No. 18

The Kingdom of Thailand

Electricity Generating Authority of Thailand

UPPER QUAE YAI HYDROELECTRIC DEVELOPMENT PROJECT FEASIBILITY REPORT

Volume 4

(APPENDIX 4, 5 and 6)

June 1980

Japan International Cooperation Agency

The Kingdom of Thailand

Electricity Generating Authority of Thailand

UPPER QUAE YAI HYDROELECTRIC DEVELOPMENT PROJECT FEASIBILITY REPORT

Volume 4

(APPENDIX 4, 5 and 6)

June 1980

Japan International Cooperation Agency

APPENDIX 4

LOAD FORECAST

APPENDIX 4

— LOAD FORECAST —

CONTENTS

EGAT'S ELECTRIC POWER DEVELOPMENT PROGRAM

No. 1

FY	Power Plant	No. of Unit	Installed Capacity (MW)		Dependable Capacity (MW)		Commissioning Year
			Unit Size	Total Capa.	Unit Size	Total Capa.	
1979	Ubolratana	3	8.3	25.0	6.8	20.3	Feb. 66 - Jun. 68
	Srindhorn	2	12.0	24.0	11.4	22.7	Nov. 71
	Chulabhorn	2	20.0	40.0	19.8	39.5	Nov. 73
	Nam Pung	2	3.2	6.0	2.9	5.7	Oct. 65
	Kangkrachan	1	19.0	19.4	13.4	13.4	Aug. 74
	Nam Ngum Surplus			50.0		50.0	
	Bhumibol #1-6	6	70.0	420.0	63.4	350.2	May 64 - Aug. 69
	Sirikit #1-3	3	125.0	375.0	97 0	291.1	Jan. 74 - Jul. 74
	Srinogarind #1	1	120.0	120.0	119.5	119.5	Sep. 79
	Hydro-total			1079.0		912.4	
	North Bangkok	1	87.5	87.5	83.1	83.1	Nov. 68
	North Bangkok	2	75.0	150.0	71.3	142.5	Mar. 61, June 63
	South Bangkok	3	300.0	900.0	285.0	855.0	Jul.74,Sep.75,Nov.77
	South Bangkok	2	200.0	400.0	190.0	380.0	Nov. 70, Nov. 72
	Surat Thani	1	30.0	30.0	28.5	28.5	Feb. 73
	Thermal-total			1567 5		1489 1	
	Mae Moh #1-2	2	75.0	150.0		142.6	May 77
	Krabi #1-3	3	20.0	60.0		54.0	Jun. 64
	Lignite-total			210.0		196 6	
	South Bangkok #1-3			45.0		40.5	Dec 70
	Nakhon Ratchasima			15.0		13.5	Jun. 68
	Udon Thani			15.0		13.5	Jun. 69
	Hat Yai #1-3			45.0		40.5	Aug. 71
	Surat Thani			45.0		40.5	Nov. 77
	Gas-total			165.0		148.5	
	Phuket #1-4	4		10.6		8.5	Nov. 67
	Chaiug Mai #1-3	3		3.0		2.4	Jul. 68
	Mae Mah #1-9	9		9.0		7.2	May 72
	Nakhon Si Thamarat	2		2.0		1.6	Jul. 73
	Ban Chao Nav	5		5.0		4.0	-
	Bang Lang	5		5.0		4.0	-
	Diesel-total			34.6		27.7	
	TOTAL			3056.1		2774.3	

EGAT'S ELECTRIC POWER DEVELOPMENT PROGRAM

No. 2

FY	Power Plant	No. of Unit	Installed Capacity (MW)		Dependable Capacity (MW)		Commissioning Year
			Unit Size	Total Capa.	Unit Size	Total Capa.	
1980	Hydro accumulated			1079.0		912.4	
	Srinagarind #2-3	2	120.0	240.0	119.5	239.0	Dec. 79, Mar. 80
	Hydro-total			1319.0		1151.4	
	Thermal accumulated			1567.5		1489.1	
	EGAT-NEB TIE LINE			40.0		40.0	
	Thermal-total			1607.5		1529.1	
	Lignite-total			210.0		196.6	
	Gas-total			165.0		148.5	
	Diesel-total			34.6		27.7	
	TOTAL			3336.1		3053.3	
1981	Hydro accumulated			1319.0		1151.4	
	Bhumibol #7			90.0		75.0	
	Hydro-total			1409.0		1226.4	
	Thermal accumulated			1607.5		1529.1	
	Bang Pakon (1) #1-4			240.0		228.0	Oct. 80
	Bang Pakon (2) #1-4			240.0		228.0	Jan. 81
	Barge			75.0		71.3	Apr. 81
	Thermal-total			2162.5		2056.4	
	Lignite accumulated			210.0		196.6	
	Mae Moh #3			75.0		71.3	Jul. 81
	Lignite-total			285.0		267.9	
	Gas-total			165.0		148.5	
	Diesel-total			34.6		27.7	
	TOTAL			4056.1		3726.9	
1982	Hydro accumulated			1409.0		1226.4	
	Pattani #1-3			72.0		53.5	Oct. 81
	Lower Que Yai #1-2			38.0		38.0	Aug. 82
	Hydro-total			1519.0		1317.9	
	Thermal accumulated			2162.5		2056.4	
	Bang Pakon C-C (1)	1	120.0	120.0	114.0	114.0	Aug. 82
	Thermal-total			2282.5		2170.4	
	Lignite-total			285.0		267.9	
	Gas-total			165.0		148.5	
	Diesel-total			34.6		27.7	
	TOTAL			4286.1		3932.4	

ETAT'S ELECTRIC POWER DEVELOPMENT PROGRAM

No. 3

FY	Power Plant	No. of Unit	Installed Capacity (MW)		Dependable Capacity (MW)		Commissioning Year
			Unit Size	Total Capa.	Unit Size	Total Capa	
1983	Hydro-total			1519.0		1317.9	
	Thermal accumulated			2282.5		2170.4	
	Bang Pakon C-C (2)	1	120.0	120.0	114.0	114.0	Oct. 82
	Bang Pakon Th. #1	1	550 0	550.0	522.5	522.5	Jul. 83
	Thermal-total			2952.5		2806.9	
	Lignite-total			285.0		267 9	
	Gas-total			165.0		148.5	
	Diesel-total			34 6		27.7	
	TOTAL			4956.1		4568.9	
1984	Hydro accumulated			1519 0		1317.9	
	Khao Laem #1-3			300.0		236.0	Mar. 84
	Hydro-total			1819.0		1553.9	
	Thermal accumulated			2952.5		2806 9	
	Bang Pakor Th #2			550.0		522.5	Aug. 84
	Thermal-total			3502.5		3329.4	
	Lignite accumulated			285.0		267.9	
	Mae Moh #4-5	2	150.0	300.0		285.0	Jan. 84, Jul. 84
	Lignite-total			585.0		552.9	
	Gas-total			165.0		148.5	
	Diesel-total			34.6		27.7	
	TOTAL			6106.1		5612.4	
1985	Hydro accumulated			1819.0		1533.9	
	Lang Suan #1-3			135.0		135.0	
	Hydro-total			1954.0		1688.9	
	Thermal-total			3502.5		3329.4	
	Lignite-total			585.0		552.9	
	Gas-total			165.0		148.5	
	Diesel-total			34 6		27.7	
	TOTAL			6241.1		5747.4	
1986	Hydro accumulated			1954.0		1688 9	
	Chiew Larn #1-2	2		120.0		110.0	Jan. 86
	Srinagarind Pump #4-5	2		360.0		360.0	Oct 85
	Hydro-total			2434.0		2158.9	
	Thermal-total			3502.5		3329.4	
	Lignite accumulated			585 0		552.9	
	Mae Moh #6	1		300.0		285.0	Sep. 86
	Lignite-total			885.0		837.9	
	Gas-total			165.0		148.5	
	Diesel-total			34.6		27.7	
	TOTAL			7021.1		6502.4	

EGAT'S ELECTRIC POWER DEVELOPMENT PROGRAM

No. 4

FY	Power Plant	No. of Unit	Installed Capacity (MW)		Dependable Capacity (MW)		Commissioning Year
			Unit Size	Total Capa.	Unit Size	Total Capa.	
1987	Hydro accumulated			2074.0		1798.9	
	Pump accumulated			360.0		360.0	
	Hydro-total			2434.0		2158.9	
	Thermal accumulated			3502.5		3329.4	
	R3 (1) C-C #1-3	3		180.0		171.0	Oct. 86
	Thermal-total			3682.5		3500.4	
	Lignite accumulated			885.0		837.9	
	Mae Moh #7-8	2	300.0	600.0	285.0	570.0	Mar. 87, Sep. 87
	Lignite-total			1485.0		1407.9	
	Gas-total setised			0		0	Oct. 86
	Diesel-total			34.6		27.7	
	TOTAL			7636.1		7094.9	
1988	Hydro accumulated			2074.0		1798.9	
	Pump accumulated			360.0		360.0	
	Upper Quae Yai			580.0		547.3	Oct. 87
	Hydro-total			3014.0		2706.2	
	Thermal-total			3682.5		3500.4	
	Lignite accumulated			1485.0		1407.9	
	Mae Moh #9			300.0		285.0	
	Lignite-total			1785 0		1692.9	
	Diesel-total			34.6		27.7	
	TOTAL			8516.1		7927.2	
1989	Hydro accumulated			2654.0		2346.2	
	Pump accumulated			360.0		360 0	
	Misc, Hydro			300.0		278.0	
	Thi Khong			51.0		46.1	
	Hydro-total			3365.0		3030.3	
	Thermal-total			3682.5		3500.4	
	Lignite-total			1785.0		1692.9	
	Diesel-total			34.6		27.7	
	TOTAL			8867.1		8251.3	

EGAT'S ELECTRIC POWER DEVELOPMENT PROGRAM

No. 5

FY	Power Plant	No. of Unit	Installed Capacity (MW)		Dependable Capacity (MW)		Commissioning Year
			Unit Size	Total Capa.	Unit Size	Total Capa.	
1990	Hydro accumulated			3005.0		2670 3	
	Pump accumulated			360 0		360 0	
	Quae Yai Pump (1)			500.0		500.0	
	Hydro-total			3865.0		3530.3	
	Thermal accumulated			3682.5		3500.4	
	R3 (2) C-C #1-3			180 0		171.0	Jul 90
	Thermal-total			3862.5		3671.4	
	Lignite accumulated			1785.0		1692.9	
	Krabi sctireal #1-3			-60.0		-54.0	Jul 90
	Lignite-total			1725.0		1638.9	
	Diesel-total			34.6		27.7	
	TOTAL			9487.1		8868.3	
1991	Hydro accumulated			3005.0		2670.3	
	Pump accumulated			860.0		860.0	
	Hydro-total			3865.0		3530.3	
	Thermal-total			3862.5		3671.4	
	Lignite-total			1725.0		1638.9	
	Diesel-total			34.6		27.7	
	Nuclear #1			900.0		855.0	
	TOTAL			10387.1		9723.3	
1992	Hydro accumulated			3005.0		2670.3	
	Pump accumulated			860.0		860.0	
	Hydro-total			3865.0		3530.3	
	Thermal-total			3862.5		3671.4	
	Lignite-total			1725.0		1638.9	
	Diesel-total			34.6		27.7	
	Nuclear accumulated			900.0		855.0	
	Nuclear #2			900.0		855.0	
	Nuclear-total			1800.0		1710.0	
	TOTAL			11287.1		10578.3	
1993	Hydro accumulated			3005.0		2670.3	
	Pump accumulated			860.0		860.0	
	Quae Yai Pump (2)			500.0		500 0	
	Hydro-total			4365.0		4030.3	
	Thermal-total			3862.5		3671.4	
	Lignite-total			1725.0		1638.9	
	Diesel-total			34.6		27.7	
	Nuclear-total			1800.0		1710 0	
	TOTAL			11787 1		11078.3	

EGAT'S ELECTRIC POWER DEVELOPMENT PROGRAM

No. 6

FY	Power Plant	No. of Unit	Installed Capacity (MW)		Dependable Capacity (MW)		Commissioning Year
			Unit Size	Total Capa.	Unit Size	Total Capa.	
1994	Hydro accumulated			3005 0		2670.3	
	Pump accumulated			1360.0		1360 0	
	Hydro-total			4365 0		4030.3	
	Thermal-total			3862.5		3671.4	
	Lignite-total			1725.0		1638.9	
	Diesel-total			34.6		27.7	
	Nuclear accumulated			1800.0		1710.0	
	Nuclear #3			1200.0		1140.0	
	Nuclear-total			3000.0		2850.0	
	TOTAL			12987.1		12218.3	
1995	Hydro accumulated			3005.0		2670.3	
	Pump accumulated			1360.0		1360.0	
	Upper Quae Yai Pump			500.0		500.0	
	Hydro-total			4865.0		4530.3	
	Thermal-total			3862.5		3671.4	
	Lignite-total			1725.0		1638.9	
	Diesel-total			34.6		27.7	
	Nuclear accumulated			3000.0		2850.0	
	Nuclear #4			1200.0		1140.0	
	Nuclear-total			4200.0		3990.0	
	TOTAL			14687.1		13858.3	

Dependable Capacity :

Hydro plants - averaged the installed and minimum generating capability based on long term reservoir simulation using past records.

Thermal plants - All thermal (oil, gas, lignite) 95% of rated capacity

Krabi Lignite 90%

Combined cycle 95%

Existing gas turbine 90%

Existing diesel 80%

APPENDIX 5

POWER SYSTEM

APPENDIX 5 POWER SYSTEM

CONTENTS

List of Figures

List of Tables

5-1 Study of Power System Construction Prior to Development of Upper Quae Yai Project

In studying the method of power transmission for the Upper Quae Yai Project, it is necessary to confirm that the power system prior to development of the Project has function that are amply satisfactory. Thereby, it will be possible to clarify the system strengthening facilities required for the Upper Quae Yai Project.

(1) Hydroelectric Power Development Projects in the Western Area

The hydroelectric power development projects in the western area to be carried out by EGAT up to 1987 when Upper Quae Yai is to be developed are as listed below.

Sept. 1979	Srinagarind #1	120 MW
Dec. 1979	Srinagarind #2	120 MW
Mar. 1980	Srinagarind #3	120 MW
Aug. 1982	Lower Quae Yai	38 MW
Mar. 1984	Khao Laem #1, 2, 3	300 MW
Oct. 1985	Srinagarind #4, 5	360 MW
Oct. 1987	Upper Quae Yai	631 MW*

(* 560 MW in the electric power development program of EGAT, but changed to 631 MW as a result of the present study)

According to this electric power development program, the total output of hydro in the western area will be 1,058 MW in October 1985 when Srinagarind No. 4 and No 5 (pumped storage) are brought into service, and the system prior to development of Upper Quae Yai will be completed.

(2) Power Transmission Plan of EGAT for Hydroelectric Power Sources in the Western Area

For the above electric power development program, EGAT has planned to strengthen the 230-kV, 2-cct transmission line between Srinagarind and Bangkok.

The construction plan is as follows:

a) Construction of a substation at the Sai Noi site.

b) Connection between Sai Noi Substation and Ban Pong 2 Substation with a

230-kV transmission line (2-cct or 3-cct, ACSR 1272 MCM).

c) The 230-kV, 2-cct transmission line between Srinagarind and Ban Pong 2 Substation strengthened to 4 circuits.

d) Connection between Sai Noi Substation and Rangsit Substation with a 230-kV transmission line (2-cct, ACSR 1272 MCM x 2).
Connection between Sai Noi Substation and Nakhon Sawan Substation, and Bangkok Noi Substation with a 230-kV transmission line (2-cct, ACSR 1272 MCM) respectively.

(3) Power System Analysis

(a) Power System Construction demanded from Standpoint of Reliability

The power system to transmit the electric power generated at hydroelectric sources in the western area to Bangkok will be the 230-kV transmission line of Srinagarind - Ban Pong 2 - Sai Noi. The specifications of this transmission line will first be examined from the standpoint of reliability.

- In case of connecting Srinagarind and Ban Pong 2 with a 230 kV, 4-cct transmission line (conductor used: ACSR 1272 MCM), the transmission capacity of this section will be approximately 1,900 MVA (478 MVA/cct x 4 cct) under normal operation. Though it will decrease to 1,430 MVA when there is a faulting outage of one circuit, the entire output of 1,058 MW of the hydro power sources in the western area could be transmitted without any problem If a 230-kV, 3-cct transmission line (conductor used: ACSR 1272 MCM) is adopted in this section, it may be necessary to restrict approximately 100 MW at a time of an outage of one circuit.

- In case of connecting Ban Pong 2 Substation with Sai Noi Substation with a 230-kV, 3-cct transmission line (conductor used: ACSR 1272 MCM), the transmission capacity of this section will be 1,430 MVA and in the event of faulting outage of one circuit, it will be reduced to approximately 950 MW. However, deducting the load consumed at Ban Pong 2 Substation (the maximum of approximately 300 MW in 1985), the power flowing in this section will be about 750 MW so that ample transmission capacity will be secured

without any problem. If a 230-kV transmission line (2-cct, ACSR 1272 MCM) is adopted in this section, the transmission capacity at a time of faulting outage of one circuit will be 478 MVA and it will be necessary to restrict power generation rapidly.

Based on the above considerations, if the criterion of reliability of the electric power system is to be that power generation will not be restricted even at a time of an outage of one circuit, the transmission lines required in 1985, when the No. 4 and No. 5 units of Srinagarind are incorporated, will be the following at least:

Srinagarind - Ban Pong 2 Substation:

230 kV, 4 cct, ACSR 1272 MCM

Ban Pong 2 Substation - Sai Noi Substation:

230 kV, 3 cct, ACSR 1272 MCM

Meanwhile, EGAT has a plan to construct a 500-kV transmission line between Mae Moh and Min Buri in order to transmit the electric power of Mae Moh Lignite-Fired Thermal scheduled to be in service in 1986.

The system diagram prior to development of the Upper Quae Yai Project (1986) prepared based on the above conception is indicated in Fig. 1.

(b) Examination from Voltage and Power Flow Aspects

Power flow calculations on the electric power system of Fig. 1 were carried out to study the system piror to development of Upper Quae Yai based on the power supply plans and load forecasts made by EGAT. The power flow diagrams are shown in Fig. 2 (peak) and Fig. 3 (off-peak). There are no transmission lines overloaded in this system.

However, on examination of the 230-kV, 4-cct transmission line from Nakhon Sawan Substation to the Bangkok Area, the power flow of the transmission line connecting Nakhon Sawan - Ang Thong - Rangsit is shown to be far greater than that of the transmission line connecting Nakhon Sawan - Ang Thong 2 - Sai Noi to indicate an unbalanced condition. This condition will be further aggravated with an increase of the power demand at Ang Thong, and there may be disruption

of power supply at a time of a line fault between Nakhon Sawan and Ang Thong. By connecting Ang Thong Substation and Ang Thong 2 Substation with a 230-kV transmission line (1-cct, ACSR 1272 MCM x 2), the power flows of the two transmission lines mentioned above will be evened out, and moreover, the voltage at Ang Thong Substation will be improved. Simultaneously, the supply reliability will be greatly enhanced.

Since it is possible to lead in a 230-kV, 1-cct transmission line at Ang Thong Substation, a transmission line connecting Ang Thong and Ang Thong 2 should be planned. The result of power flow calculation of the power system with Ang Thong - Ang Thong 2 connection is shown in Fig. 4.

The reason why the reactive power required at Rangsit and Phitsanulok became fairly large is that the voltages of the 230-kV buses at both the substations were settled at 102% of the normal voltage.

The voltage regulation of the entire power system should be thoroughly studied, though it has not been studied in this report. A considerable quantity of reactive power will be required to regulate the voltage.

(c) Examination from Stability Aspect

Transient stability calculations were made for peak and off-peak times in 1986 on the system of Fig. 1 and the stability of Srinagarind - Sai Noi transmission line was confirmed.

A change of an angular position of each rotar succeeding to a disturbance in the power system was calculated in the transient stability study. The result is shown as a function of time (swing curve).

A three-phase fault of one circuit of Srinagarind - Ban Pong 2 line with a fault-clearing time of 5 cycles was adopted as a disturbance. A fault location selected is the point near Srinagarind Power Station.

The swing curves of the calculation results are shown in Figs. 5 and 6.

The following may be said as a result of study of the power system prior to development of the Upper Quae Yai Project from the viewpoints of reliability, power flow and stability:

- It will be necessary to connect Srinagarind and Ban Pong 2 with a transmission line of 230-kV, 4-cct (using ACSR 1272 MCM as conductor), and Ban Pong 2 and Sai Noi with a transmission line of 230-kV, 3-cct (using ACSR 1272 MCM as conductor).
- It will be desirable to connect Ang Thong with Ang Thong 2 with a 230-kV transmission line (1-cct, ACSR 1272 MCM x 2) in order to enhance supply reliability and to improve voltage and power flow aspects.

5-2 Transmission Line required when Transmitting Power of Upper Quae Yai only

Fig. 7 shows the transmission capacity of a 230-kV, 2-cct transmission line calculated by a simplified model system. The conductor used is ACSR 610 mm^2 x 2, but current carrying capacity and line constants are roughly the same as for ACSR 1272 MCM x 2. If the route of the transmission line from Upper Quae Yai to Bangkok is to be selected along a road, the only route conceivable is the one from Upper Quae Yai passing the Srinagarind site and reaching Sai Noi. The length of the transmission line in such a case will be approximately 270 km.

As indicated in Fig. 7, the transmission capacity will differ according to the transmission length, and up to a transmission length of about 100 km the transmission capacity will be determined by the current carrying capacity of the conductor, but with greater length the transmission capacity is decreased in inverse proportion to the transmission line length. The transmission capacity of the above-mentioned transmission line of approximately 270 km will be about 400 MW. Consequently, if the electric power of the Upper Quae Yai Project is to be transmitted to Bangkok independently, a transmission line of at least a 230-kV, 3-cct transmission line (conductor used: ACSR 1272 MCM x 2) will be required.

5-3 System Construction for Quae Yai Pumped Storage

After development of the Upper Quae Yai Project, EGAT has a plan to develop Quae Yai Pumped Storage (ultimate installed capacity 1,000 MW) in the first half of the 1990s. Judging from the geographical locations of the two plants, it is conceivable that the transmission line for the Upper Quae Yai Project is planned so that it could transmit the power generated at Quae Yai Pumped Storage also. The power transmission methods of the Upper Quae Yai Project and Quae Yai Pumped Storage Project should be studied simultaneously, and a power system which will be advantageous from an overall viewpoint should be planned.

The maximum voltage in Thailand at present is 230-kV, but EGAT is planning to construct a 500-kV transmission line from Mae Moh Thermal to the outskirts of Bangkok in order to send the electric power of Mae Moh Thermal which is scheduled to be in service in 1986. Therefore, as the transmission voltage for the Upper Quae Yai Project scheduled to be incorporated in 1987, not only the existing 230-kV, but also 500-kV will be an object of study considering transportation of electric power of Quae Yai Pumped Storage.

A study of the power transmission method for Upper Quae Yai and Quae Yai Pumped Storage will be made below:

(1) Selection of System Plan

In studying the transmission methods for the electric power of Upper Quae Yai and Quae Yai Pumped Storage, there are the three conceptions below.

a) 230-kV, the present highest circuit voltage, is to be adopted for both the Upper Quae Yai Project and Quae Yai Pumped Storage Project.

b) A 230-kV transmission system is to be adopted for the Upper Quae Yai Project and a 500-kV transmission system is to be introduced at a time when Quae Yai Pumped Storage is developed.

c) A 500-kV transmission line is to be constructed at the time of development of the Upper Quae Yai Project in order that it can be utilized for Quae Yai Pumped Storage also. However, the 500-kV transmission line is to be

operated at 230-kV initially, and is to be upgraded to 500-kV at the time of development of the Quae Yai Pumped Storage Project.

Power transmission system schemes corresponding to the above conceptions were prepared and studied, and then the most advantageous power transmission system pattern was selected for each conception from the standpoints of construction cost, convenience in maintenance and operation, and stability during pumping. For each of the power transmission system patterns, the power transmission system from 1985 when the No. 4 and No. 5 units of Srinagarind are incorporated till the time when Quae Yai Pumped Storage reaches its ultimate capacity of 1,000 MW (1992 according to EGAT's plan) was chronologically illustrated in Fig. 8. For each scheme, the ultimate number of parallel transmission line routes was limited within five.

Scheme I is a pattern adopting 230-kV transmission for the Upper Quae Yai Project and Quae Yai Pumped Storage Project. In 1987, when the Upper Quae Yai Project is brought into service, Srinagarind and Ban Pong 2 are to be connected each other by a 230-kV, 5-cct transmission line, and Ban Pong 2 and Sai Noi by a 230-kV, 4-cct transmission line. In 1992, Srinagarind - Ban Pong 2 transmission line is to be 230-kV, 10-cct, and Ban Pong 2 - Sai Noi transmission line 230-kV, 9-cct.

In Scheme II, the system in 1978 is identical with Scheme A-② -C mentioned in Chapter 9 of Main Report. A 230-kV, 2-cct transmission line (conductor used: ACSR 1272 MCM x 2) is to be added between Srinagarind and Ban Pong 2 with development of the Upper Quae Yai Project. For the Quae Yai Pumped Storage Project a 500-kV transmission line is to be adopted with 500-kV, 2-cct considered for 1990.

In Scheme III, a 500-kV transmission line is to be constructed at the time of development of the Upper Quae Yai Project in consideration of the pumped storage to be developed in the future. It is to be operated initially at 230-kV, and to be upgraded to 500-kV by a 500-kV/230-kV transformer installed at the Srinagarind site at the time Quae Yai Pumped Storage is incorporated (1990 according to EGAT).

Scheme IV means that a 500-kV transmission line is to be constructed in 1985 when No. 4 and 5 units of Srinagarind Power Station are to be brought into service. This system is roughly the same as Scheme III and aims to save on the number of 230-kV transmission line circuits in parallel with the 500-kV transmission line.

(2) Power System Analysis

Each of the scheme differs in its development process and form in the final year, 1992, when the capacity of Quae Yai Pumped Storage is thought to become ultimate capacity, 1,000 MW. It is possible to judge whether the system scheme is adoptable or not by analyzing the system in the final year.

In such power systems as these schemes in which a large-capacity pumped storage power station is at a great distance from thermal and/or nuclear power plants which are to supply power for pumping, system stability during pumping at off-peak time is very severe. So, it is nearly determined from this aspect whether a power system is adoptable or not.

The results of transient stability calculation for the systems in 1990 and 1992 are given in Table 1 and the respective swing curves in Fig. 9-15. In calculations of transient stability, fault locations selected were where the fault is thought to exercise the severest influence on the system stability.

The conditions for calculations are as indicated below.

Scheme	Fault Location	Type of Fault	Fault Breaking Time
I	Srinagarind Switchyard end of Srinagarind - Sai Noi 230-kV Transmission Line	1-cct, 3-phase line-to-ground	5 cycles
II	Quae Yai Pumped Storage Power Station end of a 500-kV Transmission Line for Quae Yai Pumped Storage	Ditto	4 cycles
III	Srinagarind Switchyard end of 500-kV Srinagarind - Sai Noi Transmission Line	Ditto	Ditto
IV	Ditto	Ditto	Ditto

Transient stability calculations were made for the two cases of the transmission line for Ao Phai Nuclear which supply power for pumping-one is 230-kV, 4-cct as in the EGAT's plan, the other 500-kV, 2-cct.

The following were clarified from the transient stability calculations.

- It is impossible for Quae Yai Pumped Storage (1,000 MW) to pump up with a 230-kV, 10-cct transmission line (conductor used: ACSR 1272 MCM). Consequently, it is necessary to construct a 500-kV transmission line between Quae Yai Pumped Storage and Sai Noi. (Fig. 9)
- In 1990, when Quae Yai Pumped Storage has an output of 500 MW, two circuits suffice for this 500-kV transmission line.
- In 1992, when Quae Yai Pumped Storage has an output of 1,000 MW, this line is sufficient from the point of view of stability, on condition of adopting the fault clearing time of 4-cycles and choosing a 500-kV transmission system for Ao Phai Nuclear. (Figs. 10, 11, 12)
- In case of the fault clearing time of 5-cycles, a 500-kV, 3-cct transmission line would be required in 1992.
- Scheme II is the most stable scheme of these schemes.

The results of power flow calculations for Scheme II and III are shown in Figs. 16 - 23. With Scheme IV, it was found that the 230-kV transmission line between Srinagarind and Sai Noi is overloaded even under normal conditions at peak time in 1990 and is unable to function.

Based on the results of the above analyses, either Scheme II or III is needed to be adopted for transmission of the power of the Upper Quae Yai Project and Quae Yai Pumped Storage Project.

Regarding Upper Quae Yai Pumped Storage scheduled to be developed by EGAT in 1995, the following can be assumed from the results of studies of Quae Yai Pumped Storage.

- The transmission line of 500-kV, 4-cct, ACSR 1272 MCM x 3 will be required at least to transmit the aggregate amount of power for Quae Yai Pumped

Storage and Upper Quae Yai Pumped Storage from Sai Noi Substation.

- It is also necessary to strengthen greatly the nuclear power transmission line and the 500-kV outer loop transmission line of Bangkok.

Judging from the present electric power development plan and power system plan of EGAT, the system in 1995 is inadequate for development of Upper Quae Yai Pumped Storage.

(3) Examinations from Construction Costs and Economic Aspects

As a result of the system analyses in the preceding section, it was found that Scheme II and Scheme III can be adopted as power systems accompanying development of the projects of Upper Quae Yai and subsequent pumped storage.

That is to say:

Scheme II: In 1987 when the Upper Quae Yai Project is brought into service, Srinagarind and Ban Pong 2 will be connected by a 230-kV, 4-cct transmission line (conductor: ACSR 1272 MCM) and a 230-kV, 2-cct transmission line (conductor: ACSR 1272 MCM x 2), and Ban Pong 2 Sai Noi by a 230-kV, 4-cct transmission line (conductor: ACSR 1272 MCM). At the time when Quae Yai Pumped Storage is developed (in 1990 accroding to EGAT's plans), a 500-kV transmission line (2-cct, ACSR 1272 MCM x 3) is to be constructed between Quae Yai Pumped Storage and Sai Noi.

Scheme III: A 500-kV transmission line (2-cct, ACSR 1272 MCM x 3) is to be constructed between Srinagarind and Sai Noi in 1987 when the Upper Quae Yai Project is brought into service, and operated initially at 230-kV. This transmission line is to be stepped up to 500-kV and also a 500-kV transmission line is to be constructed between Quae Yai Pumped Storage and Srinagarind at the time Quae Yai Pumped Storage is incorporated.

The construction costs of power system expansion and the annual costs for the above two schemes are shown in Table 2 and Table 3. Economic comparison of the two schemes regarding annual costs and transmission lines losses resulted in the conclusion that Scheme II is more advantageous than Scheme III from an overall

viewpoint because of less advance investment in construction cost in spite of larger transmission losses in the early years after the development of the hydro projects in the western area. The losses of Scheme III will be greater than those of Scheme II, because of less strengthening of 230-kV transmission system of Srinagarind - Sai Noi, from the late years of this century. That will make Scheme III be inferior to Scheme II.

Economic Comparison between Scheme II and Scheme III

	Scheme II	Scheme III
(1) Present Value of Total Annual Cost (MB)		
1987	1,280	2,744
1990	1,727	1,028
1992	106	106
Total	3,113	3,878
(2) Losses (MB)	1,461	1,262
(3) Total (MB)	4,574	5,140

Note: Losses (MB) for the two schemes,

$$\left\{ \text{Power Loss (59)} + \text{Annual Energy Loss (102)} \right\} \times \sum_{n=1}^{25} \frac{1}{(1+0.1)^n} = 1,461$$

$$\left\{ \text{Power Loss (50)} + \text{Annual Energy Loss (89)} \right\} \times \sum_{n=1}^{25} \frac{1}{(1+0.1)^n} = 1,262$$

(4) Conclusions

As the result of power system analyses, it was found that Scheme II and III will provide satisfactory functions as methods of transmitting the electric power from and to Upper Quae Yai and Quae Yai Pumped Storage, but Scheme I and IV won't do and cannot be adopted. With Scheme II there will be 4 routes necessary in 1992 between Srinagarind and Sai Noi, whereas with Scheme III there will be the advantage that 3 routes will suffice. Scheme II will have less transmission losses than Scheme III in near future, and the estimated construction cost of Scheme II is lower than that of Scheme III. Taking transmission losses into account and comparing cumulative costs

at present values, Scheme II will be more advantageous as indicated above.

With Scheme III, a 500-kV transmission line have to be constructed at the time of development of the Upper Quae Yai Project so that the advance investment will be enormous. If development of the Quae Yai Pumped Storage Project is thought to be delayed beyond the timing originally planned, there will be great economic risk. Adoption of Scheme III is not advisable unless there is a definite outlook for development of Quae Yai Pumped Storage to be moved up.

In connection with development of the Quae Yai Pumped Storage Project, it is necessary to examine strengthening of the major transmission line system, especially the transmission line for Ao Phai Nuclear to be the source of power for pumping and the outer loop transmission line of Bangkok.

5-4 Fault Current Calculations

Fault current were calculated on 3 line-to-ground and 1 line-to-ground current of the system in 1987. The results are indicated in Fig. 12.

The conditions for calculations were the following:

(1) System A -②- C (1987)

(2) Generator Reactance xd"

(3) The transformers at each substation were assumed to have a rating of 200 MVA, 230/115/65 kV with reactances of $\%X_{ps} = 9.2$, $\%X_{pt} = 40$ and $\%X_{st} = 25.2$ at 200 MVA base and the total capacity of banks were assumed to meet the load MVA.

5-5 Transmission Losses

The transmission losses used for economic comparisons were obtained based on the conditions below.

(1) Scope of Transmission Loss Calculations

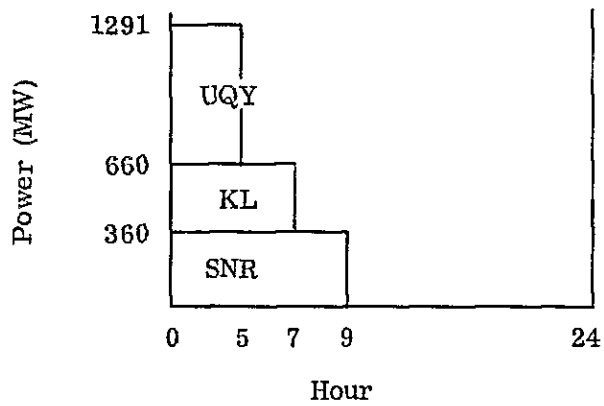
The power transmission system from hydroelectric power plants in the western area (including Khao Laem and Upper Quae Yai) to Sai Noi Substation.

(2) Load Duration Curves of Hydroelectric Power Plants

The operating time per day of each power station was calculated from the electric power generation and energy production figures given in EGAT Report No. 844-2207, and assuming that these power station would be operated during peak time, the load duration curves indicated below were prepared.

As it is thought that Srinagarind No. 4 and No. 5 (pumped storage) will be operated for only very short periods, they were ignored in the transmission loss calculations. The electric power of Lower Quae Yai is not considered either, as it will be consumed through a 115-kV system.

Load Duration Curve of Hydroelectric Power Plants in the western area.



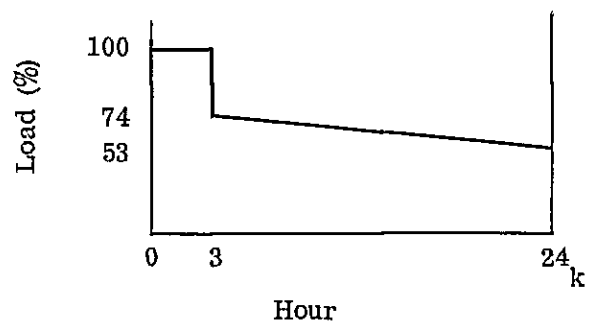
(3) Load and Load Duration Curve at Ban Pong 2 Substation

The loads at Ban Pong 2 Substation were taken to be the following based on load forecasts by EGAT.

Year	1987	1990	1992	1995
Load (MW)	425.3	647	750	987

The shape of the load duration curve was taken to be unchanged every year as shown below.

Load Duration Curve at Ban Pong 2 Substation



(4) Transmission Loss

Both power loss and energy loss are sometimes considered for the economical evaluation of transmission loss. However, the transmission loss will be subjected to the severest evaluation conditions, if the kW cost and the kWh cost of the thermal power plant used for evaluation of the economics of the Upper Quae Yai Project are also used as criteria for evaluation of the transmission loss. The reasons are that the power loss borne by the Upper Quae Yai Project will be very small — it was calculated at 43.6 MW (60 MW - 16.4 MW) which is less than 0.6% of total dependable capacity after 1987 (7,973.3 MW in 1988) and less than 3% of reserve supply capacity (1,825.3 MW in 1988), even in the case of Scheme A - ② - a with the highest loss —and so the power corresponding to the transmission loss will be able to be enough supplied by increasing output of an existing plant. This is a desirable and realistic way from the standpoint of improving operating efficiency of that plant.

So, only energy loss was allowed to be considered in evaluation of transmission loss in the study, but both power loss and energy loss were taken with the costs

assumed to be 1,224฿ per kW and 1.013฿ per kWh, respectively.

Transmission losses for 25 years for two schemes (Scheme II and Scheme III) have been calculated and are shown in Table 6. In the calculation of transmission losses, the load at Ban Pong 2 Substation was assumed to increase at the rate of 8% a year after 1995. The calculation results of transmission losses indicate those given below.

There will be more transmission losses with Scheme II than Scheme III for a few years after 1987, but the difference in the transmission losses will be smaller year by year and become nearly zero in 1997. The losses of Scheme III will be greater than those of Scheme II afterwards and the difference in the transmission losses will become larger and larger with an increase of the load at Ban Pong 2 Substation year by year.

· Fig. I Electric Power System in 1986

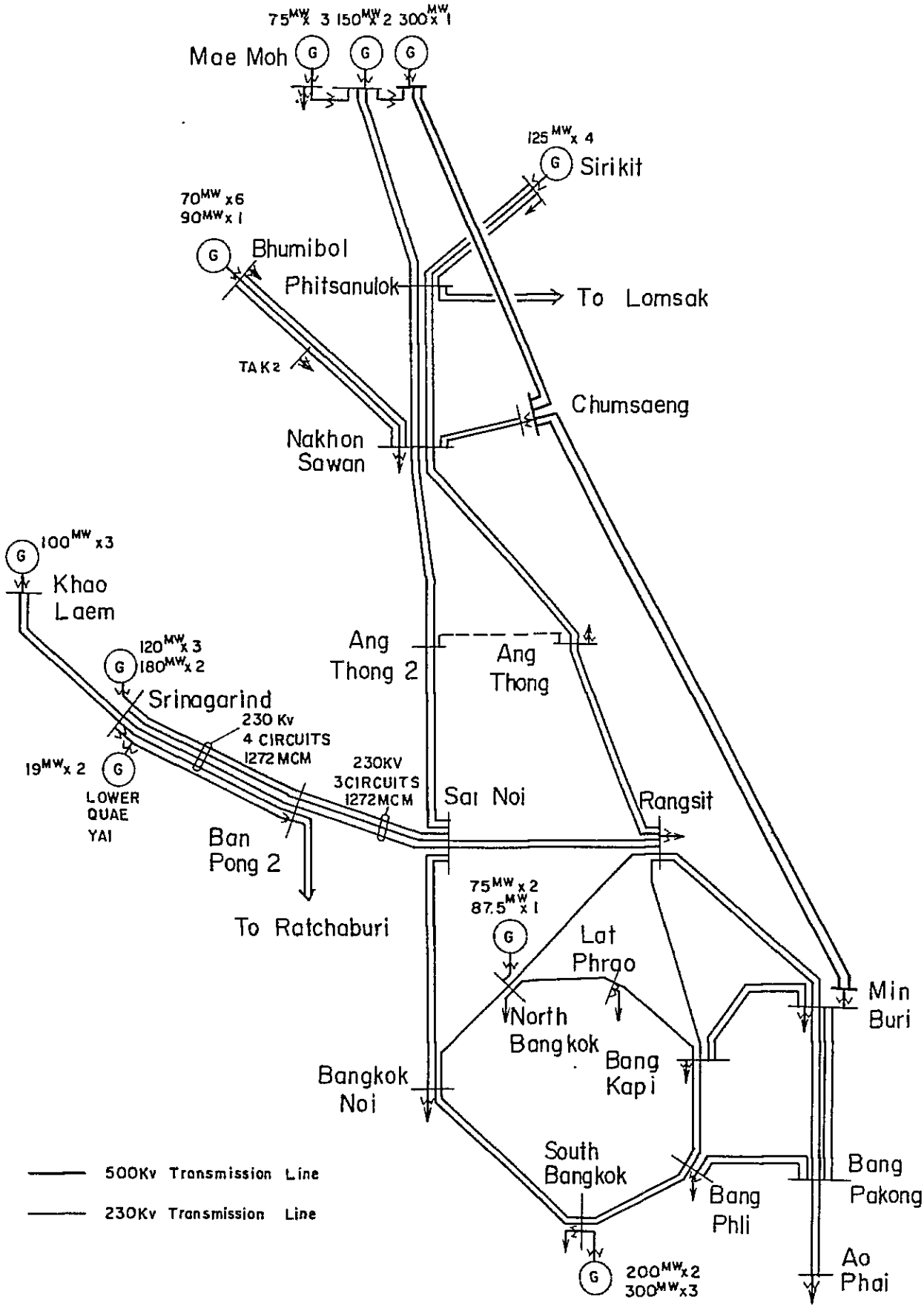


Fig. 2 Power Flow - Peak Time in Sept., 1986
(Without Ang Thong-Ang Thong 2 Conection)

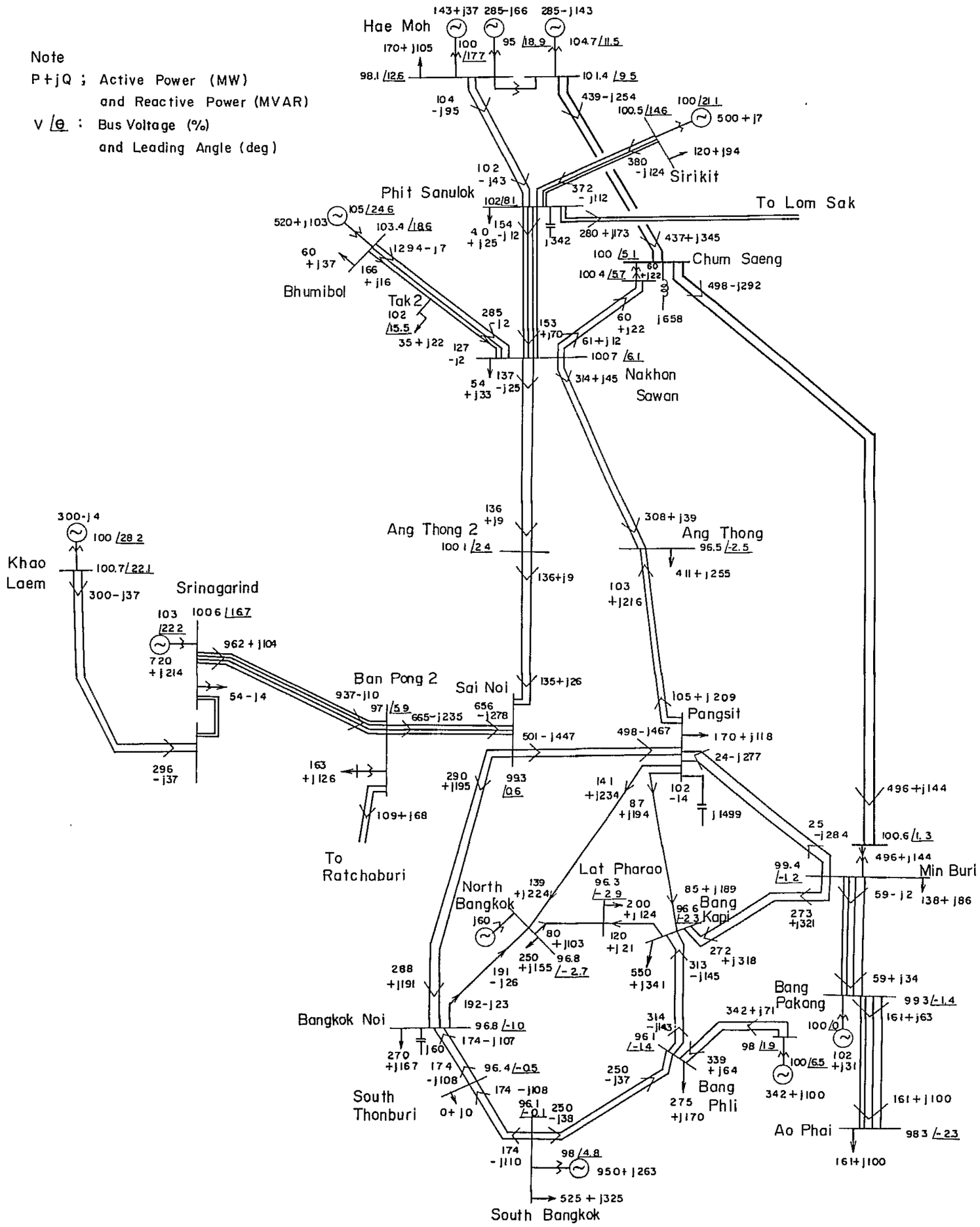


Fig. 3 Power Flow Off Peak Time in Sept., 1986
(Without Ang Thong - Ang Thong 2 Conection)

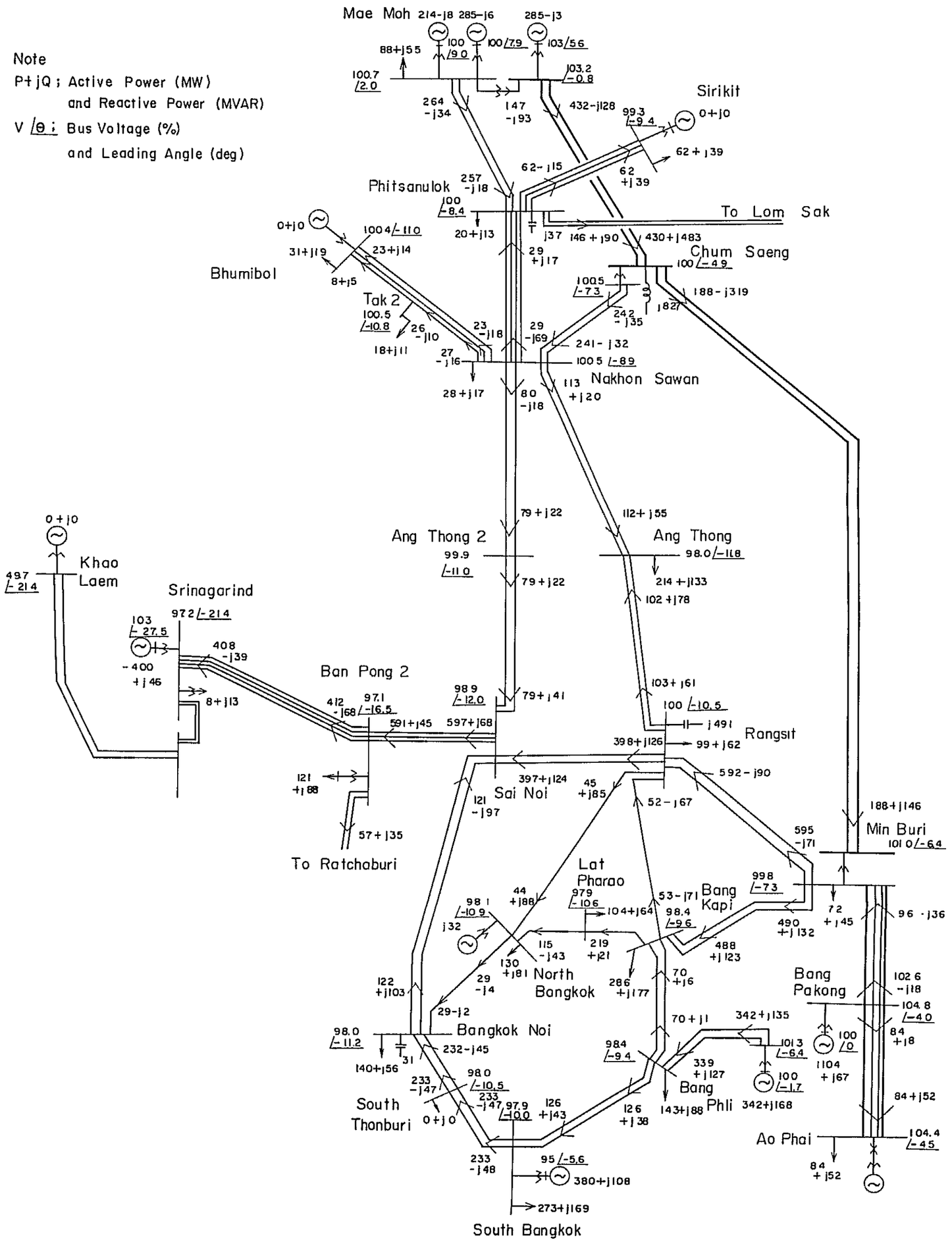


Fig 4 Power Flow - Peak Time in Sept, 1986
(With Ang Thong - Ang Thong 2 Conection)

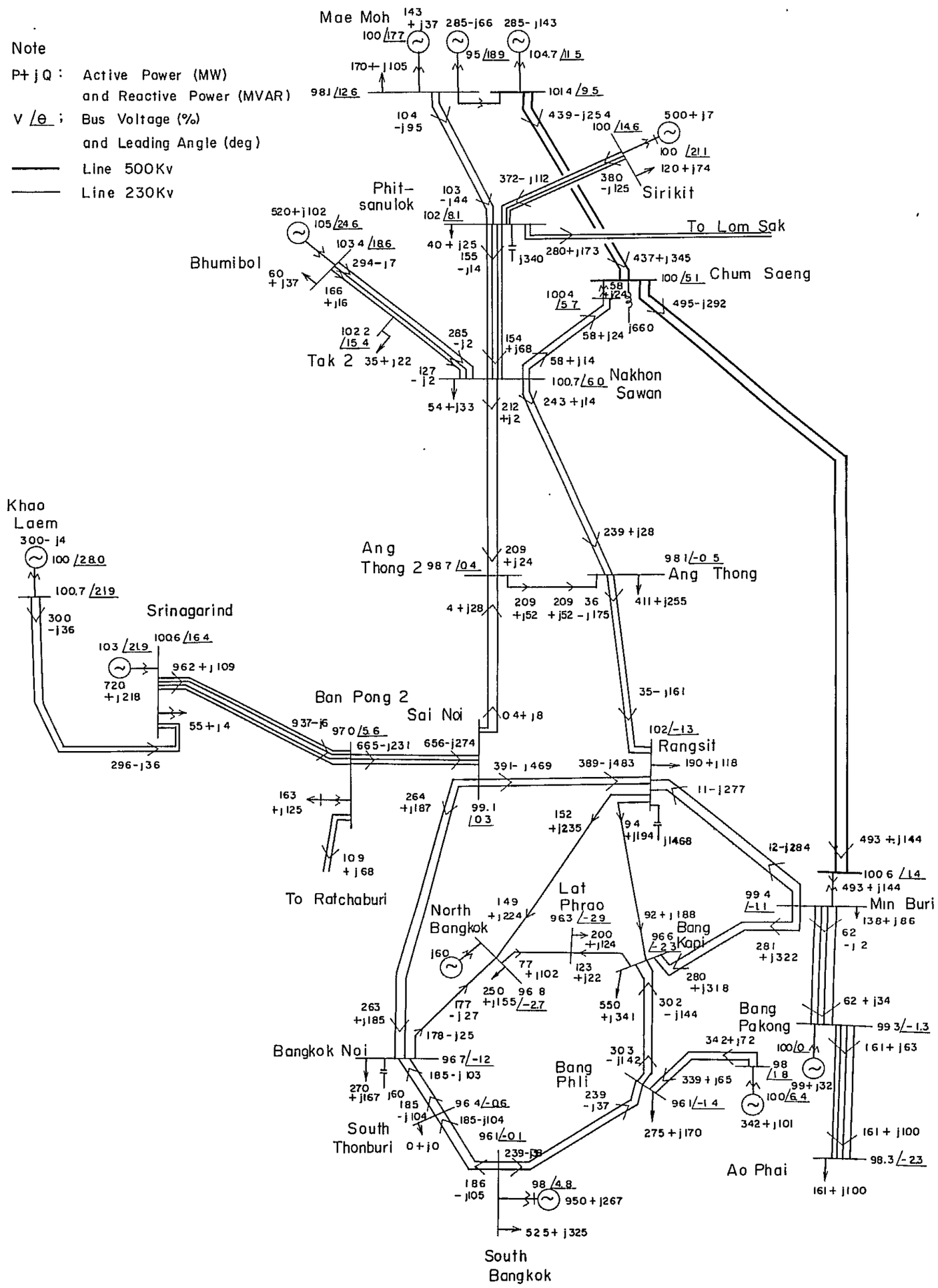


Fig. 5 Transient Stability Study for Srinagarind-Bangkok Transmission System (Peak Time in 1985)

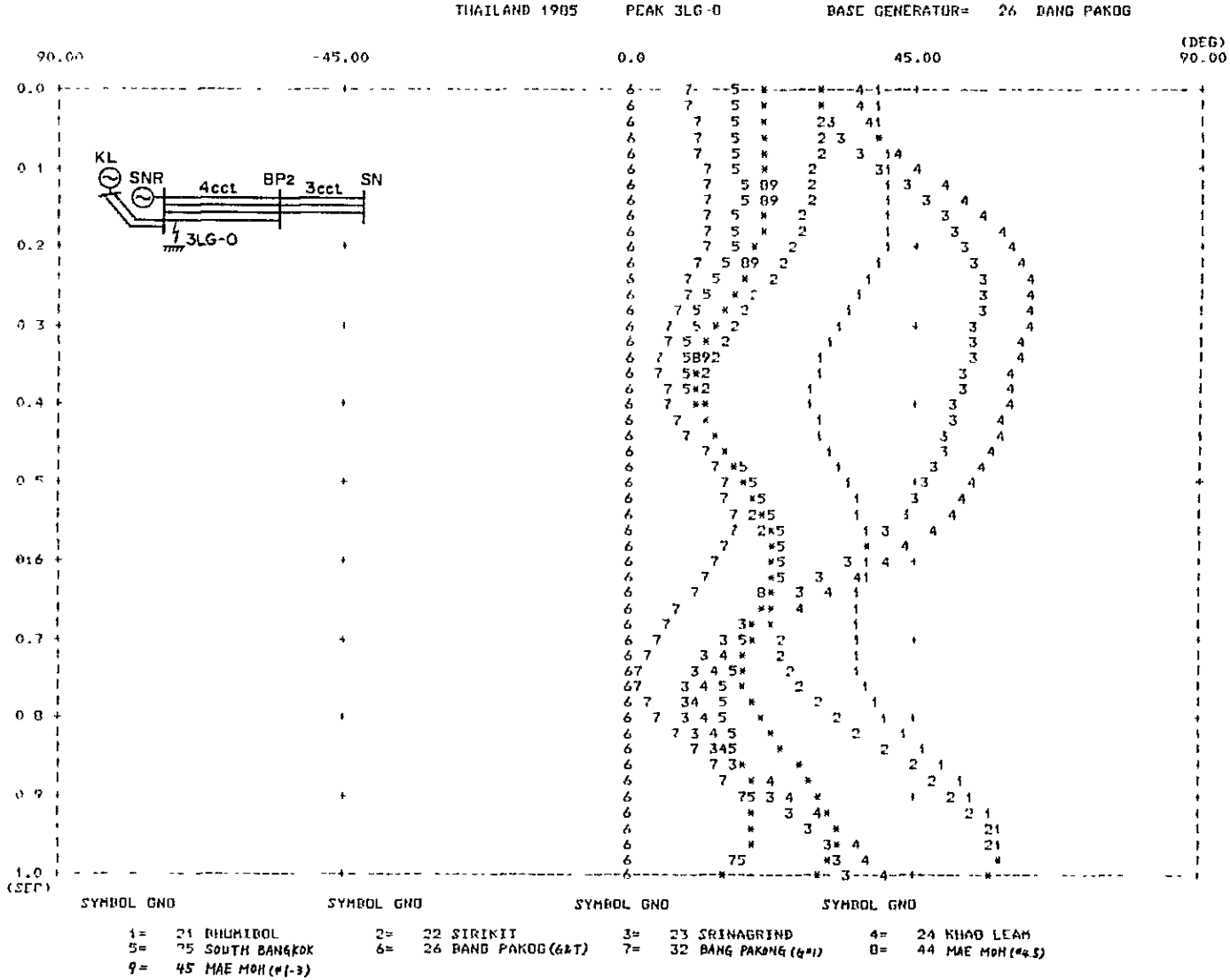


Fig. 6 Transient Stability Study for Srinagarind - Bangkok Transmission System (Off-peak Time in 1985)

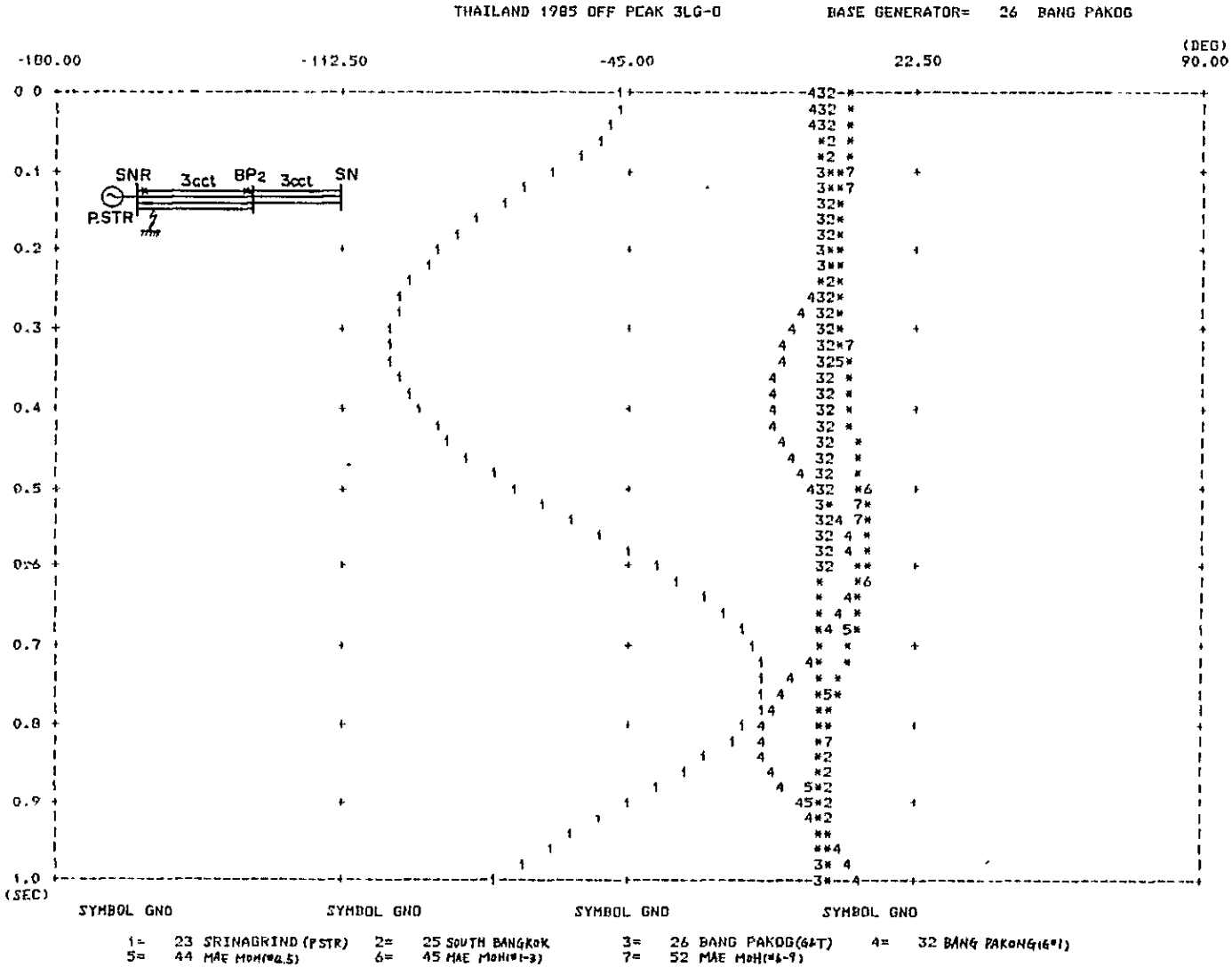
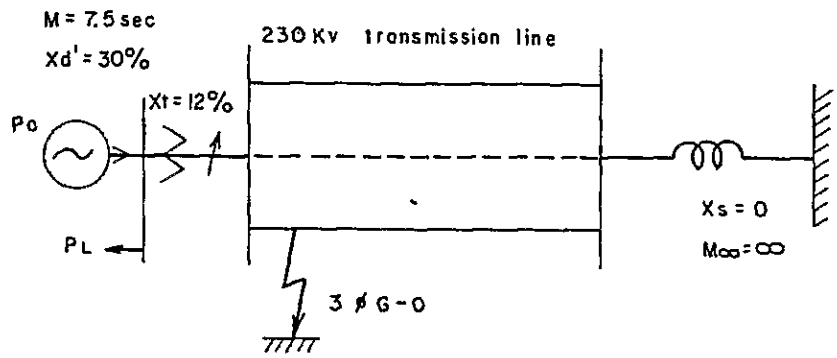


Fig. 7 Transmission Capacity of 230KV Line



Transmission Capacity = Generated Power (Po)

- Station Loading (P_L)

$P_L = 0.04\ P_o$

Clearing Time 0.08 sec

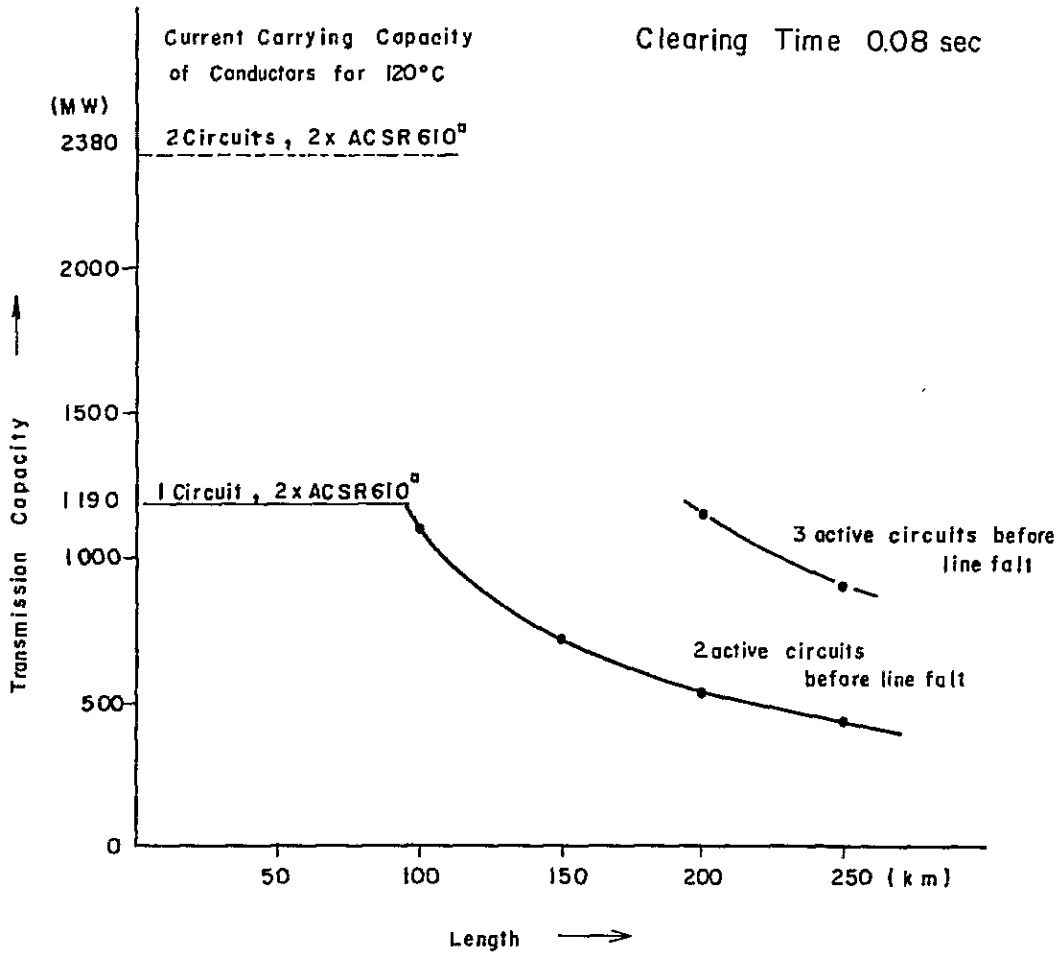
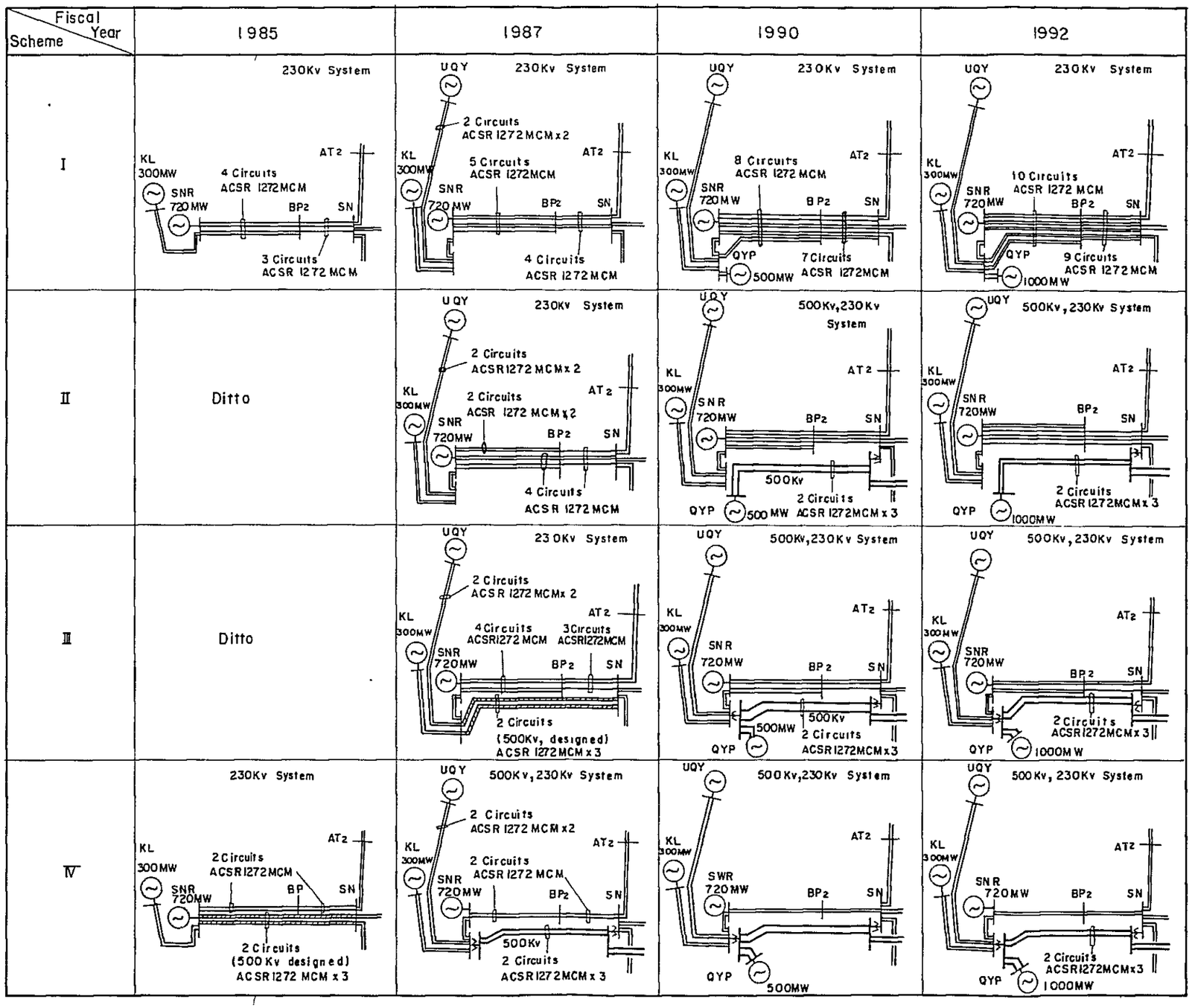


Fig.8 Power System Schemes for Upper Quae Yai Project and Quae Yai Pumped Storage Project



KL ; Khao Laem
SNR ; Srinagarind
UQY ; Upper Quae Yai
QYP ; Quae Yai Pumped Storage

BP2 ; Ban Pong 2
SN ; Sai Noi
AT2 ; Ang Thong 2

—— 230Kv Transmission line
═══ 500Kv Transmission line energized at 230Kv
—— 500Kv Transmission line

Fig.9 Transient Stability Study for Quae Yai Pumped Storage - Bangkok Transmission System

Scheme I (230KV Transmission for Ao Phai Nuclear)

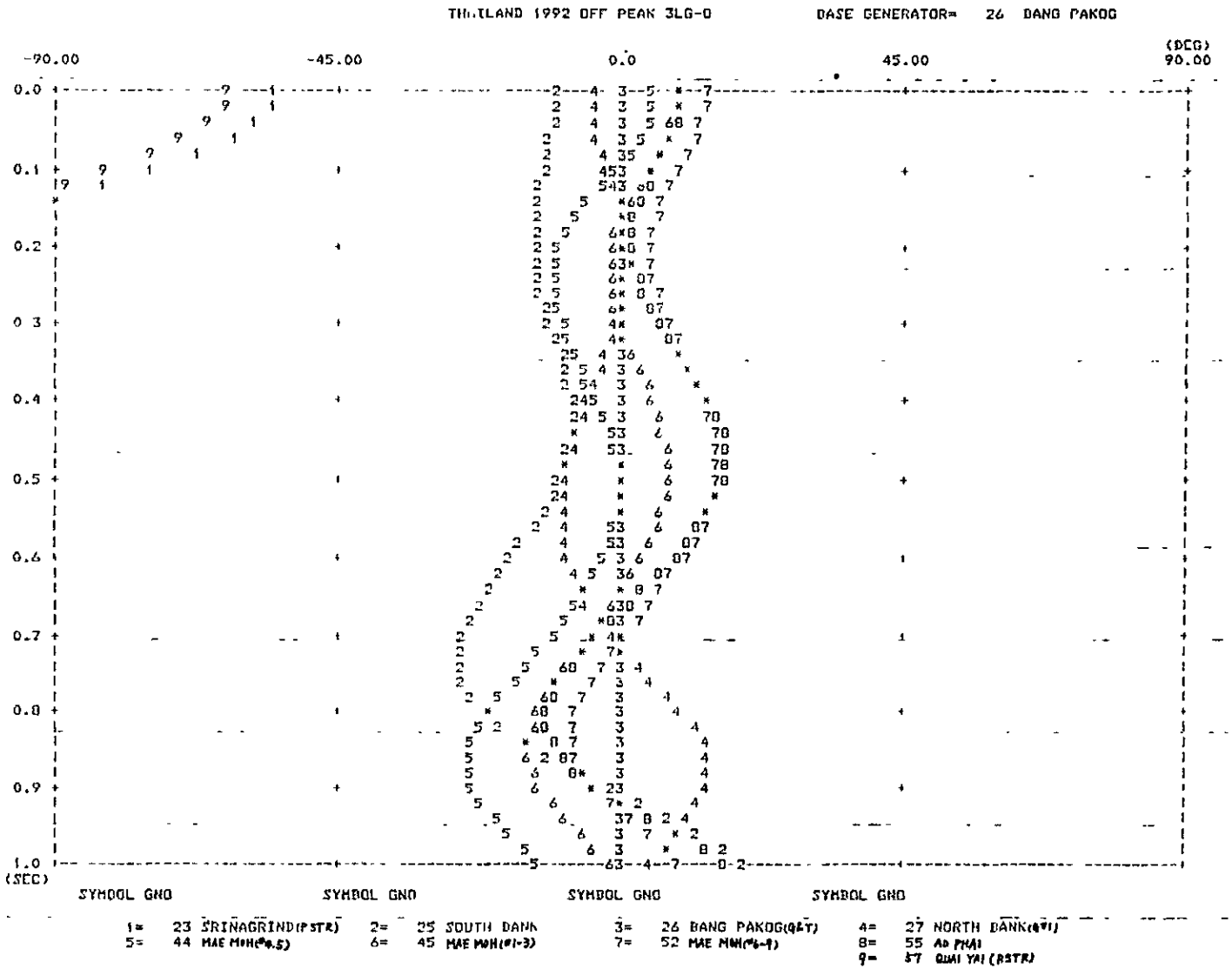


Fig. 10 Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System

Scheme II 500kV Transmission for Ao Phai Nuclear)

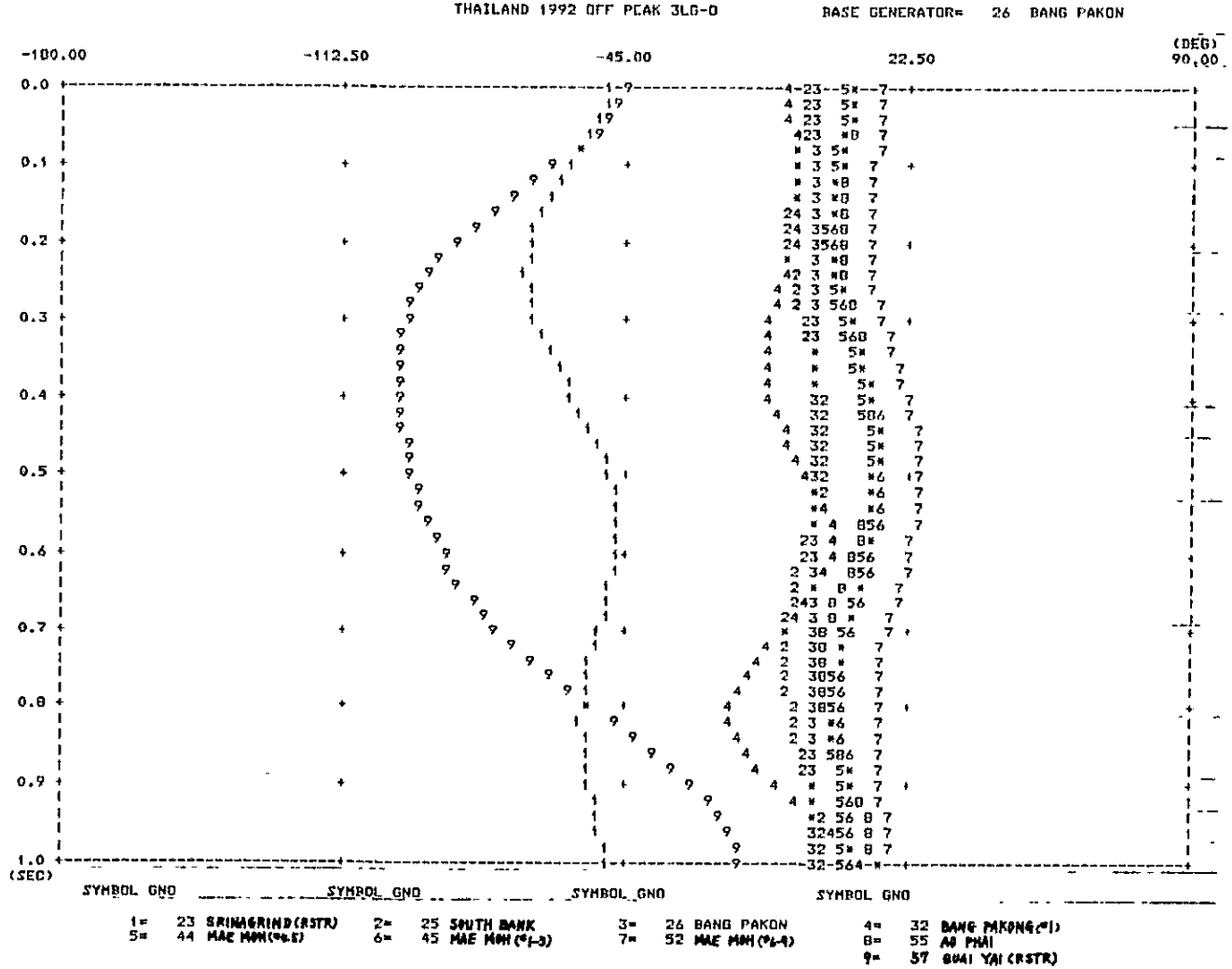


Fig. 11: Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System

Scheme III (500kV Transmission for Ao Phai Nuclear)

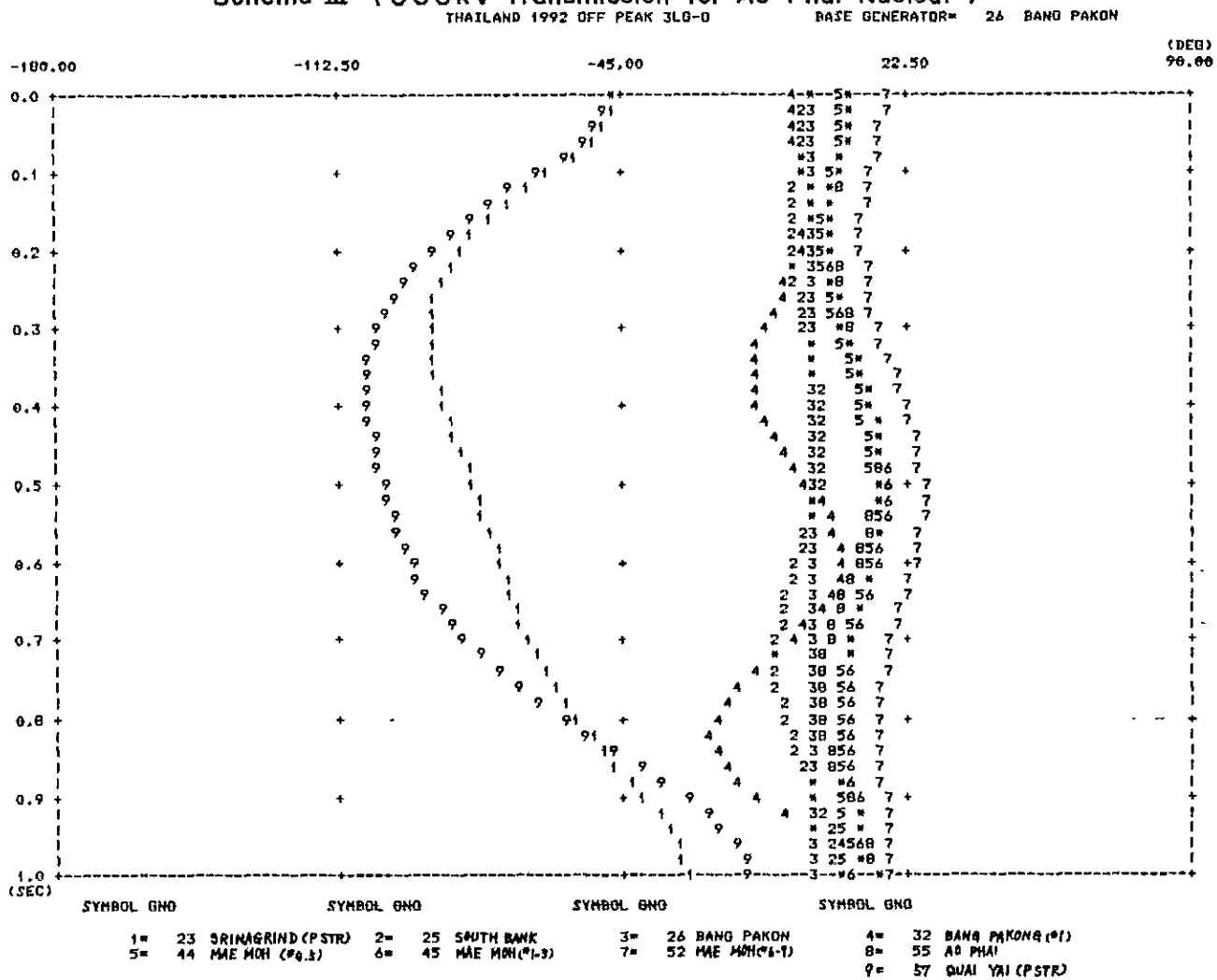


Fig. 12 Transient Stability Study for Quae Yai Pumped Storage - Bangkok Transmission System

Scheme IV (500KV Transmission for Ao Phai Nuclear)

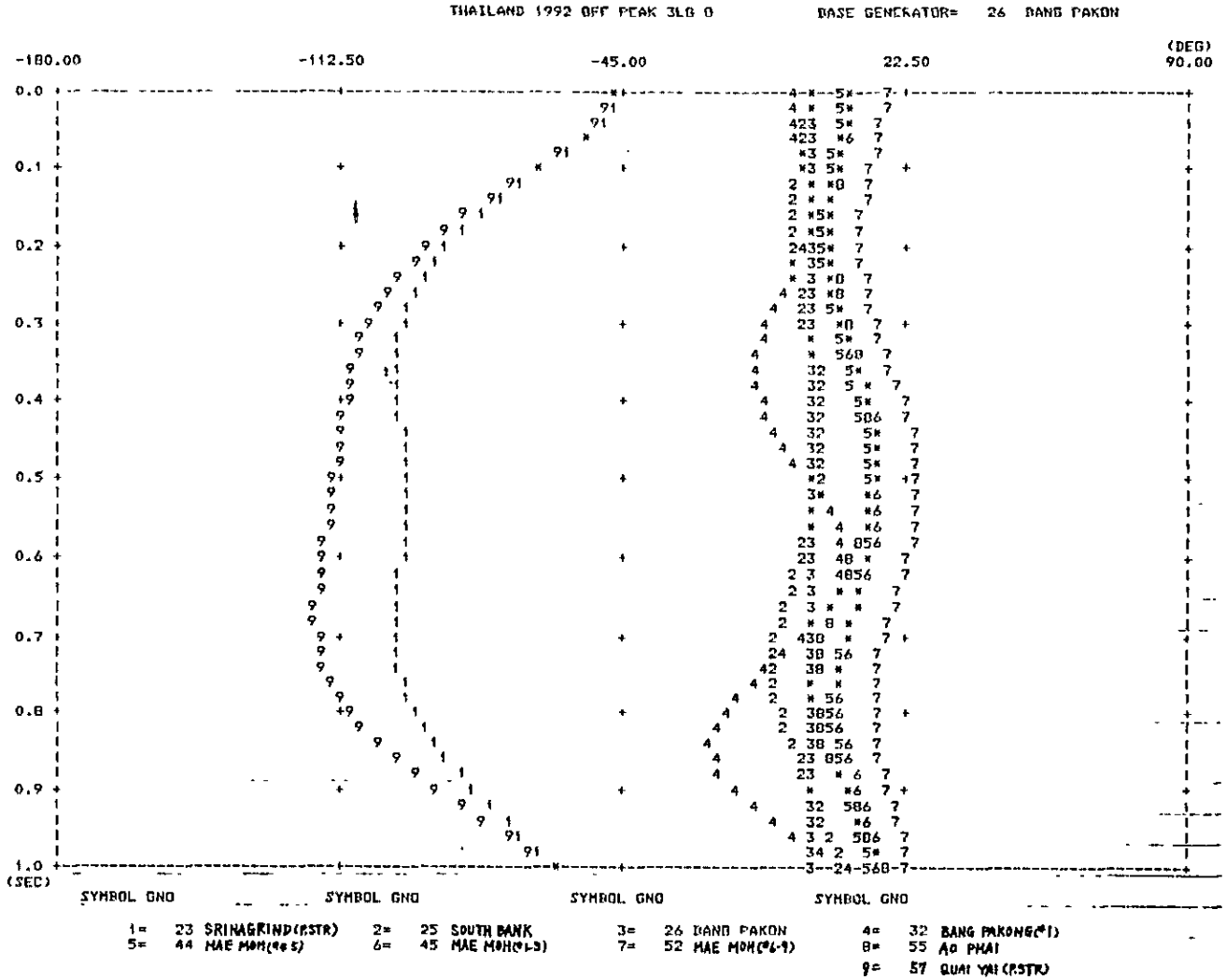


Fig. 13 Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System

Scheme II (230KV Transmission for Ao Phai Nuclear)

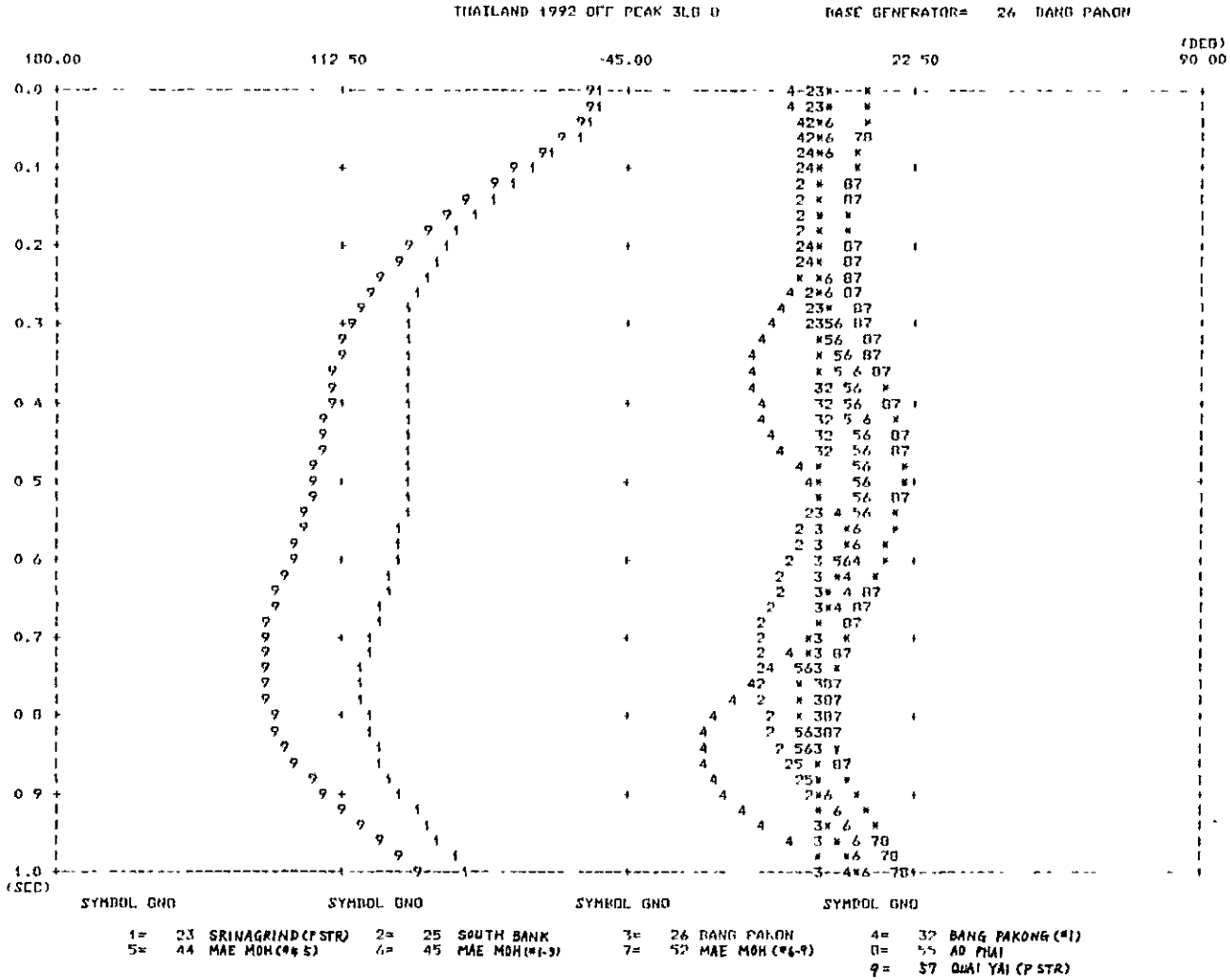


Fig. 14 Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System

Scheme III (230KV Transmission for Ao Phai Nuclear)

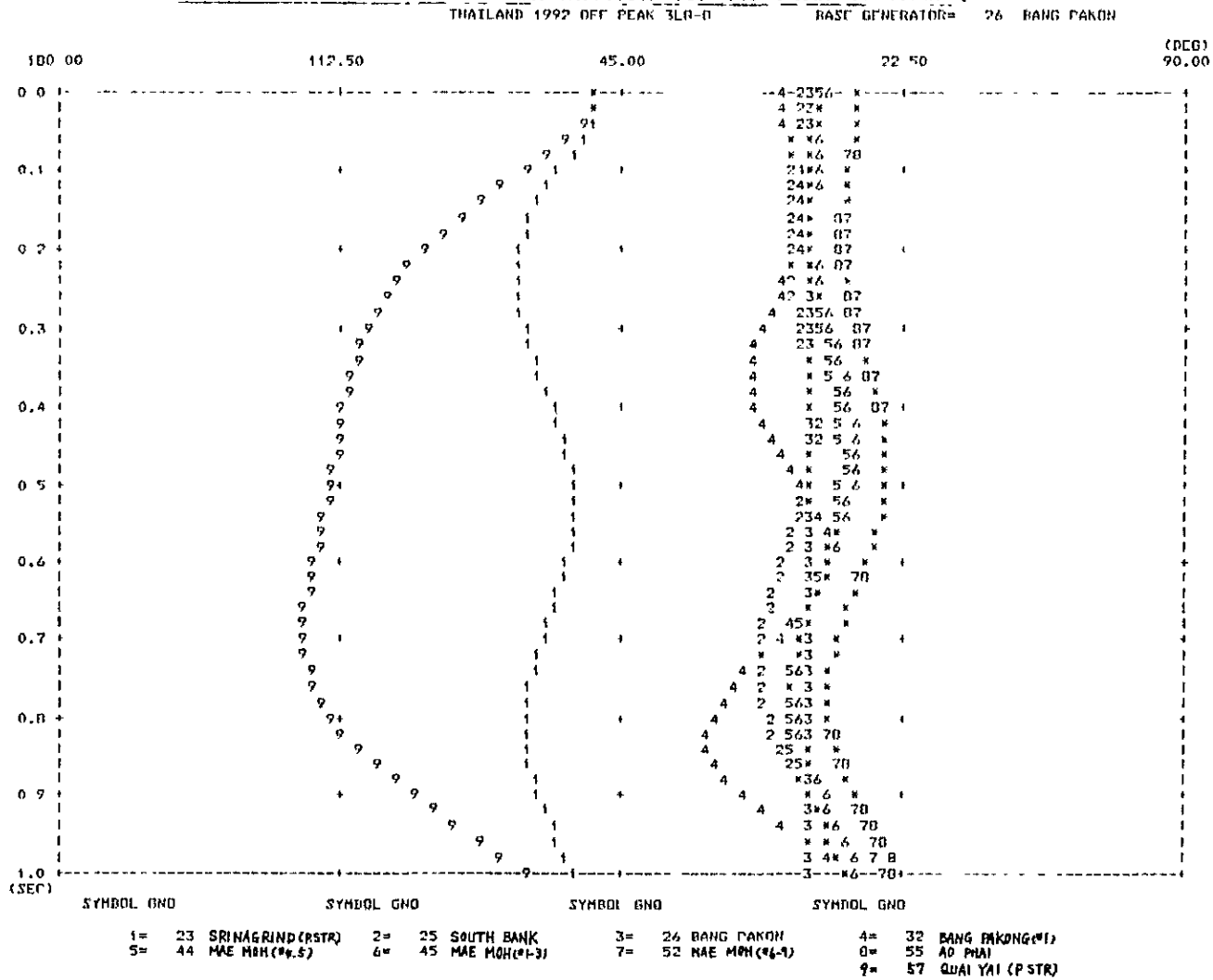


Fig. 15-1 Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System

Scheme IV (230KV Transmission for Ao Phai Nuclear)

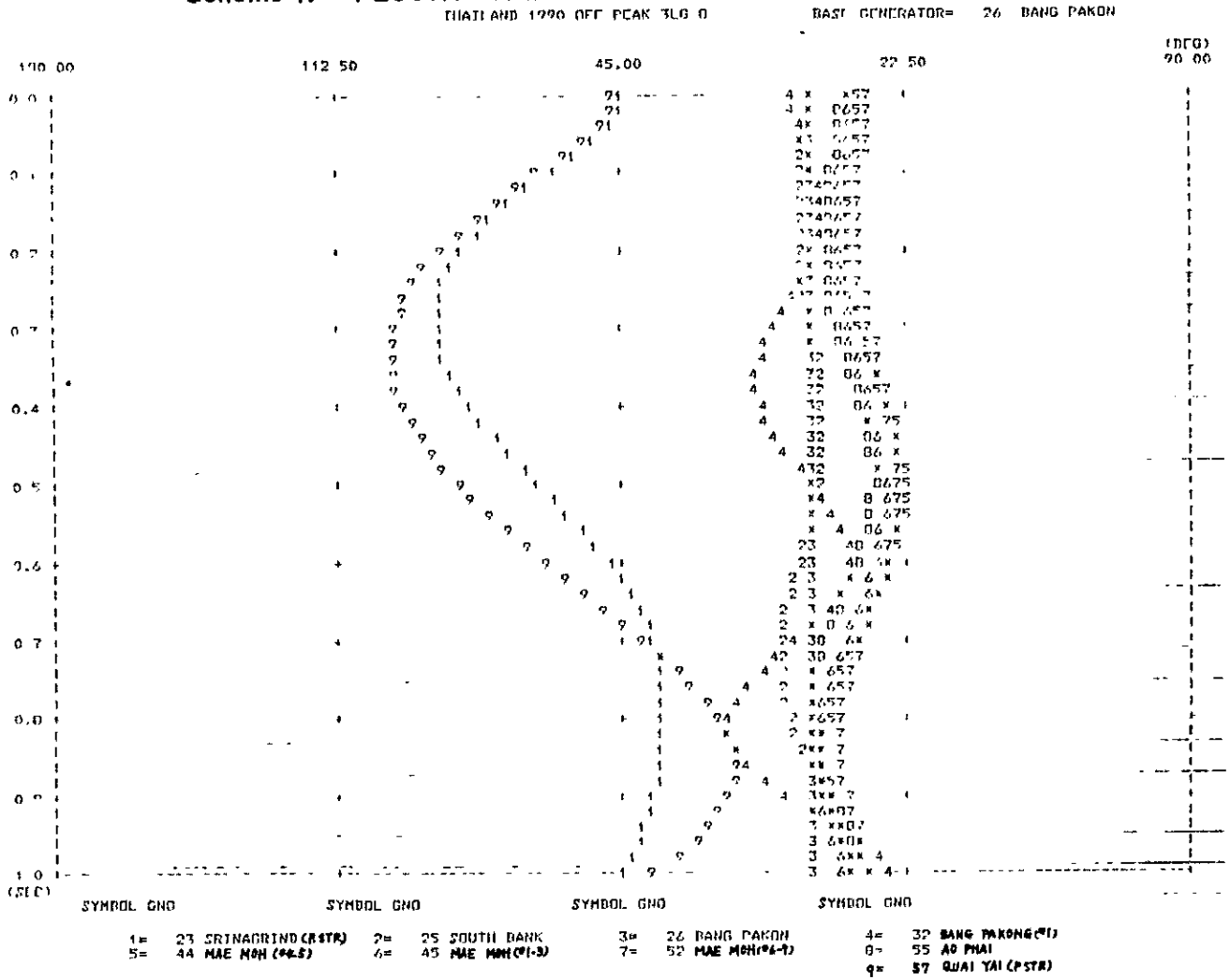


Fig.15-2 Transient Stability Study for Quae Yai Pumped Storage - Bangkok Transmission System
Scheme Ⅳ (230kV Transmission for Ao Phai Nuclear)

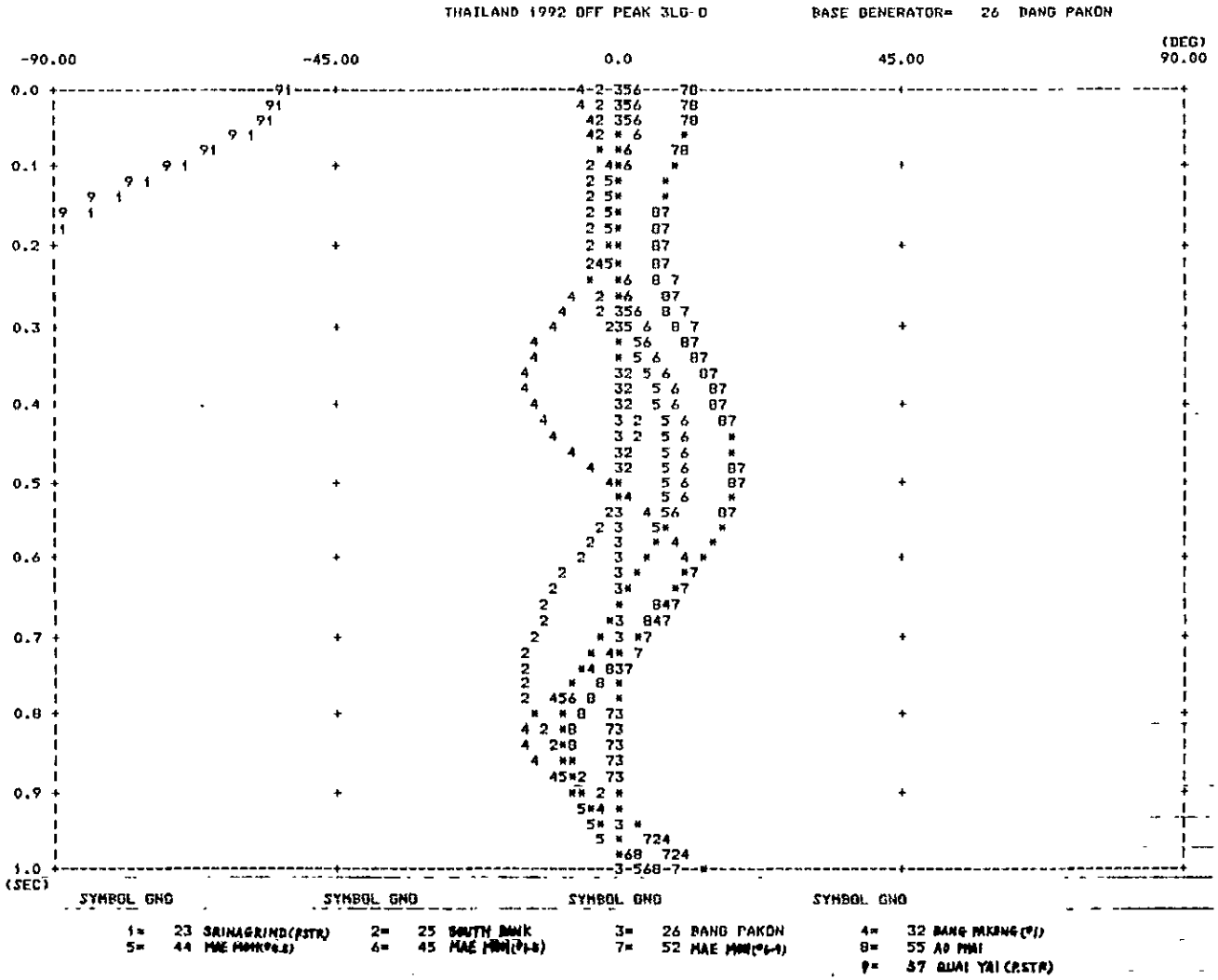
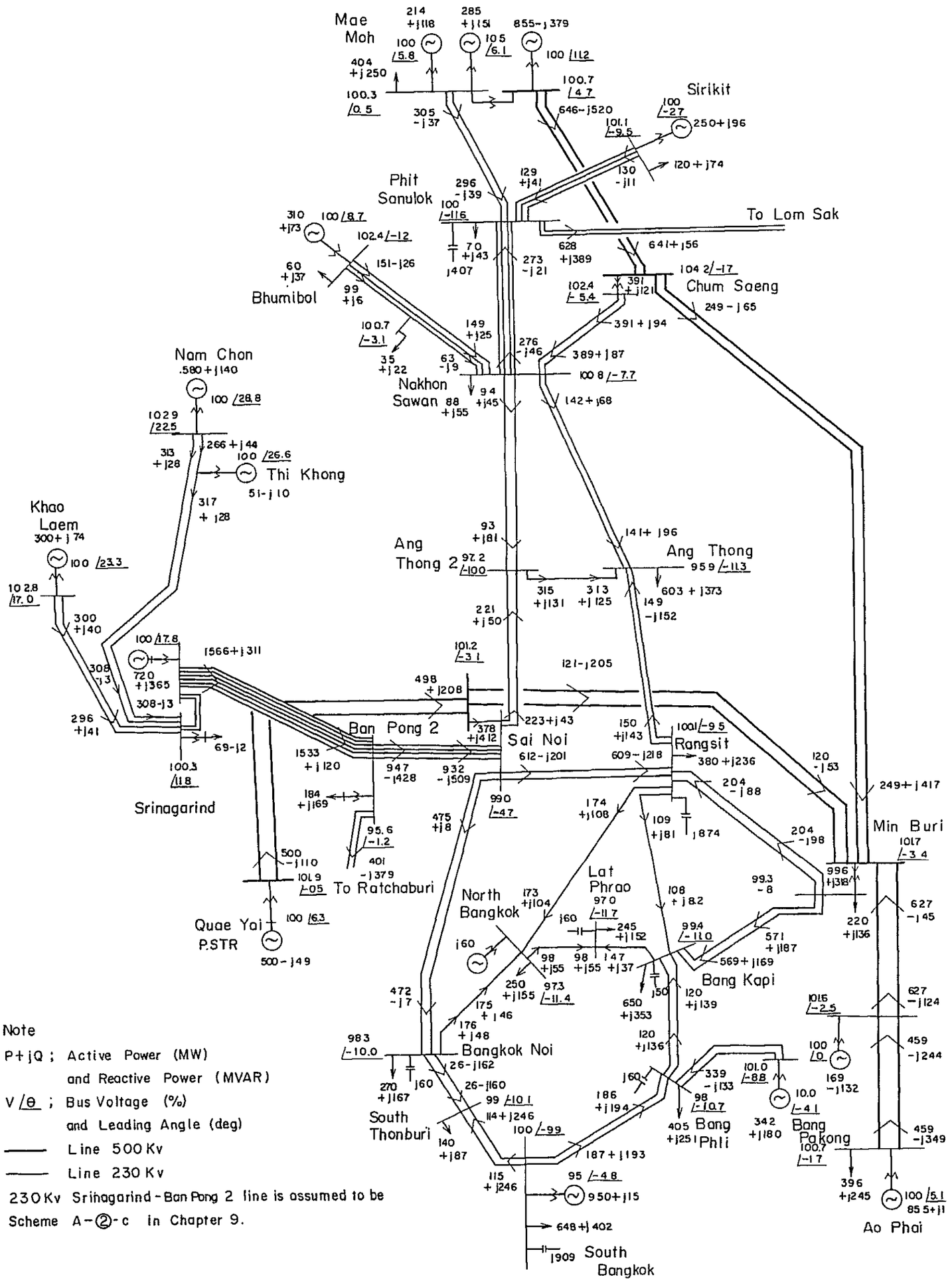


Fig. 16 Power Flow - Peak Time in Oct., 1990

Scheme II



Note

P+jQ ; Active Power (MW) and Reactive Power (MVAR)

V/θ ; Bus Voltage (%) and Leading Angle (deg)

—— Line 500 Kv

—— Line 230 Kv

230 Kv Srinagarind - Ban Pong 2 line is assumed to be Scheme A-②-c in Chapter 9.

Fig.17 Power Flow - Off-peak Time in Oct., 1990

Scheme II

Note

P+jQ : Active Power (MW) and Reactive Power (MVAR)

V /θ Bus Voltage (%) and Leading Angle (deg)

—— Line 500Kv

—— Line 230Kv

230Kv Srinagarind-Ban Pong 2 line is absumed to be Scheme A - ② - c in Chapter 9.

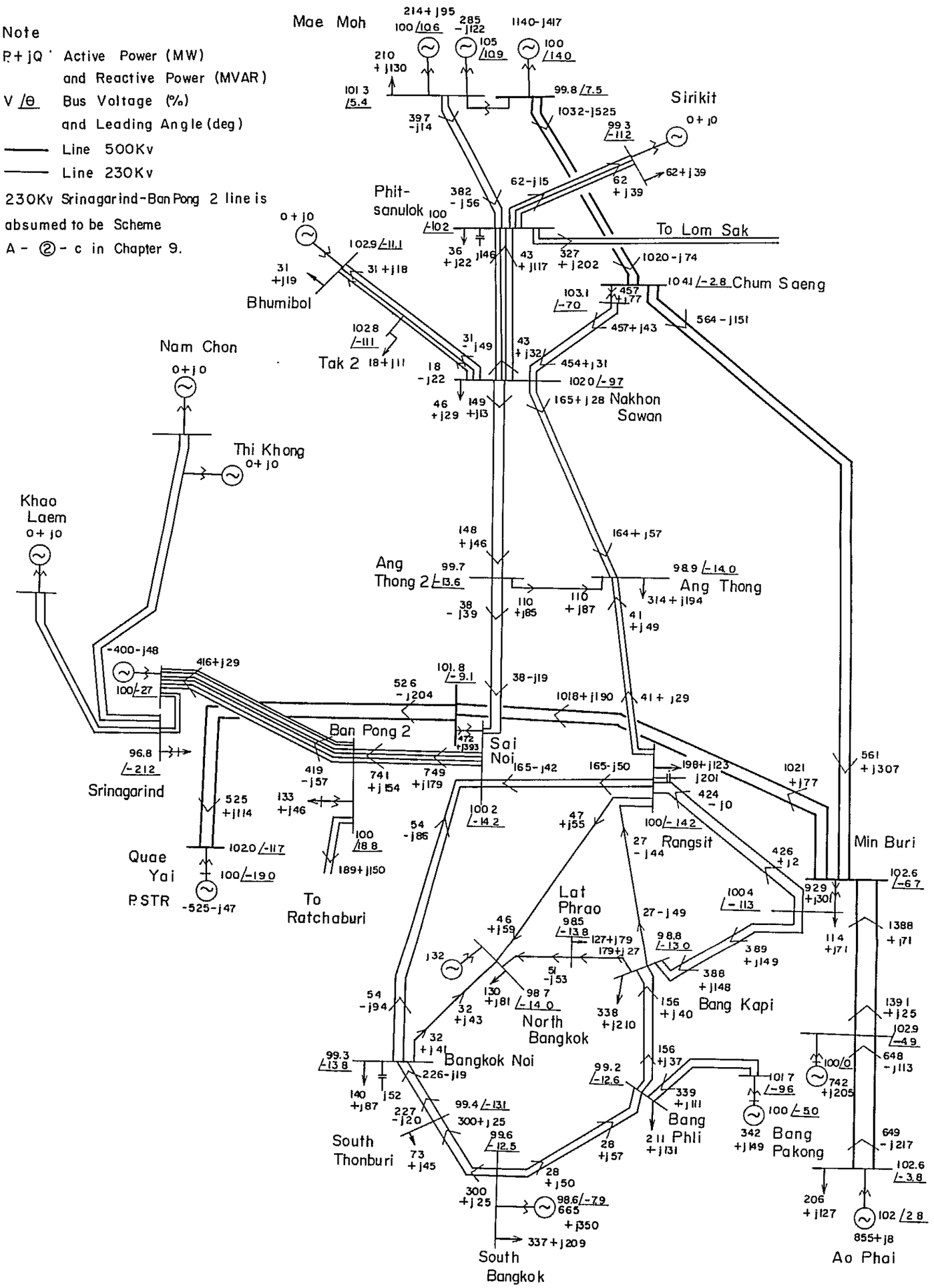


Fig.18 Power Flow - Peak Time in Oct., 1990

Scheme Ⅲ

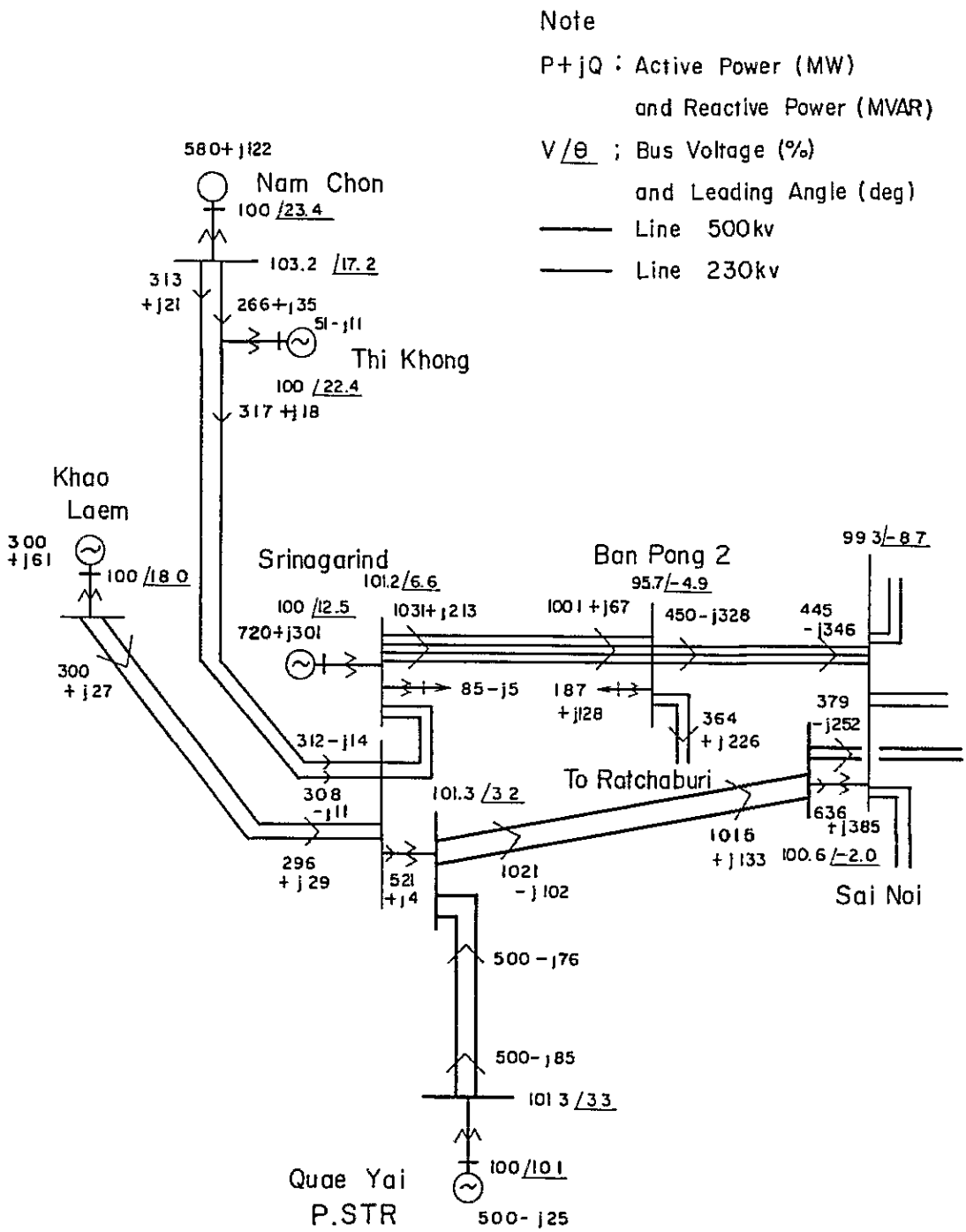


Fig. 19 Power Flow —Off-peak Time in Oct., 1990

Scheme III

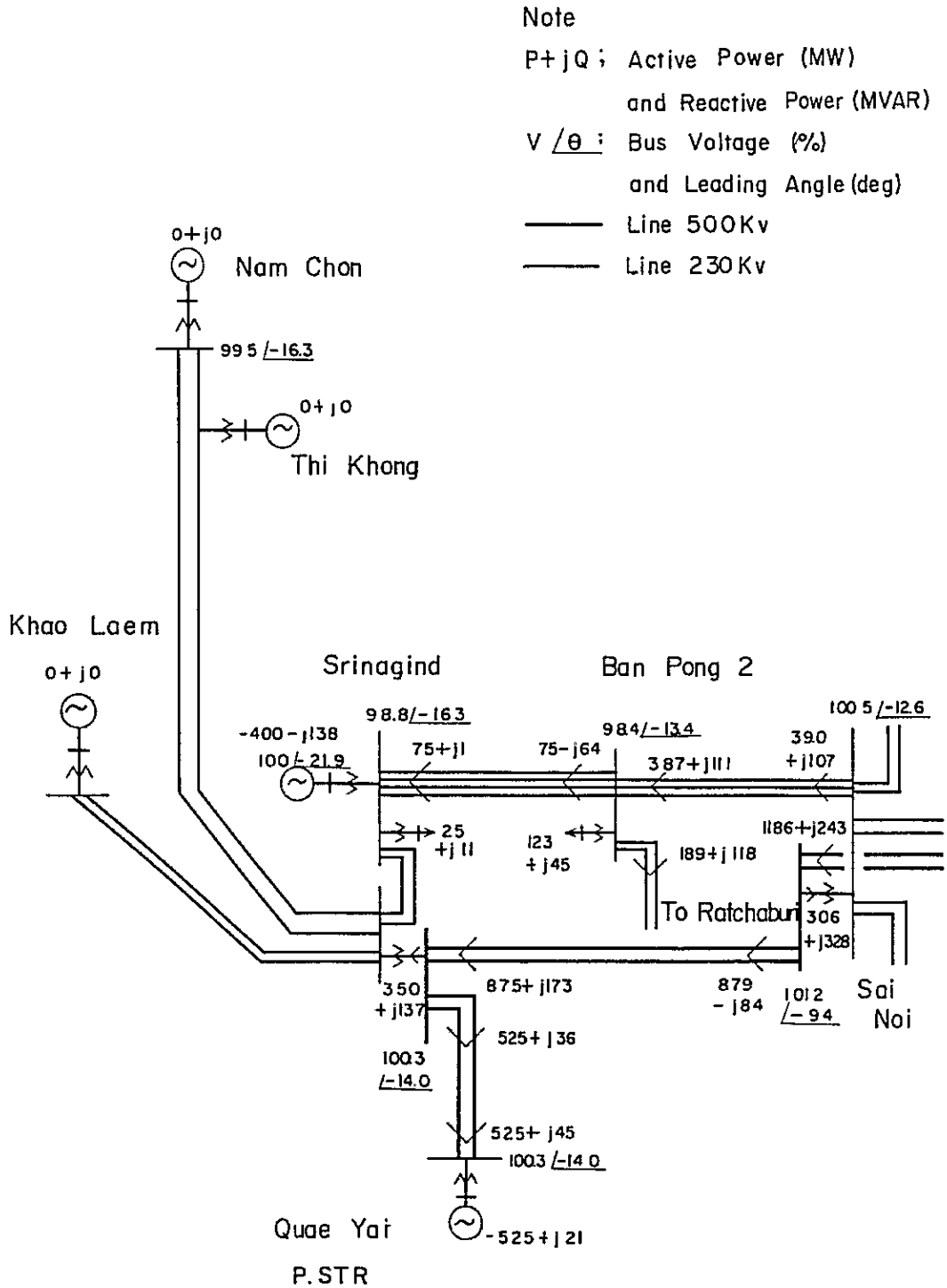
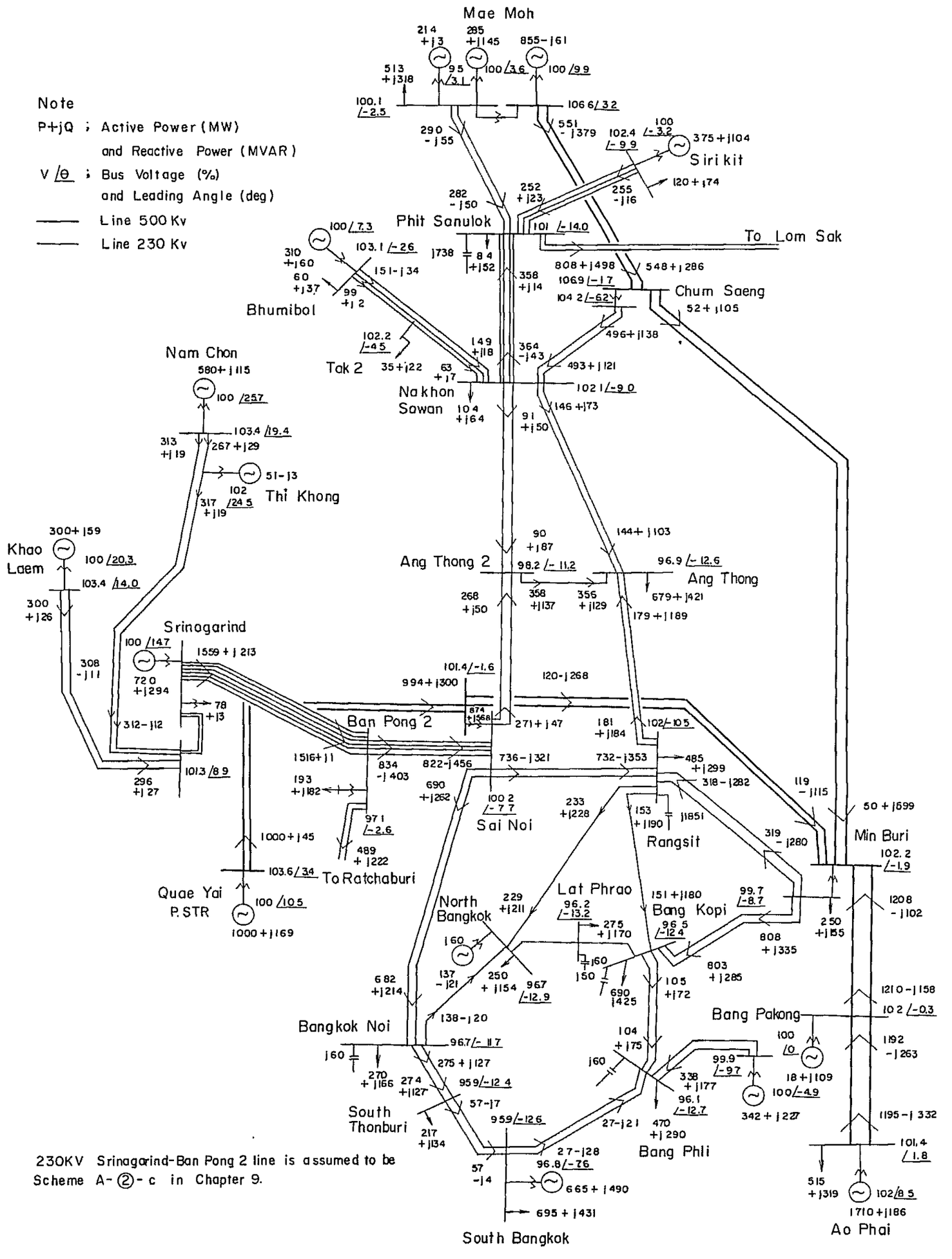


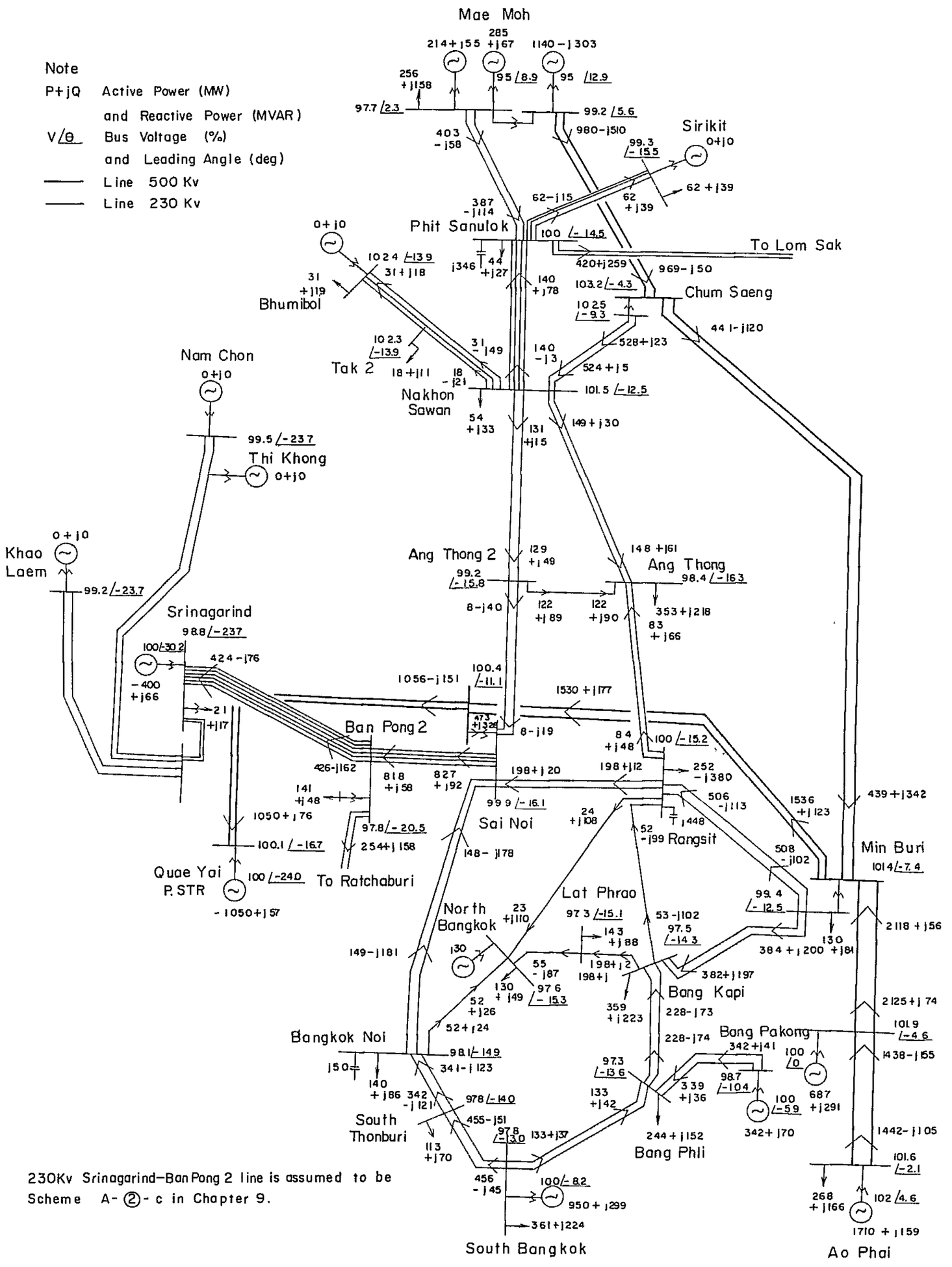
Fig. 20 Power Flow - Peak Time in Oct., 1992

Scheme II



230KV Srinagarind-Ban Pong 2 line is assumed to be Scheme A-②-c in Chapter 9.

Fig.21 Power Flow-Off-peak Time in Oct., 1992
Scheme II



230Kv Srinagarind–Ban Pong 2 line is assumed to be Scheme A-②-c in Chapter 9.

Fig.22 Power Flow- Peak Time in Oct., 1992

Scheme III

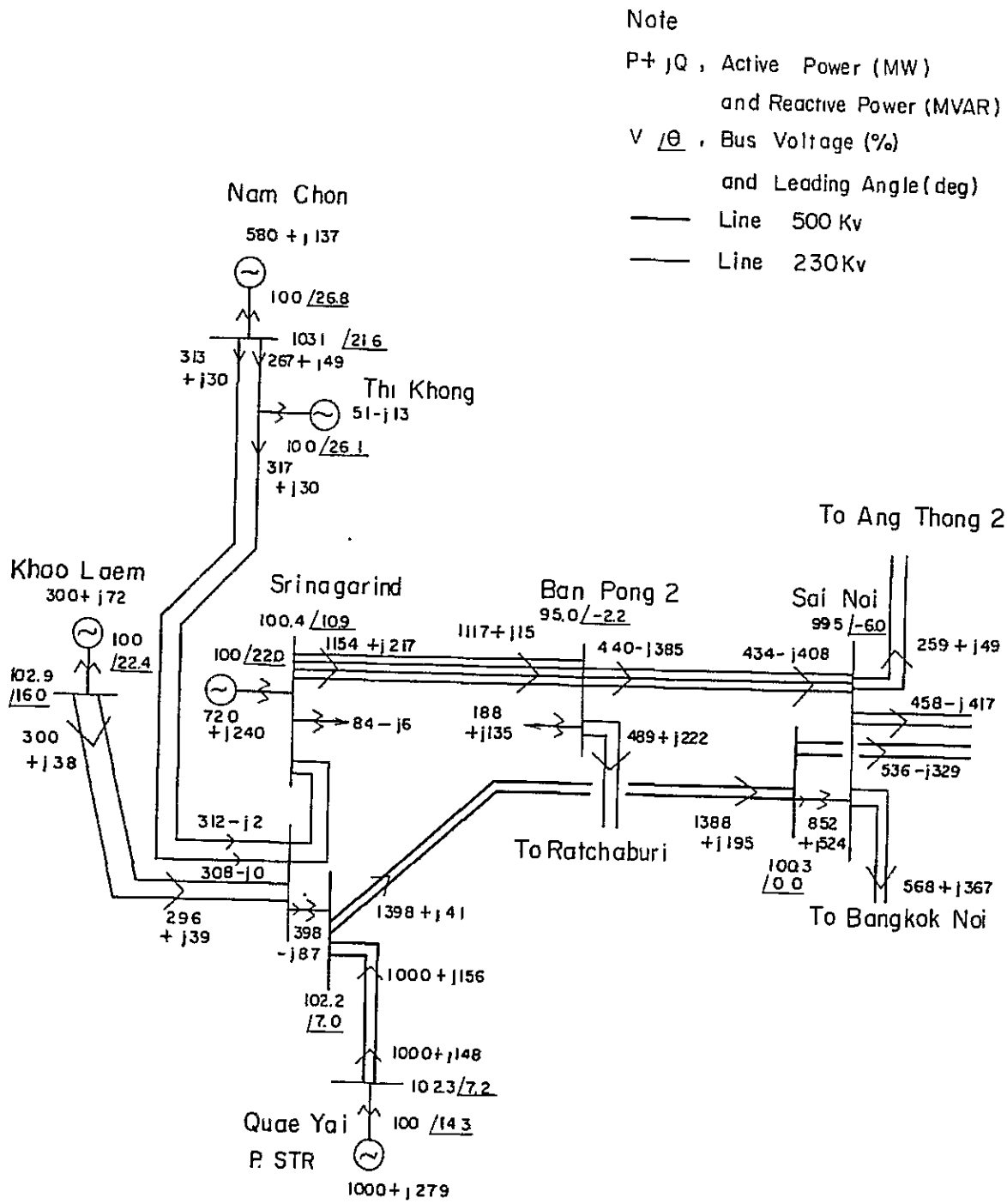


Fig.23 Power Flow-Off-peak Time In Oct., 1992

Scheme II

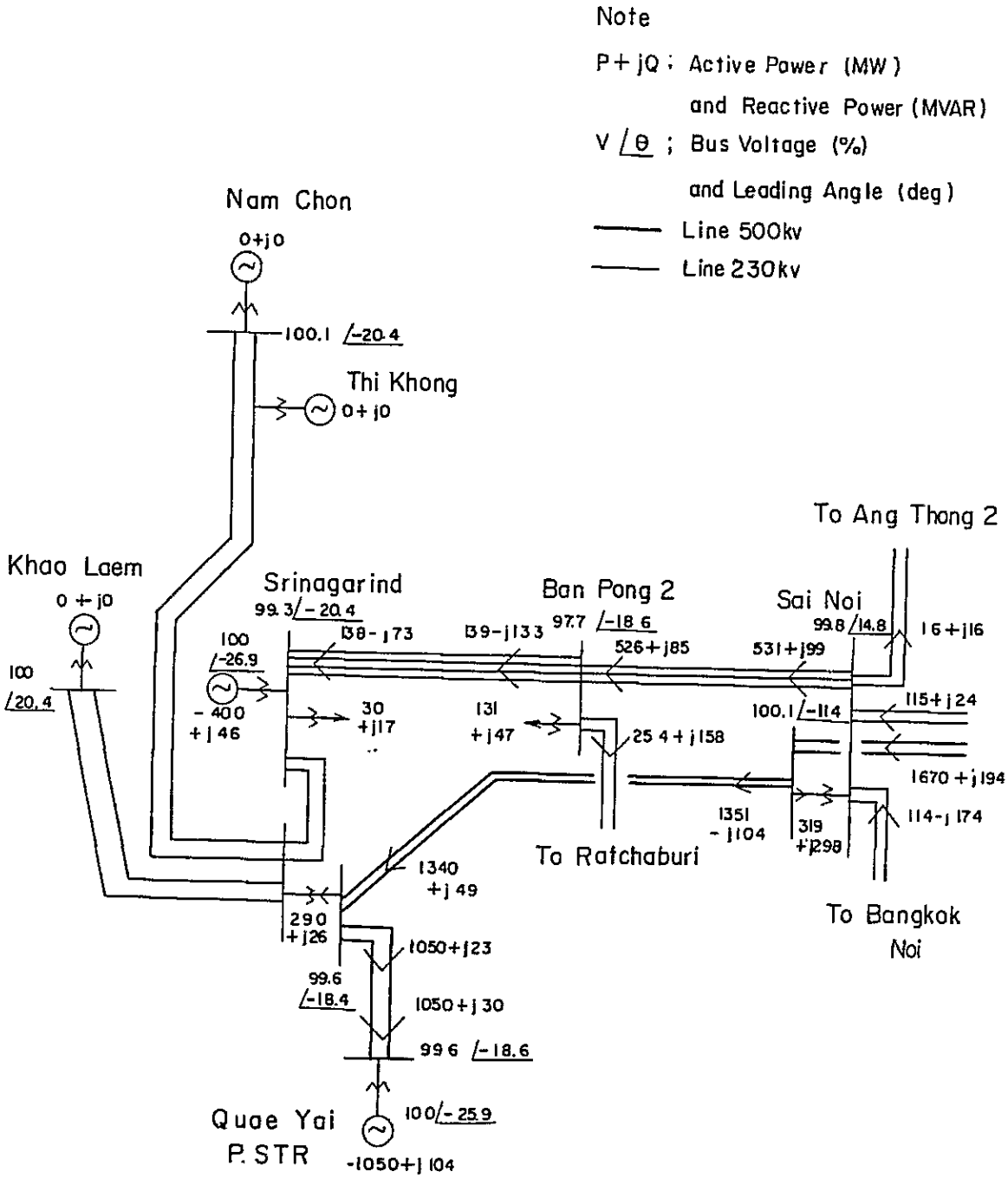
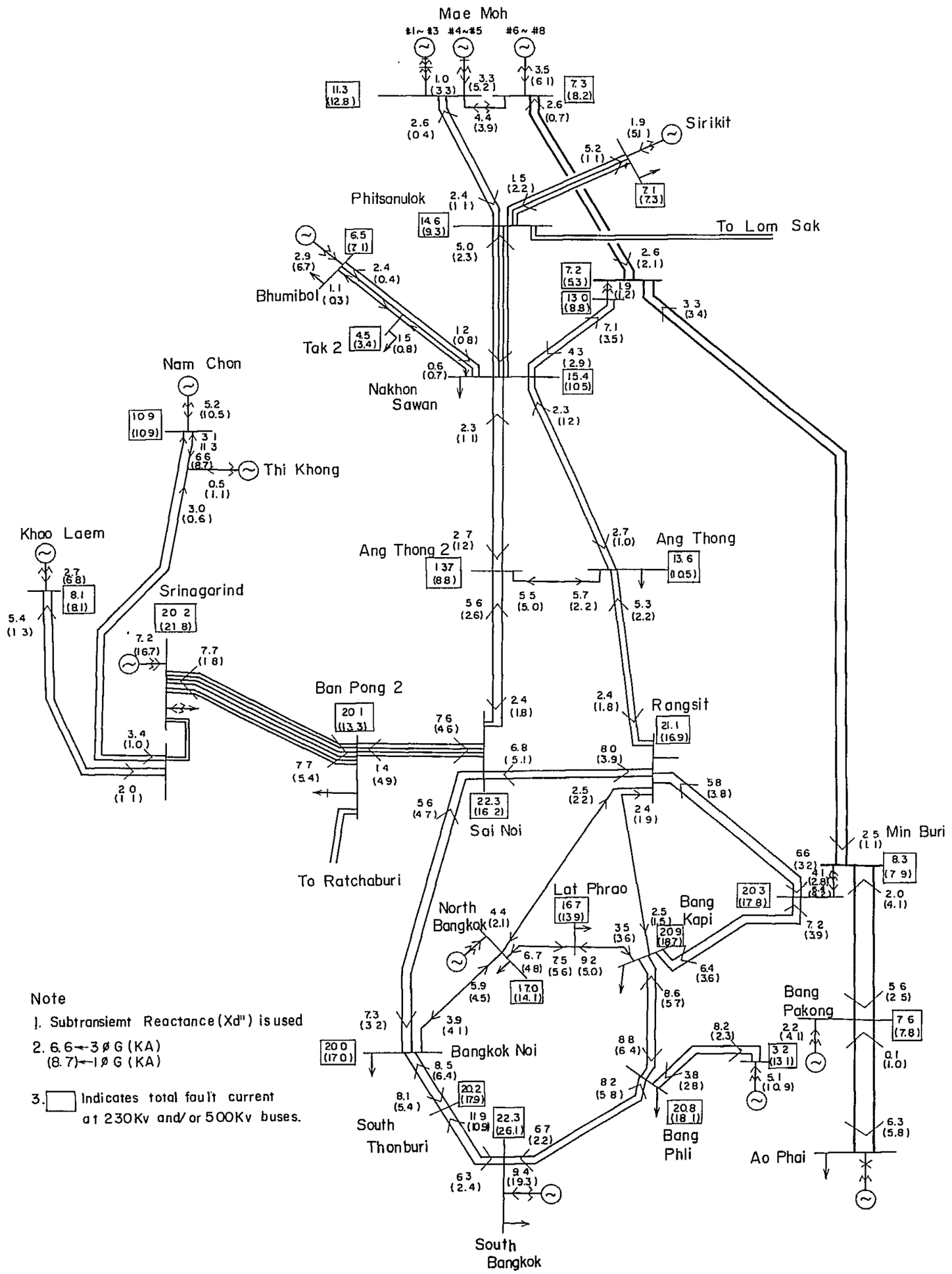


Fig. 24 Fault Current of EGAT Power System in 1987
Scheme A - ② - C



Note

1. Subtransiemt Reactance (Xd") is used
2. 6.6←3ØG (KA)
   (8.7)←1ØG (KA)
3. ☐ Indicates total fault current at 230Kv and/or 500Kv buses.

Fig.25 Transmission Line Impedance of EGAT Power System in 1987

Scheme A - ②-a

Note

Percentage Impedance (Admittance)

at 100 MVA base

R1 + j X1 (Y1) ; Positive - Sequence

Ro + j Xo (Yo) ; Zero - Sequence

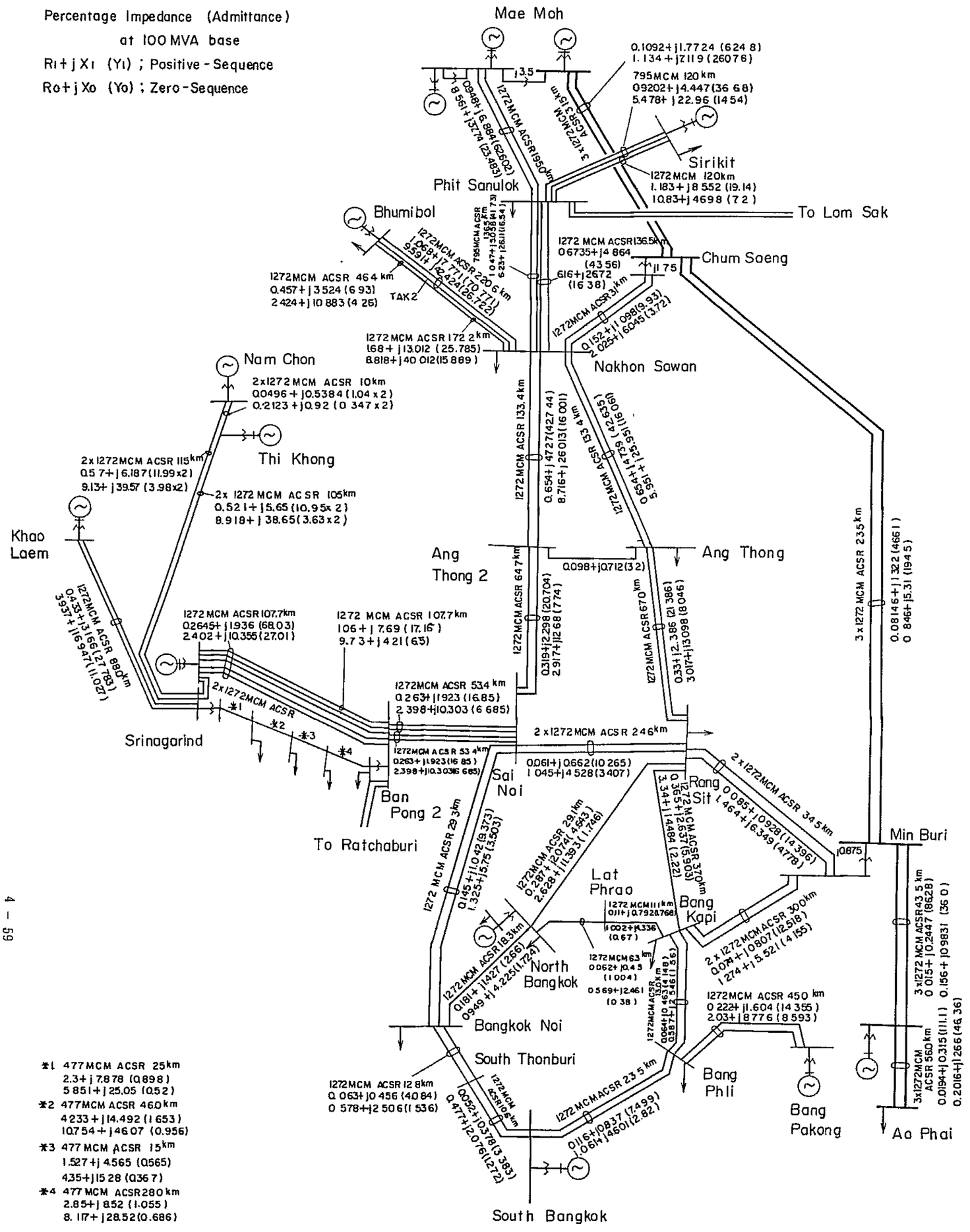


Fig.26 Transmission Line Impedance of EGAT Power System in 1987

Scheme A-②-c

Note; Percentage Impedance (Admittance) at 100 MVA base

$R_1+X_1(Y_1)$; Positive - Sequence

$R_0+X_0(Y_0)$: Zero - Sequence

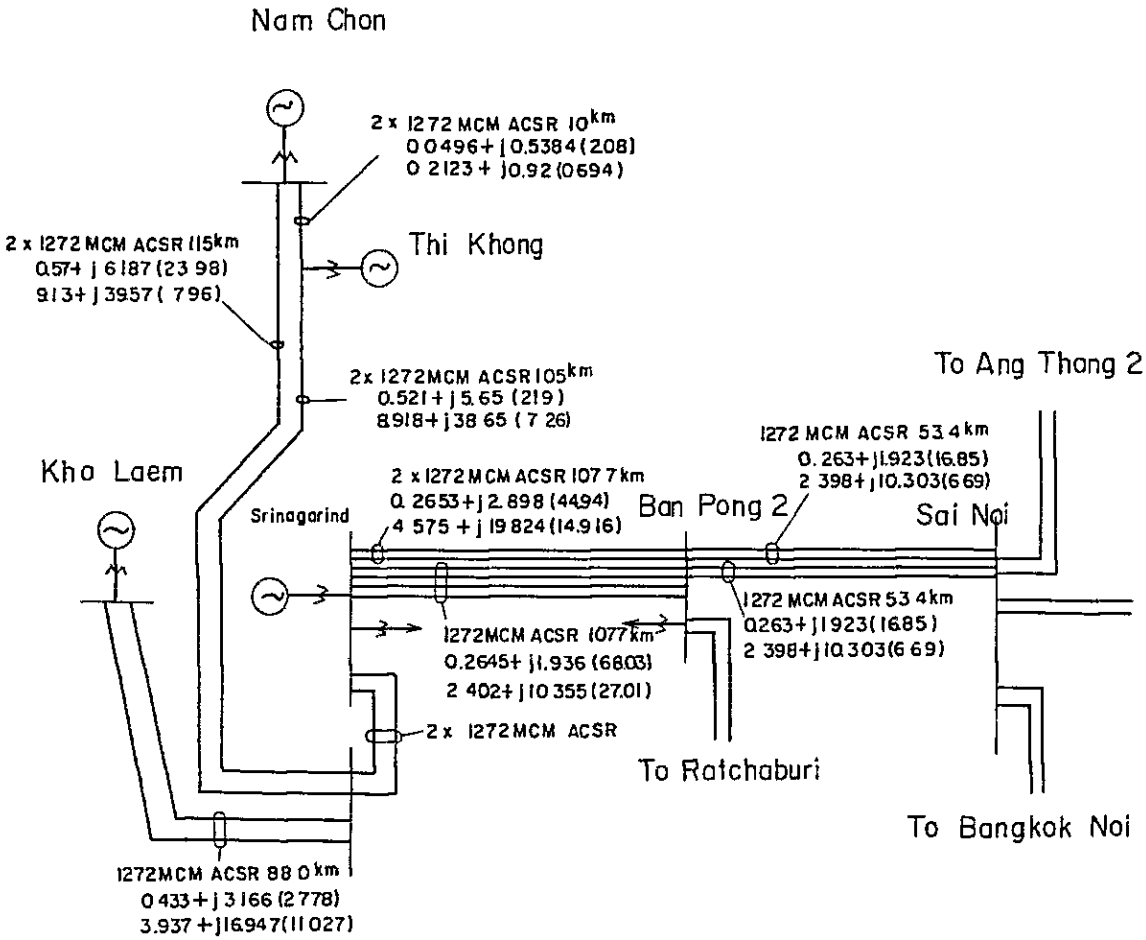


Fig. 27 Transmission Line Impedance of EGAT Power System in 1987

Scheme B

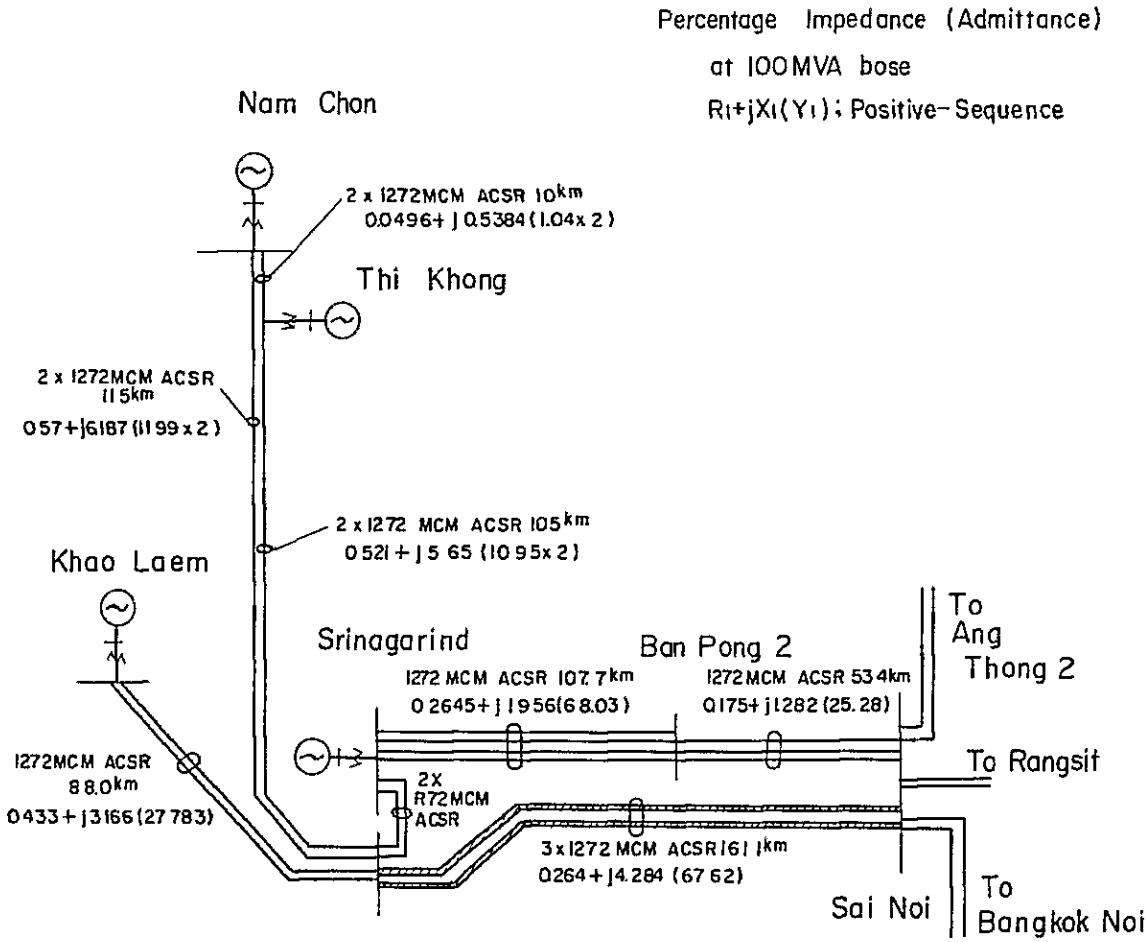


Fig. 28 Transmission Line Impedance of EGAT Power System in 1990
Scheme II

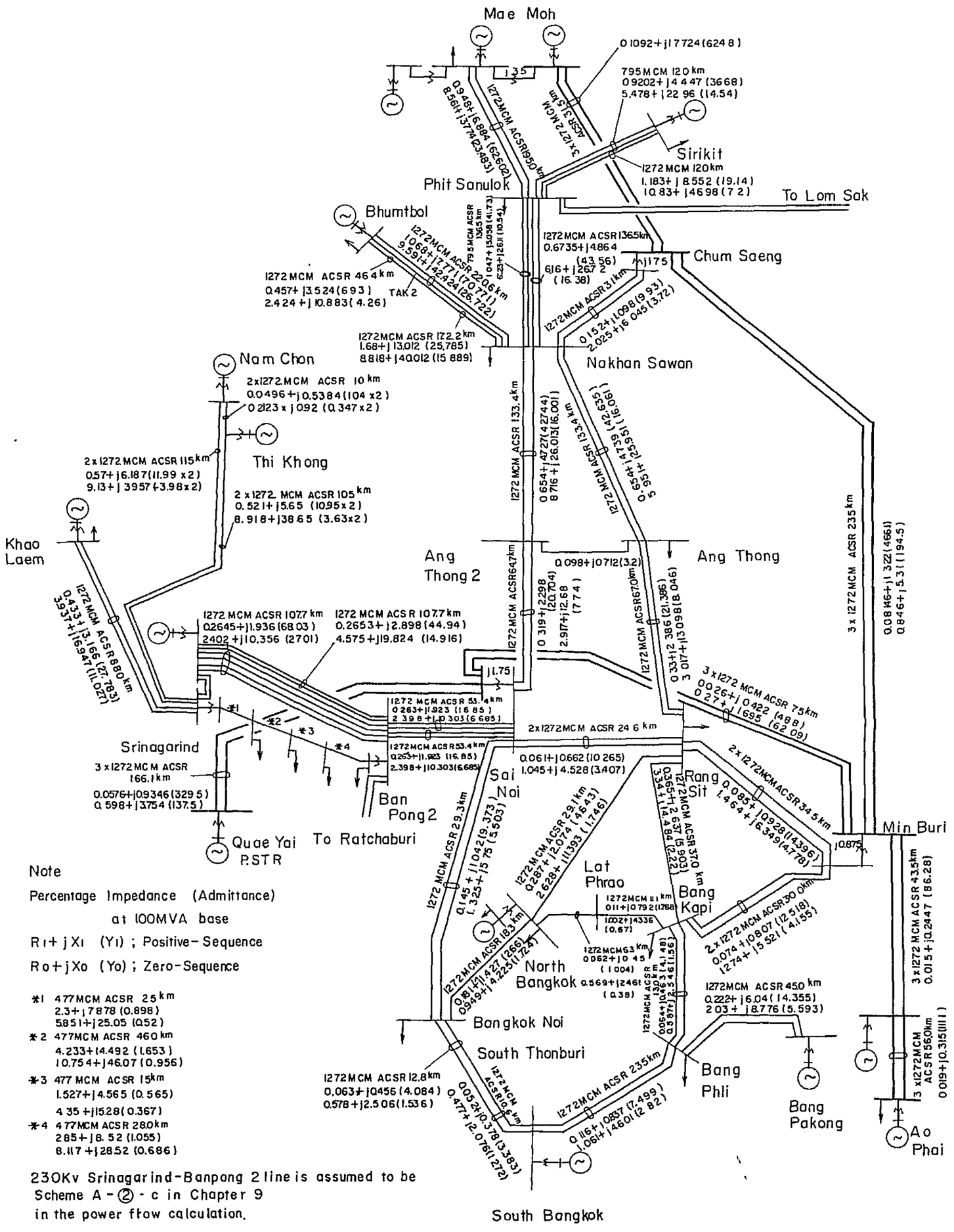


Fig.29 Transmission Line Impedance of EGAT Power System in 1990

Scheme Ⅲ

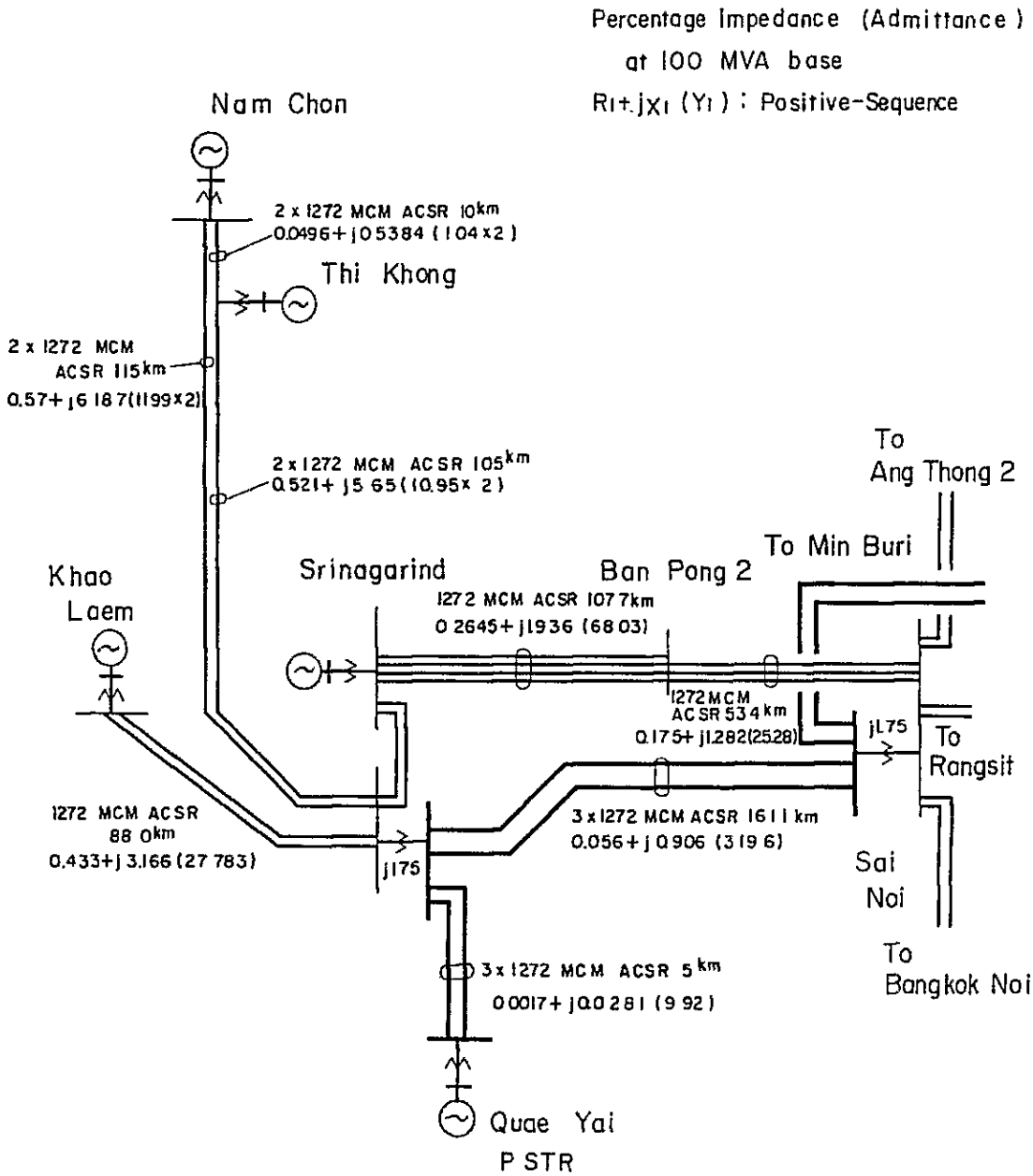


Table 1 Results of Transient Stability Study for Quae Yai Pumped Storage

1) Case 1

500 kv transmission for Ao Phai Nuclear

Scheme \ Year	1990	1992
I	—	X (Fig. 9)
II	(O)	O (Fig. 10)
III	(O)	O (Fig. 11)
IV	(O)	O (Fig. 12)

Note O Stable
X Unstable

2) Case 2

230 kv transmission for Ao Phai Nuclear

Scheme \ Year	1990	1992
I	—	(X)
II	(O)	O (Fig. 13)
III	(O)	Δ (Fig. 14)
IV	O (Fig. 15-1)	X (Fig. 15-2)

Note O Stable
Δ Marginal
X Unstable

Table 2 Economic Evaluation of the Power System for Upper Quae Yai and Quae Yai Pumped Storage

Scheme II : Construction of only 230 kV lines in 1987

Item \ Fiscal Year	1987		1990		1992	
Construction Cost (MB)	Transmission Lines Nam Chon-Srinogarind 115 km 230 kV, 2 circuits, ACSR 1272 MCMx2 Thi Khong-Transmission Line 5 km 230 kV, 1 circuit, ACSR 795 MCM Srinagarind-Ban Pong 2 108 km 230 kV, 2 circuits, ACSR 1272 MCMx2 Ban Pong 2 -Sai Noi 54 km 230 kV, 1 circuit, ACSR 1272 MCM	901	Transmission Lines Quae Yai Pumped Storage-Sai Noi 166 km 500 kV, 2 circuits, ACSR 1272 MCMx3	1,406		
	Equipment of Stations Nam Chon 230 kV, 2 Line Bays Thi Khong 230 kV, 1 Line Bay Srinagarind 230 kV, 8 Line Bays Ban Pong 2 230 kV, 3 Line Bays Sai Noi 230 kV, 1 Line Bay	268	Equipment of Stations Quae Yai Pumped Storage 500 kV, 2 Line Bays Sai Noi 500 kV, 2 Line Bays Transformers 500/230 kV, 400 MVAx2	745	Equipment of Stations Sai Noi Transformers 500/230 kv, 400 MVAx1	152
	Total Cost	1,169	Total Cost	2,151	Total Cost	152
Annual Cost (MB)	Annual Cost Factor x Construction Cost Annual Cost Factor: Line 0.1173 Equipment 0.1302	141	Annual Cost Factor x Construction Cost Annual Cost Factor: Line 0.1173 Equipment 0.1302	262	Annual Cost Factor x Construction Cost Annual Cost Factor: Equipment 0.1302	20
Present Value (MB)	Annual Cost x $\sum_{n=1}^{25} \frac{1}{(1+\iota)^n}$ Interest Rate $\iota = 0.1$	1,280	Annual Cost x $\sum_{n=4}^{25} \frac{1}{(1+\iota)^n}$ Interest Rate $\iota = 0.1$	1,727	Annual Cost x $\sum_{n=6}^{25} \frac{1}{(1+\iota)^n}$ Interest Rate $\iota = 0.1$	106
Transmission Losses (MB)	Power Loss (MW) x 1.224 x 10^6 (B/MW) Power Loss: 48 MW Annual Energy Loss (GWH) x 1.013 (B/KWH) Annual Energy Loss: 101 GWH	59 102	Power Loss (MW) x 1.224 x 10^6 (B/MW) Power Loss: 44 MW Annual Energy Loss (GWH) x 1.013 (B/KWH) Annual Energy Loss: 97 GWH	54 98	Power Loss (MW) x 1.224 x 10^6 (B/MW) Power Loss: 42 MW Annual Energy Loss (GWH) x 1.013 (B/KWH) Annual Energy Loss: 97 GWH	51 98

Table 3 Economic Evaluation of the Power System for Upper Quae Yai and Quae Yai Pumped Storage

Scheme III : Construction of 500 kv lines in 1987

Item \ Fiscal Year	1987		1990		1992	
Construction Cost (M฿)	Transmission Lines Nam Chon-Srinagarind 115 km 230 kV, 2 circuits, ACSR 1272 MCMx2 Thi Khong-Transmission Line 5 km 230 kV, 1 circuit, ACSR 795 MCM Srinagarind-Sai Noi 162 km 500 kV, 2 circuits, ACSR 1272 MCMx3	1,842	Transmission Lines Quae Yai Pumped Storage-Srinagarind 5 km 500 kV, 2 circuits, ACSR 1272 MCMx3	42		
	Equipment of Stations Nam Chon 230 kV, 2 Line Bays Thi Khong 230 kV, 1 Line Bay Srinagarind 230 kV, 6 Line Bays 500 kV, 2 Line Bays Sai Noi 500 kV, 2 Line Bays	662	Equipment of Stations Srinagarind 500 kV, 2 Line Bays Transformers 500/230 kV, 400 MVAx2 Quae Yai Pumped Storage 500 kV, 2 Line Bays Sai Noi Transformers 500/230 kV, 400 MVAx2	1,160	Equipment of Stations Sai Noi Transformer 500/230kV, 400 MVAx1	152
	Total Cost	2,504	Total Cost	1,202	Total Cost	152
Annual Cost (M฿)	Annual Cost Factor x Construction Cost Annual Cost Factor: Line 0.1173 Equipment 0.1302	302	Annual Cost Factor x Construction Cost Annual Cost Factor: Line 0.1173 Equipment 0.1302	156	Annual Cost Factor x Construction Cost Annual Cost Factor: Equipment 0.1302	20
Present Value (M฿)	Annual Cost x $\sum_{n=1}^{25} \frac{1}{(1+\iota)^n}$ Interest Rate $\iota = 0.1$	2,744	Annual Cost x $\sum_{n=4}^{25} \frac{1}{(1+\iota)^n}$ Interest Rate $\iota = 0.1$	1,028	Annual Cost x $\sum_{n=6}^{25} \frac{1}{(1+\iota)^n}$ Interest Rate $\iota = 0.1$	106
Transmission Losses (M฿)	Power Loss (MW) x 1.224 x 10^6 (฿/MW) Power Loss: 41 MW Annual Energy Loss (GWH) x 1.013 (฿/KWH) Annual Energy Loss: 88 GWH	50 89	Power Loss (MW) x 1.224 x 10^6 (฿/MW) Power Loss: 35 MW Annual Energy Loss (GWH) x 1.013 (฿/KWH) Annual Energy Loss: 81 GWH	43 82	Power Loss (MW) x 1.224 x 10^6 (฿/MW) Power Loss: 34 MW Annual Energy Loss (GWH) x 1.013 (฿/KWH) Annual Energy Loss: 82 GWH	42 83

Table 4 Machine Constants

Power Station \ Item	Generator						Transformer	
	Unit #	Capacity Po (MVA)	Direct-axis Transient Reactance xd'(%)	Direct-axis Subtransient Reactance xd''(%)	Inertia Constant 2H(sec)	Power Factor (p.u)	Capacity P_T (MVA)	Reactance X_T (%)
Mae Moh	1-3	83.3	15.7	10.1	6.82	0.9	83.3	10.3
	4-5	166.7	20.0	13.3	6.82	0.85	166.7	12.0
	6-9	333	20.0	19.0	6.82	0.85	333	14.0
Sirikit	1-4	132	25.0	23.8	13.24	0.95	132	12.0
Bhumibol	1-6	73.68	28.0	16.0	5.61	0.95	73.68	12.0
	7	105.25	27.0	17.0	6.36	0.95	105.25	12.0
Nam Chon	1-4	161	25.0	19.0	7.72	0.9	161	12.0
Thi Khong	1-2	28.5	25.0	19.0	7.72	0.9	28.5	12.0
Khao Laem	1-3	111.0	25.0	19.0	6.52	0.9	111	12.0
Srinagarind	1-3	150	28.4	19.0	6.8	0.8	150	12.0
	4-5	211.8/235.5	25.4/25.4	19.0	6.8/6.8	0.85/0.85	235.5	12.0
South Bangkok	1-2	250	34.2	23.9	6.54	0.8	250	8.8
	3-5	375	34.7	22.5	6.92	0.8	370	12.0
Bang Pakong	1-2	680	28.8	22.2	5.88	0.8	680	12.0/14.0
	5-12	75	15.9	11.4	3.57	0.8	92	12.5/14.0
	13-14	150	20.2	13.3	3.57	0.8	184	13.5/14.0
Quae Yai P. Str.	1-2	550/580	29.0/29.0	19.0	8.0/8.0	0.9/0.95	580	14.0
Ao Phai	1-2	1,000	25.4	22.2	8.0	0.9	1,000	14.0

Note 1. Reactances are indicated at a machine capacity base.

2. Generator/Motor

3. $\% X_T \left(\frac{\text{Line 230 kV}}{\text{Line 500 kV}}\right)$

Table 5 List of Shunt Capacitors and Synchronous Condenser

Shunt Capacitors

Substations	Existing		Under Construction		
	KV	MVA	KV	MVA	In Service
Bang Phli	72	32.4 x 2	—	—	—
Lat Phrao	72	32.4 x 2	—	—	—
North Bangkok	72	30.0 x 2	—	—	—
Rangsit	—	—	69	32.4 x 2	1979
South Bangkok	72	30.0 x 2	—	—	—
Ban Pong 2	22	81.2	—	—	—
Mae Mok	11	4.42 x 1	—	—	—
Srinagarind	11.5	2.25 x 2	—	—	—

Synchronous Condensers

Substations	Existing		Under Construction	
	KV	MVA	KV	MVA
Bang Kapi	13.8	50	None	
Bangkok Noi	13.8	50/60	None	
North Bangkok	13.8	60	None	

Table 6 Power Losses (MW) at Peak Time and Annual Energy Losses (GWH) on the Transmission Lines for Scheme II and III

Fiscal Year	Load at BP2 (MW)	Common to Scheme II and III						Scheme II				Scheme III			
		(1) KL-SNR Line		(2) NC-SNR Line		(3) SNR-BP2 Lines		(4) BP2-SN Lines		(1)+(2)+(3)+(4) Total		(5) SNR-SN Lines		(1)+(2)+(5) Total	
		(MW)	(GWH)	(MW)	(GWH)	(MW)	(GWH)	(MW)	(GWH)	(MW)	(GWH)	(MW)	(GWH)	(MW)	(GWH)
1987	425.3	3.9	10.0	11.4	20.7	23.0	47.6	9.9	22.4	48.1	100.7	26.0	57.4	41.3	88.0
1988	499	"	"	"	"	"	"	8.3	20.4	46.5	98.7	25.5	58.0	40.8	88.7
1989	573	"	"	"	"	"	"	6.8	19.1	45.1	97.4	25.1	59.2	40.4	89.9
1990	647	"	"	"	"	"	"	5.5	18.4	43.8	96.7	19.5	49.8	34.8	80.5
1991	699	"	"	"	"	"	"	4.6	18.2	42.9	96.5	19.6	51.9	34.9	82.6
1992	750	"	"	"	"	"	"	3.8	18.4	42.1	96.7	18.2	50.7	33.5	81.5
1993	830	"	"	"	"	"	"	2.8	19.1	41.1	97.4	18.9	55.7	34.2	86.4
1994	910	"	"	"	"	"	"	1.9	20.7	40.2	99	19.6	60.7	34.9	91.4
1995	989	"	"	"	"	"	"	1.2	22.8	39.5	101.1	20.3	65.7	35.6	96.4
1996	1,068	"	"	"	"	"	"	0.7	25.7	39.0	104	21.3	69.7	36.6	100.4
1997	1,154	"	"	"	"	"	"	0.2	29.6	38.5	107.9	22.6	79.6	37.9	110.3
1998	1,246	"	"	"	"	"	"	0	34.7	38.3	113	24.2	88.7	39.5	119.4
1999	1,346	"	"	"	"	"	"	0	41.3	38.3	119.6	26.2	99.6	41.5	130.3
2000	1,453	"	"	"	"	"	"	0.3	49.6	38.6	127.9	28.6	112	43.9	142.7
2001	1,569	"	"	"	"	"	"	1.0	60.0	39.3	138.3	31.5	127	46.8	157.7
2002	1,695	"	"	"	"	"	"	2.1	73.1	40.4	151.4	35.0	144.9	50.3	175.6
2003	1,831	"	"	"	"	"	"	3.8	89.1	42.1	167 4	39.3	166.8	54.6	197.5
2004	1,977	"	"	"	"	"	"	6.2	108.6	44.5	186.9	44.4	191.3	59.7	222
2005	2,135	"	"	"	"	"	"	9.4	132.3	47.7	210.6	50.5	221.2	65.8	251.9
2006	2,306	"	"	"	"	"	"	13.5	161.0	51.8	239.3	57.8	256.2	73.1	286.9
2007	2,490	"	"	"	"	"	"	18.9	195.7	57.2	274	66.5	297.5	81.8	328.2
2008	2,690	"	"	"	"	"	"	25.7	237.7	64.0	316	76.9	346	92.2	376.7
2009	2,905	"	"	"	"	"	"	34.3	287 6	72.6	365.9	89.2	403.3	104.5	434
2010	3,137	"	"	"	"	"	"	44.8	347.3	83.1	425.6	103.8	470.5	119.1	501.2
2011	3,388	"	"	"	"	"	"	57.8	418.6	96.1	496.9	121.1	549.7	136.4	580.4
2012	3,659	"	"	"	"	"	"	73.7	503.4	112.0	581.7	141.5	642.4	156.8	673.1

Note; KL: Khao Leam, NC: Nam Chon, SNR: Srinagarind, BP2: Ban Pong 2, SN: Sai Noi

APPENDIX 6

ECONOMIC ANALYSIS

APPENDIX 6

— ECONOMIC ANALYSIS —

6-1 UPPER QUAE YAI PROJECT (Case without Thi Khong P.S.)

*** CHECK PRIECT DATA *** -- HYDROPOWER --

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	GENERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	DAM AND RESERVER L.C PART (MIL.BHT)	MACHINERY F.C PART (MIL.BHT)	MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
1981	217.76	447.13	0.0	0.0	0.0	0.0	0.0	0.0
1982	361.75	781.49	0.0	0.0	0.0	0.0	0.0	0.0
1983	395.33	778.23	29.43	3.43	0.0	0.0	0.0	0.0
1984	299.35	444.31	234.10	42.30	124.33	63.30	52.00	4.00
1985	353.10	562.93	473.90	84.00	186.33	88.00	48.00	12.00
1986	251.10	295.62	431.10	53.13	186.33	88.33	48.33	12.33
1987	240.44	296.47	247.03	71.30	124.33	55.00	32.00	12.30
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	29.83	3.43	0.0	0.0	0.0	0.0
2009	0.0	0.0	294.10	42.30	0.0	0.0	32.00	4.00
2010	0.0	0.0	473.90	84.00	0.0	0.0	48.00	12.00
2011	0.0	0.0	431.10	53.13	0.0	0.0	48.33	12.00
2012	0.0	0.0	247.03	71.30	0.0	0.0	32.00	12.00
2013	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

YEAR	GENERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	DAM AND RESERVER L.C PART (MIL.BHT)	MACHINERY F.C PART (MIL.BHT)	MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	124.33	63.33	0.0	0.0
2024	0.0	0.0	0.0	0.0	186.33	88.00	0.0	0.0
2025	0.0	0.0	0.0	0.0	186.33	88.00	0.0	0.0
2026	0.0	0.0	0.0	0.0	124.33	55.33	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2037	0.0	0.0	0.0	0.0	-465.33	-223.50	0.0	0.0

*** CHECK ANNUAL DATA *** — HYDROPOWER —

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	INSTALLED CAPACITY (MW)	ANNUAL GENERATING ENERGY (MIL.KWH)	FIXED O&M: GENERAL FACIL. (MIL.BHT)	FIXED O&M: TRANS. FACIL. (MIL.BHT)	FIXED O&M: SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M: FUEL PRICE (BHT/L)	VARIABLE O&M: FUEL CONSUM (L/KWH)	VARIABLE O&M: ETC. VARIA. (MIL.BHT)	TRANS. LOSS: POWER LOSS (MW)	TRANS. LOSS: ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.28	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.70	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.10	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73.38	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.22	0.0	0.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.22	0.0	0.0
1987	595.0	277.0	11.79	0.43	1.00	0.0	0.0	62.10	34.00	9.70
1988	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1989	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1990	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1991	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1992	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1993	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1994	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1995	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1996	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1997	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1998	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1999	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2000	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2001	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2002	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2003	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2004	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2005	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2006	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2007	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2008	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2009	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2010	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2011	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2012	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2013	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2014	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2015	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2016	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2017	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2018	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2019	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2020	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00

YEAR	INSTALLED CAPACITY (MW)	ANNUAL GENERATING ENERGY (MIL.KWH)	FIXED O&M: GENERAL FACIL. (MIL.BHT)	FIXED O&M: TRANS. FACIL. (MIL.BHT)	FIXED O&M: SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M: FUEL PRICE (BHT/L)	VARIABLE O&M: FUEL CONSUM (L/KWH)	VARIABLE O&M: ETC. VARIA. (MIL.BHT)	TRANS. LOSS: POWER LOSS (MW)	TRANS. LOSS: ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
2021	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2022	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2023	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2024	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2025	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2026	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2027	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2028	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2029	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2030	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2031	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2032	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2033	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2034	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2035	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2036	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2037	595.0	1103.0	73.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00

*** CHECK PROJECT DATA *** -- ALTERNATIVE --

*** CASE 1 *** PLANT NO. 1 *** Gas Turbine Power Plant

YEAR	GENERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	DAM AND RESERVER L.C PART (MIL.BHT)	MACHINERY F.C PART (MIL.BHT)	MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	392.60	20.70	0.0	0.0	0.0	0.0
1985	0.0	0.0	588.90	31.00	54.20	36.20	0.0	0.0
1986	0.0	0.0	588.90	31.00	54.20	36.20	0.0	0.0
1987	0.0	0.0	392.60	20.70	72.+0	48.20	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	392.60	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	588.90	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	588.90	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	392.60	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2013	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

YEAR	GENERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	DAM AND RESERVER L.C PART (MIL.BHT)	MACHINERY F.C PART (MIL.BHT)	MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	392.60	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	588.90	0.0	54.20	36.20	0.0	0.0
2026	0.0	0.0	588.90	0.0	54.20	36.20	0.0	0.0
2027	0.0	0.0	392.60	0.0	72.+0	48.20	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2037	0.0	0.0	-981.50	0.0	-135.00	0.0	0.0	0.0

*** CASE 1 *** PLANT NO. 1 *** Oil-fired Thermal Power Plant

YEAR	GENERATING FACILITY: DAM AND RESERVOIR F.C PART (MIL.BHT)	DAM AND RESERVOIR L.C PART (MIL.BHT)	MACHINERY F.C PART (MIL.BHT)	MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	310.50	54.80	0.0	0.0	0.0	0.0
1985	0.0	0.0	455.30	82.20	23.30	15.50	0.0	0.0
1986	0.0	0.0	455.30	82.20	23.30	15.50	0.0	0.0
1987	0.0	0.0	310.50	54.80	31.00	23.60	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	310.50	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	455.30	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	465.30	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	310.50	0.0	0.0	0.0	0.0	0.0
2013	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

YEAR	GENERATING FACILITY: DAM AND RESERVOIR F.C PART (MIL.BHT)	DAM AND RESERVOIR L.C PART (MIL.BHT)	MACHINERY F.C PART (MIL.BHT)	MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	23.30	15.50	0.0	0.0
2026	0.0	0.0	0.0	0.0	23.30	15.50	0.0	0.0
2027	0.0	0.0	0.0	0.0	31.00	23.60	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2037	0.0	0.0	0.0	0.0	-58.20	0.0	0.0	0.0

*** CHECK ANNUAL DATA *** -- ALTERNATIVE --

*** CASE 1 *** PLANT NO. 1 *** **Gas Turbine Power Plant**

YEAR	INS-TALLED CAPA-CITY (MW)	ANNUAL GENE-RATING ENERGY (MIL.KWH)	FIXED COM GENERAT. FACIL. (MIL.BHT)	FIXED COM TRANS. FACIL. (MIL.BHT)	FIXED COM SUBSTA. FACIL. (MIL.BHT)	VARIABLE COM FUEL PRICE (BHT/L)	VARIABLE COM FUEL CONSUM (L/KWH)	VARIABLE COM ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1988	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1989	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1990	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1991	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1992	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1993	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1994	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1995	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1996	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1997	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1998	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
1999	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2000	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2001	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2002	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2003	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2004	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2005	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2006	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2007	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2008	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2009	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2010	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2011	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2012	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2013	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2014	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2015	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2016	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2017	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2018	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2019	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2020	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50

YEAR	INS-TALLED CAPA-CITY (MW)	ANNUAL GENE-RATING ENERGY (MIL.KWH)	FIXED COM GENERAT. FACIL. (MIL.BHT)	FIXED COM TRANS. FACIL. (MIL.BHT)	FIXED COM SUBSTA. FACIL. (MIL.BHT)	VARIABLE COM FUEL PRICE (BHT/L)	VARIABLE COM FUEL CONSUM (L/KWH)	VARIABLE COM ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
2021	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2022	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2023	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2024	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2025	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2026	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2027	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2028	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2029	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2030	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2031	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2032	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2033	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2034	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2035	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2036	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50
2037	420.0	184.0	62.00	4.52	0.0	4.680	0.3777	0.0	21.00	6.50

*** CASE 1 *** PLANT NO. 2 *** Oil-fired Thermal Power Plant

YEAR	INS-TALLED CAPA-CITY	ANNUAL GENE-RATING ENERGY	FIXED O&M: GENERA. FACIL.	FIXED O&M: TRANS. FACIL.	FIXED O&M: SUBSTA. FACIL.	VARIABLE O&M: FUEL PRICE	VARIABLE O&M: FUEL CONSUM	VARIABLE O&M: ETC. VARIA.	TRANS. LOSS: POWER LOSS	TRANS. LOSS: ENERGY LOSS
	(MW)	MIL.KWH	MIL.BHT	MIL.BHT	MIL.BHT	BHT/L	L/KWH	MIL.BHT	(MW)	MIL.KWH
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	-717.0	0.0	0.0	0.0	3.480	0.2523	0.0	0.0	0.0
1986	0.0	-514.0	0.0	0.0	0.0	3.480	0.2523	0.0	0.0	0.0
1987	180.0	93.1	11.42	0.49	0.0	3.480	0.2523	0.0	9.00	6.35
1988	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1989	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1990	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1991	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1992	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1993	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1994	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1995	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1996	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1997	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1998	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
1999	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2000	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2001	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2002	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2003	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2004	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2005	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2006	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2007	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2008	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2009	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2010	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2011	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2012	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2013	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2014	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2015	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2016	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2017	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2018	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2019	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2020	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00

YEAR	INS-TALLED CAPA-CITY	ANNUAL GENE-RATING ENERGY	FIXED O&M: GENERA. FACIL.	FIXED O&M: TRANS. FACIL.	FIXED O&M: SUBSTA. FACIL.	VARIABLE O&M: FUEL PRICE	VARIABLE O&M: FUEL CONSUM	VARIABLE O&M: ETC. VARIA.	TRANS. LOSS: POWER LOSS	TRANS. LOSS: ENERGY LOSS
	(MW)	MIL.KWH	MIL.BHT	MIL.BHT	MIL.BHT	BHT/L	L/KWH	MIL.BHT	(MW)	MIL.KWH
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
2021	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2022	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2023	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2024	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2025	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2026	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2027	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2028	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2029	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2030	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2031	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2032	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2033	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2034	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2035	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2036	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00
2037	180.0	97.5	45.57	1.94	0.0	3.480	0.2523	0.0	9.00	83.00

*** 1 *** PROJECT BALANCE SHEET (HYDROPOWER PLANT)
--- NE SHIJIA PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	664.39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	673.1
1982	1152.24	0.0	0.0	0.0	0.0	0.0	0.0	23.73	0.0	23.73	1172.9
1983	1236.62	0.0	0.0	0.0	0.0	0.0	62.10	0.0	0.0	62.10	1268.6
1984	1302.63	0.0	0.0	0.0	0.0	0.0	70.16	0.0	0.0	70.16	1373.2
1985	1804.99	0.0	0.0	0.0	0.0	0.0	95.22	0.0	0.0	95.22	1900.2
1986	1437.42	0.0	0.0	0.0	0.0	0.0	95.22	0.0	0.0	95.22	1503.0
1987	1078.71	595.0	277.0	267.3	18.76	0.0	80.86	0.03	1.40	85.29	1164.0
1988	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1989	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1990	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1991	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1992	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1993	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1994	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1995	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1996	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1997	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1998	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
1999	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2000	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2001	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2002	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2003	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2004	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2005	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2006	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2007	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2008	45.20	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	125.9
2009	372.40	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	465.1
2010	617.80	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	710.6
2011	584.20	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	676.9
2012	362.30	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	455.0

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2014	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2015	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2016	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2017	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2018	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2019	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2020	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2021	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2022	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2023	187.30	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	279.7
2024	274.30	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	366.7
2025	274.30	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	366.7
2026	179.30	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	271.7
2027	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2028	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2029	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2030	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2031	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2032	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2033	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2034	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2035	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2036	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.7
2037	-685.30	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	-592.7

*** 2 *** PROJECT SALANGE ASSET (ALTERNATIVE)
--- NO SALING PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 13.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 *** PLANT NO. 1 *** Gas Turbine Power Plant

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING CEM COST: FIXED COST (MIL.BHT)	GENERATING CEM COST: VARIABLE COST (MIL.BHT)	GENERATING CEM COST: TOTAL COST (MIL.BHT)	TRANSMISSION CEM COST (MIL.BHT)	SUB-STATION CEM COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	413.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	413.30
1985	710.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	710.30
1986	710.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	710.30
1987	531.90	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	942.89
1988	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1989	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1990	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1991	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1992	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1993	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1994	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1995	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1996	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1997	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1998	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
1999	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2000	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2001	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2002	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2003	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2004	392.60	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	801.59
2005	588.90	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	997.89
2006	588.90	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	997.89
2007	392.60	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	801.59
2008	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2009	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2010	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2011	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2012	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING CEM COST: FIXED COST (MIL.BHT)	GENERATING CEM COST: VARIABLE COST (MIL.BHT)	GENERATING CEM COST: TOTAL COST (MIL.BHT)	TRANSMISSION CEM COST (MIL.BHT)	SUB-STATION CEM COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2014	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2015	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2016	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2017	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2018	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2019	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2020	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2021	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2022	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2023	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2024	392.60	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	801.59
2025	679.80	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	1088.29
2026	679.80	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	1388.29
2027	513.20	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	922.19
2028	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2029	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2030	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2031	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2032	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2033	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2034	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2035	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2036	0.0	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	408.99
2037	-1117.10	420.0	184.0	177.5	62.00	342.47	404.47	4.52	0.0	408.99	-708.11

*** CASE 1 *** PLANT NO. 2 *** Oil-fired Thermal Power Plant

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	365.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	365.30
1985	586.30	0.0	-717.0	-717.0	0.0	-628.78	-628.78	0.0	0.0	-628.78	-41.98
1986	586.30	0.0	-514.0	-514.0	0.0	-450.76	-450.76	0.0	0.0	-450.76	136.04
1987	416.30	180.0	99.1	89.7	11.42	86.03	97.45	0.49	0.0	97.94	514.84
1988	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1989	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1990	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1991	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1992	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1993	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1994	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1995	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1996	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1997	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1998	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
1999	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2000	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2001	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2002	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2003	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2004	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2005	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2006	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2007	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2008	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2009	311.50	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	1212.71
2010	465.80	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	1368.01
2011	465.80	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	1368.01
2012	311.50	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	1212.71

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2014	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2015	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2016	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2017	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2018	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2019	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2020	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2021	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2022	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2023	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2024	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2025	38.80	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	941.01
2026	38.80	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	941.01
2027	51.60	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	953.81
2028	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2029	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2030	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2031	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2032	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2033	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2034	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2035	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2036	0.0	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	902.21
2037	-54.20	180.0	974.5	891.5	45.67	854.60	900.27	1.94	0.0	902.21	844.01

*** 3 *** PROJECT EVALUATION BY THE NET PRESENT VALUE (N.P.V) METHOD
--- NE SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED OGM --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 *** PLANT NO. 1 ***

YEAR	Hydropower Nam Chon Power Station: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)	Alternative Gas Turbine Power Plant: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)
1981	664.99	8.28	673.17	0.9091	611.97	0.0	0.0	0.0	0.9091	0.0
1982	1152.24	20.70	1172.94	0.8264	969.37	0.0	0.0	0.0	0.8264	0.0
1983	1206.52	62.10	1268.62	0.7513	953.11	0.0	0.0	0.0	0.7513	0.0
1984	1302.83	70.38	1373.21	0.6830	937.92	413.33	0.0	413.33	0.6830	282.29
1985	1804.99	95.22	1933.21	0.6209	1179.87	710.30	0.0	710.30	0.6209	441.04
1986	1407.32	95.72	1503.04	0.5645	848.41	710.30	0.0	710.30	0.5645	400.95
1987	1078.71	85.29	1164.00	0.5132	597.32	533.33	408.99	942.89	0.5132	483.85
1988	0.0	92.75	92.75	0.4665	43.27	0.0	408.99	408.99	0.4665	190.80
1989	0.0	92.75	92.75	0.4241	39.34	0.0	408.99	408.99	0.4241	173.45
1990	0.0	92.75	92.75	0.3855	35.76	0.0	408.99	408.99	0.3855	157.68
1991	0.0	92.75	92.75	0.3505	32.51	0.0	408.99	408.99	0.3505	143.35
1992	0.0	92.75	92.75	0.3186	29.55	0.0	408.99	408.99	0.3186	130.32
1993	0.0	92.75	92.75	0.2897	26.87	0.0	408.99	408.99	0.2897	118.47
1994	0.0	92.75	92.75	0.2633	24.42	0.0	408.99	408.99	0.2633	107.70
1995	0.0	92.75	92.75	0.2394	22.21	0.0	408.99	408.99	0.2394	97.91
1996	0.0	92.75	92.75	0.2176	20.19	0.0	408.99	408.99	0.2176	89.01
1997	0.0	92.75	92.75	0.1978	18.35	0.0	408.99	408.99	0.1978	80.92
1998	0.0	92.75	92.75	0.1799	16.68	0.0	408.99	408.99	0.1799	73.56
1999	0.0	92.75	92.75	0.1635	15.17	0.0	408.99	408.99	0.1635	66.87
2000	0.0	92.75	92.75	0.1486	13.79	0.0	408.99	408.99	0.1486	60.79
2001	0.0	92.75	92.75	0.1351	12.53	0.0	408.99	408.99	0.1351	55.27
2002	0.0	92.75	92.75	0.1228	11.39	0.0	408.99	408.99	0.1228	50.24
2003	0.0	92.75	92.75	0.1117	10.36	0.0	408.99	408.99	0.1117	45.68
2004	0.0	92.75	92.75	0.1015	9.42	392.60	408.99	801.59	0.1015	81.38
2005	0.0	92.75	92.75	0.0923	8.56	588.90	408.99	997.89	0.0923	92.13
2006	0.0	92.75	92.75	0.0839	7.78	588.90	408.99	997.89	0.0839	83.73
2007	0.0	92.75	92.75	0.0763	7.07	392.60	408.99	801.59	0.0763	61.14
2008	33.20	92.75	125.95	0.0693	8.73	0.0	408.99	408.99	0.0693	28.36
2009	372.40	92.75	465.15	0.0630	29.32	0.0	408.99	408.99	0.0630	25.78
2010	617.90	92.75	710.65	0.0573	40.73	0.0	408.99	408.99	0.0573	23.44
2011	584.20	92.75	676.95	0.0521	35.27	0.0	408.99	408.99	0.0521	21.31
2012	362.30	92.75	455.05	0.0474	21.57	0.0	408.99	408.99	0.0474	19.37

YEAR	Hydropower Nam Chon Power Station: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)	Alternative Gas Turbine Power Plant: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)
2013	0.0	92.75	92.75	0.0431	3.99	0.0	408.99	408.99	0.0431	17.61
2014	0.0	92.75	92.75	0.0391	3.63	0.0	408.99	408.99	0.0391	16.01
2015	0.0	92.75	92.75	0.0356	3.30	0.0	408.99	408.99	0.0356	14.55
2016	0.0	92.75	92.75	0.0324	3.00	0.0	408.99	408.99	0.0324	13.23
2017	0.0	92.75	92.75	0.0294	2.73	0.0	408.99	408.99	0.0294	12.03
2018	0.0	92.75	92.75	0.0267	2.48	0.0	408.99	408.99	0.0267	10.93
2019	0.0	92.75	92.75	0.0243	2.25	0.0	408.99	408.99	0.0243	9.94
2020	0.0	92.75	92.75	0.0221	2.05	0.0	408.99	408.99	0.0221	9.04
2021	0.0	92.75	92.75	0.0201	1.86	0.0	408.99	408.99	0.0201	8.22
2022	0.0	92.75	92.75	0.0183	1.69	0.0	408.99	408.99	0.0183	7.47
2023	187.30	92.75	279.75	0.0166	4.64	0.0	408.99	408.99	0.0166	6.79
2024	274.00	92.75	366.75	0.0151	5.53	112.60	408.99	801.59	0.0151	12.10
2025	274.00	92.75	366.75	0.0137	5.01	679.30	408.99	1088.29	0.0137	14.93
2026	179.00	92.75	271.75	0.0125	3.39	679.30	408.99	1088.29	0.0125	13.57
2027	0.0	92.75	92.75	0.0113	1.05	513.20	408.99	922.19	0.0113	10.46
2028	0.0	92.75	92.75	0.0103	1.95	0.0	408.99	408.99	0.0103	4.22
2029	0.0	92.75	92.75	0.0094	0.87	0.0	408.99	408.99	0.0094	3.83
2030	0.0	92.75	92.75	0.0085	0.79	0.0	408.99	408.99	0.0085	3.48
2031	0.0	92.75	92.75	0.0077	0.72	0.0	408.99	408.99	0.0077	3.17
2032	0.0	92.75	92.75	0.0070	0.65	0.0	408.99	408.99	0.0070	2.88
2033	0.0	92.75	92.75	0.0064	0.59	0.0	408.99	408.99	0.0064	2.62
2034	0.0	92.75	92.75	0.0058	0.54	0.0	408.99	408.99	0.0058	2.38
2035	0.0	92.75	92.75	0.0053	0.49	0.0	408.99	408.99	0.0053	2.16
2036	0.0	92.75	92.75	0.0048	0.45	0.0	408.99	408.99	0.0048	1.97
2037	-695.50	92.75	-602.75	0.0044	-2.63	-1117.10	408.99	-708.11	0.0044	-3.10
TOTAL	10816.48				6683.83	5478.19				3887.26

*** CASE 1 *** PLANT NO. 2 ***

YEAR	Hydropower Nam Chon Power Station: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)	Alternative Oil-fired Thermal Power Plant: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)
1981						0.0	0.0	0.0	0.9091	0.0
1982						0.0	0.0	0.0	0.8264	0.0
1983						0.0	0.0	0.0	0.7513	0.0
1984						365.30	0.0	365.30	0.6830	249.51
1985						586.40	-628.78	-41.48	0.6209	-26.07
1986						596.40	-459.76	136.04	0.5645	76.79
1987						416.40	97.94	514.34	0.5132	264.20
1988						0.0	902.21	902.21	0.4665	420.89
1989						0.0	902.21	902.21	0.4241	382.63
1990						0.0	902.21	902.21	0.3855	347.84
1991						0.0	902.21	902.21	0.3505	316.22
1992						0.0	902.21	902.21	0.3186	287.47
1993						0.0	902.21	902.21	0.2897	261.34
1994						0.0	902.21	902.21	0.2633	237.58
1995						0.0	902.21	902.21	0.2394	215.98
1996						0.0	902.21	902.21	0.2176	196.35
1997						0.0	902.21	902.21	0.1978	178.50
1998						0.0	902.21	902.21	0.1799	162.27
1999						0.0	902.21	902.21	0.1635	147.52
2000						0.0	902.21	902.21	0.1486	134.11
2001						0.0	902.21	902.21	0.1351	121.92
2002						0.0	902.21	902.21	0.1228	110.83
2003						0.0	902.21	902.21	0.1117	100.76
2004						0.0	902.21	902.21	0.1015	91.63
2005						0.0	902.21	902.21	0.0923	83.27
2006						0.0	902.21	902.21	0.0839	75.70
2007						0.0	902.21	902.21	0.0763	68.82
2008						0.0	902.21	902.21	0.0693	62.56
2009						310.50	902.21	1212.71	0.0630	76.45
2010						465.30	902.21	1368.01	0.0573	78.40
2011						465.90	902.21	1368.01	0.0521	71.27
2012						310.50	902.21	1212.71	0.0474	57.44

YEAR	Hydropower Nam Chon Power Station: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)	Alternative Oil-fired Thermal Power Plant: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)
2013						0.0	902.21	902.21	0.0431	38.85
2014						0.0	902.21	902.21	0.0391	35.32
2015						0.0	902.21	902.21	0.0356	32.11
2016						0.0	902.21	902.21	0.0324	29.19
2017						0.0	902.21	902.21	0.0294	26.53
2018						0.0	902.21	902.21	0.0267	24.12
2019						0.0	902.21	902.21	0.0243	21.93
2020						0.0	902.21	902.21	0.0221	19.93
2021						0.0	902.21	902.21	0.0201	18.12
2022						0.0	902.21	902.21	0.0183	16.48
2023						0.0	902.21	902.21	0.0166	14.98
2024						0.0	902.21	902.21	0.0151	13.62
2025						38.80	902.21	941.01	0.0137	12.91
2026						38.80	902.21	941.01	0.0125	11.74
2027						51.60	902.21	953.81	0.0113	10.81
2028						0.0	902.21	902.21	0.0103	9.30
2029						0.0	902.21	902.21	0.0094	8.45
2030						0.0	902.21	902.21	0.0085	7.69
2031						0.0	902.21	902.21	0.0077	6.99
2032						0.0	902.21	902.21	0.0070	6.35
2033						0.0	902.21	902.21	0.0064	5.77
2034						0.0	902.21	902.21	0.0058	5.25
2035						0.0	902.21	902.21	0.0053	4.77
2036						0.0	902.21	902.21	0.0048	4.34
2037						-58.20	902.21	844.01	0.0044	3.69
TOTAL						3579.40				5241.32

*** 5 *** DISCOUNT RATE VARIABLE SHEET
--- NO SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

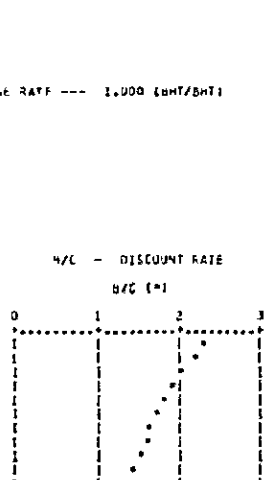
ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 ***

DISCOUNT RATE (%)	HYDRO TOTAL INVEST (MIL.BHT)	ALT TOTAL INVEST (MIL.BHT)	BENEFIT - COST ANALYSYS: COST (MIL.BHT)	BENEFIT (MIL.BHT)	B-C (MIL.BHT)	B/C RATIO
5.0	13816.48	9357.48	9399.26	20547.14	11148.89	2.3369
5.5	13816.48	9357.48	8743.23	18376.12	10632.49	2.1704
6.0	13816.48	9357.48	8186.52	17269.77	9082.36	2.0490
6.5	13816.48	9357.48	8155.29	15761.08	7605.39	1.9325
7.0	13816.48	9357.48	7897.60	14444.14	6546.55	1.8289
7.5	13816.48	9357.48	7659.21	13282.33	5623.12	1.7342
8.0	13816.48	9357.48	7438.17	12253.43	4815.23	1.6474
8.5	13816.48	9357.48	7232.20	11337.93	4105.73	1.5677
9.0	13816.48	9357.48	7039.63	10520.45	3480.81	1.4935
9.5	13816.48	9357.48	6858.46	9787.73	2929.24	1.4270
10.0	13816.48	9357.48	6688.86	9128.54	2439.68	1.3647
10.5	13816.48	9357.48	6528.24	8533.59	2005.32	1.3072
11.0	13816.48	9357.48	6376.15	7994.64	1618.49	1.2538
11.5	13816.48	9357.48	6231.71	7504.93	1273.22	1.2043
12.0	13816.48	9357.48	6095.25	7058.80	963.55	1.1583
12.5	13816.48	9357.48	5963.12	6651.35	688.24	1.1154
13.0	13816.48	9357.48	5837.82	6277.50	439.68	1.0753
13.5	13816.48	9357.48	5717.82	5934.26	216.44	1.0379
* 14.0	13816.48	9357.48	5602.73	5618.15	15.45	1.0028
* 14.1	13816.48	9357.48	5580.23	5557.91	-22.32	0.9960
14.5	13816.48	9357.48	5492.13	5326.10	-166.03	0.9698
15.0	13816.48	9357.48	5385.75	5056.47	-329.27	0.9389
15.5	13816.48	9357.48	5283.26	4806.25	-477.01	0.9097
16.0	13816.48	9357.48	5184.44	4573.89	-610.55	0.8822
16.5	13816.48	9357.48	5089.32	4357.62	-731.39	0.8563
17.0	13816.48	9357.48	4996.79	4156.01	-840.78	0.8317
17.5	13816.48	9357.48	4907.56	3967.75	-939.81	0.8085
18.0	13816.48	9357.48	4821.20	3791.62	-1029.58	0.7864
18.5	13816.48	9357.48	4737.52	3626.66	-1110.86	0.7655
19.0	13816.48	9357.48	4656.37	3471.85	-1184.52	0.7456
19.5	13816.48	9357.48	4577.62	3326.40	-1251.22	0.7267
20.0	13816.48	9357.48	4501.19	3189.57	-1311.61	0.7086

B/C - DISCOUNT RATE

B/C (*)



* --- I.R.R (HYDROPOWER)

*** 6 *** FUEL PRICE VARIABLE SHEET
--- NO SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

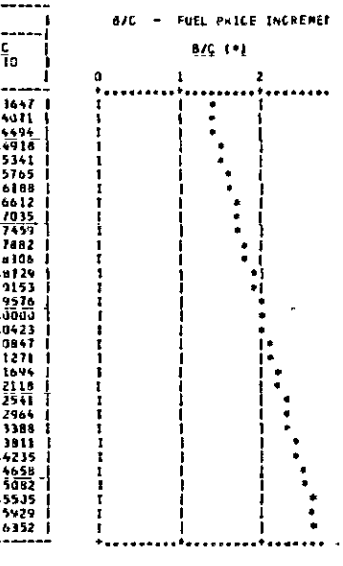
ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 ***

FUEL PRICE INCREMENT (%)	UNIT FUEL COST (BHT/KWH)	HYDRO TOTAL INVEST (MIL.BHT)	ALT TOTAL INVEST (MIL.BHT)	BENEFIT - COST ANALYSYS: COST (MIL.BHT)	BENEFIT (MIL.BHT)	B-C (MIL.BHT)	B/C RATIO
0.0	0.0	13816.48	9357.48	6688.86	9128.54	2439.68	1.3647
5.0	0.0	13816.48	9357.48	6688.86	9611.84	2922.98	1.4371
10.0	0.0	13816.48	9357.48	6688.86	9825.11	3136.26	1.4694
15.0	0.0	13816.48	9357.48	6688.86	9973.37	3284.51	1.4918
20.0	0.0	13816.48	9357.48	6688.86	10261.63	3572.77	1.5341
25.0	0.0	13816.48	9357.48	6688.86	10544.91	3856.05	1.5765
30.0	0.0	13816.48	9357.48	6688.86	10823.16	4139.31	1.6188
35.0	0.0	13816.48	9357.48	6688.86	11111.45	4422.59	1.6612
40.0	0.0	13816.48	9357.48	6688.86	11394.75	4705.90	1.7035
45.0	0.0	13816.48	9357.48	6688.86	11673.02	4989.16	1.7459
50.0	0.0	13816.48	9357.48	6688.86	11961.29	5272.43	1.7882
55.0	0.0	13816.48	9357.48	6688.86	12244.56	5555.70	1.8306
60.0	0.0	13816.48	9357.48	6688.86	12527.85	5838.99	1.8729
65.0	0.0	13816.48	9357.48	6688.86	12811.13	6122.27	1.9153
70.0	0.0	13816.48	9357.48	6688.86	13094.42	6405.56	1.9576
75.0	0.0	13816.48	9357.48	6688.86	13377.69	6688.84	2.0000
80.0	0.0	13816.48	9357.48	6688.86	13660.98	6972.12	2.0423
85.0	0.0	13816.48	9357.48	6688.86	13944.25	7255.39	2.0847
90.0	0.0	13816.48	9357.48	6688.86	14227.54	7538.68	2.1271
95.0	0.0	13816.48	9357.48	6688.86	14511.82	7821.95	2.1694
100.0	0.0	13816.48	9357.48	6688.86	14794.11	8105.25	2.2118
105.0	0.0	13816.48	9357.48	6688.86	15077.14	8388.49	2.2541
110.0	0.0	13816.48	9357.48	6688.86	15361.61	8671.76	2.2964
115.0	0.0	13816.48	9357.48	6688.86	15645.88	8955.03	2.3388
120.0	0.0	13816.48	9357.48	6688.86	15927.13	9238.27	2.3811
125.0	0.0	13816.48	9357.48	6688.86	16211.39	9521.53	2.4235
130.0	0.0	13816.48	9357.48	6688.86	16493.64	9804.79	2.4658
135.0	0.0	13816.48	9357.48	6688.86	16776.90	10088.05	2.5082
140.0	0.0	13816.48	9357.48	6688.86	17060.16	10371.30	2.5505
145.0	0.0	13816.48	9357.48	6688.86	17343.42	10654.56	2.5929
150.0	0.0	13816.48	9357.48	6688.86	17626.70	10937.85	2.6352

B/C - FUEL PRICE INCREMENT

B/C (*)



* --- I.R.R (HYDROPOWER)

*** 7 *** PROJECT BALANCE SHEET (HYDROPOWER PLANT)
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 12.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.100
L.C PART (HYDRO) --- 0.853
L.C PART (ALTER) --- 0.459
FUEL PRICE --- 1.000

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	619.60	0.0	0.0	0.0	0.0	0.0	7.87	0.0	0.0	7.87	627.46
1982	1072.14	0.0	0.0	0.0	0.0	0.0	19.66	0.0	0.0	19.66	1090.01
1983	1171.76	0.0	0.0	0.0	0.0	0.0	58.99	0.0	0.0	58.99	1190.76
1984	1294.69	0.0	0.0	0.0	0.0	0.0	66.86	0.0	0.0	66.86	1361.55
1985	1398.76	0.0	0.0	0.0	0.0	0.0	40.46	0.0	0.0	40.46	1889.21
1986	1426.45	0.0	0.0	0.0	0.0	0.0	90.46	0.0	0.0	90.46	1516.90
1987	1077.76	595.0	277.0	267.3	15.95	0.0	74.94	2.92	0.85	78.71	1156.47
1988	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1989	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1990	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1991	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1992	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1993	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1994	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1995	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1996	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1997	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1998	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1999	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2000	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2001	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2002	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2003	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2004	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2005	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2006	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2007	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	114.51
2008	35.07	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	476.90
2009	398.36	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	736.53
2010	655.59	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	695.18
2011	616.34	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	456.54
2012	377.70	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2014	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2015	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2016	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2017	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2018	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2019	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2020	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2021	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2022	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2023	189.35	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	268.79
2024	279.40	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	358.24
2025	279.40	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	358.24
2026	183.15	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	261.99
2027	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2028	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2029	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2030	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2031	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2032	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2033	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2034	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2035	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2036	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2037	-656.32	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	-623.39

*** 8 *** PROJECT BALANCE SHEET (ALTERNATIVE)
--- WITH 34.30% PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS

DISCOUNT RATE --- 12.0 %

EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.100
L.C PART (HYDRO) --- 0.850
L.C PART (ALTER) --- 0.950
FUEL PRICE --- 1.000

*** CASE 1 *** PLANT NO. 1 *** Gas Turbine Power Plant

YEAR	INVESTMENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	451.52	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	451.52
1985	771.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	771.25
1986	771.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	771.25
1987	576.95	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	982.61
1988	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1989	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1990	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1991	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1992	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1993	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1994	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1995	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1996	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1997	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1998	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
1999	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2000	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2001	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2002	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2003	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2004	431.86	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	837.52
2005	647.79	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	1053.45
2006	647.79	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	1053.45
2007	431.86	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	837.52
2008	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2009	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2010	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2011	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2012	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66

YEAR	INVESTMENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2014	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2015	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2016	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2017	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2018	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2019	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2020	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2021	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2022	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2023	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2024	431.86	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	837.52
2025	741.90	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	1147.46
2026	741.90	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	1147.46
2027	557.39	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	962.95
2028	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2029	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2030	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2031	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2032	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2033	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2034	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2035	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2036	0.0	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	405.66
2037	-1229.41	420.0	184.0	177.5	58.90	342.47	401.37	4.29	0.0	405.66	-823.15

*** CASE 1 *** PLANT NO. 2 *** Oil-fired Thermal Power Plant

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUC-TION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	193.61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	193.61
1985	630.42	0.0	-717.4	-717.0	0.0	-628.78	-628.78	0.0	0.0	-628.78	2.04
1986	633.42	0.0	-514.0	-514.0	0.0	-450.76	-450.76	0.0	0.0	-450.76	180.07
1987	447.28	180.0	98.1	89.7	10.85	86.03	96.88	0.47	0.0	97.34	544.62
1988	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1989	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1990	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1991	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1992	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1993	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1994	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1995	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1996	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1997	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1998	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
1999	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2000	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2001	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2002	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2003	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2004	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2005	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2006	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2007	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2008	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2009	341.55	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	1241.38
2010	512.38	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	1412.21
2011	512.38	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	1412.21
2012	341.55	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	1241.38

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUC-TION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2014	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2015	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2016	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2017	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2018	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2019	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2020	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2021	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2022	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2023	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2024	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2025	40.35	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	940.18
2026	40.35	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	940.18
2027	54.67	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	953.50
2028	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2029	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2030	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2031	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2032	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2033	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2034	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2035	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2036	0.0	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	899.83
2037	-64.32	180.0	974.5	891.5	43.39	854.60	897.98	1.84	0.0	899.83	835.81

*** 9 *** PROJECT EVALUATION BY THE NET PRESENT VALUE (N.P.V) METHOD
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM

F.C PART ---	3.0 %	
L.C PART ---	3.0 %	
FIXED OEM ---	3.0 %	
FUEL PRICE ---	3.0 %	

SHADOW PRICE FACTOR

F.C PART ---	1.00
L.C PART (MYORJI) ---	0.85
L.C PART (ALTEX) ---	0.95
FUEL PRICE ---	1.000

*** CASE 1 *** PLANT NO. 1 ***

YEAR	Hydropower Nam Chon Power Station					Alternative Gas Turbine Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	NET PRESENT VALUE (I= 10.0 %) N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	NET PRESENT VALUE (I= 10.0 %) N.P.V (MIL.BHT)
1981	619.60	7.87	627.46	0.9091	573.42	0.0	0.0	0.0	0.9091	0.0
1982	1070.34	19.66	1090.01	0.8264	900.81	0.0	0.0	0.0	0.8264	0.0
1983	1131.76	58.99	1193.76	0.7513	896.64	0.0	0.0	0.0	0.7513	0.0
1984	1294.69	66.86	1361.55	0.6830	929.95	451.52	0.0	451.52	0.6830	308.40
1985	1798.76	90.46	1889.21	0.6209	1173.03	771.25	0.0	771.25	0.6209	478.89
1986	1426.45	90.46	1516.90	0.5645	855.20	771.25	0.0	771.25	0.5645	435.35
1987	1077.76	78.71	1156.47	0.5132	593.44	576.95	405.66	982.61	0.5132	504.24
1988	0.0	78.84	78.84	0.4665	36.78	0.0	405.66	405.66	0.4665	189.25
1989	0.0	78.84	78.84	0.4241	33.44	0.0	405.66	405.66	0.4241	172.04
1990	0.0	78.84	78.84	0.3855	30.40	0.0	405.66	405.66	0.3855	156.40
1991	0.0	78.84	78.84	0.3505	27.63	0.0	405.66	405.66	0.3505	142.18
1992	0.0	78.84	78.84	0.3186	25.12	0.0	405.66	405.66	0.3186	129.26
1993	0.0	78.84	78.84	0.2897	22.84	0.0	405.66	405.66	0.2897	117.51
1994	0.0	78.84	78.84	0.2633	20.75	0.0	405.66	405.66	0.2633	106.82
1995	0.0	78.84	78.84	0.2394	18.87	0.0	405.66	405.66	0.2394	97.11
1996	0.0	78.84	78.84	0.2176	17.15	0.0	405.66	405.66	0.2176	88.28
1997	0.0	78.84	78.84	0.1978	15.60	0.0	405.66	405.66	0.1978	80.26
1998	0.0	78.84	78.84	0.1799	14.18	0.0	405.66	405.66	0.1799	72.96
1999	0.0	78.84	78.84	0.1635	12.89	0.0	405.66	405.66	0.1635	66.33
2000	0.0	78.84	78.84	0.1486	11.72	0.0	405.66	405.66	0.1486	60.30
2001	0.0	78.84	78.84	0.1351	10.65	0.0	405.66	405.66	0.1351	54.82
2002	0.0	78.84	78.84	0.1228	9.67	0.0	405.66	405.66	0.1228	49.83
2003	0.0	78.84	78.84	0.1117	8.80	0.0	405.66	405.66	0.1117	45.30
2004	0.0	78.84	78.84	0.1015	8.00	431.86	405.66	837.52	0.1015	85.03
2005	0.0	78.84	78.84	0.0923	7.28	647.79	405.66	1053.45	0.0923	97.23
2006	0.0	78.84	78.84	0.0839	6.62	647.79	405.66	1053.45	0.0839	88.39
2007	0.0	78.84	78.84	0.0763	6.01	431.86	405.66	837.52	0.0763	63.89
2008	35.67	78.84	114.51	0.0693	7.94	0.0	405.66	405.66	0.0693	28.13
2009	198.36	78.84	476.90	0.0630	30.05	0.0	405.66	405.66	0.0630	25.57
2010	635.39	78.84	714.53	0.0573	40.93	0.0	405.66	405.66	0.0573	23.25
2011	616.34	78.84	695.18	0.0521	36.22	0.0	405.66	405.66	0.0521	21.13
2012	377.70	78.84	456.54	0.0474	21.62	0.0	405.66	405.66	0.0474	19.21

YEAR	Hydropower Nam Chon Power Station					Alternative Gas Turbine Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	NET PRESENT VALUE (I= 10.0 %) N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	NET PRESENT VALUE (I= 10.0 %) N.P.V (MIL.BHT)
2013	0.0	78.84	78.84	0.0431	3.39	0.0	405.66	405.66	0.0431	17.47
2014	0.0	78.84	78.84	0.0391	3.08	0.0	405.66	405.66	0.0391	15.86
2015	0.0	78.84	78.84	0.0356	2.81	0.0	405.66	405.66	0.0356	14.44
2016	0.0	78.84	78.84	0.0324	2.55	0.0	405.66	405.66	0.0324	13.12
2017	0.0	78.84	78.84	0.0294	2.32	0.0	405.66	405.66	0.0294	11.93
2018	0.0	78.84	78.84	0.0267	2.11	0.0	405.66	405.66	0.0267	10.85
2019	0.0	78.84	78.84	0.0243	1.92	0.0	405.66	405.66	0.0243	9.86
2020	0.0	78.84	78.84	0.0221	1.74	0.0	405.66	405.66	0.0221	8.96
2021	0.0	78.84	78.84	0.0201	1.58	0.0	405.66	405.66	0.0201	8.15
2022	0.0	78.84	78.84	0.0183	1.44	0.0	405.66	405.66	0.0183	7.41
2023	183.35	78.84	262.19	0.0166	4.40	0.0	405.66	405.66	0.0166	6.73
2024	279.40	78.84	358.24	0.0151	5.41	431.86	405.66	837.52	0.0151	12.64
2025	279.40	78.84	358.24	0.0137	4.91	741.40	405.66	1147.46	0.0137	15.74
2026	183.15	78.84	261.99	0.0125	3.27	741.40	405.66	1147.46	0.0125	14.31
2027	0.0	78.84	78.84	0.0113	0.89	556.29	405.66	962.95	0.0113	10.92
2028	0.0	78.84	78.84	0.0103	0.81	0.0	405.66	405.66	0.0103	4.18
2029	0.0	78.84	78.84	0.0094	0.74	0.0	405.66	405.66	0.0094	3.80
2030	0.0	78.84	78.84	0.0085	0.67	0.0	405.66	405.66	0.0085	3.46
2031	0.0	78.84	78.84	0.0077	0.61	0.0	405.66	405.66	0.0077	3.14
2032	0.0	78.84	78.84	0.0070	0.55	0.0	405.66	405.66	0.0070	2.86
2033	0.0	78.84	78.84	0.0064	0.50	0.0	405.66	405.66	0.0064	2.60
2034	0.0	78.84	78.84	0.0058	0.45	0.0	405.66	405.66	0.0058	2.36
2035	0.0	78.84	78.84	0.0053	0.42	0.0	405.66	405.66	0.0053	2.15
2036	0.0	78.84	78.84	0.0048	0.38	0.0	405.66	405.66	0.0048	1.95
2037	-698.32	78.84	-623.39	0.0044	-2.71	-1228.81	405.66	-823.15	0.0044	-3.60
TOTAL	10735.79				6445.23	5974.23				4008.68

*** CASE 1 *** PLANT NO. 2 ***

YEAR	Hydropower Thi Khong Power Station: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)	Alternative Oil-fired Thermal Power Plant: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)
1981						0.0	0.0	0.0	0.9091	0.0
1982						0.0	0.0	0.0	0.8264	0.0
1983						0.0	0.0	0.0	0.7513	0.0
1984						391.61	0.0	391.61	0.6830	268.84
1985						630.82	-628.78	2.04	0.6209	1.27
1986						630.82	-450.76	180.07	0.5645	101.64
1987						447.28	97.34	544.62	0.5132	279.48
1988						0.0	899.83	899.83	0.4665	419.78
1989						0.0	899.83	899.83	0.4241	381.62
1990						0.0	899.83	899.83	0.3855	346.93
1991						0.0	899.83	899.83	0.3505	315.39
1992						0.0	899.83	899.83	0.3186	286.72
1993						0.0	899.83	899.83	0.2897	260.65
1994						0.0	899.83	899.83	0.2633	236.96
1995						0.0	899.83	899.83	0.2394	215.41
1996						0.0	899.83	899.83	0.2176	195.83
1997						0.0	899.83	899.83	0.1978	178.03
1998						0.0	899.83	899.83	0.1799	161.84
1999						0.0	899.83	899.83	0.1635	147.13
2000						0.0	899.83	899.83	0.1486	133.76
2001						0.0	899.83	899.83	0.1351	121.60
2002						0.0	899.83	899.83	0.1228	110.54
2003						0.0	899.83	899.83	0.1117	100.49
2004						0.0	899.83	899.83	0.1015	91.36
2005						0.0	899.83	899.83	0.0923	83.05
2006						0.0	899.83	899.83	0.0839	75.50
2007						0.0	899.83	899.83	0.0763	68.64
2008						0.0	899.83	899.83	0.0693	62.40
2009						341.55	899.83	1241.38	0.0630	78.26
2010						512.38	899.83	1412.21	0.0573	80.93
2011						512.38	899.83	1412.21	0.0521	73.58
2012						341.55	899.83	1241.38	0.0474	58.80

YEAR	Hydropower Thi Khong Power Station: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)	Alternative Oil-fired Thermal Power Plant: INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %): P.V.F (P.U)	N.P.V (MIL.BHT)
2013						0.0	899.83	899.83	0.0431	38.74
2014						0.0	899.83	899.83	0.0391	35.22
2015						0.0	899.83	899.83	0.0356	32.02
2016						0.0	899.83	899.83	0.0324	29.11
2017						0.0	899.83	899.83	0.0294	26.46
2018						0.0	899.83	899.83	0.0267	24.06
2019						0.0	899.83	899.83	0.0243	21.87
2020						0.0	899.83	899.83	0.0221	19.88
2021						0.0	899.83	899.83	0.0201	18.07
2022						0.0	899.83	899.83	0.0183	16.43
2023						0.0	899.83	899.83	0.0166	14.94
2024						0.0	899.83	899.83	0.0151	13.58
2025						40.35	899.83	940.18	0.0137	12.90
2026						40.35	899.83	940.18	0.0125	11.73
2027						53.67	899.83	953.50	0.0113	10.81
2028						0.0	899.83	899.83	0.0103	9.28
2029						0.0	899.83	899.83	0.0094	8.43
2030						0.0	899.83	899.83	0.0085	7.67
2031						0.0	899.83	899.83	0.0077	6.97
2032						0.0	899.83	899.83	0.0070	6.34
2033						0.0	899.83	899.83	0.0064	5.76
2034						0.0	899.83	899.83	0.0058	5.24
2035						0.0	899.83	899.83	0.0053	4.76
2036						0.0	899.83	899.83	0.0048	4.33
2037						-64.02	899.83	835.81	0.0044	3.65
TOTAL						3480.76				5324.58

*** 11 *** DISCOUNT RATE VARIABLE SHEET
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 13.0 % EXCHANGE RATE --- 1.000 (MNT/BHT)

ESCALATION PER ANNUM
F.C PART --- 3.0 %
L.C PART --- 3.0 %
FIXED ITEM --- 3.0 %
FUEL PRICE --- 3.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.100
L.C PART (HYDRO) --- 0.450
L.C PART (ALTER) --- 3.950
FUEL PRICE --- 1.000

*** CASE 1 ***

DISCOUNT RATE (%)	HYDRO TOTAL INVEST (MIL.BHT)	ALT TOTAL INVEST (MIL.BHT)	BENEFIT - COST ANALYSIS: COST (MIL.BHT)	BENEFIT (MIL.BHT)	B-C (MIL.BHT)	B/C RATIO
5.0	13735.79	9854.96	8727.67	21245.46	12517.79	2.4343
5.5	13735.79	9854.96	8407.67	19261.30	10853.63	2.2909
6.0	13735.79	9854.96	8115.95	17533.94	9418.05	2.1604
6.5	13735.79	9854.96	7848.51	16023.19	8174.67	2.0416
7.0	13735.79	9854.96	7602.29	14696.08	7093.79	1.9331
7.5	13735.79	9854.96	7374.73	13524.87	6150.14	1.8329
8.0	13735.79	9854.96	7163.39	12487.27	5323.88	1.7432
8.5	13735.79	9854.96	6966.26	11563.73	4597.47	1.6630
9.0	13735.79	9854.96	6781.77	10739.71	3957.95	1.5915
9.5	13735.79	9854.96	6608.46	9998.04	3389.58	1.5130
10.0	13735.79	9854.96	6445.23	9333.23	2887.97	1.4481
10.5	13735.79	9854.96	6290.97	8732.09	2441.16	1.3880
11.0	13735.79	9854.96	6145.09	8187.33	2042.24	1.3324
11.5	13735.79	9854.96	6005.74	7692.19	1686.45	1.2808
12.0	13735.79	9854.96	5873.41	7240.79	1367.39	1.2328
12.5	13735.79	9854.96	5747.58	6828.11	1081.03	1.1881
13.0	13735.79	9854.96	5626.33	6449.86	823.56	1.1464
13.5	13735.79	9854.96	5510.56	6102.16	591.63	1.1074
14.0	13735.79	9854.96	5399.45	5781.78	382.29	1.0708
14.5	13735.79	9854.96	5292.73	5485.93	193.23	1.0365
* 15.0	13735.79	9854.96	5189.99	5212.08	22.10	1.0043
* 15.1	13735.79	9854.96	5169.88	5159.80	-10.09	0.9980
15.5	13735.79	9854.96	5093.56	4958.42	-135.14	0.9739
16.0	13735.79	9854.96	4995.43	4722.13	-273.29	0.9453
16.5	13735.79	9854.96	4903.15	4502.37	-400.78	0.9183
17.0	13735.79	9854.96	4813.93	4297.37	-515.56	0.8927
17.5	13735.79	9854.96	4727.59	4105.85	-621.74	0.8685
18.0	13735.79	9854.96	4644.00	3926.63	-717.37	0.8455
18.5	13735.79	9854.96	4562.96	3758.63	-804.33	0.8237
19.0	13735.79	9854.96	4484.37	3600.89	-883.48	0.8030
19.5	13735.79	9854.96	4408.07	3452.60	-955.47	0.7832
20.0	13735.79	9854.96	4333.98	3313.01	-1020.97	0.7644

B/C - DISCOUNT RATE
B/C (*)
0 1 2 3

* --- I.R.R (HYDROPOWER)

*** 12 *** FUEL PRICE VARIABLE SHEET
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 13.0 % EXCHANGE RATE --- 1.000 (MNT/BHT)

ESCALATION PER ANNUM
F.C PART --- 3.0 %
L.C PART --- 3.0 %
FIXED ITEM --- 3.0 %
FUEL PRICE --- 3.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.100
L.C PART (HYDRO) --- 0.450
L.C PART (ALTER) --- 3.950
FUEL PRICE --- 1.000

*** CASE 1 ***

FUEL PRICE INCREMENT (%)	UNIT FUEL COST (MNT/KWH)	HYDRO TOTAL INVEST (MIL.BHT)	ALT TOTAL INVEST (MIL.BHT)	BENEFIT - COST ANALYSIS: COST (MIL.BHT)	BENEFIT (MIL.BHT)	B-C (MIL.BHT)	B/C RATIO
0.0	3.0	13735.79	9854.96	6445.23	9313.23	2867.99	1.4481
5.0	3.0	13735.79	9854.96	6445.23	9616.50	3171.26	1.4920
10.0	3.0	13735.79	9854.96	6445.23	9923.47	3478.24	1.5360
15.0	3.0	13735.79	9854.96	6445.23	10233.03	3787.80	1.5799
20.0	3.0	13735.79	9854.96	6445.23	10466.31	4021.08	1.6239
25.0	3.0	13735.79	9854.96	6445.23	10979.56	4534.32	1.6678
30.0	3.0	13735.79	9854.96	6445.23	11082.85	4637.61	1.7118
35.0	3.0	13735.79	9854.96	6445.23	11316.12	4870.89	1.7557
40.0	3.0	13735.79	9854.96	6445.23	11599.41	5154.18	1.7997
45.0	3.0	13735.79	9854.96	6445.23	11882.70	5437.47	1.8436
50.0	3.0	13735.79	9854.96	6445.23	12166.98	5722.74	1.8876
55.0	3.0	13735.79	9854.96	6445.23	12451.25	6334.31	1.9315
60.0	3.0	13735.79	9854.96	6445.23	12782.53	6287.29	1.9755
65.0	3.0	13735.79	9854.96	6445.23	13015.81	6570.58	2.0194
70.0	3.0	13735.79	9854.96	6445.23	13299.13	6853.36	2.0634
75.0	3.0	13735.79	9854.96	6445.23	13582.38	7137.14	2.1074
80.0	3.0	13735.79	9854.96	6445.23	13865.64	7420.41	2.1513
85.0	3.0	13735.79	9854.96	6445.23	14149.95	7703.72	2.1953
90.0	3.0	13735.79	9854.96	6445.23	14432.19	7986.96	2.2392
95.0	3.0	13735.79	9854.96	6445.23	14715.47	8270.24	2.2832
100.0	3.0	13735.79	9854.96	6445.23	14998.76	8553.53	2.3271
105.0	3.0	13735.79	9854.96	6445.23	15282.03	8836.80	2.3711
110.0	3.0	13735.79	9854.96	6445.23	15566.29	9120.06	2.4150
115.0	3.0	13735.79	9854.96	6445.23	15849.53	9403.33	2.4593
120.0	3.0	13735.79	9854.96	6445.23	16131.80	9686.57	2.5029
125.0	3.0	13735.79	9854.96	6445.23	16415.08	9969.85	2.5469
130.0	3.0	13735.79	9854.96	6445.23	16698.35	10253.12	2.5948
135.0	3.0	13735.79	9854.96	6445.23	16981.56	10536.33	2.6347
140.0	3.0	13735.79	9854.96	6445.23	17264.86	10819.62	2.6787
145.0	3.0	13735.79	9854.96	6445.23	17548.11	11102.87	2.7226
150.0	3.0	13735.79	9854.96	6445.23	17831.35	11386.11	2.7666

B/C - FUEL PRICE INCREMENT
B/C (*)
0 1 2

* --- I.R.R (HYDROPOWER)

*** 4 *** THE INTERNAL RATE OF RETURN (I.R.R) AND BENEFIT - COST RATIO (B/C) OF THIS PROJECT CASE

*** EVALUATION CRITERIA ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM

F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 *** (with Shadow Price Factor)

(1) THE INTERNAL RATE OF RETURN (I.R.R) CALCULATED BY THE REGULA ITERATIVE METHOD

THE I.R.R OF HYDROPOWER IS 14.0 % (PROJECT BENEFIT IS MEASURED BY ALTERNATIVE PLANT)

(2) PROJECT EVALUATION BY THE BENEFIT/COST RATIO (B/C) METHOD

B/C RATIO = SUM((INVESTMENT + ANNUAL COST) * P.V.F) : ALTERNATINE
/SUM((INVESEMENT + ANNUAL COST) * P.V.F) : HYDROPOWER

= 1.3647 (I= 10.0 %)

B-C = 2,370.63 (MIL.BHT)

*** 10 *** THE INTERNAL RATE OF RETURN (I.R.R) AND BENEFIT - COST RATIO (B/C) OF THIS PROJECT CASE

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM		SHADOW PRICE FACTOR	
F.C PART ---	0.0 %	F.C PART ---	1.100
L.C PART ---	0.0 %	L.C PART (HYDRO) ---	0.850
FIXED O&M ---	0.0 %	L.C PART (ALTER) ---	0.950
FUEL PRICE ---	0.0 %	FUEL PRICE ---	1.000

*** CASE 1 *** (without Shadow Price Factor)

(1) THE INTERNAL RATE OF RETURN (I.R.R) CALCULATED BY THE REGULA ITERATIVE METHOD

THE I.R.R OF HYDROPOWER IS 15.0 % (PROJECT BENEFIT IS MEASURED BY ALTERNATIVE PLANT)

(2) PROJECT EVALUATION BY THE BENEFIT/COST RATIO (B/C) METHOD

B/C RATIO = SUM((INVESTMENT + ANNUAL COST) * P.V.F) : ALTERNATINE
/SUM((INVESEMENT + ANNUAL COST) * P.V.F) : HYDROPOWER

= 1.4481 (I= 10.0 %)

B-C = 2187.99 (MIL.BHT)

6-2 UPPER QUAE YAI PROJECT (Case with Thi Khong P.S.)

*** CHECK PROJECT DATA *** -- HYDROPOWER --

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	SEPERATING FACILITY: DAM AND RESERVEN F.C PART (MIL.BHT)	SEPERATING FACILITY: DAM AND RESERVEN L.C PART (MIL.BHT)	SEPERATING FACILITY: MACHINERY F.C PART (MIL.BHT)	SEPERATING FACILITY: MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
1981	217.76	447.13	0.0	0.0	0.0	0.0	0.0	0.0
1982	361.75	788.49	0.0	0.0	0.0	0.0	0.0	0.0
1983	395.34	778.23	29.80	3.40	0.0	0.0	0.0	0.0
1984	299.35	444.38	294.13	42.30	124.00	63.00	32.00	4.00
1985	350.16	562.93	473.90	84.00	186.00	88.00	48.00	12.00
1986	254.10	295.52	431.10	93.10	186.00	88.00	48.00	12.00
1987	240.44	296.97	247.30	71.30	124.00	55.00	32.00	12.00
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	29.80	3.40	0.0	0.0	0.0	0.0
2009	0.0	0.0	294.13	42.30	0.0	0.0	32.00	4.00
2010	0.0	0.0	473.90	84.00	0.0	0.0	48.00	12.00
2011	0.0	0.0	431.10	93.10	0.0	0.0	48.00	12.00
2012	0.0	0.0	247.30	71.30	0.0	0.0	32.00	12.00
2013	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

YEAR	SEPERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	SEPERATING FACILITY: DAM AND RESERVER L.C PART (MIL.BHT)	SEPERATING FACILITY: MACHINERY F.C PART (MIL.BHT)	SEPERATING FACILITY: MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	124.00	63.00	0.0	0.0
2024	0.0	0.0	0.0	0.0	186.00	88.00	0.0	0.0
2025	0.0	0.0	0.0	0.0	186.00	88.00	0.0	0.0
2026	0.0	0.0	0.0	0.0	124.00	55.00	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2037	0.0	0.0	0.0	0.0	-465.00	-229.50	0.0	0.0

*** CASE 1 *** PLANT NO. 2 *** Thi Khong Power Station

YEAR	GENERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	GENERATING FACILITY: DAM AND RESERVER L.C PART (MIL.BHT)	GENERATING FACILITY: MACHINERY F.C PART (MIL.BHT)	GENERATING FACILITY: MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	35.77	60.87	0.0	0.0	0.0	0.0	0.0	0.0
1986	33.03	81.58	21.61	0.0	0.0	0.0	0.0	0.0
1987	44.45	131.56	71.68	11.15	0.0	0.0	0.0	0.0
1988	9.28	81.19	235.68	47.33	0.0	0.0	0.0	0.0
1989	0.0	0.0	29.00	5.00	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	21.61	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	71.68	11.15	0.0	0.0	0.0	0.0
2013	0.0	0.0	235.68	47.33	0.0	0.0	0.0	0.0
2014	0.0	0.0	29.00	5.00	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

YEAR	GENERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	GENERATING FACILITY: DAM AND RESERVER L.C PART (MIL.BHT)	GENERATING FACILITY: MACHINERY F.C PART (MIL.BHT)	GENERATING FACILITY: MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2026	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2027	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2037	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

*** CHECK ANNUAL DATA *** -- EXISTPWER --

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	INS-TALLED CAPA-CITY (MW)	ANNUAL GENE-RATING ENERGY (MIL.KWH)	FIXED O&M GENERA. FACIL. (MIL.BHT)	FIXED O&M TRANS. FACIL. (MIL.BHT)	FIXED O&M SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M FUEL PRICE (BHT/L)	VARIABLE O&M FUEL CONSUM (L/KWH)	VARIABLE O&M ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.X	XXXX.XX	XXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.23	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.70	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.10	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	70.38	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.22	0.0	0.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.22	0.0	0.0
1987	595.0	277.0	11.76	3.43	1.00	0.0	0.0	62.10	34.00	9.70
1988	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1989	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1990	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1991	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1992	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1993	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1994	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1995	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1996	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1997	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1998	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
1999	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2000	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2001	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2002	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2003	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2004	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2005	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2006	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2007	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2008	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2009	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2010	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2011	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2012	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2013	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2014	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2015	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2016	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2017	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2018	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2019	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2020	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00

YEAR	INS-TALLED CAPA-CITY (MW)	ANNUAL GENE-RATING ENERGY (MIL.KWH)	FIXED O&M GENERA. FACIL. (MIL.BHT)	FIXED O&M TRANS. FACIL. (MIL.BHT)	FIXED O&M SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M FUEL PRICE (BHT/L)	VARIABLE O&M FUEL CONSUM (L/KWH)	VARIABLE O&M ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.X	XXXX.XX	XXXX.XX
2021	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2022	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2023	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2024	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2025	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2026	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2027	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2028	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2029	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2030	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2031	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2032	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2033	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2034	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2035	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2036	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00
2037	595.0	1103.0	75.34	13.71	4.00	0.0	0.0	0.0	34.00	39.00

*** CASE 1 *** PLANT NO. 2 *** Thi Khong Power Station

YEAR	INSTALLED CAPACITY (MW)	ANNUAL GENERATING ENERGY (MIL.KWH)	FIXED O&M GENERA. FACIL. (MIL.BHT)	FIXED O&M TRANS. FACIL. (MIL.BHT)	FIXED O&M SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M FUEL PRICE (BHT/L)	VARIABLE O&M FUEL CONSUM. (L/KWH)	VARIABLE O&M ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.82	0.0	0.0
1987	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.17	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.17	0.0	0.0
1989	51.0	77.5	12.60	0.0	0.0	0.0	0.0	2.36	5.00	2.50
1990	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1991	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1992	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1993	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1994	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1995	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1996	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1997	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1998	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
1999	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2000	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2001	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2002	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2003	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2004	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2005	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2006	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2007	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2008	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2009	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2010	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2011	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2012	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2013	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2014	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2015	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2016	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2017	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2018	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2019	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2020	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00

YEAR	INSTALLED CAPACITY (MW)	ANNUAL GENERATING ENERGY (MIL.KWH)	FIXED O&M GENERA. FACIL. (MIL.BHT)	FIXED O&M TRANS. FACIL. (MIL.BHT)	FIXED O&M SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M FUEL PRICE (BHT/L)	VARIABLE O&M FUEL CONSUM. (L/KWH)	VARIABLE O&M ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
2021	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2022	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2023	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2024	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2025	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2026	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2027	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2028	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2029	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2030	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2031	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2032	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2033	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2034	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2035	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2036	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00
2037	51.0	93.0	12.60	0.0	0.0	0.0	0.0	0.0	5.00	3.00

*** CHECK PROJECT DATA *** -- ALTERNATIVE --

*** CASE 1 *** PLANT NO. 1 *** Gas Turbine Power Plant

YEAR	GENERATING FACILITY: DAM AND RESERVOIR F.C PART (MIL.BHT)	GENERATING FACILITY: DAM AND RESERVOIR L.C PART (MIL.BHT)	GENERATING FACILITY: MACHINERY F.C PART (MIL.BHT)	GENERATING FACILITY: MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	449.16	23.16	0.0	0.0	0.0	0.0
1985	0.0	0.0	673.06	35.42	61.99	41.33	0.0	0.0
1986	0.0	0.0	673.06	35.42	61.99	41.33	0.0	0.0
1987	0.0	0.0	449.16	23.16	82.66	55.10	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	449.16	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	673.06	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	673.06	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	449.16	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2013	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

YEAR	GENERATING FACILITY: DAM AND RESERVOIR F.C PART (MIL.BHT)	GENERATING FACILITY: DAM AND RESERVOIR L.C PART (MIL.BHT)	GENERATING FACILITY: MACHINERY F.C PART (MIL.BHT)	GENERATING FACILITY: MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	449.16	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	673.06	0.0	61.99	41.33	0.0	0.0
2026	0.0	0.0	673.06	0.0	61.99	41.33	0.0	0.0
2027	0.0	0.0	449.16	0.0	82.66	55.10	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2037	0.0	0.0	-1122.00	0.0	-155.00	0.0	0.0	0.0

*** CASE 1 *** PLANT NO. 2 *** Oil-fired Thermal Power Plant

YEAR	GENERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	DAM AND RESERVER L.C PART (MIL.BHT)	MACHINERY F.C PART (MIL.BHT)	MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	293.27	51.75	0.0	0.0	0.0	0.0
1985	0.0	0.0	439.90	77.63	21.96	14.64	0.0	0.0
1986	0.0	0.0	439.90	77.63	21.96	14.64	0.0	0.0
1987	0.0	0.0	293.27	51.75	29.28	19.52	0.0	0.0
1988	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1991	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1992	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1993	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1994	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1995	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1996	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1997	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2001	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2002	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2003	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2004	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2005	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2006	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	293.27	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	439.90	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	439.90	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	293.27	0.0	0.0	0.0	0.0	0.0
2013	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2014	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2015	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2017	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2018	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2019	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

YEAR	GENERATING FACILITY: DAM AND RESERVER F.C PART (MIL.BHT)	DAM AND RESERVER L.C PART (MIL.BHT)	MACHINERY F.C PART (MIL.BHT)	MACHINERY L.C PART (MIL.BHT)	TRANSMISSION FACIL. F.C PART (MIL.BHT)	TRANSMISSION FACIL. L.C PART (MIL.BHT)	SUBSTATION FACILITY F.C PART (MIL.BHT)	SUBSTATION FACILITY L.C PART (MIL.BHT)
	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX	XXXXXX.XX
2021	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2022	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2023	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2024	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2025	0.0	0.0	0.0	0.0	21.96	14.64	0.0	0.0
2026	0.0	0.0	0.0	0.0	21.96	14.64	0.0	0.0
2027	0.0	0.0	0.0	0.0	29.28	19.52	0.0	0.0
2028	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2029	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2030	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2031	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2032	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2033	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2034	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2035	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2036	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2037	0.0	0.0	0.0	0.0	-54.90	0.0	0.0	0.0

*** CHECK ANNUAL DATA *** -- ALTERNATIVE --

*** CASE 1 *** PLANT NO. 1 *** Gas Turbine Power Plant

YEAR	INS-TALLED CAPA-CITY (MW)	ANNUAL GENE-RATING ENERGY (MIL.KWH)	FIXED O&M GENERA. FACIL. (MIL.BHT)	FIXED O&M TRANS. FACIL. (MIL.BHT)	FIXED O&M SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M FUEL PRICE (BHT/L)	VARIABLE O&M FUEL CONSUM (L/KWH)	VARIABLE O&M ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1988	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1989	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1990	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1991	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1992	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1993	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1994	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1995	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1996	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1997	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1998	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
1999	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2000	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2001	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2002	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2003	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2004	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2005	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2006	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2007	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2008	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2009	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2010	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2011	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2012	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2013	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2014	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2015	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2016	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2017	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2018	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2019	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2020	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50

YEAR	INS-TALLED CAPA-CITY (MW)	ANNUAL GENE-RATING ENERGY (MIL.KWH)	FIXED O&M GENERA. FACIL. (MIL.BHT)	FIXED O&M TRANS. FACIL. (MIL.BHT)	FIXED O&M SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M FUEL PRICE (BHT/L)	VARIABLE O&M FUEL CONSUM (L/KWH)	VARIABLE O&M ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
2021	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2022	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2023	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2024	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2025	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2026	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2027	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2028	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2029	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2030	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2031	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2032	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2033	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2034	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2035	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2036	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50
2037	480.0	210.0	70.35	5.17	0.0	4.680	0.3977	0.0	24.00	7.50

*** CASE 1 *** PLANT NO. 2 *** Oil fired Thermal Power Plant

YEAR	INSTALLED CAPACITY (MW)	ANNUAL GENERATING ENERGY (MIL.KWH)	FIXED O&M GENERAL FACIL. (MIL.BHT)	FIXED O&M TRANS. FACIL. (MIL.BHT)	FIXED O&M SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M FUEL PRICE (BHT/L)	VARIABLE O&M FUEL CONSUM (L/KWH)	VARIABLE O&M ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0.0	-717.0	0.0	0.0	0.0	3.480	0.2523	0.0	0.0	0.0
1986	0.0	-514.0	0.0	0.0	0.0	3.480	0.2523	0.0	0.0	0.0
1987	170.0	95.6	43.13	0.46	0.0	3.480	0.2523	0.0	10.00	8.13
1988	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1989	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1990	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1991	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1992	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1993	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1994	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1995	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1996	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1997	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1998	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
1999	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2000	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2001	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2002	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2003	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2004	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2005	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2006	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2007	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2008	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2009	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2010	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2011	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2012	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2013	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2014	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2015	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2016	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2017	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2018	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2019	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2020	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50

YEAR	INSTALLED CAPACITY (MW)	ANNUAL GENERATING ENERGY (MIL.KWH)	FIXED O&M GENERAL FACIL. (MIL.BHT)	FIXED O&M TRANS. FACIL. (MIL.BHT)	FIXED O&M SUBSTA. FACIL. (MIL.BHT)	VARIABLE O&M FUEL PRICE (BHT/L)	VARIABLE O&M FUEL CONSUM (L/KWH)	VARIABLE O&M ETC. VARIA. (MIL.BHT)	TRANS. LOSS POWER LOSS (MW)	TRANS. LOSS ENERGY LOSS (MIL.KWH)
	XXXXX.X	XXXXX.X	XXXX.XX	XXXX.XX	XXXX.XX	XX.XXX	X.XXXX	XXXX.XX	XXXX.XX	XXXX.XX
2021	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2022	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2023	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2024	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2025	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2026	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2027	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2028	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2029	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2030	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2031	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2032	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2033	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2034	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2035	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2036	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50
2037	170.0	1045.0	43.13	1.83	0.0	3.480	0.2523	0.0	10.00	88.50

*** 1 *** PROJECT BALANCE SHEET (HYDROPOWER PLANT)
--- NO SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	664.49	0.0	0.0	0.0	0.0	0.0	8.28	0.0	0.0	8.28	673.17
1982	1152.24	0.0	0.0	0.0	0.0	0.0	20.70	0.0	0.0	20.70	1172.94
1983	1206.52	0.0	0.0	0.0	0.0	0.0	62.10	0.0	0.0	62.10	1268.62
1984	1302.33	0.0	0.0	0.0	0.0	0.0	70.38	0.0	0.0	70.38	1373.21
1985	1834.49	0.0	0.0	0.0	0.0	0.0	95.22	0.0	0.0	95.22	1900.21
1986	1407.12	0.0	0.0	0.0	0.0	0.0	95.22	0.0	0.0	95.22	1503.04
1987	1078.71	595.0	277.0	267.3	18.76	0.0	80.86	3.43	1.00	85.29	1164.00
1988	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1989	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1990	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1991	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1992	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1993	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1994	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1995	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1996	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1997	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1998	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
1999	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2000	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2001	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2002	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2003	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2004	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2005	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2006	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2007	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2008	33.20	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	125.95
2009	372.40	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	465.15
2010	617.90	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	710.65
2011	584.20	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	676.95
2012	362.30	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	455.05

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2014	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2015	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2016	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2017	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2018	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2019	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2020	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2021	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2022	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2023	187.00	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	279.75
2024	274.00	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	366.75
2025	274.00	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	366.75
2026	179.00	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	271.75
2027	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2028	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2029	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2030	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2031	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2032	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2033	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2034	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2035	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2036	0.0	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	92.75
2037	-685.00	595.0	1138.0	1069.0	75.04	0.0	75.04	13.71	4.00	92.75	-592.75

*** CASE 1 *** PLANT NO. 2 *** Thi Khong Power Station

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	116.34	0.0	0.0	0.0	0.0	0.0	4.73	0.0	0.0	4.73	121.57
1986	133.29	0.0	0.0	0.0	0.0	0.0	11.82	0.0	0.0	11.82	145.11
1987	258.34	0.0	0.0	0.0	0.0	0.0	14.17	0.0	0.0	14.17	273.01
1988	373.48	0.0	0.0	0.0	0.0	0.0	14.17	0.0	0.0	14.17	387.65
1989	34.30	51.0	77.5	75.0	10.50	0.0	12.86	0.0	0.0	12.86	46.86
1990	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1991	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1992	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1993	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1994	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1995	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1996	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1997	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1998	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
1999	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2000	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2001	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2002	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2003	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2004	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2005	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2006	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2007	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2008	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2009	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2010	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2011	21.61	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	34.21
2012	82.83	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	95.43

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	283.31	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	295.61
2014	34.30	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	46.60
2015	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2016	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2017	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2018	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2019	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2020	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2021	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2022	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2023	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2024	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2025	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2026	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2027	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2028	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2029	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2030	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2031	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2032	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2033	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2034	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2035	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2036	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60
2037	0.0	51.0	93.0	90.0	12.60	0.0	12.60	0.0	0.0	12.60	12.60

*** 2 *** PROJECT BALANCE SHEET (ALTERNATIVE)
--- NO SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED OEM --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING OEM COST: FIXED COST (MIL.BHT)	GENERATING OEM COST: VARIABLE COST (MIL.BHT)	GENERATING OEM COST: TOTAL COST (MIL.BHT)	TRANSMISSION OEM COST (MIL.BHT)	SUB-STATION OEM COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	472.32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	472.32
1985	811.10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	811.60
1986	811.60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	811.60
1987	613.38	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	1076.96
1988	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1989	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1990	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1991	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1992	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1993	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1994	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1995	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1996	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1997	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1998	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
1999	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2000	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2001	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2002	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2003	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2004	449.16	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	916.04
2005	673.36	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	1139.94
2006	673.36	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	1139.94
2007	449.16	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	916.04
2008	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2009	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2010	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2011	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2012	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING OEM COST: FIXED COST (MIL.BHT)	GENERATING OEM COST: VARIABLE COST (MIL.BHT)	GENERATING OEM COST: TOTAL COST (MIL.BHT)	TRANSMISSION OEM COST (MIL.BHT)	SUB-STATION OEM COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2014	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2015	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2016	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2017	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2018	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2019	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2020	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2021	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2022	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2023	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2024	449.16	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	916.04
2025	776.38	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	1243.26
2026	776.38	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	1243.26
2027	586.92	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	1053.80
2028	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2029	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2030	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2031	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2032	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2033	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2034	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2035	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2036	0.0	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	466.88
2037	-1277.30	430.0	210.0	202.5	70.85	390.86	461.71	5.17	0.0	466.88	-810.12

*** CASE 1 *** PLANT NO. 2 *** Thi Khong Power Station

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	345.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	345.02
1985	554.13	0.0	-717.0	-717.0	0.0	-628.78	-628.78	0.0	0.0	-628.78	-74.65
1986	554.13	0.0	-514.0	-514.0	0.0	-450.76	-450.76	0.0	0.0	-450.76	103.37
1987	393.42	170.0	95.6	87.5	10.30	83.84	94.64	0.46	0.0	95.10	488.92
1988	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1989	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1990	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1991	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1992	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1993	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1994	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1995	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1996	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1997	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1998	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1999	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2000	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2001	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2002	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2003	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2004	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2005	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2006	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2007	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2008	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2009	293.27	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	1254.65
2010	439.90	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	1401.28
2011	439.90	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	1401.28
2012	293.27	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	1254.65

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2014	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2015	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2016	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2017	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2018	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2019	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2020	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2021	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2022	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2023	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2024	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2025	36.50	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	997.98
2026	36.50	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	997.98
2027	48.80	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	1010.18
2028	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2029	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2030	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2031	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2032	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2033	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2034	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2035	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2036	0.0	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
2037	-54.80	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	906.48

*** 3 *** PROJECT EVALUATION BY THE NET PRESENT VALUE (N.P.V) METHOD
--- NO SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED ITEM --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 *** PLANT NO. 1 ***

YEAR	Hydropower Nam Chon Power Station					Alternative Gas Turbine Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)
1981	664.49	8.28	673.17	0.9091	611.97	0.0	0.0	0.0	0.9091	0.0
1982	1152.24	20.73	1172.94	0.8264	969.37	0.0	0.0	0.0	0.8264	0.0
1983	1206.52	62.10	1268.62	0.7513	953.18	0.0	0.0	0.0	0.7513	0.0
1984	1302.83	70.38	1373.21	0.6830	937.92	472.32	0.0	472.32	0.6830	322.60
1985	1804.09	95.22	1900.21	0.6209	1179.93	811.80	0.0	811.80	0.6209	504.07
1986	1437.32	95.22	1533.04	0.5645	848.45	811.80	0.0	811.80	0.5645	458.24
1987	1078.71	85.29	1164.00	0.5132	597.32	610.93	466.88	1076.96	0.5132	552.65
1988	0.0	92.75	92.75	0.4665	43.27	0.0	466.88	466.88	0.4665	217.80
1989	0.0	92.75	92.75	0.4241	39.34	0.0	466.88	466.88	0.4241	198.00
1990	0.0	92.75	92.75	0.3855	35.76	0.0	466.88	466.88	0.3855	180.00
1991	0.0	92.75	92.75	0.3505	32.51	0.0	466.88	466.88	0.3505	163.64
1992	0.0	92.75	92.75	0.3186	29.55	0.0	466.88	466.88	0.3186	148.76
1993	0.0	92.75	92.75	0.2897	26.87	0.0	466.88	466.88	0.2897	135.24
1994	0.0	92.75	92.75	0.2633	24.42	0.0	466.88	466.88	0.2633	122.95
1995	0.0	92.75	92.75	0.2394	22.20	0.0	466.88	466.88	0.2394	111.77
1996	0.0	92.75	92.75	0.2176	20.18	0.0	466.88	466.88	0.2176	101.61
1997	0.0	92.75	92.75	0.1978	18.35	0.0	466.88	466.88	0.1978	92.37
1998	0.0	92.75	92.75	0.1799	16.68	0.0	466.88	466.88	0.1799	83.97
1999	0.0	92.75	92.75	0.1635	15.17	0.0	466.88	466.88	0.1635	76.34
2000	0.0	92.75	92.75	0.1486	13.78	0.0	466.88	466.88	0.1486	69.40
2001	0.0	92.75	92.75	0.1351	12.53	0.0	466.88	466.88	0.1351	63.09
2002	0.0	92.75	92.75	0.1228	11.39	0.0	466.88	466.88	0.1228	57.36
2003	0.0	92.75	92.75	0.1117	10.35	0.0	466.88	466.88	0.1117	52.14
2004	0.0	92.75	92.75	0.1015	9.42	449.16	466.88	916.04	0.1015	93.00
2005	0.0	92.75	92.75	0.0923	8.56	673.06	466.88	1139.94	0.0923	105.21
2006	0.0	92.75	92.75	0.0839	7.78	673.06	466.88	1139.94	0.0839	95.65
2007	0.0	92.75	92.75	0.0763	7.07	449.16	466.88	916.04	0.0763	69.88
2008	33.50	92.75	126.95	0.0693	8.79	0.0	466.88	466.88	0.0693	32.38
2009	372.40	92.75	465.15	0.0630	29.32	0.0	466.88	466.88	0.0630	29.43
2010	617.90	92.75	710.65	0.0573	40.71	0.0	466.88	466.88	0.0573	26.76
2011	584.20	92.75	676.95	0.0521	35.27	0.0	466.88	466.88	0.0521	24.32
2012	362.30	92.75	455.05	0.0474	21.57	0.0	466.88	466.88	0.0474	22.11

YEAR	Hydropower Nam Chon Power Station					Alternative Gas Turbine Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)
2013	0.0	92.75	92.75	0.0431	3.99	0.0	466.88	466.88	0.0431	20.10
2014	0.0	92.75	92.75	0.0391	3.63	0.0	466.88	466.88	0.0391	18.28
2015	0.0	92.75	92.75	0.0356	3.30	0.0	466.88	466.88	0.0356	16.61
2016	0.0	92.75	92.75	0.0324	3.00	0.0	466.88	466.88	0.0324	15.10
2017	0.0	92.75	92.75	0.0294	2.73	0.0	466.88	466.88	0.0294	13.73
2018	0.0	92.75	92.75	0.0267	2.48	0.0	466.88	466.88	0.0267	12.48
2019	0.0	92.75	92.75	0.0243	2.25	0.0	466.88	466.88	0.0243	11.35
2020	0.0	92.75	92.75	0.0221	2.05	0.0	466.88	466.88	0.0221	10.32
2021	0.0	92.75	92.75	0.0201	1.86	0.0	466.88	466.88	0.0201	9.38
2022	0.0	92.75	92.75	0.0183	1.69	0.0	466.88	466.88	0.0183	8.53
2023	187.30	92.75	279.75	0.0166	4.64	0.0	466.88	466.88	0.0166	7.75
2024	274.00	92.75	366.75	0.0151	5.53	449.16	466.88	916.04	0.0151	13.82
2025	274.00	92.75	366.75	0.0137	5.03	776.38	466.88	1243.26	0.0137	17.06
2026	179.00	92.75	271.75	0.0125	3.39	776.38	466.88	1243.26	0.0125	15.51
2027	0.0	92.75	92.75	0.0113	1.05	586.92	466.88	1053.80	0.0113	11.95
2028	0.0	92.75	92.75	0.0103	0.95	0.0	466.88	466.88	0.0103	4.81
2029	0.0	92.75	92.75	0.0094	0.87	0.0	466.88	466.88	0.0094	4.38
2030	0.0	92.75	92.75	0.0085	0.79	0.0	466.88	466.88	0.0085	3.98
2031	0.0	92.75	92.75	0.0077	0.72	0.0	466.88	466.88	0.0077	3.62
2032	0.0	92.75	92.75	0.0070	0.65	0.0	466.88	466.88	0.0070	3.29
2033	0.0	92.75	92.75	0.0064	0.59	0.0	466.88	466.88	0.0064	2.99
2034	0.0	92.75	92.75	0.0058	0.54	0.0	466.88	466.88	0.0058	2.72
2035	0.0	92.75	92.75	0.0053	0.49	0.0	466.88	466.88	0.0053	2.47
2036	0.0	92.75	92.75	0.0048	0.45	0.0	466.88	466.88	0.0048	2.25
2037	-664.56	92.75	-592.75	0.0044	-2.59	-1277.00	466.88	-810.12	0.0044	-3.54
TOTAL	10814.8				6683.95	6262.27				4439.60

*** CASE 1 *** PLANT NO. 2 ***

YEAR	Hydropower Thi Khong Power Station					Alternative Oil-fired Thermal Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)
1981	0.0	0.0	0.0	0.9091	0.0	0.0	0.0	0.0	0.9091	0.0
1982	0.0	0.0	0.0	0.8264	0.0	0.0	0.0	0.0	0.8264	0.0
1983	0.0	0.0	0.0	0.7513	0.0	0.0	0.0	0.0	0.7513	0.0
1984	0.0	0.0	0.0	0.6830	0.0	345.02	0.0	345.02	0.6830	235.65
1985	116.34	4.73	121.57	0.6209	75.48	554.13	-628.78	-74.65	0.6209	-46.35
1986	133.29	11.82	145.11	0.5645	81.91	554.13	-450.76	103.37	0.5645	58.35
1987	258.34	14.17	273.01	0.5132	140.10	393.92	95.00	488.92	0.5132	250.89
1988	373.48	14.17	337.65	0.4665	180.84	0.0	961.38	961.38	0.4665	448.50
1989	34.00	12.86	46.86	0.4241	19.87	0.0	961.38	961.38	0.4241	407.72
1990	0.0	12.60	12.60	0.3855	4.85	0.0	961.38	961.38	0.3855	370.66
1991	0.0	12.60	12.60	0.3505	4.42	0.0	961.38	961.38	0.3505	336.96
1992	0.0	12.60	12.60	0.3186	4.01	0.0	961.38	961.38	0.3186	306.33
1993	0.0	12.60	12.60	0.2897	3.65	0.0	961.38	961.38	0.2897	278.48
1994	0.0	12.60	12.60	0.2633	3.32	0.0	961.38	961.38	0.2633	253.17
1995	0.0	12.60	12.60	0.2394	3.02	0.0	961.38	961.38	0.2394	230.15
1996	0.0	12.60	12.60	0.2176	2.74	0.0	961.38	961.38	0.2176	209.23
1997	0.0	12.60	12.60	0.1978	2.49	0.0	961.38	961.38	0.1978	190.21
1998	0.0	12.60	12.60	0.1799	2.27	0.0	961.38	961.38	0.1799	172.92
1999	0.0	12.60	12.60	0.1635	2.06	0.0	961.38	961.38	0.1635	157.20
2000	0.0	12.60	12.60	0.1486	1.87	0.0	961.38	961.38	0.1486	142.91
2001	0.0	12.60	12.60	0.1351	1.70	0.0	961.38	961.38	0.1351	129.91
2002	0.0	12.60	12.60	0.1228	1.55	0.0	961.38	961.38	0.1228	118.10
2003	0.0	12.60	12.60	0.1117	1.41	0.0	961.38	961.38	0.1117	107.37
2004	0.0	12.60	12.60	0.1015	1.28	0.0	961.38	961.38	0.1015	97.61
2005	0.0	12.60	12.60	0.0923	1.16	0.0	961.38	961.38	0.0923	88.73
2006	0.0	12.60	12.60	0.0839	1.06	0.0	961.38	961.38	0.0839	80.67
2007	0.0	12.60	12.60	0.0763	0.96	0.0	961.38	961.38	0.0763	73.33
2008	0.0	12.60	12.60	0.0693	0.87	0.0	961.38	961.38	0.0693	66.67
2009	0.0	12.60	12.60	0.0630	0.79	293.27	961.38	1254.65	0.0630	79.09
2010	0.0	12.60	12.60	0.0573	0.72	439.90	961.38	1401.28	0.0573	80.31
2011	21.61	12.60	34.21	0.0521	1.78	439.90	961.38	1401.28	0.0521	73.01
2012	82.83	12.60	95.43	0.0474	4.52	293.27	961.38	1254.65	0.0474	59.43

YEAR	Hydropower Thi Khong Power Station					Alternative Oil-fired Thermal Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)
2013	283.31	12.60	295.61	0.0431	12.73	0.0	961.38	961.38	0.0431	41.40
2014	34.00	12.60	46.60	0.0391	1.82	0.0	961.38	961.38	0.0391	37.63
2015	0.0	12.60	12.60	0.0356	0.45	0.0	961.38	961.38	0.0356	34.21
2016	0.0	12.60	12.60	0.0324	0.41	0.0	961.38	961.38	0.0324	31.10
2017	0.0	12.60	12.60	0.0294	0.37	0.0	961.38	961.38	0.0294	28.27
2018	0.0	12.60	12.60	0.0267	0.34	0.0	961.38	961.38	0.0267	25.70
2019	0.0	12.60	12.60	0.0243	0.31	0.0	961.38	961.38	0.0243	23.37
2020	0.0	12.60	12.60	0.0221	0.28	0.0	961.38	961.38	0.0221	21.24
2021	0.0	12.60	12.60	0.0201	0.25	0.0	961.38	961.38	0.0201	19.31
2022	0.0	12.60	12.60	0.0183	0.23	0.0	961.38	961.38	0.0183	17.56
2023	0.0	12.60	12.60	0.0166	0.21	0.0	961.38	961.38	0.0166	15.96
2024	0.0	12.60	12.60	0.0151	0.19	0.0	961.38	961.38	0.0151	14.51
2025	0.0	12.60	12.60	0.0137	0.17	36.60	961.38	997.98	0.0137	13.69
2026	0.0	12.60	12.60	0.0125	0.16	36.60	961.38	997.98	0.0125	12.45
2027	0.0	12.60	12.60	0.0113	0.14	48.80	961.38	1010.18	0.0113	11.45
2028	0.0	12.60	12.60	0.0103	0.13	0.0	961.38	961.38	0.0103	9.91
2029	0.0	12.60	12.60	0.0094	0.12	0.0	961.38	961.38	0.0094	9.01
2030	0.0	12.60	12.60	0.0085	0.11	0.0	961.38	961.38	0.0085	8.19
2031	0.0	12.60	12.60	0.0077	0.10	0.0	961.38	961.38	0.0077	7.45
2032	0.0	12.60	12.60	0.0070	0.09	0.0	961.38	961.38	0.0070	6.77
2033	0.0	12.60	12.60	0.0064	0.08	0.0	961.38	961.38	0.0064	6.15
2034	0.0	12.60	12.60	0.0058	0.07	0.0	961.38	961.38	0.0058	5.59
2035	0.0	12.60	12.60	0.0053	0.07	0.0	961.38	961.38	0.0053	5.09
2036	0.0	12.60	12.60	0.0048	0.06	0.0	961.38	961.38	0.0048	4.62
2037	0.0	12.60	12.60	0.0044	0.05	-54.90	961.38	906.48	0.0044	3.96
TOTAL	1337.80				569.65	3380.54				5471.72

*** 5 *** DISCOUNT RATE VARIABLE SHEET
--- NO SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 12.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED OGM --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 ***

DISCOUNT RATE (%)	HYDRO TOTAL INVEST (MIL.BHT)	ALT TOTAL INVEST (MIL.BHT)	BENEFIT - COST ANALYSYS COST (MIL.BHT)	BENEFIT (MIL.BHT)	B-C (MIL.BHT)	B/C RATIO
5.0	12134.38	9642.80	10302.30	22766.45	12464.14	2.2761
5.5	12134.38	9642.80	9614.16	20622.33	11033.13	2.1453
6.0	12134.38	9642.80	9261.15	18756.41	9495.25	2.0253
6.5	12134.38	9642.80	8938.43	17125.12	8186.69	1.9159
7.0	12134.38	9642.80	8642.02	15692.66	7133.64	1.8159
7.5	12134.38	9642.80	8369.49	14428.93	6363.44	1.7242
8.0	12134.38	9642.80	8115.13	13309.84	5194.71	1.6401
8.5	12134.38	9642.80	7879.27	12314.18	4434.91	1.5629
9.0	12134.38	9642.80	7659.01	11425.06	3766.05	1.4917
9.5	12134.38	9642.80	7452.59	10628.13	3175.54	1.4261
10.0	12134.38	9642.80	7258.42	9911.29	2652.88	1.3655
10.5	12134.38	9642.80	7075.32	9264.29	2188.97	1.3094
11.0	12134.38	9642.80	6902.10	8678.26	1776.16	1.2573
11.5	12134.38	9642.80	6737.80	8145.81	1408.01	1.2093
12.0	12134.38	9642.80	6581.61	7660.63	1079.03	1.1639
12.5	12134.38	9642.80	6432.77	7217.29	784.52	1.1220
13.0	12134.38	9642.80	6291.74	6811.13	523.39	1.0827
13.5	12134.38	9642.80	6154.85	6437.95	283.11	1.0460
14.0	12134.38	9642.80	6024.65	6094.31	61.66	1.0116
* 14.1	12134.38	9642.80	5995.24	6028.79	33.56	1.0049
* 14.2	12134.38	9642.80	5974.37	5964.42	-9.95	0.9984
14.5	12134.38	9642.80	5899.71	5777.13	-122.60	0.9792
15.0	12134.38	9642.80	5779.65	5483.71	-295.94	0.9488
15.5	12134.38	9642.80	5664.17	5218.73	-445.44	0.9201
16.0	12134.38	9642.80	5552.90	4959.19	-593.71	0.8931
16.5	12134.38	9642.80	5445.59	4724.13	-721.46	0.8675
17.0	12134.38	9642.80	5341.98	4504.98	-836.99	0.8433
17.5	12134.38	9642.80	5241.86	4300.36	-941.50	0.8204
18.0	12134.38	9642.80	5145.03	4109.02	-1035.01	0.7986
18.5	12134.38	9642.80	5051.34	3929.81	-1121.53	0.7780
19.0	12134.38	9642.80	4960.57	3761.62	-1198.95	0.7583
19.5	12134.38	9642.80	4872.58	3603.61	-1268.97	0.7396
20.0	12134.38	9642.80	4787.26	3454.97	-1332.29	0.7217

B/C - DISCOUNT RATE

B/C (*)

0 1 2 3

* --- I.R.R (HYDROPOWER)

*** 6 *** FUEL PRICE VARIABLE SHEET
--- NO SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 12.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED OGM --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1 ***

FUEL PRICE INCREMENT (%)	UNIT FUEL COST (BHT/KWH)	HYDRO TOTAL INVEST (MIL.BHT)	ALT TOTAL INVEST (MIL.BHT)	BENEFIT - COST ANALYSYS COST (MIL.BHT)	BENEFIT (MIL.BHT)	B-C (MIL.BHT)	B/C RATIO
0.0	0.0	12134.38	9642.80	7258.42	9911.29	2652.88	1.3655
5.0	0.0	12134.38	9642.80	7258.42	10223.80	2965.38	1.4085
10.0	0.0	12134.38	9642.80	7258.42	10556.32	3297.90	1.4516
15.0	0.0	12134.38	9642.80	7258.42	10848.79	3590.37	1.4946
20.0	0.0	12134.38	9642.80	7258.42	11161.30	3902.88	1.5377
25.0	0.0	12134.38	9642.80	7258.42	11473.81	4215.39	1.5808
30.0	0.0	12134.38	9642.80	7258.42	11786.32	4527.90	1.6238
35.0	0.0	12134.38	9642.80	7258.42	12098.81	4840.39	1.6669
40.0	0.0	12134.38	9642.80	7258.42	12411.30	5152.89	1.7099
45.0	0.0	12134.38	9642.80	7258.42	12723.83	5465.41	1.7530
50.0	0.0	12134.38	9642.80	7258.42	13036.34	5777.92	1.7960
55.0	0.0	12134.38	9642.80	7258.42	13348.81	6090.39	1.8391
60.0	0.0	12134.38	9642.80	7258.42	13661.32	6402.90	1.8821
65.0	0.0	12134.38	9642.80	7258.42	13973.84	6715.42	1.9252
70.0	0.0	12134.38	9642.80	7258.42	14286.34	7027.93	1.9682
75.0	0.0	12134.38	9642.80	7258.42	14599.84	7340.42	2.0113
80.0	0.0	12134.38	9642.80	7258.42	14911.36	7652.94	2.0544
85.0	0.0	12134.38	9642.80	7258.42	15223.87	7965.45	2.0974
90.0	0.0	12134.38	9642.80	7258.42	15536.34	8277.93	2.1405
95.0	0.0	12134.38	9642.80	7258.42	15848.84	8590.42	2.1835
100.0	0.0	12134.38	9642.80	7258.42	16161.34	8902.92	2.2266
105.0	0.0	12134.38	9642.80	7258.42	16473.84	9215.42	2.2696
110.0	0.0	12134.38	9642.80	7258.42	16786.32	9527.91	2.3127
115.0	0.0	12134.38	9642.80	7258.42	17098.80	9840.39	2.3557
120.0	0.0	12134.38	9642.80	7258.42	17411.30	10152.88	2.3988
125.0	0.0	12134.38	9642.80	7258.42	17723.79	10465.37	2.4418
130.0	0.0	12134.38	9642.80	7258.42	18036.27	10777.86	2.4849
135.0	0.0	12134.38	9642.80	7258.42	18348.73	11090.31	2.5279
140.0	0.0	12134.38	9642.80	7258.42	18661.23	11402.82	2.5710
145.0	0.0	12134.38	9642.80	7258.42	18973.71	11715.29	2.6140
150.0	0.0	12134.38	9642.80	7258.42	19286.20	12027.79	2.6571

B/C - FUEL PRICE INCREMENT

B/C (*)

0 1 2 3

* --- I.R.R (HYDROPOWER)

*** 7 *** PROJECT BALANCE SHEET (HYDROPOWER PLANT)
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED ITM --- 0.0 %
FUEL PRICE --- 0.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.000
L.C PART (HYDRO) --- 0.850
L.C PART (ALTER) --- 0.950
FUEL PRICE --- 1.000

*** CASE 1 *** PLANT NO. 1 *** Nam Chon Power Station

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	619.20	0.0	0.0	0.0	0.0	0.0	7.87	0.0	0.0	7.87	627.46
1982	1370.14	0.0	0.0	0.0	0.0	0.0	19.66	0.0	0.0	19.66	1090.01
1983	1131.76	0.0	0.0	0.0	0.0	0.0	58.99	0.0	0.0	58.99	1190.76
1984	1294.59	0.0	0.0	0.0	0.0	0.0	66.86	0.0	0.0	66.86	1361.55
1985	1798.76	0.0	0.0	0.0	0.0	0.0	90.46	0.0	0.0	90.46	1889.21
1986	1426.45	0.0	0.0	0.0	0.0	0.0	90.46	0.0	0.0	90.46	1516.90
1987	1077.76	595.0	277.0	267.3	15.95	0.0	74.94	2.92	0.85	78.71	1156.47
1988	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1989	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1990	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1991	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1992	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1993	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1994	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1995	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1996	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1997	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1998	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
1999	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2000	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2001	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2002	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2003	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2004	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2005	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2006	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2007	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2008	35.27	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	114.51
2009	398.36	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	476.93
2010	655.59	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	734.53
2011	616.34	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	695.18
2012	377.70	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	456.54

YEAR	INVESTMENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2014	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2015	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2016	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2017	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2018	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2019	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2020	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2021	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2022	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2023	189.35	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	268.79
2024	279.40	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	358.24
2025	279.40	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	358.24
2026	183.15	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	261.99
2027	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2028	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2029	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2030	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2031	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2032	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2033	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2034	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2035	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2036	0.0	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	78.84
2037	-698.32	595.0	1108.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	-620.09

*** CASE 1 *** PLANT NO. 2 *** Thi Khong Power Station

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	108.31	0.0	0.0	0.0	0.0	0.0	4.49	0.0	0.0	4.49	112.80
1986	126.22	0.0	0.0	0.0	0.0	0.0	11.23	0.0	0.0	11.23	137.45
1987	249.05	0.0	0.0	0.0	0.0	0.0	13.46	0.0	0.0	13.46	262.51
1988	378.70	0.0	0.0	0.0	0.0	0.0	13.46	0.0	0.0	13.46	392.16
1989	36.15	51.0	77.5	75.0	8.92	0.0	11.17	0.0	0.0	11.17	47.32
1990	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1991	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1992	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1993	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1994	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1995	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1996	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1997	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1998	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1999	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2000	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2001	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2002	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2003	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2004	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2005	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2006	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2007	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2008	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2009	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2010	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2011	23.77	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	34.48
2012	88.33	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	99.04

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	299.48	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	310.19
2014	36.15	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	46.86
2015	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2016	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2017	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2018	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2019	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2020	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2021	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2022	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2023	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2024	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2025	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2026	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2027	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2028	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2029	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2030	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2031	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2032	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2033	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2034	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2035	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2036	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
2037	0.0	51.0	93.0	90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71

*** 8 *** PROJECT BALANCE SHEET (ALTERNATIVE)
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.100
L.C PART (HYDRO) --- 0.850
L.C PART (ALTER) --- 0.950
FUEL PRICE --- 1.000

*** CASE 1 *** PLANT NO. 1 *** Gas Turbine Power Plant

YEAR	INVESTMENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	516.38	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	516.38
1985	881.47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	881.47
1986	881.47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	881.47
1987	659.15	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	1122.43
1988	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1989	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1990	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1991	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1992	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1993	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1994	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1995	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1996	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1997	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1998	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
1999	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2000	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2001	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2002	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2003	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2004	494.38	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	957.15
2005	740.37	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	1203.44
2006	740.37	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	1203.44
2007	494.38	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	957.15
2008	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2009	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2010	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2011	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2012	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08

YEAR	INVESTMENT (MIL.BHT)	GENERATING END INSTALLED CAPACITY (MW)	GENERATING END PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST FIXED COST (MIL.BHT)	GENERATING O&M COST VARIABLE COST (MIL.BHT)	GENERATING O&M COST TOTAL COST (MIL.BHT)	TRANSMISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2014	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2015	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2016	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2017	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2018	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2019	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2020	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2021	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2022	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2023	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2024	494.38	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	957.15
2025	847.42	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	1310.90
2026	847.42	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	1310.90
2027	637.35	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	1100.42
2028	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2029	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2030	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2031	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2032	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2033	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2034	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2035	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2036	0.0	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	463.08
2037	-1404.70	480.0	210.0	202.5	67.31	390.86	458.17	4.91	0.0	463.08	-941.62

*** CASE 1 *** PLANT NO. 2 *** Oil fired Thermal Power Plant

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	371.76	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	371.76
1985	595.70	0.0	-717.0	-717.0	0.0	-628.78	-628.78	0.0	0.0	-628.78	-33.08
1986	595.70	0.0	-514.0	-514.0	0.0	-450.76	-450.76	0.0	0.0	-450.76	144.94
1987	422.31	170.0	95.6	87.5	10.26	83.84	94.10	0.44	0.0	94.53	517.04
1988	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1989	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1990	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1991	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1992	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1993	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1994	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1995	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1996	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1997	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1998	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
1999	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2000	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2001	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2002	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2003	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2004	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2005	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2006	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2007	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2008	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2009	322.60	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	1281.73
2010	483.39	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	1443.02
2011	483.39	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	1443.02
2012	322.60	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	1281.73

YEAR	INVEST-MENT (MIL.BHT)	GENERATING END: INSTALLED CAPACITY (MW)	GENERATING END: PRODUCTION (MIL.KWH)	SALABLE ENERGY (MIL.KWH)	GENERATING O&M COST: FIXED COST (MIL.BHT)	GENERATING O&M COST: VARIABLE COST (MIL.BHT)	GENERATING O&M COST: TOTAL COST (MIL.BHT)	TRANS-MISSION O&M COST (MIL.BHT)	SUB-STATION O&M COST (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)
2013	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2014	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2015	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2016	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2017	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2018	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2019	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2020	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2021	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2022	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2023	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2024	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2025	38.06	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	997.20
2026	38.06	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	997.20
2027	50.75	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	1009.89
2028	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2029	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2030	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2031	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2032	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2033	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2034	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2035	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2036	0.0	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	959.13
2037	-60.39	170.0	1045.0	956.5	40.97	916.42	957.40	1.74	0.0	959.13	898.74

*** 9 *** PROJECT EVALUATION BY THE NET PRESENT VALUE (N.P.V) METHOD
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.100
L.C PART (MAJOR) --- 0.850
L.C PART (ALTER) --- 0.950
FUEL PRICE --- 1.000

*** CASE 1 *** PLANT NO. 1 ***

YEAR	Hydropower Nam Chon Power Station					Alternative Gas Turbine Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)
1981	619.50	7.87	627.46	0.9091	570.42	0.0	0.0	0.0	0.9091	0.0
1982	1070.34	19.66	1090.01	0.8264	900.81	0.0	0.0	0.0	0.8264	0.0
1983	1131.76	58.99	1170.76	0.7513	879.64	0.0	0.0	0.0	0.7513	0.0
1984	1294.89	66.86	1361.55	0.6830	929.95	516.08	0.0	516.08	0.6830	352.49
1985	1798.76	90.46	1889.21	0.6209	1173.05	881.47	0.0	881.47	0.6209	547.32
1986	1426.85	90.46	1516.90	0.5645	856.20	881.47	0.0	881.47	0.5645	497.57
1987	1077.76	78.71	1156.47	0.5132	593.46	659.35	463.08	1122.43	0.5132	575.99
1988	0.0	78.84	78.84	0.4665	36.78	0.0	463.08	463.08	0.4665	216.03
1989	0.0	78.84	78.84	0.4241	33.44	0.0	463.08	463.08	0.4241	196.39
1990	0.0	78.84	78.84	0.3855	30.40	0.0	463.08	463.08	0.3855	178.54
1991	0.0	78.84	78.84	0.3505	27.63	0.0	463.08	463.08	0.3505	162.31
1992	0.0	78.84	78.84	0.3186	25.12	0.0	463.08	463.08	0.3186	147.55
1993	0.0	78.84	78.84	0.2897	22.84	0.0	463.08	463.08	0.2897	134.14
1994	0.0	78.84	78.84	0.2633	20.75	0.0	463.08	463.08	0.2633	121.94
1995	0.0	78.84	78.84	0.2394	18.87	0.0	463.08	463.08	0.2394	110.86
1996	0.0	78.84	78.84	0.2176	17.15	0.0	463.08	463.08	0.2176	100.78
1997	0.0	78.84	78.84	0.1978	15.60	0.0	463.08	463.08	0.1978	91.62
1998	0.0	78.84	78.84	0.1799	14.18	0.0	463.08	463.08	0.1799	83.29
1999	0.0	78.84	78.84	0.1635	12.89	0.0	463.08	463.08	0.1635	75.72
2000	0.0	78.84	78.84	0.1486	11.72	0.0	463.08	463.08	0.1486	68.83
2001	0.0	78.84	78.84	0.1351	10.65	0.0	463.08	463.08	0.1351	62.58
2002	0.0	78.84	78.84	0.1228	9.68	0.0	463.08	463.08	0.1228	56.89
2003	0.0	78.84	78.84	0.1117	8.80	0.0	463.08	463.08	0.1117	51.72
2004	0.0	78.84	78.84	0.1015	8.00	494.08	463.08	957.15	0.1015	97.18
2005	0.0	78.84	78.84	0.0923	7.28	740.37	463.08	1203.44	0.0923	111.08
2006	0.0	78.84	78.84	0.0839	6.62	740.37	463.08	1203.44	0.0839	100.98
2007	0.0	78.84	78.84	0.0763	6.01	494.08	463.08	957.15	0.0763	73.01
2008	35.47	78.84	114.51	0.0693	7.94	0.0	463.08	463.08	0.0693	32.11
2009	398.16	78.84	476.90	0.0630	30.05	0.0	463.08	463.08	0.0630	29.19
2010	655.89	78.84	734.53	0.0573	42.10	0.0	463.08	463.08	0.0573	26.54
2011	616.34	78.84	695.18	0.0521	36.22	0.0	463.08	463.08	0.0521	24.13
2012	377.70	78.84	456.54	0.0474	21.62	0.0	463.08	463.08	0.0474	21.93

YEAR	Hydropower Nam Chon Power Station					Alternative Gas Turbine Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	N.P.V (MIL.BHT)
2013	0.0	78.84	78.84	0.0431	3.39	0.0	463.08	463.08	0.0431	19.94
2014	0.0	78.84	78.84	0.0391	3.08	0.0	463.08	463.08	0.0391	18.13
2015	0.0	78.84	78.84	0.0356	2.81	0.0	463.08	463.08	0.0356	16.48
2016	0.0	78.84	78.84	0.0324	2.55	0.0	463.08	463.08	0.0324	14.98
2017	0.0	78.84	78.84	0.0294	2.32	0.0	463.08	463.08	0.0294	13.62
2018	0.0	78.84	78.84	0.0267	2.11	0.0	463.08	463.08	0.0267	12.38
2019	0.0	78.84	78.84	0.0243	1.92	0.0	463.08	463.08	0.0243	11.26
2020	0.0	78.84	78.84	0.0221	1.74	0.0	463.08	463.08	0.0221	10.23
2021	0.0	78.84	78.84	0.0201	1.58	0.0	463.08	463.08	0.0201	9.30
2022	0.0	78.84	78.84	0.0183	1.44	0.0	463.08	463.08	0.0183	8.46
2023	189.95	78.84	268.79	0.0166	4.46	0.0	463.08	463.08	0.0166	7.69
2024	279.40	78.84	358.24	0.0151	5.41	494.08	463.08	957.15	0.0151	14.45
2025	279.40	78.84	358.24	0.0137	4.91	847.82	463.08	1310.90	0.0137	17.99
2026	183.15	78.84	261.99	0.0125	3.27	847.82	463.08	1310.90	0.0125	16.35
2027	0.0	78.84	78.84	0.0113	0.89	637.35	463.08	1100.42	0.0113	12.48
2028	0.0	78.84	78.84	0.0103	0.81	0.0	463.08	463.08	0.0103	4.77
2029	0.0	78.84	78.84	0.0094	0.74	0.0	463.08	463.08	0.0094	4.34
2030	0.0	78.84	78.84	0.0085	0.67	0.0	463.08	463.08	0.0085	3.94
2031	0.0	78.84	78.84	0.0077	0.61	0.0	463.08	463.08	0.0077	3.59
2032	0.0	78.84	78.84	0.0070	0.55	0.0	463.08	463.08	0.0070	3.26
2033	0.0	78.84	78.84	0.0064	0.50	0.0	463.08	463.08	0.0064	2.96
2034	0.0	78.84	78.84	0.0058	0.45	0.0	463.08	463.08	0.0058	2.69
2035	0.0	78.84	78.84	0.0053	0.42	0.0	463.08	463.08	0.0053	2.45
2036	0.0	78.84	78.84	0.0048	0.38	0.0	463.08	463.08	0.0048	2.23
2037	-698.22	78.84	-620.09	0.0044	-2.71	-1404.70	463.08	-941.62	0.0044	-4.12
TOTAL	10735.79				6445.23	6829.59				4578.47

*** CASE 1 *** PLANT NO. 2 ***

YEAR	Hydropower Thi Khong Power Station					Alternative Oil-fired Thermal Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	NET PRESENT VALUE (I= 10.0 %) N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	NET PRESENT VALUE (I= 10.0 %) N.P.V (MIL.BHT)
1981	0.0	0.0	0.0	0.9091	0.0	0.0	0.0	0.0	0.9091	0.0
1982	0.0	0.0	0.0	0.8264	0.0	0.0	0.0	0.0	0.8264	0.0
1983	0.0	0.0	0.0	0.7513	0.0	0.0	0.0	0.0	0.7513	0.0
1984	0.0	0.0	0.0	0.6830	0.0	371.76	0.0	371.76	0.6830	253.92
1985	138.31	4.49	112.80	0.6209	70.04	595.70	-626.78	-33.08	0.6209	-20.54
1986	126.22	11.23	137.45	0.5645	77.59	595.70	-450.76	144.94	0.5645	81.82
1987	249.35	13.46	262.51	0.5132	134.71	422.51	94.53	517.04	0.5132	265.33
1988	378.70	13.46	392.16	0.4665	182.95	0.0	959.13	959.13	0.4665	447.45
1989	36.15	11.17	47.32	0.4241	20.07	0.0	959.13	959.13	0.4241	406.77
1990	0.0	10.71	10.71	0.3855	4.13	0.0	959.13	959.13	0.3855	369.79
1991	0.0	10.71	10.71	0.3505	3.75	0.0	959.13	959.13	0.3505	336.17
1992	0.0	10.71	10.71	0.3186	3.41	0.0	959.13	959.13	0.3186	305.61
1993	0.0	10.71	10.71	0.2897	3.10	0.0	959.13	959.13	0.2897	277.83
1994	0.0	10.71	10.71	0.2633	2.82	0.0	959.13	959.13	0.2633	252.57
1995	0.0	10.71	10.71	0.2394	2.56	0.0	959.13	959.13	0.2394	229.61
1996	0.0	10.71	10.71	0.2176	2.33	0.0	959.13	959.13	0.2176	208.74
1997	0.0	10.71	10.71	0.1978	2.12	0.0	959.13	959.13	0.1978	189.76
1998	0.0	10.71	10.71	0.1799	1.93	0.0	959.13	959.13	0.1799	172.51
1999	0.0	10.71	10.71	0.1635	1.75	0.0	959.13	959.13	0.1635	156.83
2000	0.0	10.71	10.71	0.1486	1.59	0.0	959.13	959.13	0.1486	142.57
2001	0.0	10.71	10.71	0.1351	1.45	0.0	959.13	959.13	0.1351	129.61
2002	0.0	10.71	10.71	0.1228	1.32	0.0	959.13	959.13	0.1228	117.83
2003	0.0	10.71	10.71	0.1117	1.20	0.0	959.13	959.13	0.1117	107.12
2004	0.0	10.71	10.71	0.1015	1.09	0.0	959.13	959.13	0.1015	97.38
2005	0.0	10.71	10.71	0.0923	0.99	0.0	959.13	959.13	0.0923	88.53
2006	0.0	10.71	10.71	0.0839	0.90	0.0	959.13	959.13	0.0839	80.48
2007	0.0	10.71	10.71	0.0763	0.82	0.0	959.13	959.13	0.0763	73.16
2008	0.0	10.71	10.71	0.0693	0.74	0.0	959.13	959.13	0.0693	66.51
2009	0.0	10.71	10.71	0.0630	0.68	322.63	959.13	1281.73	0.0630	80.80
2010	0.0	10.71	10.71	0.0573	0.61	483.89	959.13	1443.02	0.0573	82.70
2011	23.77	10.71	34.48	0.0521	1.80	483.89	959.13	1443.02	0.0521	75.18
2012	88.33	10.71	99.04	0.0474	4.69	322.63	959.13	1281.73	0.0474	60.71

YEAR	Hydropower Thi Khong Power Station					Alternative Oil-fired Thermal Power Plant				
	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	COST FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	NET PRESENT VALUE (I= 10.0 %) N.P.V (MIL.BHT)	INVEST-MENT (MIL.BHT)	ANNUAL COST (MIL.BHT)	BENEFIT FLOW (MIL.BHT)	NET PRESENT VALUE (I= 10.0 %) P.V.F (P.U)	NET PRESENT VALUE (I= 10.0 %) N.P.V (MIL.BHT)
2013	299.46	10.71	310.19	0.0431	13.37	0.0	959.13	959.13	0.0431	41.30
2014	36.15	10.71	46.86	0.0391	1.83	0.0	959.13	959.13	0.0391	37.54
2015	0.0	10.71	10.71	0.0356	0.38	0.0	959.13	959.13	0.0356	34.13
2016	0.0	10.71	10.71	0.0324	0.35	0.0	959.13	959.13	0.0324	31.03
2017	0.0	10.71	10.71	0.0294	0.31	0.0	959.13	959.13	0.0294	28.21
2018	0.0	10.71	10.71	0.0267	0.29	0.0	959.13	959.13	0.0267	25.64
2019	0.0	10.71	10.71	0.0243	0.26	0.0	959.13	959.13	0.0243	23.31
2020	0.0	10.71	10.71	0.0221	0.24	0.0	959.13	959.13	0.0221	21.19
2021	0.0	10.71	10.71	0.0201	0.22	0.0	959.13	959.13	0.0201	19.27
2022	0.0	10.71	10.71	0.0183	0.20	0.0	959.13	959.13	0.0183	17.51
2023	0.0	10.71	10.71	0.0166	0.18	0.0	959.13	959.13	0.0166	15.92
2024	0.0	10.71	10.71	0.0151	0.16	0.0	959.13	959.13	0.0151	14.47
2025	0.0	10.71	10.71	0.0137	0.15	38.06	959.13	997.20	0.0137	13.68
2026	0.0	10.71	10.71	0.0125	0.13	38.06	959.13	997.20	0.0125	12.44
2027	0.0	10.71	10.71	0.0113	0.12	50.75	959.13	1009.89	0.0113	11.45
2028	0.0	10.71	10.71	0.0103	0.11	0.0	959.13	959.13	0.0103	9.89
2029	0.0	10.71	10.71	0.0094	0.10	0.0	959.13	959.13	0.0094	8.99
2030	0.0	10.71	10.71	0.0085	0.09	0.0	959.13	959.13	0.0085	8.17
2031	0.0	10.71	10.71	0.0077	0.08	0.0	959.13	959.13	0.0077	7.43
2032	0.0	10.71	10.71	0.0070	0.08	0.0	959.13	959.13	0.0070	6.75
2033	0.0	10.71	10.71	0.0064	0.07	0.0	959.13	959.13	0.0064	6.14
2034	0.0	10.71	10.71	0.0058	0.06	0.0	959.13	959.13	0.0058	5.58
2035	0.0	10.71	10.71	0.0053	0.06	0.0	959.13	959.13	0.0053	5.07
2036	0.0	10.71	10.71	0.0048	0.05	0.0	959.13	959.13	0.0048	4.61
2037	0.0	10.71	10.71	0.0044	0.05	-60.39	959.13	898.74	0.0044	3.93
TOTAL	1346.15				553.03	3665.13				5550.33

*** 11 *** DISCOUNT RATE VARIABLE SHEET
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

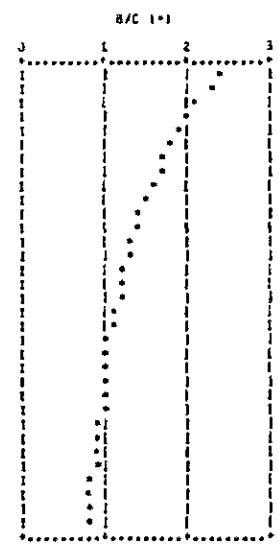
CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 13.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED 3C4 --- 0.0 %
FUEL PRICE --- 0.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.100
L.C PART (HYDRO) --- 0.950
L.C PART (ALTER) --- 0.950
FUEL PRICE --- 1.000

*** CASE 1 ***

DISCOUNT RATE (%)	HYDRO TOTAL INVEST (MIL.BHT)	ALT TOTAL INVEST (MIL.BHT)	BENEFIT - COST ANALYSYS: COST (MIL.BHT)	BENEFIT (MIL.BHT)	B-C (MIL.BHT)	B/C RATIO
5.0	12081.93	10494.72	9616.34	23084.46	13468.12	2.4005
5.5	12081.93	10494.72	9247.32	20926.22	11678.90	2.2629
6.0	12081.93	10494.72	8911.17	19047.42	10136.25	2.1375
6.5	12081.93	10494.72	8603.48	17404.21	8800.73	2.0229
7.0	12081.93	10494.72	8320.54	15960.83	7640.29	1.9182
7.5	12081.93	10494.72	8059.10	14687.01	6627.91	1.8224
8.0	12081.93	10494.72	7816.69	13558.57	5741.89	1.7346
8.5	12081.93	10494.72	7590.81	12554.28	4963.46	1.6539
9.0	12081.93	10494.72	7379.66	11657.11	4277.45	1.5796
9.5	12081.93	10494.72	7181.58	10852.67	3671.09	1.5112
10.0	12081.93	10494.72	6995.18	10128.77	3133.59	1.4483
10.5	12081.93	10494.72	6819.19	9475.17	2655.98	1.3895
11.0	12081.93	10494.72	6652.61	8882.92	2230.31	1.3353
11.5	12081.93	10494.72	6494.51	8344.60	1850.09	1.2849
12.0	12081.93	10494.72	6344.13	7853.86	1509.75	1.2380
12.5	12081.93	10494.72	6200.76	7405.29	1204.52	1.1943
13.0	12081.93	10494.72	6063.82	6994.10	930.28	1.1534
13.5	12081.93	10494.72	5932.76	6616.16	683.39	1.1152
14.0	12081.93	10494.72	5807.13	6267.96	460.82	1.0794
14.5	12081.93	10494.72	5686.54	5946.41	259.87	1.0457
15.0	12081.93	10494.72	5570.58	5648.82	78.24	1.0140
* 15.2	12081.93	10494.72	5525.46	5535.98	13.52	1.0019
* 15.3	12081.93	10494.72	5503.16	5480.82	-22.34	0.9959
15.5	12081.93	10494.72	5458.99	5372.84	-86.15	0.9842
16.0	12081.93	10494.72	5351.44	5116.42	-235.02	0.9561
16.5	12081.93	10494.72	5247.71	4877.65	-371.05	0.9295
17.0	12081.93	10494.72	5147.48	4654.93	-492.55	0.9043
17.5	12081.93	10494.72	5050.61	4446.87	-603.74	0.8805
18.0	12081.93	10494.72	4956.93	4252.16	-704.77	0.8578
18.5	12081.93	10494.72	4866.21	4069.76	-796.45	0.8363
19.0	12081.93	10494.72	4778.32	3898.44	-879.88	0.8159
19.5	12081.93	10494.72	4693.09	3737.41	-955.68	0.7964
20.0	12081.93	10494.72	4610.40	3585.84	-1024.56	0.7778



* --- I.R.R (HYDROPOWER)

*** 12 *** FUEL PRICE VARIABLE SHEET
--- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CRITERIA ***

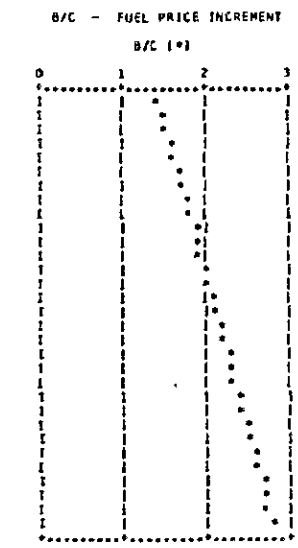
CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 13.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM
F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED 3C4 --- 0.0 %
FUEL PRICE --- 0.0 %

SHADOW PRICE FACTOR
F.C PART --- 1.100
L.C PART (HYDRO) --- 0.950
L.C PART (ALTER) --- 0.950
FUEL PRICE --- 1.000

*** CASE 1 ***

FUEL PRICE INCREMENT (%)	UNIT FUEL COST (BHT/KWH)	HYDRO TOTAL INVEST (MIL.BHT)	ALT TOTAL INVEST (MIL.BHT)	BENEFIT - COST ANALYSYS: COST (MIL.BHT)	BENEFIT (MIL.BHT)	B-C (MIL.BHT)	B/C RATIO
0.0	0.0	12081.93	10494.72	6995.18	10128.77	3133.59	1.4483
5.0	0.0	12081.93	10494.72	6995.18	10441.26	3446.08	1.4926
10.0	0.0	12081.93	10494.72	6995.18	10753.79	3758.61	1.5373
15.0	0.0	12081.93	10494.72	6995.18	11066.27	4071.09	1.5823
20.0	0.0	12081.93	10494.72	6995.18	11378.79	4383.61	1.6267
25.0	0.0	12081.93	10494.72	6995.18	11691.32	4696.14	1.6713
30.0	0.0	12081.93	10494.72	6995.18	12033.80	5038.62	1.7163
35.0	0.0	12081.93	10494.72	6995.18	12315.31	5321.13	1.7607
40.0	0.0	12081.93	10494.72	6995.18	12628.82	5633.64	1.8054
45.0	0.0	12081.93	10494.72	6995.18	12941.31	5946.13	1.8500
50.0	0.0	12081.93	10494.72	6995.18	13253.80	6258.62	1.8947
55.0	0.0	12081.93	10494.72	6995.18	13566.33	6571.15	1.9394
60.0	0.0	12081.93	10494.72	6995.18	13878.81	6883.63	1.9841
65.0	0.0	12081.93	10494.72	6995.18	14191.33	7196.15	2.0287
70.0	0.0	12081.93	10494.72	6995.18	14503.84	7508.66	2.0734
75.0	0.0	12081.93	10494.72	6995.18	14816.34	7821.16	2.1181
80.0	0.0	12081.93	10494.72	6995.18	15128.84	8133.66	2.1628
85.0	0.0	12081.93	10494.72	6995.18	15441.33	8446.15	2.2074
90.0	0.0	12081.93	10494.72	6995.18	15753.86	8758.68	2.2521
95.0	0.0	12081.93	10494.72	6995.18	16066.36	9071.18	2.2968
100.0	0.0	12081.93	10494.72	6995.18	16378.88	9383.70	2.3415
105.0	0.0	12081.93	10494.72	6995.18	16691.35	9696.17	2.3861
110.0	0.0	12081.93	10494.72	6995.18	17003.83	10008.65	2.4308
115.0	0.0	12081.93	10494.72	6995.18	17316.33	10321.15	2.4755
120.0	0.0	12081.93	10494.72	6995.18	17628.80	10633.63	2.5201
125.0	0.0	12081.93	10494.72	6995.18	17941.26	10946.08	2.5648
130.0	0.0	12081.93	10494.72	6995.18	18253.77	11258.59	2.6095
135.0	0.0	12081.93	10494.72	6995.18	18566.23	11571.05	2.6541
140.0	0.0	12081.93	10494.72	6995.18	18878.74	11883.56	2.6988
145.0	0.0	12081.93	10494.72	6995.18	19191.20	12196.02	2.7435
150.0	0.0	12081.93	10494.72	6995.18	19503.69	12508.51	2.7882



* --- I.R.R (HYDROPOWER)

*** 4 *** THE INTERNAL RATE OF RETURN (I.R.R) AND BENEFIT - COST RATIO (B/C) OF THIS PROJECT CASE

*** EVALUATION CRITERIA ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM

F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

*** CASE 1.***

(1) THE INTERNAL RATE OF RETURN (I.R.R) CALCULATED BY THE REGULA ITERATIVE METHOD

THE I.R.R OF HYDROPOWER IS 14.1 % (PROJECT BENEFIT IS MEASURED BY ALTERNATIVE PLANT)

(2) PROJECT EVALUATION BY THE BENEFIT/COST RATIO (B/C) METHOD

B/C RATIO = SUM((INVESTMENT + ANNUAL COST) * P.V.F) : ALTERNATINE
/SUM((INVESEMENT + ANNUAL COST) * P.V.F) : HYDROPOWER

= 1.3655 (I= 10.0 %)

B-C = 2652.88 (MIL.BHT)

*** 10 *** THE INTERNAL RATE OF RETURN (I.R.R) AND BENEFIT - COST RATIO (B/C) OF THIS PROJECT CASE

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 10.0 % EXCHANGE RATE --- 1.000 (BHT/BHT)

ESCALATION PER ANNUM

F.C PART --- 0.0 %
L.C PART --- 0.0 %
FIXED O&M --- 0.0 %
FUEL PRICE --- 0.0 %

SHADOW PRICE FACTOR

F.C PART --- 1.100
L.C PART (HYDRO) --- 0.850
L.C PART (ALTER) --- 0.950
FUEL PRICE --- 1.000

*** CASE 1 ***

(1) THE INTERNAL RATE OF RETURN (I.R.R) CALCULATED BY THE REGULA ITERATIVE METHOD

THE I.R.R OF HYDROPOWER IS 15.2 % (PROJECT BENEFIT IS MEASURED BY ALTERNATIVE PLANT)

(2) PROJECT EVALUATION BY THE BENEFIT/COST RATIO (B/C) METHOD

B/C RATIO = SUM((INVESTMENT + ANNUAL COST) * P.V.F) : ALTERNATINE
/SUM((INVESEMENT + ANNUAL COST) * P.V.F) : HYDROPOWER

= 1.4480 (I= 10.0 %)

B-C = 3133.59 (MIL.BHT)

Financial Programs Taking Escalation (as Reference)

Financial Program of Nam Chon Project

Unit: Million US$ (Million ฿)

Year	Foreign Currency	Local Currency	Total
1981	11.5 (236)	25.2 (516)	36.7 (752)
1982	21.4 (439)	52.6 (1,078)	74.0 (1,517)
1983	28.4 (582)	63.3 (1,297)	91.7 (1,879)
1984	52.6 (1,077)	61.3 (1,259)	113.9 (2,336)
1985	79.9 (1,638)	90.7 (1,859)	170.6 (3,497)
1986	75.6 (1,549)	83.9 (1,721)	159.5 (3,270)
1987	56.9 (1,167)	87.5 (1,793)	144.4 (2,960)
Total	326.3 (6,688)	464.5 (9,523)	790.8 (16,211)

Notes: * These prices are based on the level as of 1980, taking the price escalation of 8 percent per annum into consideration.

* 1US$ = 20.5฿

Financial Program of Thi Khong Project

Unit: Million US$ (Million ฿)

Year	Foreign Currency	Local Currency	Total
1985	2.8 (57)	6.3 (129)	9.1 (186)
1986	4.5 (93)	8.4 (171)	12.9 (264)
1987	10.4 (214)	15.9 (325)	26.3 (539)
1988	22.9 (469)	19.1 (393)	42.0 (862)
1989	3.0 (61)	3.9 (80)	6.9 (141)
Total	43.6 (894)	53.6 (1,098)	97.2 (1,992)

Notes: * These prices are based on the level as of 1980, taking the price escalation of 8 percent per annum into consideration.

* 1US$ = 20.5฿

FINANCIAL ANALYSIS BY PROJECT BASIS

Return on investment for the Project is shown in the attached table. The costs of the Project are as same as the figures for the economic analysis. The benefits are considered as the sales income from the Project and were estimated by the annual energy sales and 1.08 Baht/kWh of the average net sales income at the consumer's end taking 10 % at the distribution line loss into consideration.

The financial internal rate of return (FIRR), i.e. Equalizing Discount Rate, is 8.0 %. The most of interest rate of the financial assistance for this kind of projects to developed countries are less than this figure. Judging from the fact, this project is also sound in the financial point of view.

UPPER QUAE YAI PROJECT
Return on Investment

Year	Cost Streams (Million Bahts)			Benefit Streams (Million Bahts)				
				Power Energy (GWh) at Primary Substation			Annual Energy Sales (GWh)	Sales Income
	Nam Chon PS	Thi Khong PS	Total	Nam Chon PS	Thi Khong PS	Total		
	C1	C2	C	P1	P2	P3	P	B
1981	673	0	673	0	0	0	0	0
1982	1,173	0	1,173	0	0	0	0	0
1983	1,269	0	1,269	0	0	0	0	0
1984	1,373	0	1,373	0	0	0	0	0
1985	1,900	122	2,022	0	0	0	0	0
1986	1,503	145	1,648	0	0	0	0	0
1987	1,164	273	1,437	267	0	267	240	259
1988	93	388	481	1,069	0	1,069	962	1,039
1989	93	47	140	1,069	75	1,144	1,030	1,112
1990 - 2007	93	13	106	1,069	90	1,159	1,043	1,126
2008	126	13	139	1,069	90	1,159	1,043	1,126
2009	465	13	478	1,069	90	1,159	1,043	1,126
2010	711	13	724	1,069	90	1,159	1,043	1,126
2011	677	34	711	1,069	90	1,159	1,043	1,126
2012	455	95	550	1,069	90	1,159	1,043	1,126
2013	93	296	389	1,069	90	1,159	1,043	1,126
2014	93	47	140	1,069	90	1,159	1,043	1,126
2015 - 2022	93	13	106	1,069	90	1,159	1,043	1,126
2023	280	13	293	1,069	90	1,159	1,043	1,126
2024	367	13	380	1,069	90	1,159	1,043	1,126
2025	367	13	380	1,069	90	1,159	1,043	1,126
2026	272	13	285	1,069	90	1,159	1,043	1,126
2027 - 2036	93	13	106	1,069	90	1,159	1,043	1,126
2037	-593	13	-580	1,069	90	1,159	1,043	1,126

Basic Assumptions

Distribution Loss = 10 %
Average Sales Income = 1.08 Baht/kWh

Equalizing discount rate (FIRR) = 8.0%

JICA