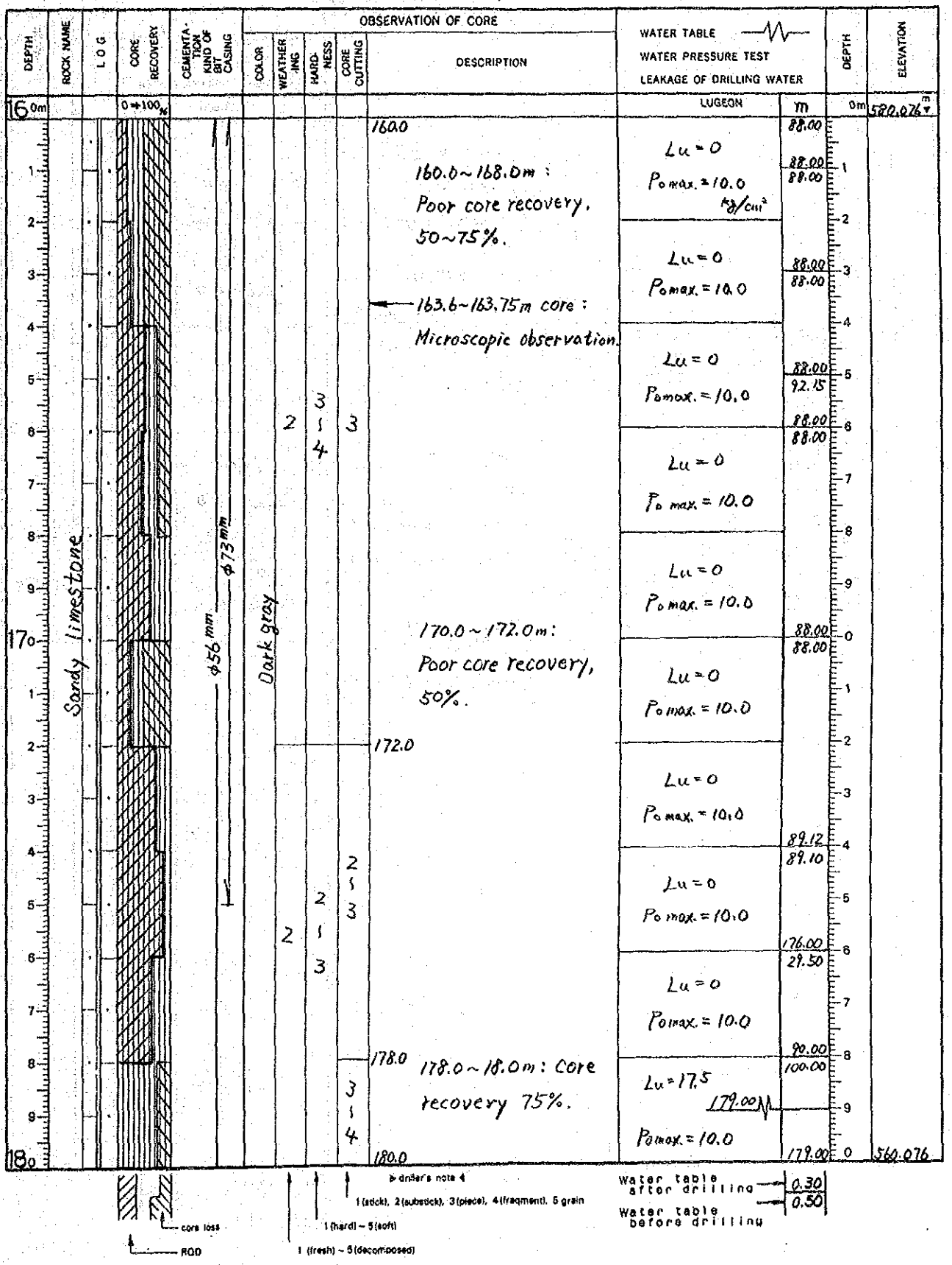
Water table after drilling 0.30 m

Water table before drilling 0.50 m

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 9 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X 460,825.80 Y 4168,653.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 ·	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	81.2/91.0 = 89.2 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. TB-2 (SHEET 10 OF 10)

LOCATION	HEADRACE TUNNEL	DEPTH OF HOLE	190.00 m	COMMENCED	10 - 5 -1988
ELEVATION	740.076 m	DEPTH OF OVERBURDEN	0 m	COMPLETED	19 - 7 -1988
COORDINATE	X. +60.825.80 Y. 4168.653.59	LENGTH OF ROCK DRILLING	190.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	81.20 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	81.2/91.0 = 89.2 %		

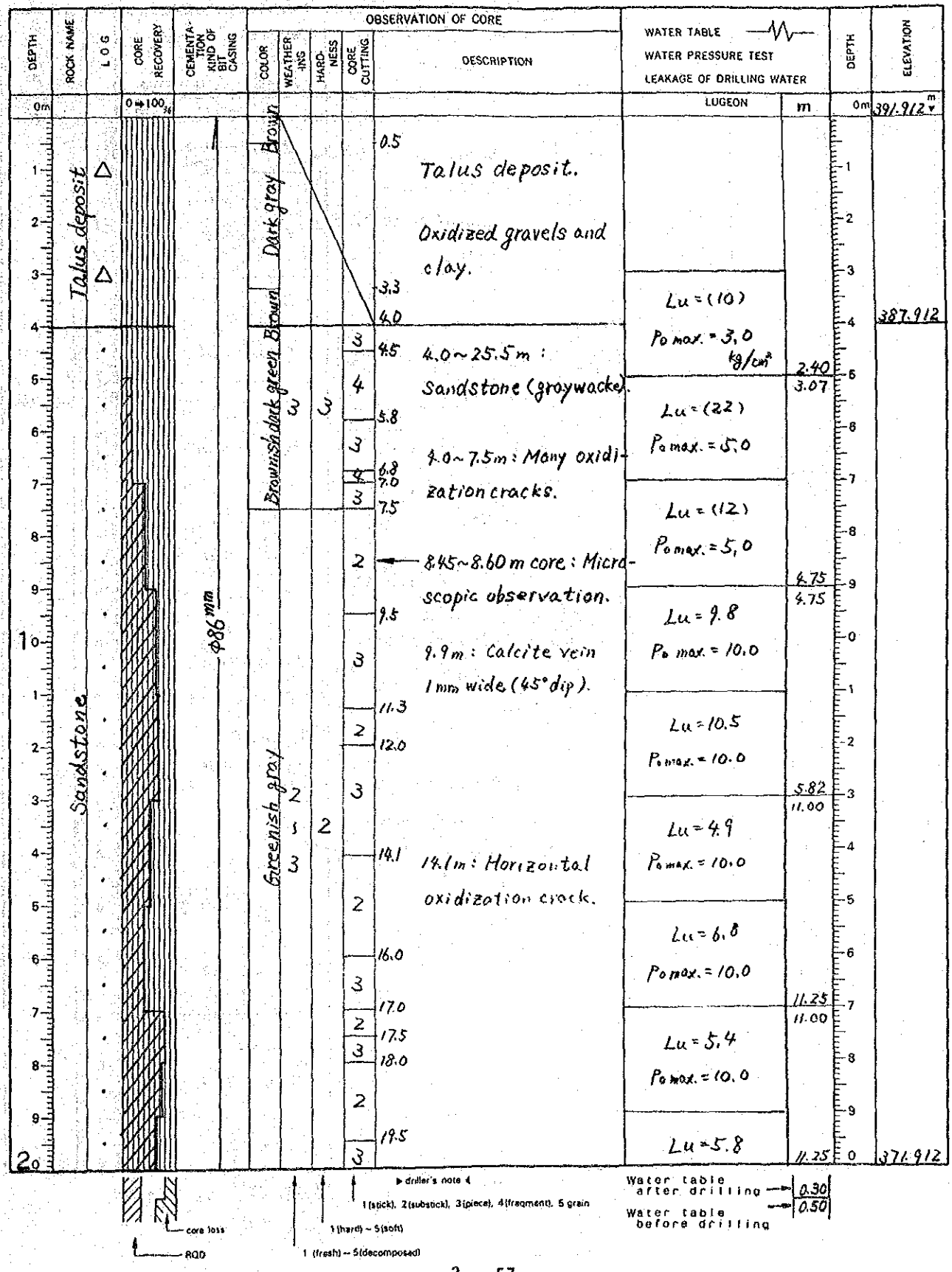
DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	DEPTH (m)	ELEVATION
18 0m			0 → 100 %								179.00	560.076 m
	Dolomitic limestone			φ56 mm	Gray	2	2	3	180.0 180.0 ~ 190.0m (End of drill hole) : Dolomitic limestone. 180.0~188.0m : Core recovery 50~75%.	Lu = 0 Po max. = 10.0 kg/cm²	179.00	
										Lu = 0 Po max. = 10.0	179.00	
										Lu = 0 Po max. = 10.0	179.00	
										Lu = 0 Po max. = 10.0	179.00	
									188.0 187.7~187.85m core : Microscopic observation.	Lu = 0 Po max. = 10.0	179.00	551.076
					Dark gray	2	2 ~ 3	2	189.0 190.0 End of drill hole		179.00	550.076
19 0									R.Q.D (Av.) = 60%			

core loss
ROD
driller's note: 1(stick), 2(substick), 3(piece), 4(fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)
Water table after drilling 0.30
Water table before drilling 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. PB-1 (SHEET 1 OF 4)

LOCATION	POWER PLANT	DEPTH OF HOLE	71.00 m	COMMENCED	25 - 5 -1988
ELEVATION	391.912 m	DEPTH OF OVERBURDEN	4.00 m	COMPLETED	16 - 6 -1988
COORDINATE	X. 462.758.59 Y. 4.166.135.85	LENGTH OF ROCK DRILLING	67.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	70.37 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.1 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. PB-1 (SHEET 2 OF 4)

LOCATION	POWER PLANT	DEPTH OF HOLE	71.00 m	COMMENCED	25 - 5 -1988
ELEVATION	391.912 m	DEPTH OF OVERBURDEN	4.00 m	COMPLETED	16 - 6 -1988
COORDINATE	X. 462.758.59 Y. 4.166.135.85	LENGTH OF ROCK DRILLING	67.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	70.37 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.1 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION
20m			0 ➡ 100%						
1	Sandstone			486 mm	Greenish gray	2	2	3	20.5
						3		4	21.0
								3	21.6
2						2		4	22.5
						3	2	3	23.0
						3		4	23.5
								3	24.0
								2	25.5
					Dark gray			4	25.7
6						3	3	2	26.5
								3	27.0
7								3	
8						2	2	4	29.4
								3	29.7
3 0						1	1	4	30.0
									30.5
1					Greenish gray	3	3	3	31.3
2								4	32.0
3								3	
4	Shale			76 mm					34.0
5						2	2	3	
6									35.5
						2			
7						1	2	3	
						3			
8									38.4
9					Greenish gray Purple	3-2	3-2	4	39.0
4 0						3-2	3-2	4	

20.5~21.0m, 21.6~22.5m and 23.0~23.5m : Fragment cores, cracky zones.

24.6~25.0m core : Laboratory test.

25.5~49.2m : Greenish gray ~ purple shale.

Boundary dip is 35° at 25.5m.

25.7~26.5m : Dark gray shale, lamina 40° dip.

32.0m and 33.0m : oxidization cracks.

33.9~34.0m : Fragment cores.

WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER	LUGEON	m	DEPTH 0m	ELEVATION 371.912 m
Po max. = 10.0 kg/cm²		11.12		
Lu = 4.1 Po max. = 10.0		11.03 / 11.03		
Lu = 0 Po max. = 10.0		11.00 / 13.90		
		18.30 / 20.40		366.412
Lu = 0 Po max. = 10.0				
Lu = 2.5 Po max. = 10.0		19.84 / 27.21		
Lu = 0 Po max. = 10.0		22.76 / 22.76		
Lu = 0 Po max. = 10.0		20.25 / 25.85		
Lu = 0 Po max. = 10.0		34.96		
Lu = 0 Po max. = 10.0		20.02 / 20.02		
Lu = 0 Po max. = 10.0				
Lu = 0				351.912

core loss

RQD

▶ driller's note ◀

1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

1 (hard) ~ 5 (soft)

1 (fresh) ~ 5 (decomposed)

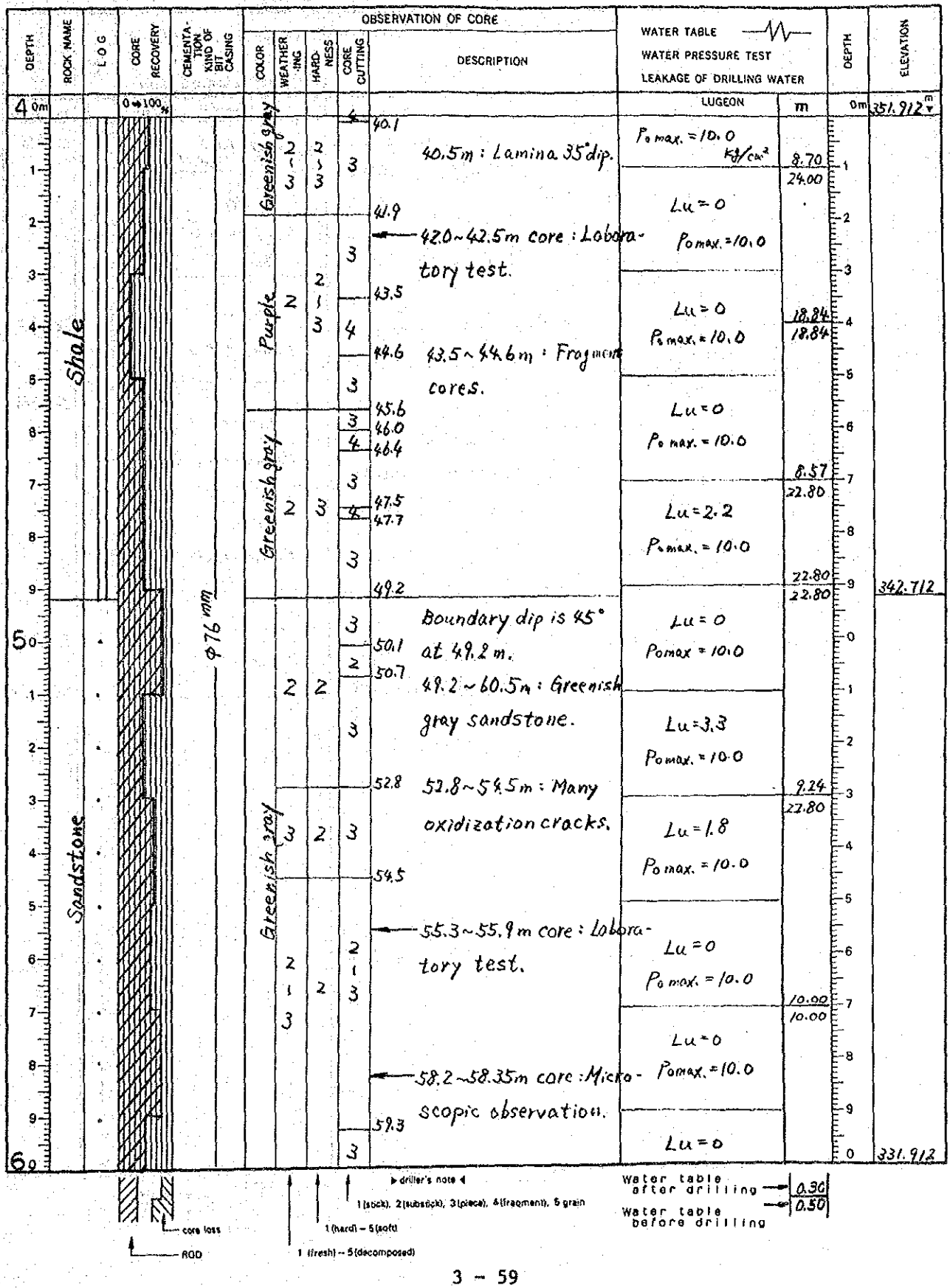
Water table after drilling → 0.30

Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. PB-1 (SHEET 3 OF 4)

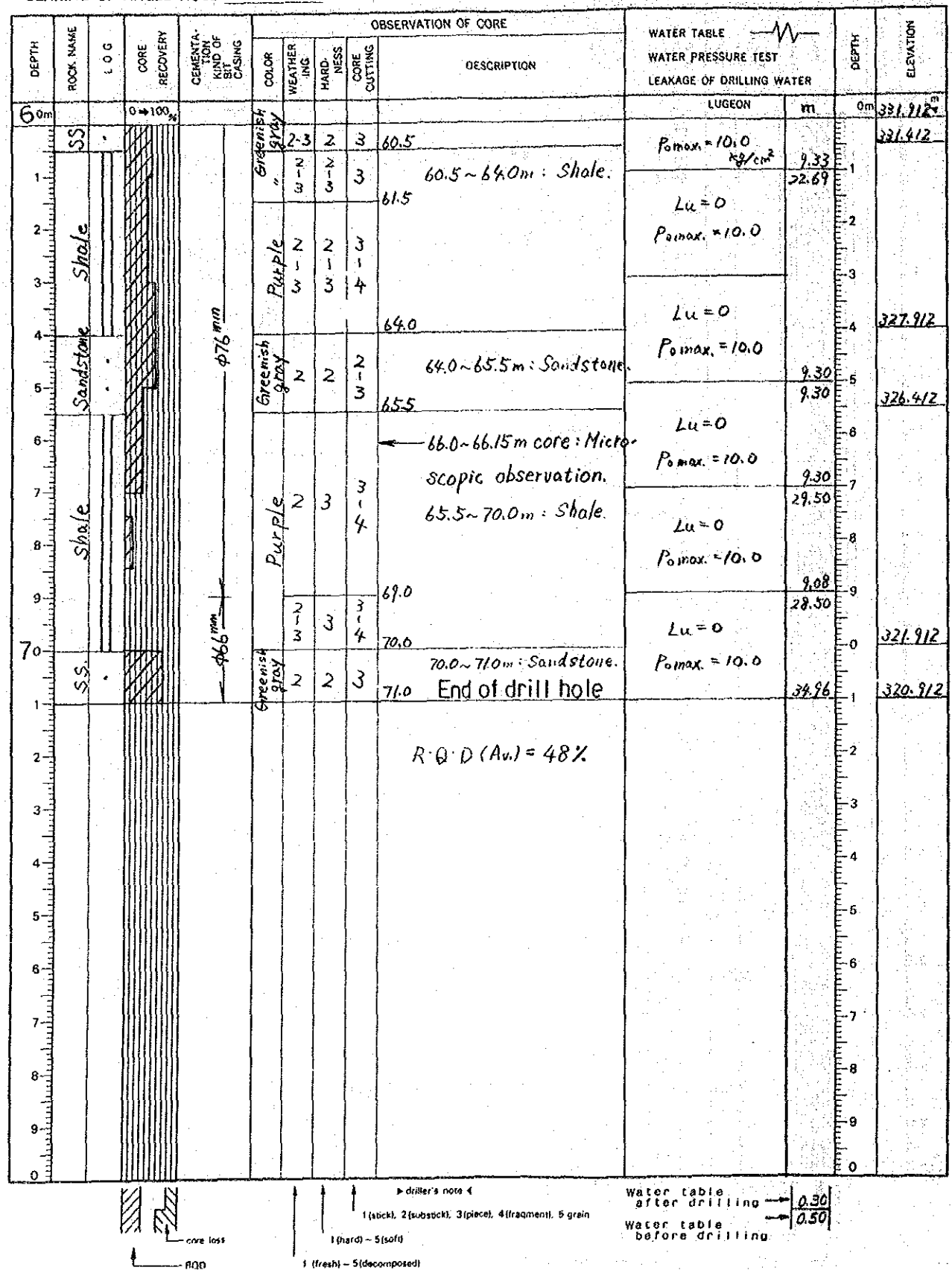
LOCATION	POWER PLANT	DEPTH OF HOLE	71.00 m	COMMENCED	25 - 5 -1988
ELEVATION	391.912 m	DEPTH OF OVERBURDEN	4.00 m	COMPLETED	16 - 6 -1988
COORDINATE	X 462,758.59 Y 4,166,135.85	LENGTH OF ROCK DRILLING	67.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	70.37 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.1 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. PB-1 (SHEET 4 OF 4)

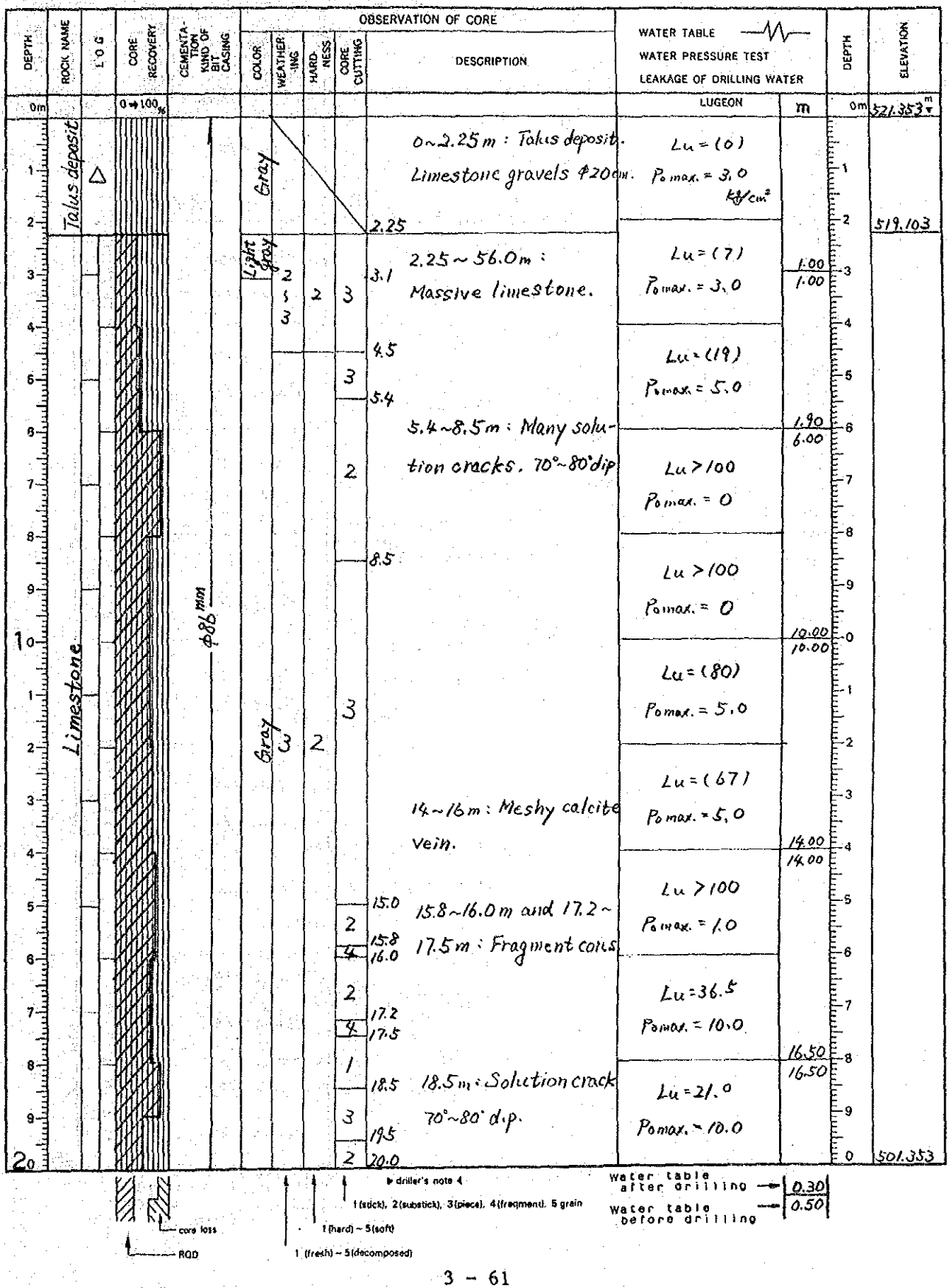
LOCATION	POWER PLANT	DEPTH OF HOLE	71.00 m	COMMENCED	25 - 5 -1988
ELEVATION	391 912 m	DEPTH OF OVERBURDEN	4.00 m	COMPLETED	16 - 6 -1988
COORDINATE	X 462.758.59 Y 4,166,135.85	LENGTH OF ROCK DRILLING	67.00 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	70.37 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	—	CORE RECOVERY	99.1 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. PB-2 (SHEET 1 OF 4)

LOCATION	PENSTOCK	DEPTH OF HOLE	70.00 m	COMMENCED	7 - 4 -1988
ELEVATION	521.353 m	DEPTH OF OVERBURDEN	2.25 m	COMPLETED	24 - 5 -1988
COORDINATE	X 462,565.39 Y 4,166,145.90	LENGTH OF ROCK DRILLING	67.75 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	68.85 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	98.4 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. PB-2 (SHEET 2 OF 4)

LOCATION	PENSTOCK	DEPTH OF HOLE	70.00 m	COMMENCED	7 - 4 -1988
ELEVATION	521.353 m	DEPTH OF OVERBURDEN	2.25 m	COMPLETED	24 - 5 -1988
COORDINATE	X. 462.565.39 Y. 4166.145.90	LENGTH OF ROCK DRILLING	67.75 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	68.85 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	98.4 %		

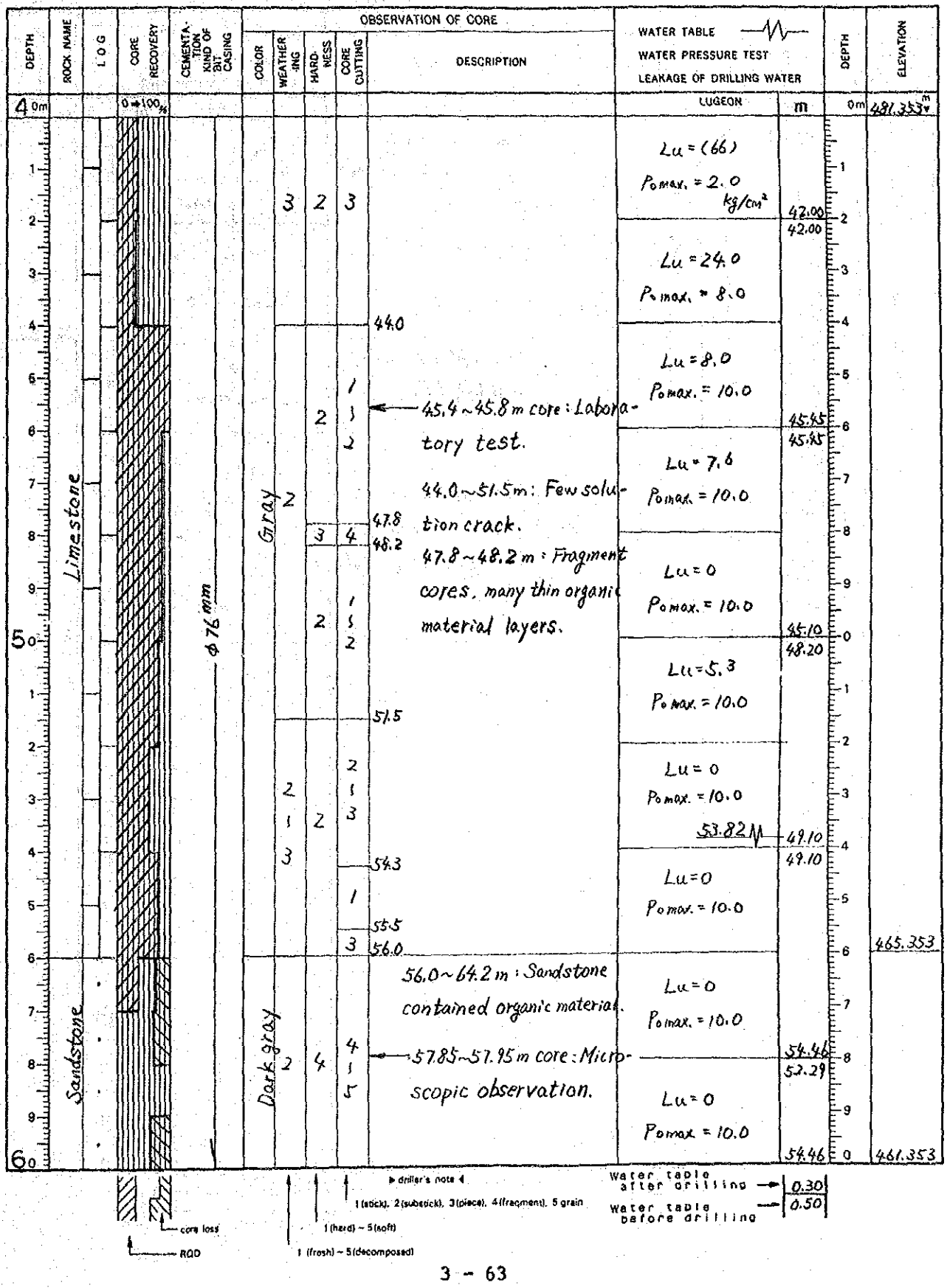
DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
2 0m			0 ⇒ 100%									0m	501.353 m
1								3	20.0	Lu > 100		1	
									21.0	Pomax. = 1.0 kg/cm²			
2								2	22.0	22.0 ~ 25.4 m : Fragment cores.	22.00	2	
										Lu > 100	22.00		
3										Pomax. = 1.0		3	
4								4				4	
										Lu > 100	25.00		
5									25.4	Pomax. = 1.0	25.00	5	
6								2 3	26.0			6	
								3 1 4		Lu > 100			
7					Gray	3	2		27.0	Pomax. = 1.0		7	
8								2		28.0 m : Meshy calcite vein 5~10mm wide.	28.00	8	
										Lu = 16.0	28.00		
9										Pomax. = 10.0		9	
3 0	Limestone								30.0	30.0 m : Calcite vein filled open crack.	30.00	0	
										Lu = 25.0	30.00		
1								4		Pomax. = 10.0		1	
2											32.00	2	
										Lu > 100	32.00		
3									33.4	Pomax. = 1.0		3	
								2 1 3		34.0 ~ 34.15 m core : Micro-	34.00		
4									34.5	scopic observation.	34.00	4	
					Dark grey	2	3	3		Lu = 25.0			
5									35.4	Pomax. = 10.0		5	
6								2			36.00	6	
									36.6	Many oxidization cracks	36.00		
										Lu = (96)			
7					Gray	3	2	4		Pomax. = 1.0		7	
8									38.5			8	
										Lu = (87)	39.00		
9								2	39.5	Pomax. = 1.0	39.00	9	
4 0								3				0	481.353

core loss
RQD
▶ driller's note ◀
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)
Water table after drilling → 0.30
Water table before drilling → 0.50

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. PB-2 (SHEET 3 OF 4)

LOCATION	PENSTOCK	DEPTH OF HOLE	70.00 m	COMMENCED	7 - 4 -1988
ELEVATION	521.353 m	DEPTH OF OVERBURDEN	2.25 m	COMPLETED	24 - 5 -1988
COORDINATE	X 462,565.39 Y 4,166,145.90	LENGTH OF ROCK DRILLING	67.75 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	68.85 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	98.4 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. PB-2 (SHEET 4 OF 4)

LOCATION	PENSTOCK	DEPTH OF HOLE	70.00 m	COMMENCED	7 - 4 -1988
ELEVATION	521.353 m	DEPTH OF OVERBURDEN	2.25 m	COMPLETED	24 - 5 -1988
COORDINATE	X. 462,565.39 Y. 4,166,145.90	LENGTH OF ROCK DRILLING	67.75 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90 °	TOTAL LENGTH OF CORE	68.85 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	98.4 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
6 0m			0 ⇔ 100%								54.46	0m	466.353
1	Sandstone								Cores are brittle. Core recovery 60~90%.	Lu = 0 Pomax. = 10.0 kg/cm²	54.46	1	
2					Dark gray	2	4	4 1 5			54.60	2	
3										Lu = 0 Pomax. = 10.0		3	
4									64.2		54.60	4	457.153
5	Limestone			466 mm			3	3	64.2 ~ 70.0m (End of drill hole) : Limestone	Lu = 0 Pomax. = 10.0	50.24	5	
6									65.5			6	
7					Gray	2	2	2	67.80~67.95m core: Microscopic observation.	Lu = 0 Pomax. = 10.0	49.56	7	
8									68.8~69.2 m core: Laboratory test.		49.56	8	
9										Lu = 0 Pomax. = 10.0		9	
70									70.0 End of drill hole		31.56	0	451.353
1									R·Q·D (Av.) = 56 %			1	
2												2	
3												3	
4												4	
5												5	
6												6	
7												7	
8												8	
9												9	
0												0	

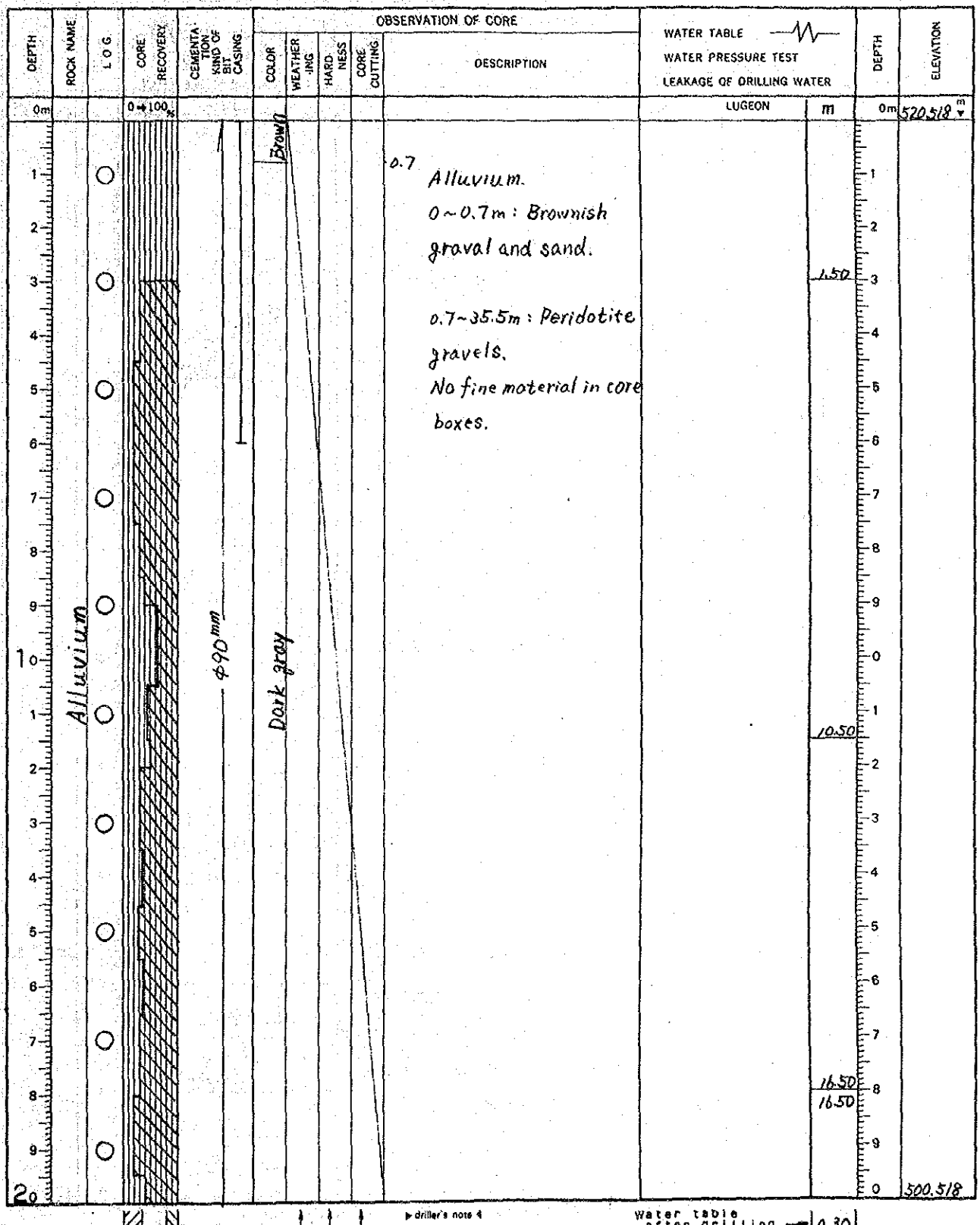
Water table after drilling → 0.30
Water table before drilling → 0.50

core loss
RQD
1 (fresh) ~ 5 (decomposed)
1 (hard) ~ 5 (soft)
▶ driller's note ◀
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain

GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SSK-1 (SHEET 1 OF 3)

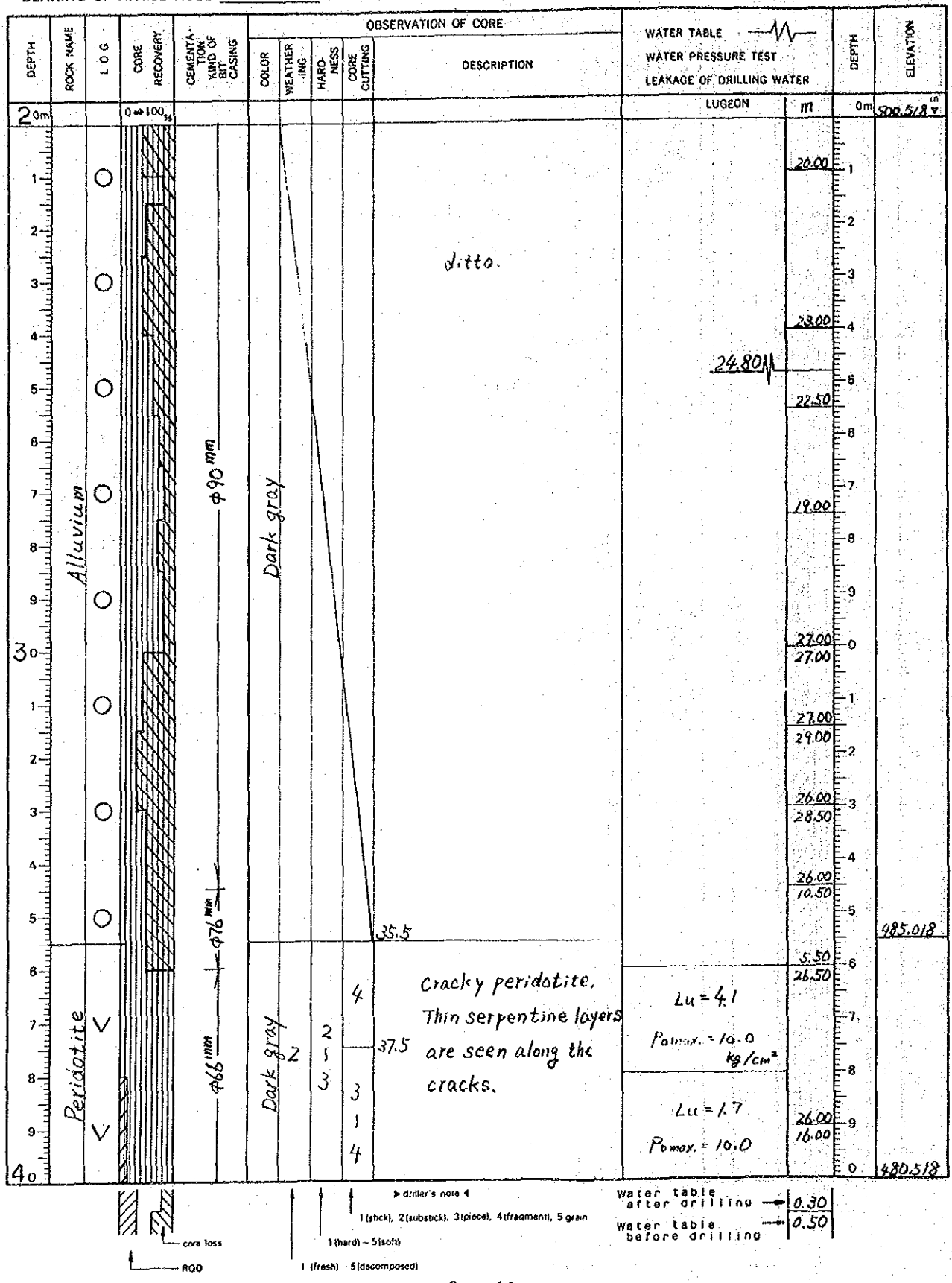
LOCATION	Alternative Power Plant	DEPTH OF HOLE	50.00 m	COMMENCED	23 - 9 -1987
ELEVATION	520.518 m	DEPTH OF OVERBURDEN	35.50 m	COMPLETED	9 - 10 -1987
COORDINATE	X 453.591.59 Y 4.177.144.65	LENGTH OF ROCK DRILLING	15.50 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	31.35 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	62.7 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SSK-1 (SHEET 2 OF 3)

LOCATION	Alternative Power Plant	DEPTH OF HOLE	50.00 m	COMMENCED	23 - 9 -1987
ELEVATION	520.518 m	DEPTH OF OVERBURDEN	35.50 m	COMPLETED	9 - 10 -1987
COORDINATE	X 453,591.59 Y 4,177,144.65	LENGTH OF ROCK DRILLING	15.50 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	31.35 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	62.7 %		



GEOLOGIC LOG OF DRILL HOLE

GOKTAS PROJECT — HOLE No. SSK-1 (SHEET 3 OF 3)

LOCATION	Alternative Power Plant	DEPTH OF HOLE	50.00 m	COMMENCED	23 - 9 -1987
ELEVATION	520.518 m	DEPTH OF OVERBURDEN	35.50 m	COMPLETED	9 - 10 -1987
COORDINATE	X 453,591.59 Y 4,177,144.65	LENGTH OF ROCK DRILLING	15.50 m	DRILLED BY	DSI
ANGLE FROM HOLIZONTAL	90°	TOTAL LENGTH OF CORE	31.35 m	LOGGED BY	JICA
BEARING OF ANGLE HOLE	-	CORE RECOVERY	62.7 %		

DEPTH	ROCK NAME	LOG	CORE RECOVERY	CEMENTATION KIND OF BIT CASING	OBSERVATION OF CORE: COLOR	WEATHERING	HARDNESS	CORE CUTTING	DESCRIPTION	WATER TABLE / WATER PRESSURE TEST / LEAKAGE OF DRILLING WATER: LUGEON	m	DEPTH	ELEVATION
40m			0 → 100%									0m	480.518m
1	Peridotite	V		966 mm	Dark gray	2	2 ~ 3	3 ~ 4	Piece and fragment cores continue. No oxidization along cracks.	Lu = 1.3 Pomax. = 10.0 kg/cm²		1	
2												2	
3		V								Lu = 1.0 Pomax. = 10.0		3	
4											17.00	4	
											24.80		
5		V								Lu = 0 Pomax. = 10.0		5	
6												6	
7		V								Lu = 0 Pomax. = 10.0	24.80	7	
											24.80		
8												8	
9		V							R·Q·D (Av.) = 10%	Lu = 0 Pomax. = 10.0		9	
50									50.0 End of drill hole		24.80	0	470.518

core loss
RQD
▷ driller's note ◁
1 (stick), 2 (substick), 3 (piece), 4 (fragment), 5 grain
1 (hard) ~ 5 (soft)
1 (fresh) ~ 5 (decomposed)

Water table after drilling → 0.30
Water table before drilling → 0.50