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



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国際協力事業団 ^{別日} ¹⁸44. 3.28 /22 登録No. 02090 MPN



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APPENDIX 4 LOAD FORECAST

APPENDIX 4

- LOAD FORECAST -

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EGAT's Electric Power Development Program

FY 1979 - FY 1995 6 sheets



No. 1

FY	D Di	No, of	Installed Ca	pacity (MW)	Dependable (Capacity (MW)	No. 1
FX	Power Plant	Unit	Unit Size	Total Capa.	Volt Size	Total Capa.	Commissioning Year
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	1		50,0	ļ	50.0	
	Bhumíbol #1-6	6	70,0	420.0	€3,4	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	Bap. 15
	North Bangkok	1	87.5	07.5	00.1	ĺ	**
	North Bangkok	2	75.0	87.5 150.0	83.1	83,1	Nov. 68
	South Bangkok	3	300.0	900.0	71.3 285.0	142.5	Mar. 61, June 63
	South Bangkok	2	200.0	400.0		855.0	Jul. 74, Sep. 75, Nov. 7
	Surat Thani	1	30.0	30.0	190.0 28.5	380.0	Nov. 70, Nov. 72
	Thermal-total	1	30.0	1567 5	20.5	28.5	Feb. 73
			-	1307 5		1489 1	1
	Mao 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 Yaı #1-3			45.0		40.5	Aug. 71
	Surat Fhant			45.0	İ	40.5	Nov. 77
	Gas-total			165, 0		148.5	:
	 Phuket #1-4	4	1	10,6	•	8.5	Nov. 67
	Chalug 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	1	2.0		1.6	Jul. 73
	Ban Chao Nav	5	1	5.0	1	4.0	_
	Bang Lang	5		5.0		4,0	_
	Diesel-total			34.6	E -	27.7	
	TOTAL	1		3056.1	[2774.3	

No. 2

		No. of	Installed Ca	Installed Capacity (MW) Dependable Capacity (MW)			No. 2
FY	Power Plant	Unit	Unit Size	Total Capa	Unit Size	Total Capa.	Commissioning Year
1980	Hydro accumulated			1079.0		912.4	
ĺ	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	
 i	TOTAL			3336.1		3053.3	
1981	Hydro accumulated			1319.0		1151.4	
	Bhumibol #7		1	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
	Thermai-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		Į.	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	<u> </u>	148.5	
	Diesel-total		[34.6		27.7	
	TOTAL			4286.1	-	3932.4	

No. 3

		No. of	In a to 11 - 3 -		1 8		No. 3
FY	Power Plant	No. of Unit	Unit Size	Total Core		Capacity (MW)	Commissioning Year
	·	Unit	Unit Size	Total Capa.	Unit Size	Total Capa	
1983	Hydro-total			1519.0		1317.9	Į
	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	1145. 01
						[.	
	Lignite accumulated Mae Moh #4-5		150.0	285.0		267, 9	[<u> </u>
	Lignite-total	2	150.0	300.0		285,0	Jan. 84, Jul. 84
	rimite-totat			585.0		552.9	
	Gas-total			165.0	ļ	148, 5	
	Diesel-total			34.6		27.7	
	TOTAL			6106.1		5612.4	
1985	Hydro accumulated			1819.0		1533,9	
	Lang Suan #1-3		ļ	135.0	<u> </u>	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
	Srinagarınd 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	1	552.9	
	Mae Moh #6	1		300,0		285.0	Sep. 86
	Lignite-total		[885.0	l 	837.9	
	Gas-total			165,0		148.5	
	Diesel-total			34.6		27.7	
	TOTAL			7021.1		6502.4	

No. 4

		r		No. 4			
FY	Power Plant	No. of	Installed Ca	pacity (MW)	Dependable C	apacity (MW)	Commissioning Year
	101101	Unit	Unit Size	Total Capa.	Unit Size	Total Capa.	Commissioning Tear
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
İ	Thermal-total			3682.5		3500.4	Oct. 80
				3002,3		5000.4	
	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	1	ļ	1485, 0	ļ 1	1407.9	
	Gas-total setleed			0		0	Oct. 86
	Diesel-total		!	34.6		27.7	
	TOTAL			7636.1		7094.9	
1988	Hydro accumulated			2074.0		1798.9	
1	Pump accumulated			360.0		360.0	
	Upper Quae Yai			580.0		547.3	Oct. 87
	Hydro-total			3014.0	<u> </u>	2706, 2	
	Thermal-total			3682.5		3500.4	
İ	Lignite accumulated			1485.0		1407.9	
	Mae Moh #9			300.0		285.0	
ĺ	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		<u> </u>	3682.5		3500.4	
l 	Lignite-total			1785.0		1692.9	
	Diesel-total			34.6		27.7	
	TOTAL			8867.1		8251.3	

							No. 5
FY	Power Plant	No. of		apacity (MW)	Dependable (Capacity (MW)	Commissioning Year
		Unit	Unit Size	Total Capa.	Unit Size	Total Capa.	
1996	Hydro accumulated		Ę.	3005.0		2670 3	
	Pump accumulated			360 0		360 0	
	Quae Yat Pump (1)			500.0		500.0	
	Hydro-total			3865.0	1	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	İ	1692.9	
	Krabi sctireal #1-3			-60.0		-54.0	Jul 90
	Lignite-total]	1725.0		1638, 9	
	Dlesel-total			34.6		27.7	
	TOTAL	l <u></u>		9487.1	<u> </u>	. 8868.3	
1991	Hydro accumulated			3005.0		2670.3	
	Pump accumulated		ļ	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	į I	1	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	<u> </u>	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		1	860.0	1	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	

							No. 6
FY	Power Plant	No. of	Installed Ca	pacity (MW)	Dependable (Capacity (MW)	Commissioning Year
		Unit	Unit Size	Total Capa.	Unit Size	Total Capa.	Commissioning real
1994	llydro 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	Ì		34.6]	27.7	
	Nuclear accumulated	!		1800.0		1710.0	
	Nuclear #3			1200.0		1140.0	
	Nuclear-total			3000.0	ļ	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	1	ţ	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

Krahi Lignite 90%
Combined cycle 95%
Existing gas turbine 90%
Existing diesel 80%

APPENDIX 5

POWER SYSTEM

APPENDIX 5 POWER SYSTEM

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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.

- o 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 $\mathrm{mm^2}$ 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.

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(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
п	Quae Yai Pumped Storage Power Station end of a 500-kV Trans- mission Line for Quae Yai Pumped Storage	Ditto	4 cycles
Ш	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.
- o 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 (ME)		*
1987	1,280	2,744
1990	1,727	1,028
1992	106	106
Total	3,113	3,878
(2) Losses (MØ)	1,461	1,262
(3) Total (MB)	4,574	5,140

Note: Losses (MB) for the two schemes,

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

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

(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

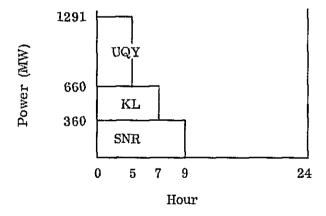
The power transmission system from hydroelectric power plants in the western area (including Khao Laem and Upper Quae Yai) to Sai Noi Substation.

(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.



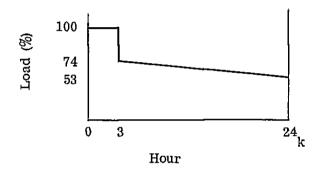
(3) Load and Load Duration Curve at Ban Pong 2 Substation

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.

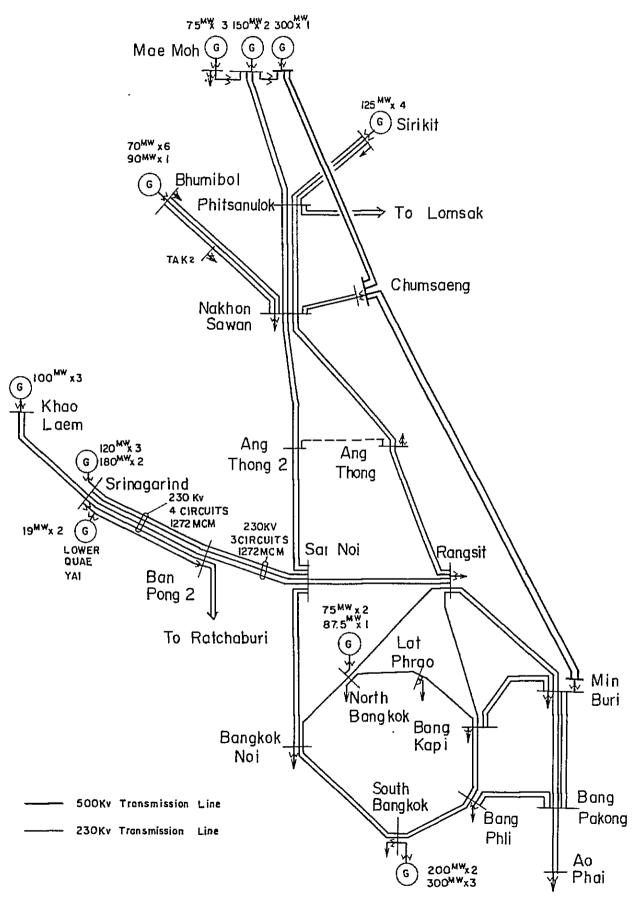
So, only energy loss was allowed to be considered in evaluation of transmission loss in the study, but both power loss and energy loss were taken with the costs

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

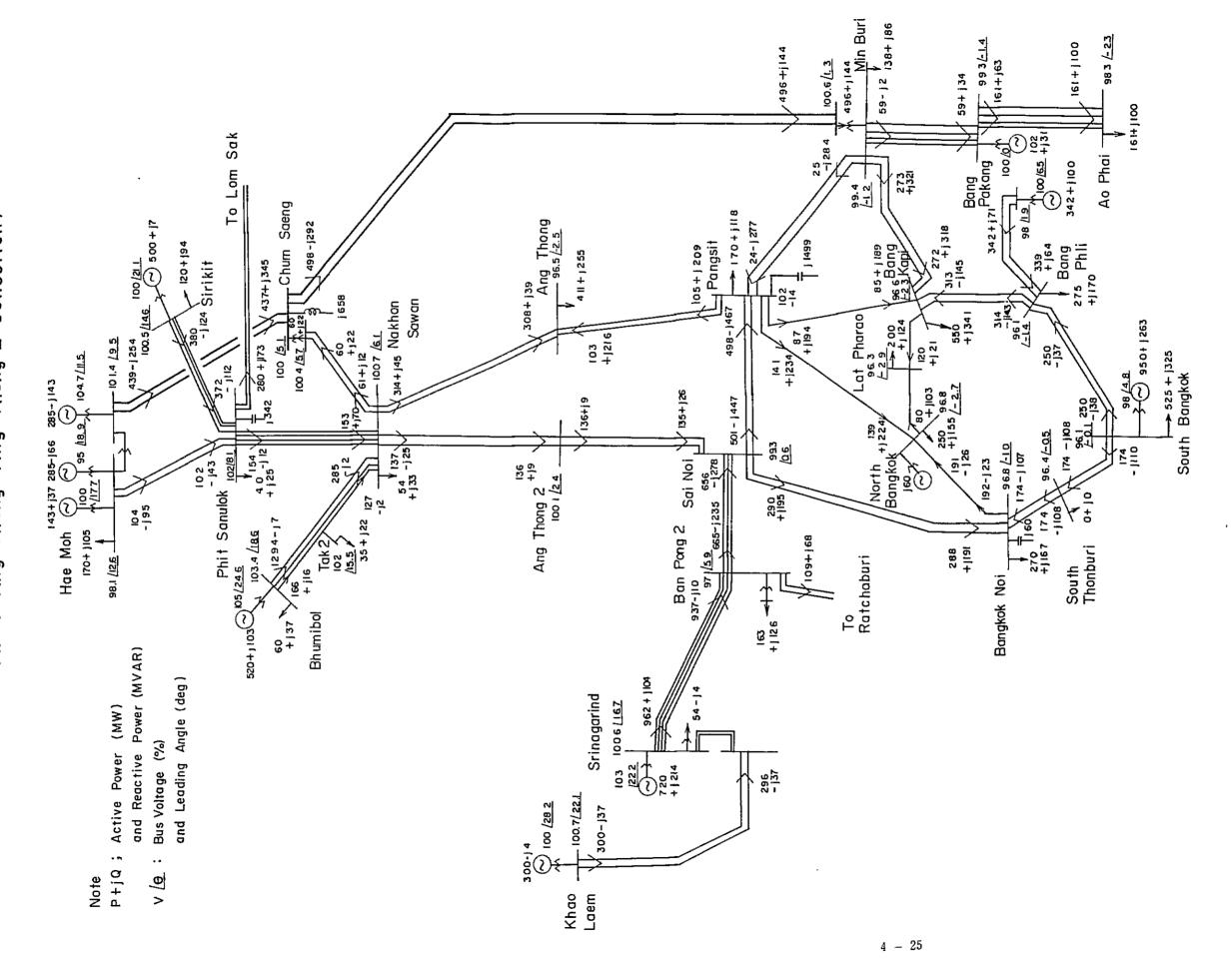
Transmission losses for 25 years for two schemes (Scheme II and Scheme III) have been calculated and are shown in Table 6. In the calculation of transmission losses, the load at Ban Pong 2 Substation was assumed to increase at the rate of 8% a year after 1995. The calculation results of transmission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

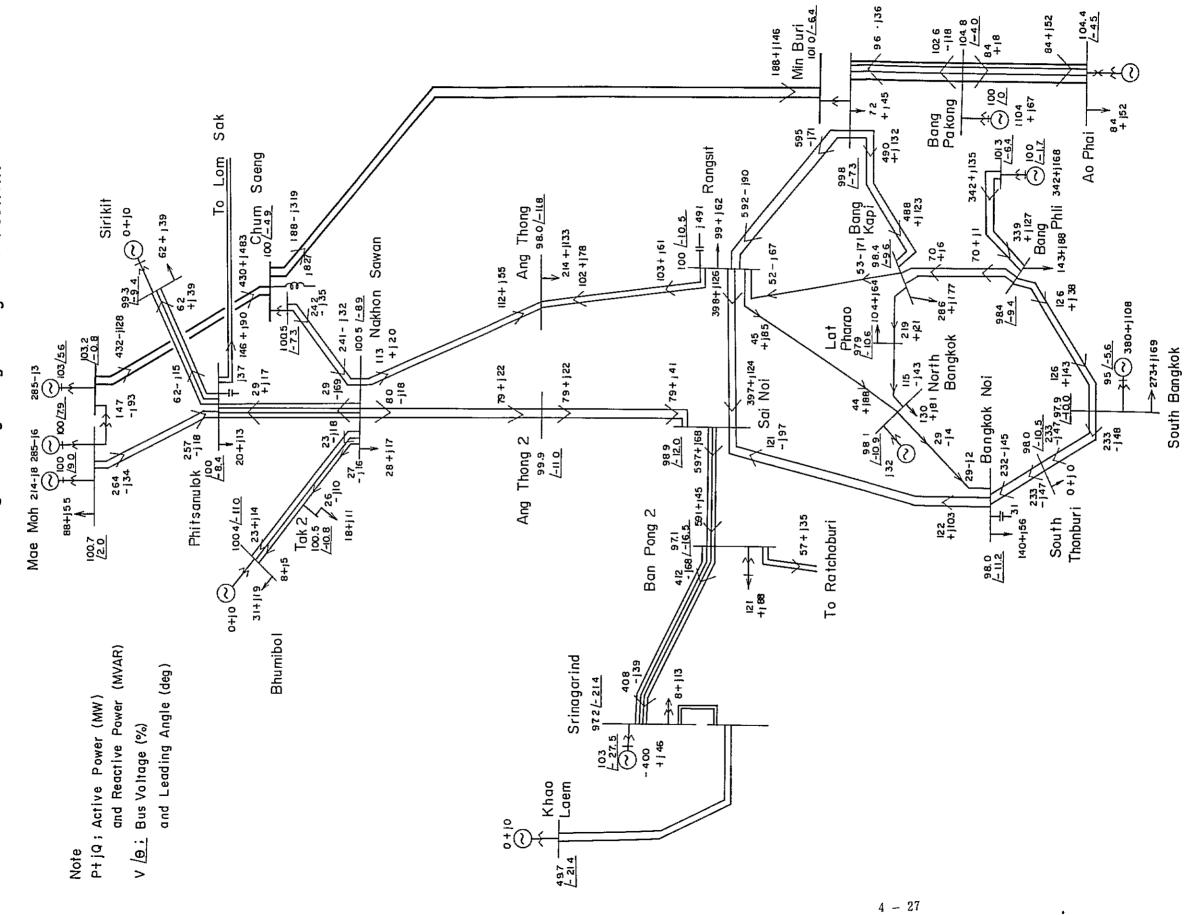
· Fig. | Electric Power System in 1986



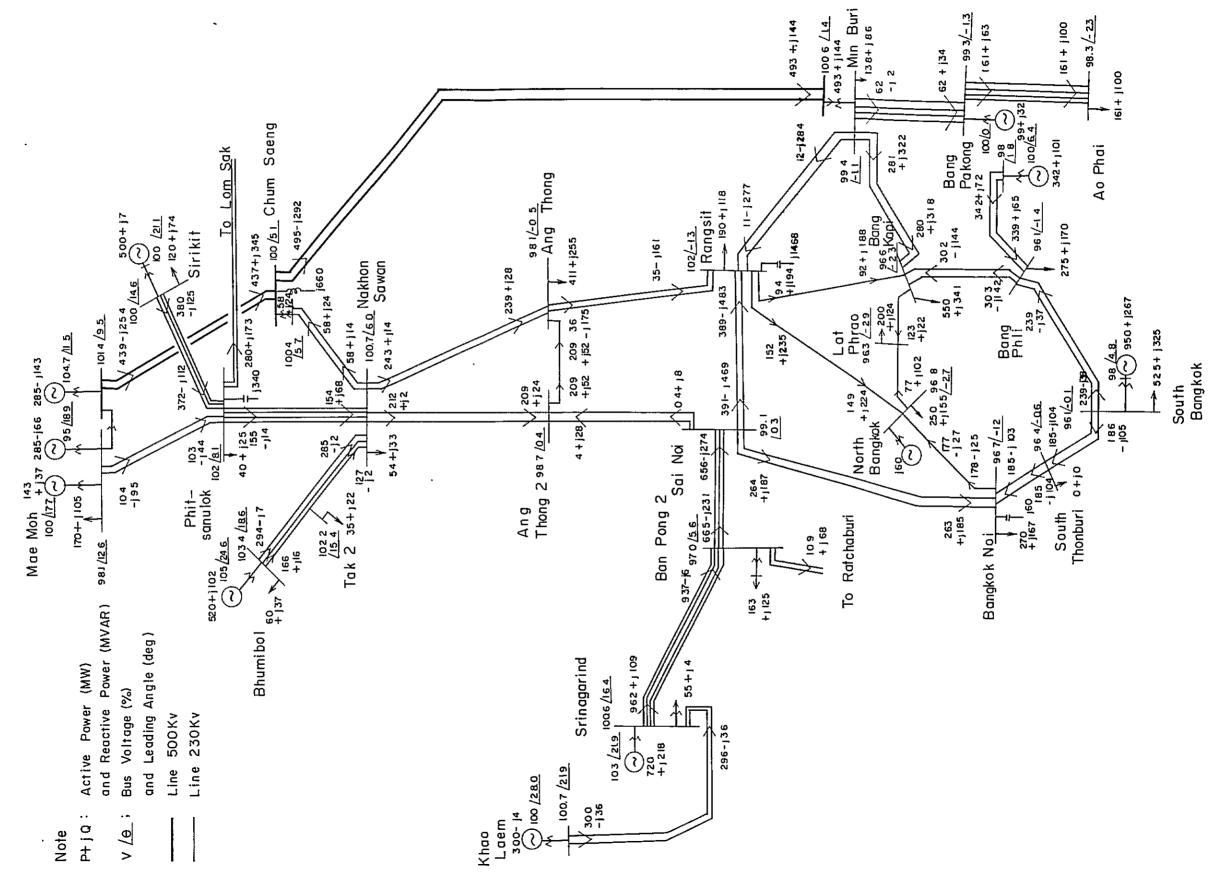
(Without Ang Thong-Ang Thong 2 Conection) Power Flow-Peak Time in Sept., 1986 Fig. 2



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



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



(DEG) 90.00 Transient Stability Study for Srinagarind-Bangkok Transmission System (Peak Time in 1985) 26 DANG PAKOG 24 KHAD LEAM 44 MAE MOH (44.5) BASE GENERATUR= 45.00 SYMBOL GNO 23 SRINAGRIND 32 BANG PAKONG (4*1) PEAK 3LG-0 SYMBOL GNO 22 SIRINII 26 BAND PAKOG(611) THAILAND 1985 SYMBOL GNO 5 13 **9** 13 š -45,00 21 THUMIBOL 75 SOUTH BANGKOK 45 MAE MON(Mf-3) Fig. 5 SYMBOL GNO **~むか** 日日 月 00.09 ---+ 0.0 1 0 0 3 + r c 0.0 **919** 0.3 0 0

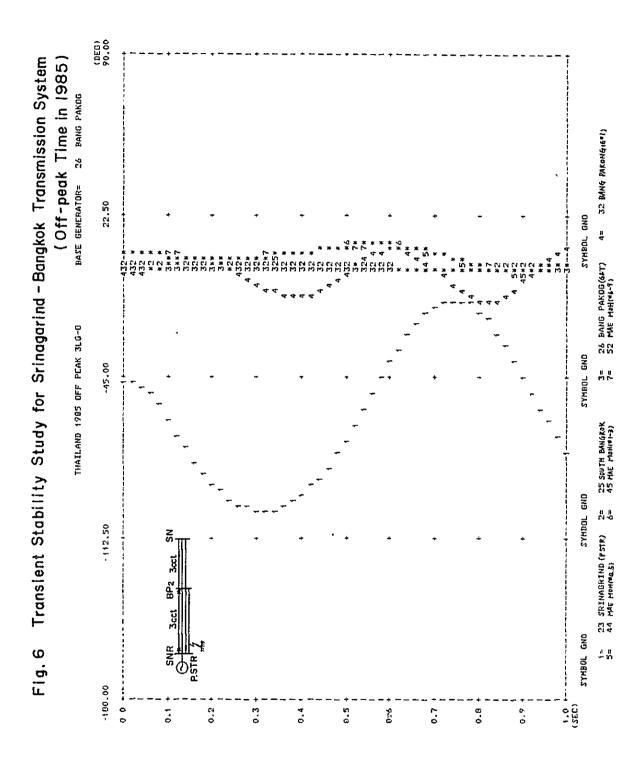
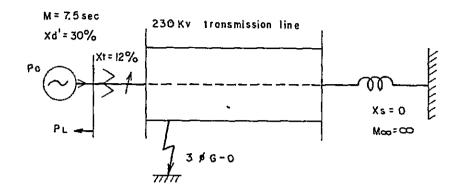


Fig. 7 Transmission Capacity of 230KV Line



Transmission Capacity = Generated Power (Po) -Station Loading (PL)

PL= 0 04 Po

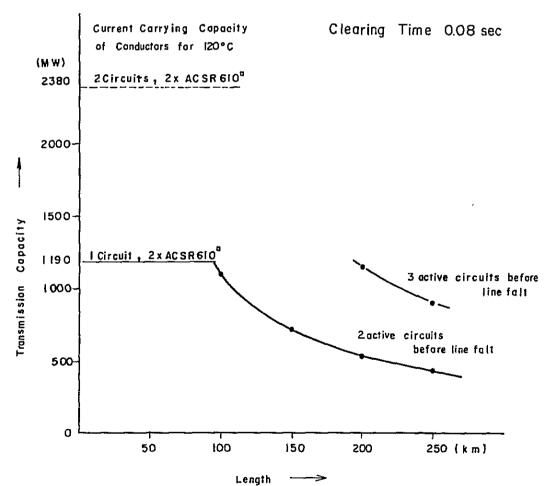
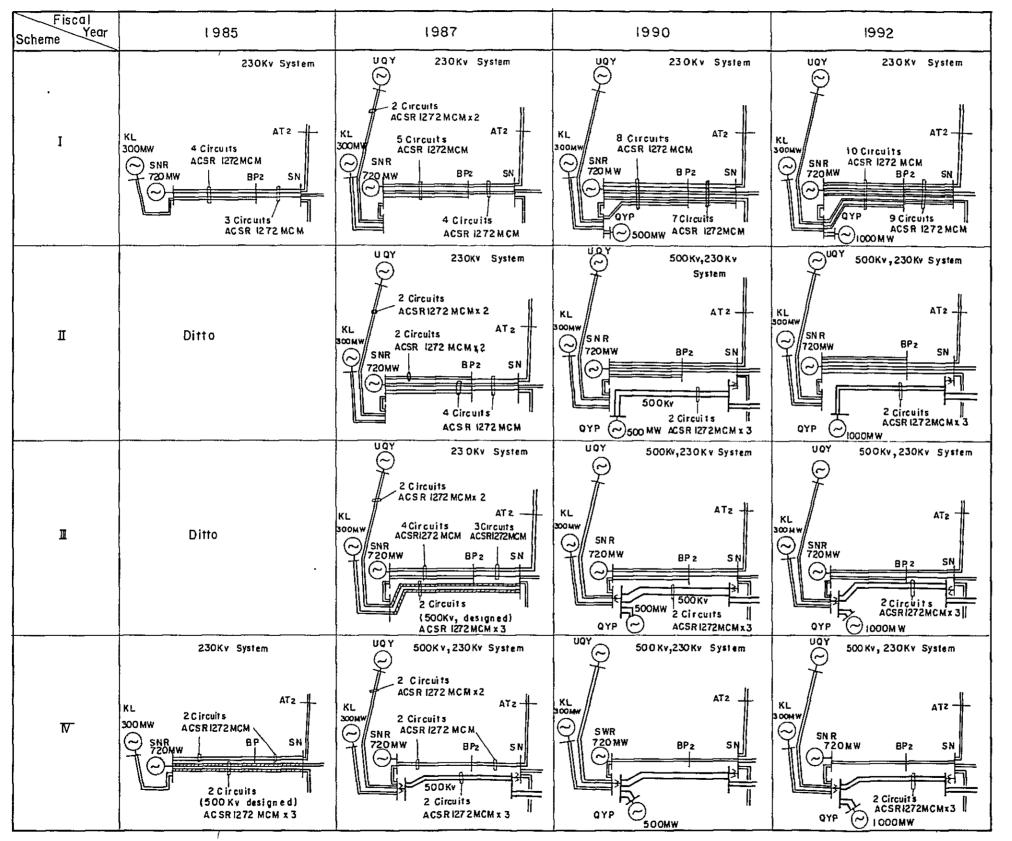


Fig.8 Power System Schemes for Upper Quae Yai Project and Quae Yai Pumped Storage Project



KL ; Kha o Laem SNR ; Srin agarind UQY ; Upper Quae Yai

QYP; Quae Yai Pumped Storage

BP2; Bon 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)

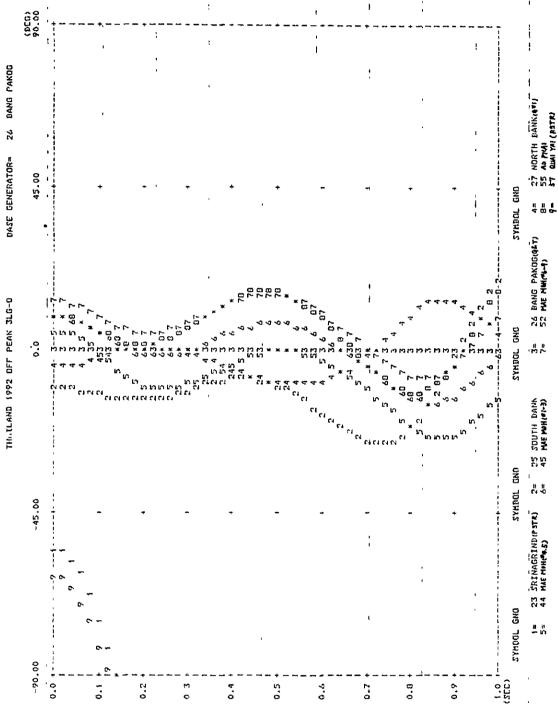


Fig. 10 Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System

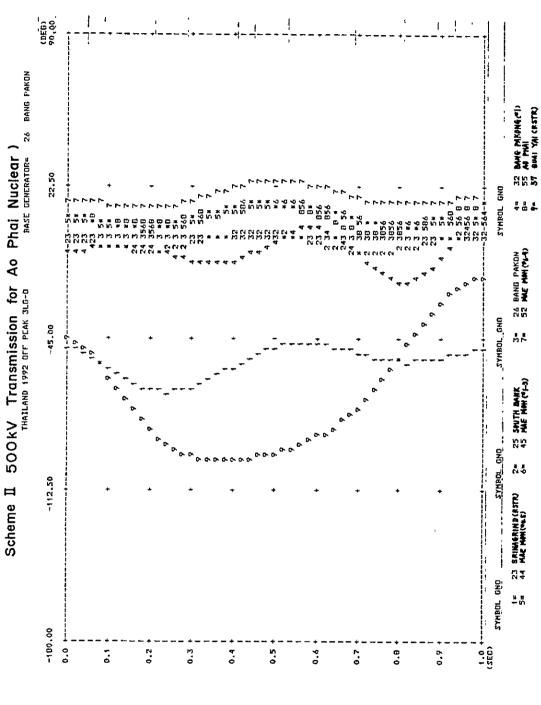


Fig. II. Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System

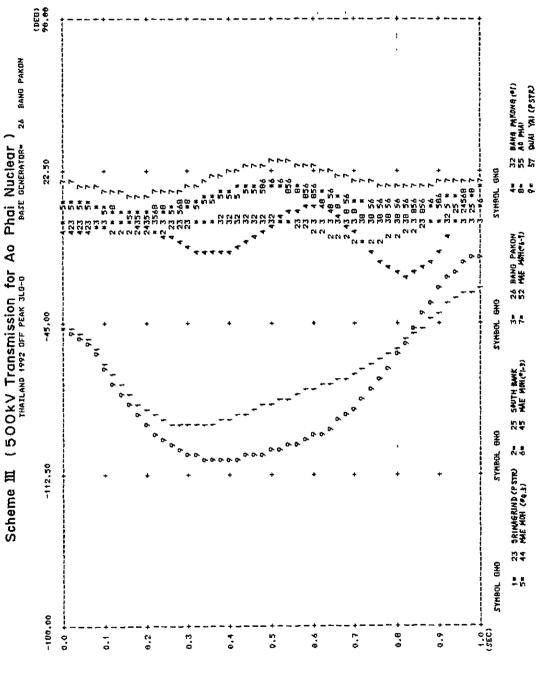
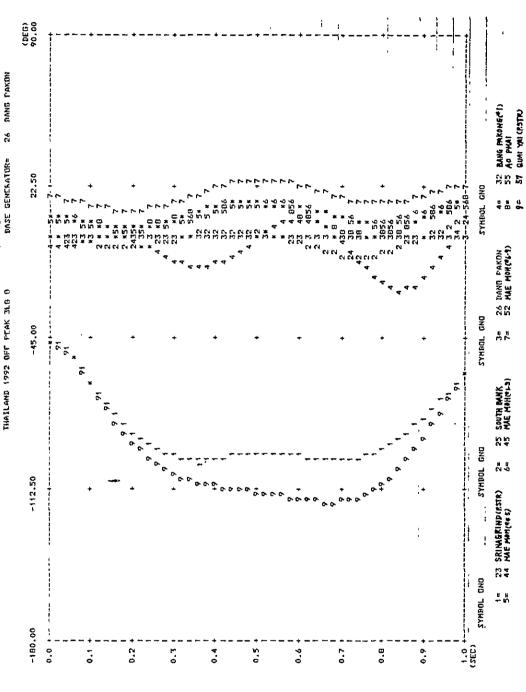


Fig. 12 Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System Scheme IV (500 KV Transmission for Ao Phai Nuclear)



Translent Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System 26 DANG PANDH 4= 32 BANG PAKONG (*1) 0= 55 AD PIAI 9= 57 QUAI YAI (P STR) Scheme II (230KV Transmission for Ao Phai Nuclear)
THAILAND 1992 OFF PCAR 3LS U RASE GENERATORS 3= 26 BANG PAKON 7= 52 MAE MOH (*6-9) SYMMOL GNO 112 50 SYMBOL GRO 100,00 0.2 £.0 0,7 F1g. 13

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

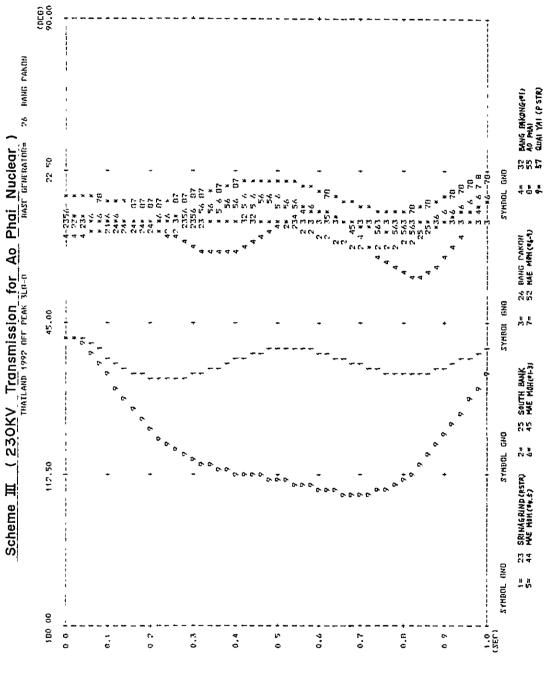


Fig. 15-1 Transient Stability Study for Quae Yai Pumped Storage-Bangkok Transmission System

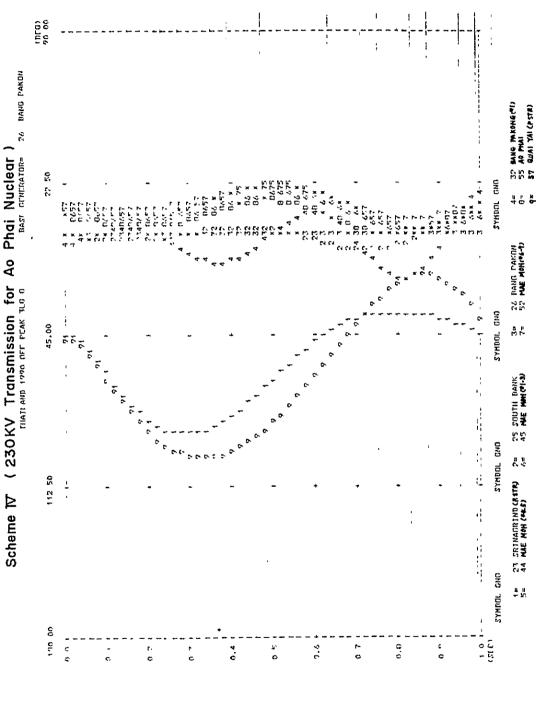


Fig. 15-2 Transient Stability Study for Quae Yai Pumped Storage - Bangkok Transmission System Scheme IV (230kV Transmission for Ao Phai Nuclear)

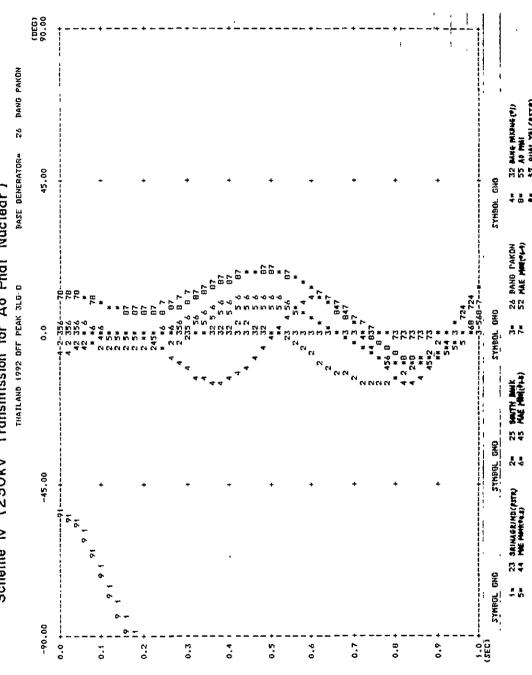


Fig.16 Power Flow-Peak Time in Oct., 1990

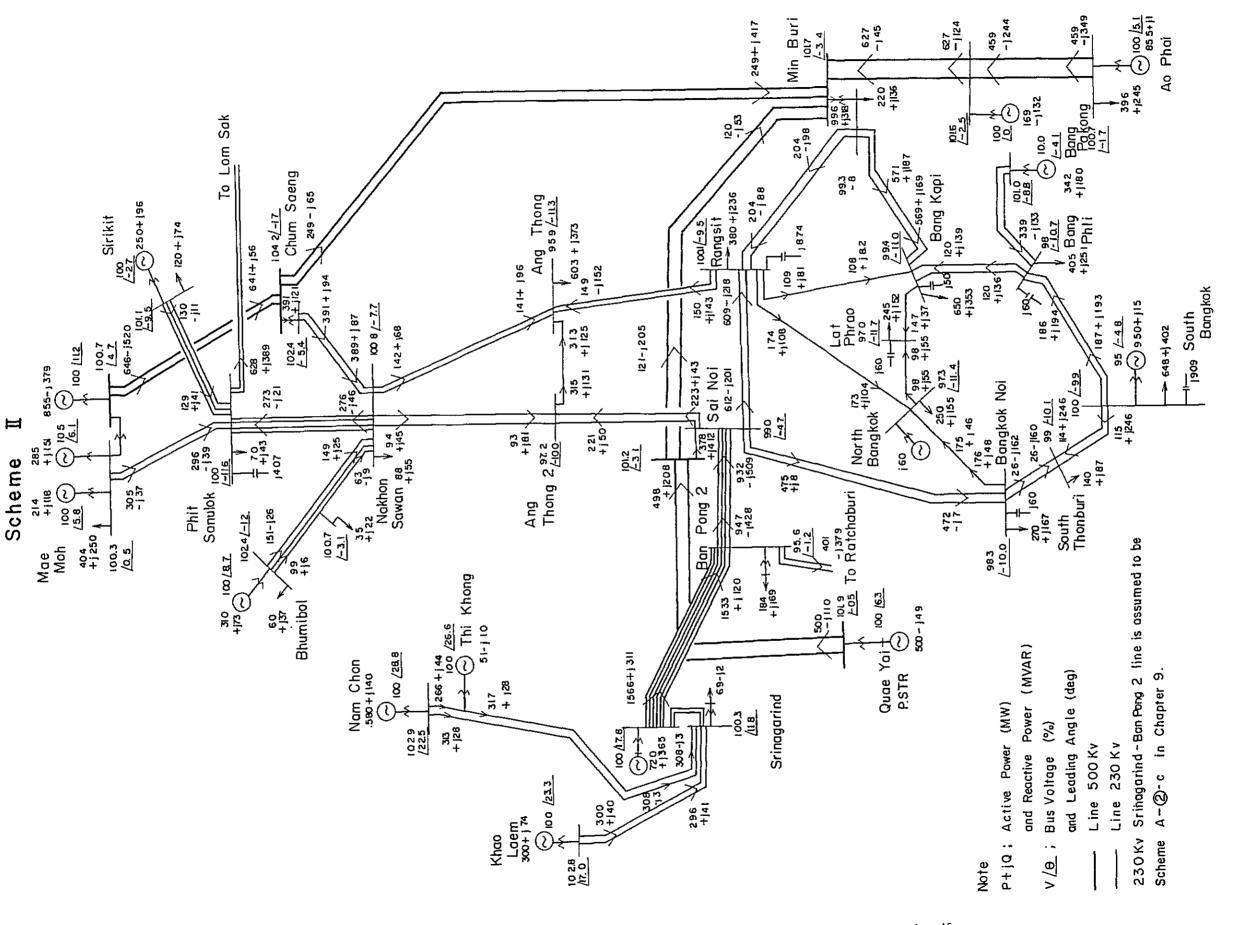


Fig.17 Power Flow-Off-peak Time in Oct., 1990 Scheme I

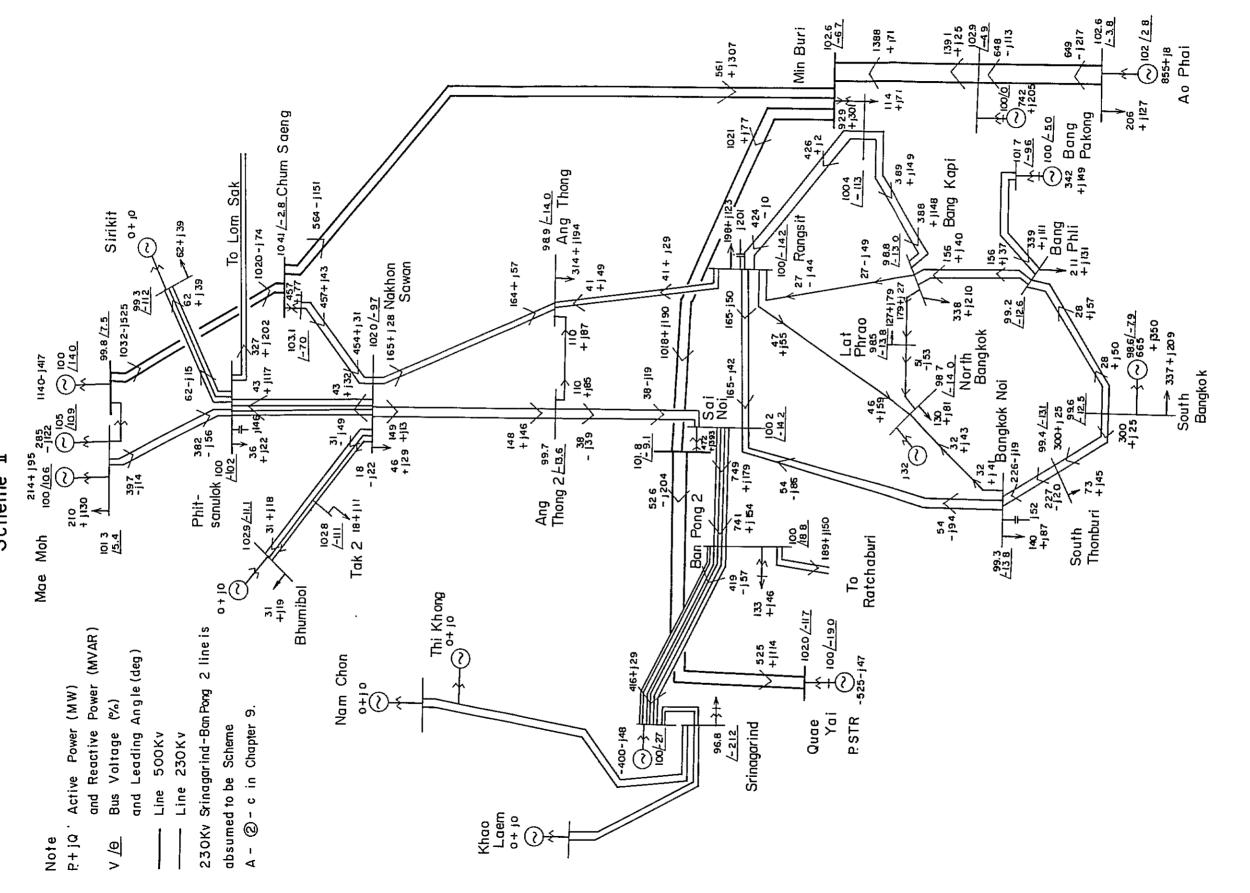


Fig.18 Power Flow-Peak Time in Oct., 1990 Scheme III

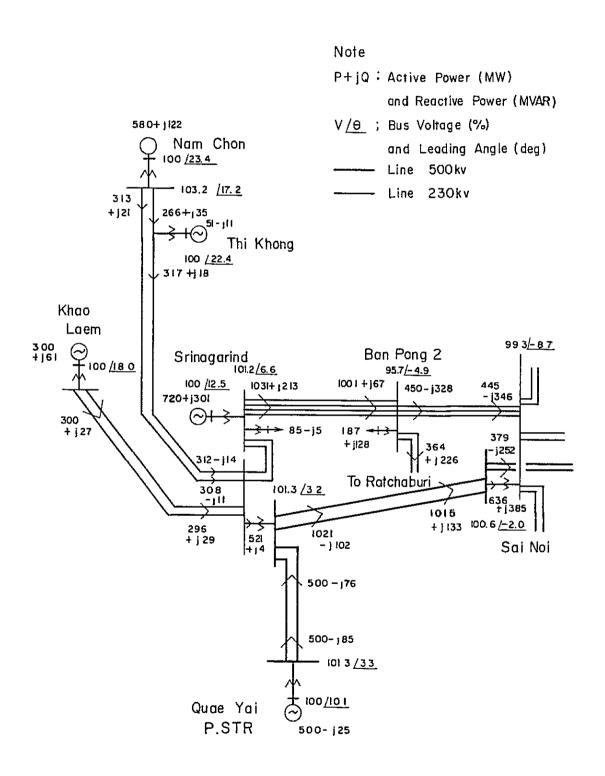


Fig. 19 Power Flow -Off-peak Time in Oct., 1990
Scheme III

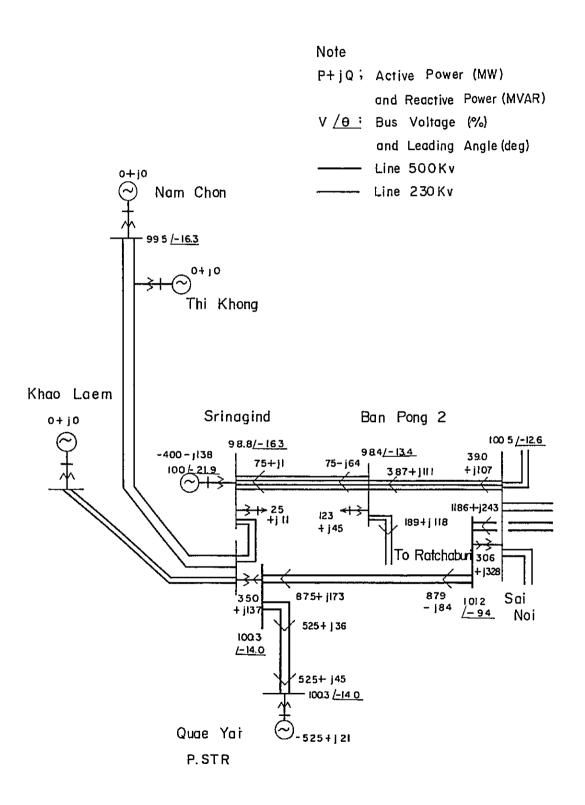


Fig. 20 Power Flow-Peak Time in Oct., 1992

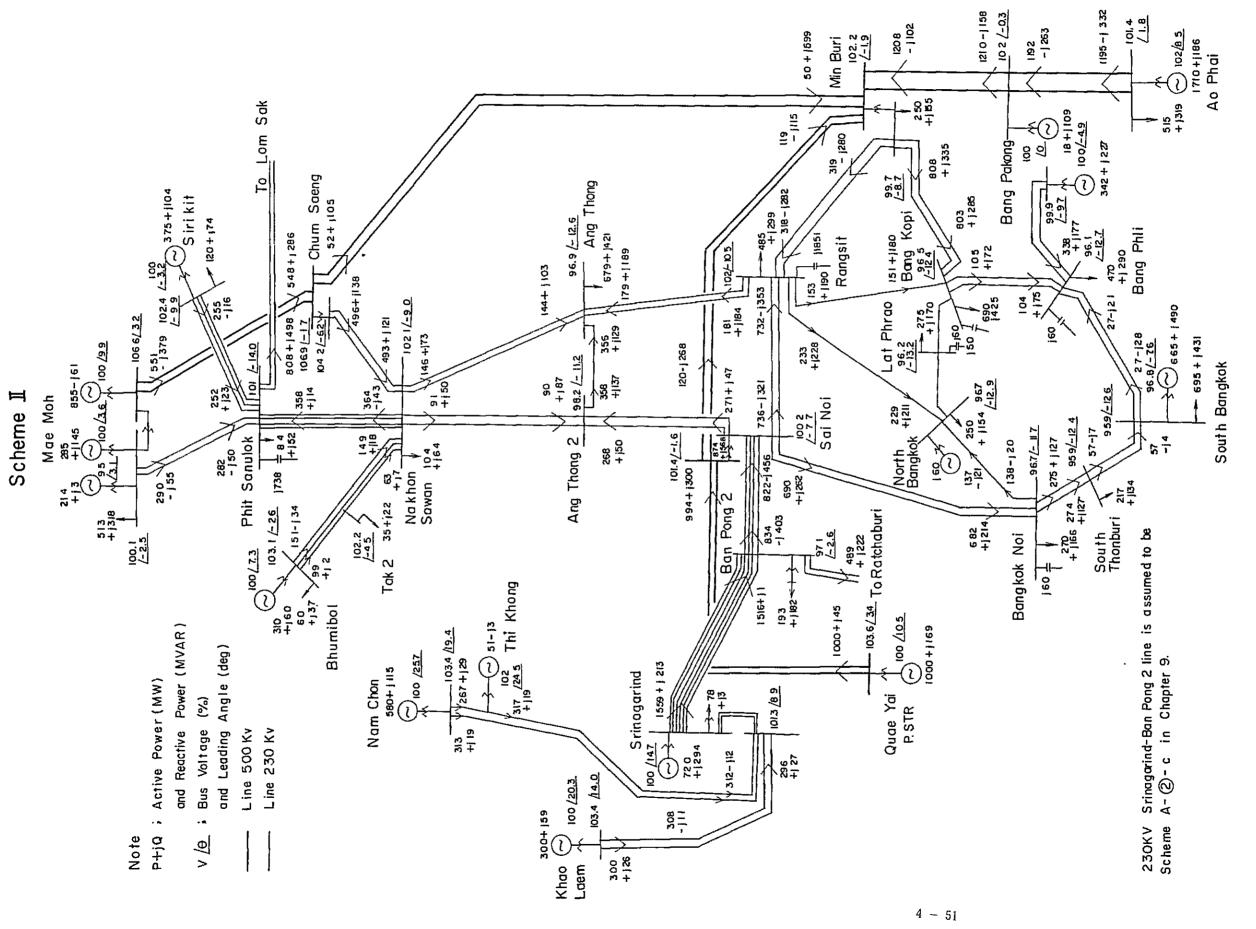
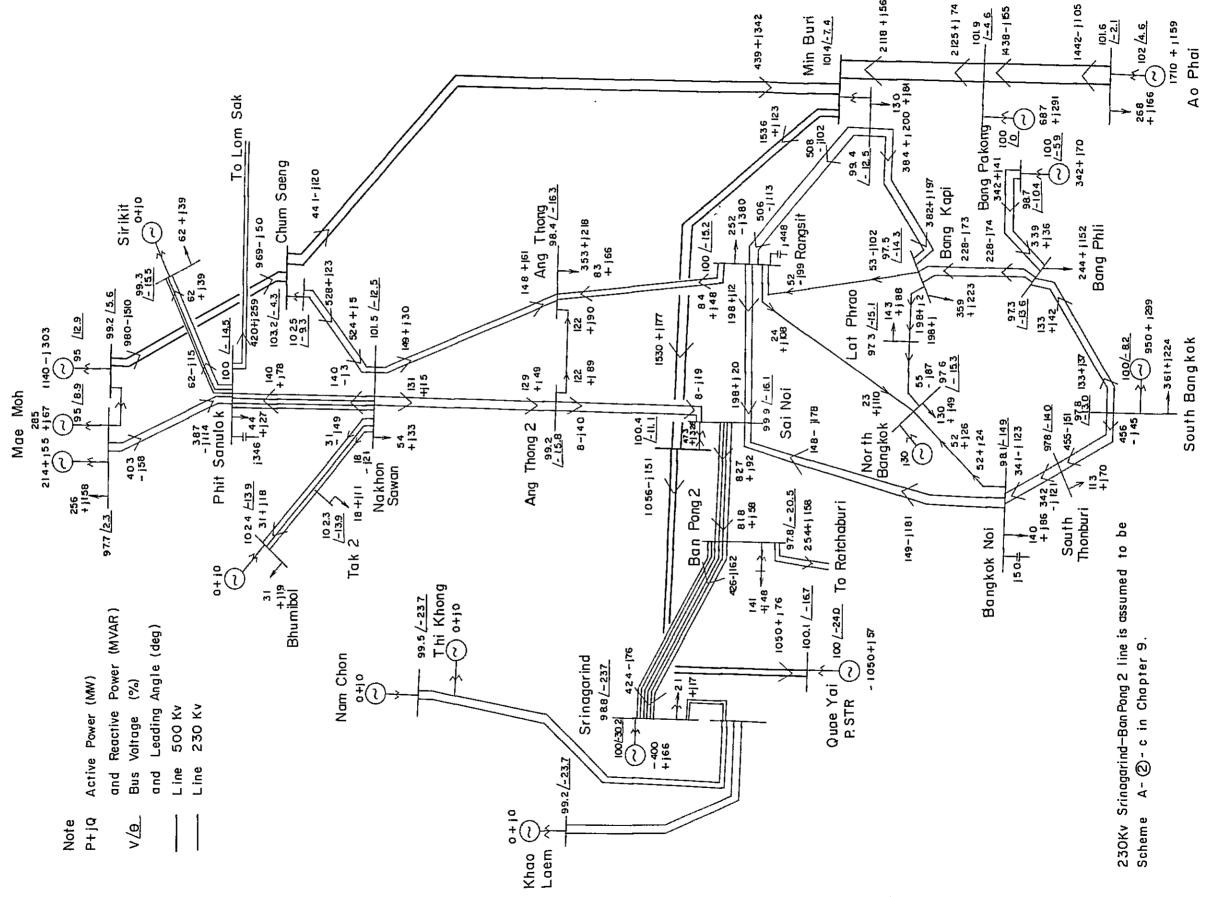


Fig.21 Power Flow-Off-peak Time in Oct, 1992 Scheme II



4 - 53

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

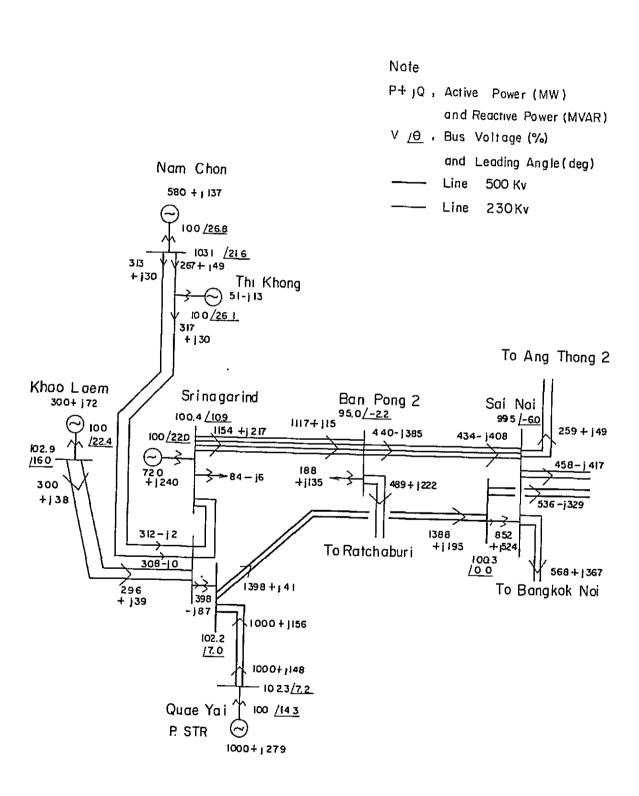
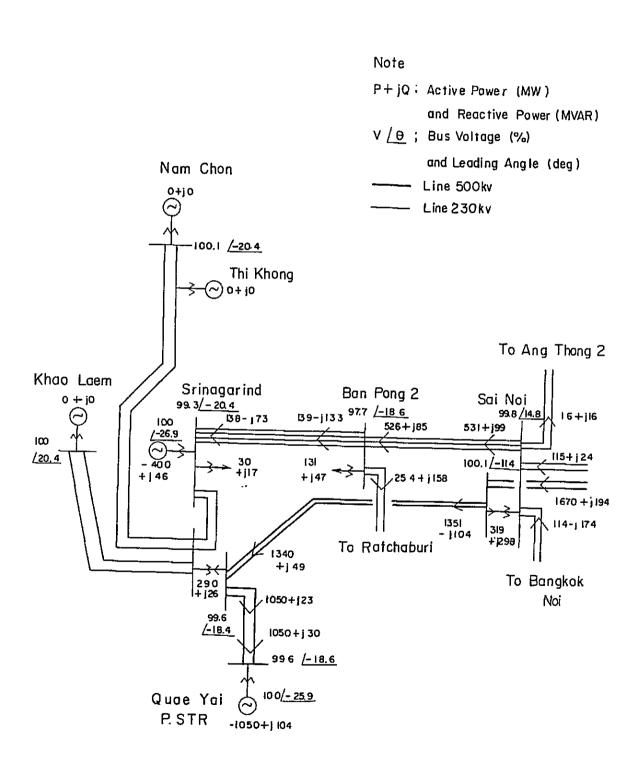
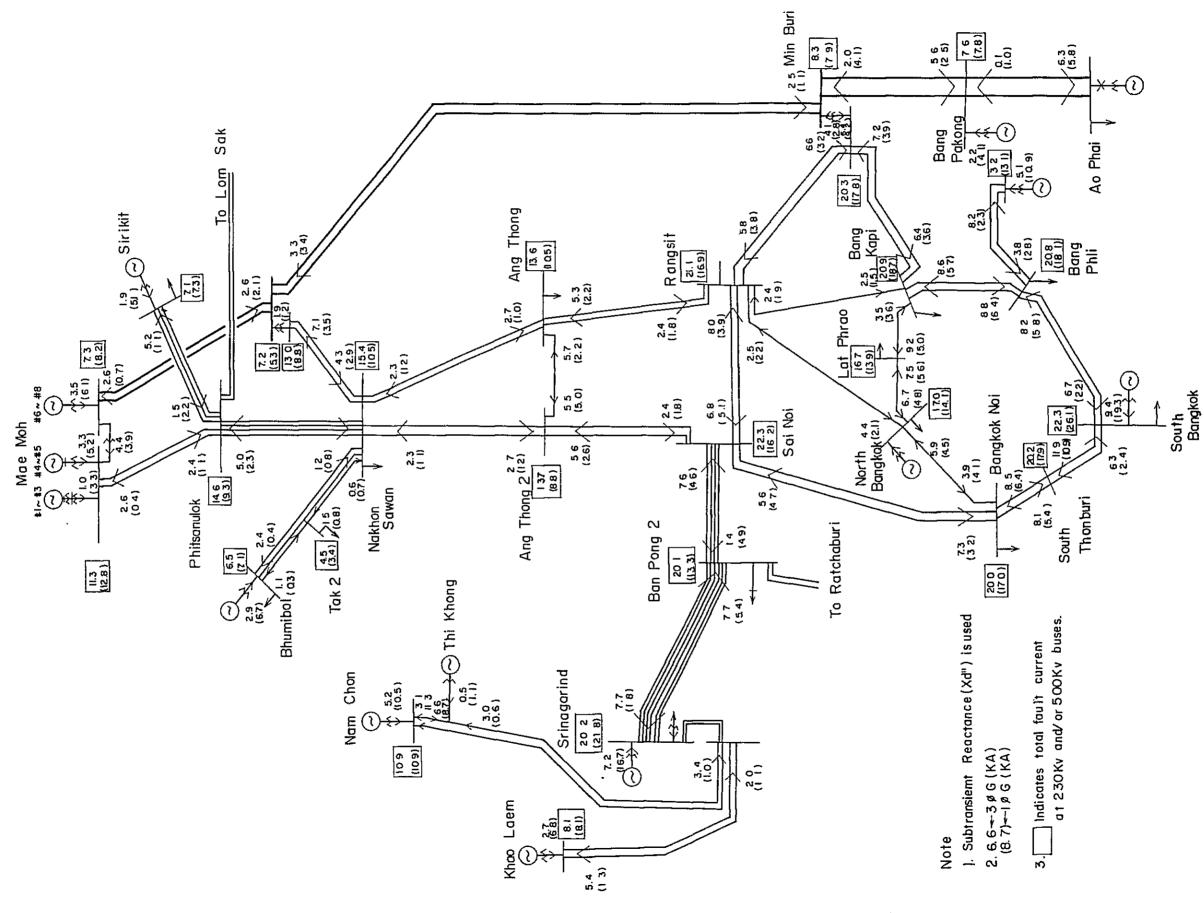


Fig.23 Power Flow-Off-peak Time In Oct., 1992
Scheme 1



1

Fault Current of EGAT Power System in 1987 ပ 1 (<u>()</u> ۱ ۲ Scheme Fig. 24



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

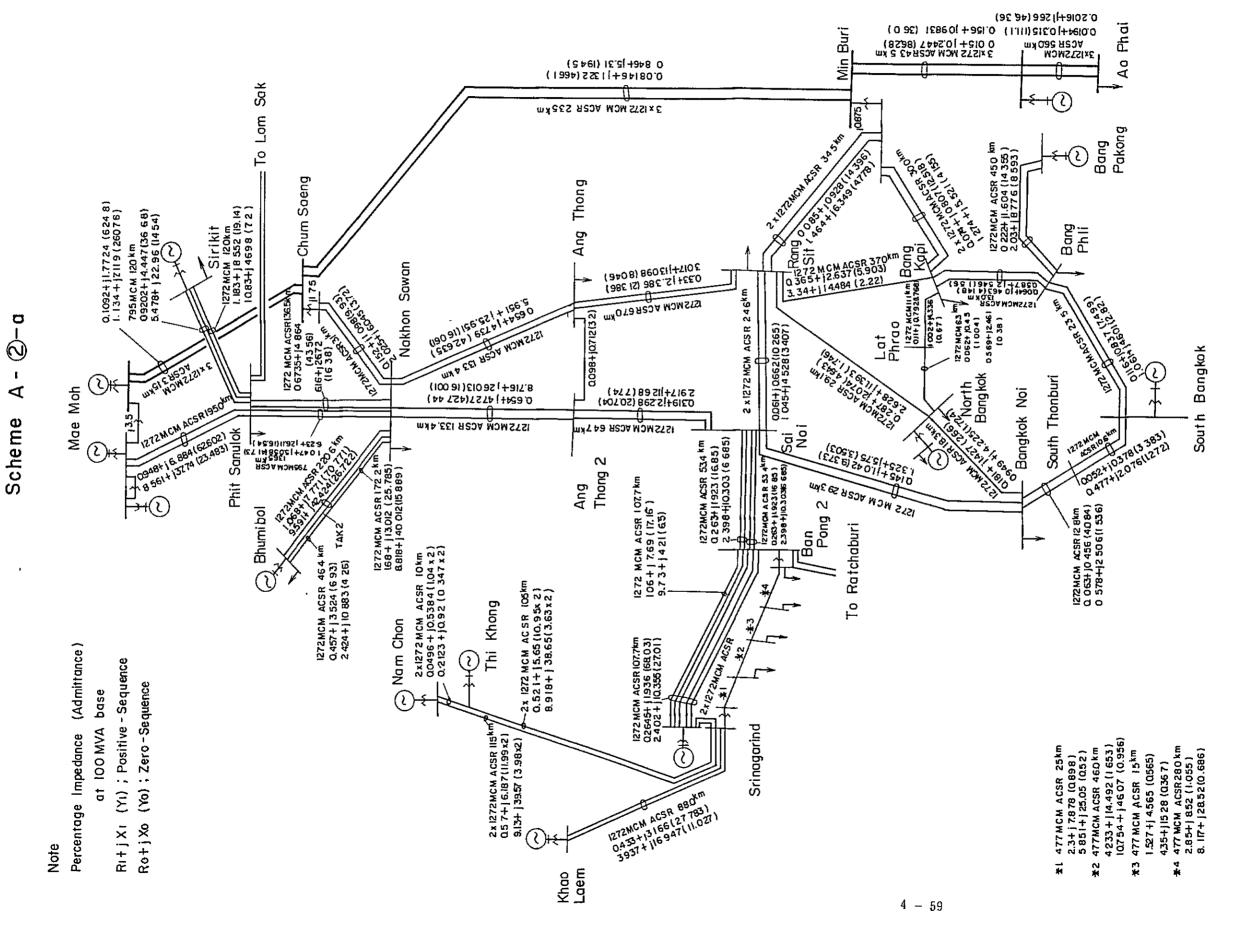


Fig. 26 Transmission Line Impedance of EGAT Power System in 1987

Scheme A-2-c

Note: Percentage Impedance (Admittance) at IOO MVA base

Ri+Xi(Yi); Positive - Sequence

Ro+ Xo (Yo): Zero - Sequence

Nam Chon

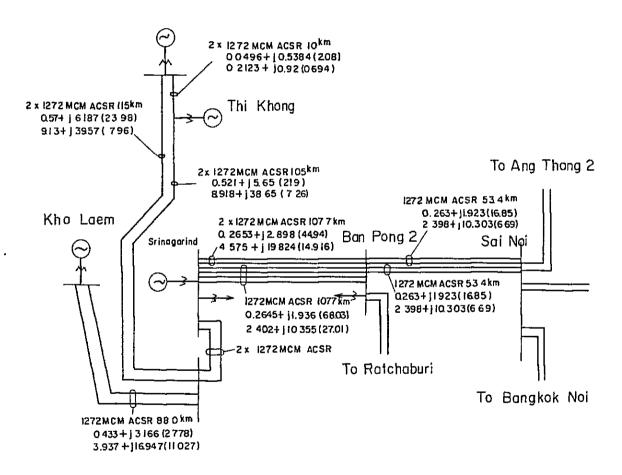
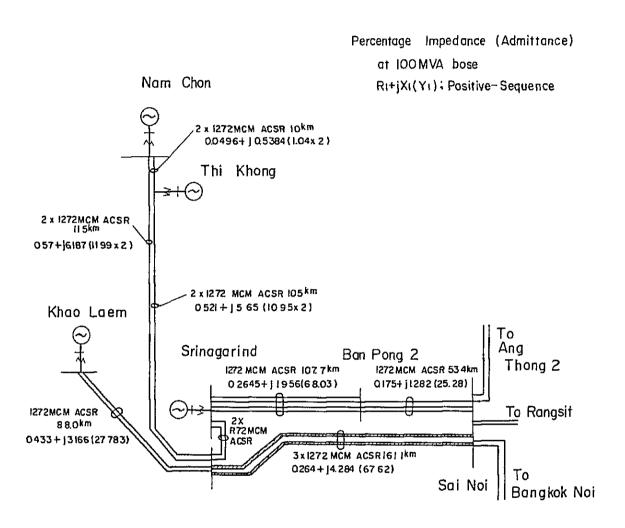


Fig. 27 Transmission Line Impedance of EGAT Power System in 1987
Scheme B



0661 System in EGAT Power of Ħ Scheme Transmission Line Impedance Fig. 28

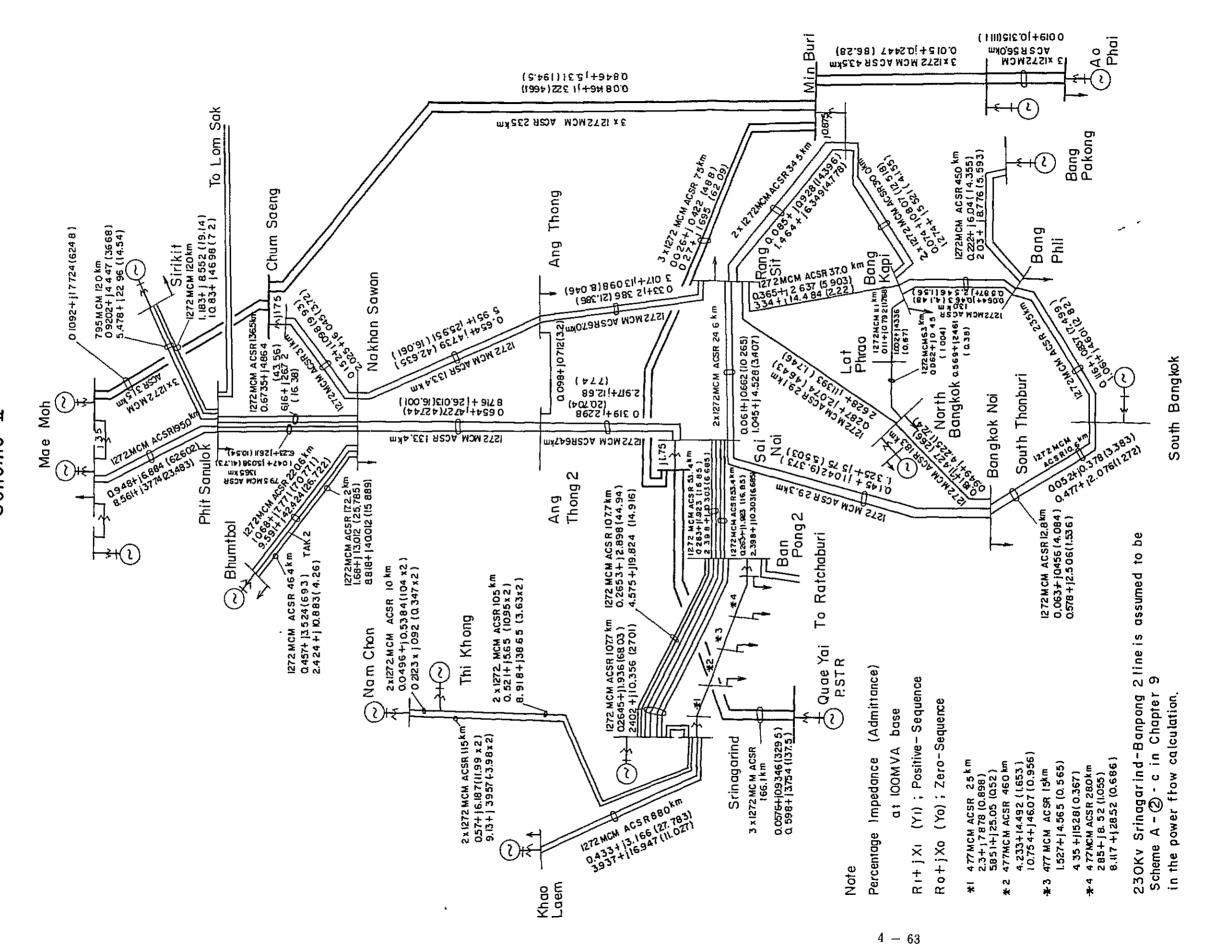


Fig.29 Transmission Line Impedance of EGAT Power System in 1990 Scheme III

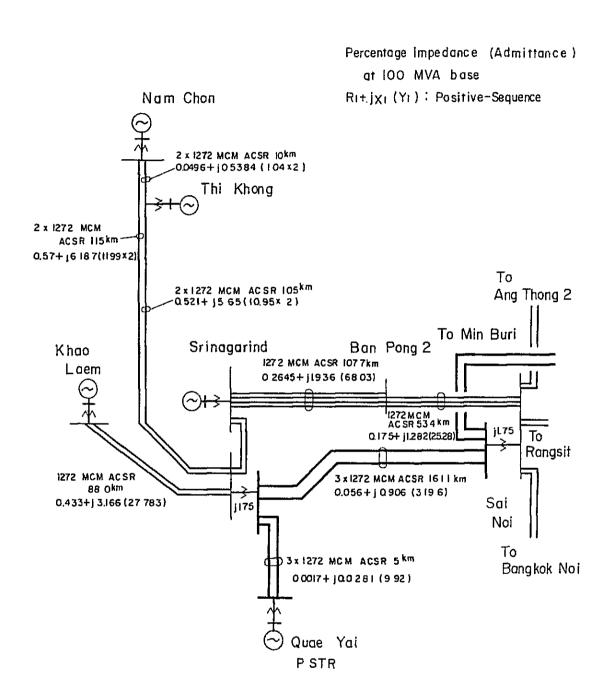


Table 1 Results of Transient Stability Study for Quae Yai Pumped Storage

1) Case 1

500 kv transmission for Ao Phai Nuclear

Year Scheme	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

Year	1990	1992
I		(X)
11	(O)	O (Fig. 13)
ш	(0)	△ (Fig. 14)
IV	O (Fig. 15-1)	X (Fig. 15-2)

Note O Stable

△ 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

Fiscal Year Item	1987		1990		1992	
	Transmission Lines Nam Chon-Srinogarind 230 kV, 2 circuits, ACSR 1272 MCMx2 Thi Khong-Transmission Line 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		
Construction Cost (MB)	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 (ME)	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 (MF)	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

Fiscal Year Item	1987		1990		1992	
	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		
Construction Cost (ME)	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		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 (MB)	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 (MB)	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以)	Power Loss (MW) x 1.224 x 10 ⁶ (B/MW) Power Loss: 41 MW Annual Energy Loss (GWH) x 1.013 (B/KWH) Annual Energy Loss: 88 GWH	50 89	Power Loss (MW) x 1.224 x 10 ⁶ (B/MW) Power Loss: 35 MW Annual Energy Loss (GWH) x 1.013 (B/KWH) Annual Energy Loss: 81 GWH	43 82	Power Loss (MW) x 1.224 x 10 ⁶ (B/MW) Power Loss: 34 MW Annual Energy Loss (GWH) x 1.013 (B/KWH) Annual Energy Loss: 82 GWH	42 83

Table 4 Machine Constants

	· <u>·</u> ·		Gen	erator	·	<u> </u>	Transi	ormer
Item Power Station	Unit #	Capacity Po (MVA)	Direct-axis Transient Reactance xd'(%)	Direct-axis Subtransient Reactance xd"(%)		Power Factor (p.u)	Capacity Pt (MVA)	Reactance XT (%)
	1-3	83.3	15.7	10.1	6.82	0.9	83.3	10.3
Mae Moh	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
Billiminor	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
	1-3	150	28.4	19.0	6.8	0.8	150	12.0
Srinagarind	4-5	211.8	25.4 25.4	19.0	6.8	0.85	235.5	12.0
	1-2	250	34.2	23.9	6.54	0.8	250	8.8
South Bangkok	3-5	375	34.7	22.5	6.92	0.8	370	12.0
	1-2	680	28.8	22.2	5.88	0.8	680	12.0
Bang Pakong	5-12	75	15.9	11.4	3.57	0.8	92	$\frac{12.5}{14.0}$
	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	19.0	8.0	0.9	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. %
$$X\tau$$
 $\left(\frac{\text{Line } 230 \text{ kV}}{\text{Line } 500 \text{ kV}}\right)$

Table 5 List of Shunt Capacitors and Synchronous Condenser
Shunt Capacitors

	Exi	isting	Under Construction			
Substations	KV	MVA	KV	MVA	In Service	
Bang Phli	72	32.4 x 2		_	<u> </u>	
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

	Exi	sting	Under Construction		
Substations	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

	Load	Com	mon to Se	heme II a	nd III			Sche	eme II				Scheme	e III	
Fiscal Year	at BP2 (MW)		1) R Line (GWH)	NC-SN (MW)	2) R Line (GWH)	(SNR-BP (MW)	•		4) V Lines (GWH)		+(3)+(4) otal (GWH)		5) Lines (GWH)	(1)+(2 To (MW)	
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	11	11	11	11	17	TT .	8.3	20.4	46.5	98.7	25.5	58.0	40.8	88.7
1989	573	t†	71	11	11	11	lt It	6.8	19.1	45.1	97.4	25.1	59.2	40.4	89.9
1990	647	11	"	11	11	f#	11	5.5	18.4	43.8	96.7	19.5	49.8	34.8	80.5
1991	699	11	11	"	11	11	1t	4.6	18.2	42.9	96.5	19.6	51.9	34.9	82.6
1992	750	11	"	11	11	11	11	3.8	18.4	42.1	96.7	18.2	50.7	33.5	81.5
1993	830	11	11	11	"	11	11	2.8	19.1	41.1	97.4	18.9	55.7	34.2	86.4
1994	910	71	:1	11	11	11	11	1.9	20.7	40.2	99	19.6	60.7	34.9	91.4
1995	989	19	"	. 11	11	††	11	1.2	22.8	39.5	101.1	20.3	65.7	35.6	96.4
1996	1,068	11	11	**	11	11	п	0.7	25.7	39.0	104	21.3	69.7	36.6	100.4
1997	1,154	n	rr	"	11	11 .	"	0.2	29.6	38.5	107.9	22.6	79.6	37.9	110.3
1998	1,246	Ħ	"	**	71	**	r,	0	34.7	38.3	113	24.2	88.7	39.5	119.4
1999	1,346	ŧŧ	''	"	77	11	11	0	41.3	38.3	119.6	26.2	99.6	41.5	130.3
2000	1,453	11	rr .	11	17	Ħ	11	0.3	49.6	38.6	127.9	28.6	112	43.9	142.7
2001	1,569	††	11	11	11	ff	11	1.0	60.0	39.3	138.3	31.5	127	46.8	157.7
2002	1,695	11	"	"	11	11	11	2.1	73.1	40.4	151.4	35.0	144.9	50.3	175.6
2003	1,831	11	11	11	11	11	11	3.8	89.1	42.1	167 4	39.3	166.8	54.6	197.5
2004	1,977	**		11	11	"	11	6.2	108.6	44.5	186.9	44.4	191.3	59.7	222
2005	2,135	11	11	11	11	ft	"	9.4	132.3	47.7	210.6	50.5	221.2	65.8	251.9
2006	2,306	##	ŧr	**	11	"	11	13.5	161.0	51.8	239.3	57.8	256.2	73.1	286.9
2007	2,490	11		, ,,	11	"	11	18.9	195.7	57.2	274	66.5	297.5	81.8	328.2
2008	2,690	11	11	"	**	11	''	25.7	237.7	64.0	316	76.9	346	92.2	376.7
2009	2,905	11	11	11	11	11	"	34.3	287 6	72.6	365.9	89.2	403.3	104.5	434
2010	3,137	11	. 11	11	11	17	"	44.8	347.3	83.1	425.6	103.8	470.5	119.1	501.2
2011	3,388	ft	11	11	11	11	11	57.8	418.6	96.1	496.9	121.1	549.7	136.4	580.4
2012	3,659	ŧ 1	f1	11	11	11		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	Case without Thi Khong Power Statio	n	4 - 75
6-2	Case with Thi Khong Power Station		4 - 95

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

*** CHECK PASSECT DATA *** -- HEDRIPOWER --

*** CASE 1 *** PEN'T tol. 1 *** Nam Chon Power Station

•		GE*	IER AT I YU	41CILI	ΙŦΥ	TRANSHI 3 SI	IN FACIL.	SUUSTATIC!	FACILITY
	YEAR		RETERVER !	14641	NEHY			[
			LaC PART	#•3 P44T	L.C PART	F.L PAHT	144T	PART I	L.L Papt
		 [415*0#11	(481 - 347)	[416.547]	(MIL.BHT)	(MIL-BHI)		[41[*88[]	[416.847]
	ļ	XXXXXX,4X	AXAXXY.XX	AAASAX.XA	XX.XXKKKK	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	XX.KXXXX	(*4.7.7.4	KA.XKXAXX
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	1963								
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	1 1992 1 1992	1•7 3•3							
	1991	3.7							
	1954	2.1							
	1955								
	1996	55							
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	 12-2								L.C PART
		[THE ABET]	INIL.OHT;	E CEL JHT	[41L.8HT]	(FIL.BHT)	(41L_ 3HT)	C4IC+6HTI	(M16.8HT1)
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2328 1.3 3.4 3.5 3.5 124.31 63.31 3.6 6.0 202+ 3.5 3.6 3.6 3.6 3.6 3.6 3.6 3.6 202+ 3.5 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.6 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.6 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 202- 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.	2022	0							0.0
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*** CASE 1 *** PLANT NJ. 1 *** Nam Chon Power Station

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2002		1100.0					13.0	1 3.1		
2335		1113.3					j5. j	1 3.3		
2001		1 1101.0					(1.0	0.0	14.00	
2001		1101.0					13.3	لرول [
 2337		1 1133.3				3.3	11.1	1	1 35-77	
 2013		1101.0				0.0	11.0	1 0.0	1 34.00	
2011		1101.0			1 4.00	C.0	11.0	1 9.0		
2012	595.1	1 1134.3	į 73.J4	1 23.71			11.1	1 3-1		
1 2013	\$ 595.0	1 1103.0	1 75.34				10.0	0.0	34.00	
1 2014		1 1101.0					1.0	1 0-0		
 ZQ L		i. LLƏJ.Ə					1.44.	ابعاتا		
2016		1101.0					11-0	u.0		
1 2017		1131-0					1 100	1 0.1		
2013		1109-3					13-3	1 3.3		
2014		1 1101.0					11.0	1 0.3		
[202J	595.0	1103.0	i 75.14	1 13.71	J 4.00	10-0	17.7	1 4.3	1 34-03	1 39*001

			=====								
!		IINS- TALLED	ATTULL I	±1)	(=O ())C =	VAH	IABLE	TEH	T < 445	L 255
\ \	YF A4	ICAPA- I		GENERA.	TRAUS. 1	SUBSTA.	FUFL	1 = JEL	IETC.	POHER	ENEMOY
i		CITY			FACIL.					LOSS	LUSSI
		L1			L			L			
<u>!</u>		1 (Mm) (MIT.KPH	MIC. 411	MIC.BHT	MIT " RHI	BHI/L	1 F\004	[= 1 F * DL :		HIL KWH
ī		i xxxxx.xl	XXXX (.X	****	X K A K A K	XXXX.XX	IXX-AXX	IA-XXXX	[X4XX.XX	*****	XX.XXXX
Ì		1 (!	í l		1	1 :	i	l	1
Į	2021		1103.0					1).)	1 0.0	34.00 34.00	
	_ <u>2022</u> _						} \$ <u>-</u> 5	11.0 .	1 0.0		
!	2021	595.0						1).0	j.)		
i	2025	545.0						13.0	i 3.j		
i	2026		1101.3				0.0	3.3	4.0	34.00	
į	2027	595+0	1101-0	75.34	13.71			11.3	1 3.3		
	_ 2028 _		1101-0				Tenn.	٣٠ وويا	1 - 0.6		
	2324		1131.3				1.2-2	13-3	1 7.7		
ļ	2030		1101-0					13.0	1 3.0	14.00	
!	203L	595.0	1121-3					13-3	1.3		
i	2031		1101.0					1.0			
j	203+	595.0					0.0	12.0	j a,)	34.00	
i	2335		1131.3				73.3	15.5	1 1.5	1 34.33	39.00
i	2030	595.0	110 1.0				0.0	11.0	[0.0	14.00	
İ	2037	595.0	1104-U	15.14	13.71	1 4.00	0.0	11-0	1 0.0	1 11.00	39.01

*** CHECK PAGIECT DATA *** -- ALTERNATIVE --

Gas Turbine Power Plant NJ. 1 *** Gas Turbine Power Plant

		g (t	HERATING	FACIL	ŤΥ	TRANSHESSI	IN FACIL.	SUHSTATIO	FACILITY
	1	CAH AJG	RESERVER	1464	NERY			 !	
	YEAR !	F.C P4F1	L.C PART			F.C PART	L.C PART	F4C PAFT	L.C Pakt
	Ĺi	(M1L_3HT)	! 	TTILE - JUE 1	(MIL.BHT)	(MIL-HHT)	I HILABHI) ((ATC*PHI)	[[[[]] * []]]]
	1 1	XXXXXX. CA	[XX4X4X.X4	*4****	*******	XXXXXX.4X	XX4KXX_XX	XXXXXX.XX	*****
	1481	0.)	1 0.0	i I j _e g j	0.0	0.1	u.a .	0.0	0.0
	1 1982 1)	1 4.0	1.1	3.3	ו ו	1.0	J_3	1 3.3
	1.1981	U-1	1 0 0	ليقمني يبيا	0.0	للمها	0.0 1	ا ۵۰۵ ــــــــــــــــــــــــــــــــــ	1 . 0.0 1
	1 1984 1	0.3	1 0.0	392.60	20.70	(C-0			0.0
	1 1985 1	1.1							
	1986	1 3-1							
	1 1481			392.00					
	[1484]								
	1 1983	بعدي					2.0		
	1 1993								0.0 J.J
	1 1992	لإجرا						0.0	
	1441	7-7						0.0	
	1994								
	1. 1995) 3.) 		0.0		L 0		9.0	
	1496	3.1		3.0		0.1			
	1997								
	1993			i i.i					0.0
	1999	i ä. i		1 3.0					
	2000	ă.,							
	1. 230L	i	1 3.3	<u>i </u>		ر ق	i	U.U	0.0
	1 2002								
	1 2003							0.0	0.3
	2334								
	200>	1 0.1	0.0	1 563.90	0.0	t.p i	0.0	0.0	0.0
	2006	[0.J	1 4.0	1 544.90	0.0	1 0.1	[3.0	l 0.0	(4.0
	1 2337	ــــــــــــــــــــــــــــــــــــــ		T345*07	<u>i</u>	<u></u>			
	\$ 2003	1 4.3							
	2004								
	5313								
	2011								
	1 2012	i 1•1							
	1 2313 1 2014	-ئەنى ــــــــــــــــــــــــــــــــــ		T	1 0.0		1 2.0		
	2015	1 3.3				1 0.1			
	2016	ניני ו							
	1 2017								
	2014	1 3.3		1 3.5					
	1 2014	i 3. 3	i 3.5	i j.j.		i 5. š.			
	1 2023	0.1							

	ļ.,	;c	NER AT I NO	FACILI	17	TRANSMISS!	JY FACIL.	SUBSTATION	Y FACILITY					
		DAM A (b	KE SERVER	! часні	NERY					ļ				
	YEAR	F.C	I L.C	F.C	L.C	F.C	L.C	F.C	L.C	i				
		PAPT	PART	PART	PART	PART	PART	PERT	7989	<u> </u>				
	1	[WIL-BHF}	IMIL.BHTI.	 14 F*aH11	(MIC.BHT)	 CMIL.BHT]	(4[C+84T)	(MIL.BHT)	(MIL-8HT)	j				
	ļ	******	******	* < * * * * * * * *	******	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	*****	******	XXXXXX.XX	- 				
	2021	3.7	3.3	J-0	0,0	0.1	0.0	0.0		i		 •		-
	2022	i j.j	į j.j	i ນ.ນ i	3.3	L.C 1	3.3	0.0	0.0	Í				
-	2023	9.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	ĺ				
	2024	1.1		192.60	0.0	4.3	4.0	u.s	0.0	l l				
	2,325	3.5	1 2.3	598.93	3.3	j 54,2J	36.2J	3.3	0.0	ı				
	2026	0.3	0.0	548.901	0.0	54.23			0.0	L				
	2021	0.3	0.0	192.60	0.0	1 72.+3			0+0	i				
	2254	3-1	1 1.1	1.3	0.3	1.)	1 3.3 [3.3	1.0	ļ				
	5054	0-2	j 0.0	ຸ ວ.ດຸງ	0.0	0-0	0.0	0.0	0.0	!				
	2030	(, ((1.0	0.0	1 6.7	0.01	0.0	1 0.0	•				
	2031	1 3	1 3.3	1 3.3 1	3.3	1 3.3	1 1 1	1 1.3	1 3.3	!				
	1 2032	<u> </u>		1.0	0.0	0.4	0.0	0.0	0.0		_	-	-	
	2033	3-3		0.0	0.0	بدن إ	0.6	0-0	0.0					
	1 2034	1 3-3	1 1-1	i 3.7 i	3.3	1 2-3	1.1	J.3	1 3.3	!				
	2035	1 3-3	0.0	1 0.0 (0.0	0.4	0-0 [0.0	0.0	Ł				
	1 2035	(.i.)		0.61 -981-53	3.3	0.1 Li5.61	0.0 1.3	l 0.0 l J.J	1 1.3	!				

	1	j ji	45×471×16	=431L;	TY	TRANSMI	JA FACILA	\$ 1451 AT EO	FACILII
YEA	 -	DAM AIC	4E 5E F V E 4	1ALH!	NE 4Y				
"	•	FaC PART	Laŭ PANT	-a: - 437	LeS PART	F.C PART	L.C PART	PART	L=C PA+T
		[#IL-atf]	[H1L.BH[]	[1[[.3:(*]	(411.HHT)	(MIL.HHT)	[4]L.AHT)	[4[L.dHT]	(MIL_UHT
		XXXXX4. CA	******	******	******	xxxxx.	*****	KKAKAKAK	AXXXXX
196	81	i 3.1							
198	62	().) j							
1 191									
ļ 19i									
	6>								
19									
L9:		1.1							
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1 19		4 3.3							
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Že		1 201							
	ŏ5								į J.
	Jo						0.0	0.0	į o.
	01							0.0	1 0.
	0 1					1 0.1	1.3	1 3.3	j J.
1 23	J3			313,50	0.0	[0.1			
1 20	11	1 1.1	3.0	1 458.43	1 2.9.	T 0 T		G.K	
20	11	1 1.1	J_0	1 465.40					
1 23	12]]_)	1 3-3	1 313.53					
	13								
	1+								
	15		1 7.7						
	11								
	17								
	13	1 3-3							
	111								
1 20	2J	1 0.1	1 0.0	1 20	(0.0	1 0.1	1 2.0	1 4.0	1 0.

1	!	»t	iër at i ng	FACILI	; TY		ON FACILAT	SUBSTATIO	FACILIT
	_	DAM AIL	de afrved	14641	NFRY				
YEA	* 	F+C F4FT	L.C PAPT	Fac PART	LaC PART	F _# C PART	L _T C PANT	FaC PAST	L.E PAG T
ł	i	(MIL. 387)	[H]1 = 3HF1	[4[L.JHT]	[THEL.SHT]	(PIL.nHT)	1175-3471	14(L.8HF1	(HIL.UH)
!		AXXXXX.(4	*****	******	******	44XXX.44	4444K-7X	ZZKEZK.KE	XXXXXX.
232		J. I	11	ا فء ا	0.0	1 0.21	0.51	0.01	J.0
202		7.3 [J. D	1 2.0	0.0	1 3.3	0.1	(ս•ս (4.0
1 202	3 1	1.1	3.3	1.0	[C+J	1.1			J.
232	4 1	7. 1	5.15	1 >.01	0.ኅ				12-0
1 202		4.1). Ú	1 1.0	0.0	23.11			Ų.
[202		0.1	3.0	1-0	(2), 11			j 3+
232		3.4	3.0	3.0	0.0	31-01			0.0
202		0.1.1	1.0	1.0	0.9				0.0
1 202		إبن	نود	3,5	C-0) <u>0-1</u>).
1 233		1.1	1.1	1 3.0	0.0	1 101		0.0	0.1
203). 1]. 1	1.1 1.1] 1.0 j.∪	0.0	!],) ! 0.3		j.j) j.
(203 233		:::	3.0	1.0	0.0			3.0	0.
203		1.5	3.0	1.3	0.0	3.1	1 3.0	0.0	9.
1 203		4.1	1.3	1 3.0	i c.u	1 0-1			i š.
233		1. 1	1.5		0.0	1 0.1		3.0	·
203		j. i	3.3		0.1	-58.23			i ő.,

Gas Turbine Power Plant

YFAH (CAPA- AATING LOCATAL THANS SUNSTAL FUEL FACIL PAGE LOTS PAGE LOTS PAGE LOTS PAGE LOTS PAGE LOTS PAGE LOTS PAGE LOTS PAGE LOTS LOTs LOTS LOTs												
YFAM CAPA					- [:	ו כיו	EEM) YAF	1446	Car	. ****	· rczż i
CITY E #C4GY FACIL. FACIL. FACIL. PRICE : 1950 N 287 LTSS LUSS								1				
		HATE										
		1		E 85.401					1-01569	l Varine	1 1122	i rossi
		í	. (Mm)	MI La Kahi					1.7494	s Mitabeti	l (Yel)	MICAKWHI.
1981 0.0 1.0 1.1 0.1 0.0 1.0 1.1 0.1 2.0 1982 0.0 1.0 1.1												
1982 3.3 1.3 1.3 3.3		1	XXXXX.X	XX 4X X . X	XXX C. AX	XX . XXXE	XX+X*XX	***	[4.4XXX	[XX44.XX	XX (X + XX	[XX.X.XX]
1982 3.3 1.3 1.3 3.3			!						!	1		! . !
1981 0.01 3.01 0.01 0.02 0.02 1.7 0.02 0.02 0.02 0.03 0												
198+												
1985 3,0 3,0 3,1 4,0 3,1 3,1 3,1 3,1 3,1 3,1 3,1 3,1												
1986 0.0 3.0 3.1 0.0												
1987 420.01 184.01 c2.011 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1981 420.01 184.01 c2.010 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1991 420.01 184.01 c2.010 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1991 420.01 184.01 c2.010 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1992 420.01 184.01 c2.010 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1993 420.01 184.01 c2.010 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1994 420.01 184.01 c2.011 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1995 420.01 184.01 c2.011 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1995 420.01 184.01 62.011 4.521 G.0 4.68013.3171 J.0 21.001 6.501 1997 420.01 184.01 62.011 4.521 G.0 4.68013.3171 J.0 21.001 6.503 1997 420.01 184.01 62.011 4.521 G.0 4.68013.3171 J.0 21.001 6.503 1999 420.01 184.01 62.011 4.521 G.0 4.68013.3171 J.0 21.001 6.503 1999 420.01 184.01 62.011 4.521 G.0 4.69013.3171 J.0 21.001 6.503 1999 420.01 184.01 62.001 4.521 G.0 4.69013.3171 J.0 21.001 6.503 1999 420.01 184.01 62.001 4.521 G.0 4.69013.3171 J.0 21.001 6.503 2001 420.01 184.01 62.001 4.521 G.0 4.68013.3171 J.0 21.001 6.503 2002 420.01 184.01 62.001 4.521 G.0 4.68013.3171 J.0 21.001 6.503 2003 420.01 184.01 62.001 4.521 G.0 4.68013.3171 J.0 21.001 6.503 2004 420.01 184.01 62.001 4.521 G.0 4.68013.3171 J.0 21.001 6.503 2005 420.01 184.01 62.001 4.521 G.0 4.68013.3171 J.0 21.001 6.503 2006 420.01 184.01 62.001 4.521 G.0 4.68013.3171 J.0 21.001 6.503 2007 420.01 184.01 62.001 4.521 G.0 4.68013.3171 J.0 21.001 6.503 2008 420.01 184.01 62.001 4.521 G.0 4.68013.3171 J.0 21.001 6.503 2010 420.01 184.												
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- 2015 420.0 184.0 62.33 4.52 0.0 4.680 1.3471 0.0 21.00 6.50 2016 423.3 184.3 62.33 4.52 0.0 4.680 1.3477 0.0 21.00 6.50 2017 420.0 184.0 62.33 4.52 0.0 4.680 1.3477 0.0 21.00 6.50 2018 420.0 184.0 62.33 4.52 0.0 4.680 1.3477 0.0 21.00 6.50 2011 420.0 184.0 62.33 4.52 0.0 4.680 1.3477 0.0 21.00 6.50												
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2017 420.0 184.0 62.13 4.52 0.7 4.630 3.3771 0.0 21.00 6.50 2018 420.0 18.0 62.33 4.52 0.0 4.630 3.3771 0.0 21.03 6.50 2011 420.3 184.3 62.33 4.52 0.3 4.640 3.3771 0.0 21.00 6.50												
2018 420.0 18+.0 62.23 +.52 0.0 4.680 3.377 0.0 121.03 6.53 2317 423.3 18+.3 62.33 4.52 0.3 4.680 3.3777 0.0 21.00 6.50												
1 2313 423.3 184.3 62.31 4.52 3.3 4.640 3.33771 3.0 21.00 6.50												
[202] 420.01 188.01 62.01 4.521 0.0 4.689[3.3777] [9.0 [21.00]												
		1 2021	420.0	[[4+4]	0 (*)0	1 4.52	1 0.0	1 4-080	11.31//	6+7	21.00	1 9.23

ļ	ļ		AN NUAL I	± 1)	CEC (43	¥4R	14 1L c	164	THANS	£3\$\$
	WEAD] TALLET		C. N. 2 & 4	Trable	SUUSTA	 EUE1	fedet	ETC.	POMER	ICHEBEY
	1,52					FACIL .					
		[KHH]	 4 L - -	MIL.BŧÎ	MIL.BHT	 MIL_ENT	BHT/L	1/441	ĀIL.BAT	 {M _m }) 4 L_K6H
-		XXXXX.X	K-KXXX	****	XX-XX	XX.XX	XX.XX	4. 44 44	XXXX.XX	XXXX.XX	XX4X.X4
	2021	420.0						3.3177			
	207	1 420.0 420.J						1,5711		21,40	
	2024	1 420.0						13.5171		21.00 21.00	
i	2025	420.0						13.3377			
	2025	420.0						3.3177			
	2027	420.0	18 0			0.0	4.680	13.5777	1)1	21.00	6.50
	2021	[420.0j						[3,3177]			
	2027	420.0						12.3177			
	5031	[420.0						11.11.11			
	2021	420.0.						13.5377		21.00	
	2032	420.0						[3.3427]			
	2033	1 420.0						10.3777		21.00	
:	2034	420.0						13. 37.27			
	2035	420.0						13.3371		21.33	
	20 36 20 37	420.6 420.6						[], 5177 [], 5177		21.00 21.00	

*** CASE 1 *** PLANT 11, 2 *** Oil-fired Thermal Power Plant

		IIAS-	A 1 IU4L		1£U (184		4JL=	J&4	TA ANS.	L 155
		CAPA+	tal Inc.		I te visa						INNERGY I
	1				ALIL						
	i	i			i		i				i
	i 	[[M4]	41c. (4H	411.911	1416.641	416-847	BH7/L	L/(m1	×LL.34T	(V#)	HILAKARI
	1	XXXXX.	X 4 4 4 4 4 4 X	******	******	XX.XXX	*****	A. N. K. K.	XX (X . AX	XXXX. 11	INK*XXX
	1581	3,3	J. J	1.1	ו נ.נ	3.3	1,,	1.1	J.3	3,3	` 3.0 i
	1 1982							ذ د د	0.0		
	1481	0.0						J. J	ວັບ		
	1984							زندا	j.j		
	1985	0.0					3.480				
	1985	0.0					3.480				
	1987	133.3						3.2023			
	1983	180.0					3.480				
	1981	I RO. G						J. 2123		9.00	
	1993						3.48J				
	1991	180.0			1.44	0.0	3.4Bu	1.2323			
	1992	180.0	97 +. 5	12.31	1.94	0.0	3.480	1,2523	0.0	9,00	03.001
	1991	183.3	171.5	42.31	1.74	3.3	3,483	J. 222J			43.331
_	 195 9 .	183.0			1,94	0.0	3.4801	1.2223	0.0	4.63	83.00
	1 1995	1 190 0	171.5	*>***	1.94	C_O I	1,480	3. 2524.	0.0	5.00	64.00
	1956	143.3	471.5	43.01	1.94	1.0	[3.483]	1, 2, 21.	J.J	9.331	166.56
	1997	180.0	37+.5	41.5/	1.94	0.0 (3.483	3.2523	្សេប	4.90	43.00
	1 1954	1 180.0] 1,483			9.00	100,66
	1951			45.37			3.443			9.33	166.29
	2007	160.0		41,27	1.74		L 3+462			4, 10	1,00
•	1002			+3.57	1.24	0.0	3.443	14.2523	0.1	5.00	83.001
	2032						3,483;				
	2003	, ,,,,,,					3.480			9.00	
	2004						[3,463				
	2005						3.48)				
	T 5000 -						<u>3-443</u>				
	2007						[3,48J				
	5003						3,483				
	2003	180.0					3.483				
	2011	180.0					3. 483				
	ZULL	180.0					3.483				
		L 190.0					_1.20				
	1 2011						1.460				
							1,483				
	2017	180.0					3,480				
	2016						7,480				
	2314						3.48J				
	1 2014 1 2014						100				
	2023						3.480 3.480				
-		100-0	774.5	43.57	1.44	3,3	1 3-48J	1445,57	1,1	9.33	83,331

	•	I TALLEC	TANAN IF	_	XEO (Par Mar		IADLE.	064	*FALS.	. LOSS
	YE AR	CAPA-	HATING	GENERL.	TRANS. FACIL:	SUBSTA.	 FUEL	IFJEL .			ENEPGY I
	İ	i	i i	i	พัธ ธิศฑ์		Ī I	į į	1	i	MILAKHH
. 1	[XXXXX.	XXXX (. X	X844.84	XXXX.XX	****	xx.xxx	4.4444	****	XXXX.XX	AXXXXXI
	2021	1.80.0						3-525)			
	2023	180.0						d.2521 1.2521			
	2024 2025	1 180.0 1 183.J						J. 2523 J. 2523		3.00	
!	2025	180.0	414.5	45.37	1.94	3.0	3.490	13.2323	0.0	9.001	43-00
-	2323	183.0	374.5	43.5/	1.94	3.3	1 3.463	10.2523	0.3	9.00 9.00	43.00
	2021 2031	180.0						J. 2523		9.001 9.001	
	2032	180.0 180.0						13.2323		9.001	
	2033	1 RD.0	47 4.5	43.57	1.94	6.0	3.480	0.2523	3.0	4.001	83.001
	2035	180.0	471.5	45.37	1.74	0.0	[3.480]	J. 2523 J. 2523	J.0	9.00	
	2034 2037	147.7						13.2523		9.00	
										·	

*** 1 *** FORJECT SALANCE SHEET INVOLUDATES PLANTS
--- NE SHEET PALCE FACTOR ---

*** EVALUATION CPITERIA ***

CALAULATION PERIOD --- 51 YEARS CISCOUNT RATE --- 13.0 t EXCHANGE WATE --- 1.000 (BHT/BHT)

ESCALATION PER A/MU4

P.C. PART ---).1 &
L.C. PART ---).1 &
FIRFT 164 ---).1 &
FUFL PRICE ---).1 &

Nam Chon Power Station

	!	!		(4) 240	ŀ	1 4545-	ATTING OAM	6351	I	1	1 1	
		INVEST-	[SALAHLE	ļ			[THANS-	1508-	ANNUAL I	LOST
	YEAR	1 4517	S ISTALLE 2		ENERGY	FIXED	Azr Lant C			STATION		FLDI
	: .		APACI FY			i cost	1 2121	1 2020	I UEM COST	T DEM CLST	i 1	
		[MIL.6171	[46]	(11L . Kate)	4 m I E * * # H B	[(MIL-daf)	Harriagiti	[{MIL+HHI}	TEATE SHEE	1746.114)	[[[(MIL.BHT
	1 1981	664.39	1 3.3	Jeu	i 0.7	i U.d	1 0.7	1 d. 24	u . u	1 0.0	4.20 [673.1
-	1982 I	1152.24					3.3	23.73		3.3	23.73	1172.9
	1983		1 0.3				j 3.6	62.10		0.0	62.13	1200.0
	196.			J. U	7.9		1 4.9	70-14			70.36	1373.2:
	1465	180+.79		ن د ك	0.j		j J.J	95.22		J.J	95-22	1933.2.
	1965	1437412	ו נינ ו		0.0	د. ن	0.0	45.22		0.0	45.22	1503.04
	1987				767.3	18.75		80.86		1.40	85.29	1164.00
	1961		1 595.1 [1619.0	75.3,		75-14			92.75	92.7:
	1967] "395)	1130.0	1069.0	75.04	0.)	15.04			92.15	92.71
	1943		545.2	1143,0	1004.0	75.3.		75.04				92. 7
	1991		545.1	0.8411	10/5.C	75.4		15.14		4-33	92.15	92.7
	1953	343	515.3	1133.0	1069.0	75.04	0.0	75.04		4.00	92.75	92.75
	1493 [3,)	595.) (1136,0	1069.0	75.04		75.04			92.75	92.75
	199.	3,)	595.J	1146.0	1664.0	75.0+		15.34				92.7
	1995		595.)	1136.3	1069.0	75.34		75.04	13.71	4.00	92.75	92.75
	1950	3.3	5¥5 ₊)	1101.0	104-0			75.04			92.75	92. 7:
-	1997 [515.3	1144.0				75.34			92.75	92.75
	1951		595.1	1115.3	1069.0			75.04			92.75	92.72
	1991	0.)	545.;	1100.0	1049.0			75.04		4.00	92.75	92.75
	2000	J.)	595.3		1069.0			75.34			92.75	92.75
	5221 1	1,0	313.1	1114,3	1369.0	75.04		75.04	13.71	4.00	92.75	92.75
•	2002	3.)	545.J	1136.0	1069.0	75.0+	J.0	75.04		4,00	924 75	92. 7.
	2001	3.1	595.0	llud.u	1069.0	75.34	1 0.4	75.04	13.71	4-33	92.75	92.75
	2334	ן נינ	595.) [1369.3			75.04		4.00	92.75	92.75
	2003 5	3.1	595.)	1130.0	1069.0	75.04	3.0	75.94			92.75	42. 7
	2000 1	3.1	595.1		1064.0	75+4+		75-0-	13.71			92.7
	2337	J.) .	545,3	1139.3	1369.3	77.34	0.0	75.04	13.71		92.75	92.75
	2001	33.50	595.)		1064.0	75.04		75.04				125.9!
Į.	5004 [372.10	595.3	1114.0	1064.0			75.04	13.71		92.75	465.11
	5017 1	617.10	545.3 [1130.3	1369.3			75.04	13.71		92.75	710.65
	5011 1	584.20	5-15.1	11)3.0	1069.0	75.34		75.04			92.75	670.95
	2012	362.10	595.3	1110.0	1069.6	75.0.		15.0+				455-35
-							,		÷	,.,,,		

		· 					-					
	1 1	INVEST-		(145 END		hansi l	TING 1.44	JOST	I TO AND	į	!	
	I YEAR	HEIT	I ISTALLE:		ENEAGY	FIXED	COZI A3E IYAFE	TOTAL	LAUSSING	STATEUM	AMMUAL CUST	FLQ a
	I	(HILLE II)	(4m)	i i i i L. Kumi	[MIL.Kem)	IPIL-3dl£	1111-04711	[146.84]	[LHTF" THE]	(41L-8-T)	[MIL.BHT]	(MIL-BHI
	2013	1,7 (,t	595.) 545.)									
	2015	J. 1 J. 1	592.J 595.J	I Lilan	1002.0	75.14	3.0 [15.14 15.14	13.71	4.00	92.75	92.71 92.71
	2017		595.1	111440	1361.3	15.14	1-0	75 G 75 J4	13.71	4.33	92.75	92.75 92.71
	2017	ú. j	595.1	1133.3	1069.0	75.31	J.7 [75.04 75.04		4,00	42.75	92 . 75 92 . 75
	2321	ا ز.ز ا زود	595.)	1114.1		75.31	J.6 [75.34 75.34	13.71			92.75 92.75
] 2023 [] 2024 [187.30 [1 1130,0		15.14	3.3 1	75.04	13.71			92.75 219.75
	2022	274.33	595, 3	1 1300	1069.0 1069.0	75.1+		75.04 75.34				366.75
	1 5751 1	171.3B	595. J	0.2611				75.34 75.04	13.71 13.71	4.33	92.75	271.75
_	5051	1.1 1.1	595. I	I Liden	1064.)			75.04 75.34	13.71	4.00		92.75 92.75
	2333 2031	J.; [515. j 595. j		1069.0	15.1.	0.0	75,04 75,64	11.71	4.00	42.75	92.75 92.75
	2035 2035	3.3 I	595, J 575, J		1069.0	75.3.	0.3	15.34 15.04	13.71	4.33	92.75 }	92.71
	203+ 203+	1.3 [545.) 545. J		1069.0	75.14	o.o i	75 .64 75 .34	13.71	4.00	92.75	92 • 7 <u>.</u> 92 • 7 <u>.</u>
	(2330) 2037	143 -483.30	595.)		1069.0	75.34	9.1	75.04 75.04	13.71	4.40	42.75	92.75 92.75
										4.00	92, 75)	-592.75

*** 2 *** PRINIECT SALANCE > 1327 (ALTERNATIVE)
--- NO SNAJI# PRILE FACTOP ---

*** EVALISTION CRITICAL ***

LALAULATION PERING --- 57 FERS

DISCOUNT RATE --- 11-0 &

EXCHANSE RATE --- 1.000 (SHT/SHT)

ESCALATION PER Alimu4
F.C PART --- J.J 6
L.C PART --- J.J 5
FIXED 164 --- J.J 5
PUEL PEICE --- J.J 5

Gas Turbine Power Plant

1	i	GENEFAT	lite aite l		l stier	ILTENG CLY	ÇCST	!	l	! !	COST
i	I INVEST-			SALAHLF	l				1708-	ANNUAL I	FLOW
 YE AR	HE 47	I ISTALLF)	PRIDIE-	ENEL GY .		VAR LABLE	TOTAL		STATION		PLUM
1	Ì	SAPACITY	FIGN		t cast	1 COST	I CCST	CCM COST	1233 MAD 5		ZMT: BMT
1	1 [MIL_B-11]] (Mb)	[[4[L.K.eH]	("IL.KaH)	[[4]L. 3dT.	111411-3411	{{ 41 C. 0mi}	AIC-PHIL	! ! mTC-BE: \	11711.400411	, , , , , , , , , , , , , , , , , , , ,
				C.0	i u.J	1 0.0	1 3.0	0.0	1 0.0	1 0-0 1	0-0
1 1981	1 1.4	1 0.1				3.3_	ڏ.ڏ ا	i i.i	3.3	1 3.3	0.0
 1982	1	i- "•••				7 5.5	0.0	0.0	0.0	0.0	0.0
1983	1 0,0	1 9.7				3.0	ไ	0.3	u_0	i a.o.i	413-30
1 1984						į 3.3	3.3	3.5	3.3	1.3	713-30
1985						1 3.0	0.0	0.0	0.0	i 0.0 i	710.30
1986				17745						408.99	942-89
1881								4.52		434.99	4 38-99
 1964	1 - 3-7	1 420.0						4,52		438.99	408,99
1987		1 420.0								1 408.99	408.99
1991		1 420-1								1 438.99	438.99
1991		420.0		177.5						409.91	408.99
1992		1 420.0					+04-17			408,99	408.49
1 1991	1 3.3	1 420.1	1 134.0		1 65.33		434.41		1 3.3	438.99	438.99
	ተ- ∹:;~	420.0	184.3	- 177.5						1 408.44	408.99
1995 1996		420.3								408,99	408.99
1957		420.0								1 4J8.99	408.99
1 1991		420.0								408.99	408.99
1994		420.0								1 408,99	408,99
1 1444		420-3	1 194-0	177-5			1 434.47	1 4.52	1 1.3	438,99	438-99
 1 2331	 	1 623.0			62.00				0.0	408.99	408.99
2005		420.1							0.0	408.99	400.99
2003	1 3.3	420.0							3.3	1 438.99	
1 2004	392.63	423.3						4.52	0.0	408.99	BQ1.59
2005									i 0.0	[408.99	
1 2006	588.90	420.3		1 177.5				4.52	1 3.3	434.99	997,89
 2337	392.63			177.5				4.52		1 408-99	
5007		420.0								404.49	
 2004		420. J		177.5						438.99	
2017		423.3								408.99	
2011		420.3								100.99	
1 2012		420.U	184.0	177-5	62.23					1 435_99	4 438,99
 T CATE	<u> </u>	720.0	1		4		T -12,27,2	1 '2' =			

! !	1NVEST~		LIG ENJ	SALABLE	E 7 30	RATING CL	CCST	I ITRANS-	 508-	: ANNUAL	COST
YEAR			1 -20005- 1		FIXED	I VAR IABLE	1 TOTAL		STATION		FLOW
i 1		1 TABAFITY	8 T T. 193 1)	I GUST	(COST	1 COST	I CEM COZI	I CON COST		tute sut'
 	THIL BALL	ॏॱॱॱय़ॹढ़ॸॗॗॗ	TT-TT-Karit	THIFFFHI	I (MIL-1914)	11 [4][1-14]	11(3)17-8411	TIMIL THIS	11415-01:1	i ting. 11m1	LUIL OUII
1 2013 !	0,3	1 420.0	j 184.J	177.5	62.01	1 342.17	1 404-47	1 1.54	0.0	1 408-99	
2014	5.5	423.3								408.99	408.99
2015		420+0								406.99	408,99
	3.3	420.J								1 408-99 1	408-99
1 2016	ـــُــةُ ــ ـــــــ	4234								1 438.99	404,99
 2018	0.1	423.3								408.99	408.99
		420.3								1 408.99	408.99
201+	i-i	423.3								438.54	408-99
5059	3.3									1 409.99	408.79
J 2021	9.1	420.0								\$48.99	408.99
1 2022	3.3	420.3								438.59	
 	ــربويي ـ									408.99	801.59
2024	392.60									408.59	
1 2025	679.10									438.99	1388.29
2026	679.36									408.99	922.19
1 2027 1	513.20									406.99	408.99
1 2023 1		420.3									
 . 1 2022								1 4-52	1 5.3	1 438.99	
2333		1 423.3								408.99	
2031	3.1	420.0								1 408-54	
2032	3.3	1 420.0								438.99	
2333	1 1.1	1 420.0	1 134.0							400.99	
1 2034	3.1	420,4								104.99	
1 2035	12,	1 420.3	l lda.u.			1 1. 352.47				1 439.99	
 1 2336	j.;	420.0		177.5						408.97	408,99
2037		420.0	134.0	177.5	62.13	242.47	434.47	4,52	1 0.0	408,99	1 -308-11

4 - 82

Oil-fired Thermal Power Plant

YEAR 4EVT	1 1	INV=ST-	I GENERAL	(4, £40	 S∆l≞HLF] Gz 42×	ATING OL4	COST	 	i I Stin-	j I ANNUAL 1	cost
	YEAR	4E V T	I I ISTALLE)	~200C~	ENERGY	FIXED	JJEA I PKV	1 TUTAL	I MISSICA	STATION	COST	FLOW
1982 J.J U.J J.J C.D C.D U.J U.D U.D U.D U.D O.D O.D J.D	 	1H16.8471										(MIL-BHT)
1982 J.J U.J J.J C.D C.D U.J U.D U.D U.D U.D O.D O.D J.D												
1981 1.1 0.3 0.1 0.1 0.1 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 1985 1985 108 0.0 0.1 0												
1986 365.30 0.0 -1[7.0] -7[7.0] 0.1 0.2 -628.78 -628.78 0.0 0.0 -628.78 -44.90 1975 586.30 0.0 -518.0 -518.0 -518.0 0.0 -518.0 -518.0 0.0 -518.0 -518.0 0.0 -518.0 0.0 -518.0 -518.0 0.0 0.0 -628.78 -44.90 1967 1												
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2002 9.3 183.3 374.7 651.5 45.67 854.60 930.27 1.94 0.0 932.21 932.2 932.2 932.2 932.2 932.2 933.2	(2)33	3.3	1 197.3	1 774.5	891.5	1 45.01	354.60	1 900.27	1.94	0.0	1 902.21 1	902.21
2003 0.0 180.0 974.5 891.5 45.07 854.60 900.27 1.94 0.0 902.21 902.2 2005 0.1 180.0 974.5 851.5 45.07 854.60 900.27 1.94 0.0 902.21 902.2 902.2 2005 0.1 180.0 974.5 851.5 45.07 854.60 910.27 1.94 0.0 902.21 902.2 902.2 2006 0.1 180.0 974.5 891.5 45.07 854.60 900.27 1.94 0.0 902.21 902.2 902.2 2007 0.0 0.1 180.0 974.5 891.5 45.07 854.60 900.27 1.94 0.0 902.21 902.2 902.2 2007 0.0 0.1 180.0 974.5 891.5 45.07 854.60 900.27 1.94 0.0 902.21 902.2 2007	1 2001	0.1	1 140.0	1 175	891.5	45.31	(d54.60	1 400.21	1494	0.0	402+21	902.21
2006 0-2 180.0 974.5 691.5 45.07 854.00 900.27 1.94 0.0 902.21 902.2 902.2 2005 0.1 180.0 974.2 851.5 45.07 854.00 910.27 1.94 0.0 902.21 902.2 902.2 2007 1.94 0.0 902.21 902.2 902.2 2007 0.0 0.0 180.2 902.2 902.2 902.2 2007 0.0 0.0 180.2 974.5 891.5 45.07 854.00 900.27 1.94 0.0 902.2 902.2 902.2 2007 0.0 180.2 902.2 902.2 902.2 2007 0.0 902.2 902.2 902.2 2007 0.0 902.2 9									1 1.94	1 3.3	1 932.21 1	932.21
2005 0.4 130.0 97 651.5 45.07 854.60 913.27 1.94 0.3 912.21 912.2 912.2 230.6 0.3 131.3 97 891.5 45.07 854.60 900.27 1.94 0.0 902.21 902.2 2007 0.0 180.2 474.5 891.5 45.07 854.60 900.27 1.94 0.0 902.21 902.2 902.	 1 2003	1 3.3		974.5	891-5	1 45.51	4 454.60	1 900.27	1 1.94	0.0	1 402.21	902.21
2336 3.1 131.3 97*.5 891.5 45.01 456.00 900.21 1.94 0.0 902.21 902.2 902.2 2007 3.0 140.3 174.5 891.5 45.01 854.00 900.27 1.94 0.0 902.21 902.2 200.2 20	 1 2004	(• ii	Tao. ū			45.07	854.00	15.00	j 1.96	0.0	1 902.21 4	902.21
2007 3-0 180-2 474-5 891-5 45-67 854-60 900-27 1-94 0-0 902-21 902-2	2005	L.0	1 140.0	971.2	851.5	1 45.07	854.60	913.27	1.44	ز ا	932.21 1	912.21
7003 0-3 140-3 17-0 891-5 45-07 451-60 900.27 1.94 3.3 932.21 932.2 733.1 313.50 183.3 37-0 891.5 45-07 954-60 900.27 1.94 0.0 902.21 1212-7 2013 465-40 180-0 97-5 891.5 45-7 854-60 900.27 1.94 0.0 902.21 1468-0 2011 465-40 180-3 97-5 891.5 45-07 454-60 900.27 1.94 3.3 932.21 1368-3	2336	1 1.1	1 133.3	1 974.5	891-5	1 45.42	454.60	14.000	1 1.94	1 4.0	902.21 1	902.21
2331 313.50 183.5 474.5 491.5 45.7 854.60 900.27 1.94 0.0 902.21 1212.7 1213	1 2007 1	3.0	1 180.0	1 474.5	891.5	1 45.67	854.60	15.004	1 1-94	0.0	1 402-21 1	902.21
2010 465.40 180.0 97-5 149.5 45.27 854.60 930.27 1.44 0.0 902.21 1366.0 2011 465.40 180.3 97-5 891.5 45.67 454.60 900.27 1.94 3.3 932.21 1368.3			[1d0.3	17.00	851-5	1 45.67	45%.60	1 400.27	1 1.94	1 3.3		
2010 465.40 180.0 97-5 491.5 45.27 854.60 930.27 1.44 0.0 902.21 1368.0 2011 465.40 180.3 97-5 891.5 45.67 454.60 900.27 1.94 3.3 932.21 1368.3	 1 2331	31,1.50	193"3	1 374.2	891.5	1 45.07	954.60	1 900.27	1 1-94	1 0.0	1 902.21 1	1212-71
1 2011 1 463.40 180.3 974.5 891.5 45.67 354.60 900.27 1.94 J.J 9J2.21 1368.3	 2010	465.40	180.0	77775	491.5			930.27			902.21	10.8011
	1 2011	463.40	1 180.3	1 974.5	891.5	45.67	J d54.60	15.006	1 1.94	1 3.3	932.21	
	1 2013 1	313.53	183.3	1 114.5	851.5	1 45.37			1 1.94	0.0	902.21	

i	! !	INVEST-	1 SENERAL	143 EAD	 SALARIF	SE 161	ATING	JEM	совт	TRANS	 Su#~	i ANNUAL I	COST
	YEAR			1 263300-		1 FIXES					STATION		FLOW
		ì	CAPACITY	i Itun i	1	Telia I	1 1	:JST	CFIST	DEN COST	TEH COST	i i	
		HIT BILL	لخطايا	TTTTT = VetTT	LLPILAKHILI.	TTETT-BHI	rttitr	TIHE	LC 41 La SHT 1	[[THE]]P	[[41LaBHT1]	[[MIL.6HT]]	[HIL_BHT]
Ī	2011	0.3	1 160.0	1 1/4.5	891.5	45.47	§ 85		400.21	1.94	0.0	902.21 1	15.506
	2014	3.3	1 160.0				1 35	.60	900.27	1.44	0.0	902.21	907-21
	2015		1 180.3					1.6J J	933.27			432.21	932-21
	2016	0.7	0.381						440.27			902.21	902.21
	المدعدا		l liu.u					باعده				402.Z1 I	902.21
1	70L5 (i idu.a					1.63 j				432.21	932-21
	2014		1 180.0					-60				902.21	
	2023		180-0						930.27			402+21 I	902.21
	1202		140.3					1.63	913.27			835-51	902.21
	2322	0+1	1 189 0					+=50 [930.27			902.21	
	. 2021		1 180.0					enall. I				902-21	902.21
	202+		180.0					4-6J J	913.27			932.21	
	2325		180.0					1 00.				902-21 1	
	2024	35,40						-50 (900.27			902.21	941.01
	2027		140*3					-43				932,21 1	
	2323	1-1	180.0						900.27			902.21	902.21
	2029		1 160.0									405-51	992.21
į	7033		1 140.0					1.63	933.27			932.21	
	2931		[187.7					0	700.2/			902-21 [902.21
	5035		1 180.0					.6U	930.21			902-21	902.21
	2033		1 180 0					1.63	933.77			932.21	
	2334		1 183.3					0 !	900.27			902-21	902.21
	2035		i indad					F# 60 1				902.21	
	2034	3.3	1 100.0					-60 1	933.27			932.21	
_	ZJ37	-54.20	[]87")	974.5	191.5	457	1 43	1.50 i	900.27	1,94	1 0.0	902.21	844-01

PROJECT EVALUATION OF THE NET PRESENT VALUE (16-P-V) 45TH70

--- NC SHA)JA PRICE FACTOR --
*** EVALUATION CRITERIA ***

CALASERTICS PERSOn --- 57 forks PISCOURT RATE --- 13.3 E EXCHANGE MATE --- 1-333 ENTERNATS

ESCALATION PFP AMMU4

F.C PART --- 1.1 t

L.C PART --- 1.1 t

FIRE 054 --- 1.1 t

FUEL PAICE --- 1.3 t

*** CASE 1 *** PLAKE 43. 1 ***

	!	Н	ydropower	Nam Chon	Power Stat	tion	F	lternative	Gas Turbine	Power Pl	ant
	YEAR	INVEST-	NNUAL I	COST	NET PRESE).u & 1 1	INVEST-	ANIUAL I	BENEFIT FCJ-		ENT VALUE
		i	1 1	[41E+8HT]	P.V.F	N.P.V	1	i i	[M]L.nHT)	15*n)	N.P.Y [MIL.8HT]
	T lvel	104.19	8_28 1	6/3.17 [J_9J\$1	611.97	3.1	1.3	J.J (1.4041	
	1982	1152-24	20.10	1172.94	0.8264	961431 1	0.)	0.0	0.0	0.6244	
	1983	1206.52	62.10	1265.62	C. 7513	41.tcP	0.1	0.0	0.0	0.7513	
	1 1484	1302.43	1 73,38	1373,21 1	3.6433	937.42	413.33	1 2.2	411-33	J.683J	
	1985	1804.99	95.22	1933.21	0.6209	1177.81	710.30	0.0	710.30	0.6209	
	1 1980	1407.32	45.72	1513.04	0.5645	H4Je41	710.10	0.0	710.30	0.5645	
	1 1987	1078.71	85.29	1164.33	J. 51 32	547.32	533.33	4 วัย 99 (942.89	3.5132	
	1 1963	0.0	92.75	42.75	0.4665	43.21	0.)	408.99	406.49	0.4605	
	1484	3.3	97,75	92.75	0.4241	344.54	0.3	408-99	404,99		
	1993		92.75	92.75	J. 3855	Jan fa	1 3.1	438.99	438.44	J.3855	
	1991	0.3	92-75	42.75	0.3505	32.51	0.)	408-99	4D8.99	0.3505	
	1 1992	j 3, 1	52.75	92,75	0.3186	24.55	0.3	404.99	4D8,99	D-3186	
	1991	7.5	42,75	92.75	J. 2857	26.47	- Ti. 1	438,99	438.49	3.2897	
	1 1994	ل أوا	\$2.75	92.75	0.2633	24.42	0.1	408.99	408-99	0.2633	
	1995	J.J	\$2.75	92.75	0.2394	22.21	3.1	414,99	408.49	0.2394	97,91
	1996	3.5	92.75	92.15	3.2176	23.11	د.د ا	438,99	438.99	3.2176	
	1 1997	0.3	92.75	92.75	0.1978	10.32	D.)	408.99	408.99	0.1978	1 80.52
	1991	0.3	92.75	92. 15	0.1/99	10.61	0.3	408.99	408.99	D-1799	73.56
	1993		92.75	92.15	0.1635	13.17	3.1	438.97	40H,99	J.1635	66.87
	1 2333	1 3.3	92,75	22.75	0.1485	13.77	4.7	408-99	408-99	0.1486	60.79
	2001	J.J.	92.75	92.15	0.1351	12.51	0.1	408.99	408.99	0.1351	55.27
	1 2002	0.3	92.75	42.75	C-1228	11.51	3.3	438.49	434.49	3.1228	53.24
-	2303	ذَ ذَذَ ا	92.75	22.75	0.1117	10.35	0.1	408.99	400.49	0-1117	45.6B
	1 2004	j 5.5	52.75	92. 15	0.1015	3.4.	392.50	408.99	801.59	0.1015	01.30
	2005	3.3	52.75	42, 75	C-0923	d. 5.	538.73	138.99	997.49	J. 3923	
	2336	3,3	92.75	12,75	0.0839	7.71	568. 10	404.97	997.89	0.0839	83.73
-	2007	0.0	92,75	42.75	0.0743	7.41	192.50	408.99	HQ1.59	0.0761	
	2004	31.20	92.75	125.45	0.0693	8.73	3.3	438.49	438,49	3.3693	
	2333		92.75	465.15	0.0630	27.32	0.)	401.37	408.49	0.0630	25.78
	2013	617.90	52.75	110.65	0.0573	43.73	0.1	408.99	408.99	0.05/1	23.44
	2011	584.20	52.75	670.42	0-0521	15.27	0.3	439.99	439,99		21.31
	2312							404.99	485.99		

	!!	lly	dropower i	Nam Chon P	ower Static	n i	A	lternative (Gas Turbine	Power Pla	nt
	YEAR	INVEST-	i I ANNUAL I L COST L	i GST FLOW_1	NET PRESE		INVÊST- ME 11_1	I ANNUAL L 1200 L	BENEFIT	1 NET PRES	ENT VALUE J.O C I
		1	1 1	[4[LeaHF]]	P.V.F P.U	N.P.V		1	{M[L.8HT]	P.V.F 1P.U1	į N.P.Y į (Kil.8HT)
	1 2013		92.15			3.41	11.3	-08-99			
	2014	i. 0.0	92.75 92.75	12,75 12,75	0.3391 t) ده.د ا_لفيد	3.3 0.3	4)8.99 408.99	436.91 408.99	0.0391 0.0350	
	2010	0.1	1 42.75	92.75	0.0324	3.01	0.3	408-99	408.99	0.0324	
	2017		42.75	92.15	3.1294	2.13	3.3	6.18.99	418.99		
	2014		52,75	92.15	0.0267	2.45	0.)	408-97	408.79	0.0267	j 1a.93
	1 2019		1 42.15	92,15	0.0243 1	4.4	0-3	408.74	+05.99		
	2023	3.3	92.75	42.15	J. J221	2.3-	3.3	438-99	418.99	1 3.3221	9.34
	1 2321	L0_0	1 92.15.1		0.0201.1.			408-94			
	1 2022	0.0	97,75	92.75	0.0133	1.67	0.0	400+99	408.99	0.0183	
	2023	147.34	1 52-15 1	219.15	0.0195	4.01	7-1	418.99	416,99		1 6.79
	1 2024	274.10	52.75	306.15	0.0151	3.51	112.60		601.54	0.0151	
	1 2025		92.15	3.0.75	0.0137 1	2.41	679.30		1098.59		
	2026	179,30	92-75	2/1.15	0.0125	ا دو د	679.33		LJ86.29	1 3.3125	
	1.2023	. پہرے ا	1 92.25 1	12.75	0.0113.1	L_4 <u>12</u>	513.20 0.0	408.99	922.14	0.0113	1 4.22
	2024	0.0	92.75	12.15	0.0193	J. 47	3.1	414.44	434,99	1 3.3394	3.63
	1 2029 I	3,3 3,1	92.15	12,15	4500.0	3.77	0.1	408.94	408.99	0.0045	
	2031	9.0	92.75	72,75	0.0077	3.72	0.)	408.49	108.99		
	2032	6.3	52.75	42.75	C.C070	3.6.	3.5	434.99	436.99		
	2333	ِ دُورٌ ا	92.75	42.15	0.0064	1,21	0.1	408.99	404.99		
	2034	6.7	92.75	72.75	0.0056	J.5. I	0.)	408.99	408.99	1 0.0058	2.38
	2035	1 3,3	92,75	92.15	0-0053	Jest	0.1	436,94	438,99	1 3.3353	2.16
	1 2336	د.ز ا	92.75	42.75	J. JJ48 J	3,41	0.4	448.99	406.99	0.0048	j L.97
	1 2031	-695.50	1 32.75 1	-512,15	0.0044 1	-2,51	-1117.10	408.49	-708-11	0.00+4	-3.10
	1 Forái	l 10a1a.4F	ļ- ;			664.44	5478.14	ļ	!	!] 3887.26

	!!!	Нус	iropower N	am Chon Pe	ower Static	วก	Alte	rnative Oil-	fired Therm	ial Power I	Plant
	YEAR		AMPRIAT I	CJaT Ì	hef Presi Cl⇒ L	0.0 ()		Afilm Jal	PF4FFT !	461 Pacs	BULAV TMB
	<u> </u>	WE AL		FLilw	6 4 5	N.P. /	MENT	[E357]	F[1)~ (~	
	i	[MIC.6HT]	[41L=8HT#	(MILSON)	[[[]] []	[[4]["44[]	(411.447)	[#]L.seT1	[4]L.BHT]		L A.P.V (L (MIL-8HT)
	1981	i	J .	1	l	1	0.1	0.0	ا زروق	0.9091	J 0.0 I
	1962	ĺ	i i		i	i i	J. 3	9.U 1	3.0	0.8264	
	1981	i	i i			i i	3.1	3.3	J.0	0.7513	
	196+		Ť -	· 1		ì	365.33		365.30		
	1985	i i	i i	į į	ĺ	i	586-40	-628.78	-41.48	0.6209	1 -20-07 1
	1966	ı	1	l i	1	1	596.11		136.04		
	1987	į .	i i			j j	\$16.JJ	97.74	514.44	0.5132	1 264.20 1
	1781	i i	i i			i i	U. 1	902,21			
	1984	i	i i	i	ł	i i	1.1	932.21			
	1995	r –	i			ī — ī	0.3	902.21	902.71	0.305>	347.64
	1951	i	i i	i		i i	U.U	502.21		0.3505	1 316-22 1
	1992	i	1	i	l	Ì	3.)	4J2-21 (432.21	J.3186	1 287.47
	1991		i i			i	0-11	902.21 1			
	1994	ĺ	i i	1		i i	0.1	902.21	902.21	0.2633	1 237.58 1
	1995	i	i i			i i	3.3	932.21			
 -	1996	1	i i			í - Ti	0.0	902.21	902.21	0.2176	1 196.35
	1991	Ì	į i	i	İ	i i	0.1	902.21	402,21	0-1478	1 174.50 1
	1991	i	i i		i	ì	3.3	932.21			
	1997	Ì	i i			i i	5.7	902-21	90Z-21 J	0.1635	j 147.52 j
	2003	İ .	j i	i		i i	0.0 (902.21		0.1446	
	2001	İ	j i			1	3.3	932.21	432.21	3.1351	1 121.92 1
	2302		I	-1		i 1	0.1	902.21	402.21	0.1228	i 110.63 l
	2301	İ	į į	i		i i	0.)	902.21	902.21	0.1117	1 100.76
	200.	1	l i	1		1	3.3	932.21	732.21	3.1015	1 41.63
	2335	į	i i		i	j j	0.1	902.21 1	902.71 J		1 83.27 1
	2005	j	i i			i i	0.)	902.21	902.21 (0.0639	75.70
	2007	ŀ	1	i		1	J. J	432.21	932.21		69.82 1
	2303	· · ·	1	1			0.0	202.21	902.21	0.0693	62.56
	2003	1	1	ı i		ı	3100	902-61	1212.71		
	2013	I	1	l i	i	i	465.13		1366.31		
	2311	į .	ı i		•	i i	465. 10		1368-01	0.0521	1 71-27 1
	2012	İ	i i	i		i i	310.50		1212-71 4		
-											

•	! !	Ну	dropower	Nam Chon I	Power Stat	ion	Altern	ative Oil-fr	red Therma	i Power Pla	ant 1
	YEAR		ANTUAL I	2,57] ([= [ENT VALUE		ANNUAL EJST	RENEFIT	=	
	1 1	[M[L.BHT]	 {4 L.BH7}	(*IL+3HT)	(P.U)	N.P.V [Mlt.onfil					N.P.Y IMIL_BHT
	2013		1			! !	0.3 (.0	902.21			
	2015 2016		l I			l		932.21	902.21	0.0324	29.19
	2017 2014 2314				! ! !		0.4 0.4	902.21 932.21 902.21	932.21	3.3267	24-12
	2020		i 				0.1 i	902.21	902.21	0.0221	1 19.93
	2021						0.3	902.21 902.21	902.21	0.0166	14,98
	1 202+ 1 2025 1 2025						0.3 36.35 36.40	932.71 902.21 902.21	932.21 941.01 941.01	0.0137	12.91
	L 2027 J			- -i	- <u></u>		<u>51.63</u> 0.1	902.21	953.81 902.21	0.0103	l 10-81 (9-30 (
	2024 2033 2036] 	7*? (*0	902.21 (902.21 (902.41 (902.21 932.21 902.21	3,3385	7.69
	7032 7033					i i L 1	0.) 	902-21 912-21	402.21 15.56 <u>e</u>	0.0010 0.0010	i 6,35 (I 5,77 I
	2334 2035 2036						0.) J.)	902.21 902.21 902.21	902.21	0.0053	4.17
	2437				i 	i i	-58-20				
	LTOTAL	 	 i		 	-	3579.40	 		<u> </u>	1 5241.32

```
*** 5 *** GISCHUNS RATE VAFIANE SHEET --- FO SHADN PARCE FACTOR ---
  *** EVALUATION CHITERIA ***
   CALAULATEEN PERSUD --- ST FERRS
                                   DISCOUNT MATE --- 13.3 4
                                                             EXCHANGE RATE --- 1.000 (BHT/BHT)
    ESCALATION PSR AHRUS
FCC PART --- J. F F LaC PART --- J. T F FRED 18M --- J. T F FUFL PFICE --- 1.J 6
*** CASE 1 ***
    4/C - DISCOUNT RATE
                                                                            HZC (*1
     . --- 1.R.R CHYORUPUSER1
          THE PRICE VALUE SHEET THE NO. NO. SHEET PRICE FACTER ---
         _____
    CALAGLATION PERIOD --- ST FERRS
                                    DISCOUNT RATE --- 13.3 E
    *** C351 1 ***
                                  ... -----
    BENEFIT - COST ANALYSYS
                                                                             8/C - FUEL PAICE INCREMEN
                                                                                     B/C (+)
      1.7482
1.#108
                                                                 2.00dd
2.0423
2.0847
2.1271
2.1644
2.2118
2.2541
                                                                 2.2964
2.3388
2.3811
2.4235
2.4658
2.5082
```

. --- Laffe IHYOROPT beal

PROJECT SALVICS STEET INTOPORER PLANTS

*** EVALUATION CHITERIA ***

DISCOUNT RATE --- 11-0 4 CALCULATION PERIAD --- 57 YEARS

EXCHANGE PATE --- 1.300 (BHT/BHT)

SHARDS PPICE FALLS

F.C

1.0 PART | 147071 | --- 0.853 |
1.0 PART | 1ALTES | --- 0.853 |
FUEL PRICE --- 1.JJJ

*** CASE 1 *** PLANT W.J. 1 *** Nam Chon Power Station

												
•			1.E 468A [it and I		GEMEY	ATING DAM	:4ST	1	1	l	
	:	INVEST-								1545-	ANIWAL COST	CDST
	YEZĞ	AF IT	I ISTALLE).	PRIJUE-1		FIXED	VAN LABLE		MISSION I L LEM CHST			
	1	ί				T CO'L	[5257]	1051	[C.P. C. 31	LEM COST		(MIL.8HT)
	i	[[HIL.BHT]	(64m)	[[HIL-Kad]	(WIF *KMH)	11416-8411	[[4][*34:1]	1415-20-1		**********		
			i ()	J.U	C.L	۱., د	1).3	1.87	3.3	1 3.3		
	1991			2.5	0.0			19.65	1 0.0	1 0.0	19.66	
	1 1985				0.0			73.97		0.0	58,99	1190-76
	1 1983 1984			0.0	0.0		3.0	46.34		1 3.3	66.86	
	1 1985				3.0	1 0.3		10.46		0.0	40.46	
	1 1966	1426.45	0.0		0.0	0.3	1 3.0	42.46		0.0	90.46	
	1987	1 1077-16			267-3			74.94				
	1543	1	5 #5.0		1069.0			43.74				
	1987	1 3.3	595.0		1069.0	63.78		53.75				
	1993		145.0	1 1104.0	1069.0	1 63,78		63.78		1 3.43		
	1991		595.0	1104.0	1069.0	1 63./8		63.78				
	1 1952		1 175.0	1 1110.0	1 1069.0	41.54		63.78	1 11.65			
	1991		5-75-0	1 1133.4	1 1669.0	1 63./8	1 1.3	63.74		3.40		
	1 1994	i _ iii.	515.1	1. 1108.9				63.18				
	1 1995		515.0		1069.0	63.78		63.78				
	1 1946		595.0	f 1198*q	1 1049-0	63-16		1 63./B				
	1 1997		515.3	1110.1	1069.0	63.78		63.78 63.78				
	1994		5 15.0	1 :194.7	1069.0							
	1994		5 45.0		1069.0	1 63.16		1 63.78		3.40		
	1 2331		. (15 ا					63.18			70.8	
	1 2001	1 0.3	575.0		1 1064.0			63.78				
	1 2002	j 3.)	595.0			63.78	1 3.3	63.78				
	1 2333	. 1.1	1 545.3	1 1138.1	1 1704-0			63.70				
	1 2004	3.3	1 515.0	1179*7	1094.0			65.78				
	1 2005		1 595.0	(frag• n				1 41.74		3.40		
	1.2325		J_ 595a J	1 111803.				33.78				
	1 2007		595.0	1 1113-9	1069-0			63.78				
	1 2003			1 1799*7	1 1009-0			43.78				
	2331							63.18				
	1 201)				1069.0			63-78				
	2011							11.62				
	1 2312	1374.10	1 _595.4	1 1119.1.	1 1003-9	T - 21-14	مكافقت حجاج	T. 35748	J. 11170	,		

			LEVERATI	IG END		ĢE-IcR	NEW DALLE	LCST	1	1		
ļ			1 45T ALLE TH		SALABLE :	FIRED	I VARIABLE I	TOTAL	MISSIEN	6027472 4027472	ANNUAL COST	COST
	YELR	יוזר	CAPACITY	MLIT					I DEM COST	I CEM CEST	i Centlabetii	CMCL-HHTEL
	<u>L 1</u>	THIL HHIT	1 - CONT	(4 <u>[* K*H </u>	INIT - KPHI	[[,][-6],]	111111111111111111111111111111111111111	(direast i	i de min	11.25		CHELFAHLTI
		J.)	515-J	1136.3	1349.3	61.16	1 3.3 1	63.78				
	2013	5.3	595.0	11)1.0				53.78				
	2014	1.1	595.0	1134.0			1 0.0	03.TH	1 11.65	J 3.40		
	2015		545.31	1134,3				63.78	11.65	3.40		
	1 2016 1	3.1	535.0	[[]]	1069.0	63./4		63.78		3,40		78,84
	2017		592.6	1134.3				63.78		3.40	70.84	
	2018	3.3	595.0	(1111.)				43,76	11.65	3-43		
	2013	3.3	515.0	1103.3				53.78	11.65	3.40	18.64	
	(2020	3.1	595.0	1101.0				53,78	1 11.65	3.40	18.84	78.84
	5051	3.3	545.0	1109.3		63.13		63.7H		3.43	75.64	
	1 2025	1.3	1 575.0 ([134.0		63.73		63.78		3.40	76.84	Z68.79
	2321	189.75		1133.0		63.74		63,78		3,40	74.84	
	202+			1108.0	1 1369.3	1 65.78		63,10			78.84	
	2025	279.16		1100.0		63./3		53.7H			78.84	261.99
	2326	163-15		1145.0	1 1069.0			63.76			18.84	78,64 1
	1 2027	9.7	545.0	1118.0	1 1069.3			63.78		3.43	79.84	
	Z023	2.1	1 595.0	1109.0				63.78		3,40	78.84	78.44 [
	1 2327	ر با	1 - 315.0					03.78		3,40	76.84	78.84
	2033	0.3	595.0	1105.0	1 1069.0			63.78				1 78.84 1
	1 5031		1 595-0 1	1123-0	1 1069.0	63.78		53.78				78.84
	2332		5 15 .0		1069.0	63.16		63.76				78,84
	2031		1 545.0					1 53.78				1 78-84
	1 203+		1 595.0	1108.3	1 1069.0	63.76		53.78				78.44
	2335	1.1	1 202.0	1171-0				45.18				76,84
	2036		545.0	1134.3	1064.0			53.78				
	2037	j -653. 1 2	1 575.0	L LUG.O	1 1069.0	. 03-13		, ,,,,,				

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*** 8 *** PROJECT MALTINES SHEET CALTENNATIVES --- WITH SHADOW PRICE FACTOR ---

*** EVALUATION CHITCHIA ***

CALCULATION PERIJO --- 57 Y:145

DISCOUNT RATE --- 1Jau 6

EXCHANGE MATE --- 1.000 [BHT/BHT)

SHADQ» PRILE FALLII .

F-C PART PART --- 1.100
L-C PART (ATTEL --- 1.95)
L-C PART (ATTEL --- 1.95)
FUEL PRIJE --- 1.000

*** CASE I *** PLANT NU. 1 *** Gas Turbine Power Plant

_												1
1		1	L CENERATI	43 END 1		(GENER	MBE JUSTA	CUSI		 •	ANNUAL I	1203
i	i i	INVEST-	i		S4LABLE J	L==-===			LIPANSTON .	<u>SU</u> #		
	YEAR		II 45" NLET 3	PK3705-		FIXED	I VAN LABLE		CEH COST	CON COST		
i i	1	l	1 CAPACITY!	7104	·	£05T	£351	1 1411	liner Gust	L BILLEHT I	LACL ANTS	(MIL.BHT)
ı	l i	(MJL+B 4T)	1 141 1	[41 LaK#+8) {	[WIL*KAH]	[# M EC * 19 41]	\$ (41 F * 10,11))	14 72 6 6 6 7 7 7 7	114111			(*(L.BHT))
-			1 3.0 1	1.1	3.3	1).1	1 3.3	0.0) 0.0	0.0	1 0.0 1	0.0
	1981			J. O. I			Ĺ 0.0		Ĺ Q∡Q .	[0.0 .	i 0.0 i	أ عنت إ
	1982	ded		0.3			1 0.0	0.0	0.0	j .0	0.0 i	3-3
	1943 (3.3		ر د د			1 3.3	j J.J	[0.0	1 0.0	0.0	451.52
	1984			3.3			0.0	0.0	0.0	J 0.0	1 0.0	771.25
	1985			J.J.			1 0.0	i 0.0	0.0	0-0	(0.0 I	771.25
	1965	771.25		164.J				4 31 37	4.29	0.0	1 405.66	
	1987			134-2.1				431.37	4.29	0.0	405.06	
	1961		1 - 520-0 (184.0	177.5			1 31 37	4.29	0.0	405+66	
· ·	1983		420-0	194.3				431.37		0.0	405.66	
	1667		1 4/0.0	134.0						0.0	405.65	
	1 1001		1 420.0 1							0.0	405.00	
	1992		1 420.0	164.0 144.J							405-66	405.66
	1993		1 423.0 1	_134.0 _							1 405,66	405.64
	1 1955 .		1. 44040.1								405-66	1 405.46
	1995	1 3.3	1 420-0	184.0							435.66	405.66
	1996		1 423.0 1	[84.J							405.46	1 405.66
	1997		420.0	134.0							1 40>466	405-66
	1993		420.0	1:4.0							435.66	405.66
	1443		1 423.3	184.3							1 405.60	1 405.66
	<u>1 ZUOJ.</u>		1 420.0	184.0							1 405.66	
	2001		470.0	184.0							435.66	
	2002		420-3	194.7						0.0	1 405.66	
	2003		420.0	184-0						0.0	405.66	
	2004			134-0							435.66	1353.45
	1 2005	1 641-19		18447							1 405.66	
	1_2006	1 64 2 4 72.		184.0							405.66	
	2007	431.86		144.0							435.66	
	2000	1 3.3	+20.0	176.3							405.66	
	2309		420.0	184.0							105.60	
	2013	j 3.J	420.0	104.0							435.66	
	2011		1 420.0	184.0							1 405.66	
	2312		1 520.0	114#		158=#1	342.4.7	1_ 401.37	1 4.29	T Gen	1 155488	~

!		I GE VERAT	OV9 DV1	SALARLF	GENE	ATTING DEP	L rst	I TH ANS-	sua-	ANNUAL	cast
YEA	I INVEST-	I ASTALLE)		ENERGY	FIXED	I VAR I ABLE	I TOTAL	I MISSION	TRES MAD 1	1	FLOW
 _[1 (HTL-8 17	14F)	[4]L.Kuft]	CHIL KHIII	[HIL.BAT	(LIL BHT)	ismst. BHT)	11415-641)	(xīr*BHi)		(HIF-8H1)
 1 23	3 1 3.3	423.0	134.3	177.5	1 58-93	342.47	431.37			405.66	
20		420.0				342.47				405.66	405+66 i
1 20		4 20.0			58.70				0.0	435.66	435-66
1 23		42J.J			58.43		1 40L.37	4.29	5.0	405.66	405-66
1 20		420.D	.d4.0	177.5	1 58.40		1 421.37		0.0	405.66	195,466
 - 2 8		420.0	174.0						0.0	405.66	435-66
23		423.0	184.3						0.0	405.66	405.66
20		420.0	194.0	177.5					1 3.0	405-66	435.66
1 20		420.0			1 58.47					405.66 405.66	
	2 1 3.3	473.0			56- J				0.0		405.66
1 20.	3 3.3	420.0	1 184.0	177.5	1 50. 13			4+29	1 0.0	405-66	837.52
	4 7 4 3 1 . 46		1 194.0						0.0	405.66	1147.46
j 2)	5 741.3J	423.3					1 431.37		0.0	405.66	1147.46
1 20	6 741.10		1 144.0							405.66	962.95
1 20	F 557.39	450+0	187.3		1 58.13		431.37			405-66	
23	26 3.)	423.0	184.3	1 177-5	58-93		431.37			405.66	405.66
1 20	29 [7.]	1 420.0	194.0	177.5	58.33					1 405.66	405-66
 1 20	io " i+1	"T" 420.0		177.5					1 3.5	405-66	405.66
20		1 423.3								405.66	405.46
1 20	12 3.1	420.0							1 0.0	1 405-66	405-66
1 20		420.0							1.0	435.66	1 405.66
1 20	34 0.)	423-3	194"3	1 177.5	5d- 13					403.66	405.66
	35 1 3.3	1 420.0		177.5					0.0	+05-06	405.66
 Ť žó	(•((† «)	420.0								415-66	1 -823.15 I
1 20	37 -L229-11	1 457.0	1 174.3	1 177.5	1 58.93	342-47	1 431-37	1 4.29	1 440	1 737400	, ,,,,,,,

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*** CASE 1 *** PLANT NI. 2 *** Oil-fired Thermal Power Plant

•	1 1			NG EAL I		GE IER	TING 1 CM	CUST			!	
	1 (·								L ANNUAL	i cast i
	1 YEAR	4541	ISHSTALLES'	- 10COR4	ENERGY	1 FixED	AR ! AJLE	I TOTAL "	415510N] STATEON :	LUST] FLO⊎]
	1 1		CAPACITY				COST		HEN COST			1
	L. i	LIMI LABATI		Litte Selli.	IIIILaFaHl.	IIIIII BHIL	TTHE-TILL	LETT BHILL	[]%[[.8HT]	Limii.ubnTi.	Harenta	[[M]L-BH[]]
	1 1961	3.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	U.0 1	0.0 1
	1982							0.0	J.0	0.0	0.0	0.J 1
	1 1963	3.3					1 3.3	1 3.3		0.0	0.0	0.0
	1984						j 340	U.0		0.0	0.0	
_	1 1985	030m12						-628.78		0.0	-62a.7a	
	1 1986									3.0	1 -450.76	
	1987	447.28		99.1							97.34	
	1988	3.1		474.5						0.0	199.83	
	1989	3.1	163.3								899.83	899-03
	1990	ز د ا	190.0	974.5						0.0	849.63	899.83
	1991).)	1.10.0	914.5			854440	897.98	Latie	i 0.0 .	849-64	L 699.83 J
	1492	0.3	[[83.3]			43.39	854,63	597.78	1.84	1 3,3	199.83	899.83
	1 1 9 9 3	0.3	130.0	974.5	891.5	43.39	854.60	897.98	1.84	0,0	699.83	849.83
	1994	3.1	110.0	414.5	691.5	43.49	15+440	847.98	1444	I 0.0	899.83	899.83
	1995	1 3-3	110.0	914.5	891,5	43,39	1 354.63	697.98	1.84	1 3.3	899.83	1 66.008 1
	1996	0.)	140.0	974.5	891.5	43.39	854.60	497.48	1.84	0.0	899.83	899.83 [
	1 1997		1.10.0	474.5		43.39	1569 .	397.98	l 1484	1 0.0	1 694.83	899.83 L
	1994	3.3	1 30.0	974.5	891.5	43.39	854,63	1 677.98	1.84	1 1.3	89 9. 83	
	1959	0.1	1 180.0	974.5	891,5			697.98			994.83	
	2003	1.1	140.0	914.5	891.5	43.39	854.60	997.48	1.84	U.O	(844.83	899.83 [
	1 Soof	1.7	180.0	974,5	891,5	1 43,19	854,63	1 697.98	1.84	1 3.3	(899.03	
	1 5305	1.3	140.0	914.5	891.5	43.39					944.83	849.83
	1.2091	<u></u>	180.0	. 414.5	_ 491.42 _	L _ 51e 29_	H59460	L 22/498.J			1 494-43	1 699.83 (
	1 2004		180.0	414-5							1 899.83	
	2305		140.0								1 699.63	
	1 2005	9.3	1 130.0								894.83	
	1 2007	0.3	190.0								899.83	
	1 2308	3.1	1 190.0								899.83	
	1, 2009	341.55									[444°83 '	
	2010	512.1B									899.83	1412-21
	2311										899.83	
	2012	341.55	180.0	474.5	891.5	43.39	H54-00	831-96	1.84	i 0.0	1 844-91	1241.38

YEAR NEAT INSTALLE PRODUCT ENERGY FIXED VARIABLE TOTAL NISSION STATION CUST FLOW		I I INVEST-) 1 SALABLE		RATING DEM		 TRANS-	l Isua-	ANNUAL	COST
COST COST CAPACITY TIJN COST COST COST CAPACIST CAPACITY TIJN COST CAPACITY TIJN COST CAPACITY TIJN COST CAPACITY TIJN COST CAPACITY TIJN CAPACITY TIJN CAPACITY TIJN CAPACITY TIJN CAPACITY TIJN	YEAR		ÍTHSTALLED	1 PRODUC-			I VAR TABLE	TIDTAL	415510N	STATION	CUST	FLOw
Cold 1.0 130.0 174.5 891.5 43.39 854.60 847.98 1.84 0.0 899.83 899.83 2014 1.1 110.0 174.5 891.5 43.39 854.60 847.98 1.84 0.0 899.83 899.83 2015 0.1 110.0 174.5 891.5 43.39 854.60 847.98 1.84 0.0 899.83 899.83 899.83 2015 0.1 110.0 174.5 891.5 43.39 854.60 847.98 1.84 0.0 849.83 899.83 899.83 2016 3.3 180.0 174.5 891.5 43.39 854.60 847.98 1.84 0.0 849.83 899.83 899.83 2018 3.3 180.0 174.5 891.5 43.39 854.60 847.98 1.84 0.0 849.83 899.83 2018 3.3 180.0 174.5 891.5 43.39 854.60 847.98 1.84 0.0 849.83 899.83 2019 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2019 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 999.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 849.83 999.83 2021 3.3 180.0 174.5 891.5 43.37	i	i										1
2013 1-0	ì	MIC.BHTI				(MIL.BAF)						(MIL.BHT)!
2314 1,3	 									:		
2015 3-3 130.0 17-5 891.5 43.34 454.60 837.98 1.84 0.0 894.83 899.83 2016 3.3 180.0 774.5 891.5 43.37 854.60 847.98 1.84 0.0 894.83 899.83 2018 3.3 180.0 774.5 891.5 43.37 854.60 847.98 1.84 0.0 894.83 899.83 2019 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 894.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 894.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 877.98 1.84 0.0 894.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 877.98 1.84 0.0 894.83 899.83 2021 3.3 180.0 174.5 891.5 43.37 854.60 847.98 1.84 0.0 899.83 894.83 2022 3.3 180.0 374.5 891.5 43.37 854.60 847.98 1.84 0.0 899.83 894.83 2022 3.3 180.0 374.5 891.5 43.37 854.60 847.98 1.84 0.0 899.83 894.83 2021 3.3 180.0 374.5 851.5 43.37 854.60 847.98 1.84 0.0 899.83 894.83 2021 3.3 180.0 374.5 851.5 43.37 854.60 847.98 1.84 0.0 899.83 894.83 2021 3.3 180.0 374.5 891.5 43.37 854.60 847.98 1.84 0.0 899.83 899.83 2022 3.3 130.0 374.5 891.5 43.37 854.60 847.98 1.84 0.0 899.83 899.83 2022 3.3 130.0 374.5 891.5 43.37 854.60 847.98 1.84 0.0 899.83 40.18 2025 40.15 130.0 374.5 891.5 43.37 854.60 847.98 1.84 0.0 899.83 40.18 2027 54.67 190.0 374.5 891.5 43.39 854.60 847.98 1.84 0.0 899.83 899.83 2023 3.1 180.0 374.5 891.5 43.39 854.60 877.98 1.84 0.0 899.83 899.83 2023 3.1 180.0 374.5 891.5 43.39 854.60 877.98 1.84 0.0 899.83 899.83 2024 3.3 300.0 374.5 891.5 43.39 854.60 877.98 1.84 0.0 899.83 899.83 2024 3.3 300.0 374.5 891.5 43.39 854.60 897.98 1.84 0.0 899.83 899.83 2031 3.3 180.0 374.5 891.5 43.39 854.60 897.98 1.84	1 2013	1.0	130.0	1 374.5	1 851.5	43.39	854.60	847.98	1.84	0.0	899.83	899.83 1
2016 J3 130.0 774.5 851.5 43.39 854.60 877.98 1.84 0.0 899.83 899.83 2018 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2019 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2019 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2023 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2021 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2022 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2022 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2023 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2024 J3 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2025 43.35 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2025 43.35 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 400.18 2025 43.35 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 940.18 2027 54.67 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 940.18 2027 54.67 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 940.18 2027 54.67 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 999.83 2023 J. 1 180.0 974.5 891.5 43.39 854.60 877.98 1.84 0.0 899.83 999.83 2023 J. 1 180.0 974.5 891.5 43.39 854.60 877.98 1.84 0.0 899.83 999.83 2023 J. 1 180.0 974.5 891.5 43.49 854.60 877.98 1.84 0.0 899.83 999.83 2023 J. 1 180.0 974.5 891.5 43.49 854.60 877.98 1.84 0.0 899.83 899.83 2023 J. 1 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2023 J. 1 180.0 974.5 891.5 43.49	1 2314	i 1,1	143.3	914.5	891.5	43.19	854-63	897.98	1.84	0.0	899.83	499.83
2017 3-3 183.3 974.5 891.5 43.39 454.60 847.98 1.84 0.0 899.83 899.83 2018 3.3 180.0 974.5 891.5 43.37 854.60 847.98 1.84 0.0 899.83 899.83 2019 3.3 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 3.3 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 3.3 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 3.3 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2022 3.3 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2023 0.3 183.3 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2024 3.3 130.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2024 3.3 130.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2025 43.35 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2026 40.15 133.3 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 40.18 2027 54.67 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 40.18 2023 0.1 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2029 1.3 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2029 1.3 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2023 0.3 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2031 2031 3.2 180.0 974.5 891.5 43.49 854.60 897.9	1 2015	1.1	1 10.0	1/4.2	891-5	43.14	454.63	4P.748	1.64	0.0	844.83	899.43 !
2019 J_J 180.0 174.5 891.5 43.37 854.60 897.98 1.84 0.0 894.83 899.83 2021 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 J_J 180.0 174.5 891.5 53.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 J_J 180.0 174.5 891.5 53.37 854.60 897.98 1.84 0.0 899.83 899.83 2023 0.J 180.0 174.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2025 43.35 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 999.83 2025 43.35 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 940.18 2026 40.15 133.J 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 940.18 2027 54.67 190.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 940.18 2023 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 940.18 2023 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 999.83 2029 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2029 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2023 J_J 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 J_J 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 J_J 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 J_J 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 2031 3.2 180.0 974.5 891.5 43.37 854.60 8	2010	1 3.3	1.10.0	174.5	1 851.5	43.39	851.60	8 17.94		0.0	849.83	899.83
2019 J_J 180.0 174.5 891.5 43.37 854.60 897.98 1.84 0.0 894.83 899.83 2021 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 J_J 180.0 174.5 891.5 53.37 854.60 897.98 1.84 0.0 899.83 899.83 2021 J_J 180.0 174.5 891.5 53.37 854.60 897.98 1.84 0.0 899.83 899.83 2023 0.J 180.0 174.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2025 43.35 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 999.83 2025 43.35 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 940.18 2026 40.15 133.J 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 940.18 2027 54.67 190.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 940.18 2023 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 940.18 2023 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 999.83 2029 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2029 J_J 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2023 J_J 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 J_J 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 J_J 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 J_J 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 3.2 180.0 974.5 891.5 43.37 854.60 877.98 1.84 0.0 899.83 899.83 2031 2031 3.2 180.0 974.5 891.5 43.37 854.60 8	1 2317]3_3	183.3	974.5					1 -1-84	0.0		
2021 3-3	 2018	3.3	180.0	974.5	691.5			897.94		0.0	899.63	
2021 J.1 180.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2022 J.3 180.0 374.5 891.5 53.49 854.60 877.98 1.84 0.0 899.83 899.83 2023 0.1 183.3 974.5 891.5 43.49 854.60 877.98 1.84 0.0 899.83 899.83 2024 1.1 130.0 774.5 891.5 43.49 854.60 877.98 1.84 0.0 899.83 499.83 2025 43.15 180.0 974.5 891.5 43.17 854.60 877.98 1.84 0.0 899.83 490.18 2026 49.15 133.3 974.5 891.5 43.17 854.60 877.98 1.84 0.0 899.83 490.18 2027 54.67 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 994.83 2023 J.1 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2022 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2022 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2023 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2023 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 J.1 180.0 974.5 861.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 J.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 3.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 2031 3.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 2031 3.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 2031 3.1 180.0 974.5 891.5 43.19	2019	().)	180.0	374.5	891.5	43,37	854,60	897.98		0.0	849.83	
2022 J_3 140.0 474.5 891.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2024 J_1 140.0 474.5 891.5 43.49 854.60 847.98 1.84 0.0 849.83 899.83 2024 J_2 140.0 474.5 891.5 43.49 854.60 847.98 1.84 0.0 849.83 899.83 2026 40.15 130.0 474.5 891.5 43.49 854.60 847.98 1.84 0.0 899.83 940.18 2027 54.67 140.0 474.5 891.5 43.49 854.60 847.98 1.84 0.0 899.83 940.18 2027 54.67 140.0 474.5 891.5 43.49 854.60 847.98 1.84 0.0 899.83 953.50 2023 J_1 180.0 474.5 891.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2029 J_2 180.0 474.5 891.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2029 J_2 180.0 474.5 871.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2021 1.0 140.0 474.5 871.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2021 1.0 140.0 474.5 871.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2021 1.0 140.0 474.5 871.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2021 1.0 140.0 474.5 871.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2021 1.0 140.0 474.5 871.5 43.49 854.60 847.98 1.84 0.0 899.83 899.83 2021 1.0 140.0 474.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2023 1.0 140.0 474.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2024 1.0 140.0 474.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2024 1.0 140.0 474.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2024 0.0 140.0 474.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2024 0.0 140.0 474.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2024 0.0 140.0 474.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2024 2024 2024 2024 2024 2024 2024 2024 2024 2	2023	1).)	143.3	1 974.5	691.5							
2021 0_1 183.0 974.5 851.5 43.19 854.60 877.98 1.84 0.0 849.83 899.83 2025 43.35 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 849.83 940.88 2026 40.15 130.0 974.5 891.5 43.13 854.60 877.98 1.84 0.0 899.83 940.18 2027 54.67 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 940.18 2028 0.1 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 953.50 2029 0.1 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2029 0.1 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2020 0.1 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2030 0.1 180.0 974.5 871.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2031 0.2 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2031 0.2 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2031 0.2 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 0.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 0.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 0.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 0.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83 2031 0.1 180.0 974.5 891.5 43.19 854.60 897.98 1.84 0.0 899.83 899.83	2021	l 0.1	180.0	974.5	891.5	43.37	854.60	677.98	1.84	0.0	899.83	849.83
12026 3.1 140.0 174.5 891.5 41.11 454.60 847.78 1.84 0.6 449.83 899.83 2025 40.15 130.0 974.5 891.5 43.17 854.60 847.98 1.84 0.0 899.83 940.18 2026 40.15 130.0 974.5 891.5 43.17 854.60 847.98 1.84 0.0 899.83 940.18 2027 51.67 180.0 974.5 891.5 43.19 854.60 847.98 1.84 0.0 899.83 953.50 2023 J.1 180.0 974.5 891.5 43.19 854.60 847.98 1.84 0.0 899.83 899.83 2029 J.1 180.0 974.5 891.5 43.19 854.60 847.98 1.84 0.0 899.83 899.83 2029 J.1 180.0 974.5 891.5 43.19 854.60 847.98 1.84 0.0 899.83 899.83 2021 J.1 180.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2031 J.2 190.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2032 J.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2032 J.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2032 J.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 J.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 J.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 J.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 J.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 J.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 0.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 2035 0.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 2035 0.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 2035 0.1 130.0 974.5 891.5 43.19 854.60 877.98 1.84 0.0 899.83 899.83 2035 2035 0.1 130.0 974.5 891.5	2022	1 3.3	140.0	37445	891.5	43.14	854.60	847.48	1.84	0.0	899-83	
2025									1.84	1 3.3		
2026 40.15 133.3 974.5 891.5 43.33 854.60 877.98 1.84 0.0 894.63 940.18 2027 54.67 180.0 974.5 891.5 43.39 854.60 877.98 1.84 0.0 894.63 953.50 2023 0.1 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 894.83 899.83 2029 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 894.63 899.83 2030 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.94 0.0 894.63 899.83 2031 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.94 0.0 894.83 899.83 2031 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 894.83 899.83 2031 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 894.83 899.83 2031 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 894.83 899.83 2031 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 894.83 894.83 2035 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 899.83 899.83 2035 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 899.83 899.83 2035 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 899.83 899.83 2035 0.3 180.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 899.83 899.83 2036 0.3 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2036 0.3 2036			140.0	174.5	891-5			847.48	1.84		449.63	
2027 54,67 140,0 474,5 871,5 43,49 854,60 877,98 1.84 0.0 894,83 953,50 2023 4.1 180,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 899,83 899,83 2029 4.1 180,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 899,83 899,83 2031 3.2 180,0 474,5 871,5 43,49 854,60 897,98 1.84 0.0 894,83 899,83 2031 3.2 180,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 894,83 899,83 2032 3.1 130,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 894,83 899,83 2032 3.1 130,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 894,83 899,83 2034 3.1 180,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 899,83 899,83 2035 3.1 140,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 899,83 899,83 2036 3.1 140,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 899,83 899,83 2036 3.1 140,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 899,83 899,83 2036 3.1 140,0 474,5 891,5 43,49 854,60 897,98 1.84 0.0 899,83 899,83	1 2025	1 43.35) tao.o	914.5	1 891.5						899.83	
2023 J.1 180.0 474.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2029 J.1 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2030 0.1 180.0 974.5 871.5 43.49 854.60 897.98 1.44 0.0 849.83 899.83 2031 3.2 180.0 974.5 891.5 43.49 854.60 897.98 1.44 0.0 899.83 899.83 2032 J.1 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2032 J.1 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2032 J.1 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2032 3.2 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2035 3.2 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 2036 0.1 180.0 974.5 891.5 43.49 854.60 897.98 1.84 0.0 899.83 899.83 899.83	2026	40.15	[13.3	974.5	J 891.5	43.39	854.63	1 877.98	1.84	1 3.3	899.63	940.18]
2029 J_J 180_0 974_5 891_5 43_39 854_60 897_98 1.84 J_J 894_63 899_83 2031 J_J 190_0 974_5 891_5 43_33 854_60 897_98 1.94 0.0 899_83 899_83 2031 J_J 190_0 974_5 891_5 43_39 854_60 897_98 1.84 U_J 899_83 899_83 2032 J_J 130_0 974_5 891_5 43_39 854_60 897_98 1.84 U_J 899_83 899_83 2032 U_J 130_0 974_5 891_5 43_33 854_60 897_98 1.84 U_J 899_83 899_83 2034 U_J 899_83 899_83 2035 U_J 180_0 974_5 891_5 43_33 854_60 897_98 1.84 U_J 899_83 899_83 2035 U_J 180_0 974_5 891_5 43_33 854_60 897_98 1.84 U_J 899_83 899_83 2035 U_J 180_0 974_5 891_5 43_33 854_60 897_98 1.84 U_J 899_83 899_83 2035 U_J 180_0 974_5 891_5 43_33 854_60 897_98 1.84 U_J 899_83 899_83 2035 U_J 180_0 974_5 891_5 43_33 899_83 2035 U_J 180_0 974_5 891_5 43_33 899_83 2035 U_J 180_0 974_5 891_5 43_33 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 899_83 2035 U_J 899_83 899_83 2035 U_J 899_83 899_83 2035 2035 U_J 899_83 899_83 2035 2035 U_J 899_83 899_83 2035 20			140.0	1 474,5	871.5			8 #7 . 98			844.83	953.50
2030 0.7 140.0 974.5 871.5 43.33 854.60 897.98 1.44 0.0 899.83 899.83 2031 3.2 140.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 899.83 899.83 2032 3.3 10.0 140.0 974.5 851.5 43.39 854.61 897.98 1.84 0.0 899.83 899.83 2032 0.1 140.0 174.5 891.5 43.33 854.61 897.98 1.84 0.0 899.83 899.83 2034 1.2 140.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2035 0.1 140.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2036 0.1 140.0 974.5 891.5 43.37 854.60 897.98 1.84 0.0 899.83 899.83 2036 0.1 140.0 974.5 891.5 43.39 854.60 897.98 1.84 0.0 899.83 899.83		1 0.1	180.0	4/4.5	891.5			897,48		0.0	899,83	
2031 3.3 180.0 774.5 891.5 *31.3 85*.60 877.98 1.84 U.0 893.83 899.83 2032 J.3 180.0 974.5 861.5 43.39 854.61 897.98 1.84 J.3 899.83 2033 U.3 130.0 974.5 891.5 43.39 854.60 887.98 1.84 U.0 899.83 899.83 2034 J.3 180.0 974.5 891.5 43.39 854.60 877.98 1.84 U.0 899.83 899.83 2035 J.3 140.0 974.5 891.5 43.39 854.60 877.98 1.84 U.0 899.83 899.83 899.83 2035 U.3 130.0 974.5 891.5 43.39 854.60 897.98 1.84 U.0 899.83 899.83	 2029		[F80*9	914.5			854.6J	837.98			899.83	899.83 [
2032 J. 130.0 774.5 851.5 43.39 854.60 897.98 1.86 J. 1899.83 899.83 2331 0.1 130.0 174.5 891.5 43.13 454.60 897.98 1.84 0.0 899.83 899.83 2034 J. 180.0 974.5 891.5 43.13 854.60 847.98 1.84 0.0 899.83 899.83 2035 J. 140.0 974.5 891.5 43.13 854.60 847.98 1.84 0.0 899.83 899.83 2036 0.1 130.0 774.5 891.5 43.13 854.60 897.98 1.84 0.0 899.83 899.83	 2030	3.3	130.0	974.5	871.5	43.37	1 854.60	897.98	1.94	ā,a	849.63	899.83
233 0-1 140.0 174.5 891.5 43.13 454.00 897.98 1.84 0.0 349.83 439.83 2034 3-1 140.0 474.5 891.5 43.13 454.60 477.98 1.84 0.0 499.83 899.83 2035 3-1 140.0 474.5 891.5 43.13 854.60 477.98 1.84 0.0 499.83 899.83 2036 0.1 130.0 274.5 691.5 43.19 454.60 897.98 1.84 0.0 899.83 899.83								6 37. 98			894, 63	899.83
2034 3-7 140.0 974.5 891.5 43.39 854.60 847.98 1.84 0.0 899.83 899.83 899.83 2035 3-1 140.0 974.5 891.5 43.17 854.60 847.98 1.84 3.0 899.83 899.83 899.83 2036 0.7 130.0 774.5 691.5 43.19 454.60 897.98 1.84 0.0 899.83 899.83	2032	[J.)	130.0	974.5	851.5	41.19	854.63	897.98	1.84	1 1.1	197.85	499.83
7035 3.1 140.0 474.5 891.5 43.17 854.60 437.98 1.84 0.0 899.83 899.83 2036 0.0 190.0 274.5 691.5 43.19 454.60 457.98 1.84 0.0 899.83 899.83	1 2133	1 0.1	110.0	1 3/4.5	891.5	43.13	454.00	497.48	1.44	0.0	349-43	899.83
2036 0.0 190.0 274.5 691.5 43.19 454.60 497.48 1.64 0.0 899.83 899.83			O.DHI					447.98			1 899.83	899.83
							854.63				699.83	899-83 1
7037 -64.37 120.0 474.5 601.5 43.14 45.60 447.54 1.94 0.0 609.23 435.41								897.98			899.83	
t toward a ranger to a state to a toward a state of the state of a state of a state of a state of a state of a	1 2037	1 -64.32	1 40.0	974.5	691.5	43.14	854.60	447.98	1.84	0.0	699.83	835.8L

ee g ee= PROJECT EVALUATION BY THE NET PRESENT VALUE (L.P.V) METHOD --- WITH SHINDER PRICE FACTOR ---

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 YEARS

DISCOUNT RATE --- 13.0 E

EXCHANGE PATE --- 1.000 (BHT/8HT)

CASE 1 MM PLANT NO. 1 MM

-	· · · · · · · ·	Ну	dropower l	Nam Chon F	ower Stati	on	A	lternative (Gas Turbine	Power Plan	nt
	YEAR	INVEST-	ANNUAL	uist	NET PRESE	NT VALUE	INVEST-	ANNUAL COST	BENEFIT FLOW	NET PHESE 	
		16 17 36 11 11 18 11 11 11 11 11 11 11 11 11 11 1	COST TALL+BATI	WC13 {THE _# 11P3	P.V.F (P.U)	N _B P _B V MIL _B SHT1	4[L.9H[]) (P.U)	N.P.V) (MIL.BHT)
					0.4091	573.42	0.0	0.0	0.0	0.9041	0,0
	1981	619+60		627.46 1490.31		18,109	J.J	3,3	۱, ۱	J.8264	1 2'2 1
į	1985	1070,34	19,66	1113.76	0.7513	+4.46E	0.3	0.0	0.0	0.7513	0. 0 }
	1983	1131-76		1361->5	0.6830	927,90	451.52	5,0	451.52	0.6630	308.40
	1984	1294-69	66,86	1894-51	C-6209	1113,00	171.25	3,3	17L.25	J.6234	478.89
	1982	1798.76	4J.46 9J.46	1516.93		0>>.Za	771.25	0.0	271.25	1 0.5645	[435,35]
	1 1986	1 1474.45	78.71	1156.47	0.5132	593,45	574.95	405.66	982.61	0.5132	504+24 [
	1987		76.84	14.81	G.4665		0.4	405.66	435.66	J.4605	
	1 1981	ļ <u>0,</u> 3	75.84	78.84	3.4241	33.44	0.0	405.66	405.66	0.4241	
	1989	1 3.3	78.84	10, 54		33,43	0.0	405.66	405.66] 156440 [
	1993	6.3	78.84	10.84			i ō.ā	405.66	405.66		
	1 1991	1,1	79.84	78.84	3.3186	2>-14	0.0	405,66	402.66	1 0.3197	124+56
	1 1993	 -::- -	76.84	78.84	0.2897	22.4+	0.0	405.44	405.06	0.2897	
	1 1994	0.3	78.84	78,84	0,2633	21,15	0.9	405,65	405-66	J.2633	1 136+82
	1 1995	3.3	18.84	78.44				405.66	405.66		97.11
		0.3	18.84	78.84		17,12	0.0	405,66	485,66		85.26
	1996	0.3	78.84	78.84		15.63	0.3	405.06	405-46	0-1979	
	1954	1 3.3	18.84	78.54	3,1799	14.11	3.3	405,66	405 66		1 35.36
	1999	3.5	78.84	70.84			0.0	405.66	405.66		00-33
	1 2003	0.0	78.84	78.84	0.1486	11.72	i 0.0	405,66	405,46	1 0-1466	63,33
	2331		76.84		1 3.1351		3-3	435,06	1 405.66	0.1351	54.82
	2002		79.84			1,01	0,3	405,66	1 405,66	0.1558	1 49.83
	2002		78.84	78.84			0.0	405.66		1 0-1117	1 45-30 1
	1 2304	3.3	78.84	79 44	1 1.1115	1 4.22.	1 431.80	1 432.00			1 62.03 1
	2005		75.84	78.34	0.0923	7,21	647.79	405.00			97.23
	2004	3.3	78.84			1 0.62	647.19		1053.45		1 98-39
	1 2307		79.84	78.84			431.86	1 435.66	1 837.52		63-89
	2001		78.84	114.51			0,0	405,66		0.0693	28.13
	5003		78.84		D. 0630			405.06		0.0630	
	1 2010		76.84	714.53	3.3573	1 42.11		1 435.66		1 . 0 . 05/3	1 23425
	1 2011				0.0521	36.22	0.0	405,66			
	2012							1 405,66	1 405.66	1 0.0414	1 19.21
	: TOTE	f Stanta									

1	Hy	dropower i	Nam Chon l	Power Stati	ion	<u>Al</u>	ternative G	as Turbine I	ower Pian	<u> </u>
YEAR	INVEST-	ANAUAL (COST FLOW	NET PRESE (I* 10	NT VALUE	(NVEST- MENT	ANNUAL COST	BENEFIT FLOW	NET PRESE	
 7	(IPH. JIH)	11 TH8 - 1TP 1	141C+H (T)	P.V.F (P.U)	[HIF*BH13]	(The.JJF)	1M1L_BHT)	[H1L.BH1]		(MIL.SHT
[2313 (1.)	75.84 (78.84	3,3431	3.33	0.0	405,65		0.0431	
2014 i	3.0	78,84	18. 14	0.0391	3.34	0.1	405,66		0.0391	15.66
2015	0.1	78.84	78.84	G.0356	2,81	0.0	405.66	405.66	3-3356	13.12
 2316		B.84	78.54	3.3324	2.55	0.0	405.66	405.66	0.0324	13.12
2017	3.1	78.04	78. 14	0.0294	2,32	3.0	405.66	405.66	0.0294	11.9
2018	4.1	78.64	78.84	C.0267	2.11	0-3	405.66	435.66	1.0267	Li-8
2319	3.1	78.84	79.34	J. 3243	1.92	6.0	405.66	405.66	0.0243	9.86
2020	1, 1	78.84	78.44	0.0221	1.70	0.0	405.66	405+66	0.0551	8.96
1 2021	ز.ن	78.84	14.64	C.0201	1.51	0.0	405.66	405.66	1-7537	į ų. į:
 1 2322	7,3	78,84	78.34	3.3183	1,44	0.0	405.66	405.400	0.0183	7-41
2023	163.35	78.84	268-79	0.0166	4.40	3.0	405.66	405.66	Q=0160	6.73
2023	279.10	78.84		0.0151	5.+1	+31.46	405.66	B31.52		
1 2325	279.43	78.84	358.24	3.3137	4.11	741.13	405.66	1147.46		15.74
	163.15	78.84	261.99	0.0125	3.28	141.40	405.46	1147.40	0.0125	14-31
2026	0.)	78.84	78.57	0.0117	0,3)	557.29	405.66	962.45	0.0113	13.9
 1 2021		70.84	73.34	3.3133	J. 3L	3.3	435.06	407.66	0.0103	4.1
		78.84	18.84	0.0094	3,10		405.66	405.66	0.0094	3.81
1 2020	3.3	78.84	78-64	0.0085	3.57	3.3	405.66	405.66	0.0085	3.4
[2033]	3.1	[78.84	70.34	3.0377	1.61		4 4 15 . 66	405.66	0.0077	
1 5331	1.1	78.84	78.04		3.55		405.66	405.66	0.0070	[Z.86
2032	3.3	78.84	78.84	0.0064	J.5)		405.66	405.66	0.0064	2.6
 2033	- 1.1	78.84	78.84		73.44		445.00	405.66	0.0056	2.30
1 2314			78.84	0.0053	1.42		405.66	405.66	0.0053	j 7.19
2035	1.1	75.84	78.84		1.11		405.64	1 445.66		1.49
1 2036 (}.] -648.32	78.84 78.84				-1228.81				
1		1	 i				1	L	1	1
 TOTAL	10715-75	i	} -	i	6445.23	5974.23	T	Γ ' ""	i -	4308.6

	<u> </u>										
	1	l.	ly dropower	Thi Khong	Power St	ation	Altern	ative Oil-fi	red Therma	l Power Pl	nt !
	YEAR _	. 4E41 - 17441	ANPUAL COST	LOST FLOH		0.0 \$ 1	TREVP)	ANNUAL I	BENFFIT FLUW		
,	<u> </u>	(*IL.841)	[[4][.B)][]	[P]L.BHT[]		[(HIL.3H[1]	(AEL*HALL)	[9]L.BHT]	[MIL.BIST)		(MIL.BHT)
	1981	I	! I			1	3.3	ا د.د	3.3	7.6341	J.J
	1465		i i	i	,	i	0.0	ยเป	9.0 I	0.8264	
	1981	i	i	ì		i i	. 0.0 1	u.u i	V.4	0.7513	
	1986	i '	i i	i		ì	193.61	3.3	391.61	3.6833	
	1985	i	i i	i		i i	630.82	-628.78	2.04		1.27
	1986	ĺ .	i i	i		i i	630.02	-450.76	180.07	0,5645	101.64
	1987		i i	i		1	447.28	97.34	544.62	3.5132	279-48
	1963	1	i	i		i i	3.9	899.83	899.43	0.4665	419.76
	1981	1	i			لـــ . ــاأ	ز ده سا	#99.#3 1	14.446	4.42-1	351-42 1
	1993) '	Ī 1			1	1.1	899.83	899,63	J.3855	346.93
	1991	ì	1 1	l l		1 1	0,0	899.83	464.83	0.3505	315.39
	1952.		! !	1		1 (0.) (899+43	899.83	0.3166	266.72
	1991	!	i i	1		j j	0.0	899.83 (
	1994	t	1 1	i i		t 1	0.0 1	899.83 (844.83	0.2633 i	236.96 [
	1.1995	t:	1 1	1	_	1	0.1.1	ี คิอิล ็ติ3	899.63	0.2344	215.41 1
	1946	ļ	1 1			1	3.3	899.63	899.83	J.2176	
	[997	;	} {			1 1	ا د۔د	899.03	899,83	0.1976	
	1994	l .	! I	1		1 (0.0 (8 43 63 1	499.41		
	1999	!	ļ (1		1 .	0.0	849.63	899.41		
	5277	•	!!	1		\$ 1	3.3	894.113	899.83		
	<u> 2001 </u>	L	ļ <u>.</u>			ĻI			899.63		121,49
	2002	į	!!				0.3	844.33			
	2333	!	!!			ļ j	3.3	894.83	859.83		103.49
	200+	!	!!!			ļ (0.0	899.63	859.43		91.36
	2003		!!!			į į	0.5	899.43	894.83		
	2006		!	,]	3.3	899.83	454.81	2.3837	75.50
	2007	 	<u> </u>	<u> </u>		<u> </u>	0_1_	899.61 J	899.43		66,64
	2001	!	!!!			!	0.1	899.61	BAA*B1		62.40
	2009	ļ	!!!			į į	3 - 1 - 55	699.63	1241.34		78,26
	2013	ļ	!!!			!	512.34	699.81	1412.21	3.3573	
	1 Saff	· ·	!!!			! !	512.33		1412-21		
	2012	ı	I .	1	l	1	341.55	899.83	1241.34	0.047+	58.80 [
								777777	- <u>-</u>		

,]	Ну	dropawer 1	flu Khong l	ower Stat	on	Alter	native Oil-	ired Therm	al Power P	lant /
	YEAR	INVEST-	I 4NAUAL I COST	CCST _FL j#		ENT VALUÉ 0.0 %	IMVĒST- Mēnt	LAUMMAL (BENEFIT FLUW	NET PHESE	NT VALUE
			[i		₽,¥.F {₽,⊔}	K-6.A		, (P.V.F (N.P.Y
·	2013		!		 		0.)	894.83	894.83 899.83	0.0431	38.74 45.42
	2015 2015						2.3	899,41	894.83	0.0356	32,62 i 25,11 i
	2017 2014		1				J.J	899.83	899.83	0.0294	26.46 24.06
	2019						0.4	899.83 899.83	899.83	0.0221	21.87
-	1 2021 2022				- -		- 3.0	899.83 899.83	899.83	i o.olaš.	16.43
	2023 202+ 2325						0.0 (J.J. 40.35 (899.81 899.83 899.83	899.83 897.83 940.18		14.94 13.58 12.40
	2026			į		i	+0+35 (+0+35 (699.43 699.83	940.1H 953.5J	0.0125	11.73
	2323 2024		j		;	i	0.)	899.63	899.83 899.83	0.0103	9.28 (8.43 (
	2033 2031	ļ		İ	! 		0.3 3.3	899.81	894.83 64.698	3.3345	7.67 6.97
	2033					<u>.</u>	0.2	825-93	884°93 884*87	0.0064	5.76 L
	2034 2035 2036					!	0.0	899.83	899.63		5.24 4.76
	2037	·			 	! !	0.0 (-64.J2	899.83 899.83	832·41 994·93		4,33 3,65
	TOTAL		{	ı		 	348D- 76	}		1	5324.58

CALCULATION PERIOD -- 57 1849S DISCOUNT RATE --- 13.0 4 EXCHANGE MATE --- 1.000 (BHT/BHT) ESCALATION PER ALMUS

F.C PART --- 7.3 t

L.C PART --- 1.3 t

FIRET 114 --- 1.3 t

FUEL PFICE --- 1.3 t SHAPPL PRICE PACTIA

F.C PAAT --- 1.131
L.C PART (HIDRE) --- 1.951
L.C PART (ALTCA) --- 1.953
FUEL PRICE --- 1.313 *** CASE I *** B/C - FUEL PHICE INCHEMEN 876 LF3 --- I.R.F (HITRUFORER)

*** 12 *** FUEL PRICE VARIABLE SEET --- WITH SHOOM PRICE FACTOR ---

THACOM PRICE FICE IA

FOR PART --- 1.13)
LOC PART (HETALL) --- 0.453
LOC PART (ALTEL --- 1.43)
FUEL ARTE --- 1.43)

BYC - CISCOUNT HATE 3/0 (4)

* --- 1.F.K IHYOADPONERI

---- Fee. Case 1 ***

CALCILATION PETITO -- SE YEARS ESCALATION PEP ANNUA E.C. PART --- J. I t. PART --- J. I FIRIT JEM --- J. I FURT VALCE --- J. I

*** EVALUATION CHITFRIA ***

ene ti ese Discopat Adre vadital sale Factia ---

CISCONT BATE --- 13.0 €

I THANTHAI LOUA I --- 17A0 SUPANDES

**	THE	INTERNAL		RATE)F	RETURN	JF RETURN (I.R.R.) AND		BENEFIT	- COST	PATIO	(8/C)	9 F	TH15	BENEEIT - COST PATIO (B/C) OF THIS PROJECT	CASE
*** EVALUATION CRITERIA ***	VI ICN	CRI TE	* 414	神様と												i ! ;
CALAUL	A T I GN	CALAULATION PERIUD 57	OC	. 57 Y.	YEARS		DISCOUNT RATE 13.0 \$	RATË	13.6	*	EXC	EXCHANGE RATE	RATE .	1	1.000 (BHT/BHT)	/BHT)
ESCALA	17 10N F.	ESCALATION PER ANNUY	NNU4 ART	ج ا	~* ~											į
	L.C.	C PA XED C	PART	 	~ ~											
	FU	FUEL PRICE	:CE	1	~				1							
*** CASE 1 *** (with Shadow Price Factor)	1 + +	(with	Shadow	Price Fac	ctor)									, 		1
(1)	出上		INTERNAL	RATE		RETUR	JE RETURN (1.R.R)		CALCULATED BY THE REGULA ITERATIVE	BY THE	E REGUL	A ITER	34T IV	E METHOD	ООН	
		THE	I.A.F	THE I+3.R OF AY		³J#ER	243P34ER IS 14.3 %		(PROJECT BENEFIT IS MEASURED BY ALTERNATIVE PLANT)	ENEFIT !	IS MEASU	RED BY	ALTE	RNAT IV	E PLANT)	
	}	!														
(2)		PPJJECT EVALUATIUA	EV 1L L	JAT1U4	i	THE	3Y THE BENEFIT/COST RATIO (8/C) METHOD	ST R.	4T 10 (8,	- YET	гнар				-	:

= 1.3647 (I= 13.3 %)

2+33.63 (MIL.BHT)

۱,

B/C RATIC = SU4((INVESTMENT + ANNUAL COST) * P.V.F) : ALTFRNATINE /3J4((INVESEMENT + ANNUAL COST) * P.V.F) : HYDROPOWER

* *	*** 10 ***	1	THE INTERNAL KATE	KATĒ	T.	RETURN	RETURN (I.R.R) AND	AND	86 4EF LT	- COST	F AT 10	(3/8)	0F	THIS	BENEFIT - COST RATIO (B/C) OF THIS PROJECT CASE	CASE
1	*** EVALUATION CPITERIA ***	N01	CPITERIA *	*												
	CALCULA	VOIT.	CALCULATION PERIJO 57 YE	57 YE	AR S	U	DISCOUNT RATE 13.3 \$	ATE -	13.3	ħ₽.	ЕХСНА	NGE RA	i E	- 1.	EXCHANGE RATE 1.000 (BHT/BHT)	BHT)
	ESCALAT	JON P	ESCALATION PEP ANNUM F.C PART	,	8	5	SHADOW PRICE FACTOR	CE F	ADOW PRICE FACTOR F.C PART 1.100	1,100		ļ				;
		1°C	L.C PART	-) .	* (L.C PAR	T (H)	10R11	3.853						
		FUE	FIXEL JGM FUEL PRICE	0°C	# ₩ *3 C		LAC PAR FUEL	T CAL	Lac.PARI (ALTER) 0.950 FUEL PRICE 1.300	1,300						
				•	•		 		! !							

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

(PROJECT BENEFIT IS MEASURED BY ALTERNATIVE PLANT) CALCULATED BY THE REGULA ITERATIVE METHOD THE INTERNAL RATE OF RETURN (I.R.R.) THE I.A.P OF HYJROPJWER IS 15.0 % (1)

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

B/C RATIC = SJ4((INVESTMENT + ANNUAL COST) * P.V.F) = ALTERNATINE /SU4((INVESEMENT + ANNUAL COST) * P.V.F) = HYDROPOWER

B-C = 2187,99 (MIL.BHT)

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

*** CHECK PROJECT DATA *** -- 1/DROPOWER --

*** CASE 1 *** PLANT A.J. 1 *** Nam Chon Power Station

1] 3E ·	LEF AT ING	FACILI	TY	TP ANSM1 5 %	JY FACIL.	SIBSTATION	FACILITY!
l l		RE SEPVEN	MALH!	NERY		 	 	·
I VEAR		L.C PART	F.C PART		F.C PART	L.C PART	F.C PART	L=C PART
}	I (MILANHE)	(FIL.BhT)	141L=5HE1	(MIL.eHT)	(MIL.BHT)	[[4[L.BH]]	(41L.BHT)	IMIL.BHT1
Ţ	YXXXXXX 4Y	******	******	******	*******	CECEXX.XX	XXXXXX.XX	XX4XXX,XX
1981	217-76	447-13	ا د د	J.J	ا د . د	j	3.3	3.0 1
1962	361.75	788.49	} J_9 {	0.0	ا تنه ا	0.0	a.a j	0.0 1
1 1983	1 395.14	178.23	29.801	30	0.1	ا کون ا	0.0	0.01
1984	299. 35	444.38	294.13	42.33	J 124.JJ	63.1)	12.33	4.33}
1 1985	1 350.16	562.93	+73.90	84.00	186-43	88.30	46.00	12.90
1 1466	254.10							12.001
1 L967	243.44	296.97	247.33	71.33	124.33	j 55.JJ	32.33	12.301
1 1488	1 1.7	0.0						
1 1989								
1993								
1991								
1 1003								
1 1991								
1994			3.0 (
1995								
1996								
1 1997								
1998	1 0.1							
1999								
5000	1 1-1							
2001	1 0-7							
2002								
2333	1 3.3							
2004								
1 2005								
1 2007	1 3.3. 1 0.0							
1 2008	1 0.3							
2333								
2013								
2011								
1 2312								
2013	i č.ć							
201+	i 5.5							
2315	i jij							
2016	1 1.1							
2017	1 0.1							
1 2318	1 3.1							
2019								
2023	1 0.0	0.0	0.0	0.0	1 0.0	j 0+3	1 0.0	1 0.0

] ;E	IEF ATING	FACILI	17	TRANSHISS	JY FACIL-	SUBSTATIO	FACILITY
YFAR	DAM AID	RESERVER	HACH!	NERY		ĺ		ļ
угдн	F.C PART	L.C PART	PART PART	L.C PART	F.C PART	L.C PART	F.C PART	L.C PART
	tale annes	iriL.ant)	(41L-84T)	1411-8H11	INIT-DHI!	1 41 C+BHT)	[THIL BHT]	
	*******	******	x.xx.xx	******	******	(X4XXX.XX	XXXXXX = XX	XXXXXX*XX
2321	ا د د ا	3.3	1.0	0.0	0.,	0.0	0.0	0.0
2022	1 0.01] 1.0	0.0	0.3			0-0
2023	1 0.1	0.0) 3.0	0.0	124.00			1 3.3
2324	1 3.3	J.J		3.0	186.33			0-0
2025	1 3.3	3.0	1 3.3	0.0	186.33			
2076	1 0.3	0.0		4-0	124.03			1.3
2327	1 3.3	3.3	1 3.3		ا برميا			0.0
2024	1.)	0.0	1 3.01	0.0	0.3		0.0	0.0
202)	0.1	0.0	1 2.0	0-0	0.1	3-0	0.0	1 4.0
2333	1 3-1	3.3	1 3.0	3-3 0-0	1 2.1	0.0	0.0	0.0
2031	3-11				. 0.3	0.0	4.0	0.0
2032	1 0.3	3.0	1 3.0 1	3-3	3.3	3.3	3.0	0.0
2034	1 1.1	0.0	0.4	0.0	0.31	J. J. J	9.0	0.0
2035	0.1	3.0	0.0	0.0	, J.J.	1 3.0	0.0	0.0
2336	1	3-3	3.0	1.3		3.3		3.0
2037	3.3	0.3	0.0	8-9	-465.33			

!	j 5€.	NER AT ING	FACILI	TY	TRANSHIS	J4 FACIL.	SUMSTATEG	Y FACILITY
YEAR		RE SEFVER	MACHI	NEPY				
						E.C PA⊰⊤	FaC PAHT	L.C PART
1	11416.887)	IM1L_BHT1	(11 L. SHT)	(MIL.BHT)	[MIL.BAT]	1716.1171	I TIL .BHTI	[41L.8AT]
ļ	*******	******	44×3×4.××	******	XXXXXXXXX	KXKXXX.XX	XXXXXX.XX	XXXXXXXXX
1961								
1 1982 .								
1983). J. J	1 3.3	3.3	0.0			0.0	0.0
1 1984	3.3	0.0	3.0	0.0		0.0	0.0	0.0
1 1985	35.77	0.0 60.87	0.0	0.0	0.0	0.0	0_0	J.J
i 1966	1 37-17	61.58	24.61 71.68	3.0		0.0	0.0	0.0 i
1 1987	44.45	131.56	71.68	11.15	0.3	0.0	0.0	0.01
1 1984 l	9.20	81.19	235.68	17, 33			1 0.0	إ ئيا إ
1987	1 3.3	1 3.3	59.33	5.33	3.3	0.0	0.0	0.0
1 199)	1 0.3	0.0	3.0		0.3	0.0	0.0	0.0]
1 1991	0.3	0.0	J.0	0.0	0.3		0.0	0.0
1 1992	1 3.3	1.0	3.3	3.3).J	3.0	0.0	i a.o 1
1 1993						0.0		
1994	i 0.3	0.0	0.0	0.0	0.3	0.0	0.0	1 0.0 1
1 1955	1 3.3							0.0
1996								
1 1497						0.0	0.0	
1 1993					3.3	3.3	3.3	
1 1991						9.0	0.0	
1 2000								
1 2001			3.3				3.3	
2002						0.0	0.0	
1 2003								
1 2004								
1 2005								
1 2005						0.0		
1. 2007								
2008								
1 2339								
1 2010								
2011				0.0				
1 2312			71.60	1 11.15	1 3.3			
2013		1 0.0	235.08		6.5			
2014			29.00	5.00	0.3			
2315				3.3				
2016			0.11	0.0	0.7			
2017								
2318	3.3				3.3			
1 2019	i 5.5							
2020								
. EULU	1 294	1 0*0			1 003		, 010	

1	36	IEP AT ING	FACIL	ן זין	TPANSH155	IJV FACILA	SUBSTATIO	FACILITY
YEAR	DAN AND	RESERVER :	MACH!	NERY				
I IEEK	F+G	L+C PART	F.C PART	L.C PART	F.C PART	L.C PA-IT	FaC PART	L-C PART
<u> </u>	 [M E=BHT]	[HIL.BHT]	 {	[MIL.BHT]	(4)£.8HT)	(MIL.AHT)	[HIL.SHT]	(M1L.BHT)
!	xxxxxx. 4x	*****	44××××××	******	******	444XXX XX	XXXXXX XX	XXXXXX.XX
2321	1 2.3	3.3	3.0	0.0	0.3	9.0	8.0	0.0
2022	1 0.3	0.0	1 3.0	0.0	1.3	0.0	0.0	0.0
2021	1 0.3 (0.0	3.0	0.0	0.3	0.0	1 1.3	
2324]).) (0.3	0.0	0.0	0.0
1 2025	(J*)		0.0	0.0	0.0		0.0	0.0
1 2026	() <u>.</u> ; (0.0	0.0	0.0		0.0	1 3.3 1
1 2327	ا د د د	3.3	1 2.3	3.3	0.1	0.0	0.0	0.0
1 5058	i 3*)		3.0	0.0	0.0	0.0	0.0	0.0
2029	1 0.3		3.3	0.0	ڊ.ب	0.0	0.0	0.0
1 2333	1 3-3 (1 1.1	3.3	۲.د		0.0	0.0
5031	1 3.3		0.0	0.0	0.3	0.0	0+0	0.0
2032	(0.3			0.0	زين	0.0	0.0	1 0.0
2333	1 3-3		1.3	3.3	7.1	7.1	0.0	0.0
2034	i 3.1			0.0	0.1	1 3.3	0.0	0.0
2035 2034	1 0.3] 3.0	9.0	1 5.3		0.0	3.3
2037	1 1.1	3.3	3.3 3.8		[0.J) 0.0 0.0	0.0	0.0

••• CASE 1 ••• PLANT Is 1 ••• Nam Chon Power Station

1	f INS-	LANNUSE	1 -1:	LED (36"	i vaki	148L:	664	PRANT	LUSS
i	I TALLED	IGENE-								
\$ AEWS	I CAPA-	1 RATING	GENÉRA.	TRANS.	SUBSTA.	FUEL	1 FUEL	LETC.	Pjad≘k	ENEPGY
1	I CITY	Í ENE ₹GY	FACILA.	FACIL	FACTL.	PRISC	IC INSUR	VARIA.	LOSS	
ļ	i	i .] .	ı	1	1	i	l	I	ŀ
1	[{HP]	ІМІЦ.≪ ЫЫ	M[L+441]	THE.JIP	MIŁ. 6HT	BHTZL	L/541	MIL.BHT	(PW)	MILJEWH
!	[XXXXX.X	1 X 4 X X 4 . X	IXXX4.6X	XXXXXXX	KY****X	****	14.3446	XXXX.AC	XXXX XX	KX.XXXX
1981	1 0.0	! \	143		!					
1 1982							13.0	9.21		
1 1983							13.3	23.13		
1964							17.0	62-13		
1 1985							11-0	10.38		
1986							13.3	95.22		
1987							12.0	15.22		
1 1989		1101.0					13.3 13.3	62.[J		
1989		1101.0					J.3	3.0		
1990		1101.0					(3.3	0.0		
1991		1 1101.0					١.٠	3.3		
1 1992		1 1131.0					13.0	0.0		
1993		1101.0					1.0	3.0		
1 1994		£ 10 1.0					1.1	j.,		
1 1995		1103.0					J.J	j.,j		
1 1956		1101.0					1.0	3.0		
1 1997		1 1103.0					3.3	j.,		
1 1994		1 1133.0					3.0	0.0		
1 1999		1 1107.0					13.0	3.0		
1 5003	1 595.0	1103.0	73.34				3.3	1.5		
1 2331	1 595. 3	11139.0.	75.34	13.71			3.3	0.0		
1 2302		1103.0	75.34		4.00	0.0	13.3	0.0		
1 2003		i 1143.6.		13.71	4-00	0.0	13.3	3.3	34.13	
2334		1 1131.3			4.001	0.0	J.J	0.0	34.00	34,00
2005		1 1733.0			4.00	0.0	11-2	0.0	34.00	39.23
2335		1139.0				3.3	נינו	1 0.0	34.00	39.00
1 2007		1 110 i. 0					13.3	3.0		39,00
200B		1134.0					3.3	0.0		
1 2339		i 1111, 0,					[]_]	3.0	34.00	39.00
2010		1 1103.0					jJ.)	0.0		
	1 595-0	1 1103.0					17-3	0.0		
1 5315		1103.0					13.3	3.3		
2013		1101.0					3.3	0.0		
2014		1104.0					13.3	0.0		
1 2315		1133-0					1.3	3-3		
1 2015		1 1101.0					1.3).D		
2017		1103.0					17. 2	3.0		
2019		[[]]					1.1	0.0		
		1104.0					3.3	0.0		
1 20 20	1 242.0	1131.0	75.3+	13.71	4+00	0.0	17-7	3-0	34.33	39.33

!		ISNS-	ANNUAL	112		124	VAR	lAdLE	OEM	TRANS	LESS [
!	YEAR	CAPA-	RATING	GENERA.] FACIL.						P34ER LOSS	
i		ļ	i	MEL . 5 18	i	t I	ł .	1.)	t i	
į		xxxxx.x	*****	A4X4.44	AAAK. XX	2×××. ××	XX. XX4	x . x < x <	****	xxxx.xx	XXXX.XX
į	2021		1101.0					j• j	3.0		
i	20 22 . 20 23	595.0	1133.3	75.34	13.71	4.00	0.0	()•0 (0.0	34.JJ 34.DQ	
ł	2024 2025		[1]3.0 [1]3.0].J	J.U	34.00	
1	2024		1101.0					3.3	0.0 I		39-001
į	2029	595.0	1131.3	73.34	13.71	4.33	3.3	3.3	1.0	34,33	39.331
į	2330	595.0	1193.0	75.00	13.71	4,00	0.0	J. J	3.0	34.00	39.001
į	2031 2032	595.0	1103.0 1103.0	75.34	13.71	4.00	0.0)•0 (•t	3.3 l	34.00	39.00
ł	2033		1103.0					1.0	3.0		
1	2035 2076		1101.0					1.0	0.01	34.00	
1	2037	595.0	1101.0	73-34	11.71	4.33		13.3	3.0	34.33	

*** CASE 1 *** PLANT NJ. 2 *** The Khong Power Station

	I INS-	IANNUAL GENER		XED	06 M	VAR.	148LI	364	THANS	LOSS
YEAR			CENZAS	TRANE	SUBSTA.	Cuc.	FUEL			
	i CITY	ENERGY	FASIL	FACIL.	FACIL	IPOEL I PRICE.	1702L 1239334	ETC.	P7*EA L755	LOS
	!		1	1	! ™1L.BHT	1	į	1		į
	į xxxxx į		****					17777		
	1	i i				1	1		******	
1981	1 0.0	J. 0).)	0.0	0.0	0.0	1.3	9.0	0.0	0.0
1965	1 0.0	ا ت مذ	J. J	(1 مال	0.0		3.0	0.0		
1981	1 3.3						3.0	3.3		
1984	1 0.0						3.3			
1975							12.0	÷.73		
1966							j. j	11.62		
1987								14.17		
1989							د در			
1989							3,5			
1991							3.3	2.35		
1991	51.0						3.9			
1992					3.3		7.0	0.0		
1993							13.3	3.3		
1954							1.0	0.0		
1955							J. 0	0.0		
1996							1.1	7.1		
1967							1.0	3.0 [
1999							J.3			
							3.3	1 7.7 [3.3
195)							3.0	0.0	5.00	3,0
2000							J.0 .	J_0		3.0
2001							3.3	3.3	5.33	3.3
2002			15.33	4.0	0.0	0.0	1.0	0.0 1	5.001	
2003				0.0	0.0 [0.0	J. 0	0.0		
2004			12.33	1.1	3.3 (0.3	3.3	3.3		
2005			12.50	0.0	0.0		3.0	3.0 i	5.001	
2006			12.53	0.0	0.0		J. 0 j	2.0 1		
2007	(51.0)	91.3	12.55	3.3			1.1	3.3		
2003			12.30	0.0			J.0 1	2-0 (5.00	
5004	1 51.0	91.0					J. J	0.0		
2010							1.1		5.33	
2011							i i.i		5.00	
2012							J. 0 1		5.00	
2013		93.01					1.3	3.3	5.331	
2014	51.0						j.j i		5.001	3.0
2015	51.0						ا تارد			
2016							3.3			
2317							i			
2018							3.0 I		5-00	
2019							ו לינ		5.001	
2320									5.331	
	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,	254351	2.0	440	0.00	J.O [0.0	5.00;	3.0

	(1NS-	1 4 1 2 1 1 4 2 2								
<u> </u>	TALLEC	ANNUAL	 			YAR.	148LE	DEM	TRANS,	LUSS
YEAR	I CAPA-		GENERA.					1574		
1	CITY	I ENERGY	FACIL-	EAC 11	EACTI	LLAFF	IFUEL	1516.	IPONER .	
i		1 - 16101		FACILI	LACTE	PHICE	i CUNSUN	YANIA.	L355	LOSS
i	(44)	HEL-KHH	HEL . 3 17	411.641	MIL-BHT	BHT/L	Likei	141L.BHT	[[MW]	 MEL-XWH
!	XXXXXX	XXXXX.X	XXX C+ CK	444X.XX	XXXX.XX	XX.XXX	14.3626	IXXXX.XX.	xxxxxx	XXXX.XX
2321	51.0		[12.33	0.0	0.0	0.0	13.7] 3.0	1 5.001	3.00
2022	51.0			0.0	0.0	0.0	13.0	0.0		
2023	51.0				! c.o	0.4	13.3	9.0		
2324	51.0				0.0	υ.υ	13-0	0.0	5,00	
2025	51.0					0.0	[3.0	0.0	5.00	3.00
1 2024	51.0				0.0		13.4	0.0	5.03	3,33
2327	51.3				1 3.3	0.0	13.0	0.0	5.00	3.00
2028	51.0				0.0		1).0	0.0	5.00	3.00
2029	51.0				0.0		13.0	1 3-0 (5.00	3.11
1 2333	51.3						[].0	J -0 1	5.00	3.00
2031	51-0						[1•0	4.0	5.00	3.00
2032	51.0				C.a		jj.j	3.0	1 5.QD	3.00
2333	31.0				1.3		13.3	0.0	5.00	3.00
1 2034	51.0						13.3	0.0	5.00	
2035	51.0				0-0		13.0	3.0	5.33	3.13
2336	51.0						13.0	0.01	5.00	3.00
2037	51.0	93.0	1231	0.0	0.0	0.0	(•(0.0	5.00	3.00

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

	l oE*	SFATING	FACILI	ΪΥ	TRANSHI 351	IJN FACIL.	SUBSTATIC	FACILITY
L L YEAR	11 4 MAG	ME JERVER	HOAP	NERY				
1	F=C PAFT						F.C PART	L.C PART
<u>'</u>	I CHILLAHT 1	(THELIBA)	[4]L_6HT}	(MIL.BHT)	[[MIL.BHT]	1 111.0411	(4[L.UHT)	(MIL.BHT)
Ì	XYXXXXXX	XXXXXX.XX	XX.XXXXXX	*****	XX.XKXXX	4 ** * * * * * * *	******	******
1981								
1482								
1983								
1984								
1985								
1986								
198/								
1968 1989								
1993								
1991								
1992								
1991								
199+								
1995								
1996								
1997								
1994								
195)								
2000								
2001								
1 2302								
2003								
200.								
2305								
2006								
2007								
2308	1 3.3							
2009	1 (.0	3.0						
2013		J.0	3.0	0.0				3.3
2011	1 3-3 ().J					0.0	9-0
2012					0.0	3.0		
1 2013								
2014								
2015								
2016								
2317								
2018								
2019								
5251	j 1.1 j	1.3	3*3	3-3	3-3	1.0	0.0	0.0]

!] 3E	NERAT ING	FACILI	I TY	[TRANSMISS	IDN FACIL.	SUBSTATIC	N FACILITY!
YEA		RE SERVER	I MACH	NEAY				!
"-	F.C PART	L.C.	G PART	L_C PART	F.C PART	L.C PART	F.C PART	L.C PART
<u> </u>	(MIL.BHT)	I CMIL.BHT I	1 4 EL - 8 HT 1	{M{L.#HT]	(41L.8HT)	[MIL . BHT]	(THE_JIF)	EMIL.BHT3
!	[xxxxxx.ex	******	AKKKEX.XK	******	******	AXXXXXXXX	******	, xx x x x x i
202	1 0.3	i 3.0	0.0	0.0	0.3	0.3	0.0	0.0
202	2 0)	1 3.0	1 3.0 (0.0	a. j	ו נינ	3.3	1 3.3 1
232	1 ().)	1 3.3	1 3.0 1	0.0	0.)	0.0	0.0	0.0
1 202	4 1 3.5	1 3.0	1 499.151	0.0	0.3	0.01	0.0	0.0
1 202	5 Jaj	1 3.3	140-176	0.0	61.94	41.33	1.3.3	1 3.31
1 232		1 7.3	673.76	0.0	61.39	41.33	0.0	0.01
1 202			444.16	0.0	92.56	55.10	0.0	0.0
1 202								
1 232			ו הינ ו		0.1	1 0.01	0.0	0.0
203			3.0		0.)		0.0	
203).u			0.3			
203				J.J)		0.0	
203		J.0 .		0.0	0.)(0.0	
203				0+0	0.0		0.0	0.0
533		3.0		3.3	1 3.1		0.0	0.0
203		3.0		0.0 (0.1			0.0
1 203	1 0.1	1 3-0	[-[[22+00]	0.0	-155.03	0.0	0.0	0.0

***	CASE	ı	***	PLANT	N 3.	2 ***
-----	------	---	-----	-------	------	-------

!	i ,E	(EH AT L IG	FACILI	ťΥ	TRANSMISS	IJ4 FACIL.	SUBSTATIO*	FACILITY
] } YEAR		ME BERVER	44619	HERY	!			
						LeC PART		LaC PART
1	I [EMIL_AHT]	[MIL.BHT]	[THH	(416.8HT)	(MEL.BHT)	1 MIL. BHT I	14IL.BHT 1	(MIL.BHT)
!	******.4	** 47** **	44.222.22	******	******	* 4 4 X X X . X X	*****	*******
1961	۱.,	ا د من	J.u	0-0	1.0	۱.د	3,3	ا د.د
1 1162	3.1	1.4	1.0	0.0	0.1	0.3	0.0	0.01
1463	1.1	3.0	3.0	0.0	0.)	0.3	0+0	0.0
1 198 .	1 (.0)	التعل	293.27			0.3		
1985								
1986								
1 1987								
1 [461								
1 1983								
1 1990								
1 (991	1 1.1							
1 1992								
1 1993	0.3							
1 1495								
1 1496	1.3							
1 1997								
1 1494	(
1999	i 5,5 j							
1 2303								
1 2001								
2062								
1 2303	1 3,1							
1 2084								
2005	3.3						0.0	0.0
1 2006	1 1.1						3.3	3.3 [
2007	1 0.)	3.0			0.3	0.0	0.0	0.0 [
2003	1 2-3	3.0	0.0	0.0	0.1	0.0	0.0	
2339).)	293.271	3.3	3.3	J. J		
1 2010		3.0	439,90	0.0	0.3	0.0		
1 2011								
1 2312								
[2013								
1 2014								
2015								
1 2016								
1 2017	1 3.3							
1 2019								
1 2019	. 0.1							
1 2023	1 0.3	ا ۵۰۵	0.0	0+0	1 4.3	₽ . Q	₽0	[a_o

] jE'	4EF 4714G	FACIL	TY	TRANSMISS	IJY FACIL.	SUBSTAT 10	Y FACILITY
AEYS	DAM AND	RESERVER	HALH	NERY				!
,,,,,,	FaC PART	LAC PART	≓∗C PART	L=C PART	F.C PART	L.C PART	F.C PART	L.C PART
	1 	(MIL.BHT)	 (41L.BHT)	(MIL.BHT)	 [41L_861]		(MIL.BHT)	(416.847)
	AXXXXX.	AX KEXE. AX	AKAXXA.XX	XXXXXX.XX	******.44	******	AFRAKK.RK	XXXXXX.XX
2321	וֹ נ.נ	رود	j ,,,	د،د			0.0	
2022	1.3			0.6	1 0.)		0.0	0.0
2023	1 4.1			0.0	د و ا			0.0
2324	1.1			3.3	3.3			
2025	1.		0.0	0.0	21.40			
2026	! 0.3		1-0	0.0	21.16			0.0
2327	1.1			3.3	29.24			0.0
2024 2024	(.0)).0).0		0.0	(0.3			
2333	3.)	1.3		3.3				0.0
2031	1 11	1.0	. J.0	0.0			0.0	
2032	ز ن		3.0	0.0	נים ו			
2313	1 3.5			3.3	i š.š		ă	j.a
203+	i 5.5		3.0	0.0	0.0			0.0
20.55	1 3.3		0.0	0.0	0.3		0.0	0.0
2035	1 3.3		j.,j	3.3	3.3	1.3	3.3	1 3.3
2037	1 0.1	3.0	0.0	0.0	_54.≱J.	0.0	0.0	0.0

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

!	INS-	AN WAL	= [>	(ED (364	VAR	I ABLE	P30	TRANS.	LOSS
	TALLEL!	LETE-	Cr	LEADE	SUBSTA.	to Fe	1 1 1/2			EN-RGY
TEAR	CAPA-	TAILYG	UEN: SA.	MANS.	2012 A.	PUEL	7000	1516.		
: :	CITY	ENERGY	FA.LL.	FACILS:	FACIL	i PKICE!	1 2005 0 41	V4H1A+	LOSS.	russi
i i	(44)	HIL.KWH	MEC. 347	MIL.BHT	M11.8HT	BHT/L	L/(44	MIL.BHT	[44]	MILAKHHI
1	XXXXXX.X	XXXXX	X4X4.4X	*K.KXXX	****	XX.XXX	Ix.xexe	XXXX.XX	X X X X X X X X	XXXXXXX
 1981	3.0).0	ر . ر	0.0	0.0	0.0	13.0	0.0	0.0	0.0
1 1962								3.3		
							13.0	0.0		
1963							13.3	0.0		
1984							13.3	1.0		
1965			3.3	0.0						
1985						0.0		0.3		
1987						4.680				
1 1981	480.0					1 4.683				
1989						4.680				
1992						4.680				
1 1991						1.680				
1665						4.650				
1993						4.680				
199+	490.0					4.690				
1 1995	[48J.J	1 51300	1 71.45	5.17	0.0	1 4.680	13.3377	0.0	24.00	
1996	1 480.0	1 213-0	77.35	1 5.17		1 4.600				
1 1997						4.68Q				
1 1943] 483.3	1 211.3	73.35	5.17	0.0	4.680	J. 3777			
1999] 21). 0			1 0.0	4.680	13.3177	0.0		
1 2003	1 480.0	[21.340	[7Ja 15	1 5.17	0.0	[4.660	10.1771	l 0.J	24.03	[7.53]
2331	1 483.3	1 213.3					13.3377			
2002	480.0	213.0	73.32	5-17	0.6	4.680	3.3177	0.0	24.00	
1 2003	480.0	1 213.0	1 73.35	5.17	0.0	4.460	13.3177	0.0	24.00	7.531
2334	483.3	1 21 3.3	71.45	5.17	3.5	4.680	13.3177	1 3.0	24.00	
2005	480.0	1 213.6	1 3.35	5.17	0.0	4.680	13.3477			7.50
2006						4.680				
1 2337						1 4.683	13.3977	0.0	24.00	7.50
1 2003						4.680				
2009						1 4-680				
7313						4.683				
ZOII						4.680				
2012						4.660				
2313						4.683				
2014						4-680				
2015						1 4.660				
2316	1 483.3					4.683				
2017						4.680				
2014	440.0					1 4.683				
2013						1 4.683				
2023						4.690				
. 2023	. 400.0	, 213.0	1 // 17	1 2911		. 70000	1043761	. ,,,,		, ,,,,,,

1		1185-	A FYUAL	KI F LX	ED (LH .	VAR	I A BL S	064	TRANS	L955 1
i		TALLED									
Ł	YEAR	CAPA-	HAT ING	GENERAL	TRANS.	SUBSTA.	FUEL	FUEL	ETC.	IPSHER !	L YOMENSY
Ì		I CITY	= YE AGY	FACIL-	FAC 1L.	FACIL.	PAICE	1634504	VARIA.	LDSS	LD\$\$1
1		ł		1	١ .					!!	
ı		1 (AM1	H[L.KWK	INIL. HIT	MIL.SHT.	M16.8HT	BHT/L	E L/444	MIL.HHT] [HH]]	[MIL.KWH]
					2 X X Y Y		1 1 X . Y # Y			XXXX.XX	****
1		^^^^			*****				^^^^	1	
i	2321	483.0	213.3	73.35	5.17	0.0	4.680	3.377	0.3	24-00	7.50
i	20 22	1 480-0					4,680	3.3111	0.0	24.00	7.501
i	2023	+80.0	21 3-0	73.15	5.17	0.0	4.680	1146.6)	0.0	[24,33[1.531
ı	2324	1 453.3	1 211.3	71.351	>-17	0.0		[3.377]		24,00	
ŧ	2029	480 - 0	21 3.0					J.3171		24,000	
- [2026	480.0						13. 5111		24-03	
1	2327	493.3						13.5177		24.00	
•	2023	480.0						3.3111		24.00	
ŧ	2029	i 490. 0						13.3777		24.00	
ı	2333	(483.3						3.3177		24.00	
1	203l	490.0						3.3177			
1	2032	440.0	21.3.0.] 7), 15]	5.17			[3,117]		24.00	
1	2033	1 483.0	1 511.0	77.35				13.3177		1 24.00	
1	2034	480.0	213.0	7 }, 15	5.17	0.0	1 4.660	[3,3)77] 24,00	
Ì	2035	+80.0	1 211.0	71.35	5.17	1 0.0	t 4.680	13.1377	0.0	24.00	7.501
- 1	2334	443.3	1 21 1.0	71.35	5.17	1 3.3	4,683	13.3911	0.0	24.00	7.501
ı	2037	480.0	0.615	73.12	ielT	0.0	4.680	13.3171	0.0	24,00	7.501

!		AN 4UAL	= { /	(3)	Cr.	VAR.		JEH :	TRANS.	rass
į :	TALLEC							,		
¥ = AR			G:4: 13.							NERGY
ļ	(C3'Y	- 15 (0)	FMILLE	FACIL.	+ ACTL	I DETCE	1-34561	. V4" } 4.	1 1022	Fugg
i	{Ma}	HIL. Sale	MIL . 117	 MIL.3HT	MIL.HHT.	OHT/L	L/444	MIL.BHT	[[MH]	MIL.KHH
ļ	KEKIX. X	AXXA4.A	AAAAAAA	AX4K-XX	XXXX.XX	KX.XXX		XXXX.LA		MAXX. AK
!				J.)	!	1 3.3) J.)	٠,٠٠	ן וֹנ•נ וֹ	ا د ـ د
1981							10.0			
1982							13.0			
1941								3.3		
146+		1					3.2523			
						3.450				
1986 1987						3.4HJ				
1 1487		145.0				3.480				
1969		1347+0				1.480				
1433		1347.0				1 3.493				
1391		1 1 14 5 . 0				3.480				
1992		1,14,50					13.2321			
1993		1345.3				3.463				
195+		1345.0					1.2523			
1953		134240				3,440				
1955		1347.3					13.2523			
1997		1345.0					1.2523			46.50
1954		1,145.0					1.2523			69.50
1969		1345.0				3.483			1 13.33	38.53
2063		1345.0				3.440	[3.2523]	0.0	10.001	68.50
2001		1347.0				3.480	3.2323	0.0	10.00	98.50
1 2002	170.0	1347.0	43.13	1.53	1 3.3	3.483	[3.2>23	1 3.3	13.33	88.5J
1 2003	170.0	1345.0	43.13	1.53	0.0	3.480	(3.2:2)			48.50
2004	170.0	13-5-0	43.13	1 1.83	0.0	3-480	13.2,23	. 0.3	10.00	68.50
2005	170.0	13-7.0					[3.252]			
[2336	1 170.0	1347.0	1 43.13	1.43	0.0	3.480				
1 2001	170.0	1 134 2+ 0					[]+5>5]			
1 2003] 1J47.0			1 3.3		11.2.21			
1 2339		1 1345.0					J.252)			
1 3313		1345.0					13.2523			
1 2011		Darrtl					12547			
2312		1 1345.0					13.2221			
2013		134>.0					13.2523			
1 201+		1347.0					13.252)			
2315	1 173.3						11.2521			
2016		13470				3.460				
1 2017		134200				3.480				
2318		1 134 > 3				3.463				
2019		1 1345,0				3.480				
1 2020	1 110-0	1 13+5.0	1 +3+13	1.83	1 0-0	1 3.450	13.2523	0.0	1 13.33	1 44.53

_											
1		1145-	ANNUAL	† alx	E) (VAR I	1812	DEM	I TRANS.	LUSS
i		TALLEG	GENE-								
i	YEAR	CAPA-	RATING	Í GENERA. I	TRANS. 1	SUBSTA.	FUEL I	AJ5L	ETC.	I P J A E R	ENERGY
i	,		THE LEY		FACIL.					LCSS	LCSS1
ï		1		i				i	1	i	
i		i 78-1 i	NIL KW	Í 111 L. 341 Í	MELABUT	MELABHE	IBHT/L Ì	LZKAT	HILLBHT	i ruus i	SIL.FAHL
_											
-		I TYXXX . X	3 x x x c . X	ixxx t.xxi	XXXX.XX	******	I NK . XXX	La.akaki	XX.XX	IXXXX.XXI	IXX.XXX
;		1 000000	1	i					i	1	i
1	2021	170.0	13+5-0	1 -1-13	1.83	6.0	3. +00	4.2.23	1 3.0	10.00	48.50
•	2322	173.3						12.2523		1 10.00	
:	2023	170.0						3.2533			
1	2024	170.0						13.2923		10.00	
!	2325	173.3						3.2723		13.30	
:		170.0						2.2.21			
ļ	2024	170.0						3.2723			
!	2027							3.2523		13.30	
!	2323	173.3						13.2523			
•	2029	170.0									
į	2030	170.0						1.2523			
ļ	2331	1 173.3						13.2523			
١	2032	110.0						3.2523			
ı	2023	1 110-0						17.5257			
١	2334	170.0						13.2.23		1 13.33	
ŧ	2335	170.0						13-2023		10-06	
1	2036	170.Q						13-2-23		10.00	
Į	2037	173.3	1345.3	41.65	1.63	J.3	3.48)	13.2523	1 3.3	1 13.33	86.53
			- -								

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*** 1 *** PROJECT 16LANCE S GET ENYOPOPOWER PLANT!
--- NO SHROJA PRICE FACTOR ---
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CALAULATION PERIOD --- ST YEARS DISCOUNT MATE --- 13.0 \$ EXCHANGE PATE --- 1.000 (8HT/8HT)

ESCALATION PER ANNU4

F,C PART --- 3.1 f

L.C PART --- 3.1 f

FIXET J&M --- 3.1 f

FUEL JAIJE --- 3.1 f

*** CASE 1 *** PLINT NI. 1 *** Nam Chon Power Station

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2002 0.1 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2003 3.1 595.0 1108.0 1089.0 75.04 3.3 75.04 13.71 4.00 92.75 2004 0.1 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2005 0.1 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2005 0.1 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2007 0.1 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2007 0.1 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2008 33.20 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 108.0 1089.0 75.04 0.0 75.04 13.71 4.00 92.75									1179*2	595.0 [0.)	2000 [
2003 3.1 545.0 1138.3 1069.3 75.34 3.3 75.34 13.71 4.30 92.75 2004 0.1 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2005 0.1 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2006 0.3 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2007 0.1 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2008 33.20 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1069.0 75.04 75.0						0.0	75.34	1069.0	1108-0	595.0	0.3	2001
2004 0.1 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2005 0.1 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2005 0.1 595.0 1108.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2007 0.1 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2008 33.20 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 108.0 1089.0 175.04 0.0 10.0 10.0 10.0 2008						0.0	75.34	1069.0	1108.0	595.0 j	0.)	2002
1 2005 0.5 595.0 1104.0 1069.0 75.35 0.0 75.04 13.71 4.00 92.75 2005 0.5 595.0 1104.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2007 0.5 595.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2008 33.20 595.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2007 2008						3.3	75.34	1069-3	[[]8.3	545.3	3.1	2003
2006 3.3 595.0 1138.0 1269.0 75.34 3.3 75.34 13.71 4.30 92.75 2007 0.1 595.0 1138.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2008 33.20 595.0 1138.0 1069.0 75.34 0.0 75.04 13.71 4.00 92.75 2009 372.40 595.0 1138.0 1069.0 75.34 0.0 75.34 13.71 4.00 92.75 2009 372.40 595.0 1138.0 1069.0 75.34 3.3 75.34 13.71 4.30 92.75								1069.0	1108.0	595.0 1	0.1	2004
2007 . 0.3 545.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.0 595.0 1108.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.0 595.0 1108.0 1069.0 75.04 0.3 75.04 13.71 4.00 92.75					15.04	0.0	75.34	1.069.0	1108-0	595.0 1	0.)	2005
2007 . 0.1 545.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2008 33.20 545.0 1104.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75 2009 372.0 595.0 1104.0 1069.0 75.04 3.3 75.04 13.71 4.03 92.75				1 13.71	1 75,34	J.3	75,34	1369.3	1136.3	595.0 [3.3	2006
2009 372-40 595-0 1104-0 1049-0 75-04 0-0 75-04 13-71 4-00 92-75						0.0	75.04	1059.0	1104.0			2007
					75.04	0.0	75.04	1069.0	1134.0	595.0	33.20	2003
					75.34	1 3.3	15.14	1369.3	1134-3	595.0	372-+0	2009 I
			4.00	13.71	75.04	0.0	75.44	1069.0	1109.3		617-10	2313
[2011 58+.20 535.0 1138.0 1069.0 75.04 0.0 75.04 13.71 4.00 92.75			1 4.00	13.71	75.04	0.0	75.04	1069.0	1136.0		564.20	2011
2312 362,33 595,3 1136,3 1369.3 75,34 3.3 75,34 13,71 4,00 92,75	455.05	92,75	[4,00	13.71	1 75.34	1.1	75, 34	1369.3	1138,3			

HARY I		GENERATIIG END INSTALLED PRODUC- CAPACITY TION INSTALLED	SALABLE ! ENERGY	i fixed ! Cost .	SJEAIREV TZOO	I TOTAL	MISSIAN	STATION DEM COST	[COST 	i
1 2013 1	3.1	545.3 t [138.J	1 1069.J	75.34	3.3	15.14	13.71	f 4,00		
1 2014	0.1	575.0 1138.0	1069.0	75.34	0.3	15.04	13.71	4.00	92.75	92.75
2015	3.3	595.0 1 1198.0	1 1069.0	75.J+	0.0	1 75.04	13.71	4.00	92.75	
2016	3.)	535.J 1138.3	1369.3	15.34	J.3	1 75.34				
1 2017	0.1	545.0 1 1108.0	[1069.0	15.J4	0.0					
1 2018	0.1	595.0 1108.0	1 1069.0	75.34	0.0					
2019	ا زون ا	595.3 [[38.3				75.J4				
2020	0.1	595.0 1108.0								
1 2021 1		[535.0 [[]4.4								
2022		595.3 1138.3								
1 2023 1	187 ₋ JQ									
1 2024						75.04				
1 2025 1										
1 2026										
1 2027						75.04				
2029		595.0 1138.3								
1 2029 1	0.2	1 575.0 1 1178.0								
1 2030		535.0 1104.0				75.04				
1 2J3L i		575.3 [[]8.]								
1 2032 1		575.0 1138.0								
1 2023 1		745-7 1178-7				75.04				
2334		575.3 [[38.3								
1 2035 i	3.J	1 545.0 1100.0								
\$ 2036		545.0 1108.0								
1 2)37	-685.1J	535.3 1138.3	1367.3	75.34	j 6.0	1 75.04	1 13.71	4.00	92.75	-592.75

*** CASE 1 *** PLANT 41. 2 *** Thi Khong Power Station

1		I GE IERATI I					TZO		•		
1 1	TAMEST_	LE 15KA 1 1	G END	C31 &61 C	46 16 1	ATING USM		} 7 4 €	SHA-	ANNIIAI I	COST
YEAR		I I STALLE 31									FLOW 1
1000		1 JAPAC 11ti							DE4 COST		1
1 1	INCL. DATE	i limi it	MIL Kaati	FM11 . NAME	,	LI CALL CHATS	DIMIL BUTI	Itali.auth	IARTI-BETT	1411 - BHT1	тить.∡антіі
			34 F4VA311								
1 1461	0.3	1 0.0 (J. 0 1	0.0	3.3	1 0.0	0.0			0. 0 ∣	
1 1982	0.1	1 0.0 1	انين	0.0	0.3	1), 1	().))).3	3.3		
1 1981	1.1	1 1.1	3,3 1	0.0	0.3	1 0.0	1 0.0	0.0	1 0.0 l		
1986 (3.3	1 0.0 1	0.9 1	0.0	L.B	1 0.0	1 0.0	0.0	0.0		
1 1985 [116.14	ا نندن ا	3.4 }	0.0	9.3	1 0.0	1 4.73	().J	1 3.3		
1 1986	133,29	1 3.3 1	3.1 [0.0	1 0 1	1 0.0	} 11.8Z	1 0.0			
1 1987	258.34	0.01	3.3 1	0.0	1 7.7	1 0.0	14.17				
1985	373.+8	1 3.0	3.3	0.0	0.0	1 0.0	1 14.17				
1 1983 [1 34.33	1 51.0 [77.5 1	75.0	10.53	1 0.0	12.46				
1990	ŭ., 1	1 51.0 1	43.0 1	90.0	12.50	i 0.0	15.40				
1 1991	0-1	1 >1.0 1	l tote	90.0	12.63	1 0.0	12.60] 0.0			
1 1992 (1.3	51.3	11.3 [93.3							
1993 (0.3	ال الماد ا	43.0 1	90.0	12.03	0.0	12.60	1 0.0	1 0.0		
199 ₇	0.1	1 51.0 1	93.0 [90.0		1 0.0	12,60				
1 1495	3.1	1 51.3 1	11.1 [83.3 (12.63	1 3.0	1 12.60				12.60
1 1996	1.0.1	1 01.0 1	93.9 1	90.0	12.63	1 0.0	12.60			12.00	
1 1997		\$ Si.O !	93,0 1	90.0	12.aŭ	1 0.3	12,60			12.60	
1 1998	1 7.1	1 51.3 1	93.3 [93.3	1 12.63	3.3	1 12.60			12.60 [
199)		1 51.0 F	43.0 1	90.0	12.63	0.0	12.60			12.60 [
[2000]		1 51.0	13. 1				1 12.60		j 3.3	12.63	
1 2331		J 51.J j	43.J i	93.3						12,60	
2002			93.0 1				12.60				
[2003 [93.0 (12.60				
2334		11.7	11-11								
2005		il.d	73.0 l				12.60			12.60	
2006		1 51.0 [93.0 1				12.60			12.60	
2007		1 21*7	93.3				15.60			12,60 1	
2003			33.0 (90.0			12,60				12.60 1
2009			4 G aft							15-47 [12.63
1 5313			93.3				12.60				12-60
2011			93.3 (90.0			12.60			15-60 [34.21
1 2012 (82.33	1 51.4 1	47*0 [90.0	12.63	1 0.0	12.60	0.0	J 0-0 I	12,60 [95,43

ļ	!		I IG END			ATING DEM		Į.	ļ	!	1
ı		ļ							isua-	Į ANNUAL Į	CO\$7
AEYS	HE ∤T					i√48 [ABLE			STATION		FLOW J
1	i	CAPACITY			l cost				I CEM COST		1
ı] [HIL-BIT]	((4w)	(MIL.KWHI)	[[HIL . KWH]	[MIL-dnT]	{ 41L.BHT }	[[MIL.BHT]	[{41L.BHT}	[[MIL.BHT]	[4 L	(MIL.BHTI
1 2013	1 203.31	1 51.0	93.0	93.3	12.63	1 3.3	1 12.63	1 3,3	3.3	1 12.60 1	295.61
1 2014	34-10	i stali	11.3	90.0	12.60	i a.s i	12.60	i a.a	0.0	1 12.60	46.60
1 2015		51.0					12.60		0.0	12.60	12.60 i
1 2016		51.0					12.63		1 3.3	1 12.60	
2317	1 3.3	51.0					1 12.60	6.0	0.0	1 12.60	
1 2018	0.3	51.3					12.60		0.0	1 12.60	12.60
2019	ز ق	51.0	93.0				1 12.63	3,3	1 3.3	12.60	12,63
2323	1.3	j 51.0 j	73.3	90.0	12.53	3.3	12.60	0.0	0.0	12.60	12.60
2021	0.1	51.0 I	43.3	90.0	[2.6J	0.0	12.60	0.0	0.0	12.60	12.60
2022	3.1	51.3	91.3	93.3	12.63	1 3.1	1 12.63	1 3.3	1 3.3	1 12.60	12.60
2023	1 0.3	51.01	93.0	70.0	12,60	0.0	12.60	0.0	0.0	i 12.60 i	12.60
1 2024	1 0.1	11.3	43.0	90.0	12.6J	0.0	12.60	0.0	0.0	12.60	12.60 i
2025	1 3.1	1 21.0 1	93.3	87*7	12.6J	3.3	12.63	1 3.3	1 3.3	1 12.60	12-63 [
1 2026	3.1	51.0	73.0	90.0	12.50	0.0	12.60	0.0	(0.0	12.60	12.60 1
1 2027	0.1	l oled	43.0	90.0	12.03	0.0	12.60	t 0.a	1 0.0	1 12,60	12.60
1 2024	3.1	51.0	43.3	93.1	12.6J	1 3.3	[[2.63	1 7.7] 3.3	12.60	12-63 [
1 2329	0.3	j ál.u i	93.0	90.0	12.63	t a.a l	12.60	1 0.0	i 0.0	1 2.60 (12.60 1
1 2030	0.1	51.0	93.0	90.0 [12.60	0.0	12.60	j 6.0	(0,0	1 12,60	12.60
203l	1 3.1	} 51.0	13,0	93.3	12.6J	1 3.3	1 12.63	1 3.3] 3,3	[[2.63]	12.6J j
2332	1 3.3	51.0 [93.0	90.0	12.43	0.0	l 12.60	1 a.a	i 0.0	1 12.60 1	12.60
203)	1 0.1	51.0	93.0	90.0	12.00	0.0	1 12.60	0.0	(0.0	1 12,60	12.60
1 203+	(4)	الماذ ا	93.0	90.0	12.63	1).)	12.63	1 3.3	1 3.3	1 12.60	12.60
1 2035	3.3	j slagj		90-0	12.60	1 0.0	12.60	1 4.0	i 0.0	12.60 (
1 2025	1 0.3	f 51.0 /	41.0	90.0	12.63	0.0	12.60	0.0	0.0	1 12.60	12.60
1 2037	0.3	51.J <i>[</i>	91.0	! 90+a	[2.60	1 1.1	12.63	į 3*3	1 3.3	12.60	12-63]

```
*** 2 *** PROJECT JALANCE SHEET (ALTERNATIVE) --
--- NO SHADIA PRICE FACTOR ---

*** EVALUATION CRITIFIL ***

CALAULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 13.0 C EXCHANGE RATE --- 1.000 (BMT/BHT)

ESCALATION PER ANNIA
#_C PART --- 1.3 T
FIXED 104 --- 3.3 T
FIXED 105 --- 3.3 T
FUEL PRICE --- 3.3 C
```

*** CASE 1 *** PLANT VI. 1 *** Nam Chon Power Station

1 1	1	UE VERATI	40 E40			ATING DEM		1	t	1 1	1
1 1	INVEST-			SALABLE (* ********		TRANS-	Sub-	ANNUAL !	COST 1
I YEAR	46 47	IC BJJATCE 11	P4030C-	ENEPGY I	FIXED	VARIANE	TOTAL	I MISSICM	I STATEON	COST	FLOW I
1 1	ľ	1 CAFALITY!	1139 1		i cost	1200	CEST	1 064 6051	I DEM COST	1 1	1
1 1	[MIL_BITE	î (34î î)	ERELEKAREL	[MIL_KHH]	I The sall H	ÉL4IL, HHTA	[[4[L.BHT]	[YIL. SHT)	[MIL.BHT]	[MIL.BHII]	[MEL-BHT1]
[1981	1.1	1 3.3 1	J.J	3.3	J.)	1 1.3	0.0	0.0	0.0	1 0.0	0.0 I
1 1982 1	3.)	0.0 1	0.0 [0.0	0.0	().)	0.0	0.0	1 0,0	0.0	0.0 L
1 1983	0.)	0.01	J.0 1	0.0	0.0	1 0.0	0.0	0.0	0.0	1 0.0	3.3 [
1 1984	472.32	1 3.3 1	J. J [J.J	1 3.3	1 3.3	1 3.3	0.0	0.0	0.0	472.32 1
1965	911.10	i 0.0 i	0.0 i	0.0	i 0.5	1 3.0	0.0	0.0	0.0	J 0.0 j	811.60 i
1 1986	811.40		J. 0 1	0.0	0.0	0.0	0.0	0.0	0.0	1 0.0 1	811.6J
1 1987	413.38	453.3 1	213.3 1	232.5	73.45	1 393.86	461.71	5.17	0.0	466.88	1076.96 1
1 1983		440.0	210.0 l	202.5	70.45	390.86	461.71	5.17	1 0,0	406.86	466488
1989	3.3	480.0 1	210.0 1	202.5	70.45	390.86	461.71	5.17	0.0	-66-8B	466.88 1
1993	3.3	1 433.3 1	213.3	202.5	73.85	393.86	461.71	5.17	0.0	465.68	466.88]
1 1991	0.1	410.0	210.0 [202.5	70.45	340.86	461.71	5.17	i 0.0	466.68	446.86 1
1 1992	0.1	1 480.0 1	210.0 1	202.5	70.45	1 390.36	461.71	5.17	1 0.0	1 466.88	465 - BB
1993	3.3	433.3 1	213.3	232.5	73.45	393.86	461.71	5.17	3.0	466.88	465.88
1 199+		1 410.0 1	213.3 1	202.5					i 0.0	466.88	466.88
1 1995		1 450.0 1	210.0 1	202.5				5.17	0.0	466-88	466.88 [
1995		1 493.3 1	213.3 1							465.68	466.88 1
1997	0.5	1 430.0 [210.0	202.5				5.17	0.0	88.042	466.88
1 1499	3.1	1 430.0 1	210.3	202.5						466-88	466-88 I
1 1999	0.1	443.3 1	213.3 i	202.5					1 3.3	466488	466.88
2000	0.1	410.0 [210.0 1	202.5						465.88	446.68
3 ZD01	0.1	1 440.0 1	710.0							466.88	466.88
1 2002	i 0.3	1 430.3 1	213.3							1 466.88	466.88
2003	0.3	1 430.3 1	210.0 [202.5					6.0	466.88	466.88
2004	449-16		21 J. 0 I	202.5						466.88	916+04 6
1 2005	673.16		213.3 1						1 3.3	466.88	1139.94 1
1 2006	613.36		213.0 I	202.5					0.0	466.88	1139.94
1 2007	449.16		210.J I	202.5						466.88	916.04
1 2009	3.3	1 410.3 1	210.3	202.5						466.88	466.88
1 2339	0.3	430.0	210.0 j	202.5						466.88	
2010		1 430.0 1	213.3	202.5						1 466.88	466.88 [
1 2011	0.1	430.0 1	210.3							466-88	
1 2312		1 430.0 1	213.3 1							466.88	

1		1 :					ATING DEM		t	i	1	
- 1	j	INVEST-									ANNUAL I	COST I
ì	AETE !	ME 17	I astalle j				1ATSIFFE			STATION .		FLOW I
- (1		LAPALLIY			I COST				1 CEM COST		
ı		(MIL_E :T)	i (4#3	[41C*KRH1]	{MIL.KWH}	(INB.JIM)	11 411 BHT	[MIL.BHT]	{*1L.BHT }	l("TL-BHT1	[{4[L.BHT]	{MIL.BHT!!
-	2313	J.)	483-3 [213.3 1	232-5	1 73.65	1 390.66	461.71	5.17	0.0	466.88	466.88 1
ì	2014	3.)	440.0	213.3	202.5						466.88	
i	2015		430.0		202.5						466.88	
ì	2316	3.3	433.3 1	21J.J j	202.5	73.65	393.86	461.71	5-17	0.0	466.88	465.88
Ĭ	2017	3.3	433.3 1	213.9 1	202.5	73.65	390.86	461-71	5.17	0.0	466.88	466.86
ì	2019	0.3	430.0 1								466-88	
ì	2319	3.3	440.2		232.5		1 393.86	461.71	5.17	0.0	466.88	466.88
1	2020	3.1	437.0 1	210.3	202.5	70.05	390.66	461.71	5.17	0.0	466.68	466.68
ij	2021	0.1	430.3 1	210.0 [202.5	70.45	1 190.86	461.71	5.17	0.0	466.88	166.88
- 1	2322	3.3	49J.J	SIJ.J į	232.5	13.35	1 193.86	461.71	5-17	1 0.0	466.88	466-88 1
ı	2023	0.1	1 0.014	Z13.J !	202.5	70.05	1 390,86	461-71	5.17	0.0	466.88	466.88 i
- 1	2024	449.Lt	430.0 		202.5	70.15	1 390,86	461.71	5-17	0.0	466.88	916.34
- 1	2J25 [776.18	433.3	213.3 [202.5	1 73.35	1 393,86 (461.71	5.17	0.0	466.88	1243.26 i
1	2026	776.38	430.0 }	210.0	202.5	70.35	390.66	461-71	5.17	0.0	446.88	1243-26 1
1	2027				202.5	70.85	1 390,86	461.71	5.17	0.0	66.88	LO53-80
- 1	ZJ28 [3.1	433.3	213.3 1	232.5	1 73.45	1 393.86	461.71	5.17	0.0	466.86	466.88
1	2027		1 0.062		202.5	1 70.35	1 393.86 1	461.71	5.17	0.0	466.08	466.86 I
- 1	2033		430,0 }		202.5		1 390.85	461.71	5.17	1 0.0	466-88	465-88
- 1	2031	7.1	43J.J [213.3 1	202.5	[7J.65	1 393.86	461.71	5-17	1 3.3	466.68	465-59 1
- 1	2032		i 430.0 i	213.0	202.5	70.45	390.85	461.71	5-17	i 0.0	406.86	466.88 l
ı	2033		430.0 (570.0	202.5		1 390.86	461.71	J 5.17	0.0	456.88	466.88 !
- 1	2034		433.J [1 393.86	461.71	1 5-17	1 3.0	466.88	466.88
1	2035		430.01	210.0 1	202.5						1 464486	
i	7036		440.0				1 390.86	461.71	5,17	0.0	1 466.88	
ı	2037	-1277.10	433,3	217-7	232.5	1 73.45	1 393.86	461.71	1 5-17	1 3.3	1 466-88	-610.12

*** CASE 1 *** PLMT VI. 2 *** Thi Khong Power Station

į	!	GE 4ERAT I	AC SUD		GENER	ATENG DEM	COST	!	!	!	
											COST
1 YEAR		LI ISTALLE DI									FLOW !
!		CAPACITY				(CJST					
i	1 (MIL-8 (T)	[[4%]	MJL.KWH)	[HIL-KAH]	(MIT AUL)	[[4[L.BHY]][4;L.BHT]	[[MIL.BHT]	LM1L.BFT	EM	(MIL.BHT)
1 1981	1 0.)	0.0	3.d [0.0	0.0	1 0.0	0.0	l 0.0	0.0	0.0 1	0.0
1 1982	0.1	0.0	3.0	0.0	0.5	1 0.0	0.0	1 0.0	1 0.0	1 0.0 i	3.3
1 1983	1 3.1	1 2.7	ا د.د	3.3	3.3]].]	1 3.3	0.0	0.0	0.0	0.0
1 1984	345.12	0.0 1	7.0 I	0.0	0.3	0.0	0.0	0.0	0.0	0.0	345.02
1 1985	1 554.13	0.0	-117.4	-717.0	0.1	1 -623.78	1 -628.78	1 0.0	0.0	-628,78	-74.65 [
J 1986	554.13	1 3.3	-514.J	-514.3	J.J	1 -453.76	1 -453.76	1 3.3	0.0	-450.76	
1 1987	393.12	170.0 j	95.6	87.5	10.10	63.84	94.64	0.46	0.0	95.10 (488.92 1
1 1968	1 3.3	170.0	LUISAU	456.5	43,13	1 916.42	959,55	1.83	0.0	86-169	
1 1989	1 3.1	1 173.3	1345.3	456.5	43.13	916.42	959.55	1.83] 3.0	961.38	961.38
1990	0.3	170.0	10+5-0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1 1991	1 3.1	110.0 1	10+5.0 !	956,5	43.13	916.42	959.55	1.83	0.0	961.3B	961.38]
1 1992	1 3.3	113.3 (1345.3	556.5	43.13	916.42	959.55	1.83	1 3.3	961.38	961-38
j 1993	(0.)	1 170.0 1	1945.3	956.5	43.13	916.42	954,55	1,83	0.0	961.38	961.38
[1994	0.1	1 170.0	1045.J	956.5	13.13	916.42	959,55	1 1.63	1 0.0	461.38 (961-38
1 1995	1 3.3	173.3	[345.3	954.5	43.13	916.42	959.55	l 1.83	3.0	961.38	
1 1996	1 0.1	170.0 j	1345.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1997	1 0.3	170.0	19+5.0	956.5	13.13	916.42	959.55	1.83	l 0.0	1 961.38 i	961.38
1993).)	1 L70.0	LJ45.J	956.5	43.13	1 916.42	959.55	1.83	1 3.3	961.38	961.38 [
1 1494	0.1	1 170.0	1045.0	956.5	43.13	916,42	954,55	1.83	0.0	961.36	
1 2000	0.3	170.0	1045.0	956.5	43.13	916.42	959.55	1.83	1 0.0	961_38	
I SOOF	1 0.)	1 1/0.0 1	1045.0	956.5	43.13	916.42	959.55	1.83	j J.J	961.JB	961-38
1 2332	1 0,3	170.0 1	1045.0	956.5	43,13	1 916.42	959.55	1.83	0.0	961.38	
I 2003	1 0.3	1 170.0 /	1045.0	954.5	43,13	916.42	959,55	1.83	1 0.0	961.38	
1 2004	1 3.3	170.01	1045.0	956.5	43.13	916.42	959.55	1.83	j J.J	961.38	961.38
2305	3.3	1 1/0.0	1045.0	956.5	43.13	916.42	959,35	1.83	0.0	961.38 1	961.38
] 2006	1 0.1	1 1/0.0	1045.0	456.5	43.13	916.42	959.55	1.83	0.0	961.38	961.38
1 2007	1 3.)	1 170.3	1045.0	956.5	43.13	1 916.42	959.55	1.63	3.3	961.38	961.38
2338	1 3.3	1 170.0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961-38	961.38
1 2003	293-27	l 170.0 i	1 1045.0	956.5				1.83	0.0	961.38	1254.65
1 2013	439.20	1 170.0	10-5-0	956.5	43.13	916.42	959.55	1.83	1 3.3	961.38	1431.28
1 2311	439.33	173.3	1345.3	956.5	43.13	916.42	959.55	1.03	0.0	961.38	1401.28
1 2012	1 293.27	j 170.a j	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.36	1254.65

ļ	I I invest-	GENERATI	LAG END		GENEA	ATENG CEM	COST	I T D AN C -	[Su8-		COST I
YEAR		I I VSTALLED					1 TOTAL			ANNUAL COST	
TEAT		I CAPACITY					I COST				LTON
i											INIL.BHT)
<u></u>							** ********				
1 2013	1 0.1	1 170.0	10+5+0 j	956.5	43.13	1 916.42	959.55	1 1.83	1 0.0	961.38	961.38 I
1 2014	. 1 3.3	173.3	1345.3	956.5	43.13	916.42	959.55	1 1.83	1 3.3	961.38	961.38
2019	0.3	1 170.0	1045.0	956.5	43.13	916,42	954.55	1.83	0.0	961.38	961.38
1 2016	1 0-1	1 1/0.0	1045.0	956-5	43.L3	916.42	959,55	1 1.63	l 0.a	961.38	961-38 [
2017		1 173,3		956.5	43.13	1 916.42	1 959.55	1.83	1 7.3	961.36	941.38
2018		1 170.0	1345.9	956.5	43.13	1 916.42	959.55	1.83	0.0	961.38	961.38
1 2019		1 170.0			فإوقه ا	916.42	959,55	1.83	0.0	8E.14P	961-38 j
1 2023		1 170.0		956.5			959.55	1.83	j 3.0	961.38	961.38 i
1 2021	. 0.;	1 170.6 (1045.0	956.5	43.13	1 916,42	1 959.55	1.83	1 0.0	961.38	961.38 }
1 2027		170.0							1 0.0	1 961.3B	961.38 (
1 2023	(· i	J 170.0 i	i 1045.j/	956.5	43.13	1 916,42	959.55	1 1.83	i 3.3	961.38	1 961.38 1
2324	- O.J	1 170.3	1445.3	956.5	43.13	916.42	959.55	1.83	1 0.0	961.38	961.38 1
2025	30.00	1 170.0	1 1045.0	956.5	43.13	J 916.+2	959,55	1.83	1 0.0	961.38	997,98
1 2326	36,50	1 110.3	1 1045.0	956.5	43.13	1 916.42	959.55	1.03	1 0.0	961.38	997.98
1 232	46.30	1 170-0	1045.0	956.5	43.13	916.42	959.55	1.83	0.0	961.38	1010.18
1 2021	: 0.)	1 110.0	1045.0	956.5	43.13	916.42	959.55	1.83	1 0.0	961.38	961.38 1
1 2029	0.1	1 170.0	1045.0	956.5	43.13	1 916.42	959.55	1.83	1 7.3	1 961.38	j 961.38 j
1 203.	1.1	1 1/0.0	1045.0	956.5	43,13	916.42	959.55	1.83	0.0	961.38	961.38
203	(0.1	1 1/0.0	1045.0	956.5	43.13	916.42	959.55	1.63	0.0	961.38	961.38
2032	(U + 3	T10"1			43.13	1 916.42	959.55	1 1-83	1 3.3	961.38	961.36
1 2333	1 1.1	173.3	1045.0	956.5	43.13	916.42	959.55	1.03	0.0	961.38	961.38
2034					43.13	1 916.42	959.55	1.63	0.0	961.38	96L.38
1 2039		i 130.0		954.5	43-13	916.42	1 959.55	1.83	1 3.3	961.38	961.38 1
2336	.	1 173.3	1 1345.3	956.5	43.13	916.42	959.55	1.83	1 0.0	961.30	961.38
2037	-54.10	1 170-3	1 1045.0	956.5	43.13	916.42	1 959.55			961.38	906.48

*** 3 *** PROJECT EVALUATION BY THE NET PRESENT VALUE IN.P.-VY METHOD --- NU SHADOM PRICE FACTOR ---

CALAULATION PERLID --- 57 FEARS DISCOUNT RATE --- 11.0 \$ EXCHANGE MATE --- 1.000 (WHT/BHT)

ESCALATION PER ANNUA
F.C PART ---).) t
C.C PART ---).) t
FIRET 164 --- 1.3 t
FUEL PAICE --- 3.3 t

*** CASE | *** PLINT | 1 ***

1	Н	y dropower	Nam Chon	Power Stat	tion	Al	ternative G	as Turbine	Power Plan	t
VEAR	INVEST-		£ 157 FLOw	NET PRES! { I= {(144557- Ment	I ANNUAL I	BENFF17 FLOW	NET PRESE	
i	i -	j i		P.V.F (P.U)	146°411	(MIL.BHT)	i i	i - i	P.V.F [P.U1	N.P.V (MIL.BHT
1981	664.19	3.28	673-17 (0.0 1	0.0	0.9091	0.0
1982	1152.24	j 23.73 (1172-94	Q. 8264			1 0.0	0.0	i 0-8264 i	0-0
1983	1236.52	62-13	1269.62	J. 7513	953.13		1 3.3	1.3	0.7513 [0.0
1984	1302.33	77.38	1373.21	0.6830				472.32		322.60
1985	1804.39				1 1179.91			08.116	0.6209 1	504-0
1986	1437.32	95.22	1533,34	J. 5645) 848.45	8(1.43		311.63		
1987	1078.71	85.29	1164.00	0.5132	597.32		466.88	1076.96	0.5132	552.65
1988	0.3	1 92.75	92.75 [G-4665	i 43 <i>-21</i>		466.68		0.4665	217.8
1967 [3.3	1 92.75					466.98		J.4241	198.0
99)	1.1	1 92.75			35.75 [0.0	466.84	466.B8	0.3655 i	160.0
1491	0.)	92,75	1 +2.75 1	0.3505) 32.51		1 466.88			163.6
1992	0.)	92.15			27.55		466.08		J.3186	148.7
1493	0.)	1 62.75	92.75	0.2497	26.87	0.0	666.93	466.88	0.2097	135.2
1994	0.)	1 42.75		0.2633	1 20042		466.88		0.2633	122.9
1995	1.0	1 42.75			22.2)		466.88		0.2394	111.7
1996	0.)	92.75		0.2176	20.11		466-88	466.89	0.2176	101.6
1597	ŭ. 3	1 42.15		0.1978		0.0	466.88		1 0.1978	92.3
L998 j	0.1	1 92.75	12.25 1	3-1160			1 466.88 !		3,1799	83.9
1959	(.0	92.15	92.75				466.86	466.88	0.1635	
2000]	0.1	J 92.75	92.75	0.1465		0.0	j ∻66.88	88.044	0.1486	69.4
2001	0.3	92.75		C.1351			466.88		1 3.1351	63.4
5735]).)	1 52.75		0.1228	11.37		466.88		0.1278	57.3
Z003 [4.)	i 92.75			13.31	0.0	466.88			
200: 1	6.1	92.75		0.1015			466.88			93.1
2335 []]]	1 92./2	72.75	0.0923	4.55 (673.06		1139.94		105.2
2004 1	0.3	1 52,75	92.75	0.0839	1 7.73	673.30	466.88			95,6
7007	0.1	92.75		0.0763		449.16	466.88			69.8
2 339 (33.20	92.75		0.0693	3.73	0.0	466.88			32-3
5004	372.+0	1 42.75		0.0630	24.32		466.88			29.4
2010	617.70			0.0573			466.38			26.7
7311	584.23		676.95	0.0571	35.27		466.88		0.0521	24.3
2012	362.30	42.75	455.05	0.0474	[21.5> [0.0	466.R8	466aBB	0.0474	22.1

	Ну Ну	dropower	Nam Chon F	ower Stati	on	A	iternative (as Turbine	Power Plan	ıt !
VEAR	INVEST-	I I ANN JAL I COST		NET PRESE ([= 10		INVEST-	I ANNUAL I	BENEFIT FLOW	NET PRESE (I= 10	
	(MSL+84T)	1	[[4]L.8.4]]]	P.V.F)	(MIC*R411)	141F*8H11		i j	P-V-F (N.P.V (MEL.BHT)
2013		\$2.75					466.88			20.10
2014	[B.J	92.75		0.0391 (3.63 [466.88	466.BB	0.0391	18.28
1 2015	1 4-1	1 92.15	92.75 [3,31 (0.0	466.88		0.0356	16.61
2016	3.1	92.15	12.75				466.88		0.0324 1	15-10 1
2017		92.75	92.75		2.73		466.88		0.0294	13.73
J 2018 i	0.1	1 52.70	42.75		č. 12		466.68		0.0267	12.4B
2019	(0.)	92.25					466.88		J.3243	11.35
2020	0+)	92.75			2.000	0.0	466.88		0.0221	10.32
2021	נים ו	92.15		0.0201	i eb i	0.0	466.88		0.0201	9.36
Z022	ز د ف	92.15	92.75		1.67		466.88		J.J143 I	8.53
2023	187.10	92.15		0.0166	4.61		466.88		0.0166 (7.75
202+					3.53				0.0151	13,02
2025	274-16								0.0137 [17.06
2026	179.30			0.0125]				1243-26	0.0125	15.51
1 2027		52.75			1.02			1053.80		11.95
1 2028		92.75		0.0103 (3.93		465.88		3-3133 [4.61
2327		92.75		0.6094	J.87		466.88		0.0094 1	4.38
2030	9.1	42.75			0.71		466.88		0.0085 (3.98
1 2031		92.75		0.0077			1 466.88		3.0077	3.62
2332		92.75	12.75	0.0070			466.85		0.0070	3-29
2033		92.72		0.0064	3.51		466.88		C_QO\$4 !	2.99
203+		92.75		0.0058	J.5+		466.88		3.3058	2.72
1 2335		1 52.75		0.0053	3.41		466.88		0.0053	2.47
2036		1 92.75	92.75	0.0048			466.86			2.25
1 2037	-667.56	1 42.13	-542.75	0.0044 [-2.5)	-(277.3)	466.88	-813.12	3.3044	-3-54 (
1	1	1	1 1]	l	i] 1			
TOTAL	10814.+8	(i I	1	.P.6666	6262.27				4439.60

!	Ну	drapower	Thi Khong I	ower Stat	ion l	Alteri	native Oil-f	ired Therma	l Power Pla	int i
YEAR	I INVEST-	I JANNJAL COST	COST FLOW		ENT VALUE (INVEST-	I ANNUAL !	BENEFIT FLOW	NET PRESE	
<u> </u>)	(41L.8HT)	P.V.F (P.U)	N.P.V (MIL.OHT)			(MIL.BHT)	P.V.F ((P.U)	N.P.V (MIL.BHT)
1 1981	0.)	0.0	j 0.0 l	C. 9091	J 0.0 I	0.0	0.0 1	3.0 1	J.9091	
1982	j J. j	J.J	1 7.7 1	J.8264	1.0	0.0	i a•0 (0.0	0.8264	0.0
1 1983 :	0.1	3.3	1 0.0 1	0.7513	1 2.7 1	0.0	0.0	0.0	0.7513	0.0 1
£ 1984	(0.)	J_0	1 9.9 [C. 6AJQ	ا درو ا	345.02	0.0	345.02	J.683J I	235-65
1 1985	1 116.34] 121.5F [0.6239			-620.78	-74.65	0.6209	-46.35
J 1986	133.19	1 11.92] [45.11]	0.5645		554.13	-450.76	103.37	0.5645	58.35
1987	250.34		l Starat i	0.5132] [+J+1J]	393-42		688.92	0.5132	253.89
1 1989	373.+8	1 17-17] 337-65	3.4665	183-8- 1	1.1	961.38		0.4665	448.50
1989	1 34.10	12-45	46.86	0.4241	[19*81]	0.0	961.38		0.4241	407.72
1990	0.)	15.63	1 15.60	0.3855		0.0	961.38	961.30	0.3855	370.66
1991		12-63	1 12.63	0.3535		3.3	961.3B	961.38	0.3505 1	336.96
1992	(0.)	15-6)	12.60	0.3186	4.01 1	0.0	961.38	961.38	0.3186	306-33
1993	0-1	12.63	12.60	0-2897	1 5-65	0.0	961.38	961-38	0.2897	278-46 [
1994	1 3.1	12.6)	12.63	J. 2633] 3.32	3.3	961.38		0.2633	253.17
1995	0,3	12.61	1 5.40	0.2394		0.0	961,38		0.2394	230-15
1996	0.3	12.60	12.60	0.2176	2-7: [0.0	961.38	961.38	0.2176	209.23
1997	(2.1	12.6)	1 12.63	3.1976		3.3	961.38	961.38	0.1978 [190.21
1998	0.)	12.63	1 12.60	0.1799	1 2.27 1	0.0	961.38		0.1799	172.92 1
1 1999	0.1	1 12.63	1 12.60	0.1635	1 5.01	0.0	961,38		0.1635	157-20
2000	ز د د	15.63	1 5.63] L.87 [961-38	961-38	3-1486	142.91 1
5007	1 0.3	15.69	12.60	0.1351	1.12	0.0	961,38	961.38	0.1351 (0.1228 (124.91 1 118.10
1 2002 1 2003	0.3	12.63	12.60 12.63	G.1228 J.1117	1.57 1.41	0.0	961.38 961.38	961.38	3.1117	137.37
1 2003	0.3	12.63	1 12.60	0.1015	1 1.23 (0.0	761.36		0-1015	97.61
1 2005	1 0.1	12.63	1 12.60	0.0923		0.6	961.38	961.38	0.0923	88.73
J 2005	(0.)] 12.63 12.63	12.63	J. J839	1+1= 1+35	3.3	061.38		J.0839	83.67
1 2007	1 0.1	1 12.63	12.60	0.0014		0.0 I	961.38	961.38 [0.0763	73.33
1 2003		1 12.63	12.60	0.0693	0.87	0.0	961.38	961.36	0.0693	66.67
2009	3.3	1 12.63	12.63	3,3633				1254.65	0.0630	79.39
I 2010	0.1	12.60	12.60	0.0573		439.90	961.38	1401.28	0.0573	80.31
2011	21.1	12.60	34.21	0.0521	1.75	439.90			0.0521	73.01
2012			95.43	J. J4 74				1254.65	3.3474	59-43

!!	H)	/dropower	Thi Khong	Power Stat	ion	Alteri	native Oil-fi	red Therma	l Power Pla	nt l
YEAR	INVEST-	I ANNUAL COST	I COST		NT VALUE J.J €)	INVEST+ MENT	I ANNUAL COST	BENEFIT FLOW	NET PRESE	
: :	1 72.91	t COS;	i tromi	PavaF	N.P. Y	neni i	t CUSI I	LEUM	P.V.F I	N.P.V
	[MIL.B4T]	[{4[[.8HT]	INSL.BHT]		(HIL.JHT)	(MIL.BHT)	ITHE.JINT	IMEL.BHT)		(MIL.BHT)
J 2013 J	283.31			0.0431			961.38			41.40
j 2014 j	34.10	12.63	40.63	J.J391			961.38	961.38	J 1980.0	37.63
1 2015	0.1	12.60	12.40	0.0356	1.45		961,39 1	961.38	0.0356 [34.21
1 2016 1	0.1	12.60	12.60	0.0324] 3.41 [961.38	961.38	0.0324	31-10
2017	0.1	12.63	1 [2.6]	J.J294			[961.38	961.30	J.0294	28.27
2018	0.)	12.60	12.50	0.0267			961,38	961.38	0.0267	25.70
1 2019 (0.)	12.60	12.60	0.0243		0.0	961 ₄ 38	961.38	0.0243	23.37
1 5050 [0.)	12.63	j 12.6J.	J-J221			6 961.38		1556.6	21.24
1 2021 1	0.3	12.60 .	1 12.60	0.0201	أ دُكِونَ ا	0.0	961.38	961.38	0.0201	19.31 /
1 2022 j	0.)	12.60	12.60	0.0183			961.38	961.38	0.0183 [17.56 [
1 2023 [J.;	12.63		J-0166	J. 21 (961.38	961.38	J.0166 J	15.96
2024	0.1	12.60] 12.60	0.0151	1 11 1	0.0	961.38	961.38	0.0151	14.51
[2025 J	(O .)	12.60	12.60	0.0137	3.17 (997.98	0.0137 /	13.69
2026	3.1 ∣	12.60	[[2.6]) J. 16	36.63	961.38	997.98	0.0125 /	12.45 [
1 2027 1	((()	12.60	12.40	0.0113	0.14 [48.80	[961,38 9	1010.18	0.0111 (11,45
[2026]	0. 3	12-60	12.40	0.0103	1 11.0	0.3	961,38	961.38	0.0103	9.91
[2029]	0+1	12,61		J.JJ94	l J.12	3.1	961.38	961.38	3.3094	9.31
2333	0.)	12.63	12.60	0.0085	0.11 (0.0	1 961.3A E	961.38	0.0085 (8.19 1
7 2031 1	9.)	12,63	12.60	0.0077	l J.IJ i	0.0	761.38 1	961.38	0.0077	7.45
[2012 [1+0	[[2.6]	l 12.60 i	1.1313	1 3.31 (J.J .	l 961.38 l	961.38	4.3473	6-77 l
1 2033 1	i 0.J	12.63] 12.60	0.0064	J 0.03 1	0.0	l 961.38 l	961.38	0.0064 i	6.15 }
1 2034	Q. 1	12.63	1 12.60	0.0058	3.07	0.0	961.3B	961.38	0.0058	5.59
1 2035	0.1	12.60	12.60	0.0053	3.37	3.3	961,38	961.36	0.0353	5.09 1
J 2036 J	3.1	12.63	1 12.60	0.0048	3.05	0.0	961.38	961.38	0.0048	4.62
2037	0.1	12.60	12.60	0.0044	J.03	-54.43	961,38	906.48	0.0044	3.96 i
		!	!	!			<u> </u>		!!	
[TOTAL	1337.10	 	i 	! 	564.63	3380.54	 			5471.72

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*** $ *** 015COURT 437E VAR(41/2 34-ET --- No 34471# P41C5 FACTU ---
   *** EVALUATION CRITERIA ***
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CALAULATION PERLING --- ST YEARS ESCALLIED PLE ANNUA

F.(PART --- J.) 1

L.C PART --- J.) 1

FIRST 124 --- J.) 2

FUSL JEIGE --- J.) 1

*** CASE 1 ***

15 FOLINT	CACYH	l auf	1 <u>8</u> E%'	FIT - CUST	ANAL Y	3 Y S	9	vc - preci	TAN TAUL
			CCST	BENEFIT I	4- 1	245		3/0 (*	
1416		INV=ST		05.421.63		CITAF		914 L-	.,
4 4 4	ret aut	145-30 146-3081	140 0411	(416.647)	1911 auti	14115			•
			~~~~				<b>.</b>	1	
5.0	12124.34	9642.40	1 10002.30	22766.45 1	127 0 1 4 1	2.2761	1	1	
5.5	12154.34	96 . 2 . 6C	9614.1t	23622.33	11333.13	2.1453	ī	i	i.
				19756.41 1			i	i	
				17125-12		1.9159	i	i	*1
7.0	12154.33	95.2.60	8642.02	15692.66	1133.64	1.0159	i	i	• 1
7.5	12154.33	9642.10	3369,49	14428.93	6363,44		t	i ·	• 1
	12154.33 [			13309.84	5144.71	1.6 +01	1	1 •	ì
	12154.34			12314.14 [		1.5629	1	1 4	- 1
				11425.06 [		1.4917	i	i •	Í
9.5	12154.38	4642.10	1 7452.59	10628.13	31 7 2 . 54	1-4261 1	1	1 •	ŧ
				9911.29		1.3655	1	1 •	t
	12134.38			9264.29		1.3094	ŧ	<b>1</b> •	1
	12154.33			8678.26		1.2573	ī	1 •	1
				8145.81		1.2393 [	1	1 •	1
12-1	121,4,38	9442.63	6581.61	7660.63	1271.03	1.1639	1	ι•	ı
				7217.29		1.1220	1	1	1
	12134.39			6811.13 (		1.0827	1	1.	ļ
11.5	12154.19 [	9442.50	6154.85	6437.95	243.11	1.0460	ı	•	
14.0	12354,34 1	4442.10	4324-65	6094.31 6028.74	61.65	1-0114	1	•	i i
1.01	12194.14	90 12 10	5995.24	4028-79	21.54	1.0044	ı	•	ı
	12154.13			5944.42		3.9944	1	•	1
	12114-33 [			5777-13 [		3.4792	ı	•	ļ.
	[2874434]			5403.71		1.0400	ī	• •	
17+7	12154.13	9642.13	3664.17	5216.73 (		3.9201	•	•!	1
	12154.38			4959.19		3.8431	ī	•ાં	į.
	121 17.18			4324, [3 ]			]	• • •	!
	1 12154,38			4504.98				• 1	Į.
	12154.33				-141.50	0.8204	1	: }	!
10.0	12174.3 <i>4  </i>   12134.39	40+5*47		4109.02 [	-1112-01	1-1486	i	: !	!
10.7	121.4.19	7072.BJ	1 2325-34	3929.01	-1121-53	3.7783	ļ.	• !	!
10.5	1 171-4 16 (	70 12 30	4764.27	3101.02	-1144-44	3.7583	į		Ę
	121:4.33	70 12, 30	Parze 38 :	3603.61	-1203+V1	3.7396		* I	j

CIFEDUNE RATE --- 13.0 8 FACHANGE MATE --- 1.000 EMIT/BHEL

- --- I.P.R IHYTRIPOMERI

FUEL PRICE VARIABLE SHEET

*** EVALUATION CHITERIA ***

CALAULATION PERIOD --- 57 YEARS OF SCOUNT HATE --- LIGO T EXCHANGE RATE --- LIGOD (BHT/BHT)

ESCALATION PER ANNUA

F.C PART --- 1-J C
Lc PART --- 1-J C
FIXE 16--- 1-J C
FUEL PEILE --- 3-J &

*** CASE | ***

FUFE I	ไม่พร <i>า</i>		ALT I	BEN!	F1T - C051	ANALY	SYS I	8/6 -	FUEL PRICE	INCREMENT
	FJEL		JATET	COST	div.Fit	4-r l	8/C		6/6 1+1	
INCREMENT			INVEST		1		NATIO I		D/C 1-/	
(4)	{BHT/A#H}	[41L,8H")		twis.dutt.	141.,3871	[4[L.8HT]	1	9	1 2	:
4.3		1215 23			9911.29	2552.88	1.3695	1		` }
5.4		12154.30			13223.40			1	i • i	
10.0		12154.33			13534.32			1	1 • 1	
15.0		15121-38	6642.80		138.8.79			;	1 + 1	ŀ
23,3		12154.39	9642.83			3702.88 [	1.5377 [	I	1 * 1	
25.0		12154.34	1042.BD				1.5000	1	1 * 1	
33.0		12151-34	40-2-80		1 11716.32 (	1527.90		I.	1 • 1	1
35.3		12154.37			12331.61		1.6669 [	ī	1 * 1	
40.0		12154,34	#42.80		12411.30 [		1.7099	1	1 * 1	
+5.0		1215+. 44			12721.83	5465.41		í		)
93.3		12154.39	9642.83		13386.34		1.7760	I		
55.0		12154-31	3642.80		133+±+41	1 46.0964	1.3391	ı	• 1	
60.0	0.3	1215 17	96+2+80		13651.32		1.8621 [	1	1 •1	ŀ
15.3	1.)	12154.93	4642.83		13973.84	4715.42 [	1.9252	1		
70.0	0.1	12154.39 [	9642.80 1			7327.93	1.9682 1	ı	1 •	•
75.0		1215. 11 1	9642,80		1 4539.84		2.0[13 [	1	1 .	•
47.3		12154.39 [	9642.63 [		14911-36	7452.94	2.0544	ı	i i	
45.0		12154.14 [	7642,80		15223.87 1		2.0974	I	i i	•
10.0		12174.31	7642.AC		1 12566,34		2.1405	ŧ.	i i	•
95.3		1215+.34	5642.83		1 1341.84		2.1835 [	i í	i i	•
100.0		12154,35	3642,80 L		14151.34 1	9+35*45	Z. 2266 L	İ	i ì	
105.0		1215+, 14	4642.80 [	7258.42	16+71.44	1215.42	2.2696	Ī	i i	
113.5		12154.38 1	9642.83 [	7258.42	16736.32	9527.91	2.3127	ŧ	i i	•
115.U J		121i4.34	9642.80	7258.42	11014.60	2940.39		1	i i	•
150.0	Sal i	12154.14 [	9442.80	7258.42	17-11-10 1	10152,86		ī	i i	•
125.0		12154.11	9642.BJ		17723, 19 1			Ė	i i	•
130.0 [		1215 11 [	9642.AD		11914.27			i	iii	•
135.0		12154.14 (	9642.80		1 11111.73			i	i i	•
1+0.0	0.1	12154, 11 1	9042.83			11432.07 1		i	i i	
145.0	0.1 [	1 1154.11	1442.00		149/3.71 6			i	i i	•
150.0 Î		12154-11 /	1642 AND 1		19210.20			į	1 1	

# --- CaRaH ( 1) IR JPOHER )

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*** 7 *** PROJECT SALANCE SHEET SHYDROPOWER PLANTS
--- WITH SHADOW PRICE FACTOR ---
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CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 13.0 C EXCHANGE RATE --- 1.000 | BHT/8HT)

ESCALATION PEP A NUM SHADDW PRICE FACTIR

F.C PART --- ).) & F.C PART F.C PART --- 1.130

L.C PART --- 3.3 & L.C PART (ALTER) --- 0.450

FUEL PRICE --- 3.3 I FUEL PRICE --- 1.333

*** CASE 1 *** PLINT 41, 1 *** Nam Chon Power Station

					4						
į į		GENERATI				ATING DEM		!	!	! !	
j 1	INVEST→ I								[ 21/8→	ANNUAL I	CDST
YEAR !	4E 4T I	I VSTALLE DE				I VAR TABLE			STATION		FLON ]
!!		CAPACITY			[ COsT			I DEM COST			
1	[ (41L-8471)	1481	(MIL.KaH)	(AIT*K*H)	1(4(1.941)	1 ( 41L - 8HT)	[[MIL.BHT]	(WEL-BHI)	I CHIC.BHT )	(WIC "RHE)	(MIL_BHT)
1981	619.20	0.01	0.0	0.0	1 0.0	1 0.0	1 7.87	1 0.0	l v.o	1 7-87	627.46
1982	1373.14		3.3	3.3	i Jaj	1 3.3	19.66	1 0.0	i Q.0	l 19.66 í	1090.01
1963	1131.76					0.0	58.99			58.99	1190.76
1984			0.0			0.0	06.86	0.0	0.0	1 65.86 1	1361.55
1 1985			J.J i	3.3	נ.נ ו	i 3.3	95.46	j J.J	0.0	i 90.46 i	1809.21
1 1986	1426.+5	1 6.0	0.0 1	0.0	0.3	0.0	90.46	0.0	j 0.0	į 90.46 J	1516.90
1987	1077.76	595.3 1	217.0	267.3	1 15.95	1 0.0	1 74.94	2.92	0.85	1 78.71	1156.47
1 1986	1 3.1	595.1 1	1148.3	1369.3	i 43. fa	1 1.1	63.78	11.65	1 3.40	l 78.64 í	70.64
1 (989)	0.1	595.3 1	1104.0 [	1069.0	63.78	0.0	63.76	11.65	3,40	78.84	78.84
1 1990	0.)	595.3 L	1108.0		63.78	1 0.0	1 67.78	11.65	3.40	1 78.84	78 - 64
1 1991	3.1	595.3	1138.3	1369.3		1 3.3	3.76	11.65	3.43	78.84	
1 1992	0.)	595.J I	1108.0	1069.0	63.78	0.0	63,78	1 11.65	3,40	[ 78.84 [	76.84
1 1993	( ) i	595.3 [	1100.0	1069.0	63.78	0.0	63.78	11.65	3,40	78.84	
1 1994	[ J.) j	595.1	1118.1	1369.3	1 63.78	1 3.3	J 63.78	1 LL.65	1 3,43	1 78.84	
1 1995	0.)	595.1	1108.0	1069.0	63.74	0.0	63.78	11.65	3.40	76.B4	
1 1996	J., 3	545.1	1105.0	1049-0	63.75	0.0	63.78	11.65	3.40	1 78.84 [	
1 1997 [	0.1	595.J i	LIBLIE	[J69.J	63.78	1 3.3	1 63,78	[ 11.65	3.43	78.84	78.84
1 1998	0.1	595, )	11040	1069.0	63.78	0.0	63.78	11.65	3,40	[ 78.84 <u>[</u>	
1 1999	0.)	595.J 1	1100.0	1069.0	61.14	0.0	1 63.78	1 11.65	j 3,40	1 78.84	
1 2000 1	0.1	595.1 i	1134.3	1369.3	i 63.78	j 3.3	1 63.78	1 11.65	1 3.13	l 78.85 i	
1 2001	0.1	595.)	1108.0			0.0	63.78	11.65	3.40	76.84	
1 2002	0.1	595.J i	1100.0	1069.0	63.78	0.0	63.78	11.65	3.40	78.84	
2003	0.1	595.J (	1138.3	1369.3	63,78	1 3.5	63,78	11.65	1 3.43		
1 2004	0.1	595.3 [	1105.0	1069.0	63.78	0.0	63.78	11.65	3.40	70.84	
2005	0.3	595.J J	1108.0	1069.0	61.16	0.3	63.78	11.65	1 3,40	78.84	
1 2006	1.1	595.J J	1104.3	1369.3	63.74	1 3.3	1 63.78	11465	L 3.43		
1 2337		595.3	1104.0	1069.0			63.78	11.65	3.40	1 70.84 (	
1 2008	35- 17		1134.0	1069.0	63.75	6 0.0	63.78	11.65	3,40		
600\$	398.76	595.4 [	1108.0				63.78	11.65	3,40		
2313			1104.0	1069.0	j 63./d	( 0.0	63.78	11.65	3.40		
2011	616.14	5 +5 · J	1104.0				63.78	11.65	3.40	1 78.84	
1 2012 1	371.10	595.1	110d.0	L-P491	61.76	1 3.3	1 63.78	1 11.65	1 3.43	1 78.85 I	456.54

YEAR		GENERATING END	SALABLE :	FIXED I	VARIABLE !	TOTAL	NOTESTA	STATION	COST I	COST 1
i	CHICO ITI	SAPACITY    TIDH   [Mw]   [MIL_KwH]		CO21			DEM COST   [MIL.BHT]			(MIL.BHT)
1 2013		595.0   1108.0				63.78				
1 2014		595.3   1138.3			3.0					76.84   78.84
1 2015   1 2016		595.J   1103.Q   595.J   1108.Q			0.0					
2317						63.76				
1 20 LB		595.1   1108.0			0.0	63.7B				78 - 84 i
2019	0.)	595.J   1138.U	L069.0		0.0	63.78				78.84
2323	1 1 1	595.3   1138.3	1 1369.3	63.78	3.3	63.78	11.65	3.40	78.84	78.84
J 2021	0.7	575.3 f 1108.0	D.P401	63.74	2.0	63.78	11.65	3.40	78.84	78.84 1
2022		595.3   1108.0			<b>0,</b> 0					78.84 [
[ 2323 ]					2-1	63,78				268.79
2024		595.)   1101.0			0.0	63.78				158-24
1 2025	279.10				0.0	63,78				358.24
1 5757	LB3.15 [				3.3	63.70				261-99
1 2027	0.)	595.3   1108.0			0.0	63.78				
1 5058	0.1	595.0   110d.0			O.O .					
1 2329		1 595.3   1138.3			٠.١.					
2030		595.)   1104.0			0.0	63.78	11.65	3.40	78.84	
1 2031		595.3 1 1104.0			0.0	63.78	1 11.65	3.40	78.84	
2032	1 1 1	545.3   1138.3	[369.3	63.76	3.3	63.78	11.65	3.40	78.64	78.84
[ 2033 ]	U. 1	545.)   1104.0		63.79 [	0.0	63.78	11.65	3,40	78,84 1	78,84
[ 2034		0.6011   C.262	1 1069.0	63.78 [	0.0	63.78	11,65	3.40	1 78.64	78.84
1 2035	1 3,1 1	595.0   1194.0	1 1369-3	43.74 1	3.3			1 3.44	( 78.84 j	74.44
1 2036	3.)	595.3 \$ 1108.0	1069.0	63.70	D.0 i		11.65	3.40	78.84	78.84 1
1 2037	-698.12	595.1   1108.0	1069.0	63.18	0.0	63,78	1 11.65	1 -3.40	78.84	-620-09

*** CASE 1 *** PLANT WI. 2 *** Thi Khong Power Station

YEAR I	INVEST-		TING ENU	SALAHLE	i						
		LAPACITI IMMI				cosi					[MEL.BHT];
1 1981 [	3_3	3.3	1 3.3	1 3.3	1 3.3	1 3.3	0.3	1 0.0	0.0	0.0 1	0.0
1982 }	3.3	0.0	J. 0	0.0	1 0'7	0.0	3.0	0.0	1 0.0	0.0	0.0 1
1 1983										0.0	J., J
[ 1984 ]	3.)	1 7.3	1 3.3	1 3.3					0.0	0.0	0.0 1
l 1965 l	108.31						4.49		0.0	4.49	112.40 1
1986	126.22									11.23	
1987										13.46	
1488	378.70									13.46	392.16
1989 1										11,17 [	
1 1990 (							10.71			13.71	
1 1991 1							10.71			10.71	
1992							1 13.71			10.71 1	
J 1993		1 51.1								10.71	
J 1994 J		51.3		90.0			10.71			10-71	
1 1995 1	).J								1 0.0	10.71	10.71
1 1996										10.71	10.71
1 1997 ]		\$1.J	93.0	( 90.0	10.71	0.0	10.71	0.0	1 0.0	10.71	10.71 (
L998		51.1		93.3			13.71			10.71	10.71
1 1994 1	1.0	51.3	1 93.0	1 90.0	10.71	1 3.0	15,71	1 0.0	0.0	19.71 1	10.71 1
2000		51.3							0.0	10.71	10.71
1 2001 1		51.3					1 13.71	1 3.3	1 3.3	13.71	10.71 !
2002		1 51.3					10.71	0.0	0.0		
1 2003 I	3.)	1 51.3		90.0				0.0	2.0	10.71	LQ.71 L
1 2004 1				1 93.3	1 13.71	1 3.3	13.71	1 3.3	1 3.3 .	13,71	10.71 }
1 2005	0.3	51.3	93.0	90.0	1 10.71	i 0.0	10.71	0.0	1 0.0	10.71	10.71 1
1 2006 1	( 4.5	51.3	93.0	90.0	10.71	0.0	13.71	0.0	0.0	10.71	10.71
[ 2007 [		51.3		93.3	1 13.71	1.3	13.71	1 3.3	1 1.3	13.71	13.71 1
1 2008 [				90.0	10.71	0.0	10.71	0.0	0.0	10.71	10.71
1 5003 F										10.71	
1 2319		1 51.0		1 93.3			13.71	j 3.3	1 3.3	13.71	13.71
2311							10.71			10.71 1	34.48
1 2012	88.33	51.3	93.0	90.0	1 10.71	1 0.0	10.71	0.0	0.0	10.71	99.04

1	tw/657_	GENERATI		SALABLE		ATING DE4	CCST	TRANS-	Į Į SUB∸	I Annual I	COST
YEAR		I ISTALLE 38				VARIABLE			STATION		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1	CAPACITY			COST				CEM COST		
i	i (MIL.B.II)							IMIL.BHT:	Lanti. BHT).	CHIL.BHT 1	(MIL.BHTII
2013	294.+8	51.3	93.0	90.0	10.71	0.0	10.71	0.0	1 0.0	LJ.71	313.19
[ 2314	1 36-15 1	Stal L	47.7	93.1	13.71	4 3.4	10.71	4.4	i a.a	10.71	46,86
2015	1 0.1	51.)	93.0	90.0	10.71	1 0.0	1 10.71	0.0	0.0	1 19.71 1	10.71
1 2016		51.3					10.71		7.0	13.71	13.71
1 2317		51.1 !					1 10.71		0.0	10.71	10.71
2013		51.1	93.0				10.71		0.0	10.71	10.71
2019	1 3.3	51.0					10.71		0.0	10.71	
2323		51.3	73.3				] 13.71		0.0	10.71	
2021	1 0.0 1	51.3					10.71		1 0.0	10.71	
2022		91.1	93,0				10.71		0.0	[ [0.7] [	
2323		51.2 1					10.71		0.0	10.71	
2024	0.1	51.1	93.0				19.71		0.0	10.71	
2025	1 3*3 [	51.3	93.0				10.71		1 0.0	10.71	
2326		5t.) (	91.J				10.71		1 0.0	10.71	
2027		51.3	93.0				10.71		0.0	10.71	10.71 [
5058		51.1	91.0				10.71		1 4.0	10.71	
Z0 29		51.1	43.3				13.71		1 3.3	10-71	
2030		51.)	93.0				10-71		0.0	10.71	
1 2031	3.1	51.)					10.71		0.0	10.71	
2032		51.) [					13.71		J.3	13.71	
2033		51.)	93.0				10-71		1 0.0	10.71	
2134		51.3					10.71		0.0	10.71	
2035		51.1					13.71		1 3.3	l men l	
2036		51.3	13.0				10.71		i 9*0	10.71	
1 2037	0.3 [	514)	93.0	90.0	10.71	0.0	10.71	! 0.0	0.0	1 10-11 (	10.71 (

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PROJECT MALANCE SHEET MALTERNATIVES
```

CALCULATION PERIOD --- 57 YEARS DISCOUNT RATE --- 13.0 \$ EXCHANGE PATE --- 1,000 (BHT/BHT)

ESCALATION PEF ANNUA

F.C PART --- 1.3 t

L.C PART --- 1.3 t

FIXET 34 --- 3.1 t

FUEL 3+1C2 --- 3.3 t SHACOM PRICE FACTIR

F-C PART --- 1.100

L-C PART (HYDR)] --- 0.450

L-C PART TALTER] --- 0.450

FUEL PRICE --- 1.JJJ

*** CASE 1 *** PLINT VI. 1 *** Gas Turbine Power Plant

												-
1	t .		ING END 1			ATENG DEM		1	ı	i 1	l	1
1	I INVEST-	<b></b>	i	SALABLE .	j			JTRANS-	SUB- :	ANNUAL [	T203	i
YEAR	I ME IT	1 45TALL = 1	PAUJUC- I	FNFRGY .	) FIXED	J JEAI REV [	] IDTAL	ND1221H 1	ADITATE !	) COST !	FLOW	1
1	1	LAPACETY!	TION		1 6051	i cost	COST	I DEM COST	I CEM COST	i i	ì	Ĺ
ı	I (MIL.BIT)	j (NA) j		[#[L.KHHi]	(Thitaddi)	( (41L adr )	[MIL_BHT]	LIMIL_BHT)	Í(MIE_BHT}	[{THB.J1M1}	[ IMIL.BHT?	Ĺ
												_
1961	0.3	0.01	0.0 [	0.0	0.0	1 3.3	1 3.3	1 3.3	1 3.3	j 3.3	3.3	i
1 1982	1 2.3	1 2.1 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1 0.0 E	Q.D	Ĺ
1 1963	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	ì
1 1986	\$ 516.38	0.31	0.01	0.0	0.3	0.0	1 3.3	j 3, 1	1 3.3	1 3.3 1	516.38	Ĺ
1 1985	801. +7	1	J.J .	0.0	ن ن	0.0	0.0	0.0	0.0	1 0.0	881.47	ĺ
1 1986	861-+7	0.3 [	3.0	0.0	0.3	0.0	0.0	1 0.0	1 0.0	0.0 i	881.47	ı
1 1987	654.15	483.0 1	210-0 (	202.5	67.31	390.86	450.L7	4,91	j J,3 [	463.JB	1122,43	ı
£891 1	1 3.1	491.1	21J.J j	202.5	67.31	1 390.86	458.17	4.91	1 0.0	463.08 1	463.08	Ĺ
1 1989	9.3	460.0 1	210,0 1	202.5	67.31	390.86	458.17	4.91	1 0.0	463.08	463,08	Ĺ
1 1990	1 0.1	430.3	210.0 1	202.5	67.31	1 390.56	458.17	4.91	1 ).)	463.JB	463.38	ŧ
) 199L		i 4.3.3 i	213.3	232.5	67.31	390.86	458.17	4.91	0.0	463.08 [	463.08	1
1 1992	1 0.1	480.3 1	213.0 [	202.5	67.3L	390.86	454.17	1 4,91	1 D.C	463.08 [	463.08	j
1 1993	1 0.1	1 480.J 1	210.0	202.5	67.31	190.46	458.17	1 4.9 L	J.3	463.38 1	463.38	į
1 1994	1 3.1	1 483.11	217-7 1	232.5	67.31	393.86	458.17	4.91	1 0.0	463.08	463.08	i
1 1995	1 3.)	43D.J	210.0	202.5	67.31	36,096	458.17	4.91	0.0	463.08	463.0B	Ĺ
1996	1 0.0	48J.O j	210.0	202.5	67.31	390.96	158.17	4.9L	i 0.0 l	463.38 ]	463,38	ı
1 1997	1 3.3	48.1.1 [	213.0	212.5	67.31	393.86	458.17	4.91	j 0.6 l	463.08	463.08	Ĺ
1 1998	1 0.3	440.J j	210.0 [	202.5	67.31	390.86	458.17	1 4.91	i 0.0 1	463.05	463.08	i
1999		480.J	210.0 J	20245	67.31	340.86	458-17	l %-91	0.0	463.38	463.38	ı
i zaaa	1 1"1	493.31	213.3 1	232-5 [	67.31	393.86	458.17	4.91	0.0	1 443.Q8 İ	463.08	Ĺ
2001	1 0.1	480.)	210.0 1	Z02.5 [	67.11	390.86	458.17	4.91	1 0.0	463.08	463.08	
1 2002	1 0.1	440.3 [	210.0	202.5	67.3L	390.66	456.17	1 4.91	1 0.0 1	443.08	463.J8 J	1
[ 2303	1.1	483.3 [	213.3 1	232.5	67.31	393.86	458.17	4.91	0.0	463.0B	463.08 [	1
1 2004	1 494.38	440.3 1	210.0 (	ZB2-5 (	67.31	390.86	458-17	4.91	0.0	443.08	957.15	•
1 2005	740,37	480-3 [	210.0	202.5	67.31	190.86	458.17	1 4.91	1 0.0	463.08 #	1203.44	ı
I 2304	! 743.37	493.3 [	213.3 !	232.5	67.31	1 39J.86 i	J 458.17	1 4.91	1 0.0 1	463.08 [	1203.44	1
2007	494.18	480.3 j	210.0 [	202.5	67.31	390.86	458.17	4.91	0.0	463.08	957.15	Ĺ
1 2008		480.3	210.0	202.5	67.31	1 390.86	458-17	4.91	0.0	463.08	463.08	1
1 5703		483.)	213.3 [	202.5	67.31	193.86	458-17	4.91	j 0.0	463.08	463.08	ĺ
2010		440.J E	210.0 [	202.5	67.31	390.86	458-17	4.91	0.0	! 463.0B	463.08	1
1 2011		410.3	210.0 1	202-5	67.31	390.86	458.17	1 4.91	0.0	463.08 <b> </b>	463.08	ì
1 2012	1 3"1	483.3 [	213.3 1	202.5	67.31	1 393.86	458.17	1 4.91	ו נ.נ ו	463.06 ]	463.08	1

YEAP	ENVEST- ME IT [MIL. B.T]]	INSTALLE)	PRODUC-	SALABLE     ENERGY	FIXED COST	I VAR LABL	E   T	TOTAL COST	I MISSION I DEM COST	SUS- STATION DEM COST	i j	COST   FLOW
	1 1417- 24111		16 ILL - KAHI			11.41r*RH	111	INIT - BHI	JTF * BHI	[ IM[L+BH()	11411-84113	[MIL.BHT]
1 2013	3.1	480.3	i 210.0	202.5	67.31	1 393.8	6 1	454.17	1 4.91	1.1	1 463.38 1	463.38
2314	3.1	493.3					6 L	458.17	4.91	1 1.C	1 463.08 f	463.08 ]
2015		460.0						450.17			[ 463.08 ]	463.00 [
\$ 5010 (		480.4						459.17			1 463.JB t	463.38 1
1 2317		453.1						458.17			1 463.08	463.08
2018	(,,)	490.3						450.17			463.08	463.08
2019	0.3	480.3						455.17			463.38	463.J8
2323	3.3	443.3						458.17			) 463.08 <u>(</u>	463.08
1 2021	0.3	440. )						458.17			i 463.08 l	463.08
1 2022 1	0.3	480.						458.17			463.38	463.38
2323	1.1	483.J						458.17			463.DB	463.08
2024	494-18	480.J						458.17			463-05	957.15
2025	847.12	443-3						458.17			1 463.38 1	1313.93
1 5356	947.32	443.3						458.17			463.08	1310.90
2027	637.35 [	440-0						458.17			463.0B	1100.42
2028	0.1	440.3						458.17			1 403.08	463.JB
2329 1		483,3						458.17			463.08	463.08
2030		480.1						458.17			463.08	463.08
[ 2031 [		440.3						450.17			463.38	463-38
1 2032 1		433.3						458.17			80.69	463.0B
) 2033 [	2-3	440.1						45B.17			1 463.08	463.06 ]
203+	0	480.0	210.0					45B-17			i 463.08 [	463.08
2335	3.3	48J.J						558.17			1 463.08	463.08
1 2036	0.1	480.3						458.17			1 463.08	463.08
1 4037 1	-1-04.10	480,)	210.0	202,5	67.11	1 390.8	6 I	458.17	1 4.91	0.0	1 463.08 1	-941.62

1 (		SENERATI	No ive		GE JEA	ATING DEM	COST	<del></del>		1	1
i i	INVEST-							TRANS-	รบช-	ANNUAL I	COST
I YEAR I	ME 4T	I ISTALL - JE	~ 20CURS	ENEPGY	FIXED	I VIR I ABLE	LOTAL	MISSION	L STATION !	COST	FLUH 1
1 i	İ	LAPACITY	TION		1 (0)	COST	COST	OCH COST	DEM COST	i	ĺ
1 (	[MILABITI]	L (MH)	[ 1]L.KeH]	[MIL_KWH).	EMIL. BAT &	I LHILL BHT ).	[[M1L.BHT]	[ HIL .BHT	] ( MIL_BHT ) ]	141L. BHT }	[HILLSHT]]
							<del></del>				
1961											
1982											
1981											
1 1984 1											
1 1965						1 -628.78				-620-78 1	
1986 [						-450.76				-453.16	
1 L987 1										94.53	
1986		170.3	1045.0								
1989 [		170.)									
1995		1/3.3									
1991 (		170.1 1									
1992		175.3									
F883		173.3									
1 1994		170.)									
1995		170.J								959-13 [	
1996	3.3	170.3								959 .13 [	959-13
1997		170.)								959.13	
1998		170.3								959.13	
1999		113.3								959.13	
2000		170.)								959.13	
1 500f T		170.3									
2032		170-1								959.13	
1 2003 1		170.1		956.5							
2004										959.13	
2005 1		173.) [								959.13	
2006 i		170.)	1045.0							959-13 [	
2007		170-3	1045.0								
2009		173.3									
2009 [											1201.73
2010											
1 2011 ]	483.19		1345.J								
1 2012 1	322.30	179.0 [	1045.0	956.5	40.47	916-42	957-40	1.74	0.0	959.13	1261.73

1 1	INVEST-	GENEKATI		SALABLE		STENG DEM		I TRANS-	   508-	ANNUAL I	cost (
PAPA	MENT	1 ISTALLE 31	PR300L- (	ENEPGY	FIXED	I VARIABLE	TOTAL	MISSION	STATION		FLOW 1
i i	1	CAPACITY			CUST		COST				ì
1 1	[ [4]L_BHT]	EME) I	[ 4[ L.K.H.) ]	[MIL_KWH]	{MIC.BHT}	[[4[["RH1]]	(THE.JIM)	(HIL.BHT)	(MIL.BHTE	itmic_BHT}	[MIL.BHT]
											*******
2013											
2014		170.3	10+5.D							959.13	
1 2325		173.3	1345.3								
1 5016			10-5-0								
2017		170,1	10+5-0							959.13	
1 5718 1		133*7 [	1345.3	956.5						959.13	
1 5010 1		170.3	10+5-0	956.5						454.13	
2020		170.3	10+5-0							957.13	
2321		173.3 [	1345.3							959.13	
1 2022		170.3	1045.0	956.5						959-13	
1 2023 1		170.3	1J.5.0	956.5						] 959.13 ]	
2324	J_}	173.3	1345.3	956.5	43.37	1 916.42	957.40	1.74	0.0	959.13	959.13
2025	39.)¢ j	170.3	1045.0	956.5	40.47	1 916.42	957.40	1 1.74	0.0	959-13	997.20
1 2025	j 38∞)6 l		1045.0							959.13	
1 2327	5).75	173.3	1345-3	956.5	43.47	916.42	957.40	1.74	0.0	959.13	1009.89
2028	0.1 (	170.)	1045.0	956.5	40.47	916.42	957.40	1.74	0.0	959-13	959.13 1
2029	3.3 1	170.3	101540	956.5	40.97	915.42	957.40	1 - 74	0.0	1 959.13 1	959.13 1
1 2131 1	1.3	173_)	1J45.J [	956.5	43-97	910-42	957.43	1.74	0.0	1 959.13	959.13 (
1 2031 1	0.) }	170.3 1	1045.0	956.5	40.47	916.42	957.40	1.74	0.0	i 959.13	959-13
2032		170.3 i	10+5.0	996.5	40.97	916.42	957.40	1.74	0.0	959-13	
2333	J. J i	173.)	1345.3	956.5	43.97	916.42	957.43	1.74	0.0	959.13	959.13
2034		170.3	1045.0	956.5				1.74	0.0	954.13	
2035		170.0	LU+5.0							959.13	
1 20 16		173.3	1345.3							959 13	
2037			1045.0							959.13	

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*** 9 *** PROJECT :VALUATION BY THE NET PRESENT VALUE (N.P.V) METHOC --- WITH SHADDW PRICE FACTOR ---
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CALCULATION PER IN 11 --- 57 Y = 445

ESCALATION PER AN 114

F.C PART --- J.) I F.C PART 1--- 1.1JJ

L.C PART --- J.) I L.C PART (H7) --- 0.850

FIXED JEM --- J.) I L.C PART (ALTEX) --- 0.950

FUEL PAICE --- J.) I FUEL PRICE --- L.JJ

*** CASc 1 *** PLANT 41. 1 ***

!	Hy	dropower l	Nam Chon F	ower Stati	on		Alternative	Gas Turbine	Power Pla	nt
YE AP	INVEST-	I I WAUAL L COST	CUST FLOR	NET PRESE ( 1= 10	.0 t i	INVEST-	ANNUAL COST	BENEFIT     FLOW	NET PRESE	
		1	(AIT#AH1)	P.V.F 1	N.P.V		ì	[MIL.BHT]	P.V.F (	N.P.Y (M[L.BHT
1981	414.50	7.87	627.40	0.9091	573.42	0.0	1 0.0	0.0 1	0.9091	0.0
1982	1070.34	14.60	1010.01	0.8264	430.41	0.0	0.0	0.0 1	0.8264	0.0
1983	1131.76	58.99		J.7513	894-64	3.3	3.3	3.3	J.7513	3.3
1964	12949	66.85	1361.55	0.6830 I	927.92	515-08		516.00 i	0.6830	352.49
1965	1798.76	90.46	1439.21	0.6239 i	1173.00	H81-47		881.47		547.32
1986	1426.15					881.47		861.47		
1987	1977-76	78.71	1156.47	0.5132 1	593.46	659.35		1122.43	0.5132	575.99
1964	0.1	1 78.84 1			30.71	0.0	BD.E64	463.08 1	0.4665	214.03
1989	ן נים	J 78.8+ i				3.3	1 663.38	463.34	0.4241	196.39
1991	0.)	i 78.84			33.4)	0.0	1 463.08		0.3855	178.54
1991 [	0.7	79.8%			21.63	0.0	+63.08		0.3505	162.31
1992 [	0.3	1 73.86 1			25.12	3.3	[ 463.J8	463.38	J-3186	147.55
1993	3.)	78.84		0.2997	22.8.	0.0	463.08		0.2897	134-14
1994	. 0.)	1 78.84			20.7.	0.0	463.08	463.08 1	0.2633	121.94
1995	0.)	78.8%			14.4/	3-3	1 463.38	463.34	J-2394	
1996	3.3	78.84 (			17-15	0.0	463.08	463.08	0-2176	100.78
1941	9+3 (	73.86			15.61	0.0	463-06	463.08 (	0.1976	
1998	0-1	78.8.				3.3	463.38	463.08		
1999	3.1	78.84	78.84		12.87	0.0	1 463.08		0.1635	
2000	ا د-ه	78.64	78.84		11.72	0.0	1 463-08	463+D8 J	0.1486	68.63
2001	0+1	78.8+			10.6>	3.3	463.38		3.1351	
2332	3-1	78-85			3-61	0.0	463.06	463.08	0-1228	56-69
2003 [	0.)	78-89		0.1117	d+d) [	0.0	463-08	463.08	0.1117 i 3.1015	51.72 97.18
2004 [	0.0	78.64			8-01	494.08	463-38	957.15 1 1203.44 1	0.0923	111.08
2006	3.)	79.34 [	7d.44   fb.44	0.0923 [	7.21	740.17	1 463.08   1 463.08			100.98
2007 1	0.)	1 76.64     76.64			5.62 (	740.37 494.08	1 463.08			73.3
2338	35.67	79.84			7.7+	0.0	463.08		0.0693	32-11
2009	398.16	78.84			30.15	0.0	463.08		0.0630	29.19
2010	955-19	78.84	734.53			0.0	1 463.08		J.J573	26.5
2311	616-34	78.84			36.22	0.0	1 463.08		0.0521	
2012	377.70					0.0	463.06			

]	! Ну	dropower N	iam Chon P	ower Static	าก	A	lternative C	as Turbine	Power Plan	1t
YEAR	INVEST- MENT	I ANTUAL I	405*	12909 FBM		INVEST-	i I ANNUAL I EGST I	BENEFIT   FLOW	NET PRES	
į	i	i i	(MIL.BHT)	P.V.F     (P.U)	IMIL.BHTI	1	i i	i i	P-V-F (P+U)	N.P.V   (MIL.BHT)
2013	0.0	1 78.8+ 1				١١	1 463.38	463.38.	3.0431	
7314	1 3.)	75.84	73.84	0.0391	3.37	0.0	463.08	463.08	0.0391	18-13
2015	( ac )	1 78-04			2.81	8.0	1 463.08 [			
2016	1 3,1	1 79.8. [	76.84			J.3	1 463.38			L4.98
7317	3.3	78.85	79.84		2.32	0.0	463.08	463-08	0.0294	13,62
2016	0.7	1 78.6. [	71.44			6.0	1 463.08	463.08		12.38
2019	( 0 - )	1 78.8. 1	78.64			1 3.3	463.36	463.J8	0.3243	11.26
2323	0.0	1 78.84 [	74.84			0.0	463.08	463.08	0.0221	10.23
2021	0.3	1 78.84 (	78.84		1.51	0.0	403 <u>-</u> 08	463.08	0.0201	
2022		75.8 •				J.J	] 463.08			] 8.46
2323	189.75	78.8+	268.79		4.45	0.0	1 463.08	463,08		7.69
2024	279.+0	18.84	35d.24	0.0151	5.41	494.08	463.08 <u> </u>	957.15	0.0151	14.45
2025			358.2+	0.0137 (	4.91	441.82	463.JB	1313.93	3.3137	17.99
2326	183.15	1 78.84	261.99	0.0125	3.21	347.82	463.QB	1310.90	0.0125	16.35
2027	0.1	18.84	73.84	0.0113	3.43	637.35	1 443.08 [	1100.42 1	0.0113	12.48
2023	(.0	1 78.8+ (	73.84	0.0103 (	3.91	3.3	1 463.38	463.38	1 3.3133	4.77
2327	1.1	79.34	71.84	6.0094 (	3.7+	0.0	463.08	463,08	0.0094	4-34
1 6605 1	0-1	1 78.84	74.84	0.0065	J-6#	6.0	463.06	463,08	0.0085	3.94
1 203L	1 3.3	1 74.3.	14.8+	0.0077	10.01	1 0.0	1 463.38	463,38	3.3377	3.59
2332	1 1.1	75.84	7d.84	0.0070	J.57	0.0	463.08	463.08	0.0070	3 • 26
2033	0.1	1 78.86	74.84	L 0.0064	J.53	0.0	463.08	463.08	0.0064	j Z.96 ;
2034	) J_)	78.00	74. 34	0.0058	3.47	0.0	463.36	463.38	1 3.3350	2.69
2235	3.7	J 78.84 j	74.44	J.JJ53	3.42	J.0	463.08	463.08	0.0053	2.45
2036	0-0	78.84	78. d4	0.0346	0.31	0.0	463.08	463,08	0.0048	2.23
2037	-698-12	1 78.1+ 1	-620.04	0.0044	-2-71	-1434.70	1 463.08	-941.62	J.J344	1 -4.12
1		1		! !	i		1		!	1
TOTAL	10735.79	I	l	1 1	64+5-21	6829.59	I	!	l	4578.47

1	ı Hy	dropower T	hi Khong P	ower Stati	on	Alte	rnative Oil	-fired Thern	ial Power i	lant į
YEAR	INVEST- MENT	ANNUAL I	LOST Fluid	NET PRESE		INVEST-	ANNUAL I	0E4FFTT   FLOW	NET PRESE	NT VALUE
	   {HIL.UHF}	[416.8H71]	[M[L.aH]]	P.V.F     1P.U1	N.P.V   LMIL-BHT3	[4[L+dHT]	i i	   (416.847)	P.V.F (	(MIL.BHT)
1 1981	t.0 !	0.0	3.0	0.9091	1 1.3	0.0	ן ס.ט	U.O 1	3.9391	3.0 1
1982	1 3.3	j j	١, ١	J.8264		0.0	0.0	0.0	0.8264	0.0 i
1 1983	1 0.3	0.0	3.0	0.7513	0.0	0.0	0.0	0.0	0.7513	0.0
1984		0.0 (	ن , ز	0.6830		371.76	0.0	371.76		253.92 1
1985		4.49	112.83			595.73	-626.78	-33.08 1	0.6209	-20.54
1986		11.23				595.70	-450.76	144.94 [	0.5645	81.62
1987		13.40	262.51	0.5132		+22.51	94.53	517.04	0.5132	265.33
1988	378.73	13.46				3.3	959.13	959.13 [	0.4665	447.45
1989		11-17				0.0	959.13	959.13	0.4241	406.77 [
1990		10.71				0.0	959.13	959.13 [	0.3855	369.79
1991		13-71				3.3	959.13	959.13 [	0.3505	336.17
1992		10.71				0.0	959-13			305.61
1993		10.71				0.0	959.13	959.13 [		
1994	1 3-3	1 13.71	13.71			3.0	959.13	959.13 [	0.2633	252.57
1995	5-7	10-71	13.71		2.55 1	0.0	959.13		0.2394	229.61
1996	9.1	10.71			2.33	0.0	959.13			208.74
1991	1 3.3	13.71			2.12	3-3	959.13			189.76
1 1999	1 0-1	10.71				0.0	959.13		0.1799	172-51
1 2000	1 0.3	10.71				0.0	959.13			156.83
1 2001		13.71			[.5]	3.3	959.13			142.57 [
2002		10.71	13.71			0.0 1	959.13			
2003	0.3	10.71			1.32     1.23	0.0	959-13	959-13 [		117-63 L
2004	0.3	10.71			1-17	3.3	959.13	959.13	0.1015	137-12
i 2005	i . 0.3	13.71				0.0	959.13	959.13	0.0923	97.38     88.53
1 2006	i 3.3	10.71	13.71			3.3	959.13   959.13	959.13 1	J.0839	
2007		10.71				0.0	959-13	959 13 1	0.0743	73.16
2008	i 5.5	10.71	13.71		0.7.	0.0	954-13	959.13	0.0693	
1 2009	i ä.i	10.71				322.63	959.13	1281.73	3,3633	
2313	0.3	10.71				493-89	959.13		0.0573	
1 2011			34.48		1 .8.1	+33.84				
1 2012										

1	ļ	Hy	dropower 1	Thi Khong P	ower Stati	on j	Alter	native Oil-fi	red Therma	l Power Pla	ınt ļ
j Yf	EAR	INVEST- MENT	I I ANNUAL I EDST	GOST Flux 1	NET PRESE		INVEST-		BENEFIT	NET PRESE	.0 1 1
1		(11-8-11M)	[	{ M 1 L = D M 7	P.V.F     (P.U)	4.P.V (4(F.9HL)		i i	[MIL.BHT]	P.V.F I	
	113	299-46						959-13			41 -30 F
	14 J							959-13	959.13	3-3391 (	37.54
	15 1	0.3	1 10.71 .					959.13 J	959-13	0.0356	34.13 [
	116	3.3	10.71					959.13			31.03
	17	د-ه	13.71					959.13			28.21
	18	0.3	10.71					959.13			25.64
	119	0+1	10.71					959.13		0.0243 ]	23431
	20 j	3.1	10.71					959.13	959-13 [	J.J221	21.19
	121 J	0.7	10.71					959-13		0.0201 [	19.27
	22	0.)	10.71	13.71				959.13 (	959,13	0,0163 }	17.51
	23 į	0.3	1 10.7L :					959.13	959.13 [	3.3166 1	15.92
	24	3.3	10.71					959.13	959.13	0.0151	14.47
	125 E	0.3	10.71				18.06	959.13	997.20	0.0137	
	26	3.1	10-71					959.13	997.23	J. 0125	12-44
	127 I	0.)	1 10.71					959.13	1009,89	0.0113 f	11.45
	1 851	9. 3	10.71					959.13	954.13	0.0103	
	29 1	3.3	10.71					1 959.13	959.13	3.0094	8.99
	33 1	3.3	ļ 19.7L i					959.13 (	952.13	0.0085 [	0.17
	31	د د د	10-71				0.0	959.13	959.13 j	0.0077	
	32	3. J	10.71					959.13	959.13	3.3073	
	133 J	3. 1	13.71			1.01		959.13	959.13 [	0.0064 [	6.14
	34 [	0.1	10.71				0.0	959-13 (	959.13 1		
	35 ]	0.3	1 10.71 (			7-30 1	3.3	1 959.13	959.13		5.37
	136 J	3.3	10.71				0.0	959.13	959.13	0.0046	4.61
1 20	27 (	0.1	10.71	13.71	0.0044	3.3> 1	-60,39	959.13	898.74	0,0044	3,93 [
!	1		!	!						1	
	TAL	1346.15	1 		I	553.33	3665.13	l j	i		5550.33

•		! !		BENF	FET - COST	AVALY	SYS	j B/C	- FI \$COUR	IT RAVE	
Ĺ	15 COUNT MATE		AL F	COST I	BENEFIT	3-5 I	8/6	l	8/0 1*1		
ŧ	MAIL.	INVEST	INVEST		1	- :	RATIT	i			
i	( 2 1	(416-941)	1411.3478	1416-8411	INIL-BHILL	[KIL-BHTI		i j	1	2	. 3
ī	3.0	1 12031-41	1047+-12			13+60-12			1	1	١,
:	5.5	1 12011.31	10494.72			11573,93			1		
ı		i 120jl.7j				13135.29			į.	1.	
- 1		12031.43			17404.21				!	:	
:		1 12031.33			[5963.83]				! '	'!	
- 1		12311.41			14667.01					•	1
		12041.43			13558-57					1	1
1		12031.91		7540.EL	12554.28	4763.46			•	!	
i		i 12311.93 J			11657-11 1					į	
ι		( 12031.43 (			10852.67					!	
		12041.43			10128-77				! !	!	
ì		1 12331.93			9475.11 1					!	1
Į		1 12031.93								!	
1		[ [209].93							. •	!	
ľ		[ 12331.73 ]			7853.86 [				1 1	ļ	
- 1		12031.93							1.	Í	3
- 1		12011-73 [							1.*	ļ.	-
•		LZJ81.93								•	
1		12081.73			6267.96 ]				i.	ļ	1
1		[ 12031.93 [							•	!	
ı		[ 12031.93							•	i	
ı		12091.93							•	Į.	
ı		[ [20][.4]							•	Į.	
ı		( 1203L. <i>)</i> 3 (							•	Į.	-
1		12041.73							•	į	
j		[2031.43							*į	į	
1		1 LZ031.93							٠į	İ	-
- 1		12041-95							* [	ţ	-
ı		[20][.93							*[	ļ	
ł		[2341.93							* 1	ļ	
ł		12011.73							• !	Ţ	
1		1 12011.93							⋆ î	ļ	ļ
-	23. 3	[20][.93	13494.72	4613.43	3585.84	-1324.56	1.7778	1 1	• İ	Į.	
								- *******	********	. +	• •

. -- 1.R.P (HYOR)POWER!

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

*** EVALUATION CRITERIA ***

CALCULATION PERIOD --- 57 FERS DISCOUNT MATE --- 13-0 E EXCHANGE MATE --- 1-000 (BHT/BHT)

ESCALATION PER ANNIN

F.C PART --- ).] C

L.C PART --- ).] T

F.C PART --- ).] T

L.C PART INTORNI --- 0.450

FINED TOT --- 3.3 T

L.C PART (ALTER) --- 3.450

FUEL PRICE --- 3.3 I

FUEL PRICE --- 1.300

*** CASE | ***

!	UNIT I	I I EJOYH	!	BENE	FET - COST	ANALY		8/C -	FUEL PRICE	INCREMENT
		TOTAL 1		COST 1	DENIFIT		3/6		870 [+1	
INCREMENT		INVEST I		i i			RATIO			
141		[HIL. MIL.]		[MIL.BHTD]	(MIL.JHT)	(4)L_BHT;	i	0	1	2
0.0		12081-44	Lu494.72					1	• •	1
5.1 ]	3.3	12381.91	13494.72			3446.08		ī		Į.
10.0 1	0.1	12061-11 1	13494.72			3/58.62 [		1		1
15.0 (	0.0	12081.93	10+94.72			4071.39		ī		1
23.3 [	3.3	12381-33 [	13494.72 1		113/3.79			ī		1
25.0	0.3	12061-43 1	10494.72	6995.18	116/6.12	4416.14 1	1.6713	î	•	1
10.4	0.)	12061.41	L0494.72	6995.18 \$	12011.00 [			i		1
35.J	3.3	[ [2381-11 ]	13494.72 [	6995.[8	12315.31	5321-13 [	1.7607	1	•	1
40.0	0-2	12081-41 1	14494.72 1	6995-18 [	12623.6Z i	5633-64 (	1-8054 \$	1		1
45.0	0.3	12061.44	10+94.12 ]	6995.18	129+1.31	5946.13	1.85JJ	1	1 '	<b>&gt;</b> }
53.4	3.3	12381-93 (	13494.72	6995.18	13251.80 (	6258.62	1.6947 ]	1	1 (	•i
55.0	0.1	12081. 33	13494.72	6995.18	13506.33	0571.15 i	1.9394	1	j ,	•1
60.0	0.3	12081.31	13494.72	6995.18	13978-Bt 1	6883.63	1.9841 [	1	1	•
65.3	3.3	12381.33	13494.72	4995.18	141)1.33	1196-15	2.0287	7	1	
10.0	( t. B	12081-73 1	10494.72	6995.18	14533.84 1	7538.66	2.0734	I	ì	1.
75.0	6.3	12081.33	13494.72	4995.18	14810.34 f	7821-16	2.11B1 (	1	1	1+
83.3	3.)	12381.33	LJ494.72	6995.18	15128.84 1	1133.66	2.1628 I	1	ì	1 *
45.0	0.3	12081. #3	10494.72	6995.18 I	154-1-33	6446.15 E	2.2074 1	ī	t	1 *
10.0	0.)	12081.43 1	L3494.72 I	6495.18	15753.86 [	6758.68	2 - 2521	ι	1	1 •
95.3	3.)	12381.73 1	LJ494, 72 I	4995.14	16304.36 1	9371-16	2.2968	1	İ	1 •
100.0	0.3	12081.33 1	10494.72	4995.18 I	163/4.65 1	9383-70 1	2.3415	1		1 .
105.9		12081.91 1	1,1494, 12	6995.18 1	10021-35	4696,17	2.3861 1	ī	ì	1 +
113.3		12381.73				13338-65		1	ī	⊭
115.0		12081.43 4				10321-15		1	i	
120.0		12081.43				13633.63		Ì	i	
125.3		12381.71			1796L-26	13946.38		ī	i	1 4
130.0		120E1-13 I				11258.59		1	ì	1 •
135.0		12081.71				11571-05		ī	Ĩ	
143.3		12381.73				11853.56		Ī	i	į ·
145.0		12081.73				12196.02		İ	į.	
150.0		12061-44			195) 1.69			Ì	ī	i

* --- [.R.R [4YORUPQWER]

CASE		/BHT)	!	•			,	:			•
PROJECT		1.000 (BHT/BHT)			НОО	(PRJJECT BENEFIT IS MEASURED BY ALTERNATIVE PLANT)	; ;	, , ,			: !
THIS				t t	E METHOD	RNATIV	,	1			•
OF		(ATE	į		ATIV	ALTE	•				,
(B/C)		EXCHANGE RATE		1	REGULA ITERATIVE	RED BY	!	į	iii Œ		
RATIO (B/C)		EXCI	i ;	1	REGULA	S MEASUR	(	19.D	FERNAT IN		
BENEFIT - COST		M	!	:	BY THE	EFIT 19	i	)METH	F) : AL		
1145	!	0 - 17 - 0	:	•	CALCULA TED	ECT BEN	1	7. J 8/5	* P * V * F		
	1	<u>.</u> 1	•		CALCU	(PRJJ		RATI	05TJ		
AND	!	IT RA	•			<b>3-</b> F		150	IAL C		
(I.R.R)	!	DISCOUNT RATE 13.0 \$			RETURN (I.R.R)	IS 14.1 g		BENEFIT/COST RATIO_JE/C1_METHOD	+ ANNU	( ]= 10*0 % )	BHT }
RETURN	(							THE	B/C RATIO = SU4((INVESTMENT + ANNUAL COST) * P.V.F) : ALTERNATINE /SU4((INVESEMENT + ANNUAL COST) * P.V.F) : HYDROPOWER		2652.88 (MIL.BHT)
4	•	EAR S	; MHHH QQQQ		HO.	OROP?		83	NI U	1.3655	652.
RATE	i #	- 57 YE	0000		RATE	T4E I.R.R OF HYOROPOWER		EVALUATION	75/ 15/	guit []	, Z
THE INTERNAL	I TER 14	CALAULATION PERIJO 57 Y	TION PER ANNUM FAC. PART L.C. PART FIXED 36M FUEL PRICE	1	INTERNAL	Æ I.R.	ı J		C RATI		B,−C
Z	S.	N PE	PER C IXED	+		-		PROJECT	ač		· ф
THE	JAT I ON	JLATIO	ESCALATION PER ANNUME.C. PART - L.C. PART - FIXED 35M - FUEL PRICE -		THE		1				
***	*** EVALUATION CRITERIA ***	CALA	ESCAL	*** CASE .1. ***	(3)		·	125			
#	1										

THE IVTSRNAL RATE OF RE	RETURN (1. R. R.) AND JENEFIT - COST RATIO (B/C) OF THIS PROJECT CASE	THIS PROJECT CASE
		;
CALCULATION PERIID 57 YMARS	DISCOUNT RATE 13.3 & EXCHANGE RATE	EXCHANGE RATE 1.330 (BHT/BHT)
ESCALATION PEP ANNUM	SHADOW PRICE FACTIR	
<b>4</b> #	PA3T 1,100	
9-6	NRT (HYDRJ) 3.850	
<b>6</b> 40	NRT (ALTER) 0.950	
20	PRICE 1,000	

*** CASE 1 ***

(PRIJIECT BENEFIT IS MEASURED BY ALTERNATIVE PLANT) CALCULATED AY THE REGULA ITERATIVE METHOD THE 1.3.F OF HYDROPDWER IS 15.2 % THE INTERNAL RATE OF RETURN (I.R.R.R.) (1)

B/C RATIC = \$JM([INVESTMENT + ANNUAL COST] * P.V.F) : ALTERNATINE /SJM([INVESEMENT + ANNUAL COST] * P.V.F) : HYDROPOHER METHOD PROJECT EVALUATION BY THE BENEFIT/COST RATIO (B/C) (2)

1.44480 (1= 10.0 % ) ij

3133.59 (MIL.BHT)

Ħ

B−C

### Financial Programs Taking Escalation (as Reference)

#### Financial Program of Nam Chon Project

Unit: Million US\$ (Million B)

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 B)

					1 000 (11223	
Year	Foreign Cur	rency	Local Cur	rency	Tota	1
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	L,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

Nam Chon PS         Thi Khong PS         Total         Power Energy (GWh) at Primary Substation           G1         C2         C         P1         P2         P3           673         C         P1         P2         P3           1,173         0         673         0         0         0           1,173         0         1,173         0         0         0           1,269         0         1,269         0         0         0           1,373         0         1,269         0         0         0           1,569         1,269         0         0         0         0           1,503         145         1,648         0         0         0           1,164         273         1,437         267         0         267           93         47         140         1,069         90         1,159           93         47         140         1,069         90         1,159           465         13         478         1,069         90         1,159           677         34         71         1,069         90         1,159           85         47		Cost Streams	(Million	Bahts)		Benefit Streams	ns (Million	Bahts)	į
astr         Nam Chon PS         Thi Khong PS         Total         Nam Chon PS         Thi Khong PS         Total           1981 $G1$ $G2$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$ $G$					Power Energy (G	Wh) at Primary	Substation	Annual Energy	Sales
1981         G73         C         P1         P2         P3           1982         1,173         0         673         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0	Year	Nam Chon PS			Nam Chon PS	Thi Khong PS	Total	Sales (GWh)	Income
1981         673         0         673         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0<		CI	CZ	C	P1	P2	P3	Ъ	В
1982         1,173         0         1,173         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0 <t< td=""><td>1981</td><td>673</td><td>0</td><td>673</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></t<>	1981	673	0	673	0	0	0	0	0
1983         1,269         0         1,269         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0 <t< td=""><td>1982</td><td>1,173</td><td>0</td><td>1,173</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></t<>	1982	1,173	0	1,173	0	0	0	0	0
1984         1,373         0         1,373         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0         0 <t< td=""><td>1983</td><td>1,269</td><td>0</td><td>1,269</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></t<>	1983	1,269	0	1,269	0	0	0	0	0
1985         1,900         122         2,022         0         0         0           1986         1,503         145         1,648         0         0         0           1987         1,164         273         1,437         267         0         267           1988         93         47         140         1,069         90         1,144           -2007         93         13         166         1,069         90         1,159           2008         126         13         139         1,069         90         1,159           2009         465         13         724         1,069         90         1,159           2010         711         13         724         1,069         90         1,159           2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         47         140         1,069         90         1,159           2013         280         1,069         90         1,159           2022         387         1,069	1984	1,373	0	1,373	0	0	0	0	0
1986         1,503         145         1,648         0         0         0           1987         1,164         273         1,437         267         0         267           1988         93         388         481         1,069         0         1,069           1989         93         47         140         1,069         90         1,144           2007         93         13         166         1,069         90         1,159           2008         126         13         478         1,069         90         1,159           2009         465         13         724         1,069         90         1,159           2010         711         13         724         1,069         90         1,159           2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         13         140         1,069         90         1,159           2022         93         13         1,069         90         1,159           2026         272         13	1985	1,900	122	2,022	0	0	0	0	0
1987         1,164         273         1,437         267         0         267           1988         93         481         1,069         0         1,069           1989         93         47         140         1,069         0         1,069           1989         93         13         106         1,069         90         1,159           2008         126         13         478         1,069         90         1,159           2009         465         13         478         1,069         90         1,159           2010         711         1,069         90         1,159           2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         93         13         1,069         90         1,159           2022         93         13         1,069         90         1,159           2023         280         1,069         90         1,159           2024         367         13         380         1,069         90         1,159 <td>1986</td> <td>1,503</td> <td>145</td> <td>1,648</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td>	1986	1,503	145	1,648	0	0	0	0	0
1988         93         388         481         1,069         0         1,069           1989         93         47         140         1,069         75         1,144           2007         93         13         106         1,069         90         1,159           2008         126         13         139         1,069         90         1,159           2009         465         13         478         1,069         90         1,159           2010         711         13         724         1,069         90         1,159           2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         2014         93         47         140         1,069         90         1,159           2022         93         13         106         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         285         1,069         90         1,159	1987	1,164	273	1,437	267	0	267	240	259
1989         93         47         140         1,069         75         1,144           2007         93         13         106         1,069         90         1,159           2008         126         13         139         1,069         90         1,159           2009         465         13         478         1,069         90         1,159           2010         711         13         724         1,069         90         1,159           2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         93         47         140         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         380         1,069         90         1,159           2026         367         13         285         1,069         90         1,159           2036         367         13         285         1,069         90         1,159 <t< td=""><td>1988</td><td>93</td><td></td><td>481</td><td>1,069</td><td>0</td><td>1,069</td><td>962</td><td>1,039</td></t<>	1988	93		481	1,069	0	1,069	962	1,039
- 2007         93         13         106         1,069         90         1,159           2008         126         13         139         1,069         90         1,159           2009         465         13         478         1,069         90         1,159           2010         711         13         724         1,069         90         1,159           2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         93         47         140         1,069         90         1,159           2022         93         13         106         1,069         90         1,159           2023         280         13         293         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         285         1,069         90         1,159           2036         272         13         280         1,069         90         1,159		93	47	140	1,069	75	1,144	1,030	1,112
2008         126         13         139         1,069         90         1,159           2009         465         13         478         1,069         90         1,159           2010         711         13         724         1,069         90         1,159           2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         93         47         140         1,069         90         1,159           2024         367         13         293         1,069         90         1,159           2025         367         13         380         1,069         90         1,159           2026         367         13         380         1,069         90         1,159           2026         367         13         285         1,069         90         1,159           2026         360         1,069         90         1,159         1,159         1,159           2027         13         285         1,069         90         1,159         1,159	1	93	13	106	1,069	06	1,159	1,043	1,126
2009         465         13         478         1,069         90         1,159           2010         711         13         724         1,069         90         1,159           2011         677         34         71         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         93         47         140         1,069         90         1,159           2024         93         13         106         1,069         90         1,159           2023         280         13         380         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         285         1,069         90         1,159           2026         272         13         285         1,069         90         1,159           2036         93         1,069         90         1,159         1,159           2037         13         166         1,069         90         1,159           2037         13	2008	126	13	139	1,069	06	1,159	1,043	1,126
2010         711         13         724         1,069         90         1,159           2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         93         47         140         1,069         90         1,159           2014         93         13         106         1,069         90         1,159           2022         280         13         293         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         380         1,069         90         1,159           2026         272         13         285         1,069         90         1,159           2026         93         1,069         90         1,159           2026         93         1,069         90         1,159           2027         13         285         1,069         90         1,159           2037         13         260         1,069         90	2009	465	13	478	1,069	06	1,159	1,043	1,126
2011         677         34         711         1,069         90         1,159           2012         455         95         550         1,069         90         1,159           2013         93         296         389         1,069         90         1,159           2014         93         47         140         1,069         90         1,159           2023         280         13         293         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         285         1,069         90         1,159           2026         272         13         285         1,069         90         1,159           2026         93         1,069         90         1,159         1,159           2026         93         1,069         90         1,159           2026         93         1,069         90         1,159           2036         93         1,169         90         1,159           2037         13         285         1,069         90         1,159	2010	711	13	724	1,069	06	1,159	1,043	1,126
2012         455         95         550         1,069         90         1,159           2013         93         296         389         1,069         90         1,159           2014         93         47         140         1,069         90         1,159           2022         93         13         293         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         380         1,069         90         1,159           2026         272         13         285         1,069         90         1,159           2036         93         1,069         90         1,159           2037         13         285         1,069         90         1,159           2036         93         1,069         90         1,159           2037         13         -580         1,069         90         1,159           2037         13         -580         1,069         90         1,159	2011	219	34	711	1,069	06	1,159	1,043	1,126
2013         93         296         389         1,069         90         1,159           2014         93         47         140         1,069         90         1,159           -2022         93         13         106         1,069         90         1,159           2023         280         13         293         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         285         1,069         90         1,159           -2036         93         13         106         1,069         90         1,159           2037         13         285         1,069         90         1,159           2036         93         1,169         90         1,159           2037         13         -580         1,069         90         1,159	2012	455	95	550	1,069	06	1,159	1,043	1,126
2014         93         47         140         1,069         90         1,159           -2022         93         13         106         1,069         90         1,159           2023         280         13         293         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         380         1,069         90         1,159           -2026         272         13         285         1,069         90         1,159           -2036         93         13         106         1,069         90         1,159           2037         -593         13         -580         1,069         90         1,159	2013	93	296	389	1,069	06	1,159	1,043	1,126
- 2022         93         13         106         1,069         90         1,159           2023         280         13         293         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         380         1,069         90         1,159           -2026         272         13         285         1,069         90         1,159           -2036         93         13         106         1,069         90         1,159           2037         -593         13         -580         1,069         90         1,159		93	47	140	1,069	06	1,159	1,043	1,126
2023         280         13         293         1,069         90         1,159           2024         367         13         380         1,069         90         1,159           2025         367         13         380         1,069         90         1,159           2026         272         13         285         1,069         90         1,159           2036         93         13         106         1,069         90         1,159           2037         -593         13         -580         1,069         90         1,159	1	93	13	106	1,069	06	1,159	1,043	1,126
2024         367         13         380         1,069         90         1,159           2025         367         13         380         1,069         90         1,159           2026         272         13         285         1,069         90         1,159           -2036         93         13         106         1,069         90         1,159           2037         -593         13         -580         1,069         90         1,159	2023	280	13	293	1,069	06	1,159	1,043	1,126
2025         367         13         380         1,069         90         1,159           2026         272         13         285         1,069         90         1,159           - 2036         93         13         106         1,069         90         1,159           2037         -593         13         -580         1,069         90         1,159	2024	367	13	380	1,069	06	1,159	1,043	1,126
2026         272         13         285         1,069         90         1,159           - 2036         93         13         106         1,069         90         1,159           2037         -593         13         -580         1,069         90         1,159	2025	367		380	1,069	06	1,159	1,043	1,126
$egin{array}{c ccccccccccccccccccccccccccccccccccc$	2026	272		285	1,069	06	1,159	1,043	1,126
<del>-5</del> 93	ı	93		106	1,069	06	1,159	1,043	1,126
	2037	-593	13	-580	1,069	06	1,159	1,043	1,126

Basic Assumptions

Equalizing discount rate (FIRR) = 8.0%

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

