LOG OF BORING

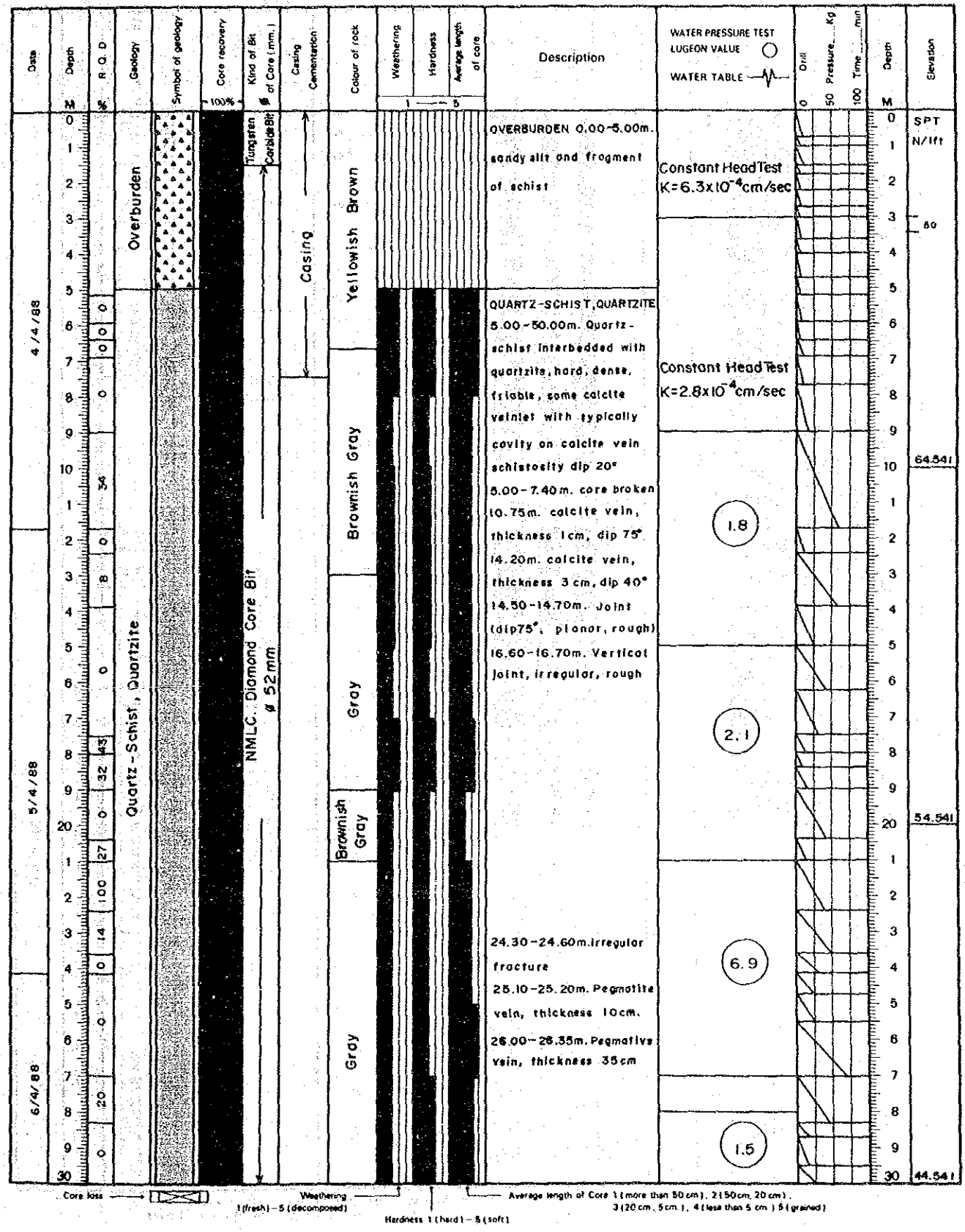
Project MAE LAMA LUANG DAM Location Power House (Right Abutment) Boring No. LY/PH-1 Log No. 1 of 2

Co-ordinates N1,966,244.181 E371,997.714 Elevation 74.541m MSL Depth of Hole 50.00m Commenced 4/4/88

Angle from Horizontal 90° Core Recovery 97.8% Depth of Overburden 5.00m Completed 8/4/88

Bearing of Angle Hole — Company EGAT Total length of core 48.90m Logged by H. Pattana

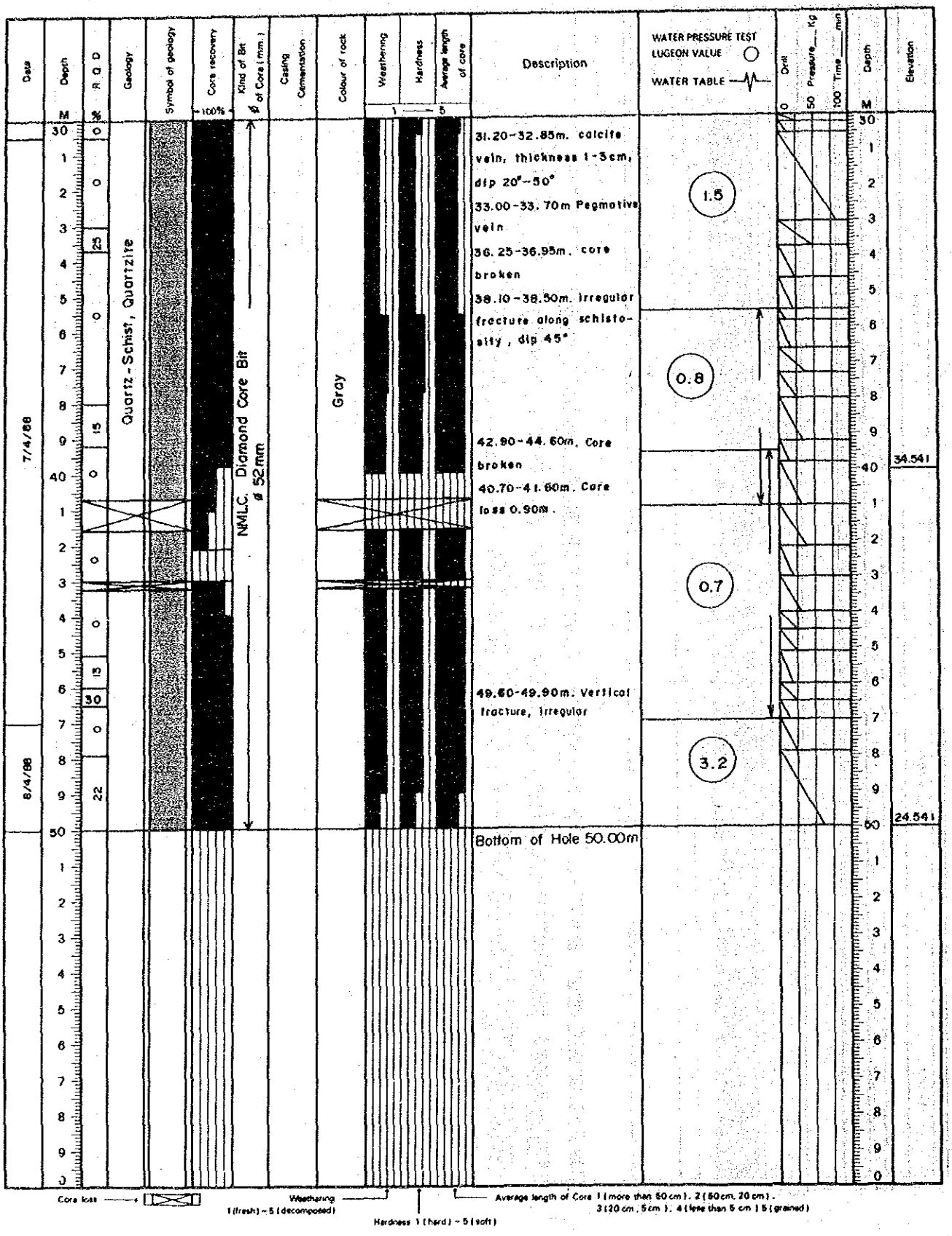
K. Takeda



LOG OF BORING

Project	MAE LAMA LUANG DAM	Location	Power House (Right Abutment)	Boring No.	LY/PH-1
Co-ordinates	N1,966,244.181 E371,997.714	Elevation	74.54 tm MSL	Depth of Hole	50.00m
Angle from Horizontal	90°	Core Recovery	97.8%	Depth of Overburden	5.00m
Bearing of Angle Hole	—	Company	EGAT	Total length of core	48.90m

Log No. 2 of 2
Commenced 4/4/88
Completed 8/4/88
Logged by H. Pattana, K. Takeda



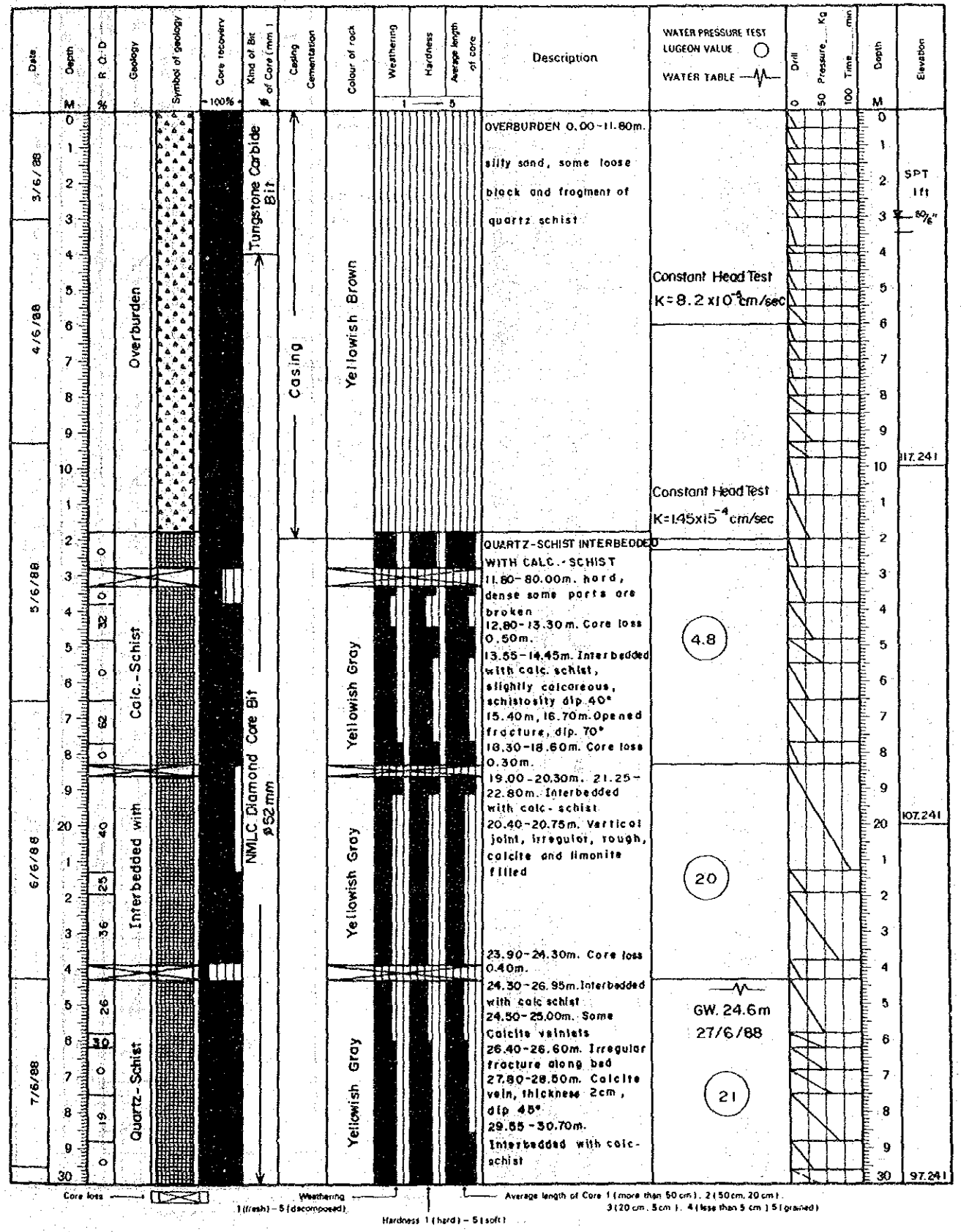
LOG OF BORING

Project MAE LAMA LUANG DAM | Location Power House (Right Abutment) | Boring No. LY/PH-2 | Log No 1 of 3

Co-ordinates N1,966,316.450 E372,100.580 | Elevation 127.241m MSL | Depth of Hole 80.00m | Commenced 3/6/88

Angle from Horizontal 90° | Core Recovery 98% | Depth of Overburden 11.80m | Completed 27/6/88

Bearing of Angle Hole — | Company EGAT | Total length of core 76.40m | Logged by H. Pattana, K. Takeda



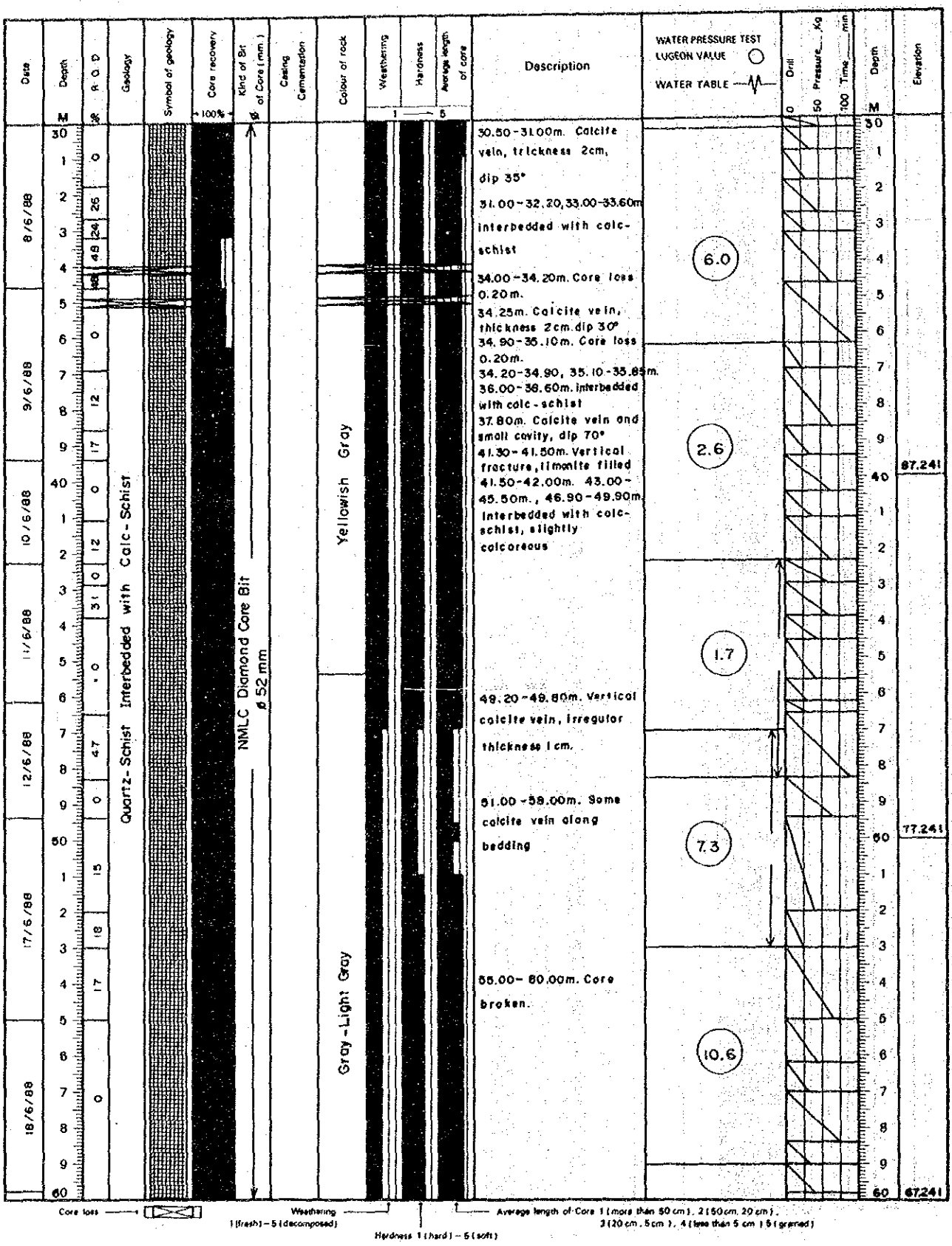
LOG OF BORING

Project MAE LAMA LUANG DAM | Location Power House (Right Abutment) | Boring No. LY/PH-2 | Log No. 2 of 3

Co-ordinates N1,966,316.450 E 372,100.580 | Elevation 127.241m MSL | Depth of Hole 80.00m | Commenced 3/6/88

Angle from Horizontal 90° | Core Recovery 98% | Depth of Overburden 11.80m | Completed 27/6/88

Bearing of Angle Hole — | Company EGAT | Total length of core 78.40m | Logged by H. Pottano, K. Takeda



LOG OF BORING

Project MAE LAMA LUANG DAM Location Power House (Right Abutment) Boring No LY/PH-2 Log No 3 of 3

Co-ordinates N1,966,316.450 E372,100.880 Elevation 127.241m MSL Depth of Hole 80.00m Commenced 3/6/88

Angle from Horizontal 90° Core Recovery 98% Depth of Overburden 11.80 m Completed 27/6/88

Bearing of Angle Hole — Company EGAT Total length of core 74.40 m Logged by H. Pattong, K. Takedo

Date	Depth M	R.Q.D %	Geology	Symbol of geology	Core recovery (100%)	Kind of Bit & Core (mm.)	Casing Cementation	Colour of rock	Weathering (1—5)	Hardness	Average length of core	Description	WATER PRESSURE TEST / LUGEON VALUE / WATER TABLE	Drill Pressure Kg / Time min (0, 50, 100)	Depth M	Elevation
19/6/88	60	0	Quartz-Schist Interbedded with Calc-Schist			NMLC Diamond Core Bit ø 52 mm		Gray-Light Gray				62.60-62.80m. Irregular fracture dip 70°, calcite filled			60	
	1														1	
	2														2	
20/6/88	3												1.5		3	
	4	24													4	
	5											66.50-75.00m. Interbedded with calc-schist			5	
	6														6	
21/6/88	7	0													7	
	8												11		8	
	9														9	
24/6/88	70														70	
	1														1	
	2	25										71.40-73.00m. Some calcite vein along bedding			2	
25/6/88	3	47													3	
	4												9.9		4	
	5	0													5	
	6														6	
26/6/88	7	11													7	
	8												2.7		8	
27/6/88	9	0													9	
	80											Bottom of Hole 80.00m			80	
	1														1	
	2														2	
	3														3	
	4														4	
	5														5	
	6														6	
	7														7	
	8														8	
	9														9	
	0														0	

Core loss

Weathering 1 (fresh) – 5 (decomposed)

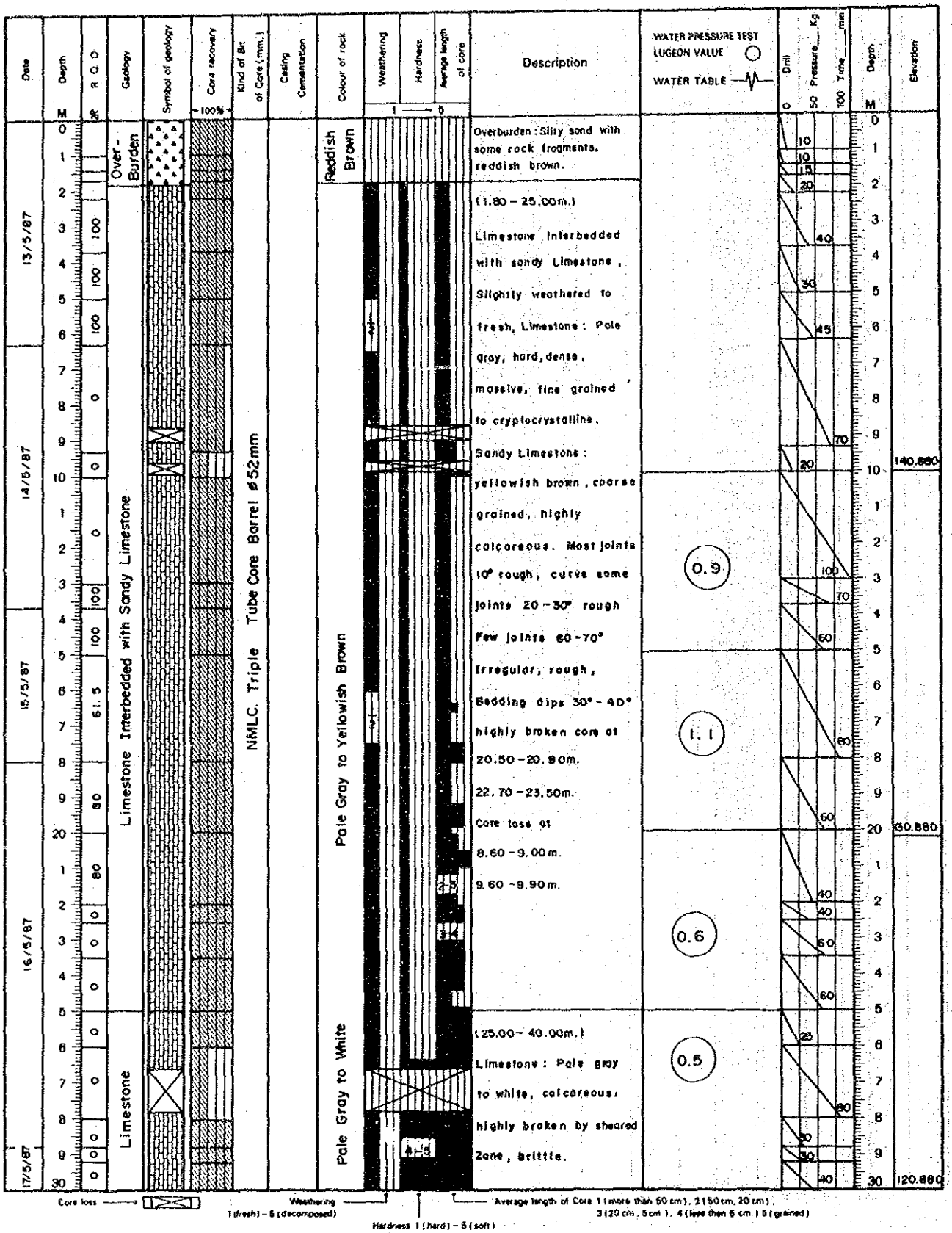
Hardness 1 (hard) – 5 (soft)

Average length of Core 1 (more than 50 cm), 2 (50 cm, 20 cm), 3 (20 cm, 5 cm), 4 (less than 5 cm), 5 (granel)

LOG OF BORING

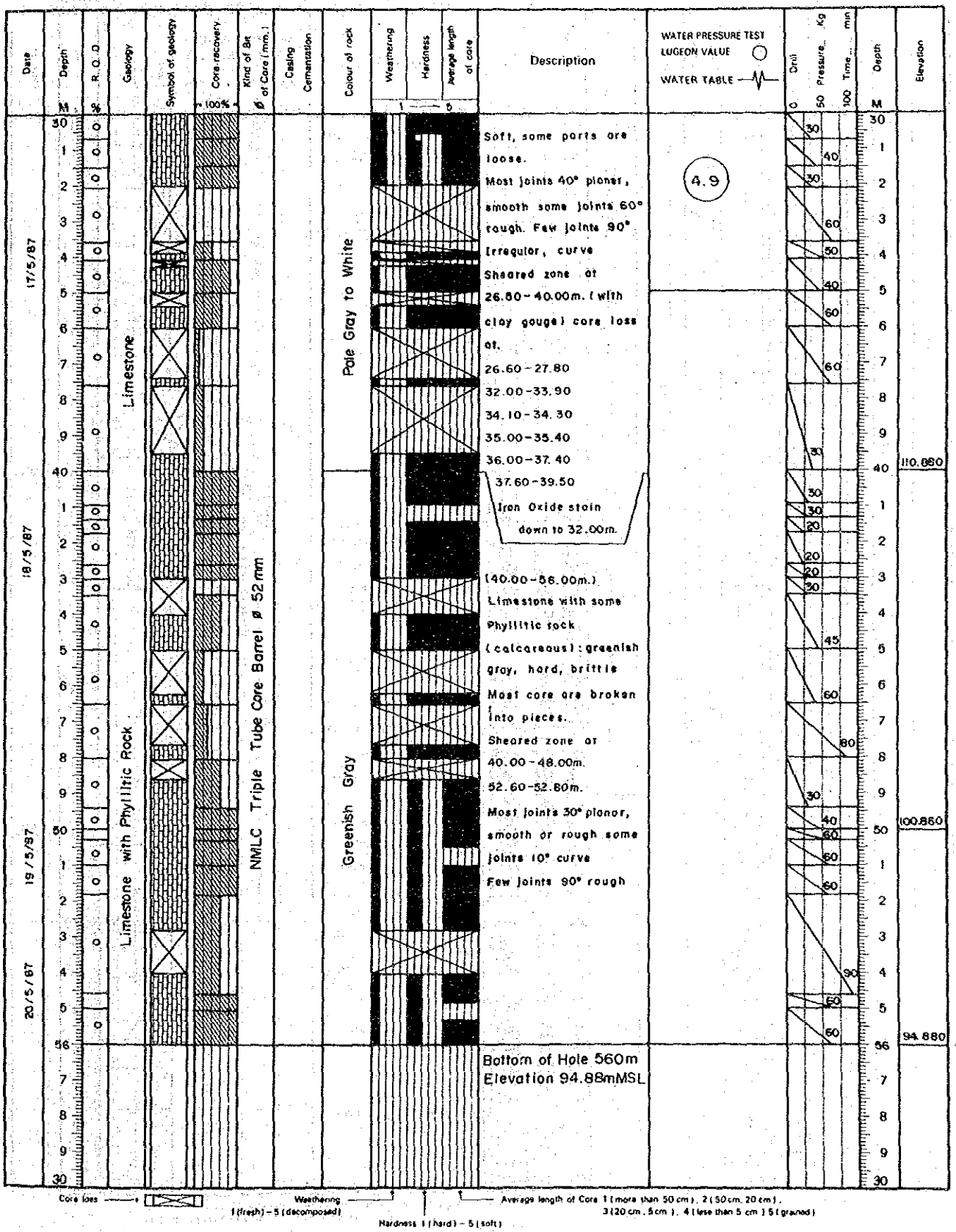
Project	MAE LAMA LUANG DAM	Location	Intake Structure	Boring No.	LY/01 - 1
Co-ordinates	N1,966,204.002, E372,341.145	Elevation	150.880mMSL	Depth of Hole	56.00m
Angle from Horizontal	90°	Core Recovery	77.05%	Depth of Overburden	1.80m
Bearing of Angle Hole	—	Company	EGAT	Total length of core	43.15m

Log No. 1 of 2
Commenced 13/5/87
Completed 20/5/87
Logged by V. Punpong, K. Takeda



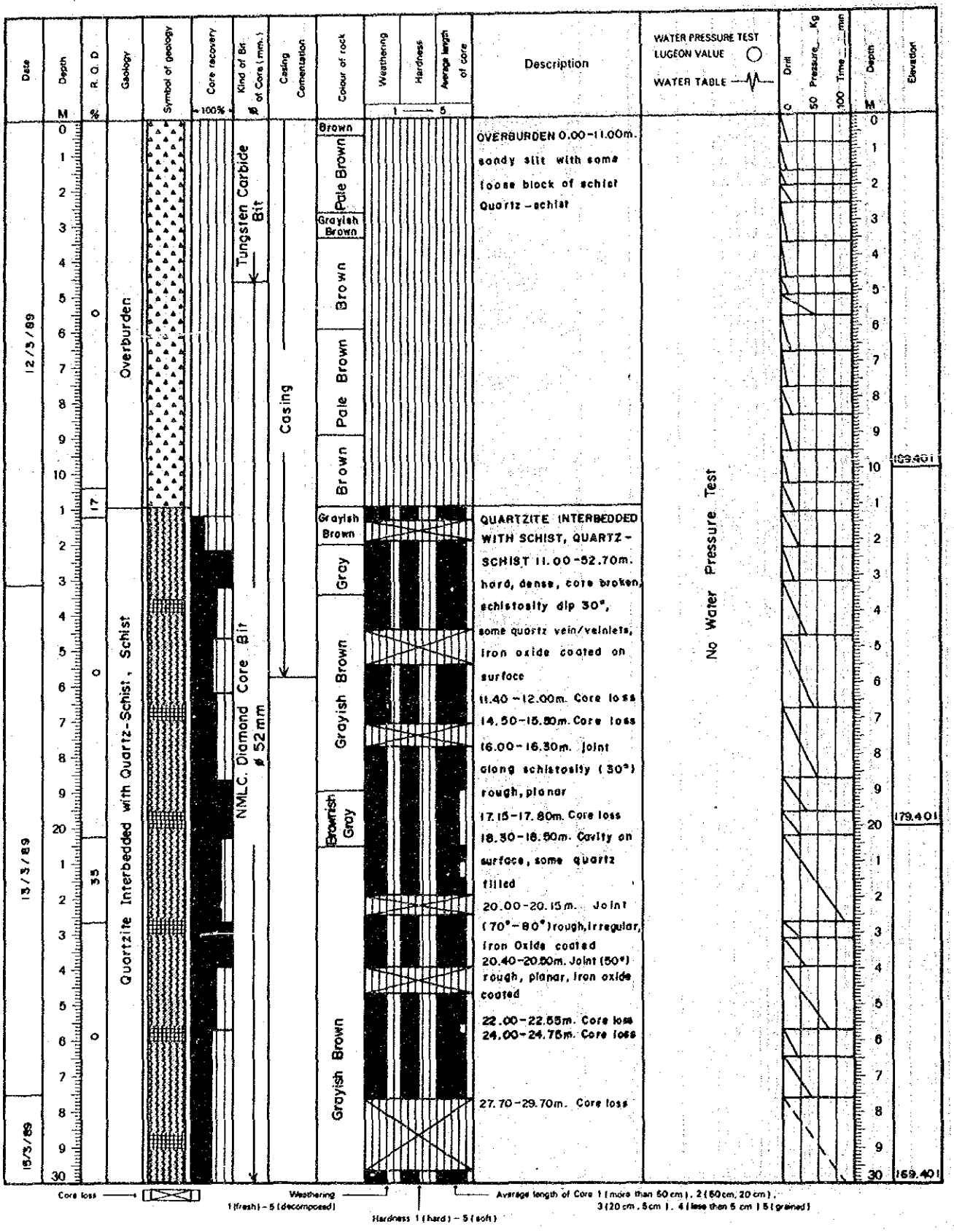
LOG OF BORING

Project	MAE LAMA LUANG DAM	Location	Intake Structure	Boring No	LY/DI - 1	Log No	2 of 2
Co-ordinates	N1,966,204.002 E372,341.145	Elevation	150.880m MSL	Depth of Hole	56.00m	Commenced	13/5/87
Angle from Horizontal	90°	Core Recovery	77.05%	Depth of Overburden	1.80 m	Completed	20/5/87
Bearing of Angle Hole	---	Company	EGAT	Total length of core	43.15 m	Logged by	V. Punpong K. Takeda



LOG OF BORING

Project	MAE LAMA LUANG DAM	Location	Quarry Site	Boring No.	LY/QS8-1	Log No.	1 of 2
Co-ordinates	NI,965,876.998E372,780.778	Elevation	199.40 m MSL	Depth of Hole	52.70 m	Commenced	12/3/89
Angle from Horizontal	90°	Core Recovery	75%	Depth of Overburden	2.65 m	Completed	20/3/89
Bearing of Angle Hole	—	Company	EGAT	Total length of core	39.60 m	Logged by	H.Pattana K.Takeda



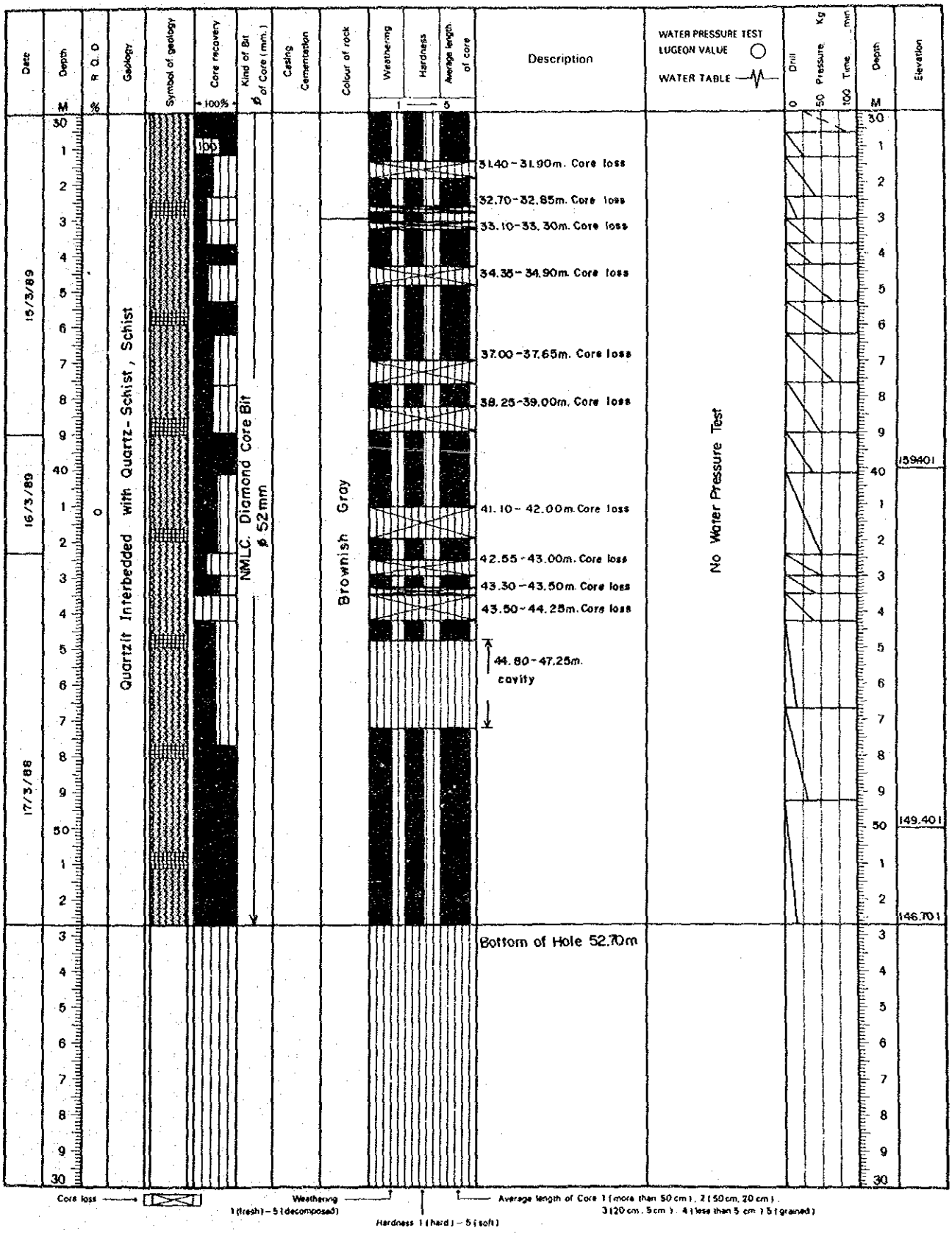
LOG OF BORING

Project MAE LAMA LUANG DAM Location Quarry Site Boring No. LY/QSB-1 Log No. 2 of 2

Co-ordinates N1,965,878.998 E372,750.776 Elevation 199.401m MSL Depth of Hole 52.70m Commenced 12/3/89

Angle from Horizontal 90° Core Recovery 75 % Depth of Overburden 11.00m Completed 20/3/89

Bearing of Angle Hole — Company EGAT Total length of core 39.60m Logged by H. Pattana, K. Takeda



B-4 MICROSCOPIC OBSERVATION OF ROCK SAMPLES

Appendix B-4 MICROSCOPIC OBSERVATION OF ROCK SAMPLES

Thin sections were prepared from twelve samples obtained in drill holes and vicinity areas at Nam Ngao dam and Mae Lama Luang dam sites. The quantity of the thin sections are shown in Table A.

The results of the microscopic observation are shown as follows:

Table A

	No.	Locality	Remarks
NAM NGAO DAM	1	Outcrop, Downstream creek of the right bank of the dam site	E 393.350 N 1967.750
	2	Outcrop, ditto	E 393.375 N 1967.730
	3	Outcrop, Downstream creek of the left bank of the dam site	E 393.325 N 1967.380
	4	Drill hole, DL-6, Depth 33.50 - 33.60 m	
	5	Outcrop, Right bank of the Mae Lui Stream	E 395.720 N 1967.450
	6	Outcrop, Creek of the left bank of the Mae Lui Stream	E 394.970 N 1966.025
MAE LAMA LUANG DAM	1	Outcrop, EL.150 m on the right bank of the dam site	
	2	Outcrop, EL.170 m in the downstream creek of the right bank	
	3	Outcrop, EL.145 m in the downstream creek of the left bank	
	4	Outcrop, Left bank of the dam site No. 4	
	5	Drill hole, DL-5, Depth 23.80 m	
	6	Drill hole, DL-5, Depth 30.00 m	

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Date : September 15, 1988.

PETROGRAPHY REPORT

Received from : EGAT

Sample no : ① NG-1 (E 393,350 N 1,967,750)

Rock name : Shale

DEscription : The rock is brownish gray and indurated. It shows a finely laminated structure of siltstone and mudstone. Microscopically, siltstone is made up of grains of detrital quartz, micas, feldspar, calcite, opaque minerals and other fine-grained minerals. The mudstone is composed of micas, detrital quartz and other extremely fine-grained minerals. Prefered orientation fo micas is observed in the rocks. The boundary between mudstone and siltstone is sharp to gradational.

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Date : September 15, 1988.

PETROGRAPHY REPORT

Received from : EGAT

Sample no. : ②NG-2 (E 393,375 N 1,967,730)

Rock name : Medium-grained micaceous sandstone
(Micaceous lithic arkose; Folk, 1974)

Description : The rock is dark gray and indurated. Microsiopically, it is composed of fine to medium sand-sized grains of quartz (~ 40%), feldspar (~ 20%), rock-fragments (~ 15%) and micas (~ 5%). Other minor constituents are calcite tourmaline and opaque minerals. The feldspar is made up of both plagioclase and potash feldspar that are partially altered to sericite. The micas are mostly biotite and muscovite. The rock--fragments constitute of volcanics, carbonates, schistose quartz, chert, quartzite etc. Cementing materiol is calcareous. The rock is poorly sorted and the grains are angular. A few late calcite veinlets are observed.

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Date : September 15, 1988.

PETROGRAPHY REPORT

Received from : EGAT

Sample no : ③ NG-3 (E 393,325 N 1,967,380)

Rock name : Fine-grained micaceous sandstone

(Micaceous lithic arkose; Folk, 1974)

Description : It is a brownish gray, indurated and fine-grained sandstone that contains finely laminated shaly layers. Microscopically, the sandstone is composed of fine-sand-sized grains of quartz (~ 50%), highly altered feldspar (~ 20%), rock-fragments (~ 15%), mica (~ 10%) and other opaque and accessory minerals. The rock-fragments include chert, schistose quartz, quartzite etc. The rock is moderately sorted and the grains are subangular. The cementing material is essentially ferruginous.

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Date : September 15, 1988.

PETROGRAPHY REPORT

Received from : EGAT

Sample no : ④NG-4 (DL-6 Depth 33.50-33.60 m.)

Rock name : fine to medium grained sandstone (Subarkose; Folk 1974)

Description : The rock is medium-gray and indurated. Microscopically, it is composed of fine to medium sand-size grains of predominantly quartz (~ 50%) and minor feldspar (~ 15%) and rock-fragments (<5%). Other minor constituents include mica (muscovite) and sphene. Most of feldspars are plagioclase and potash feldspar that are partially altered to sericite. The rock is moderately to well sorted and the grains are subangular to subrounded. The cementing material is essentially ferruginous. A few late quartz veinlets are also observed.

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Date : July 4, 1989.

PETROGRAPHY REPORT

Received from : EGAT

Sample number : ⑤NG-5 (E 395,720 N 1,967,450)

Rock name : Conglomerate

Description : The rock is medium gray and indurated. It makes up essentially of granule to pebble-size fragments (size varying from 2mm to 1 cm in diameter) setting in medium to coarse-sand size matrix and cementing materials. The coarse fragments are composed of quartz, feldspar, plutonic rocks, gneissic rock, schist, phyllite, quartz, volconics, chert. The matrix comprises similar kinds of rock fragments together with some calcite and micaceous minerals.

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Bangkok 10330, Thailand.

Date : July 4, 1989.

PETROGRAPHY REPORT

Received from : EGAT

Sample number : ⑥NG-6 (E394,970 N 1,966,025)

Rock name : Deformed limestone

Description : The rock is medium-gray limestone that show somewhat fragmental texture. Many late calcite veinlets are well observed. Microscopically, the limestone is made up essentially of large recrystallized patches of sparry calcite in smaller pseudospar matrix. The sizes of sparry calcite are quite variable. Most of the sparry calcite crystals are twinned and the twin planes are slightly bent or gliding. This suggests that this limestone has been subjected to some degrees of deformation of stress. Microveinlets of calcite are quite common. No allochemical components, e.g., bioclasts, has been preserved.

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Date : April 27 , 1988

ANALYSIS REPORT

Received from : EGAT

Sample no : ① Ly-1 Mae Lama Luang Dam

References : Collected from Dam Site

Rock name : Mica Schist

Description : The rock is light brown, dense and shows schistosity. Microscopically, it is a very fine-grained rock and composed essentially of mica (sericite), quartz and feldspar. Other minor constituents include hematite and sphene. The rock shows prefered orientation of mica flakes. Compositional layering of mica-rich alternating with quartz and feldspar-rich is also reccgnized. The original rock might have been an argillaceous siltstone that had been suffered from a low to moderate regional metamorphism.

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Date : April 27, 1988

ANALYSIS REPORT

Received from : EGAT

Sample no : ② LY-2 Mae Lama Luang Dam

References : Collected from Dam Site

Rock name : Crenulated Calc-Schist

Description : The rock is brownish gray, dense and shows schistosity and crenulated compositional layering. Microscopically, the rock is composed prodominantly of medium-grained calcite, quartz, mica (sericite) and feldspar. Compositional layering in which mica-rich bands alternate with calcite plus quartz-rich bands is obviously recognized. Crenulation (Small-scale folding) of mica-rich layers suggest at least two episodes of strain slip foliation did occur in this rock. The older S_1 is the foliation parallel to bedding and the younger S_2 is the foliation formed along crumples in S_1.

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Date : April 27, 1988

ANALYSIS REPORT

Received from : EGAT

Sample no : ③ LY-3 Mae Lama Luang Dam

References : Collected from Dam Site

Rock name : Crenulated Calc-schist

Description : This rock is similar in terms of mineralogical composition and texture to that of LY-2. The notable difference is, however, marked by the fact that the LY-3 contains less in amount of the mica-rich layers and they are restricted to a certain zone.

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Date : April 27 , 1988

ANALYSIS REPORT

Received from : EGAT

Sample no : ④ Ly-4 Mae Lama Luang Dam

References : Collected from Dam Site

Rock name : Mica Schist

Description : This rock is similar to LY-1 in that it is composed essentially of mica (sericite), quartz and feldspar. The marked differences is that the grain sizes of quartz and feldspar are in the range of medium-sand and both quartz and feldspar constitute much higher in their amounts than those in Ly-1. Other minor constituents include sphene, tourmaline, hematite and opaque minerals. Schistosity and compositional layering are not well developed. However, most quartz grains show wavy extinction. The original rock might have been an argillaceous sandstone that had been suffered from a low to moderate regional metamorphism.

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Date : April 27 , 1988

ANALYSIS REPORT

Received from : EGAT

Sample no : ⑤ LY-5 Mae Lama Luang Dam

References : DL-5, depth 23.80

Rock name : Crenulated Calc-Schist.

Description : This rock is similar to LY-2 and LY-2 and LY-3 both in terms of mineralogical composition and texture. The description is therefore refered to LY-2 and LY-3.

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Date : April 27 , 1988

ANALYSIS REPORT

Received from : EGAT

Sample no : ⑥ LY-6 Mae Lama Luang Dam

References : DL-5, depth 30.00 m.

Rock name : Calc-Schist

Description : This rock is similar to LY-2 and LY-3 both in terms of mineralogical composition and texture. Crenulation is however less obvious.

B-5 TEST RESULTS OF AUGUR DRILLING

TABLE A (1/5) SUMMARY OF TEST RESULTS

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION
HYDRO POWER ENGINEERING DEPARTMENT
EGAT.

PROJECT. NAM MAE NGAO

IMPERVIOUS MATERIAL

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION #4	GRADATION #10	GRADATION #40	GRADATION #200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max. γ_D (t/m^3)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ANG-1	0.0-1.0	ML	2.65	22.7	38.84	11.17	100	87.8	76.0	66.3	54.7	44.1	32.1				
	1.0-1.5	SM	2.70	20.0	49.20	18.97	100	81.1	66.5	54.0	45.6	39.8	30.3				
ANG-2	0.0-1.0	CL-ML	2.63	22.8	39.50	14.27	100	99.8	99.2	93.8	73.9	58.3	40.4				
	1.0-2.0	MH	2.67	25.0	52.10	20.53	100	96.7	90.6	83.5	69.3	53.8	35.9				
	2.0-3.0	ML	2.61	24.5	40.60	10.87	100	94.0	84.4	75.5	61.3	47.4	28.5				
	3.0-4.0	ML	2.64	22.6	44.60	15.55	100	87.4	77.2	68.3	57.1	47.7	31.2				
	4.0-5.0	ML	2.62	18.6	42.20	14.37	100	92.9	84.9	75.7	60.6	47.0	32.7				
ANG-3	0.0-1.0	ML	2.63	26.4	49.60	16.74	-	100	99.7	96.0	79.1	62.5	50.5				
	1.0-2.0	MH	2.71	26.2	63.20	23.89	100	99.7	98.7	95.3	82.5	66.0	54.0				
	2.0-3.0	MH	2.65	24.4	53.30	14.57	100	99.8	99.4	97.4	86.5	66.6	51.5				
	3.0-4.0	ML	2.68	19.5	47.92	14.86	100	99.9	99.6	98.6	78.7	60.2	47.0				
ANG-4	0.0-1.0	CL-ML	2.65	19.2	31.75	8.40	100	99.5	98.5	89.0	56.1	41.0	29.5				
	1.0-2.0	CL	2.65	19.0	31.45	9.56	100	99.8	98.8	89.3	56.2	43.3	30.8				
	2.0-2.5	ML	2.65	17.1	35.04	10.40	100	94.7	88.6	77.8	50.3	36.9	27.1				
ANG-5	0.0-1.0	ML	2.62	14.9	32.70	7.79	100	99.9	98.9	84.5	55.7	38.2	26.3				
	1.0-2.0	ML	2.65	18.8	39.50	12.91	100	99.8	99.6	87.2	61.2	46.2	36.0				
	2.0-3.0	ML	2.60	13.8	39.15	12.64	100	99.7	96.8	76.4	52.9	39.3	28.0				
	3.0-5.5	ML	2.66	11.0	30.70	7.40	100	99.8	99.5	95.9	58.6	35.5	23.5				
ANG-6	0.0-1.0	SM	2.53	12.2	28.68	5.33	93.7	60.0	39.1	24.2	17.8	12.5	5.0				
	1.0-2.0	SM	2.60	8.6	29.67	6.53	95.0	62.5	38.4	21.1	15.7	12.2	8.5				
ANG-7	0.0-3.0	ML	2.66	25.1	44.00	13.18	100	99.7	98.6	93.9	74.2	62.7	48.5				
	3.0-5.0	ML	2.69	19.5	46.85	15.48	100	97.2	91.2	83.7	66.1	55.5	42.8				
	5.0-7.0	ML	2.68	16.2	30.23	2.44	100	97.7	95.4	91.3	60.5	40.1	23.3				
	7.0-9.0	ML	2.61	13.5	28.19	2.12	-	100	99.8	96.7	50.9	37.2	16.0				

TABLE A (2/5) SUMMARY OF TEST RESULTS

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION
HYDRO POWER ENGINEERING DEPARTMENT
EGAT.

PROJECT. NAM MAE NGAO

INPERVIOUS MATERIAL

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT.'S LIMITS		GRADATION							COMPACTION		PERMEABILITY	
					LL. (%)	PI. (%)	-3/4"	# 4	# 10	# 40	# 200	-10 μ	-2 μ	Max. γ_D (t/m^3)	Wopt. (%)	Min. K_T (cm/sec)	Molded, W(%)
ANG-8	0.0-1.0	ML	2.58	20.4	38.20	12.47	100	84.9	75.2	66.3	52.3	42.1	26.3				
	1.0-2.0	CL	2.59	13.0	31.45	8.69	100	91.4	82.4	71.1	51.0	40.6	24.5				
	2.0-3.0	SC	2.58	10.4	29.60	7.27	100	86.1	74.7	62.0	40.6	30.4	18.4				
	3.0-3.5	SC	2.67	13.3	32.55	9.78	100	86.4	73.9	57.9	42.3	30.4	18.5				
ANG-9	0.0-1.0	ML	2.64	21.1	37.00	11.05	100	97.1	92.6	87.0	59.4	45.7	31.5				
	1.0-3.0	SM	2.64	9.0	30.35	7.09	100	92.4	84.9	75.6	38.9	22.4	13.3				
ANG-10	0.0-3.0	MH	2.65	25.2	52.00	22.65	100	98.5	95.7	91.6	71.3	57.6	46.5				
	3.0-5.0	MH	2.68	22.5	53.15	19.91	100	99.1	96.3	92.7	75.7	59.2	45.0				
	5.0-8.0	ML	2.68	20.4	46.15	16.41	100	99.9	98.2	95.5	75.1	55.8	36.2				
ANG-11	0.0-2.0	ML	2.67	30.2	41.30	14.09	100	88.7	80.4	74.7	63.1	46.8	30.0				
	2.0-3.0	ML	2.63	16.9	31.05	7.78	-	100	99.9	99.5	70.9	45.7	30.2				
	3.0-4.0	ML	2.64	11.3	30.75	7.74	-	100	99.9	98.7	61.0	39.1	24.3				
	4.0-5.0	CL-ML	2.63	9.3	24.23	4.64	-	100	99.9	98.2	53.3	37.0	22.0				
ANG-12	0.0-2.0	CL	2.64	18.8	37.05	15.46	100	99.4	98.6	95.8	71.5	61.7	46.9				
	2.0-6.0	CL	2.65	12.3	31.40	9.73	100	97.1	91.9	82.4	54.0	38.0	26.8				
ANG-13	0.0-1.0	CL	2.60	17.7	29.15	9.73	100	99.5	97.2	85.7	55.9	40.0	27.2				
	1.0-2.0	CL	2.62	16.7	35.50	14.08	100	99.7	96.0	80.0	58.6	41.5	30.1				
	2.0-5.0	CL	2.65	13.4	34.77	11.68	100	99.5	97.5	92.3	70.0	45.0	29.8				
ANG-14	0.0-2.0	MH	2.67	23.4	53.70	21.50	100	98.6	97.0	95.3	78.1	67.1	54.5				
	2.0-3.6	CL	2.68	24.3	46.90	22.64	-	100	99.4	98.0	80.1	64.4	50.7				
ANG-15	0.0-2.5	CL	2.61	22.3	32.85	13.16	100	98.8	96.8	92.6	64.7	48.5	36.6				
	2.5-3.8	ML	2.63	18.0	38.63	13.02	100	98.5	95.8	79.7	54.0	42.2	31.9				
	3.8-4.8	CL	2.62	18.5	33.90	10.46	100	99.6	98.0	84.9	53.6	37.8	26.5				
	4.8-7.1	ML	2.68	21.0	35.76	9.13	-	100	99.4	97.3	68.3	45.1	30.0				

TABLE A (3/5) SUMMARY OF TEST RESULTS

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION
HYDRO POWER ENGINEERING DEPARTMENT
EGAT.

PROJECT. NAM MAE NGAO

IMPERVIOUS MATERIAL

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W, AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION -#4	GRADATION -#10	GRADATION -#40	GRADATION -#200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max. γ_D (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ANG-16	0.0-4.2	MH	2.72	20.6	57.70	27.27	100	98.5	96.5	94.4	78.6	62.8	50.0				
ANG-17	0.0-2.0	CL	2.71	14.1	30.90	9.65	100	95.9	91.5	87.3	59.0	43.4	27.5				
	2.0-3.2	SC	2.70	8.8	31.70	11.13	100	87.9	79.1	68.8	49.9	38.1	25.0				

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION.
SURVEY & ECOLOGY DEPARTMENT
EGAT.

TABLE A (4/5) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NAM NGAO) , DRILL HOLES (HAND AUGER)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION -#4	GRADATION -#10	GRADATION -#40	GRADATION -#200	GRADATION -10 μ	GRADATION -2 μ	COMPACTION Max. γ_D (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ANG-18	0.0-0.8	CL	2.65	12.41	35.00	11.65	100	99.5	98.3	93.0	60.0	48.2	38.5				
ANG-19	0.0-0.8	CL	2.63	8.16	33.10	10.96	100	97.2	94.4	87.2	63.1	46.8	30.8				
ANG-20	0.0-1.4	SM	2.73	11.43	38.50	10.62	98.5	74.2	58.3	43.0	36.3	24.0	12.6				
ANG-21	0.0-3.0	MH	2.70	23.08	57.30	23.22	100	99.7	98.0	92.9	79.2	71.7	58.3				
	3.0-5.0	ML	2.71	19.87	49.40	17.95	100	99.8	97.7	91.3	75.6	60.5	42.4				
	5.0-6.0	ML	2.73	19.18	47.40	19.75	100	99.2	95.0	85.9	67.8	54.1	39.6				
	6.0-6.7	ML	2.74	17.97	44.00	15.90	100	98.9	92.0	79.2	63.0	49.0	35.7				
ANG-22	0.0-0.7	MH	2.67	13.18	50.40	20.86	100	98.5	96.4	89.8	71.0	58.2	45.3				
ANG-23	0.0-1.0	MH	2.70	19.34	51.40	21.74	100	97.8	95.2	92.0	79.7	67.8	47.5				
	1.0-2.0	MH	2.72	19.73	52.60	19.65	100	91.3	85.5	80.6	74.2	60.8	36.0				
	2.0-3.8	ML	2.73	20.03	43.30	13.98	100	95.5	90.1	83.8	76.3	56.9	28.6				
	3.8-4.9	ML	2.71	16.48	34.00	8.96	100	95.6	89.1	79.3	53.7	39.9	19.9				
ANG-24	0.0-0.7	SC	2.66	8.01	30.75	8.85	97.5	90.4	79.3	59.7	46.5	38.9	20.6				
ANG-25	0.0-0.6	MH	2.71	17.37	51.60	19.44	100	95.1	88.5	79.6	68.4	59.5	40.1				
ANG-26	0.0-1.0	SC	2.68	6.20	27.00	7.12	100	89.6	80.7	70.5	44.8	33.5	22.5				
ANG-27	0.0-0.8	ML	2.70	13.31	35.05	9.38	100	95.3	89.4	83.3	61.6	48.8	34.4				

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION.
SURVEY & ECOLOGY DEPARTMENT
EGAT.

TABLE A (5/5) SUMMARY OF TEST RESULTS

PROJECT: NAM YUAM (SITE NAM NGAO) DRILL HOLES (HAND AUGER)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION -#4	GRADATION -#10	GRADATION -#40	GRADATION -#200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max.γ_D (t/m^3)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W (%)
ANG-28	0.0-1.1	SM	2.68	9.14	30.85	7.09	95.6	67.1	49.5	35.3	28.2	21.8	12.7				
ANG-29	0.0-1.0	ML	2.68	12.93	33.70	6.06	100	93.9	86.7	81.3	53.7	40.8	29.1				
ANG-30	0.0-1.9	SM	2.71	14.32	28.67	5.26	100	94.0	86.1	72.6	48.3	37.2	25.2				
ANG-33	0.0-0.9	CL-ML	2.67	8.10	29.80	7.29	100	95.6	92.7	86.6	57.1	43.4	29.5				
ANG-34	0.0-0.8	ML	2.69	11.74	39.60	11.90	100	97.3	90.8	75.7	54.5	43.9	31.4				
ANG-37	0.0-3.0	ML	2.71	15.44	34.10	8.25	100	92.7	84.0	73.8	56.8	43.6	33.8				
ANG-40	0.0-1.2	ML	2.71	16.67	45.25	14.26	100	89.0	75.3	62.3	55.7	51.1	37.1				
ANG-42	0.2-2.0	SM	2.77	6.82	54.10	16.95	97.5	68.2	56.3	49.0	44.8	41.7	29.4				
	2.0-2.4	SM	2.79	9.02	42.20	10.50	99.1	73.6	59.8	46.3	40.0	34.0	20.3				
ANG-43	0.1-1.4	ML	2.74	8.25	46.70	16.28	100	95.0	89.0	79.7	71.7	66.2	46.2				
	1.4-2.5	MH	2.75	13.73	51.20	15.25	95.8	80.0	70.8	65.1	60.1	55.1	40.9				

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION.
SURVEY & ECOLOGY DEPARTMENT
EGAT.

TABLE. B (1/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO. 5)

Impervious Material (Drill Holes)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W, AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION -#4	GRADATION -#10	GRADATION -#40	GRADATION -#200	GRADATION -10 μ	GRADATION -2 μ	COMPACTION Max. γ_D (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W (%)
ALY-1	0.0-1.0	ML	2.76	17.25	31.90	8.58	100	88.8	81.2	71.2	57.7	36.5	24.0				
	1.0-2.0	SM	2.74	15.06	28.09	4.82	96.5	78.5	69.0	58.5	45.1	30.8	12.5				
	2.0-3.4	SM	2.76	17.21	NP	NP	97.4	85.0	75.2	62.7	47.7	31.8	11.5				
ALY-2	0.0-2.0	SM	2.74	17.47	NP	NP	92.7	68.1	57.8	46.3	30.3	18.0	5.5				
	2.0-3.0	ML	2.75	10.21	NP	NP	100	85.8	76.9	66.4	52.0	31.3	13.3				
ALY-3	0.0-1.0	ML	2.71	14.17	NP	NP	100	94.8	88.7	80.9	65.6	38.1	18.3				
	1.0-2.0	ML	2.72	13.43	NP	NP	100	94.5	87.6	79.9	64.1	42.4	17.4				
	2.0-3.0	ML	2.74	16.14	NP	NP	100	98.2	94.6	87.3	71.4	39.1	18.0				
	3.0-4.0	SM	2.73	12.28	NP	NP	100	91.7	80.9	66.6	48.9	37.8	8.5				
	4.0-5.0	SM	2.67	11.70	NP	NP	100	84.6	69.8	55.4	37.3	15.5	4.5				
	5.0-5.4	SM	2.69	9.42	NP	NP	100	86.5	71.0	54.4	36.0	17.6	6.4				
ALY-4	0.1-1.0	ML	2.73	13.63	28.10	4.42	100	85.7	76.8	68.5	55.2	32.4	16.7				
	1.0-4.0	ML	2.76	15.73	NP	NP	100	95.2	85.3	72.3	56.4	29.0	11.2				
ALY-5	0.1-1.0	ML	2.71	17.19	29.92	5.45	100	96.6	90.2	81.8	66.1	43.2	22.2				
	1.0-2.0	ML	2.74	14.10	NP	NP	100	92.2	83.2	71.3	52.2	30.6	10.0				
	2.0-2.3	SM	2.70	12.29	NP	NP	100	88.3	79.1	66.0	43.9	24.8	6.3				
ALY-6	0.1-1.0	ML	2.69	16.33	29.80	4.51	100	95.0	86.6	81.4	65.2	42.5	23.3				
	1.0-2.3	ML	2.75	12.26	NP	NP	98.0	89.6	77.3	66.0	52.8	33.0	15.1				

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION.
SURVEY & ECOLOGY DEPARTMENT
EGAT.

TABLE.B (2/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUM (SITE NO.5)

Impervious Material (Drill Holes)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION -#4	GRADATION -#10	GRADATION -#40	GRADATION -#200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max.γ_D (t/m^3)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-7	0.1-1.0	ML	2.75	14.10	NP	NP	100	93.8	83.9	71.8	55.3	33.9	14.1				
	1.0-2.0	SM	2.75	15.55	NP	NP	100	86.8	74.9	62.8	45.8	25.8	8.7				
	2.0-2.5	SM	2.73	13.31	NP	NP	100	80.1	68.3	54.8	37.2	19.8	6.5				
ALY-8	0.0-1.0	CL-ML	2.72	13.83	30.30	7.76	100	95.8	87.9	79.5	63.4	38.1	22.2				
	1.0-1.9	ML	2.74	13.72	29.80	5.54	100	89.9	79.8	70.7	58.3	35.5	20.2				
	1.9-2.2	ML	2.70	14.97	NP	NP	100	87.8	79.5	68.9	50.4	24.8	8.7				
	2.2 -3.8	ML	2.74	13.67	NP	NP	100	94.8	87.5	77.9	57.9	30.2	12.7				
ALY-10	0.0-1.0	ML	2.70	15.66	31.40	5.57	100	95.7	90.3	83.1	68.5	40.6	23.1				
	1.0-2.6	ML	2.72	14.40	25.05	1.61	100	92.7	84.3	75.2	57.4	34.4	20.2				
ALY-11	0.0-1.0	ML	2.68	18.67	NP	NP	100	90.4	84.7	76.6	52.4	30.2	13.0				
	1.0-2.8	ML	2.72	16.90	NP	NP	100	92.0	85.3	75.7	50.5	27.0	10.8				
ALY-12	0.0-1.0	ML	2.68	15.72	29.92	5.55	100	97.5	95.2	89.9	66.5	41.5	23.5				
	1.0-3.0	ML	2.68	13.22	26.40	3.02	100	95.9	90.0	83.0	61.2	34.1	18.5				
ALY-13	0.1-0.7	ML	2.70	12.79	25.30	3.27	98.9	89.0	81.5	72.7	53.5	26.0	12.8				
	0.7-0.9	SM	2.67	8.80	NP	NP	100	93.4	87.3	77.7	48.1	23.3	8.7				
ALY-14	0.1-1.0	ML	2.71	16.90	NP	NP	100	94.0	90.2	83.9	67.0	37.0	17.8				
	1.0-1.4	SM	2.71	10.31	NP	NP	100	80.3	66.7	56.9	42.1	22.6	7.7				

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION.
SURVEY & ECOLOGY DEPARTMENT
EGAT.

TABLE.B(3/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO.5)

Impervious Material (Drill Hloes)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT.'S LIMITS LL. (%)	ATT.'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION #4	GRADATION #10	GRADATION #40	GRADATION #200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max.γ_D (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-15	0.1-1.0	SM	2.73	13.44	NP	NP	100	91.3	80.4	67.8	44.5	22.6	7.7				
	1.0-1.9	SM	2.75	12.13	NP	NP	100	91.7	80.4	65.1	41.8	20.5	6.0				
ALY-16	0.1-1.0	ML	2.72	14.33	25.55	4.44	100	95.5	89.7	82.3	61.0	31.1	15.6				
	1.0-2.0	SM	2.71	6.81	NP	NP	95.3	84.1	73.3	63.2	47.9	25.2	12.2				
	2.0-3.0	SM	2.72	10.70	NP	NP	100	93.3	82.3	68.5	49.4	25.2	8.7				
	3.0-3.1	SM	2.72	10.55	NP	NP	100	91.0	79.7	64.4	44.5	22.7	6.3				
ALY-18	0.0-1.0	ML	2.65	21.84	46.48	14.59	100	99.4	98.2	96.1	76.8	54.0	40.6				
	1.0-3.0	ML	2.69	22.45	46.15	13.75	100	95.7	92.1	88.7	70.5	50.6	38.1				
	3.0-5.0	ML	2.67	21.01	39.80	9.03	100	96.9	93.7	90.6	65.5	44.1	30.7				
	5.0-5.6	ML	2.70	19.18	NP	NP	100	92.7	87.3	83.1	64.6	35.8	21.1				
ALY-19	0.0-1.0	ML	2.70	22.24	37.0	4.74	100	94.3	89.3	86.5	69.4	37.5	20.7				
	1.0-2.8	ML	2.69	19.04	NP	NP	100	95.3	91.8	89.1	69.7	30.9	13.8				
ALY-20	0.0-1.0	ML	2.65	25.0	49.1	13.57	100	99.9	99.8	99.3	88.0	58.8	41.3				
	1.0-3.0	ML	2.68	21.92	40.50	6.02	100	95.2	91.4	89.5	77.4	46.1	28.1				
	3.0-3.8	ML	2.68	17.67	NP	NP	100	96.3	92.7	89.8	74.9	38.0	22.5				
ALY-21	0.0-1.0	ML	2.65	25.30	43.80	9.63	100	98.5	97.1	95.5	82.6	59.6	29.8				
	1.0-2.0						Sample Loss										
	2.0-2.9	ML	2.68	20.00	NP	NP	100	93.3	86.1	81.3	66.0	38.2	23.6				

MATERIAL TESTING SECTION
GEOLOGY & SOIL ENGINEERING DIVISION.
SURVEY & ECOLOGY DEPARTMENT
EGAT.

TABLE B(4/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO.5)

Impervious Material (Drill Holes)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION -#4	GRADATION -#10	GRADATION -#40	GRADATION -#200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max.γD (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-22	0.0-1.0	ML	2.63	21.75	34.06	1.44	100	99.9	99.8	99.3	86.8	51.0	34.7				
	1.0-3.0	ML	2.69	19.64	40.68	7.15	100	99.9	99.5	99.2	86.0	44.3	27.1				
ALY-23	0.0-1.0	ML	2.61	25.63	49.85	13.87	100	99.8	99.4	98.8	88.2	60.7	41.2				
	1.0-3.0	MH	2.65	21.18	52.42	14.05	100	98.4	96.9	95.8	85.6	58.2	41.0				
	3.0-4.0	ML	2.67	24.72	45.10	11.01	100	98.6	96.6	94.7	83.0	47.6	27.6				
ALY-24	0.0-2.0	ML	2.69	28.04	42.80	6.41	100	98.4	96.8	95.2	85.8	55.1	35.7				
	2.0-2.3						Sample Loss										
ALY-25	0.1-1.0	SM	2.65	7.94	22.90	3.94	100	90.0	80.1	55.1	36.8	23.7	14.7				
	1.0-2.0	SM-SC	2.65	7.19	26.38	6.06	94.6	80.3	63.2	42.9	30.6	20.1	11.9				
	2.0-3.0	SM-SC	2.70	6.98	23.80	5.18	100	85.5	70.5	49.4	34.9	24.2	12.9				
	3.0-4.0	SM-SC	2.65	8.05	24.40	6.28	100	90.8	78.8	57.6	41.7	28.7	16.6				
	4.0-5.0	SM-SC	2.67	7.46	20.80	4.66	100	96.9	89.2	69.9	49.6	22.1	7.7				
	5.0-6.0	ML	2.67	20.07	NP	NP	100	98.9	94.4	83.8	73.0	41.8	18.4				
ALY-26	0.1-1.0	ML	2.66	20.82	48.62	14.54	-	100	99.7	98.7	86.1	61.9	49.0				
	1.0-2.0	ML	2.72	17.10	41.95	9.63	100	84.6	78.9	74.6	63.5	35.0	25.0				
	2.0-4.0	ML	2.69	15.02	NP	NP	100	91.3	81.9	73.9	59.3	32.0	16.7				
	4.0-4.6	SM	2.74	14.13	NP	NP	99.0	85.9	74.8	64.8	40.6	19.0	9.4				
	4.6-5.4	ML	2.68	16.71	NP	NP	100	96.0	91.9	88.2	63.3	27.0	9.9				

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TABLE B(5/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO.5)

Impervious Material (Drill Holes)

SAMPLE NO.	DEPTH (m.)	USCS SOIL GROUP	SP.GR.	W, AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION #4	GRADATION #10	GRADATION #40	GRADATION #200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max. γ_D (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-27	0.1-1.0	ML	2.71	22.47	38.20	6.78	99.1	86.4	82.9	81.1	71.1	37.4	24.3				
	1.0-2.0	ML	2.72	15.88	NP	NP	98.2	87.5	79.6	75.9	60.7	28.5	14.5				
	2.0-4.0	ML	2.73	14.86	NP	NP	100	86.7	79.7	74.0	52.6	22.3	10.2				
	4.0-4.6	ML	2.76	14.40	NP	NP	96.3	89.6	84.0	78.3	51.5	21.6	9.5				
ALY-28	0.1-3.0	ML	2.70	20.96	39.16	6.98	100	91.0	87.3	85.1	70.0	48.2	31.0				
	3.0-5.0	ML	2.72	12.98	NP	NP	100	89.3	84.3	80.6	57.9	28.6	13.3				
	5.0-5.7	ML	2.68	13.81	NP	NP	100	97.7	97.5	97.1	72.1	30.8	13.6				
ALY-29	0.0-1.0	MH	2.70	28.72	53.30	14.51	100	98.9	98.1	97.5	89.6	59.9	42.0				
	1.0-4.0	ML	2.72	24.99	46.65	4.76	100	97.7	96.1	94.5	78.4	49.4	25.1				
	4.0-5.0	ML	2.70	26.61	NP	NP	100	97.0	94.3	92.4	74.4	36.21	12.3				
ALY-30	0.1-2.0	ML	2.72	11.18	NP	NP	100	99.9	99.7	99.3	95.4	56.5	39.9				
	2.0-3.0	ML	2.75	21.43	NP	NP	100	81.9	77.1	73.0	65.4	35.7	19.9				
	3.0-4.0	ML	2.81	21.03	41.60	6.35	100	99.2	98.0	96.4	85.3	44.7	20.7				
	4.0-5.0	ML	6.69	19.21	NP	NP	99.0	96.5	94.7	92.0	83.4	33.4	14.6				
	5.0-6.0	ML	2.69	28.19	NP	NP	100	96.6	92.8	89.3	74.5	29.8	9.2				
ALY-31	0.1-1.0	ML	2.66	24.33	44.20	10.61	100	99.2	98.4	97.7	86.2	58.7	41.1				
	1.0-3.0	ML	2.66	22.24	37.80	8.63	100	97.8	96.9	96.4	79.7	37.0	19.5				
	3.0-5.5	ML	2.65	23.60	NP	NP	100	99.5	98.7	98.2	83.7	35.5	13.9				

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TABLE.B (6/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO.5)

Impervious Material (Drill Holes)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION -#4	GRADATION -#10	GRADATION -#40	GRADATION -#200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max.γ_D (t/m^3)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-32	0.1-1.0	MH	2.67	28.69	59.30	20.66	-	100	99.9	99.5	92.9	81.0	58.8				
	1.0-3.0	MH	2.70	28.98	61.60	17.87	-	-	100	99.7	94.3	70.9	58.40				
	3.0-4.0	ML	2.72	24.39	48.42	10.03	100	99.7	98.9	98.3	90.4	54.1	32.0				
	4.0-5.0	ML	2.70	24.14	NP	NP	-	100	99.8	99.5	90.2	42.2	19.5				
ALY-33	0.0-1.0	ML	2.62	15.74	33.65	7.70	100	98.7	94.9	81.5	62.1	43.4	25.3				
	1.0-1.4	ML	2.66	15.12	43.70	13.49	100	95.6	84.5	72.1	59.1	41.8	25.7				
ALY-34	0.0-1.0	ML	2.66	22.06	69.43	8.53	100	97.6	94.8	92.5	79.5	48.4	32.8				
	1.0-2.0	ML	2.68	18.49	34.00	4.42	100	96.0	93.1	90.6	73.5	35.7	21.5				
	2.0-2.8	ML	2.67	20.76	NP	NP	100	96.6	91.9	89.1	70.6	28.5	13.5				
ALY-35	0.0-1.0	ML	2.63	23.01	46.17	11.63	-	100	99.5	98.6	85.7	56.2	44.6				
	1.0-2.0	MH	2.65	24.47	52.80	16.20	100	99.2	93.0	97.2	85.6	60.9	48.0				
	2.0-3.0	ML	2.68	21.85	42.60	8.82	100	97.8	94.1	92.1	78.9	51.7	35.5				
ALY-36	0.0-1.0	ML	2.65	24.14	47.50	11.66	100	99.7	99.1	98.3	87.8	64.2	50.0				
	1.0-2.0	MH	2.68	24.59	53.00	13.83	-	100	99.8	99.3	87.0	63.5	50.7				
	2.0-3.0	MH	2.72	22.95	50.80	10.64	100	99.7	98.8	97.9	87.1	63.4	49.5				
ALY-37	0.0-1.0	ML	2.70	22.23	47.78	11.09	96.6	91.7	90.1	88.5	77.2	52.5	37.6				
	1.0-2.0	MH	2.70	23.21	50.30	12.56	92.7	84.3	78.3	75.0	65.4	44.5	30.5				
	2.0-3.0	ML	2.71	20.02	44.90	7.85	100	82.1	73.8	68.0	58.3	34.5	20.1				

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TABLE B(7/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO. 5)

Impervious Material (Drill Holes)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION #4	GRADATION #10	GRADATION #40	GRADATION #200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max. γ_D (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-38	0.0-1.0	ML	2.64	24.33	40.40	8.49	100	99.9	99.3	98.6	85.0	51.2	33.3				
	1.0-2.9	ML	2.63	20.53	38.20	6.08	100	99.8	99.5	99.0	84.4	46.4	24.1				
	2.9 -4.4	ML	2.65	15.24	NP	NP	100	99.9	99.6	98.9	81.8	31.5	14.5				
ALY-39	0.0-1.0	MH	2.67	27.93	57.0	16.81	-	100	99.9	99.4	90.9	67.4	30.5				
	1.0-3.0	MH	2.69	25.27	51.80	12.99	100	98.6	97.0	96.1	87.0	63.1	41.4				
	3.0-4.0	ML	2.68	21.67	NP	NP	91.7	85.9	84.4	83.2	70.6	44.0	21.2				
	4.0-4.2	ML	2.67	23.39	47.20	10.26	100	93.8	92.2	91.4	77.7	42.1	22.2				
ALY-40	0.0-1.0	MH	2.65	22.48	56.45	16.09	-	100	99.6	98.6	90.8	72.3	53.3				
	1.0-5.3	MH	2.71	24.19	56.40	13.20	100	99.8	98.9	98.1	91.2	73.8	56.5				
ALY-41	0.0-1.0	ML	2.63	12.67	35.70	10.21	98.5	92.5	83.3	69.8	54.2	39.6	23.4				
	1.0-3.0	ML	2.65	20.16	41.25	9.6	100	98.6	94.2	85.2	69.9	41.6	21.7				
	3.0-3.3	ML	2.62	18.76	NP	NP	100	99.8	99.0	87.4	69.4	39.7	18.3				
ALY-42	0.0-1.0	ML	2.65	18.75	31.38	4.94	100	92.6	89.4	87.8	66.9	37.4	23.4				
	1.0-1.8	ML	2.67	15.14	NP	NP	100	92.3	89.4	88.0	66.9	29.7	18.0				
ALY-43	0.0-1.0	ML	2.67	25.24	44.03	9.97	100	99.6	99.2	98.6	83.5	56.1	40.0				
	1.0-2.0	ML	2.69	26.05	NP	NP	100	95.9	95.0	94.1	79.3	45.3	30.9				
ALY-44	0.0-1.0	ML	2.64	26.03	45.0	11.61	100	99.0	98.4	97.0	83.2	48.9	22.9				
	1.0-2.1	ML	2.67	18.78	34.59	5.96	90.7	77.4	75.3	72.5	56.6	36.6	22.0				
	2.1-2.3	ML	2.70	13.67	NP	NP	100	83.6	76.5	71.0	54.5	25.0	13.2				

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TABLE.B(8/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO. 5)

Impervious Material (Drill Holes)

SAMPLE NO	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION #-4	GRADATION #-10	GRADATION #-40	GRADATION #-200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max.γ_D (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-45	0.0-1.0	MH	2.69	27.37	51.0	12.38	-	100	99.9	99.2	88.9	65.1	46.6				
	1.0-3.0	MH	2.72	28.90	55.80	15.42	100	98.8	98.7	98.0	88.4	54.9	51.2				
	3.0-4.07	ML	2.72	24.56	46.40	9.87	98.2	89.3	86.2	83.7	73.1	50.9	38.7				
ALY-46	0.0-1.0	ML	2.65	26.55	49.20	13.03	100	99.6	98.5	97.6	88.2	66.9	49.0				
	1.0-3.0	ML	2.67	32.92	48.50	10.36	100	98.6	97.8	97.0	87.4	56.2	42.7				
	3.0-3.5	ML	2.70	21.05	43.60	8.26	100	94.8	94.5	89.3	80.2	44.8	29.8				
ALY-47	0.0-1.0	MH	2.62	28.01	54.10	12.87	100	99.5	98.7	98.0	89.5	65.0	51.0				
	1.0-3.0	MH	2.67	27.64	59.60	18.80	100	99.4	99.0	98.5	90.5	67.4	51.9				
ALY-48	0.0-1.0	MH	2.63	26.99	53.21	13.50	100	99.7	98.6	96.1	90.2	70.5	53.7				
	1.0-3.0	MH	2.70	26.73	55.60	13.79	100	99.9	99.6	99.0	93.0	69.4	56.6				
	3.0-4.0	ML	2.73	21.53	43.85	7.33	100	88.9	83.5	80.6	73.4	45.2	33.4				
	4.0-5.0	ML	2.68	21.49	44.70	8.05	100	99.5	99.0	98.5	90.8	55.8	38.8				
ALY-49	0.1-1.6	SM	2.67	7.25	NP	NP	100	80.2	61.4	40.2	26.0	20.2	14.6				
ALY-50	0.1-2.0	ML	2.67	15.66	NP	NP	100	93.8	87.6	82.9	63.4	23.6	10.8				
ALY-51	0.1-2.0	ML	2.70	23.74	NP	NP	100	96.6	93.7	91.8	83.4	56.9	40.1				
	2.0-3.0	ML	2.74	20.38	NP	NP	100	98.1	94.2	90.2	79.3	43.6	23.5				
	3.0-4.0	ML	2.74	20.24	NP	NP	100	94.1	84.6	77.6	65.9	30.5	16.0				

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TABLE B(9/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO. 5)

Impervious Material (Drill Holes)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT'S LIMITS LL. (%)	ATT'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION #4	GRADATION #10	GRADATION #40	GRADATION #200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max.γ_D (t/m³)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-52	0.1-1.0	ML	2.69	22.65	42.05	9.86	100	97.8	96.2	95.0	84.6	56.8	39.2				
	1.0-2.0	ML	2.71	16.06	NP	NP	100	89.4	82.6	78.2	61.4	29.0	16.8				
ALY-53	0.1-1.0	MH	2.70	26.84	52.40	13.04	-	100	99.8	99.2	88.9	64.2	49.1				
	1.0-3.0	ML	2.71	24.98	49.50	13.42	100	98.4	96.5	95.1	85.6	58.2	37.8				
	3.0-5.0	ML	2.72	22.56	39.95	5.10	-	100	99.1	98.2	84.6	48.5	23.8				
ALY-54	0.1-3.0	ML	2.70	21.47	45.90	11.26	98.3	97.0	95.1	93.5	81.9	52.6	34.9				
	3.0-5.0	ML	2.66	20.40	NP	NP	-	100	99.8	99.5	82.9	43.7	21.0				
ALY-55	0.1-2.0	ML	2.67	21.07	46.05	12.19	100	96.7	94.7	93.2	81.7	53.9	37.7				
	2.0-3.0	ML	2.72	18.10	NP	NP	100	86.7	81.1	77.9	68.9	38.0	20.5				
	3.0-4.0	ML	2.70	15.22	NP	NP	100	96.9	94.1	92.2	74.6	36.6	18.0				
ALY-56	0.1-1.0	ML	2.64	25.15	49.20	15.25	-	100	99.6	93.7	82.3	58.6	44.8				
	1.0-2.0	ML	2.67	23.34	44.0	12.79	100	97.4	95.2	93.5	78.5	54.0	38.8				
	2.0-3.0	ML	2.65	19.51	NP	NP	100	96.1	93.2	90.6	75.0	40.8	21.3				
ALY-57	0.0-1.0	ML	2.65	12.40	23.20	3.34	100	87.9	82.0	73.4	51.0	28.6	14.4				
	1.0-2.0	ML	2.68	13.80	24.00	2.98	100	90.1	84.3	73.9	52.8	33.6	18.4				
	2.0-4.0	ML	2.68	13.48	NP	NP	100	89.4	78.9	68.1	50.3	30.4	15.2				
ALY-58	0.0-1.0	ML	2.65	16.72	35.43	6.38	100	92.9	89.1	86.3	71.1	39.6	24.7				
	1.0-2.0	ML	2.63	14.85	36.20	6.09	100	91.2	83.9	79.3	63.6	33.2	18.6				
	2.0-3.4	ML	2.69	17.59	NP	NP	100	96.9	94.9	93.6	71.2	31.4	12.9				

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TABLE.B(10/10) SUMMARY OF TEST RESULTS

PROJECT. NAM YUAM (SITE NO. 5)

Impervious Material (Drill Holes)

SAMPLE NO.	DEPTH (m.)	USCS. SOIL GROUP	SP.GR.	W,AT RECEIVED (%)	ATT.'S LIMITS LL. (%)	ATT.'S LIMITS PI. (%)	GRADATION -3/4"	GRADATION -#4	GRADATION -#10	GRADATION -#40	GRADATION -#200	GRADATION -10μ	GRADATION -2μ	COMPACTION Max.γ_D (t/m^3)	COMPACTION Wopt. (%)	PERMEABILITY Min. K_T (cm/sec)	PERMEABILITY Molded, W(%)
ALY-59	0.1-1.0	ML	2.69	17.0	NP	NP	100	95.1	92.8	91.8	77.7	31.7	15.0				
	1.0-2.0	ML	2.71	25.27	NP	NP	100	99.5	98.3	97.0	81.0	34.8	14.4				
	2.0-2.8	MH	2.64	36.30	61.20	12.08	100	91.7	87.3	83.2	74.7	45.6	19.8				
ALY-60	0.0-1.0	ML	2.68	24.31	NP	NP	98.9	95.8	93.8	91.9	77.2	38.2	18.5				
	1.0-1.4	ML	2.69	19.19	NP	NP	100	96.7	95.0	94.3	72.2	29.5	13.0				
ALY-61	0.1-1.0	ML	2.63	20.53	43.13	10.29	100	99.6	98.8	97.9	86.2	54.2	38.3				
	1.0-2.0	ML	2.66	22.12	45.40	10.49	100	98.6	97.6	96.8	84.5	52.6	34.1				
	2.0-3.0	ML	2.66	19.08	NP	NP	100	96.9	94.3	92.6	75.6	41.1	23.5				
	3.0-4.0	ML	2.65	17.07	NP	NP	100	90.1	85.0	82.5	64.6	31.5	13.1				
ALY-62	0.1-2.0	ML	2.65	24.21	NP	NP	100	99.9	99.7	99.3	89.3	57.1	40.0				
	2.0-3.0	ML	2.67	21.64	NP	NP	100	96.3	94.1	92.9	82.4	48.0	58.7				
	3.0-4.0	ML	2.67	20.36	NP	NP	100	99.9	99.5	99.0	85.6	43.6	17.5				
ALY-63	0.0-1.9	ML	2.69	23.13	44.70	10.18	100	94.9	92.7	90.8	76.5	51.5	34.1				
ALY-64	0.1-1.0	ML	2.64	23.25	40.82	9.53	100	96.2	94.1	93.0	82.9	55.0	36.2				
	1.0-2.0	ML	2.70	17.97	NP	NP	100	95.1	91.3	89.6	76.8	42.1	24.5				

APPENDIX—C

SEISMICITY

Appendix-C References

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APPENDIX—D

DEVELOPMENT PLAN

APPENDIX-D DEVELOPMENT PLAN

CONTENTS

D-1 DAILY PLANT FACTOR AND EQUIVALENT PEAK DURATION HOURS

APPENDIX D-1 DAILY PLANT FACTOR AND EQUIVALENT PEAK DURATION HOURS

The plant factor of 15% (equivalent peak duration hours of 3.6) was adopted in this report. The reason is described below.

- The load duration curve of the Northern Region in year of 2000 which is described in the Master Plan Study is shown in Fig. 1.

  In the region, there is no significant generating facilities to supply the power for the peak load.

- The Nam Ngao and Mae Lama Luang power plants are the best facilities to supply the power for the peak load.

- The duration hours of 3 to 7 hours are commonly used for the hydropower planning. The value depends on the load duration curve and supply capability of the system.

  The Nam Yuam river basin hydropower integrated projects and other hydropower projects in the northern region should be put into the load duration curve from the top because there is no significant facilities for the peak in Region 4. Considering the firm capacity 330 MW (firm capacity) of Nam Ngao and Mae Lama Luang projects, these project should be put into the slash part in the load curve. The equivalent peak duration hours for the part is 3.6 hours (daily plant factor 15%).

- Another way to determine the daily plant factor is to be obtained from comparison study concerning the maximum power discharge.

  According to the study on maximum power discharge of the investigation stage, the most beneficial case in terms of the (B - C) is the daily plant factor 15% (See: Main Report, Table 8-10 (3)).

  Taking into account the reason above, the daily plant factor of 15% was reasonable.

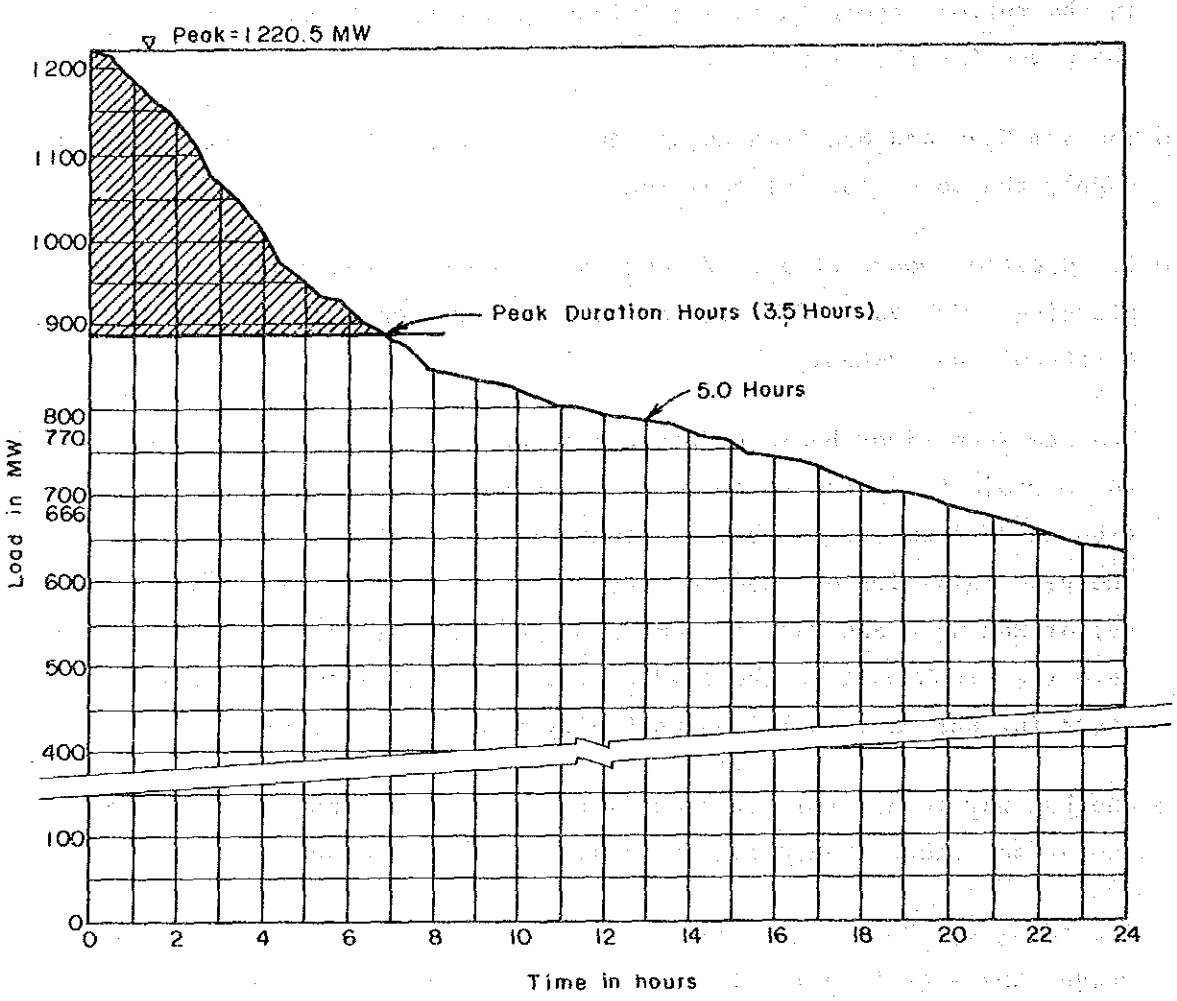
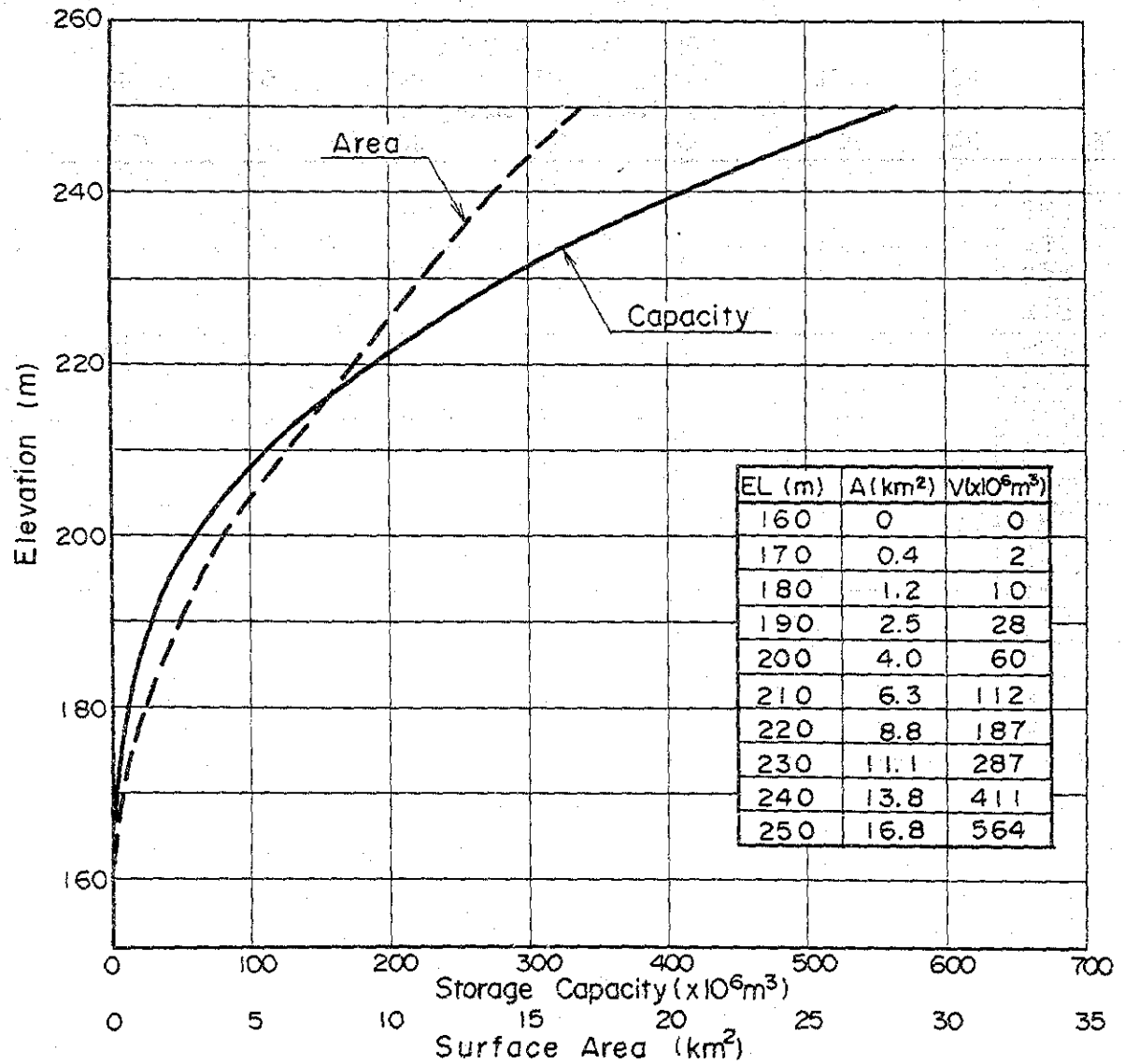


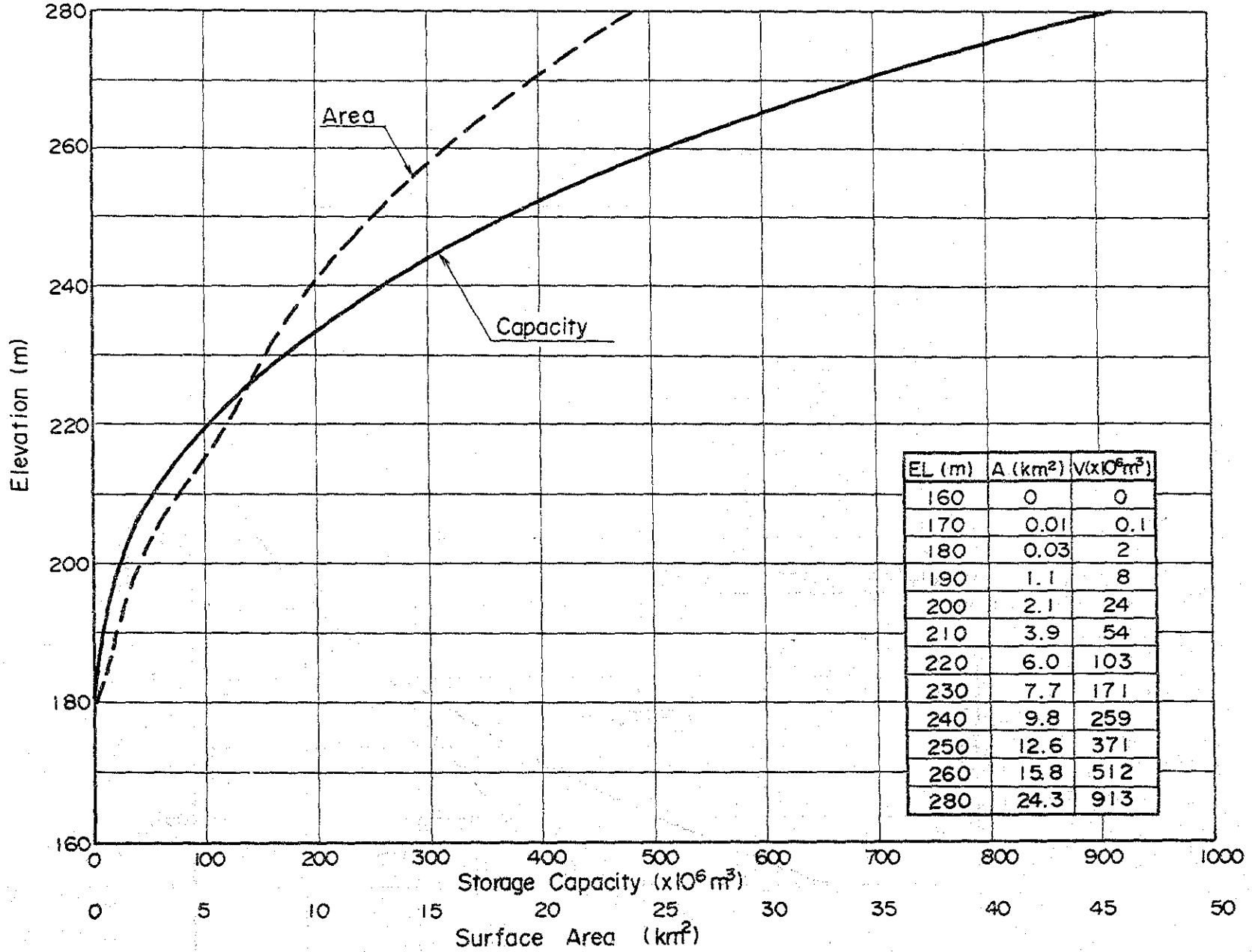
Fig. 1 Load Durations Curve of Northern Region
Year 2000 with Nam Ngao + Nam Yuam

D-2 RESERVOIR AREA AND STORAGE CAPACITY CURVES OF NAM NGAO DAM (SITE NO. 1, NO. 3)



EL (m)	A (km²)	V (x10⁶m³)
160	0	0
170	0.4	2
180	1.2	10
190	2.5	28
200	4.0	60
210	6.3	112
220	8.8	187
230	11.1	287
240	13.8	411
250	16.8	564

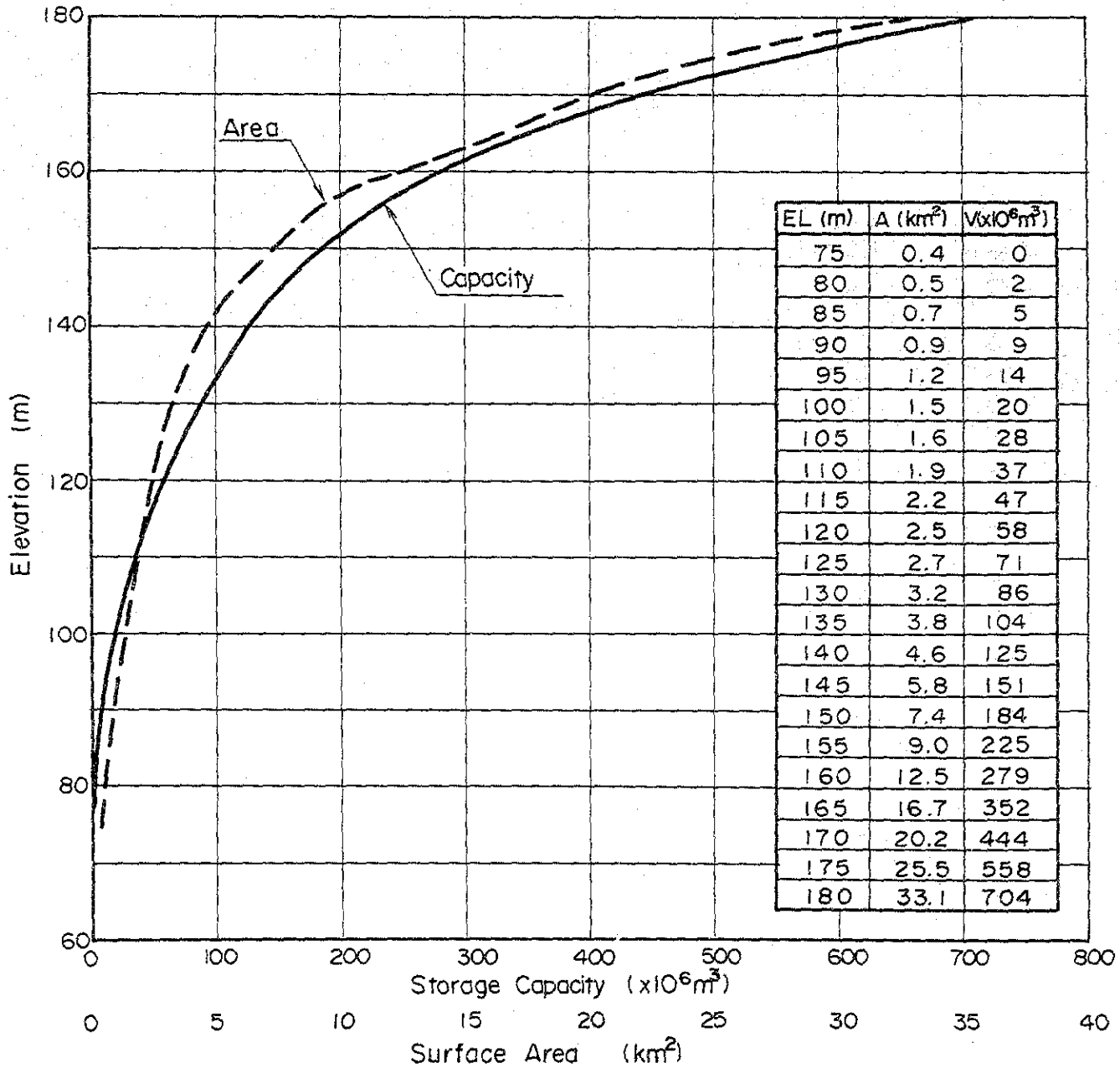
Reservoir Area and Storage Capacity Curve of Nam Ngao Dam (Site No.1)



EL (m)	A (km²)	V(x10⁶m³)
160	0	0
170	0.01	0.1
180	0.03	2
190	1.1	8
200	2.1	24
210	3.9	54
220	6.0	103
230	7.7	171
240	9.8	259
250	12.6	371
260	15.8	512
280	24.3	913

Reservoir Area and Storage Capacity Curve of Nam Ngao Dam (Site No.3)

D-3 RESERVOIR AREA AND STORAGE CAPACITY CURVES OF MAE LAMA LUANG DAM (SITE NEA)



EL (m)	A (km²)	V x10⁶m³)
75	0.4	0
80	0.5	2
85	0.7	5
90	0.9	9
95	1.2	14
100	1.5	20
105	1.6	28
110	1.9	37
115	2.2	47
120	2.5	58
125	2.7	71
130	3.2	86
135	3.8	104
140	4.6	125
145	5.8	151
150	7.4	184
155	9.0	225
160	12.5	279
165	16.7	352
170	20.2	444
175	25.5	558
180	33.1	704

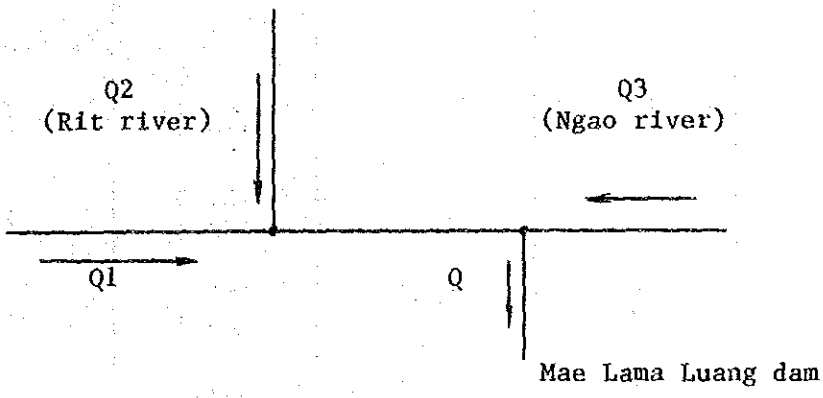
Reservoir Area and Storage Capacity Curve of Mae Lama Luang Dam (Site NEA)

D-4 BACK WATER EFFECT BY MAE LAMA LUANG RESERVOIR

1. Condition

(1) Flood

1,800 m^3/sec at Mae Lama Luang dam site with 100 years return period.



$Q = Q1 + Q2 + Q3$

$Q = Q1 + Q2 + Q3$

$Q1 = 580$ m^3/sec

$Q2 = 220$ "

$Q3 = 1,000$ "

C.A.: Mae Lama Luang dam 6,030 km^2 $Q1 = (1,800 - 1,000) \times \frac{3,719}{1,376 + 3,719}$

Ngao river 935 km^2 $= 580$ m^3/s

Rit river 1,376 km^2

Remaining area 3,719 km^2

(2) Section

Obtained from 1/10,000 map.

(3) Coefficient of roughness : 0.035

2. Calculation Cases

- Natural condition without the dam
- With dam for the initial water level of 160.0 m - 165.0 m.

Summary of Backwater Effect

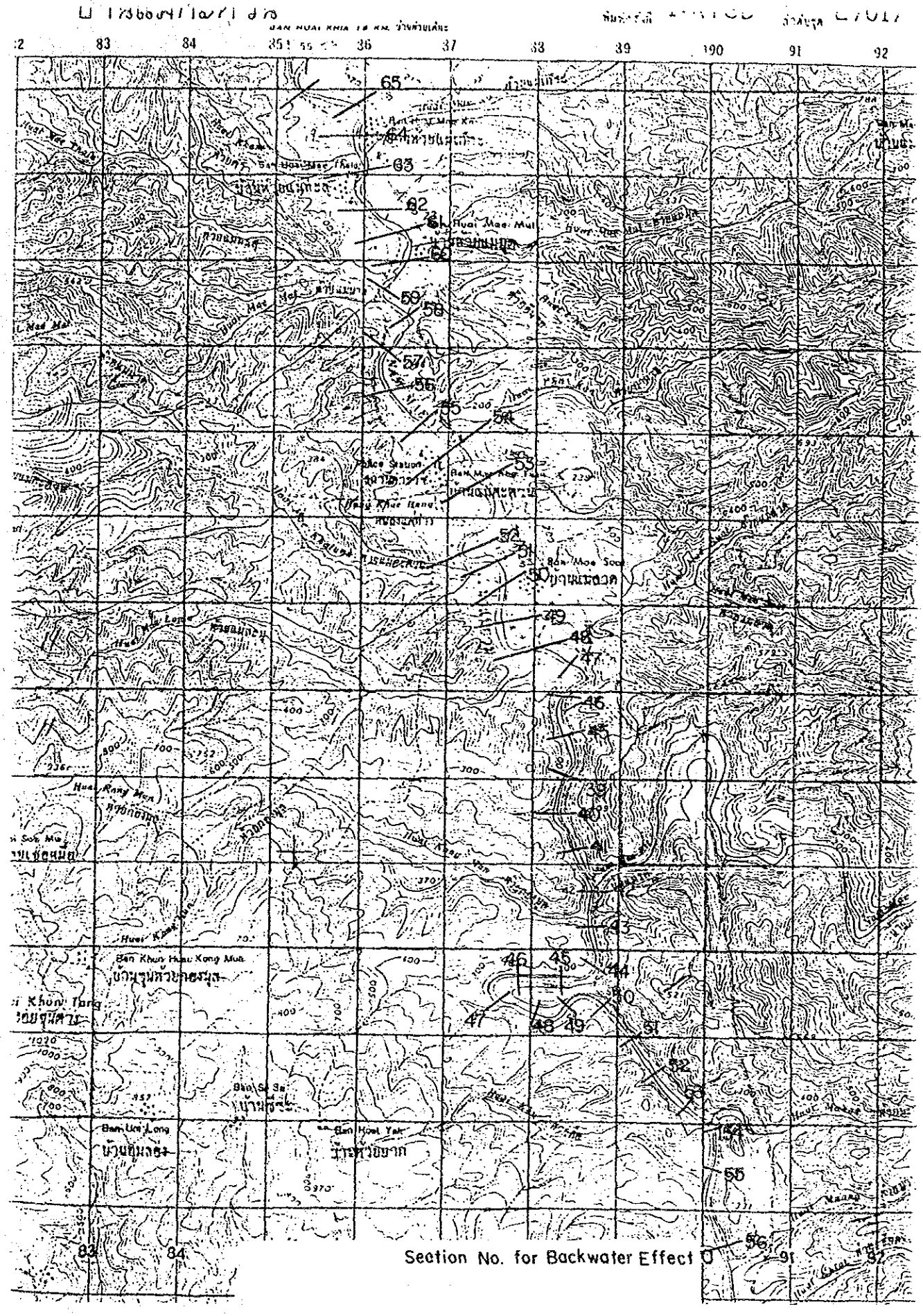
Reservoir Water Level at Dam Site	Section No. of End of Backwater	Water Level of End of Backwater		(3) Adopted Water Level for End of Backwater
		(1) With Dam	(2) W/o Dam	
				(Average of (1)
160.0	54 55	161.5 162.7	161.3 162.8	) 162.1
161.0	54 55	161.9 162.7	161.3 162.8	) 162.3
162.0	56 57	164.1 165.7	164.0 165.7	) 164.9
162.5	56 57	164.1 165.7	164.0 165.7	) 164.9
163.0	56 57	164.3 165.7	164.0 165.8	) 165.0
163.5	56 57	164.4 165.7	164.0 165.7	) 165.1
164.0	56 57	164.7 165.7	164.0 165.8	) 165.2
165.0	57 58	165.9 166.5	165.7 166.5	) 166.2

(2-1) Result of Calculation

NO.	DL	L	H	H	H	H	H	H	H	H	H
1	0.0	0.0	71.070	160.000	161.000	162.000	162.500	163.000	163 500	164.000	165.000
2	500.0	500.0	73.015	160.001	161.001	162.001	162.500	163.000	163.500	164.000	165.000
3	500.0	1,000.0	75.041	160.001	161.001	162.001	162.500	163.000	163.500	164.000	165.000
4	500.0	1,500.0	75.251	160.001	161.001	162.001	162.500	163.000	163.500	164.000	165.000
5	500.0	2,000.0	76.537	160.000	161.00	162.000	162.500	163.000	163.500	164.000	165.000
6	500.0	2,500.0	77.118	160.000	161.000	162.000	162.500	163.000	163.500	164.000	165.000
7	500.0	3,000.0	78.382	160.002	161.001	162.001	162.501	163.001	163.501	164.001	165.001
8	800.0	3,800.0	79.732	160.002	161.002	162.001	162.501	163.001	163.501	164.001	165.001
9	800.0	4,600.0	80.783	160.002	161.002	162.002	162.501	163.001	163.501	164.001	165.001
10	1,600.0	6,200.0	81.190	160.002	161.002	162.002	162.501	163.001	163.501	164.001	165.001
11	2,100.0	8,300.0	88.750	160.002	161.002	162.002	162.502	163.002	163.501	164.001	165.001
12	900.0	9,200.0	94.370	160.002	161.002	162.002	162.502	163.002	163.502	164.002	165.001
13	1,100.0	10,300.0	97.964	160.002	161.002	162.002	162.502	163.002	163.502	164.002	165.002
14	900.0	11,200.0	101.121	160.002	161.002	162.002	162.502	163.002	163.502	164.002	165.002
15	500.0	11,700.0	102.719	160.001	161.001	162.001	162.501	163.001	163.501	164.001	165.001
16	1,400.0	13,100.0	112.350	160.002	161.002	162.002	162.501	163.001	163.501	164.001	165.001
17	1,500.0	14,600.0	119.012	160.001	161.001	162.001	162.501	163.001	163.501	164.001	165.001
18	1,300.0	15,900.0	127.759	160.005	161.004	162.004	162.504	163.003	163.503	164.003	165.003
19	1,500.0	17,400.0	133,249	160.001	161.000	162.000	162.500	163.000	163.500	164.000	165.000
20	1,200.0	18.600.0	135.072	160.004	161.004	162.003	162.503	163.002	163.502	164.002	165.002
21	1,000.0	19,600.0	135,781	160.006	161.005	162.004	162.503	163.003	163.503	164.003	165.002
22	800.0	20,400.0	136.050	160.006	161.005	162.004	162.503	163.003	163.503	164.003	165.003
23	1,200.0	21,600.0	138.426	160.004	161.003	162.002	162.502	163.002	163.502	164.001	165.001
24	2,900.0	24,500.0	146.009	160.017	161.014	162.012	162.511	163.010	163.509	164.009	165.007
25	1,000.0	25,500.0	146.229	160.023	161.020	162.016	162.515	163.014	163.513	164.012	165.010
26	900.0	26,400.0	146.378	160.025	161.022	162.018	162.516	163.016	163.514	163.013	164.012
27	1,700.0	28,100.0	147.226	160.031	161.026	162.022	162.520	163.018	163.517	164.016	165.014
28	900.0	29,000.0	149.136	160.017	161.012	162.009	162.507	163.006	163.505	164.004	165.003
29	500.0	29,500.0	151.570	160.054	161.042	162.032	162.529	163.025	163.523	164.020	165.016
30	500.0	30,000.0	152.141	160.101	161.081	162.066	162.559	163.054	163.549	164.044	165.037
31	500.0	30,500.0	152.361	160.118	161.095	162.077	162.570	163.063	163.557	164.052	165.044
32	500.0	31,000.0	152.481	160.118	161.094	162.075	162.568	163.061	163.555	164.050	165.041
33	500.0	31,500.0	152.759	160.150	161.120	162.097	162.588	163.080	163.572	164.066	165.055
34	500.0	32,000.0	152.915	160.148	161.118	162.095	162.586	163.077	163.570	164.064	165.053
35	500.0	32,500.0	153.172	160.164	161.131	162.106	162.595	163.086	163.578	164.071	165.059
36	500.0	33,000.0	153.382	160.168	161.133	162.107	162.596	163.086	163.578	164.071	165.059
37	500.0	33,500.0	153.643	160.180	161.142	162.113	162.601	163.091	163.582	164.075	165.062
38	500.0	34,000.0	153.984	160.201	161.159	162.126	162.613	163.102	163.592	164.083	165.068
39	500.0	34,500.0	154.161	160.205	161.161	162.128	162.614	163.102	163.592	164.084	165.069
40	500.0	35,000.0	154.402	160.22	161.172	162.135	162.621	163.109	163.598	164.088	165.072
41	500.0	35,500.0	154.739	160.240	161.186	162.147	162.631	163.118	163.606	164.095	165.078
42	500.0	36,000.0	155.211	160.242	161.186	162.145	162.630	163.116	163.604	164.093	165.076
43	500.0	36,500.0	155.936	160.278	161.211	162.164	162.646	163.129	163.616	164.104	165.085
44	500.0	37,000.0	156.685	160.287	161.209	162.157	162.637	163.121	163.607	164.095	165.076
45	500.0	37,500.0	158.528	160.524	161.369	162.268	162.731	163.200	163.674	164.153	165.119

(2-2) Result of Calculation

NO.	DL	L	H	H	H	H	H	H	H	H	H
46	500.0	38,000.0	157.778	160.613	161.431	162.312	162.768	163.231	163.701	164.176	165.136
47	500.0	38,500.0	158.978	160.687	161.484	162.349	162.300	163.259	163.726	164.197	165.153
48	500.0	39,000.0	159.077	160.709	161.495	162.356	162.806	163.263	163.729	164.200	165.155
49	500.0	39,500.0	159.158	160.725	161.504	162.361	162.809	163.266	163.731	164.201	165.156
50	500.0	40,000.0	159.236	160.738	161.511	162.364	162.812	163.268	163.732	164.202	165.157
51	500.0	40,500.0	159.332	160.751	161.516	162.367	162.813	163.269	163.734	164.204	165.158
52	500.0	41,000.0	159,479	160.768	161.523	162.370	162.816	163.271	163.735	164.205	165.158
53	1,000.0	42,000.0	160.270	160.947	161.591	162.396	162.832	163.282	163.742	164.210	165.161
54	500.0	42,500.0	161.323	161.522	161.889	162.516	162.904	163.325	163.769	164.226	165.166
55	500.0	43,000.0	162.778	162.713	162.734	162.987	163.229	163.540	163.908	164.317	165.206
56	500.0	43,500.0	164.032	164.027	164.028	164.067	164.136	164.259	164.447	164.699	165.364
57	500.0	44,000.0	165.747	165.750	165.749	165.730	165.701	165.668	165.651	165.679	165.921
58	500.0	44,500.0	166.459	166.460	166.460	166.452	166.441	166.430	166.424	166.433	166.538
59	500.0	45,000.0	166.471	166.472	166.472	166.464	166.454	166.442	166.437	166.446	166.549
60	500.0	45,500.0	166.479	166.480	166.480	166.473	166.462	166.451	166.446	166.454	166.557
61	500.0	46,000.0	166.491	166.492	166.491	166.484	166.474	166.462	166.457	166.466	166.567
62	500.0	46,500.0	166.502	166.503	166.502	166.495	166.485	166.474	166.469	166.477	166.577
63	500.0	47,000.0	166.663	166.663	166.663	166.657	166.650	166.641	166.637	166.644	166.723
64	500.0	47,500.0	167.152	167.153	167.153	167.150	167.147	167.143	167.141	167.144	167.179
65	500.0	48,000.0	167.815	167.815	167.815	167.814	167.813	167.812	167.812	167.813	167.823
66	500.0	48,500.0	163.899	168.899	168.899	168.898	168.898	168.898	168.898	168.898	168.900
67	500.0	49,000.0	170.298	170.298	170.298	170.298	170.298	170.298	170.298	170.298	170.297
68	500.0	49,500.0	170.442	170.442	170.442	170.442	170.442	170.442	170.442	170.442	170.441
69	500.0	50,000.0	170.642	170.642	170.642	170.642	170.642	170.642	170.642	170.642	170.641
70	500.0	50,500.0	171.064	171.064	171.064	171.064	171.064	171.064	171.064	171.064	171.063
71	500.0	51,000.0	171.987	171.987	171.987	171.987	171.987	171.987	171.987	171.987	171.987
72	500.0	51,500.0	172.630	172.630	172.630	172.630	172.630	172.630	172.630	172.630	172.630
73	500.0	52,000.0	172.884	172.884	172.884	172.884	172.884	172.884	172.884	172.884	172.884
74	500.0	52,500.0	173.253	173.253	173.253	173.253	173.253	173.253	173.253	173.253	173.253
75	500.0	53,000.0	173.462	173.462	173.462	173.462	173.462	173.462	173.462	173.462	173.462
76	500.0	53,500.0	173.509	173,509	173.509	173.509	173.509	173.509	173.509	173.509	173,509
77	1,000.0	54,500.0	173.755	173.755	173.755	173.755	173.755	173.755	173.755	173.755	173.755
78	500.0	55,000.0	174.074	174.074	174.074	174.074	174.074	174.074	174.074	174.074	174.074
79	500.0	55,500.0	174.593	174.593	174.593	174.593	174.593	174.593	174.593	174.593	174.593
80	500.0	56,000.0	174.963	174.963	174.963	174.963	174.963	174.963	174.963	174.963	174.963
81	500.0	56,600.0	175.432	175.432	175.432	175.432	175.432	175.432	175.432	175.432	175.432
82	500.0	57,000.0	176.210	176.210	176.210	176.210	176.210	176.210	176.210	176.210	176.210


Section No. for Backwater Effect

D-5 CONSTRUCTION COST FOR SEQUENCE ON PROJECT IMPLEMENTATION

(1) Construction Cost for Sequence of Project Implementation

(Case A) Nam Ngao Project (Individual Development) P = 140 MW

(Million Baht)

	1st year		2nd year		3rd year		4th year		5th year		Total		
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	Total
1.Preparation Works	0.0	66.0	0.0	36.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.0	102.0
2.Environmental Mitigation	0.0	24.6	0.0	61.5	0.0	61.5	0.0	32.8	0.0	24.7	0.0	205.1	205.1
3.Civil Works	20.7	16.7	245.5	187.1	331.7	251.4	333.0	294.7	32.5	47.8	963.4	797.7	1,761.1
4.Hydraulic Equipment	0.0	0.0	0.0	0.0	45.1	18.7	46.3	16.8	25.9	6.7	117.3	42.2	159.5
5.Electro-mechanical Equipment	0.0	0.0	145.4	3.0	334.6	30.2	280.0	32.8	76.8	27.2	836.8	93.2	930.0
6.Transmission Line	0.0	0.0	0.0	0.0	229.0	28.3	182.6	46.5	46.4	18.2	458.0	93.0	551.0
Sub Total (1)	20.7	107.3	390.9	287.6	940.4	390.1	841.9	423.6	181.6	124.6	2,375.5	1,333.2	3,708.7
7.Import Duties	0.0	1.1	0.0	51.9	0.0	150.2	0.0	129.0	0.0	33.2	0.0	365.4	365.4
8.EGAT Administration	0.0	3.8	0.0	20.4	0.0	39.9	0.0	38.0	0.0	9.2	0.0	111.3	111.3
9.Engineering Service	6.4	0.0	33.9	0.0	66.5	0.0	63.3	0.0	15.3	0.0	185.4	0.0	185.4
Sub Total (2)	27.1	112.2	424.8	359.9	1,006.9	580.2	905.2	590.6	196.9	167.0	2,560.9	1,809.9	4,370.8
10.Physical Contingency	2.1	10.7	34.7	28.7	77.1	37.3	70.3	40.0	14.5	11.1	198.7	127.8	326.5
11.1 Escalation Ratio	(1.1580)	(1.1580)	(1.1997)	(1.1997)	(1.2429)	(1.2429)	(1.2877)	(1.2877)	(1.3469)	(1.3469)			
11.Price Contingency	4.3	17.7	84.8	71.9	244.6	140.9	260.4	169.9	68.3	57.9	662.4	458.3	1,120.7
Sub Total (3)	33.5	140.6	544.3	460.5	1,328.6	758.4	1,236.9	800.5	279.7	236.0	3,422.0	2,396.0	5,818.0
12.1 Interest	2.7	7.0	46.2	30.0	152.5	67.9	251.4	107.9	273.8	119.7	726.6	332.5	1,059.1
12.2 Commitment Fee	25.7		25.4		21.3		11.4		2.1		85.9	0.0	85.9
12.Interest During Construction	28.4	7.0	71.6	30.0	173.8	67.9	262.8	107.9	275.9	119.7	812.5	332.5	1,145.0
Total Project Cost	61.9	147.6	615.9	490.5	1,502.4	826.3	1,498.7	908.4	555.6	355.7	4,234.5	2,728.5	6,963.0
Economic Cost Case-1 (*)	29.2	94.8	459.5	269.0	1,084.0	399.6	975.5	465.5	211.4	117.7	2,759.6	1,346.6	4,106.2
Economic Cost Case-2 (**)	29.2	121.8	459.5	336.7	1,084.0	467.3	975.5	501.6	211.4	144.9	2,759.6	1,572.3	4,331.9

(Note) (*) excluding " 2. Environmental Mitigation "
(**) including " 2. Environmental Mitigation "

(2) Construction Cost for Sequence of Project Implementation

(CASE B) Mae Lama Luang Project (Individual Development) P = 160 MW

(Million Baht)

	1st year		2nd year		3rd year		4th year		5th year		Total		
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	Total
1.Preparation Works	0.0	100.0	0.0	32.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	132.0	132.0
2.Environmental Mitigation	0.0	31.3	0.0	78.3	0.0	78.3	0.0	41.8	0.0	31.4	0.0	261.1	261.1
3.Civil Works	64.1	54.6	132.3	107.3	336.3	328.6	250.8	232.0	12.6	17.7	796.1	740.2	1,536.3
4.Hydraulic Equipment	0.0	0.0	0.0	0.0	5.8	2.5	79.6	29.8	40.4	10.4	125.8	42.7	168.5
5.Electro-mechanical Equipment	0.0	0.0	166.2	3.4	384.4	42.8	341.2	41.8	90.2	30.0	982.0	118.0	1,100.0
6.Transmission Line	0.0	0.0	0.0	0.0	229.0	28.3	182.6	46.5	46.4	18.2	458.0	93.0	551.0
Sub Total (1)	64.1	185.9	298.5	221.0	955.5	480.5	854.2	391.9	189.6	107.7	2,361.9	1,387.0	3,748.9
7.Import Duties	0.0	3.3	0.0	52.4	0.0	151.4	0.0	153.2	0.0	39.7	0.0	400.0	400.0
8.EGAT Administration	0.0	7.5	0.0	15.6	0.0	43.1	0.0	37.4	0.0	8.9	0.0	112.5	112.5
9.Engineering Service	12.5	0.0	26.0	0.0	71.8	0.0	62.3	0.0	14.9	0.0	187.5	0.0	187.5
Sub Total (2)	76.6	196.7	324.5	289.0	1,027.3	675.0	916.5	582.6	204.5	156.3	2,549.4	1,899.5	4,448.9
10.Physical Contingency	6.4	18.6	24.9	22.0	77.1	45.9	69.7	36.5	14.9	9.3	193.0	132.3	325.3
11.1 Escalation Ratio	(1.1580)	(1.1580)	(1.1997)	(1.1997)	(1.2429)	(1.2429)	(1.2877)	(1.2877)	(1.3469)	(1.3469)			
11.Price Contingency	12.1	31.1	64.8	57.7	249.5	164.0	263.7	167.6	70.9	54.2	661.0	474.6	1,135.6
Sub Total (3)	95.1	246.4	414.2	368.7	1,353.9	884.9	1,249.9	786.6	290.3	219.8	3,403.4	2,506.4	5,909.8
12.1 Interest	7.6	12.3	40.7	30.7	149.0	74.9	249.0	114.2	272.2	125.2	718.5	357.3	1,075.8
12.2 Commitment Fee	25.5		24.8		21.7		11.6		2.2		85.8	0.0	85.8
12.Interest During Construction	33.1	12.3	65.5	30.7	170.7	74.9	260.6	114.2	274.4	125.2	804.3	357.3	1,161.6
Total Project Cost	128.2	258.7	479.7	399.4	1,524.6	959.8	1,510.5	900.8	564.7	345.0	4,207.7	2,863.7	7,071.4
Economic Cost Case-1 (*)	83.0	177.6	349.4	172.5	1,104.4	483.4	986.2	419.9	219.4	91.4	2,742.4	1,344.8	4,087.2
Economic Cost Case-2 (**)	83.0	212.0	349.4	258.6	1,104.4	569.5	986.2	465.8	219.4	125.9	2,742.4	1,631.8	4,374.2

(Note) (*) excluding " 2. Environmental Mitigation "
(**) including " 2. Environmental Mitigation "

(3) Construction Cost for Sequence of Project Implementation

(Case C)(Case D)(Case E) Nam Ngao Project (Integrated Development) P = 140 MW

(Million Baht)

	1st year		2nd year		3rd year		4th year		5th year		Total		
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	Total
1.Preparation Works	0.0	66.0	0.0	36.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.0	102.0
2.Environmental Mitigation	0.0	22.9	0.0	57.2	0.0	57.2	0.0	30.5	0.0	22.7	0.0	190.5	190.5
3.Civil Works	20.7	16.7	245.5	187.1	331.7	251.4	333.0	294.7	32.5	47.8	963.4	797.7	1,761.1
4.Hydraulic Equipment	0.0	0.0	0.0	0.0	45.1	18.7	46.3	16.8	25.9	6.7	117.3	42.2	159.5
5.Electro-mechanical Equipment	0.0	0.0	145.4	3.0	334.6	30.2	280.0	32.8	76.8	27.2	836.8	93.2	930.0
6.Transmission Line	0.0	0.0	0.0	0.0	114.0	22.3	91.4	37.0	22.6	14.7	228.0	74.0	302.0
Sub Total (1)	20.7	105.6	390.9	283.3	825.4	379.8	750.7	411.8	157.8	119.1	2,145.5	1,299.6	3,445.1
7.Import Duties	0.0	1.0	0.0	51.9	0.0	137.5	0.0	118.9	0.0	30.7	0.0	340.0	340.0
8.EGAT Administration	0.0	3.8	0.0	20.2	0.0	36.2	0.0	34.9	0.0	8.3	0.0	103.4	103.4
9.Engineering Service	6.3	0.0	33.7	0.0	60.3	0.0	58.1	0.0	13.8	0.0	172.2	0.0	172.2
Sub Total (2)	27.0	110.4	424.6	355.4	885.7	553.5	808.8	565.6	171.6	158.1	2,317.7	1,743.0	4,060.7
10.Physical Contingency	2.1	10.6	34.7	28.2	69.1	36.4	63.9	39.1	12.8	10.7	182.6	125.0	307.6
11.1 Escalation Ratio	(1.1580)	(1.1580)	(1.1997)	(1.1997)	(1.2429)	(1.2429)	(1.2877)	(1.2877)	(1.3469)	(1.3469)			
11.Price Contingency	4.3	17.4	84.8	71.0	215.1	134.4	232.7	162.7	59.5	54.8	596.4	440.3	1,036.7
Sub Total (3)	33.4	138.4	544.1	454.6	1,169.9	724.3	1,105.4	767.4	243.9	223.6	3,096.7	2,308.3	5,405.0
12.1 Interest	2.7	6.9	46.2	29.6	139.8	65.8	228.2	104.2	247.7	115.4	664.6	321.9	986.5
12.2 Commitment Fee	23.2		23.0		18.9		10.1		1.8		77.0	0.0	77.0
12.Interest During Construction	25.9	6.9	69.2	29.6	158.7	65.8	238.3	104.2	249.5	116.5	741.6	323.4	1,065.0
Total Project Cost	59.3	145.3	613.3	484.2	1,328.6	790.1	1,343.7	871.6	493.4	340.5	3,838.3	2,631.7	6,470.0
Economic Cost Case-1 (*)	29.1	94.8	459.3	268.8	954.8	389.5	872.7	452.2	184.4	113.1	2,500.3	1,318.4	3,818.7
Economic Cost Case-2 (**)	29.1	120.0	459.3	331.7	954.8	452.4	872.7	485.8	184.4	138.1	2,500.3	1,528.0	4,028.3

(Note) (*) excluding " 2. Environmental Mitigation "
(**) including " 2. Environmental Mitigation "

(4) Construction Cost for Sequence of Project Implementation

(Case C) (Case D) Mae Lama Luang Project (Integrated Development) P = 240 MW

(Million Baht)

	1st year		2nd year		3rd year		4th year		5th year		Total		
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	Total
1.Preparation Works	0.0	100.0	0.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133.0	133.0
2.Environmental Mitigation	0.0	35.9	0.0	89.8	0.0	89.8	0.0	47.9	0.0	36.0	0.0	299.4	299.4
3.Civil Works	64.1	54.6	135.9	111.8	341.5	321.9	272.3	267.8	12.8	17.1	826.6	773.2	1,599.8
4.Hydraulic Equipment	0.0	0.0	0.0	0.0	8.1	3.5	101.6	39.0	42.1	10.9	151.8	53.4	205.2
5.Electro-mechanical Equipment	0.0	0.0	166.2	3.4	572.0	55.4	550.4	61.8	130.2	50.8	1,418.8	171.4	1,590.2
6.Transmission Line	0.0	0.0	0.0	0.0	229.0	28.3	182.6	46.5	46.4	18.2	458.0	93.0	551.0
Sub Total (1)	64.1	190.5	302.1	238.0	1,150.6	498.9	1,106.9	463.0	231.5	133.0	2,855.2	1,523.4	4,378.6
7.Import Duties	0.0	3.3	0.0	52.6	0.0	205.4	0.0	219.6	0.0	50.9	0.0	531.8	531.8
8.EGAT Administration	0.0	7.6	0.0	16.2	0.0	49.5	0.0	47.1	0.0	10.9	0.0	131.3	131.3
9.Engineering Service	12.7	0.0	27.0	0.0	82.5	0.0	78.5	0.0	18.2	0.0	218.9	0.0	218.9
Sub Total (2)	76.8	201.4	329.1	306.8	1,233.1	753.8	1,185.4	729.7	249.7	194.8	3,074.1	2,186.5	5,260.6
10.Physical Contingency	6.4	19.1	25.2	23.7	91.0	47.4	88.7	43.1	17.9	11.2	229.2	144.5	373.7
11.1 Escalation Ratio	(1.1580)	(1.1580)	(1.1997)	(1.1997)	(1.2429)	(1.2429)	(1.2877)	(1.2877)	(1.3469)	(1.3469)			
11.Price Contingency	12.1	31.8	65.7	61.3	299.5	183.1	341.0	209.9	86.6	67.6	804.9	553.7	1,358.6
Sub Total (3)	95.3	252.3	420.0	391.8	1,623.6	984.3	1,615.1	982.7	354.2	273.6	4,108.2	2,884.7	6,992.9
12.1 Interest	7.6	12.6	41.2	32.2	171.1	81.4	300.3	130.5	328.6	146.3	848.8	403.0	1,251.8
12.2 Commitment Fee	30.8		30.1		26.9		14.8		2.7		105.3	0.0	105.3
12.Interest During Construction	38.4	12.6	71.3	32.2	198.0	81.4	315.1	130.5	331.3	146.3	954.1	403.0	1,357.1
Total Project Cost	133.7	264.9	491.3	424.0	1,821.6	1,065.7	1,930.2	1,113.2	685.5	419.9	5,062.3	3,287.7	8,350.0
Economic Cost Case-1 (*)	83.2	177.7	354.3	179.1	1,324.1	497.0	1,274.1	500.5	267.6	115.5	3,303.3	1,469.8	4,773.1
Economic Cost Case-2 (**)	83.2	217.2	354.3	277.9	1,324.1	595.8	1,274.1	553.2	267.6	155.1	3,303.3	1,799.2	5,102.5

(Note) (*) excluding " 2. Environmental Mitigation "
(**) including " 2. Environmental Mitigation "

(5) Construction Cost for Sequence of Project Implementation

(Case E) Mae Lama Luang Project (Integrated Development) P = 160 MW (1st stage , 2 units)

(Million Baht)

	1st year		2nd year		3rd year		4th year		5th year		Total		
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	Total
1.Preparation Works	0.0	100.0	0.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133.0	133.0
2.Environmental Mitigation	0.0	32.1	0.0	80.3	0.0	80.3	0.0	42.8	0.0	32.1	0.0	267.6	267.6
3.Civil Works	64.1	54.6	135.9	111.8	341.5	321.9	272.3	267.8	12.8	17.1	826.6	773.2	1,599.8
4.Hydraulic Equipment	0.0	0.0	0.0	0.0	8.1	3.5	101.6	39.0	42.1	10.9	151.8	53.4	205.2
5.Electro-mechanical Equipment	0.0	0.0	166.2	3.4	392.8	42.8	341.2	41.8	90.2	30.0	990.4	118.0	1,108.4
6.Transmission Line	0.0	0.0	0.0	0.0	229.0	28.3	182.6	46.5	46.4	18.2	458.0	93.0	551.0
Sub Total (1)	64.1	186.7	302.1	228.5	971.4	476.8	897.7	437.9	191.5	108.3	2,426.8	1,438.2	3,865.0
7.Import Duties	0.0	3.3	0.0	52.6	0.0	155.8	0.0	162.0	0.0	39.9	0.0	413.6	413.6
8.EGAT Administration	0.0	7.5	0.0	15.9	0.0	43.4	0.0	40.1	0.0	9.0	0.0	115.9	115.9
9.Engineering Service	12.5	0.0	26.5	0.0	72.4	0.0	66.8	0.0	15.0	0.0	193.2	0.0	193.2
Sub Total (2)	76.6	197.5	328.6	297.0	1,043.8	676.0	964.5	640.0	206.5	157.2	2,620.0	1,967.7	4,587.7
10.Physical Contingency	6.4	18.7	25.2	22.7	78.5	45.5	74.1	41.1	15.1	9.4	199.3	137.4	336.7
11.1 Escalation Ratio	(1.1580)	(1.1580)	(1.1997)	(1.1997)	(1.2429)	(1.2429)	(1.2877)	(1.2877)	(1.3469)	(1.3469)			
11.Price Contingency	12.1	31.2	65.6	59.3	253.5	164.2	277.5	184.1	71.6	54.5	680.3	493.3	1,173.6
Sub Total (3)	95.1	247.4	419.4	379.0	1,375.8	885.7	1,316.1	865.2	293.2	221.1	3,499.6	2,598.4	6,098.0
12.1 Interest	7.6	12.4	41.2	31.4	151.3	75.7	256.6	119.0	280.1	130.1	736.8	368.6	1,105.4
12.2 Commitment Fee	26.2		25.5		22.4		12.1		2.2		88.4	0.0	88.4
12.Interest During Construction	33.8	12.4	66.7	31.4	173.7	75.7	268.7	119.0	282.3	130.1	825.2	368.6	1,193.8
Total Project Cost	128.9	259.8	486.1	410.4	1,549.5	961.4	1,584.8	984.2	575.5	351.2	4,324.8	2,967.0	7,291.8
Economic Cost Case-1 (*)	83.0	177.6	353.8	178.8	1,122.3	477.4	1,038.6	472.1	221.6	91.4	2,819.3	1,397.3	4,216.6
Economic Cost Case-2 (**)	83.0	212.9	353.8	267.1	1,122.3	565.7	1,038.6	519.1	221.6	126.7	2,819.3	1,691.5	4,510.8

(Note) (*) excluding " 2. Environmental Mitigation "
(**) including " 2. Environmental Mitigation "

(6) Construction Cost for Sequence of Project Implementation

(Case E) Mae Lama Luang Project (Integrated Development) P=80 MW (#3)

(Million Baht)

	1st year		2nd year		3rd year		4th year		5th year		Total		
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	Total
1.Preparation Works	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.Environmental Mitigation	0.0	10.8	0.0	27.1	0.0	27.1	0.0	14.5	0.0	10.9	0.0	90.4	90.4
3.Civil Works	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.Hydraulic Equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.Electro-mechanical Equipment	0.0	0.0	0.0	0.0	0.0	0.0	266.9	23.1	215.7	35.0	482.6	58.1	540.7
6.Transmission Line	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub Total (1)	0.0	10.8	0.0	27.1	0.0	27.1	266.9	37.6	215.7	45.9	482.6	148.5	631.1
7.Import Duties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.4	0.0	53.9	0.0	127.3	127.3
8.EGAT Administration	0.0	0.3	0.0	0.8	0.0	0.8	0.0	9.1	0.0	7.8	0.0	18.8	18.8
9.Engineering Service	0.5	0.0	1.4	0.0	1.4	0.0	15.2	0.0	13.1	0.0	31.6	0.0	31.6
Sub Total (2)	0.5	11.1	1.4	27.9	1.4	27.9	282.1	120.1	228.8	107.6	514.2	294.6	808.8
10.Physical Contingency	0.0	1.1	0.0	2.7	0.0	2.7	18.7	3.1	15.1	3.5	33.8	13.1	46.9
11.1 Escalation Ratio	(1.1580)	(1.1580)	(1.1997)	(1.1997)	(1.2429)	(1.2429)	(1.2877)	(1.2877)	(1.3469)	(1.3469)			
11.Price Contingency	0.1	1.8	0.3	5.6	0.3	6.8	81.2	34.6	79.4	37.3	161.3	86.1	247.4
Sub Total (3)	0.6	14.0	1.7	36.2	1.7	37.4	382.0	157.8	323.3	148.4	709.3	393.8	1,103.1
12.1 Interest	0.0	0.7	0.1	2.5	0.2	4.4	30.8	12.3	56.7	19.7	87.8	39.6	127.4
12.2 Commitment Fee	5.3		5.3		5.3		5.3		2.4		23.6	0.0	23.6
12.Interest During Construction	5.3	0.7	5.4	2.5	5.5	4.4	36.1	12.3	59.1	19.7	111.4	39.6	151.0
Total Project Cost	5.9	14.7	7.1	38.7	7.2	41.8	418.1	170.1	382.4	168.1	820.7	433.4	1,254.1
Economic Cost Case-1 (*)	0.5	0.3	1.4	0.8	1.4	0.8	300.8	33.8	243.9	45.3	548.0	81.0	629.0
Economic Cost Case-2 (**)	0.5	12.2	1.4	30.6	1.4	30.6	300.8	49.8	243.9	57.2	548.0	180.4	728.4

(Note) (*) excluding " 2. Environmental Mitigation "
(**) including " 2. Environmental Mitigation "

(7) Construction Cost for Sequence of Project Implementation

(Case F) Nam Ngao Project (Integrated Development) P = 140 MW

(Million Baht)

	1st year		2nd year		3rd year		4th year		5th year		Total		
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	Total
1.Preparation Works	0.0	66.0	0.0	36.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	102.0	102.0
2.Environmental Mitigation	0.0	24.6	0.0	61.5	0.0	61.5	0.0	32.8	0.0	24.7	0.0	205.1	205.1
3.Civil Works	20.7	16.7	245.5	187.1	331.7	251.4	333.0	294.7	32.5	47.8	963.4	797.7	1,761.1
4.Hydraulic Equipment	0.0	0.0	0.0	0.0	45.1	18.7	46.3	16.8	25.9	6.7	117.3	42.2	159.5
5.Electro-mechanical Equipment	0.0	0.0	145.4	3.0	334.6	30.2	280.0	32.8	76.8	27.2	836.8	93.2	930.0
6.Transmission Line	0.0	0.0	0.0	0.0	229.0	28.3	182.6	46.5	46.4	18.2	458.0	93.0	551.0
Sub Total (1)	20.7	107.3	390.9	287.6	940.4	390.1	841.9	423.6	181.6	124.6	2,375.5	1,333.2	3,708.7
7.Import Duties	0.0	1.1	0.0	51.9	0.0	150.2	0.0	129.0	0.0	33.2	0.0	365.4	365.4
8.EGAT Administration	0.0	3.8	0.0	20.4	0.0	39.9	0.0	38.0	0.0	9.2	0.0	111.3	111.3
9.Engineering Service	6.4	0.0	33.9	0.0	66.5	0.0	63.3	0.0	15.3	0.0	185.4	0.0	185.4
Sub Total (2)	27.1	112.2	424.8	359.9	1,006.9	580.2	905.2	590.6	196.9	167.0	2,560.9	1,809.9	4,370.8
10.Physical Contingency	2.1	10.7	34.7	28.7	77.1	37.3	70.3	40.0	14.5	11.1	198.7	127.8	326.5
11.1 Escalation Ratio	(1.1580)	(1.1580)	(1.1997)	(1.1997)	(1.2429)	(1.2429)	(1.2877)	(1.2877)	(1.3469)	(1.3469)			
11.Price Contingency	4.3	17.7	84.8	71.9	244.6	140.9	260.4	169.9	68.3	57.9	662.4	458.3	1,120.7
Sub Total (3)	33.5	140.6	544.3	460.5	1,328.6	758.4	1,235.9	800.5	279.7	236.0	3,422.0	2,396.0	5,818.0
12.1 Interest	2.7	7.0	46.2	30.0	152.5	67.9	251.4	107.9	273.8	119.7	726.6	332.5	1,059.1
12.2 Commitment Fee	25.7		25.4		21.3		11.4		2.1		85.9	0.0	85.9
12.Interest During Construction	28.4	7.0	71.6	30.0	173.8	67.9	262.8	107.9	275.9	119.7	812.5	332.5	1,145.0
Total Project Cost	61.9	147.6	615.9	490.5	1,502.4	826.3	1,498.7	908.4	555.6	355.7	4,234.5	2,728.5	6,963.0
Economic Cost Case-1 (*)	29.2	94.8	459.5	269.0	1,084.0	399.6	975.5	465.5	211.4	117.7	2,759.6	1,346.6	4,106.2
Economic Cost Case-2 (**)	29.2	121.8	459.5	336.7	1,084.0	467.3	975.5	501.6	211.4	144.9	2,759.6	1,572.3	4,331.9

(Note) (*) excluding " 2. Environmental Mitigation "
(**) including " 2. Environmental Mitigation "

(8) Construction Cost for Sequence of Project Implementation

(Case F) Mae Lama Luang Project (Integrated Development) P = 240 MW

(Million Baht)

	1st year		2nd year		3rd year		4th year		5th year		Total		
	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	Total
1.Preparation Works	0.0	100.0	0.0	33.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	133.0	133.0
2.Environmental Mitigation	0.0	33.6	0.0	83.9	0.0	83.9	0.0	44.8	0.0	33.6	0.0	279.8	279.8
3.Civil Works	64.1	54.6	135.9	111.8	341.5	321.9	272.3	267.8	12.8	17.1	826.6	773.2	1,599.8
4.Hydraulic Equipment	0.0	0.0	0.0	0.0	8.1	3.5	101.6	39.0	42.1	10.9	151.8	53.4	205.2
5.Electro-mechanical Equipment	0.0	0.0	166.2	3.4	572.0	55.4	550.4	61.8	130.2	50.8	1,418.8	171.4	1,590.2
6.Transmission Line	0.0	0.0	0.0	0.0	114.0	22.3	91.6	37.0	22.6	14.7	228.2	74.0	302.2
Sub Total (1)	64.1	188.2	302.1	232.1	1,035.6	487.0	1,015.9	450.4	207.7	127.1	2,625.4	1,484.8	4,110.2
7.Import Duties	0.0	3.3	0.0	52.6	0.0	153.4	0.0	162.0	0.0	39.9	0.0	411.2	411.2
8.EGAT Administration	0.0	7.6	0.0	16.0	0.0	45.7	0.0	44.0	0.0	10.0	0.0	123.3	123.3
9.Engineering Service	12.6	0.0	26.7	0.0	76.1	0.0	73.3	0.0	16.7	0.0	205.4	0.0	205.4
Sub Total (2)	76.7	199.1	328.8	300.7	1,111.7	686.1	1,089.2	656.4	224.4	177.0	2,830.8	2,019.3	4,850.1
10.Physical Contingency	6.4	18.8	25.2	23.1	83.0	46.4	82.3	42.1	16.2	10.7	213.1	141.1	354.2
11.1 Escalation Ratio	(1.1580)	(1.1580)	(1.1997)	(1.1997)	(1.2429)	(1.2429)	(1.2877)	(1.2877)	(1.3469)	(1.3469)			
11.Price Contingency	12.1	31.5	65.7	60.0	270.0	166.7	313.4	188.8	77.8	61.4	739.0	508.4	1,247.4
Sub Total (3)	95.2	249.4	419.7	383.8	1,464.7	899.2	1,484.9	887.3	318.4	249.1	3,782.9	2,668.8	6,451.7
12.1 Interest	7.6	12.5	41.2	31.7	158.4	76.7	277.2	121.1	302.7	133.6	787.1	375.6	1,162.7
12.2 Commitment Fee	28.4		27.7		24.5		13.5		2.4		96.5	0.0	96.5
12.Interest During Construction	36.0	12.5	68.9	31.7	182.9	76.7	290.7	121.1	305.1	133.6	883.6	375.6	1,259.2
Total Project Cost	131.2	261.9	488.6	415.5	1,647.6	975.9	1,775.6	1,008.4	623.5	382.7	4,666.5	3,044.4	7,710.9
Economic Cost Case-1 (*)	83.1	177.7	354.0	178.9	1,194.7	486.8	1,171.5	487.2	240.6	110.9	3,043.9	1,441.5	4,485.4
Economic Cost Case-2 (**)	83.1	214.6	354.0	271.2	1,194.7	579.1	1,171.5	536.5	240.6	147.8	3,043.9	1,749.2	4,793.1

(Note) (*) excluding " 2. Environmental Mitigation "
(**) including " 2. Environmental Mitigation "

D-6 CASH FLOW FOR SEQUENCE ON PROJECT IMPLEMENTATION

(Unit: Million ฿)

Serial Number	No. after Completion	Cost				Benefit					B - C
		Investment Cost	O&M Cost	Total	Total (N.P.V.)	Investment Cost	O&M Cost	Fuel Cost	Total	Total (N.P.V.)	
1		0.00		0.00	0.00	0.00			0.00	0.00	0.00
2		151.00		151.00	134.82	0.00			0.00	0.00	-151.00
3		796.20		796.20	634.73	0.00			0.00	0.00	-796.20
4		1551.30		1551.30	1104.16	502.12			502.12	357.40	-1049.18
5		1477.10		1477.10	938.72	627.65			627.65	398.88	-849.45
6		356.30		356.30	202.17	125.53			125.53	71.23	-230.77
7	1		54.00	54.00	27.36		37.66	343.35	381.00	193.03	327.00
8	2		54.00	54.00	24.43		37.66	343.35	381.00	172.35	327.00
9	3		54.00	54.00	21.81		37.66	343.35	381.00	153.88	327.00
10	4		54.00	54.00	19.47		37.66	343.35	381.00	137.39	327.00
11	5		54.00	54.00	17.39		37.66	343.35	381.00	122.67	327.00
12	6		54.00	54.00	15.52		37.66	343.35	381.00	109.53	327.00
13	7		54.00	54.00	13.86		37.66	343.35	381.00	97.79	327.00
14	8		54.00	54.00	12.38		37.66	343.35	381.00	87.32	327.00
15	9		54.00	54.00	11.05		37.66	343.35	381.00	77.96	327.00
16	10		54.00	54.00	9.87		37.66	343.35	381.00	69.61	327.00
17	11		54.00	54.00	8.81		37.66	343.35	381.00	62.15	327.00
18	12		54.00	54.00	7.86		37.66	343.35	381.00	55.49	327.00
19	13		54.00	54.00	7.02	502.12	37.66	343.35	883.13	114.84	829.13
20	14		54.00	54.00	6.27	627.65	37.66	343.35	1008.66	117.11	954.66
21	15		54.00	54.00	5.60	125.53	37.66	343.35	506.54	52.51	452.54
22	16		54.00	54.00	5.00		37.66	343.35	381.00	35.27	327.00
23	17		54.00	54.00	4.46		37.66	343.35	381.00	31.49	327.00
24	18		54.00	54.00	3.98		37.66	343.35	381.00	28.11	327.00
25	19		54.00	54.00	3.56		37.66	343.35	381.00	25.10	327.00
26	20		54.00	54.00	3.18		37.66	343.35	381.00	22.41	327.00
27	21		54.00	54.00	2.84		37.66	343.35	381.00	20.01	327.00
28	22	170.66	54.00	224.66	10.54		37.66	343.35	381.00	17.87	156.34
29	23	419.52	54.00	473.52	19.83		37.66	343.35	381.00	15.95	-92.52
30	24	359.72	54.00	413.72	15.47		37.66	343.35	381.00	14.24	-32.72
31	25	119.60	54.00	173.60	5.79		37.66	343.35	381.00	12.72	207.40
32	26		54.00	54.00	1.61		37.66	513.90	551.56	16.44	497.56
33	27		54.00	54.00	1.44		37.66	513.90	551.56	14.68	497.56
34	28		54.00	54.00	1.28	502.12	37.66	513.90	1053.69	25.03	999.69
35	29		54.00	54.00	1.15	627.65	37.66	513.90	1179.22	26.01	1125.22
36	30		54.00	54.00	1.02	125.53	37.66	513.90	677.09	12.82	623.09
37	31		54.00	54.00	0.91		37.66	513.90	551.56	9.33	497.56
38	32		54.00	54.00	0.82		37.66	513.90	551.56	8.33	497.56
39	33		54.00	54.00	0.73		37.66	513.90	551.56	7.44	497.56
40	34		54.00	54.00	0.65		37.66	513.90	551.56	6.64	497.56
41	35		54.00	54.00	0.58		37.66	513.90	551.56	5.93	497.56
42	36		54.00	54.00	0.52		37.66	513.90	551.56	5.29	497.56
43	37		54.00	54.00	0.46		37.66	513.90	551.56	4.73	497.56
44	38	295.90	54.00	349.90	2.68		37.66	513.90	551.56	4.22	201.66
45	39	263.50	54.00	317.50	2.17		37.66	513.90	551.56	3.77	234.06
46	40	74.30	54.00	128.30	0.78		37.66	513.90	551.56	3.36	423.26
47	41		54.00	54.00	0.29		37.66	513.90	551.56	3.00	497.56
48	42		54.00	54.00	0.26		37.66	513.90	551.56	2.68	497.56
49	43		54.00	54.00	0.23	502.12	37.66	513.90	1053.69	4.57	999.69
50	44		54.00	54.00	0.21	627.65	37.66	513.90	1179.22	4.57	1125.22
51	45		54.00	54.00	0.19	125.53	37.66	513.90	677.09	2.34	623.09
52	46		54.00	54.00	0.17		37.66	513.90	551.56	1.70	497.56
53	47		54.00	54.00	0.15		37.66	513.90	551.56	1.52	497.56
54	48		54.00	54.00	0.13		37.66	513.90	551.56	1.36	497.56
55	49		54.00	54.00	0.12		37.66	513.90	551.56	1.21	497.56
56	50		54.00	54.00	0.11		37.66	513.90	551.56	1.08	497.56
		6035.10	2700.00	8735.10	3316.61	5021.22	1882.96	21431.24	28335.42	2851.38	19600.32

B - C	-465.2280
B / C	0.8597279
E D R	0.0995743

(Unit: Million ฿)

Serial Number	No. after completion	Cost				Benefit					B - C
		Investment Cost	O&M Cost	Total	Total (N.P.V.)	Investment Cost	O&M Cost	Fuel Cost	Total	Total (N.P.V.)	
1		0.00		0.00	0.00	0.00			0.00	0.00	0.00
2		295.00		295.00	263.39	0.00			0.00	0.00	-295.00
3		608.00		608.00	484.69	0.00			0.00	0.00	-608.00
4		1673.90		1673.90	1191.45	505.42			505.42	359.75	-1168.48
5		1452.00		1452.00	922.77	631.78			631.78	401.51	-820.22
6		345.30		345.30	195.93	126.36			126.36	71.70	-218.94
7	1		56.40	56.40	28.57		37.91	605.33	643.24	325.88	586.84
8	2		56.40	56.40	25.51		37.91	605.33	643.24	290.97	586.84
9	3		56.40	56.40	22.78		37.91	605.33	643.24	259.79	586.84
10	4		56.40	56.40	20.34		37.91	605.33	643.24	231.96	586.84
11	5		56.40	56.40	18.16		37.91	605.33	643.24	207.11	586.84
12	6		56.40	56.40	16.21		37.91	605.33	643.24	184.92	586.84
13	7		56.40	56.40	14.48		37.91	605.33	643.24	165.10	586.84
14	8		56.40	56.40	12.93		37.91	605.33	643.24	147.41	586.84
15	9		56.40	56.40	11.54		37.91	605.33	643.24	131.62	586.84
16	10		56.40	56.40	10.30		37.91	605.33	643.24	117.52	586.84
17	11		56.40	56.40	9.20		37.91	605.33	643.24	104.93	586.84
18	12		56.40	56.40	8.21		37.91	605.33	643.24	93.68	586.84
19	13		56.40	56.40	7.33	505.42	37.91	605.33	1148.66	149.37	1092.26
20	14		56.40	56.40	6.55	631.78	37.91	605.33	1275.01	148.04	1218.61
21	15		56.40	56.40	5.85	126.36	37.91	605.33	769.59	79.78	713.19
22	16		56.40	56.40	5.22		37.91	605.33	643.24	59.54	586.84
23	17		56.40	56.40	4.66		37.91	605.33	643.24	53.16	586.84
24	18		56.40	56.40	4.16		37.91	605.33	643.24	47.46	586.84
25	19		56.40	56.40	3.72		37.91	605.33	643.24	42.38	586.84
26	20		56.40	56.40	3.32		37.91	605.33	643.24	37.84	586.84
27	21		56.40	56.40	2.96		37.91	605.33	643.24	33.78	586.84
28	22	195.04	56.40	251.44	11.79		37.91	605.33	643.24	30.16	391.80
29	23	491.28	56.40	547.68	22.93		37.91	605.33	643.24	26.93	95.56
30	24	440.45	56.40	496.85	18.57		37.91	605.33	643.24	24.05	146.39
31	25	138.23	56.40	194.63	6.50		37.91	605.33	643.24	21.47	448.61
32	26		56.40	56.40	1.68		37.91	906.03	943.94	28.13	887.54
33	27		56.40	56.40	1.50		37.91	906.03	943.94	25.12	887.54
34	28		56.40	56.40	1.34	505.42	37.91	906.03	1449.36	34.43	1392.96
35	29		56.40	56.40	1.20	631.78	37.91	906.03	1575.72	33.42	1519.32
36	30		56.40	56.40	1.07	126.36	37.91	906.03	1070.29	20.27	1013.89
37	31		56.40	56.40	0.95		37.91	906.03	943.94	15.96	887.54
38	32		56.40	56.40	0.85		37.91	906.03	943.94	14.25	887.54
39	33		56.40	56.40	0.76		37.91	906.03	943.94	12.73	887.54
40	34		56.40	56.40	0.68		37.91	906.03	943.94	11.36	887.54
41	35		56.40	56.40	0.61		37.91	906.03	943.94	10.14	887.54
42	36		56.40	56.40	0.54		37.91	906.03	943.94	9.06	887.54
43	37		56.40	56.40	0.48		37.91	906.03	943.94	8.09	887.54
44	38	295.90	56.40	352.30	2.69		37.91	906.03	943.94	7.22	591.64
45	39	263.50	56.40	319.90	2.18		37.91	906.03	943.94	6.45	624.04
46	40	74.30	56.40	130.70	0.80		37.91	906.03	943.94	5.75	813.24
47	41		56.40	56.40	0.31		37.91	906.03	943.94	5.14	887.54
48	42		56.40	56.40	0.27		37.91	906.03	943.94	4.59	887.54
49	43		56.40	56.40	0.24	505.42	37.91	906.03	1449.36	6.29	1392.96
50	44		56.40	56.40	0.22	631.78	37.91	906.03	1575.72	6.11	1519.32
51	45		56.40	56.40	0.20	126.36	37.91	906.03	1070.29	3.70	1013.89
52	46		56.40	56.40	0.17		37.91	906.03	943.94	2.92	887.54
53	47		56.40	56.40	0.16		37.91	906.03	943.94	2.60	887.54
54	48		56.40	56.40	0.14		37.91	906.03	943.94	2.32	887.54
55	49		56.40	56.40	0.12		37.91	906.03	943.94	2.08	887.54
56	50		56.40	56.40	0.11		37.91	906.03	943.94	1.86	887.54
		5272.90	2820.00	9092.90	3379.32	5054.21	1895.33	37784.08	44733.62	4127.79	35640.72

B - C	748.47216
B / C	1.2214860
E D R	0.1494911

(Unit: Million ฿)

Serial Number	No. after Completion	Cost				Benefit					B - C
		Investment Cost	O&M Cost	Total	Total (N.P.V.)	Investment Cost	O&M Cost	Fuel Cost	Total	Total (N.P.V.)	
1		0.00		0.00	0.00	0.00			0.00	0.00	0.00
2		449.50		449.50	401.34	0.00			0.00	0.00	-449.50
3		1423.20		1423.20	1134.57	0.00			0.00	0.00	-1423.20
4		3327.10		3327.10	2368.16	1351.60			1351.60	962.05	-1975.50
5		3185.80		3185.80	2024.63	1689.51			1689.51	1073.71	-1496.29
6		745.60		745.60	423.07	337.90			337.90	191.73	-407.70
7	1		120.30	120.30	60.95		101.37	989.41	1090.78	552.62	970.48
8	2		120.30	120.30	54.42		101.37	989.41	1090.78	493.41	970.48
9	3		120.30	120.30	48.59		101.37	989.41	1090.78	440.55	970.48
10	4		120.30	120.30	43.38		101.37	989.41	1090.78	393.35	970.48
11	5		120.30	120.30	38.73		101.37	989.41	1090.78	351.20	970.48
12	6		120.30	120.30	34.58		101.37	989.41	1090.78	313.57	970.48
13	7		120.30	120.30	30.88		101.37	989.41	1090.78	279.98	970.48
14	8		120.30	120.30	27.57		101.37	989.41	1090.78	249.98	970.48
15	9		120.30	120.30	24.62		101.37	989.41	1090.78	223.20	970.48
16	10		120.30	120.30	21.98		101.37	989.41	1090.78	199.28	970.48
17	11		120.30	120.30	19.62		101.37	989.41	1090.78	177.93	970.48
18	12		120.30	120.30	17.52		101.37	989.41	1090.78	158.87	970.48
19	13		120.30	120.30	15.64	1351.60	101.37	989.41	2442.39	317.61	2322.09
20	14		120.30	120.30	13.97	1689.51	101.37	989.41	2780.29	322.81	2659.99
21	15		120.30	120.30	12.47	337.90	101.37	989.41	1428.68	148.11	1308.38
22	16		120.30	120.30	11.13		101.37	989.41	1090.78	100.96	970.48
23	17		120.30	120.30	9.94		101.37	989.41	1090.78	90.15	970.48
24	18		120.30	120.30	8.88		101.37	989.41	1090.78	80.49	970.48
25	19		120.30	120.30	7.93		101.37	989.41	1090.78	71.86	970.48
26	20		120.30	120.30	7.08		101.37	989.41	1090.78	64.16	970.48
27	21		120.30	120.30	6.32		101.37	989.41	1090.78	57.29	970.48
28	22	365.70	120.30	486.00	22.79		101.37	989.41	1090.78	51.15	604.78
29	23	1141.03	120.30	1261.33	52.81		101.37	989.41	1090.78	45.67	-170.55
30	24	1063.75	120.30	1184.05	44.26		101.37	989.41	1090.78	40.78	-93.27
31	25	327.75	120.30	448.05	14.95		101.37	989.41	1090.78	36.41	642.73
32	26		120.30	120.30	3.59		101.37	1480.91	1582.28	47.15	1461.98
33	27		120.30	120.30	3.20		101.37	1480.91	1582.28	42.10	1461.98
34	28		120.30	120.30	2.86	1351.60	101.37	1480.91	2933.88	69.70	2813.58
35	29		120.30	120.30	2.55	1689.51	101.37	1480.91	3271.78	69.40	3151.48
36	30		120.30	120.30	2.28	337.90	101.37	1480.91	1920.18	36.37	1799.88
37	31		120.30	120.30	2.03		101.37	1480.91	1582.28	26.76	1461.98
38	32		120.30	120.30	1.82		101.37	1480.91	1582.28	23.89	1461.98
39	33		120.30	120.30	1.62		101.37	1480.91	1582.28	21.33	1461.98
40	34		120.30	120.30	1.45		101.37	1480.91	1582.28	19.04	1461.98
41	35		120.30	120.30	1.29		101.37	1480.91	1582.28	17.00	1461.98
42	36		120.30	120.30	1.15		101.37	1480.91	1582.28	15.18	1461.98
43	37		120.30	120.30	1.03		101.37	1480.91	1582.28	13.56	1461.98
44	38	452.60	120.30	572.90	4.38		101.37	1480.91	1582.28	12.10	1009.38
45	39	411.20	120.30	531.50	3.63		101.37	1480.91	1582.28	10.81	1050.78
46	40	117.20	120.30	237.50	1.45		101.37	1480.91	1582.28	9.65	1344.78
47	41		120.30	120.30	0.65		101.37	1480.91	1582.28	8.61	1461.98
48	42		120.30	120.30	0.58		101.37	1480.91	1582.28	7.69	1461.98
49	43		120.30	120.30	0.52	1351.60	101.37	1480.91	2933.88	12.73	2813.58
50	44		120.30	120.30	0.47	1689.51	101.37	1480.91	3271.78	12.68	3151.48
51	45		120.30	120.30	0.42	337.90	101.37	1480.91	1920.18	6.64	1799.88
52	46		120.30	120.30	0.37		101.37	1480.91	1582.28	4.89	1461.98
53	47		120.30	120.30	0.33		101.37	1480.91	1582.28	4.36	1461.98
54	48		120.30	120.30	0.30		101.37	1480.91	1582.28	3.90	1461.98
55	49		120.30	120.30	0.26		101.37	1480.91	1582.28	3.48	1461.98
56	50		120.30	120.30	0.24		101.37	1480.91	1582.28	3.11	1461.98
		13010.43	5015.00	19025.43	7041.27	13516.04	5068.52	61758.01	80342.56	7991.03	61317.13

B - C	949.75718
B / C	1.1348843
E D R	0.1401851

(Unit: Million ฿)

Serial Number	No. after Completion	Cost				Benefit					B - C
		Investment Cost	O&M Cost	Total	Total (N.P.V.)	Investment Cost	O&M Cost	Fuel Cost	Total	Total (N.P.V.)	
1		0.00		0.00	0.00	0.00			0.00	0.00	0.00
2		300.40		300.40	268.21	0.00			0.00	0.00	-300.40
3		632.20		632.20	503.99	0.00			0.00	0.00	-632.20
4		1919.90		1919.90	1366.55	547.18			547.18	389.47	-1372.72
5		1827.30		1827.30	1161.28	683.98			683.98	434.68	-1143.32
6		422.70		422.70	239.85	136.80			136.80	77.62	-285.90
7	1	149.10	69.30	218.40	110.65	0.00	41.04	649.98	691.02	350.09	472.62
8	2	791.00	69.30	860.30	389.16	0.00	41.04	649.98	691.02	312.58	-159.28
9	3	1407.20	69.30	1476.50	596.33	804.38	41.04	649.98	1495.40	603.97	18.90
10	4	1358.50	69.30	1427.80	514.88	1005.48	41.04	649.98	1696.50	611.77	268.70
11	5	322.50	69.30	391.80	126.15	201.10	41.04	649.98	892.12	287.24	500.32
12	6		120.30	120.30	34.58		101.37	989.41	1090.78	313.57	970.48
13	7		120.30	120.30	30.88		101.37	989.41	1090.78	279.98	970.48
14	8		120.30	120.30	27.57		101.37	989.41	1090.78	249.98	970.48
15	9		120.30	120.30	24.62		101.37	989.41	1090.78	223.20	970.48
16	10		120.30	120.30	21.98		101.37	989.41	1090.78	199.28	970.48
17	11		120.30	120.30	19.62		101.37	989.41	1090.78	177.93	970.48
18	12		120.30	120.30	17.52		101.37	989.41	1090.78	158.87	970.48
19	13		120.30	120.30	15.64	547.18	101.37	989.41	1637.96	213.00	1517.66
20	14		120.30	120.30	13.97	683.98	101.37	989.41	1774.76	206.06	1654.46
21	15		120.30	120.30	12.47	136.80	101.37	989.41	1227.57	127.26	1107.27
22	16		120.30	120.30	11.13	0.00	101.37	989.41	1090.78	100.96	970.48
23	17		120.30	120.30	9.94	0.00	101.37	989.41	1090.78	90.14	970.48
24	18		120.30	120.30	8.88	804.38	101.37	989.41	1895.16	139.84	1774.86
25	19		120.30	120.30	7.93	1005.48	101.37	989.41	2096.26	138.11	1975.96
26	20		120.30	120.30	7.08	201.10	101.37	989.41	1291.87	75.99	1171.57
27	21		120.30	120.30	6.32		101.37	989.41	1090.78	57.29	970.48
28	22	195.04	120.30	315.34	14.79		101.37	989.41	1090.78	51.15	775.44
29	23	721.51	120.30	841.81	35.25		101.37	989.41	1090.78	45.67	248.97
30	24	704.03	120.30	824.33	30.82		101.37	989.41	1090.78	40.78	266.45
31	25	208.15	120.30	328.45	10.96		101.37	989.41	1090.78	36.41	762.33
32	26		120.30	120.30	3.59		101.37	1312.30	1413.66	42.13	1293.36
33	27	170.66	120.30	290.96	7.74		101.37	1312.30	1413.66	37.62	1122.70
34	28	419.52	120.30	539.82	12.82	547.18	101.37	1312.30	1960.84	46.59	1421.02
35	29	359.72	120.30	480.02	10.18	683.98	101.37	1312.30	2097.64	44.50	1617.62
36	30	119.60	120.30	239.90	4.54	136.80	101.37	1312.30	1550.46	29.36	1310.56
37	31		120.30	120.30	2.03	0.00	101.37	1480.91	1582.28	26.76	1461.98
38	32		120.30	120.30	1.82	0.00	101.37	1480.91	1582.28	23.89	1461.98
39	33		120.30	120.30	1.62	804.38	101.37	1480.91	2386.66	32.17	2266.36
40	34		120.30	120.30	1.45	1005.48	101.37	1480.91	2587.75	31.15	2467.45
41	35		120.30	120.30	1.29	201.10	101.37	1480.91	1783.37	19.17	1663.07
42	36		120.30	120.30	1.15		101.37	1480.91	1582.28	15.18	1461.98
43	37		120.30	120.30	1.03		101.37	1480.91	1582.28	13.56	1461.98
44	38	295.90	120.30	416.20	3.18		101.37	1480.91	1582.28	12.10	1166.08
45	39	263.50	120.30	383.80	2.62		101.37	1480.91	1582.28	10.81	1198.48
46	40	74.30	120.30	194.60	1.19		101.37	1480.91	1582.28	9.66	1387.68
47	41		120.30	120.30	0.65		101.37	1480.91	1582.28	8.61	1461.98
48	42		120.30	120.30	0.58		101.37	1480.91	1582.28	7.69	1461.98
49	43	156.70	120.30	277.00	1.20	547.18	101.37	1480.91	2129.46	9.24	1852.46
50	44	147.70	120.30	268.00	1.04	683.98	101.37	1480.91	2266.26	8.78	1998.25
51	45	42.90	120.30	163.20	0.56	136.80	101.37	1480.91	1719.07	5.95	1555.87
52	46		120.30	120.30	0.37	0.00	101.37	1480.91	1582.28	4.89	1461.98
53	47		120.30	120.30	0.33	0.00	101.37	1480.91	1582.28	4.36	1461.98
54	48		120.30	120.30	0.30	804.38	101.37	1480.91	2386.66	5.88	2266.36
55	49		120.30	120.30	0.26	1005.48	101.37	1480.91	2587.75	5.69	2467.45
56	50		120.30	120.30	0.24	201.10	101.37	1480.91	1783.37	3.50	1663.07
57	51		51.00	51.00	0.09		60.33	508.04	568.37	1.00	517.37
58	52		51.00	51.00	0.08		60.33	508.04	568.37	0.89	517.37
59	53		51.00	51.00	0.07		60.33	508.04	568.37	0.79	517.37
60	54		51.00	51.00	0.06		60.33	508.04	568.37	0.71	517.37
61	55		51.00	51.00	0.06		60.33	508.04	568.37	0.63	517.37
		13010.03	6015.00	19025.03	5701.16	13515.62	5068.36	61758.01	80341.99	6456.14	61316.96

B - C	754.9778
B / C	1.1324253
E D R	0.1391305

(Unit: Million ฿)

Serial Number	No. after Completion	Cost				Benefit					B - C
		Investment Cost	O&M Cost	Total	Total (N.P.V.)	Investment Cost	O&M Cost	Fuel Cost	Total	Total (N.P.V.)	
1		0.00		0.00	0.00	0.00			0.00	0.00	0.00
2		295.90		295.90	264.20	0.00			0.00	0.00	-295.90
3		620.90		620.90	494.98	0.00			0.00	0.00	-620.90
4		1688.00		1688.00	1201.49	523.42			523.42	372.56	-1164.58
5		1557.70		1557.70	989.95	654.27			654.27	415.80	-903.43
6		348.30		348.30	197.63	130.85			130.85	74.25	-217.45
7	1	161.80	57.80	219.60	111.26	0.00	39.26	608.46	647.72	328.16	428.12
8	2	823.00	57.80	880.80	398.43	0.00	39.26	608.46	647.72	293.00	-233.08
9	3	1439.20	57.80	1497.00	604.61	828.14	39.26	608.46	1475.86	596.08	-21.14
10	4	1709.10	57.80	1766.90	637.16	817.09	39.26	608.46	1464.81	528.22	-302.09
11	5	623.60	57.80	681.40	219.39	207.04	39.26	608.46	854.76	275.21	173.36
12	6		122.30	122.30	35.16		101.37	989.41	1090.78	313.57	968.48
13	7		122.30	122.30	31.39		101.37	989.41	1090.78	279.98	968.48
14	8		122.30	122.30	28.03		101.37	989.41	1090.78	249.98	968.48
15	9		122.30	122.30	25.03		101.37	989.41	1090.78	223.20	968.48
16	10		122.30	122.30	22.34		101.37	989.41	1090.78	199.28	968.48
17	11		122.30	122.30	19.95		101.37	989.41	1090.78	177.93	968.48
18	12		122.30	122.30	17.81		101.37	989.41	1090.78	158.87	968.48
19	13		122.30	122.30	15.90	523.42	101.37	989.41	1614.20	209.91	1491.90
20	14		122.30	122.30	14.20	654.27	101.37	989.41	1745.05	202.61	1622.75
21	15		122.30	122.30	12.68	130.85	101.37	989.41	1221.63	126.64	1099.33
22	16		122.30	122.30	11.32	0.00	101.37	989.41	1090.78	100.96	968.48
23	17		122.30	122.30	10.11	0.00	101.37	989.41	1090.78	90.14	968.48
24	18		122.30	122.30	9.02	828.14	101.37	989.41	1918.92	141.59	1796.62
25	19		122.30	122.30	8.06	1035.18	101.37	989.41	2125.96	140.06	2003.66
26	20		122.30	122.30	7.19	207.04	101.37	989.41	1297.82	76.34	1175.52
27	21		122.30	122.30	6.42		101.37	989.41	1090.78	57.29	968.48
28	22	195.04	122.30	317.34	14.88		101.37	989.41	1090.78	51.15	773.44
29	23	500.94	122.30	623.24	26.09		101.37	989.41	1090.78	45.67	467.54
30	24	440.45	122.30	562.75	21.04		101.37	989.41	1090.78	40.78	528.03
31	25	138.23	122.30	260.53	8.70		101.37	989.41	1090.78	36.41	830.25
32	26		122.30	122.30	3.64		101.37	1291.67	1393.04	41.51	1270.74
33	27	170.66	122.30	292.96	7.80		101.37	1291.67	1393.04	37.07	1100.08
34	28	419.52	122.30	541.82	12.87	523.42	101.37	1291.67	1916.46	45.53	1374.64
35	29	693.22	122.30	815.52	17.30	654.27	101.37	1291.67	2047.31	43.43	1231.79
36	30	407.91	122.30	530.21	10.04	130.85	101.37	1291.67	1523.89	28.86	993.69
37	31		122.30	122.30	2.07	0.00	101.37	1480.91	1582.28	26.76	1459.98
38	32		122.30	122.30	1.86	0.00	101.37	1480.91	1582.28	23.89	1459.98
39	33		122.30	122.30	1.65	828.14	101.37	1480.91	2410.42	32.49	2288.12
40	34		122.30	122.30	1.47	1035.18	101.37	1480.91	2617.45	31.50	2495.15
41	35		122.30	122.30	1.31	207.04	101.37	1480.91	1789.31	19.23	1667.01
42	36		122.30	122.30	1.17		101.37	1480.91	1582.28	15.18	1459.98
43	37		122.30	122.30	1.05		101.37	1480.91	1582.28	13.56	1459.98
44	38	295.90	122.30	418.20	3.20		101.37	1480.91	1582.28	12.10	1164.08
45	39	263.50	122.30	385.80	2.63		101.37	1480.91	1582.28	10.81	1196.48
46	40	74.30	122.30	196.60	1.20		101.37	1480.91	1582.28	9.65	1385.68
47	41		122.30	122.30	0.67		101.37	1480.91	1582.28	8.61	1459.98
48	42		122.30	122.30	0.59		101.37	1480.91	1582.28	7.69	1459.98
49	43	156.70	122.30	279.00	1.21	523.42	101.37	1480.91	2105.70	9.14	1826.70
50	44	147.70	122.30	270.00	1.05	654.27	101.37	1480.91	2236.55	8.67	1966.55
51	45	42.90	122.30	165.20	0.57	130.85	101.37	1480.91	1713.13	5.93	1547.93
52	46		122.30	122.30	0.38	0.00	101.37	1480.91	1582.28	4.89	1459.98
53	47		122.30	122.30	0.34	0.00	101.37	1480.91	1582.28	4.36	1459.98
54	48		122.30	122.30	0.30	828.14	101.37	1480.91	2410.42	5.94	2288.12
55	49		122.30	122.30	0.27	1035.18	101.37	1480.91	2617.45	5.76	2495.15
56	50		122.30	122.30	0.24	207.04	101.37	1480.91	1789.31	3.51	1667.01
57	51		64.50	64.50	0.11		62.11	570.19	632.30	1.11	567.80
58	52		64.50	64.50	0.10		62.11	570.19	632.30	0.99	567.80
59	53		64.50	64.50	0.09		62.11	570.19	632.30	0.88	567.80
60	54		64.50	64.50	0.08		62.11	570.19	632.30	0.79	567.80
61	55		64.50	64.50	0.07		62.11	570.19	632.30	0.70	567.80
		13214.47	6115.00	19329.47	5539.75	13297.53	5068.36	61758.01	80123.90	6266.19	60794.43

B - C	726.4409
B / C	1.1311325
E D R	0.1392649

(Unit: Million ¥)

Serial Number	No. after Completion	Cost				Benefit					B - C
		Investment Cost	O&M Cost	Total	Total (N.P.V.)	Investment Cost	O&M Cost	Fuel Cost	Total	Total (N.P.V.)	
1		0.00		0.00	0.00	0.00			0.00	0.00	0.00
2		151.00		151.00	134.82	0.00			0.00	0.00	-151.00
3		796.20		796.20	634.73	0.00			0.00	0.00	-796.20
4		1551.30		1551.30	1104.18	502.12			502.12	357.40	-1049.18
5		1477.10		1477.10	938.72	627.65			627.65	398.88	-849.45
6		356.30		356.30	202.17	125.53			125.53	71.23	-230.77
7	1	297.70	54.00	351.70	178.18	0.00	37.66	343.35	381.00	193.03	29.30
8	2	625.20	54.00	679.20	307.24	0.00	37.66	343.35	381.00	172.35	-298.20
9	3	1773.80	54.00	1827.80	738.22	849.44	37.66	343.35	1230.44	496.96	-597.36
10	4	1708.00	54.00	1762.00	635.39	1061.80	37.66	343.35	1442.80	520.29	-319.20
11	5	388.40	54.00	442.40	142.44	212.36	37.66	343.35	593.36	191.05	150.96
12	6		120.30	120.30	34.58		101.37	989.41	1090.78	313.57	970.48
13	7		120.30	120.30	30.88		101.37	989.41	1090.78	279.98	970.48
14	8		120.30	120.30	27.57		101.37	989.41	1090.78	249.98	970.48
15	9		120.30	120.30	24.62		101.37	989.41	1090.78	223.20	970.48
16	10		120.30	120.30	21.98		101.37	989.41	1090.78	199.28	970.48
17	11		120.30	120.30	19.62		101.37	989.41	1090.78	177.93	970.48
18	12		120.30	120.30	17.52		101.37	989.41	1090.78	158.87	970.48
19	13		120.30	120.30	15.64	502.12	101.37	989.41	1592.90	207.14	1472.60
20	14		120.30	120.30	13.97	627.65	101.37	989.41	1718.43	199.52	1598.13
21	15		120.30	120.30	12.47	125.53	101.37	989.41	1216.31	126.09	1096.01
22	16		120.30	120.30	11.13	0.00	101.37	989.41	1090.78	100.96	970.48
23	17		120.30	120.30	9.94	0.00	101.37	989.41	1090.78	90.14	970.48
24	18		120.30	120.30	8.88	849.44	101.37	989.41	1940.22	143.16	1819.92
25	19		120.30	120.30	7.93	1061.80	101.37	989.41	2152.58	141.82	2032.28
26	20		120.30	120.30	7.08	212.36	101.37	989.41	1303.14	76.65	1182.84
27	21		120.30	120.30	6.32		101.37	989.41	1090.78	57.29	970.48
28	22	170.66	120.30	290.96	13.64		101.37	989.41	1090.78	51.15	799.82
29	23	419.52	120.30	539.82	22.60		101.37	989.41	1090.78	45.67	550.96
30	24	359.72	120.30	480.02	17.94		101.37	989.41	1090.78	40.78	610.76
31	25	119.60	120.30	239.90	8.01		101.37	989.41	1090.78	36.41	850.88
32	26		120.30	120.30	3.59		101.37	1159.97	1261.34	37.59	1141.04
33	27	195.04	120.30	315.34	8.39		101.37	1159.97	1261.34	33.56	946.00
34	28	721.51	120.30	841.81	20.00	502.12	101.37	1159.97	1763.46	41.90	921.65
35	29	704.03	120.30	824.33	17.49	627.65	101.37	1159.97	1888.99	40.07	1064.65
36	30	208.15	120.30	328.45	6.22	125.53	101.37	1159.97	1386.87	25.27	1058.42
37	31		120.30	120.30	2.03	0.00	101.37	1480.91	1582.28	26.76	1461.98
38	32		120.30	120.30	1.82	0.00	101.37	1480.91	1582.28	23.89	1461.98
39	33		120.30	120.30	1.62	849.44	101.37	1480.91	2431.72	32.78	2311.42
40	34		120.30	120.30	1.45	1061.80	101.37	1480.91	2644.08	31.83	2523.78
41	35		120.30	120.30	1.29	212.36	101.37	1480.91	1794.64	19.29	1674.34
42	36		120.30	120.30	1.15		101.37	1480.91	1582.28	15.18	1461.98
43	37		120.30	120.30	1.03		101.37	1480.91	1582.28	13.56	1461.98
44	38	295.90	120.30	416.20	3.18		101.37	1480.91	1582.28	12.10	1166.08
45	39	263.50	120.30	383.80	2.62		101.37	1480.91	1582.28	10.81	1198.48
46	40	74.30	120.30	194.60	1.19		101.37	1480.91	1582.28	9.65	1387.68
47	41		120.30	120.30	0.65		101.37	1480.91	1582.28	8.61	1461.98
48	42		120.30	120.30	0.58		101.37	1480.91	1582.28	7.69	1461.98
49	43	156.70	120.30	277.00	1.20	502.12	101.37	1480.91	2084.40	9.05	1807.40
50	44	147.90	120.30	268.20	1.04	627.65	101.37	1480.91	2209.93	8.56	1941.73
51	45	42.90	120.30	163.20	0.56	125.53	101.37	1480.91	1707.81	5.91	1544.61
52	46		120.30	120.30	0.37	0.00	101.37	1480.91	1582.28	4.89	1461.98
53	47		120.30	120.30	0.33	0.00	101.37	1480.91	1582.28	4.36	1461.98
54	48		120.30	120.30	0.30	849.44	101.37	1480.91	2431.72	5.99	2311.42
55	49		120.30	120.30	0.26	1061.80	101.37	1480.91	2644.08	5.81	2523.78
56	50		120.30	120.30	0.24	212.36	101.37	1480.91	1794.64	3.52	1674.34
57	51		66.30	66.30	0.12		63.71	947.11	1010.82	1.77	944.52
58	52		66.30	66.30	0.10		63.71	947.11	1010.82	1.58	944.52
59	53		66.30	66.30	0.09		63.71	947.11	1010.82	1.41	944.52
60	54		66.30	66.30	0.08		63.71	947.11	1010.82	1.26	944.52
61	55		66.30	66.30	0.07		63.71	947.11	1010.82	1.13	944.52
		13004.43	6015.00	19019.43	5427.51	13515.62	5068.36	61658.56	80242.54	5767.56	61223.11

B - C	340.0444
B / C	1.0626520
E D R	0.1285911