THE SOCIALIST REPUBLIC OF THE UNION OF BURMA

THE MASTER PLAN SURVEY REPORT ON THE IRRAWADDY BASIN INTEGRATED AGRICULTURAL DEVELOPMENT

ANNEX J

HYDRO-POWER GENERATION

MARCH 1980

JAPAN INTERNATIONAL COOPERATION AGENCY

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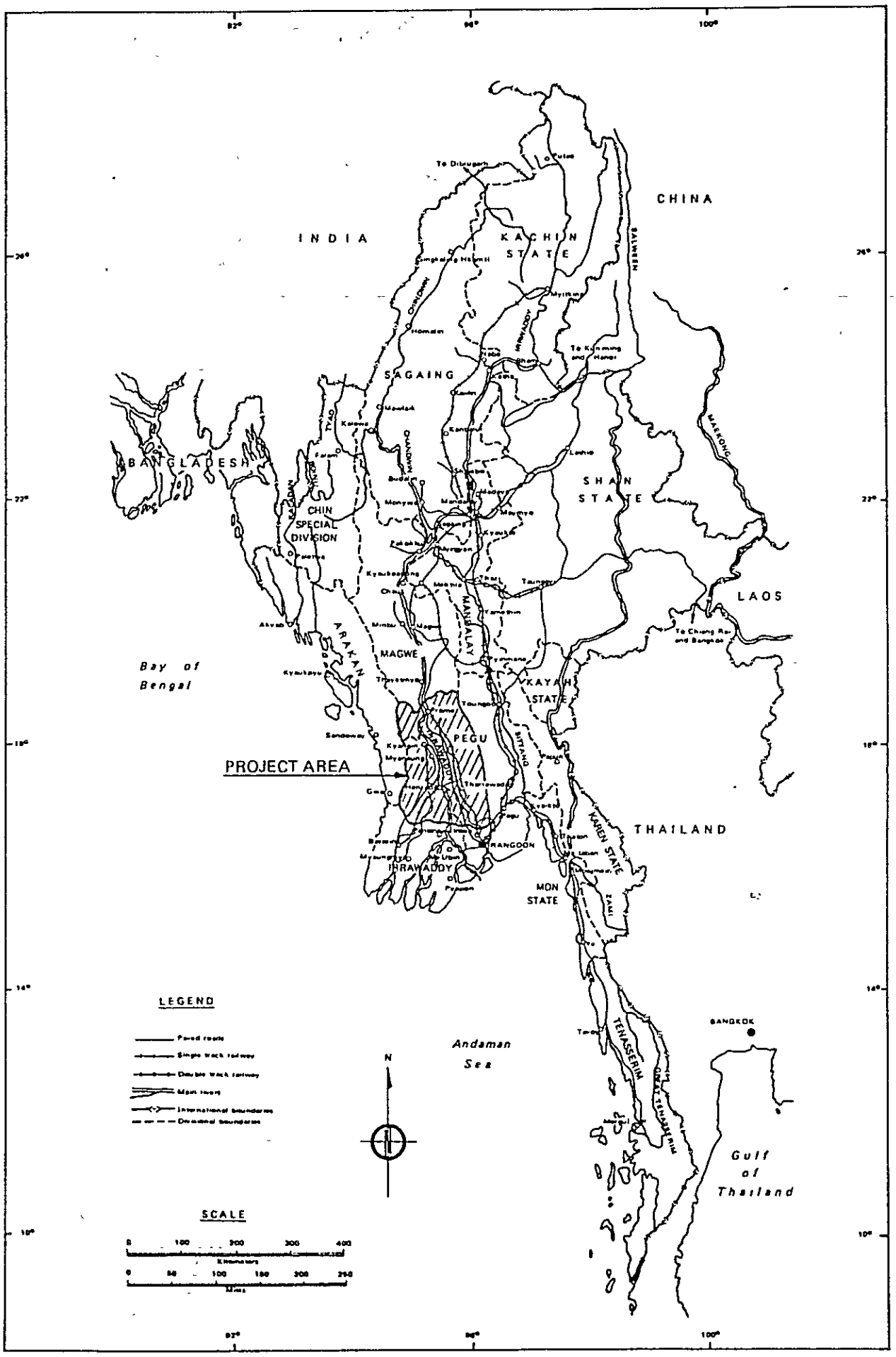
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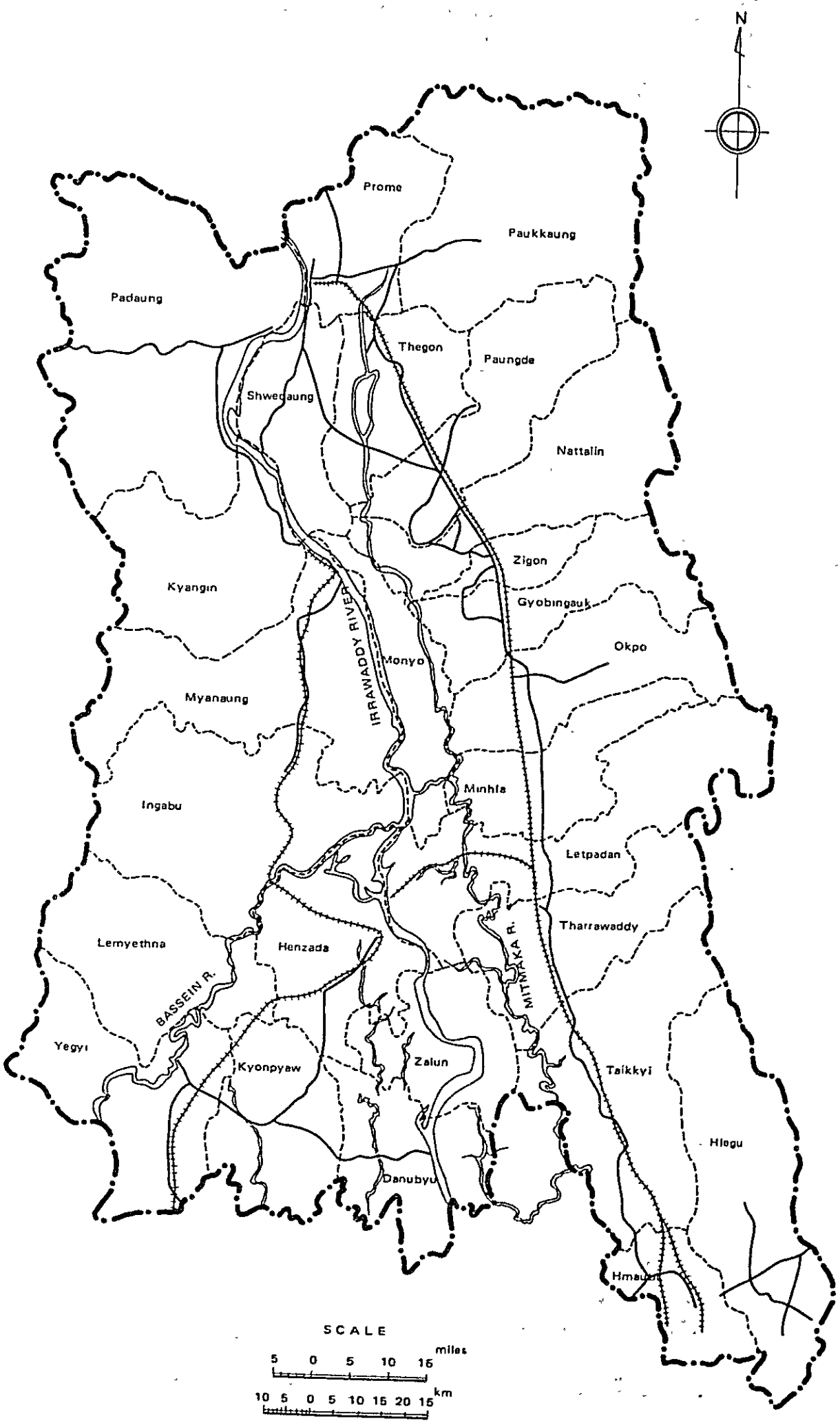
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Ingabu
Letpadan
Tharrawaddy
Lemyethna
Henzada
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MITHKA R.
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Kyonpyaw
Zalun
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Hmawbi
SCALE
miles
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km
10 5 0 5 10 15 20 15

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16) KYAUNYIN
17) MANKATHU
18) NANKATHU
19) GYAT
20) MEZILI
21) SOUTH KUN
22) KYETPAUNG
23) THEGAW

ABBREVIATION, MEASURES AND GLOSSARIES

AC	Agriculture Corporation
ADB	Asian Development Bank
AE	Assistant Engineer
AGM	Assistant General Manager
AFPTC	Agricultural and Farm Produce Trade Corporation
AMD	Agricultural Mechanization Department
APS	Advance Purchase System
Ave	Average
BAG	Bachelor of Agricultural University
BKT	Basket(s)
CIF	Cost Insurance and Freight
°C	Degree Centigrade
DAGM	Deputy Assistant General Manager
DG	Director General
DGM	Deputy General Manager
Dy	Deputy
EE	Executive Engineer
EL	Elevation
EPC	Electric Power Corporation
FC	Foreign Currency
FiD	Fishery Department
FERD	Foreign Economic Relations Department
FIC	Foodstuff Industries Corporation
FOB	Free on Board
FoD	Forest Department
F/S	Feasibility Study
FY	Fiscal Year from April to March
GM	General Manager
GNP	Gross National Product
GWH	Giga Watt Hour
HP	Horsepower

HWL	High Water Level
HYV	High Yielding Variety (of paddy)
Hz	Hertz per second
IBRD	International Bank for Reconstruction and Development
ID	Irrigation Department
IDA	International Development Association
KV	Kilo Volt
KW	Kilo Watt
KWH	Kilo Watt Hour
LC	Local Currency
LDMC	Livestock Development and Marketing Corporation
LIV	Local Improved Variety
LWL	Lower Water Level
LV	Local Variety
MAF	Ministry of Agriculture and Forests
MD	Managing Director
MHD	Meteorological and Hydrological Department
MI 1	Ministry of Industry No. 1
M/P	Master Plan
MPF	Ministry of Planning and Finance
MT	Ministry of Trade
MW	Mega Watt
MWL	Mean Water Level
PD	Project Director
pH	Potential of Hydrogen
PPFC	People's Pearl and Fishery Corporation, MAF
PPM	Part(s) per Million
%	Percent
PSD	Planning and Statistics Department
SD	Survey Department, MAF
SLRD	Settlements and Land Records Department, MAF
TC	Timber Corporation, MAF
TEM	Township Extension Manager
TSP	Triple Super Phosphate

UCC	University Computer Center
UGCF	Union Government Consolidated Fund
VAHD	Veterinary and Animal Husbandry Department
VTB	Village Tract Banks
WPSD	Working People's Settlement Department

MEASURES

Length

mm	millimeter (s)
cm	centimeter (s)
m	meter (s)
km	kilometer (s)
inch	25.4 mm
ft	foot (feet) = 12 inch = 30.48 cm
mile	5,280 feet = 1.609 km

Area

sq.cm	square centimeter (s)
sq.m	square meter (s)
sq.km	square kilometer (s) = 100 ha
ac	acre (s) = 4,047 sq.m
sq.mile	square mile = 2.59 sq.km = 640 ac
ha	hectare

Capacity

ℓ	litter
cu.m	cubic meter
MCM	Million Cubic Meter
cu.ft	cubic foot (feet) = 28.32 ℓ
cu.yd	cubic yard = 0.765 cu.m
AF	Acre Foot (feet) = 1,233.48 cu.m
Qt	Quart = 1/4 gl = 1.136 ℓ (UK) = 0.946 ℓ (US)
gl	gallon = 4.543 ℓ (UK) = 3.785 ℓ (US)

Note: UK: British Measure
US: US Measure

Weight

g	gram (s)
kg	kilogram (s)
ton	metric ton
oz	ounce = 28.4 g
lb	Pound = 16 oz = 0.454 kg

Others

cm/sec	centimeter per second
m/sec	meter per second
km/sec	kilometer per second
mile /hr	mile per hour= 1.609 km/hr = 0.447 m/sec
ft/second	feet per second
cu.m/sec	cubic meter per second
cfs/cu.sec	cubic foot (feet) per second = 0.0283 cu.m/sec
gl/sec	gallon per second = 4.543 ℓ/sec = 0.0757 ℓ/min

Glossaries

lakh	100,000
crore	10,000,000
viss	1.633 kg
Pyi	2,127 kg
basket	20.9 kg (paddy)
basket	34.0 kg (rice)
bag	75.6 kg (rice)
Chaung	River or Stream
Kyat	Unit of Local Currency (about 30 Japanese Yen)
In	Lake or Swamp area
Yoma	Mountain range
1 US$	6.44 kyats

SUMMARY

1. The electricity situation in Burma has advanced remarkably during a decade of 1967/68-1976/78. Namely, the installed capacity doubled from 200 MW in 1967/68 to 400 MW in 1976/77. The proportion between hydropower and thermal power is about 43:57 throughout the decade.

2. The generated energy in 1976/77 figures out at 810 KWH in which hydropower is 630 KWH or 78%, and thermal power 180 KWH or 22%. The generated energy also achieved the growth of double during the decade.

3. The breakdown of the generated energy in 1976/77 indicates that the industry use accounted for 53%, the general use 24% or 607 KWH in total.

4. The Government intends to double the share of power generation in sectors from 0.7 to 1.4 during the period of the twenty-year plan (1974/75-1993/94). This figure coincides with the policy to double the share of manufacturing industry from 11.5% to 22.1%.

5. There is no hydropower station in the Area, but there is gas turbine power generation plant (3 sets) with capacity of 16,400 KW output in Myanaung at present. Transmission line with 66 KV, 205 miles long runs through the left bank of the Irrawaddy River, and the line with 33 KV, 220 miles long in the right bank.

6. Most of the town in the Area is already electrified but the ratio of electrification comes up only 10% in the village area. The Government puts emphasis on the rural electrification on principle, but the progress is not satisfactory because the

villages and hamlets scatter over the large area.

7. An economic calculation was conducted against the proposed 24 hydropower stations. The total output is estimated at 38,000 KW or 1,580 KW per station which is rather small in scale. The generated energy is 130 MWH in total or 540 MWH per place. There are 13 power stations in which the benefit/cost ratio (B/C) proved to be more than 1.0. The maximum B/C was 2.97 in Kyangin.

8. All of the proposed hydropower plans appertain to the irrigation reservoirs which are comparatively small in size, runoff amounts or catchment areas. Furthermore, the duration of power generation is limited within dry season, thus they are obliged to be less output and economic efficiency.

9. Despite such drawbacks mentioned above and since the hydropower utilizes regenerative energy within the natural cycle, the Government intends to develop the hydropower potentiality powerfully from standpoint of energy policy.

I. BACKGROUND INFORMATION

I-1. History of Electric Industry

The electric industry in Burma commenced when the Angro-Burma Company established for management of steam engines acquired the rights for street light and general electricity supply. The electricity industry in prewar Burma was 102 in total number of enterprises or 33.8 MW in capacity of installation accounting for only 3% of hydropower portion.

A power generation capacity in local areas exclusive of Rangoon and Mandalay was as small as 100 KW which was mostly supplied with small size diesel generators, 90 in numbers. Further, privately owned power plants under mining enterprises were well-developed as 16,000 KW or six places in hydropower stations, 20,000 KW or nine places in thermal power stations and other small-scale diesel power stations. These were, however, destroyed during the World War II.

The Electricity Department was established in 1947 under the Ministry of Industry to restore the electric facilities. The Electricity Supply Act was enforced in 1948 and the Electricity Supply Board was set up under the Act. The Electricity Supply Board took over the Rangoon Electric Transway in 1953 and the nationalization propagated gradually towards local cities after 1953.

Meantime, the electric power generation capacity in Burma had been extended up to 191 MW in 1960 due to intensive investment of the Government along with her electric power development program.

The Baluchaung power plant (current output 168 MW) undertaken by Japanese reparation works was also incorporated in the program.

The Electricity Supply Board was reorganized in the Electric Power Corporation, 1972. The Electric Power Corporation (EPC) is

controlled under the Ministry of Industry No. 2 and is fully responsible for power generation and power transmission. The EPC's operations cover investigation and exploitation of hydropower resources, electricity supply and other related services.

I-2. Supply and Demand

The electricity demand increased annually as sharp as 20% during 1956 to 1960, however, the increase ratio slowed down after 1961. An annual generation in 1976 reached 810 GWH among which 697 GWH was consumed. (607 GHW was sold). (See Table J-1). The consumed electricity in 1976 is 697 GWH and its breakdown is 201 GWH (28.8%) for domestic and bulk use, 360 GWH (51.6%) for industrial use and 136 GWH (19.6%) for general purpose use and other use.

An average annual increase rate for domestic and general purpose uses during 1967 to 1976 was 10%. The industrial use fluctuated largely during the period. Sharp increase in demand is anticipated for fertilizer factories in sale and Kyunchaung, and cement factory in Kyangin which are expected to commence full operation. The total sales of units by users are presented in Table J-2.

I-3. Major Electric Facilities

1) Power Station

Unit sizes of existing EPC system are presented below.

Name of Station	Type	No. of Unit	Firm Capacity
Lawpita	Hydro	6	140 MW
Kyunchaung	Gas Turbine	3	61 MW
Myanaung	-do-	3	49 MW
Ahlone	Steam Turbine	3	20 MW
Ywama	-do-	3	20 MW
Moulmein	-do-	2	12 MW

TABLE J-1 ELECTRIC POWER GENERATION

Year	Installed Capacity (MW)			Generated Energy (Million KWH)			Increment	
	Hydro	Steam	Total	Hydro	Steam	Total	Mil KWH	%
1965/66	84.45	109.9	194.35	272.7	109.7	382.4	2.6	0.5
1966/67	84.45	109.9	194.35	285.7	98.5	384.2	1.8	0.3
1967/68	84.45	113.8	198.25	272.9	117.7	390.6	6.4	1.9
1968/69	84.45	113.8	198.25	314.1	122.4	436.5	45.9	1.0
1969/70	84.45	113.8	198.25	340.4	126.9	467.3	30.8	0.6
1970/71	84.45	117.8	202.25	408.7	136.3	545.0	77.7	14.1
1971/72	84.45	117.8	202.25	475.0	140.8	615.8	70 8	11.3
1972/73	84.45	117.8	202.25	480.7	169.8	650.5	34.7	5.2
1974/75*	168.45	117.8	286.25	512.0	170.4	682.4	-	-
1975/76*	168.45	226.85	395.30	540.0	180.0	720.0	37.6	5.1
1976/77*	168.45	226.85	395.30	630.0	180.0	810.0	90.0	11.1

Note: * mark denotes provisional

TABLE J-2 TOTAL SALES OF UNITS

(Unit: Million K.W.H.)

Sr. No.	Particulars	1967/68	1968/69	1969/70	1970/71	1971/72	1972/73	1973/74*	1974/75	1975/76	1976/77 P.A.
1.	General Purpose	82.91	89.69	93.34	100.47	108.57	111.74	61.50	123.87	134.20	146.75
2.	Demestic Power	12.73	13.98	15.64	15.00	16.25	19.15	9.10	21.17	23.20	24.59
3.	Industrial	132.75	139.35	155.39	200.54	247.73	260.13	129.44	266.38	293.37	321.62
4.	Bulk	42.96	45.79	52.10	56.48	65.53	74.22	38.31	70.13	78.98	88.02
5.	Street Light	20.98	21.56	22.26	23.07	24.67	25.45	12.46	24.84	24.87	24.90
6.	Flat Rate	0.04	0.03	0.01	0.01	0.01	-	-	-	-	-
7.	Special	0.12	0.15	0.10	0.09	0.10	0.08	0.03	0.07	-	-
8.	Temporary Lighting	0.35	0.48	0.40	0.50	0.49	0.82	0.48	0.96	0.90	0.91
9.	Departmental (B.P.C.)	0.36	0.41	0.39	0.43	0.45	-	0.21	0.47	0.43	0.47
	Total	293.20	311.44	339.63	396.59	463.80	491.59	251.53	507.89	555.95	607.26

Note: * Half Year

P.A. Provisional Actual

Main supply-source of electric power in Burma is Lawpita hydro-power plant located in Loikan, Kayah State as seen from the above table. In addition, the Ministry of Industry No. 2 has two diesel power plants at Sinde and Htownbo, 20 MW each in capacity.

2) Transmission Facilities

The Lawpita power plant feeds to Rangoon with transmission line of 230 KV, 250 miles long via Toungoo and to Mandalay, Chauk and Kyunchaug with 132 KV line via Thazi. The Myanaung gas turbine plant is connected to Prome and Sinde with 66 KV, 50 miles line and to Myannamya via Henzada and Bassein The major transmission line is shown below. (See Figure J-1).

Transmission Line	Voltage (KV)	Length (miles)
South (to Rangoon)	230	250
North (to Mandalay)	132	314
-do-	66	149
Myanaung	66	205
Service Wire	33	653
-do-	11	2,213
-do-	0.4	3,956

The service wire of high voltage is 11 KV or 6.6 KV and low one is 230/400 V with 3 phases 4 wires and 50 Hz cycle.

The loss rate is as high as 22%. The annual generation is 750 GWH, while consumption is 552 GWH. The voltage also fluctuates widely.

I-4. Power Development Plan

A number of power development plans has been proposed under foreign aids as per Table J-3. These are mostly studied and contemplated between the Government and the IBRD. The Burmese Government Government conceives own power projects under Five-Year Plan (1980/81-

TABLE J-3 POWER DEVELOPMENT PLANS

Year		Power station	Transmission line
1980/81	Facility	-	Myanaung - New Rangoon 2 ccts., 320 km
	Capacity	-	132 kV, 397.5 MCM
	Cost (US$10^3)	-	22,800
	Facility	-	Rangoon P/S - Rangoon S/S 2 ccts., 10 km
	Capacity	-	230 kV, 795 MCM
	Cost (US$10^3)	-	1,135
1981/82	Facility	-	Baluchaung - Rangoon 1 cct., 430 km
	Capacity	-	230 kV, 795 MCM
	Cost (US$10^3)		32,096
1982/83	Facility	Sedawgyi hydro P/S	Sedawgyi P/S - Mandalay 2 ccts., 60 km
	Capacity	20 MW (Firm 6 MW)	132 kV, 397.5 MCM
	Cost (US$10^3)	17,160	4,247
	Facility	Chauk Steam Turbine	Toungoo - Prome 2 ccts., 160 km
	Capacity	18 MW (Firm 18 MW)	132 kV, 397.5 MCM
	Cost (US$10^3)	12,230	11,400
1983/84	Facility	-	Mann - Magwe 2 ccts., 56 km
	Capacity	-	132 kV, 397.5 MCM
	Cost (US$10^3)	-	3,990
	Facility	Mann Gas Turbine	Chauk - Prome 2 ccts., 300 km
	Capacity	18 MW (Firm 18 MW)	132 kV, 397.5 MCM
	Cost (US$10^3)	7,100	21,373

(cont'd)

Year		Power station	Transmission line
1984/85	Facility	Mann Gas Turbine	Thazi - Toungoo 2 cct., 240 km
	Capacity	2 x 18 MW (Firm 2 x 18 MW)	230 kV, 795 MCM
	Cost (US$10^3)	11,200	27,141
1985/86	Facility	Rangoon Steam Trubine	Kyunchaung - Chauk 1 cct., 39 km
	Capacity	50 MW (Firm 50 MW)	132 kV, 336.4 MCM
	Cost (US$10^3)	31,135	1,901
	Facility	-	Mandalay - Thazi 1 cct., 135 km
	Capacity	-	132 kV, 336.4 MCM
	Cost (US$10^3)	-	6,649
1986/87	Facility	Yenwe hydro P/S	Yenwe P/S - Pegu 2 ccts., 100 km
	Capacity	36 MW (Firm 5 MW)	132 kV. 397.5 MCM
	Cost (US$10^3)	18,352	7,124
	Facility	Nyaunggyat hydro P/S	Nyaunggyat P/S - Thazi 2 ccts., 5 km
	Capacity	30 MW (Firm 8 MW)	132 kV, 397.5 MCM
	Cost (US$10^3)	17,073	355
	Facility	-	Chauk - Thazi 1 cct., 144 km
	Capacity	-	132 kV, 336.4 MCM
	Cost (US$10^3)	-	70,083
1987/88	Facility	Paunglaung hydro P/S	Paunglaung P/S-Pyinmana 2 ccts., 30 km
	Capacity	61 MW (Firm 61 MW)	230 kV, 795 MCM
	Cost (US$10^3)	95,363	3,393

(cont'd)

Year		Power station	Transmission line
1988/89	Facility	Rangoon Steam Turbine	-
	Capacity	2 x 50 MW (Firm 2 x 50 MW)	-
	Cost (US$10^3)	56,699	-
1989/90	Facility	-	-
	Capacity	-	-
	Cost (US$10^3)	-	-
1990/91	Facility	Rangoon Steam Turbine	-
	Capacity	50 MW (Firm 50 MW)	-
	Cost (US$10^3)	25,514	-

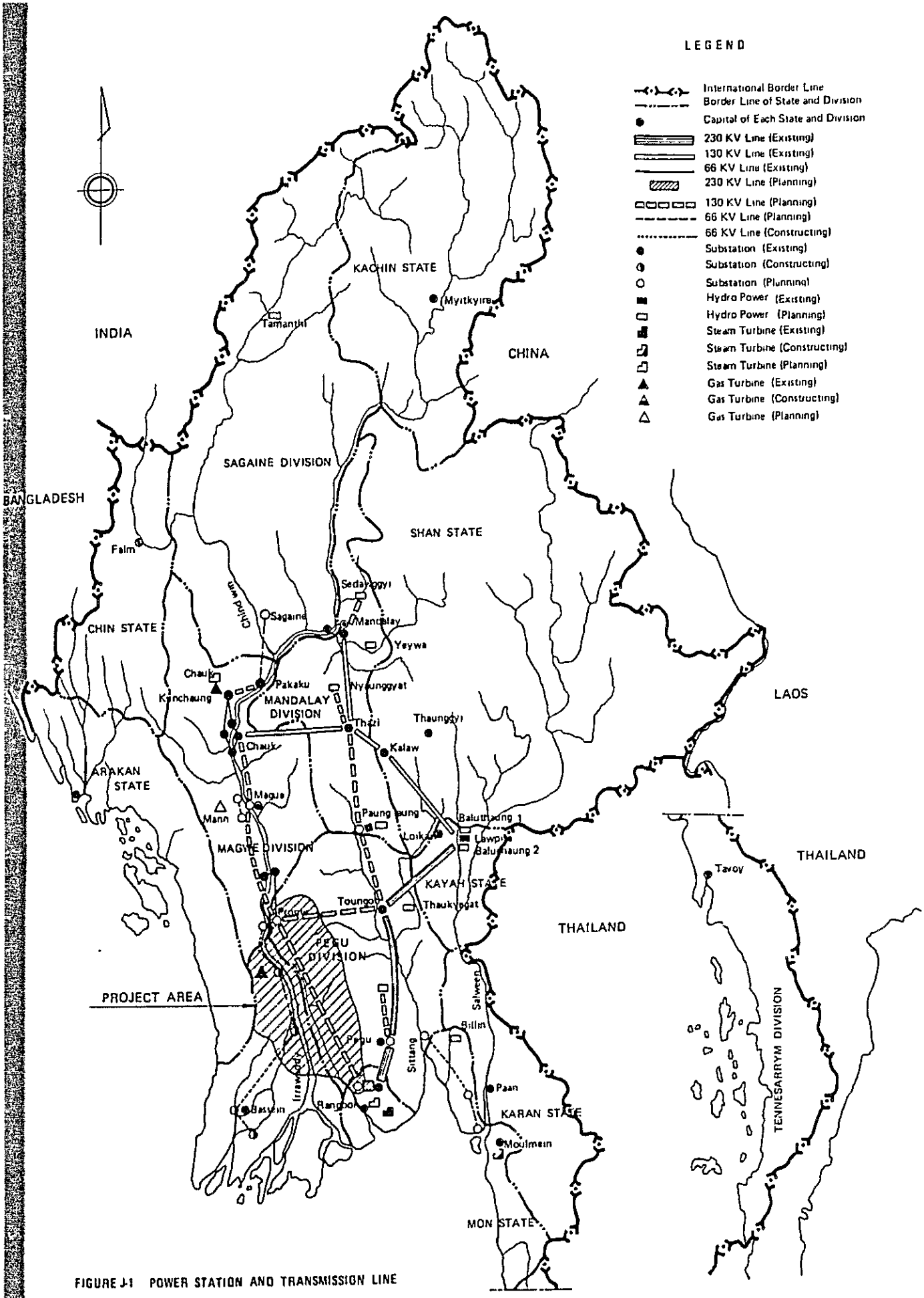

FIGURE J-1 POWER STATION AND TRANSMISSION LINE

1984/85 as shown in Table J-4.

I-5. Energy Sources

The Oil and Gas Journal 1976 reported that the reserves of oil in Burma would be 63 million barrels, while annual production came up to 7.8 million.barrels. The reserves of natural gas would be 4,245 cu.m and annual production was 200 million cu.m. A development potentiality of hydropower is said to be 3 million KW according to the World Energy Report. Since the developed capacity is 168 thousand KW, the ratio of development is as low as 5.6%.

Among these energy sources, the hydropower is a regenerative energy (soft energy) different from mineral energy (hard energy). Thus, the Government puts emphasis to develop such unfailing resources.

The Government intends to change the economic structure as shown in Table J-5 As is seen from Table J-5, the Government stresses to encourage the sectors of manufacturing industry and power generation. The demands for domestic use and general purpose use would not increase too much, however, the power demand for industrial use is expected to increase remarkably. The industrialization is now being implemented or proposed could refer to pulp factory in Yeni, fertilizer factory in Kyunchaung and tire factory in Thatoa.

A representative peak load curve is presented in Figure J-2. The load factor was 59.9% in 1976 and is expected to improve, as shown below.

LOAD FACTOR

Year	Load Factor
1976	59.9%
1981	66.0%
1986	69.5%
1991	68.0%

The future power demand in Burma studied by UNDP is as shown in Table J-6 and Figure J-3. The tariff is very low as shown in Table J-7.

TABLE J-4 PROPOSED POWER AND TRANSMISSION LINE PROJECT IN FIVE-YEAR PLAN

No.	Name of Project
1	Power (1) Projects (Con't.)
	(c) Chauk-Yenangyaung-Tangdwingyi-Prome (132) KV Transmsion Line (150miles)
	(d) Mann-Malun-Taungdwingyi (132) KV Transmission Line (60 miles)
2	Sedawgyi Hydro Electric Project
3	Yenwi Hydro Electric Project
4	Small Hydro Low Head, Power Station Projects
	(a) Yezin Hydro-electric Project
	(b) North Nawin Hydro-electric Project
	(c) Kyetmauktang Hydro-electric Project
5	Mogok Hydro Electric Project
6	Small Hydro Medium and High Head Power Station Project
	(a) Za Lui Hydro Electric Project
	(b) Ngal Sip Va Hydro-electric Project
	(c) Dawing Va Hydro-electric Project
7	Sittang-Kyaihto-Hninpale-Thaton 66/33 KV Transmission Line (60 miles)
8	Myanaung-Prome-Hlawga 230 KV Transmission Line (200 miles)
9	Chauk-Magwe 132 KV Transmission Line (75 miles)
10	Thaton-Martaban 66/33 KV Transmission Line (40 miles)

TABLE J-5 TARGET OF CHANGE IN ECONOMIC STRUCTURE

Sector	Share of Sector 1974/75 (%)	Share of Sector 1993/94 (%)	*Compound growth rate estimates during 20 years (%)
Agriculture	25.7	20.9	4.8
Meat & Fish Products	7.8	6.3	4.8
Forest Industries	2.6	2.1	4.8
Mining Industry	1.2	1.3	6.3
Manufacturing Industry	11.5	22.1	9.4
Power Generation	o.7	1.4	9.6
Construction Generation	1.9	2.4	7.2
Transport Generation	5.8	7.8	7.5
Communications Generation	0.3	0.4	7.4
Monetary and Financial	1.2	1.0	4.9
Social and Administration	9.2	7.7	5.0
House Rentals & Other Services	7.1	5.9	4.9
Trade	25.0	20.7	5.9
Total	100.0	100.0	5.9

Note; Average growth rates have been estimated, taking into account the change of share of the assumption of 2.3% of population growth rate and twice of GDP per capita as of 1993-94 into 20 years time from 1974-75

TABLE J-6 ENERGY PROJECTION

A. Probable Level (GWH (%))

Category	1975/76 (actual)	1980/81	1985/86	1990/91
(1) General Purpose	129 (23.4)	170 (17.4)	222 (13.2)	291 (10.2)
(2) Domestic Power	24 (4.3)	35 (3.6)	51 (3.0)	74 (2.6)
Sub-total	153 (27.7)	205 (21.0)	273 (16.2)	365 (12.8)
(3) Industrial	294 (53.3)	612 (62.5)	1,157 (68.7)	2,092 (73.1)
(4) Bulk	79 (14.3)	131 (13.4)	219 (13.0)	364 (12.7)
(5) Others	26 (4.7)	30 (3.1)	35 (2.1)	41 (1.4)
Sub-total	399 (72.3)	773 (79.0)	1,411 (83.8)	2,497 (87.2)-29
Total	552 (100)	978 (100)	1,684 (100)	2,862 (100)

B. Low Level (GWH (%))

Category	1975/76 (actual)	1980/81	1985/86	1990/91
(1) General Purpose	129 (23.4)	171 (18.6)	225 (15.4)	298 (12.8)
(2) Domestic Power	24 (4.3)	35 (3.8)	52 (3.6)	76 (3.2)
Sub-total	153 (27.7)	206 (22.4)	277 (19.0)	374 (16.0)
(3) Industrial	294 (53.3)	558 (60.9)	956 (65.5)	1,622 (69.5)
(4) Bulk	79 (14.3)	123 (13.4)	191 (13.1)	297 (12.7)
(5) Others	26 (4.7)	30 (3.3)	35 (2.4)	41 (1.8)
Sub-total	339 (72.3)	711 (77.6)	1,182 (81.0)	1,960 (84.0)
Total	552 (100)	917 (100)	1,459 (100)	2,334 (100)

TABLE J-7 TARIFFS FOR DISTRICTS

	(Unit/Month)	(Pyas/Unit)
1. General	1 - 100	46
	101 - 400	42
	400 -	40
2. Small Power	1 - 100	25
	101 - 300	20
	300 -	17
3. Industrial	1 - 200	25
(min. 500 units)	201 - 2,000	20
	2,000 -	15
4. Bulk	1 - 500	54
(min. 500 units)	501 - 5,000	44
	5,000 -	34

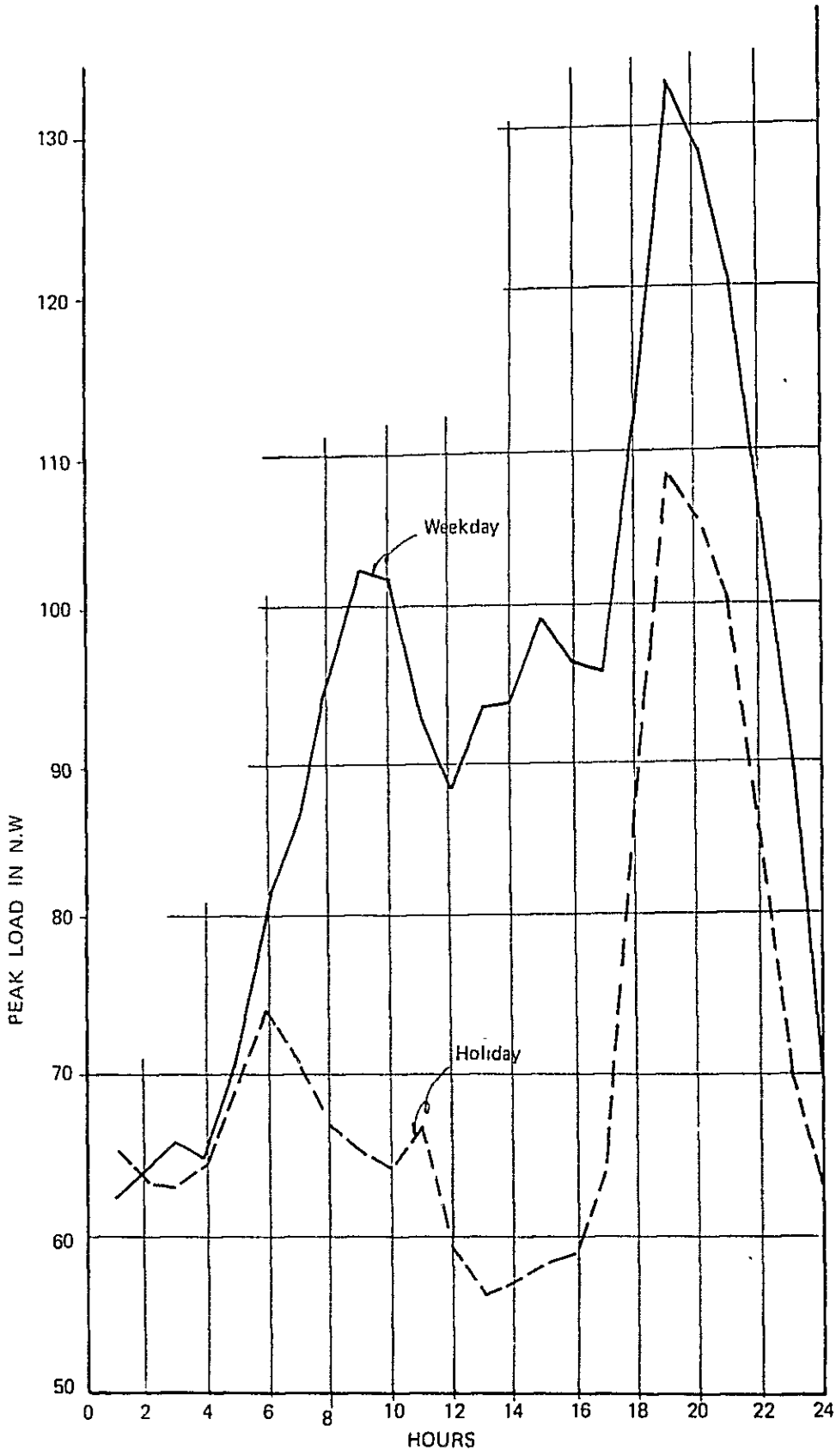

FIGURE J-2 LOAD CURVE ON A TYPICAL WEEKDAY AND HOLIDAY IN 1976

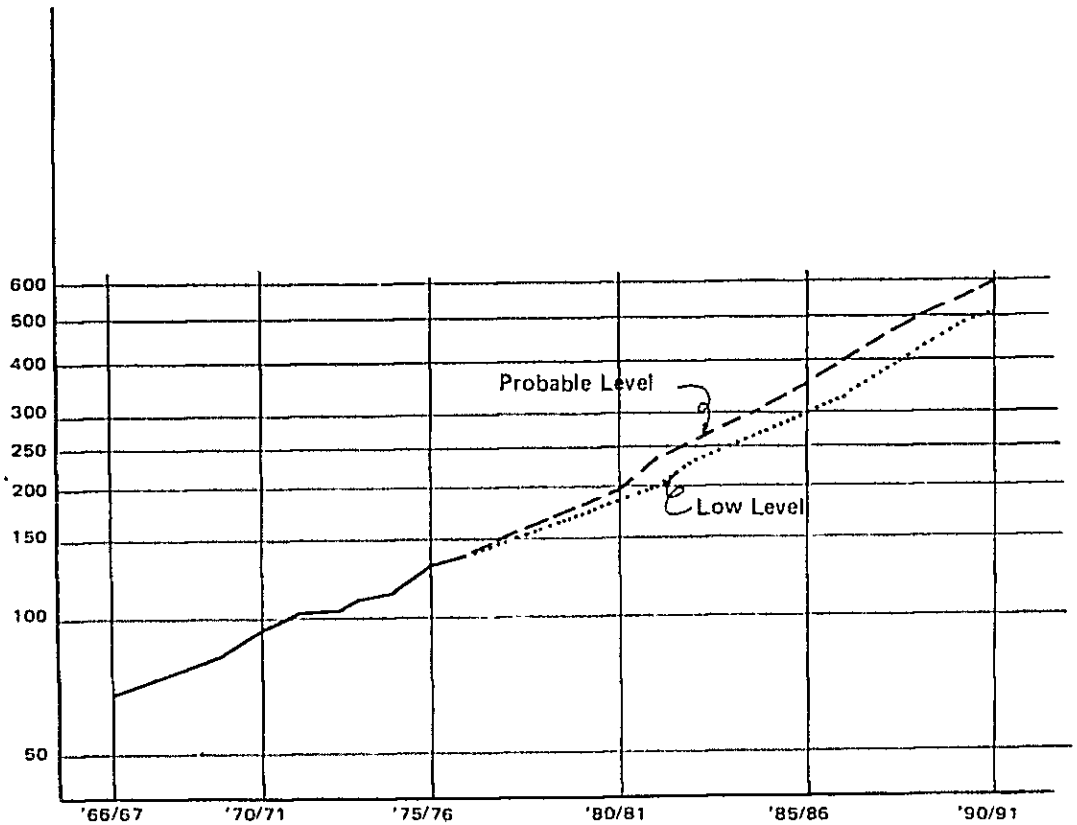

FIGURE J-3 GROWTH OF POWER DEMAND

II. POWER SITUATION IN THE AREA

II-1. Social Background

The Area has an area of approximately 2.9 million hectares and a population of about 3.3 million. There are 168 municipalities (towns), 1,454 village tracts and 9,076 villages An active labor population is estimated at 2.0 million, mostly engaging in agriculture. The Area forms granary in Burma producing about 60% of the whole paddy production. The natural gas power generation plant is located in Myanaung, the west bank of the Irrawaddy River and is feeding electricity to factories developed nearby.

Following factories are currently under operation:

a) cement factory in Kyangin
b) textile factory in Henzada
c) farming machinery factory in Padaung
d) electric devices factory in Padaung
e) pottery factory in Tharrawaddy
f) soccer ball factory in Taikkyi

There is 66 KV transmission line in the right bank of the Irrawaddy River. The line is connected with the gas turbine power plant in Myanaung and factory area.

II-2. Electricity Supply in the Area

Most of the towns in the area are electrified and about 160 village tracts out of 1,454 also are electrified. But there are no electricity services in the 9,000 villages. However, the Area is comparatively advanced in the rate of electrification. The survey of the EPC indicates that the country base electrification is undertaken only 263 towns and 709 village tracts.

The Area receives its power supply from the Myanaung gas turbine power station and the Lawpita hydropower station via Rangoon. The downstream parts of the Irrawaddy River form independent islands separated each other due to development of the delta. Thus, small-scale diesel generators are mostly employed in Monyo, Zalun and Danubyu. As a whole, about 11% out of 668 thousand households receive electric supply. It is estimated at 65.4 KW or 289 GWH in total demand.

II-3. Major Facilities

There is no hydropower station in the Area, but Myanaung gas turbine power station (3 sets) in capacity of 16,400 KW. The transmission line with 66 KV, 205 miles long is already completed in the right bank under financial support of ADB. The line goes through Bassein to Myannamya. Another transmission line, 33 KV, 220 miles long, traverses the left bank connecting between Rangoon and Prome, and feeds towns and villages along the line.

Major transformer facilities are located in Prome (20.0 MVA), Henzada (5.0 MVA) and Ngathaingoyaung (3.0 MVA). Principal service wires (11 KV) are extended from Prome to North Nawin and South Nawin, from Henzada to cement factory and limestone quarry site in Kyangin, and from Hgathaingoyaung to Kyaunggon and Tonpyaw. These are shown in Figure J-4.

II-4. Target Area

The power generation scheme under this study is featured that most of the generation period are limited to the dry season. It means that the output does not correspond to demand projection. The generated power will be delivered to the Area through the transmission lines mentioned in Figure J-4, and will provide an allowance to convert the output from the existing power stations such as Myanaung, Ranggon or Lawpita to other places. In some cases, the newly generated power may be used for irrigation

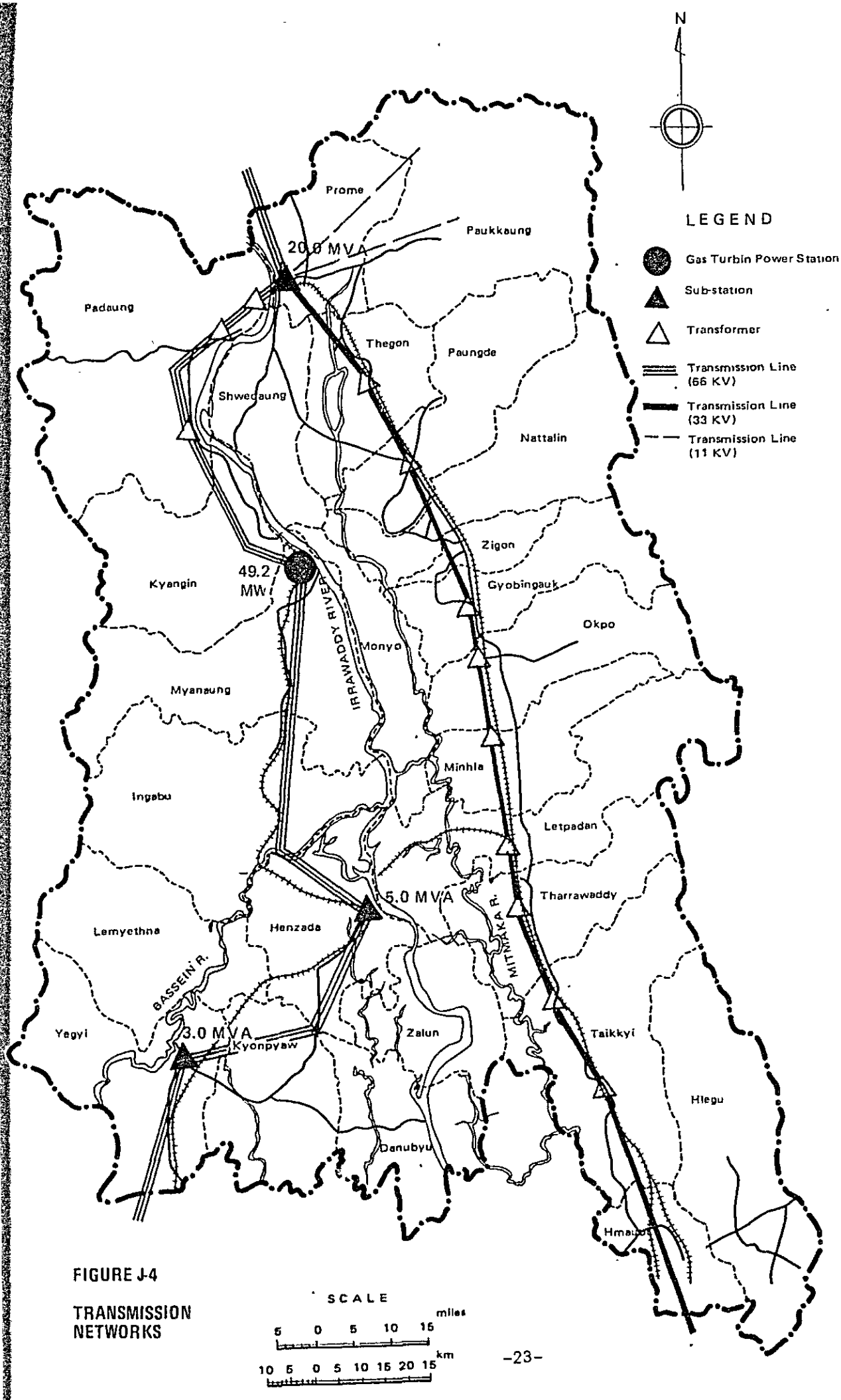

FIGURE J-4

TRANSMISSION NETWORKS

pumping plants during dry season. Therefore, the target area would not be limited to the small area.

II-5. Future Demand

As is stated in the previous section, the target area is not limited. But when the generated power is used in the vicinity of the Area to save the loss and capacity, Pegu and Rangoon divisions would be most suited as shown in Table J-8.

This is about 54% of total demand in 1990/91 and total output would be 256 GW estimating from the use ratio of facilities. The ratio of industrial use and domestic one would be 5.25. The demand in 1990/91 is equivalent to 3.9 times of current demand, 65.5 MW (1975/76).

II-6. Rural Electrification

The Government puts stress on the rural electrification in recent years as shown in Table J-9. The number of electrified towns and villages comes up to 320 in the Area representing rather high rate.

These are, however, limited to the densely populated towns and villages in the vicinity of the transmission lines or major service wires. On the contrary, no electricity services are available in the local areas. No electricity is used for farming activities such as threshing, polishing, pumping, etc.

The rural electrification has been conducted in the very limited areas, 10% out of 1,450 village tracts.

The cost of service wire works in the local areas is rather high because the houses lie scattered. Therefore, it is recommended to introduce productive electricity services rather than consumptive domestic use.

TABLE J-8 FORECAST DEMAND IN PEGU AND RANGOON

(Unit : GWH)

Year	Domestic	Industrial	Total
1975/76	93	196	289
77	96	221	317
78	102	264	366
79	108	297	405
80	116	309	425
1980/81	124	331	455
82	147	436	583
83	156	509	665
84	165	582	747
85	175	645	820
1985/86	185	728	913
87	198	844	1,042
88	209	946	1,155
89	222	1,049	1,271
90	235	1,153	1,388
1990/91	249	1,307	1,556

TABLE J-9 ELECTRIFIED TOWNS AND VILLAGES

Year	Town /3	Village /3
1961/62	317	371
66/67	324	382
67/68	329	392
68/69	335	402
69/70	335	408
70/71	335	410
71/72	335	410
72/23	262	516
73/74	263	652
74/75	263	695
75/76	263	708
76/77 /1	263	709
77/78 /2	263	709

Notes: /1 -- provisional actual.

/2 -- provisional.

/3 -- Number of towns and villages are revised with effect from 1972/73 in accordance with the new administrative system.

III. HYDROPOWER PLAN

III-1. Feature of Hydropower Plan

A dam type power generation is proposed in this Study, since the dam sites in the Area are situated in lower elevation with gentle river slope. An operation rule of the proposed reservoirs is subject to the irrigation demand which mostly concentrates during dry season. Thus, the power stations can not meet to the year-round electricity supply.

This proves that the power generation plan can not meet the requirement to serve independently within a limited area but can be materialized when the plan is incorporated in the nationwide power balance.

Most of the power generation sites is not economically advantageous. There are only 13 places out of 24 places where the irrigation dams are proposed.

A total output comes up around 100 GWH which corresponds less than 10% of future demand in the area.

III-2. Hydropower Plan

The hydropower generation plan was conducted as described in Appendix J-2. The summary-table is given in Table J-10. It is conclusively clarified that the advantageous sites are generally big in catchment area and abundant in river flow. The reservoir sites are presented in Table J-10 in economic viewpoint. Economic study was conducted as shown in Appendix J-1 and was summarized in Table J-11 which covers all reservoirs studied.

TABLE J-10 GENERAL FEATURE OF THE PROJECTS

No.	Reservoir Name	Draw-Down (M)	Effective Head (M)	Maximum discharge (M^3/S)	Peak Firm (KW)	Output (KW)	Generation (GW)	Plant Factor
1	KYANGIN	17.0	44.3	6.0	1,440	2,000	12.7	0.724
2	TAUNGNYO	12.2	25.9	9.3	1,160	1,800	10.6	0.672
3	BUYO	19.8	39.5	4.6	880	1,200	7.8	0.745
4	SOUTH NAWIN	13.1	24.0	11.0	1,890	2,100	11.1	0.610
5	WEGYI	21.6	31.5	18.3	0	4,200	13.0	0.352
6	ALMOYAK	34.3	51.0	3.5	710	1,200	5.4	0.511
7	THALEDAN	4.6	18.5	6.4	720	800	4.2	0.601
8	MANKATHU	38.6	49.5	7.5	0	2,700	6.8	0.288
9	THONZE	15.4	23.0	18.7	0	2,900	7.4	0.293
10	GYAT	30.5	39.8	8.4	0	2,400	6.4	0.303
11	NANKATHU	35.0	46.9	8.3	0	2,900	6.4	0.253
12	BAWBIN	20.0	33.3	7.0	0	1,700	5.3	0.355
13	MEZILI	30.7	39.8	7.7	0	2,200	6.0	0.313

TABLE J-11 CONSTRUCTION COST AND BENEFIT

No.	Name of reservoir	Output (KW)	Firm (KW)	Peak Firm (KW)	Generation (MWh)	Construction Cost (10^3Kyat)	Annual Benefit (10^3US$)	B/C -	B-C (10^3US$)	Cost/GW (Kyat/GW)	Cost/KWH (Kyat/KWH)
1.	South Nawin	2,100	0	1,890	10.09	28,800	821.2	1.64	321	13.7	2.60
2.	Wegyi	4,200	0	0	12.96	40,000	615.5	0.88	- 81	9.5	3.08
3.	Taungnyo	1,800	0	1,160	10.60	27,800	616.8	1.26	127	15.5	2.63
4.	Bawbin	1,700	0	0	5.29	26,700	251.4	0.53	-219	15.7	5.04
5.	Gamon	300	0	0	1.47	17,400	698.4	0.22	-243	57.9	11.80
6.	Minhla	500	0	330	2.12	19,700	132.8	0.38	-219	39.4	9.30
7.	Kadinbilin	1,500	0	0	4.09	26,900	194.2	0.41	-280	17.9	6.58
8.	Thonze	2,900	0	0	7.44	36,000	353.5	0.56	-275	12.4	4.83
9.	Okan	2,000	0	0	4.93	31,200	234.0	0.43	-313	15.6	6.34
10.	Naunggaing	100	0	80	0.53	12,900	330.6	0.13	-220	129.4	24.36
11.	Buyo	1,200	0	880	7.83	24,700	458.0	1.04	21	20.5	3.16
12.	Thaledan	800	0	720	4.21	21,600	270.6	0.70	-114	27.0	5.12
13.	Almoyak	1,200	0	710	5.37	24,400	324.4	0.75	-107	20.3	4.54
14.	North Kun	500	0	310	2.21	19,700	135.4	0.38	-217	39.4	8.91
15.	Phatashin	300	0	200	1.61	17,900	95.9	0.30	-226	59.8	11.16
16.	Mamya	1,500	0	0	4.34	26,800	206.0	0.44	-266	17.9	6.19
17.	Kyangin	2,000	440	1,440	12.69	28,200	743.6	1.50	247	14.1	2.23
18.	Mankathu	2,700	0	0	6.81	31,500	323.5	0.59	-229	11.7	4.62
19.	Nankathu	2,900	0	0	6.43	32,000	305.3	0.54	-255	11.0	4.98
20.	Gyat	2,400	0	0	6.38	31,500	302.8	0.55	-249	13.1	4.93
21.	Mezili	2,200	0	0	6.03	31,000	286.2	0.53	-257	14.1	5.14
22.	South Kun	2,200	0	0	5.15	31,700	244.4	0.44	-311	14.4	6.16
23.	Kyetpaung	400	0	380	0.75	20,200	72.6	0.20	-288	50.6	27.09
24.	Thegaw	600	0	0	1.65	20,300	78.4	0.21	-284	33.9	12.32

III-3. Basis for the Computation

Basic conditions for the hydropower generation plans are as follows:

1) Hydraulic Calculation

a) The hydraulic data such as inflow, water demand, reservoir storage volume, etc. are identical to the irrigation plan.

b) The priority was given to the irrigation water when the reservoir operation study was conducted, however, minor modification was employed to improve the power generation efficiency. (See the calculation form in Appendix J-2).

2) Calculation of Power Generation

a) Maximum discharge amount for irrigation during dry season was employed to the power generation calculation. Because the scale of power generation is small.

b) Datum water stage which dominates the maximum output was set at the center of gravity identical to the two-third of the effective reservoir depth.

3) Cost Estimate

a) Cost of major mechanical materials was estimated FOB Japan basis with exchange rate of 1 Kyat = 26 Yen.

b) Price escalation is not considered.

c) Annual costs include interest, amortization, interim replacement, etc., and administration cost was estimated at 0.131% of total cost.

4) Benefit Estimation

a) Capacity value is assumed to be 65$/KW/year.

b) Form energy value and secondary energy value are equivalent to 0.07$/KWH and 0.05$/KWH, respectively, when oil is 20$/barrel.

c) Transmission loss was assumed to be 0.05% and was deducted from the total output.

APPENDICES

CONSTRUCTION COST AND BENEFIT

WEGYI

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		419910.0	3246750.0	2161410.0	17860000.0	850000.0	24538064.0
(QUANTITY)	CM	(397.0)	(4805.0)	(3387.0)			
EXCAVATION		11910.0	144150.0	101610.0			
(QUANTITY)	DO	(190.0)	(1751.0)	(1808.0)			
CONCRETE		114000.0	1050600.0	1084800.0			
(QUANTITY)	TON	(6.0)	(91.0)	(45.0)			
IRON BAR		54000.0	819000.0	405000.0			
(QUANTITY)	DO	(12.0)					
PENSTOCK		240000.0					
(QUANTITY)	CM		(2055.0)				
HOUSE			1233000.0				
(QUANTITY)	TON			(19.0)			
GATE				570000.0			
(QUANTITY)	IS						
WHEEL					5977000.0		
(QUANTITY)	DO						
GENERATOR					7149000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					888000.0		
(QUANTITY)	KM					(17.0)	
TRNSMISSON						850000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION CONSULTING S.	CONTINGENCY	SVB . TOTAL	PRICE ESCALATION	TOTAL
24538064.0	2012121.0	2389515.0	4340951.0	33280624.0	6656124.0	39936736.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	12310172.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	615509.	615509.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
4200.	12958077.	31.50	18.30	0.	0.	429.

ANNUAL (B/C) (US DOLLARS)	ANNUAL (B-C) (KYATS)	COST/KWH (KYATS)	COST/KW (KYATS)
1.762	266282.	3.082	9509.

CONSTRUCTION COST AND BENEFIT

TAUNYO

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUTPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	248370.0	2430450.0	1715610.0	12005000.0	700000.0	17099424.0
(QUANTITY) CM	(299.0)	(4055.0)	(2627.0)			
EXCAVATION	8970.0	121650.0	78810.0			
(QUANTITY) DO	(139.0)	(1477.0)	(1403.0)			
CONCRETE	83400.0	886200.0	841800.0			
(QUANTITY) TON	(4.0)	(77.0)	(35.0)			
IRON BAR	36000.0	693000.0	315000.0			
(QUANTITY) DO	(6.0)					
PENSTOCK	120000.0					
(QUANTITY) CM		(1216.0)				
HOUSE		729600.0				
(QUANTITY) TON			(16.0)			
GATE			480000.0			
(QUANTITY) IS						
WHEEL				3483000.0		
(QUANTITY) DO						
GENERATOR				4295000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				381000.0		
(QUANTITY) KM					(14.0)	
TRNSMISSON					700000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVR TOTAL	PRICE ESCALATION	TOTAL
17099424.0	1402152.0	1665140.0	3025005.0	23191696.0	4638338.0	27830032.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	1160.	1608919.	8458656.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	81200.	112624.	422933.	616757.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
1800.	10597448.	25.93	9.30	0.	1160.	600.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
2.499	369972.	2.626	15461.

CONSTRUCTION COST AND BENEFIT

BAWBIN

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUTPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	220450.0	2700360.0	1565460.0	11068000.0	850000.0	16404270.0
(QUANTITY) CM	(275.0)	(4912.0)	(2362.0)			
EXCAVATION	8250.0	147360.0	70860.0			
(QUANTITY) DO	(127.0)	(1789.0)	(1261.0)			
CONCRETE	76200.0	1073400.0	756600.0			
(QUANTITY) TON	(4.0)	(93.0)	(32.0)			
IRON BAR	36000.0	837000.0	288000.0			
(QUANTITY) DO	(5.0)					
PENSTOCK	100000.0					
(QUANTITY) CM		(1071.0)				
HOUSE		642600.0				
(QUANTITY) TON			(15.0)			
GATE			450000.0			
(QUANTITY) IS						
WHEEL				3055000.0		
(QUANTITY) DO						
GENERATOR				3807000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				360000.0		
(QUANTITY) KM					(17.0)	
TRNSMISSON					850000.0	

CONSTRUCTION COST (KYATS)

O. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
16404270.0	1345150.0	1597446.0	2902026.0	22248864.0	4449772.0	26698624.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	5028269.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	251413.	251413.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
1700.	5292915.	33.27	7.00	0.	0.	750.

	ANNUAL (B/C) (US DOLLARS)	ANNUAL (B-C) (KYATS)	COST/KWH (KYATS)	COST/KW
	1.060	14202.	5.044	15705.

CONSTRUCTION COST AND BENEFIT

GAMON

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUTPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	136300.0	1912650.0	1027110.0	6688000.0	900000.0	10664060.0
(QUANTITY) CM	(230.0)	(4055.0)	(1477.0)			
EXCAVATION	6900.0	121650.0	44310.0			
(QUANTITY) DO	(104.0)	(1477.0)	(788.0)			
CONCRETE	62400.0	886200.0	472800.0			
(QUANTITY) TON	(3.0)	(77.0)	(20.0)			
IRON BAR	27000.0	693000.0	180000.0			
(QUANTITY) DO	(2.0)					
PENSTOCK	40000.0					
(QUANTITY) CM		(353.0)				
HOUSE		211800.0				
(QUANTITY) TON			(11.0)			
GATE			330000.0			
(QUANTITY) IS						
WHEEL				976000.0		
(QUANTITY) DO						
GENERATOR				1803000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				63000.0		
(QUANTITY) KM					(18.0)	
TRNSMISSON					900000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
10664060.0	874453.0	1038466.0	1886546.0	14463525.0	2892704.0	17356224.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	1396873.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	69844.	69844.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
300.	1470393.	24.67	2.00	0.	0.	750.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
0.442	-88317.	11.804	57854.

CONSTRUCTION COST AND BENEFIT

MINHLA

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	158940.0	2002650.0	1176600.0	7604000.0	1150000.0	12092190.0
(QUANTITY) CM	(238.0)	(4055.0)	(1740.0)			
EXCAVATION	7140.0	121650.0	52200.0			
(QUANTITY) DO	(108.0)	(1477.0)	(929.0)			
CONCRETE	64800.0	886200.0	557400.0			
(QUANTITY) TON	(3.0)	(77.0)	(23.0)			
IRON BAR	27000.0	693000.0	207000.0			
(QUANTITY) DO	(3.0)					
PENSTOCK	60000.0					
(QUANTITY) CM		(503.0)				
HOUSE		301800.0				
(QUANTITY) TON			(12.0)			
GATE			360000.0			
(QUANTITY) IS						
WHEEL				1405000.0		
(QUANTITY) DO						
GENERATOR				2247000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				106000.0		
(QUANTITY) KM					(23.0)	
TRNSMISSON					1150000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
12092190.0	991560.0	1177537.0	2139192.0	16400479.0	3280095.0	19680560.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	330.	457710.	1553514.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	23100.	32040.	77676.	132815.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
500.	2117079.	24.90	3.10	0.	330.	750.

ANNUAL (B/C) (US DOLLARS)	ANNUAL (B-C) (KYATS)	COST/KWH (KYATS)	COST/KW (KYATS)
0.747	-45013.	9.296	39361.

CONSTRUCTION COST AND BENEFIT

KADINBILIN

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		247690.0	2432310.0	1704450.0	11180000.0	950000.0	16514440.0
(QUANTITY)	CM	(296.0)	(4277.0)	(2595.0)			
EXCAVATION		8880.0	128310.0	77850.0			
(QUANTITY)	DO	(138.0)	(1558.0)	(1386.0)			
CONCRETE		82800.0	934800.0	831600.0			
(QUANTITY)	TON	(4.0)	(81.0)	(35.0)			
IRON BAR		36000.0	729000.0	315000.0			
(QUANTITY)	DO	(6.0)					
PENSTOCK		120000.0					
(QUANTITY)	CM		(1067.0)				
HOUSE			640200.0				
(QUANTITY)	TON			(16.0)			
GATE				480000.0			
(QUANTITY)	IS						
WHEEL					3046000.0		
(QUANTITY)	DO						
GENERATOR					3971000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					317000.0		
(QUANTITY)	KM					(19.0)	
TRNSMISSON						950000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB	TOTAL	PRICE ESCALATION.	TOTAL
16514440.0	1354184.0	1608175.0	2921517.0	22398288.0	4479657.0	26877936.0	

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	3883348.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	194167.	194167.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
1500.	4067735.	26.13	9.00	0.	0.	600.

ANNUAL (B/C)	ANNUAL (B-C) (US DOLLARS)	COST/KWH (KYATS)	COST/KW (KYATS)
0.813	-44561.	6.575	17919.

CONSTRUCTION COST AND BENEFIT

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DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUTPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		381290.0	2720850.0	2211540.0	15683000.0	1100000.0	22096672.0
(QUANTITY)	CM	(403.0)	(3955.0)	(3418.0)			
EXCAVATION		12090.0	118o50.0	102540.0			
(QUANTITY)	DO	(192.0)	(1441.0)	(1825.0)			
CONCRETE		115200.0	864600.0	1095000.0			
(QUANTITY)	TON	(6.0)	(75.0)	(46.0)			
IRON BAR		54000.0	675000.0	414000.0			
(QUANTITY)	DO	(10.0)					
PENSTOCK		200000.0					
(QUANTITY)	CM		(1771.0)				
HOUSE			1062600.0				
(QUANTITY)	TON			(20.0)			
GATE				600000.0			
(QUANTITY)	IS						
WHEEL					5129000.0		
(QUANTITY)	DO						
GENERATOR					6095000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					613000.0		
(QUANTITY)	KM					(22.0)	
TRNSMISSON						1100000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
22096672.0	1811927.0	2151772.0	3909052.0	29969392.0	5993878.0	35963264.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	7070160.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	353508.	353508.

K.W	K.W.H	E. HEAD MAX.	DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2900.	7442274.	22.97	18.75	0.	0.	429.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
1.120	37904.	4.832	12401.

CONSTRUCTION COST AND BENEFIT

OKKAN

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	360410.0	2354190.0	2074500.0	13296000.0	1100000.0	19185088.0
(QUANTITY) CM	(367.0)	(3553.0)	(3190.0)			
EXCAVATION	11010.0	106590.0	95700.0			
(QUANTITY) DO	(174.0)	(1294.0)	(1703.0)			
CONCRETE	104400.0	776400.0	1021800.0			
(QUANTITY) TON	(5.0)	(67.0)	(43.0)			
IRON BAR	45000.0	603000.0	387000.0			
(QUANTITY) DO	(10.0)					
PENSTOCK	200000.0					
(QUANTITY) CM		(1447.0)				
HOUSE		868200.0				
(QUANTITY) TON			(19.0)			
GATE			570000.0			
(QUANTITY) IS						
WHEEL				4165000.0		
(QUANTITY) DO						
GENERATOR				4862000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				423000.0		
(QUANTITY) KM					(22.0)	
TRNSMISSON					1100000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
19185088.0	1573177.0	1868242.0	3393973.0	26020464.0	5204092.0	31224544.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	4681324.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	234066.	234066.

K W	K W H	F. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2000.	4927710.	19.47	15.60	0.	0.	500.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
0.850	-41442.	6.337	15612.

CONSTRUCTION COST AND BENEFIT

NYAUNGGING

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		134350.0	1231680.0	893280.0	5543000.0	150000.0	7952310.0
(QUANTITY)	CM	(225.0)	(2656.0)	(1256.0)			
EXCAVATION		6750.0	79680.0	37680.0			
(QUANTITY)	DO	(101.0)	(967.0)	(671.0)			
CONCRETE		60600.0	580200.0	402600.0			
(QUANTITY)	TON	(3.0)	(50.0)	(17.0)			
IRON BAR		27000.0	450000.0	153000.0			
(QUANTITY)	DO	(2.0)					
PENSTOCK		40000.0					
(QUANTITY)	CM		(203.0)				
HOUSE			121800.0				
(QUANTITY)	TON			(10.0)			
GATE				300000.0			
(QUANTITY)	IS						
WHEEL					552000.0		
(QUANTITY)	DO						
GENERATOR					1124000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					21000.0		
(QUANTITY)	KM					(3.0)	
TRNSMISSON						150000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
7952310.0	652090.0	774396.0	1406819.0	10785615.0	2157122.0	12942737.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	80.	110960.	393747.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	5600.	7767.	19687.	33055.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
100.	531270.	13.30	1.30	0.	80.	750.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
0.274	-87761.	24.362	129427.

CONSTRUCTION COST AND BENEFIT

BUYO

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	219470.0	2734200.0	1520520.0	9611000.0	1100000.0	15184190.0
(QUANTITY) CM	(269.0)	(5400.0)	(2294.0)			
EXCAVATION	8070.0	162000.0	68520.0			
(QUANTITY) DO	(124.0)	(1967.0)	(1220.0)			
CONCRETE	74400.0	1180200.0	732000.0			
(QUANTITY) TON	(4.0)	(102.0)	(30.0)			
IRON BAR	36000.0	918000.0	270000.0			
(QUANTITY) DO	(5.0)					
PENSTOCK	100000.0					
(QUANTITY) CM		(790.0)				
HOUSE		474000.0				
(QUANTITY) TON			(15.0)			
GATE			450000.0			
(QUANTITY) IS						
WHEEL				2235000.0		
(QUANTITY) DO						
GENERATOR				3276000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				254000.0		
(QUANTITY) KM					(22.0)	
TRNSMISSON					1100000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
15184190.0	1245103.0	1478635.0	2686187.0	20594096.0	4118818.0	24712912.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	880.	1220559.	6217146.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	61600.	85439.	310857.	457896.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
1200.	7829164.	39.50	6.40	0.	880.	750.

ANNUAL (B/C) (US DOLLARS)	ANNUAL (B-C) (KYATS)	COST/KWH (KYATS)	COST/KW (KYATS)
2.077	237487.	3.157	20594.

CONSTRUCTION COST ANALYSIS

THALEDAN

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	218470.0	1765650.0	1520520.0	8960000.0	800000.0	13264640.0
(QUANTITY) CM	(269.0)	(3095.0)	(7234.0)			
EXCAVATION	8070.0	62850.0	68520.0			
(QUANTITY) DO	(124.0)	(1127.0)	(1220.0)			
CONCRETE	74400.0	676200.0	732000.0			
(QUANTITY) TON	(4.0)	(59.0)	(30.0)			
IRON BAR	36000.0	531000.0	270000.0			
(QUANTITY) DO	(5.0)					
PENSTOCK	100000.0					
(QUANTITY) CM		(776.0)				
HOUSE		465600.0				
(QUANTITY) TON			(15.0)			
GATE			450000.0			
(QUANTITY) IS						
WHEEL				2194000.0		
(QUANTITY) DO						
GENERATOR				2751000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				169000.0		
(QUANTITY) KM					(16.0)	
TRNSMISSON					800000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION.	TOTAL
13264640.0	1087700.0	1291710.0	2346607.0	17990656.0	3596130.0	21586784.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	720.	998640.	3005376.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	50400.	69905.	150269.	270574.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
800.	4214754.	18.47	6.40	0.	720.	750.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
1.395	76599.	5.122	26986.

CONSTRUCTION COST AND BENEFIT

ALONMOYAK

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		180260.0	3199200.0	1244430.0	9415000.0	950000.0	14988890.0
(QUANTITY)	CM	(242.0)	(6600.0)	(1821.0)			
EXCAVATION		7260.0	198000.0	54630.0			
(QUANTITY)	DO	(110.0)	(2404.0)	(973.0)			
CONCRETE		66000.0	1442400.0	583800.0			
(QUANTITY)	TON	(3.0)	(125.0)	(24.0)			
IRON BAR		27000.0	1125000.0	216000.0			
(QUANTITY)	DO	(4.0)					
PENSTOCK		80000.0					
(QUANTITY)	CM		(723.0)				
HOUSE			433800.0				
(QUANTITY)	TON			(13.0)			
GATE				390000.0			
(QUANTITY)	IS						
WHEEL					2039000.0		
(QUANTITY)	DO						
GENERATOR					3276000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					254000.0		
(QUANTITY)	KM					(19.0)	
TRNSMISSON						950000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION.	TOTAL
14988890.0	1229089.0	1459617.0	2651637.0	20329216.0	4065842.0	24395056.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	710.	984770.	4116001.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	49700.	68934.	205800.	324434.

K W	K W H	F. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
1200.	5369233.	50.96	3.50	0.	710.	750.

ANNUAL (B/C) (US DOLLARS)	ANNUAL (B-C) (KYATS)	COST/KWH (KYATS)	COST/KW
1.490	106714.	4.543	20329.

CONSTRUCTION COST & BENEFIT

NORTH KUN

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		156930.0	2494020.0	1046100.0	7422000.0	1000000.0	12119050.0
(QUANTITY)	CM	(231.0)	(5314.0)	(1530.0)			
EXCAVATION		6930.0	159420.0	45900.0			
(QUANTITY)	DO	(105.0)	(1936.0)	(817.0)			
CONCRETE		63000.0	1161600.0	490200.0			
(QUANTITY)	TON	(3.0)	(101.0)	(20.0)			
IRON BAR		27000.0	909000.0	180000.0			
(QUANTITY)	DO	(3.0)					
PENSTOCK		60000.0					
(QUANTITY)	CM		(440.0)				
HOUSE			264000.0				
(QUANTITY)	TON			(11.0)			
GATE				330000.0			
(QUANTITY)	IS						
WHEEL					1223000.0		
(QUANTITY)	DO						
GENERATOR					2247000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					106000.0		
(QUANTITY)	KM					(20.0)	
TRNSMISSON						1000000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
12119050.0	993762.0	1180152.0	2143944.0	16436908.0	3287381.0	19724288.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	310.	429970.	1672615.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	21700.	30098.	83631.	135429.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
500.	2213243.	36.57	2.20	0.	310.	750.

ANNUAL (B/C)	ANNUAL (B-C) (US DOLLARS)	COST/KWH (KYATS)	COST/KW (KYATS)
0.760	-42769.	8.912	39449.

CONSTRUCTION COST AND BENEFIT

PHATASHIN

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		134980.0	2375610.0	900540.0	6564000.0	1050000.0	11025130.0
(QUANTITY)	CM	(226.0)	(5227.0)	(1278.0)			
EXCAVATION		6780.0	156810.0	38340.0			
(QUANTITY)	DO	(102.0)	(1904.0)	(682.0)			
CONCRETE		61200.0	1142400.0	409200.0			
(QUANTITY)	TON	(3.0)	(99.0)	(17.0)			
IRON BAR		27000.0	891000.0	153000.0			
(QUANTITY)	DO	(2.0)					
PENSTOCK		40000.0					
(QUANTITY)	CM		(309.0)				
HOUSE			185400.0				
(QUANTITY)	TON			(10.0)			
GATE				300000.0			
(QUANTITY)	IS						
WHEEL					852000.0		
(QUANTITY)	DO						
GENERATOR					1803000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					63000.0		
(QUANTITY)	KM					(21.0)	
TRNSMISSON						1050000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
11025130.0	904061.0	1073626.0	1950422.0	14953239.0	2990647.0	17943872.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	200.	277400.	1249752.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	14000.	19418.	62488.	95906.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
300.	1607529.	35.93	1.36	0.	200.	750.

ANNUAL (B/C)	ANNUAL (B-C) (US DOLLARS)	COST/KWH (KYATS)	COST/KW (KYATS)
0.588	-67227.	11.162	59813.

CONSTRUCTION COST AND BENEFIT

MAMYA

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		180230.0	3615480.0	1237260.0	10004000.0	1450000.0	16486970.0
(QUANTITY)	CM	(241.0)	(7496.0)	(1802.0)			
EXCAVATION		7230.0	224880.0	54060.0			
(QUANTITY)	DO	(110.0)	(2731.0)	(962.0)			
CONCRETE		66000.0	1638600.0	577200.0			
(QUANTITY)	TON	(3.0)	(142.0)	(24.0)			
IRON BAR		27000.0	1278000.0	216000.0			
(QUANTITY)	DO	(4.0)					
PENSTOCK		80000.0					
(QUANTITY)	CM		(790.0)				
HOUSE			474000.0				
(QUANTITY)	TON			(13.0)			
GATE				390000.0			
(QUANTITY)	IS						
WHEEL					2234000.0		
(QUANTITY)	DO						
GENEPATOR					3607000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					317000.0		
(QUANTITY)	KM					(29.0)	
TRNSMISSON						1450000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVA	TOTAL	PRICE ESCALATION	TOTAL
16486970.0	1351031.0	1605500.0	2916657.0	22361040.0	4472207.0	26833232.0	

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	4119174.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	205959.	205959.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
1500.	4335973.	61.77	3.40	0.	0.	750.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
0.864	-32392.	6.189	17889.

CONSTRUCTION COST AND BENEFIT

KYANYIN

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		217150.0	3040200.0	1500870.0	11449000.0	1150000.0	17357216.0
(QUANTITY)	CM	(265.0)	(5700.0)	(2229.0)			
EXCAVATION		7950.0	171000.0	66870.0			
(QUANTITY)	DO	(122.0)	(2077.0)	(1190.0)			
CONCRETE		73200.0	1246200.0	714000.0			
(QUANTITY)	TON	(4.0)	(108.0)	(30.0)			
IRON BAR		36000.0	972000.0	270000.0			
(QUANTITY)	DO	(5.0)					
PENSTOCK		100000.0					
(QUANTITY)	CM		(1085.0)				
HOUSE			651000.0				
(QUANTITY)	TON			(15.0)			
GATE				450000.0			
(QUANTITY)	IS						
WHEEL					3097000.0		
(QUANTITY)	DO						
GENERATOR					4083000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					423000.0		
(QUANTITY)	KV					(23.0)	
TRNSMISSON						1150000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION.	TOTAL
17357216.0	1423292.0	1690244.0	3070609.0	23541344.0	4708268.0	28249600.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	1440.	1997279.	10059521.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	100800.	139810.	502976.	743586.

K W	K W H	F. HEAD MAX.	DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2000.	12691369.	44.33	6.00	440.	1440.	750.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
2.970	493250.	2.226	14125.

CONSTRUCTION COST AND BENEFIT

MANKATHU

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		262400.0	3540240.0	1617120.0	12757000.0	1150000.0	19326752.0
(QUANTITY)	CM	(290.0)	(660°.0)	(2424.0)			
EXCAVATION		8400.0	198240.0	72720.0			
(QUANTITY)	DO	(130.0)	(2407.0)	(1294.0)			
CONCRETE		78000.0	1444200.0	776400.0			
(QUANTITY)	TON	(4.0)	(125.0)	(32.0)			
IRON BAR		36000.0	1125000.0	288000.0			
(QUANTITY)	DO	(7.0)					
PENSTOCK		140000.0					
(QUANTITY)	CM		(1288.0)				
HOUSE			772800.0				
(QUANTITY)	TON			(16.0)			
GATE				480000.0			
(QUANTITY)	IS						
WHEEL					3694000.0		
(QUANTITY)	DO						
GENERATOR					4646000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					571000.0		
(QUANTITY)	KM					(23.0)	
TRNSMISSON						1150000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION	TOTAL
19326752.0	1584793.0	1862037.0	3419034.0	26212592.0	5242518.0	31455104.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	6469422.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	323471.	323471.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2700.	6809918.	49.53	7.50	0.	0.	750.

	ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
		(US DOLLARS)	(KYATS)	(KYATS)
	1.166	46012.	4.619	11650.

CONSTRUCTION COST AND BENEFIT

NANKATHU

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		265040.0	3482280.0	1667940.0	13215000.0	1050000.0	19680256.0
(QUANTITY)	CM	(288.0)	(6336.0)	(2518.0)			
EXCAVATION		8640.0	190080.0	75540.0			
(QUANTITY)	DO	(134.0)	(2308.0)	(1344.0)			
CONCRETE		80400.0	1384800.0	806400.0			
(QUANTITY)	TON	(4.0)	(120.0)	(34.0)			
IRON BAR		36000.0	1080000.0	306000.0			
(QUANTITY)	DO	(7.0)					
PENSTOCK		140000.0					
(QUANTITY)	CM		(1379.0)				
HOUSE			827400.0				
(QUANTITY)	TON			(16.0)			
GATE				480000.0			
(QUANTITY)	IS						
WHEEL					3965000.0		
(QUANTITY)	DO						
GENERATOR					4791000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					613000.0		
(QUANTITY)	KM					(21.0)	
TRNSMISSOM						1050000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINISTRATION	CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION.	TOTAL
19680256.0	1613731.0	1916462.0	3481571.0	26692048.0	5338409.0	32030448.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	6105436.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	305272.	305272.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2900.	6426777.	46.93	8.30	0.	0.	750.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
1.081	22945.	4.984	11045.

CONSTRUCTION COST AND BENEFIT

GYAT

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		265670.0	3157200.0	1671870.0	12887000.0	1350000.0	19331728.0
(QUANTITY)	CM	(289.0)	(5700.0)	(2529.0)			
EXCAVATION		8670.0	171000.0	75870.0			
(QUANTITY)	DO	(135.0)	(2077.0)	(1350.0)			
CONCRETE		81000.0	1246200.0	810000.0			
(QUANTITY)	TON	(4.0)	(108.0)	(34.0)			
IRON BAR		36000.0	972000.0	306000.0			
(QUANTITY)	DO	(7.0)					
PENSTOCK		140000.0					
(QUANTITY)	CM		(1280.0)				
HOUSE			768000.0				
(QUANTITY)	TON			(16.0)			
GATE				480000.0			
(QUANTITY)	IS						
WHEEL					3671000.0		
(QUANTITY)	DO						
GENERATOR					4862000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					508000.0		
(QUANTITY)	KM					(27.0)	
TRNSMISSON						1350000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION.	TOTAL
19331728.0	1535202.0	1882522.0	3419915.0	26219344.0	5243868.0	31463200.0

BENEFIT (US DOLLAR)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	6057852.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	302893.	302893.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2400.	6376683.	39.83	8.40	0.	0.	600.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
1.091	25300.	4.934	13110.

CONSTRUCTION COST AND BENEFIT

MEZILI

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	263060.0	3112200.0	1634640.0	12015000.0	2000000.0	19024896.0
(QUANTITY) CM	(282.0)	(5700.0)	(2448.0)			
EXCAVATION	8460.0	171000.0	73440.0			
(QUANTITY) DO	(131.0)	(2077.0)	(1307.0)			
CONCRETE	78600.0	1246200.0	784200.0			
(QUANTITY) TON	(4.0)	(108.0)	(33.0)			
IRON BAR	36000.0	972000.0	297000.0			
(QUANTITY) DO	(7.0)					
PENSTOCK	140000.0					
(QUANTITY) CM		(1205.0)				
HOUSE		723000.0				
(QUANTITY) TON			(16.0)			
GATE			480000.0			
(QUANTITY) IS						
WHEEL				3450000.0		
(QUANTITY) DO						
GENERATOR				4254000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				465000.0		
(QUANTITY) KM					(40.0)	
TRNSMISSON					2000000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION	TOTAL
19024896.0	1560041.0	1852642.0	3365634.0	25803200.0	5160639.0	30963924.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE F.	ENERGY VALUE F.	ENERGY VALUE S.	TOTAL
QUANTITY	0.	0.	5724133.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	286207.	286207.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2200.	6025404.	39.77	7.70	0.	0.	750.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
1.047	12905.	5.139	14074.

CONSTRUCTION COST AND BENEFIT

SOUTH KUN

DIRECT COST (KYATS)

UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE	266990.0	2915370.0	1687620.0	12652000.0	1950000.0	19471968.0
(QUANTITY) CM	(293.0)	(5139.0)	(2574.0)			
EXCAVATION	3790.0	154170.0	77220.0			
(QUANTITY) DO	(137.0)	(1372.0)	(1374.0)			
CONCRETE	82200.0	1123200.0	824400.0			
(QUANTITY) TON	(4.0)	(97.0)	(34.0)			
IRON BAR	36000.0	873000.0	306000.0			
(QUANTITY) DO	(7.0)					
PENSTOCK	140000.0					
(QUANTITY) CM		(1275.0)				
HOUSE		765000.0				
(QUANTITY) TON			(16.0)			
GATE			480000.0			
(QUANTITY) IS						
WHEEL				3658000.0		
(QUANTITY) DO						
GENERATOR				4683000.0		
(QUANTITY) DO						
SWITCH BORD				3846000.0		
(QUANTITY) DO						
TRANSFOMER				465000.0		
(QUANTITY) KM					(39.0)	
TRNSMISSON					1950000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION	TOTAL
19471968.0	1596701.0	1896178.0	3444724.0	26409552.0	5281910.0	31691456.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	P.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	4887903.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	244395.	244395.

K.W	K.W.H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2200.	5145162.	33.80	8.80	0.	0.	600.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
0.875	-35063.	6.159	14405.

CONSTRUCTION COST AND BENEFIT

KYETPAUNG

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		156990.0	1951050.0	1102830.0	7130000.0	2100000.0	12440870.0
(QUANTITY)	CM	(233.0)	(4055.0)	(1581.0)			
EXCAVATION		6990.0	121650.0	47430.0			
(QUANTITY)	DO	(105.0)	(1477.0)	(844.0)			
CONCRETE		63000.0	886200.0	506400.0			
(QUANTITY)	TON	(3.0)	(77.0)	(21.0)			
IRON BAR		27000.0	693000.0	189000.0			
(QUANTITY)	DO	(3.0)					
PENSTOCK		60000.0					
(QUANTITY)	CM		(417.0)				
HOUSE			250200.0				
(QUANTITY)	TON			(12.0)			
GATE				360000.0			
(QUANTITY)	IS				1158000.0		
WHEEL							
(QUANTITY)	DO				2041000.0		
GENERATOR							
(QUANTITY)	DO				3846000.0		
SWITCH BORD							
(QUANTITY)	DO				85000.0		
TRANSFOMER							
(QUANTITY)	KM					(42.0)	
TRNSMISSON						2100000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION	TOTAL
12440870.0	1020152.0	1211491.0	2200876.0	16873376.0	3374674.0	20248043.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	380.	527060.	183375.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	26600.	36894.	9154.	72648.

K W	K W H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
400.	747510.	27.23	2.40	0.	380.	750.

ANNUAL (B/C)	ANNUAL (B-C) (US DOLLARS)	COST/KWH (KYATS)	COST/KW (KYATS)
0.398	-109982.	27.087	50620.

CONSTRUCTION COST AND BENEFIT

THEGAW

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		197810.0	1719780.0	1510710.0	8270000.0	800000.0	12498300.0
(QUANTITY)	CM	(267.0)	(3146.0)	(2257.0)			
EXCAVATION		8010.0	94380.0	67710.0			
(QUANTITY)	DO	(123.0)	(1146.0)	(1205.0)			
CONCRETE		73800.0	687600.0	723000.0			
(QUANTITY)	TON	(4.0)	(60.0)	(30.0)			
IRON BAR		36000.0	540000.0	270000.0			
(QUANTITY)	DO	(4.0)					
PENSTOCK		80000.0					
(QUANTITY)	CM		(663.0)				
HOUSE			397800.0				
(QUANTITY)	TON			(15.0)			
GATE				450000.0			
(QUANTITY)	IS						
WHEEL					1866000.0		
(QUANTITY)	DO						
GENERATOR					2431000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFOMER					127000.0		
(QUANTITY)	KM					(16.0)	
-TRNSMISSON						800000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINESTRATION	CONSULTING S.	CONTINGENCY	SVB TOTAL	PRICE ESCALATION	TOTAL
12498300.0	1024861.0	1217084.0	2211036.0	16951280.0	3390255.0	20341520.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	0.	0.	1569145.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	0.	0.	78457.	78457.

K.W	K.W.H	E. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
600.	1651732.	16.30	6.20	0.	0.	750.

	ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
		(US DOLLARS)	(KYATS)	(KYATS)
	0.428	-104963.	12.315	33903.

CONSTRUCTION COST AND BENEFIT

SOUTH NAWIN

DIRECT COST (KYATS)

	UNIT	WATER WAY	POWER HOUSE	TAILRACE	P. EQUIPMENT	TRANSMISSION	TOTAL
TOTAL PRICE		274910.0	2533380.0	1823340.0	13255000.0	2350000.0	20236624.0
(QUANTITY)	CM	(317.0)	(4046.0)	(2798.0)			
EXCAVATION		9510.0	121380.0	83940.0			
(QUANTITY)	DO	(149.0)	(1474.0)	(1494.0)			
CONCRETE		89400.0	884400.0	896400.0			
(QUANTITY)	TON	(4.0)	(77.0)	(37.0)			
IRON BAR		36000.0	693000.0	333000.0			
(QUANTITY)	DO	(7.0)					
PENSTOCK		140000.0					
(QUANTITY)	CM		(1391.0)				
HOUSE			834600.0				
(QUANTITY)	TON			(17.0)			
GATE				510000.0			
(QUANTITY)	IS						
WHEEL					4000000.0		
(QUANTITY)	DO						
GENERATOR					4965000.0		
(QUANTITY)	DO						
SWITCH BORD					3846000.0		
(QUANTITY)	DO						
TRANSFORMER					444000.0		
(QUANTITY)	KM					(47.0)	
TRNSMISSON						2350000.0	

CONSTRUCTION COST (KYATS)

D. COST	ADMINISTRATION	CONSULTING S.	CONTINGENCY	SUB TOTAL	PRICE ESCALATION	TOTAL
20236624.0	1659493.0	1970643.0	3579997.0	27446640.0	5489327.0	32935952.0

BENEFIT (US DOLLARS)

	CAPACITY VALUE	F.ENERGY VALUE	S.ENERGY VALUE	TOTAL
QUANTITY	1930.	2538209.	5739635.	
UNIT PRICE	70.00	0.07	0.05	
BENEFIT	128100.	177675.	286982.	592756.

K W	K W H	F. HEAD	MAX.DISCHARGE	FIRM	PEAK FIRM	R.P.M.
2100.	9713521.	24.03	11.00	0.	1830.	500.

ANNUAL (B/C)	ANNUAL (B-C)	COST/KWH	COST/KW
	(US DOLLARS)	(KYATS)	(KYATS)
2.044	302767.	3.780	15084.

APPENDIX J-2 CALUCULATION OF POWER GENERATION

THE CALCULATION OF GENERATION

NEGYI

YEAR 1

M	INFLOW	I. DID	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH m.	HEAD	PLANT %	K W	K W H
1	0.0	47.12	47.12	-1.00	229.57	0.0	19.39	33.94	17.59	4200.00	3124800.00
2	0.0	44.19	44.19	-1.00	181.53	0.0	16.57	31.63	13.27	4200.00	[illegible]
3	0.0	24.12	24.12	-1.00	155.30	0.0	15.33	30.18	9.01	2129.29	1584[illegible]
4	0.0	2.13	15.90	4.54	132.68	0.0	14.02	28.94	6.13	1391.73	1035[illegible].13
5	2.00	20.46	34.23	3.38	97.28	0.0	11.50	26.60	12.78	2664.[illegible]	19[illegible]
6	55.39	1.57	15.34	1.69	135.62	0.0	14.20	29.10	5.92	1350.42	972[illegible]
7	51.17	1.32	15.37	1.68	169.83	0.0	16.20	31.02	5.63	1370.33	1019522.37
8	48.27	1.24	15.31	2.15	200.95	0.0	17.94	32.58	5.60	1431.03	1065120.00
9	68.57	0.74	14.51	3.47	252.54	0.0	20.41	34.[illegible]	5.60	1530.95	1102260.00
10	45.72	0.17	13.94	2.35	280.00	0.0	21.60	35.99	5.20	1468.56	1092622.00
11	9.23	6.27	[illegible]	-1.00	280.00	0.0	21.64	35.97	2.44	0.0	0.0
12	1.76	26.26	26.26	-1.00	250.63	0.0	20.37	34.65	10.58	2882.50	2144626.00
MEAN	282.11							32.14	8.73	TOTAL	17[illegible]

YEAR 2

M	INFLOW	I. DID	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH m.	HEAD	PLANT %	K W	K W H
1	0.0	47.02	47.02	-1.00	200.52	0.0	17.95	32.61	17.50	4200.00	3124800.00
2	0.0	44.19	44.19	-1.00	155.18	0.0	15.33	30.15	13.27	4200.00	2822400.00
3	0.0	24.07	24.07	-1.00	124.99	0.0	13.53	[illegible]	[illegible]	2007.00	[illegible]
4	0.0	2.06	13.30	4.05	102.85	0.0	11.91	26.96	7.06	1495.05	1374932.00
5	5.01	14.02	31.34	2.[illegible]	73.69	0.0	9.50	24.79	11.59	2251.70	[illegible]
6	60.36	1.57	17.77	1.47	114.31	0.0	12.79	27.60	[illegible]	1495.70	[illegible]
7	55.76	1.32	17.5[illegible]	1.71	151.34	0.0	15.16	30.0[illegible]	6.59	1540.89	[illegible]
8	63.47	1.24	17.40	2.00	195.30	0.0	17.69	32.3[illegible]	6.52	1651.27	[illegible]
9	75.23	0.74	16.[illegible]	2.40	251.20	0.0	20.33	3[illegible]	[illegible]	1700.20	[illegible]
10	49.84	0.17	15.37	3.61	280.00	0.0	21.60	[illegible]	[illegible]	1720.[illegible]	[illegible]
11	10.00	5.50	7.27	-1.00	280.00	0.0	21.64	35.[illegible]	[illegible]	0.0	0.0
12	1.92	26.07	26.07	-1.00	250.95	0.0	20.38	34.80	10.41	2605.[illegible]	2150777.00
MEAN	321.69							[illegible]	[illegible]	TOTAL	[illegible]

YEAR 3

M	INFLOW	I. DID	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	HEAD	PLANT ..	KW	KWH
1	0.0	47.04	47.04	-1.00	200.39	0.0	17.97	32.62	17.58	4200.00	[illegible]
2	0.0	44.19	44.19	-1.00	153.50	0.0	15.34	30.17	15.27	4200.00	[illegible]
3	0.0	24.00	24.00	-1.00	125.27	0.0	13.55	26.50	9.59	[illegible]	[illegible]
4	0.0	2.09	17.11	4.35	104.15	0.0	12.02	27.08	6.80	1401.37	[illegible]
5	4.42	15.95	20.97	2.95	74.03	0.0	9.63	24.89	11.58	2253.74	[illegible]
6	59.37	1.57	16.59	1.47	115.95	0.0	12.07	27.80	6.40	[illegible]	[illegible]
7	54.87	1.32	16.34	1.72	152.76	0.0	15.26	30.10	6.10	[illegible]	[illegible]
8	60.38	1.24	16.26	2.01	194.85	0.0	17.02	32.27	6.07	[illegible]	[illegible]
9	74.00	0.74	15.76	2.43	250.69	0.0	20.32	34.81	6.03	[illegible]	[illegible]
10	49.02	0.17	15.19	2.32	230.00	0.0	21.03	[illegible]	5.67	[illegible]	[illegible]
11	9.90	5.54	7.13	-1.00	230.00	0.0	21.64	[illegible]	2.73	0.0	0.0
12	1.69	28.11	28.11	-1.00	250.91	0.0	20.35	34.56	10.57	[illegible]	2133315.00
MEAN	313.87							31.25	8.83		TOTAL

17-[illegible]

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YEAR 4

M	INFLOW	I. DID	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	HEAD	PLANT ..	KW	KWH
1	0.0	47.33	47.33	-1.00	200.49	0.0	17.95	32.60	17.67	4200.00	3124800.00
2	0.0	44.19	44.19	-1.00	153.15	0.0	15.32	30.15	13.27	4200.00	[illegible]
3	0.0	24.21	24.21	-1.00	124.82	0.0	13.52	28.43	9.04	2016.01	1501[illegible]
4	0.0	2.21	2.21	-1.00	116.69	0.0	13.10	[illegible]	[illegible]	0.0	0.0
5	0.0	32.73	32.73	-1.00	82.79	0.0	10.37	25.55	12.22	[illegible]	[illegible]
6	41.55	7.03	7.03	-1.00	115.20	0.0	12.80	27.60	2.94	0.0	0.0
7	42.05	4.90	4.93	-1.00	130.56	0.0	15.17	30.01	1.80	0.0	0.0
8	39.67	4.63	4.63	-1.00	165.35	0.0	17.02	31.77	1.73	0.0	0.0
9	34.03	0.74	0.74	-1.00	214.57	0.0	18.00	[illegible]	0.27	0.0	0.0
10	37.43	0.17	0.17	-1.00	[illegible]	0.0	[illegible]	34.73	0.03	0.0	0.0
11	7.59	0.17	0.17	-1.00	[illegible]	0.0	[illegible]	[illegible]	0.15	[illegible]	[illegible]
12	1.45	28.63	28.63	-1.00	216.19	0.0	19.74	33.33	10.69	2795.27	[illegible]
MEAN	203.77							30.02	6.57		TOTAL

11-[illegible]

YEAR 5

M	INFLOW	I. AND DIS...	... E	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT ...	...	...
1	0.0	47.31	...	-1.00	156.85	0.0	20.33	33.60	17.66	4255.93	...
2	0.0	44.13	...	-1.00	119.04	0.0	13.12	28.19	16.27	4...4.81	...
3	0.0	24.20	...	-1.00	91.20	0.0	11.00	26.17	9.04	1...3.12	...
4	0.0	2.21	...	-1.00	69.75	0.0	9.62	25.70	0.00	0.0	0.0
5	0.0	31.62	...	-1.00	51.46	0.0	7.44	22.82	11.61	2112.32	...8715...00
6	43.05	5.72	...	-1.00	87.59	0.0	10.77	25.69	2.21	0.0	0.0
7	42.91	4.00	...	-1.00	125.0...	0.0	13.53	28.49	1.49	0.0	0.0
8	40.48	3.52	...	-1.00	160.16	0.0	15.74	30.54	1.31	0.0	0.0
9	37.16	0.74	...	-1.00	194.5...	0.0	17.64	32.31	0.29	0.0	0.0
10	38.34	0.17	...	-1.00	230.27	0.0	19.42	33.90	0.00	0.0	0.0
11	7.74	7.99	...	-1.00	227.47	0.0	19.29	33.84	0.00	0.0	0.0
12	1.47	28.59	...	-1.00	197.64	0.0	17.82	32.46	10.67	3747.70	...2510.00
MEAN	211.17							29.27	6.40		TOTAL ...3225.0

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YEAR 6

M	INFLOW	I. AND DIS...	... E	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT ...	...	...
1	0.0	47.35	47...	-2.00	147.00	0.0	19.00	29.85	17.05	4157.00	...5057.00
2	0.0	44.13	44...	-1.00	100.37	0.0	11.62	26.90	16.27	3...7.67	...2...0.00
3	0.0	24.22	24...	-1.00	73.48	0.0	9.27	24.60	9.04	1753.42	...3...0.00
4	0.0	2.22	2...	-1.00	50.29	0.0	7.10	24.37	0.00	0.0	0.0
5	0.0	34.14	34...	-1.00	31.76	0.0	5.16	20.70	11.72	2000.77	...53...00
6	39.03	10.00	10...	-1.00	69.31	0.0	8.34	25.66	3.07	0.0	0.0
7	40.95	0.40	0...	-1.00	98.57	0.0	11.25	28.37	2.41	0.0	0.0
8	38.62	0.05	0...	-1.00	125.00	0.0	13.45	29.91	2.50	0.0	0.0
9	35.14	0.74	0.7...	-1.00	154.36	0.0	15.40	30.22	0.29	0.0	0.0
10	33.14	0.17	0.17	-1.00	...28.2...	0.0	17.15	31.55	0.00	0.0	0.0
11	7.39	0.40	0...	-1.00	132.00	0.0	16.97	31.07	0.21	0.0	0.0
12	1.41	28.07	28...7	-1.00	132.31	0.0	13.29	30.1...	10.70	39...0.0	...0...0.00
MEAN	194.25							27.41	7.01		TOTAL 10...17.0

YEAR 7

M	INFLOW	I. DID	DISCHARGE	EV P.	ST AGE	SPILL	DEPTH	E. HEAD	PLANT ..	K W	K W H
1	0.0	47.00	47.00	-1.00	103.14	0.0	11.90	27.04	17.5	1720.3	[illegible]
2	0.0	44.19	44.19	-1.00	56.70	0.0	7.99	23.33	10.27	[illegible]	[illegible]
3	0.0	24.03	24.03	-1.00	30.23	0.0	4.97	20.50	6.99	1447.3	[illegible]
4	0.0	2.10	2.10	-1.00	20.10	0.0	4.42	20.02	0.21	0.0	0.0
5	3.79	17.14	17.14	-1.00	11.14	0.0	2.14	17.57	0.40	597.7	[illegible]
6	58.35	1.57	1.57	-1.00	67.19	0.0	8.99	24.28	0.61	0.0	0.0
7	53.91	1.32	1.32	-1.00	118.47	0.0	13.04	28.0	0.4	0.0	0.0
8	57.11	1.24	1.24	-1.00	172.60	0.0	16.45	31.20	0.40	0.0	0.0
9	72.71	0.74	0.74	-1.00	242.30	0.0	19.99	34.49	0.29	0.0	0.0
10	48.16	0.17	0.17	-1.00	280.00	0.0	21.64	35.97	0.05	0.0	0.0
11	9.73	5.70	5.70	-1.00	280.00	0.0	21.64	35.97	2.03	0.0	0.0
12	1.85	23.14	23.14	-1.00	250.84	0.0	20.37	34.69	10.51	2870.33	2155524.00
MEAN	305.61							27.01	5.57		TOTAL [illegible]

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YEAR 8

M	INFLOW	I. DID	DISCHARGE	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT ..	K W	K W H
1	0.0	47.26	47.26	-1.00	200.46	0.0	17.35	32.60	17.61	4200.00	[illegible]
2	0.0	44.19	44.19	-1.00	133.14	0.0	15.32	30.15	16.27	4200.00	2822400.00
3	0.0	24.13	24.13	-1.00	124.64	0.0	13.51	28.41	9.03	2015.5	[illegible]
4	0.0	2.10	2.10	-1.00	116.74	0.0	13.10	28.04	0.54	0.0	0.0
5	0.0	29.05	29.05	-1.00	86.52	0.0	10.63	25.04	10.69	2190.00	[illegible]
6	46.30	2.51	2.51	-1.00	120.77	0.0	13.73	28.72	0.97	0.0	0.0
7	44.79	1.83	1.83	-1.00	169.35	0.0	16.00	31.06	0.70	0.0	0.0
8	42.25	2.00	2.00	-1.00	207.91	0.0	18.30	32.95	0.77	0.0	0.0
9	44.29	0.74	0.74	-1.00	249.02	0.0	20.39	34.77	0.25	0.0	0.0
10	40.01	0.17	0.17	-1.00	280.00	0.0	21.64	35.95	0.00	0.0	0.0
11	6.06	7.60	7.60	-1.00	277.62	0.0	21.54	35.84	2.95	0.0	0.0
12	1.54	28.52	28.52	-1.00	247.60	0.0	20.24	34.72	10.65	[illegible]	[illegible]
MEAN	227.20							31.61	[illegible]		TOTAL [illegible]

YEAR 9

M	INFLOW	I. AND DISCHARGE	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H	
1	0.0	47.38	47.38	-1.00	197.38	0.0	17.74	32.45	17.69	4250.00	3[illegible]
2	0.0	44.19	44.19	-1.00	196.05	0.0	15.14	29.65	16.27	4250.00	[illegible]
3	0.0	24.25	24.25	-1.00	171.73	0.0	13.31	28.26	9.05	2505.01	1492[illegible]
4	0.0	2.24	2.24	-1.00	113.65	0.0	12.69	27.63	0.00	0.0	0.0
5	0.0	36.05	36.05	-1.00	76.45	0.0	9.83	25.04	15.48	2847.83	[illegible]
6	37.04	13.53	13.53	-1.00	98.52	0.0	11.05	26.72	5.22	1045.45	7372[illegible]
7	39.46	9.02	9.02	-1.00	127.34	0.0	13.69	28.63	3.37	0.0	0.0
8	37.22	10.03	10.03	-1.00	152.77	0.0	15.30	30.13	3.74	869.65	65817[illegible]
9	31.93	0.74	0.74	-1.00	181.91	0.0	16.97	31.89	0.29	0.0	0.0
10	27.30	0.17	0.17	-1.00	206.77	0.0	18.27	32.89	0.06	0.0	0.0
11	7.12	8.71	8.71	-1.00	202.81	0.0	18.07	32.71	3.36	861.73	620[illegible]
12	1.50	28.73	28.73	-1.00	173.07	0.0	16.48	31.23	10.73	2820.27	1953[illegible]
MEAN	181.49						29.80	7.17		TOTAL	13[illegible]

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YEAR 10

M	INFLOW	I. AND DISCHARGE	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H	
1	0.0	47.13	47.13	-1.00	123.45	0.0	13.48	28.37	17.60	3918.94	2914[illegible]
2	0.0	44.19	44.19	-1.00	76.87	0.0	9.80	25.07	16.27	3590.03	2412[illegible]
3	0.0	24.12	24.12	-1.00	49.91	0.0	7.25	22.67	9.01	1000.79	1190[illegible]
4	0.0	2.13	2.13	-1.00	45.30	0.0	6.77	22.20	0.82	0.0	0.0
5	1.84	20.75	20.75	-1.00	24.41	0.0	4.18	17.77	7.75	1202.02	694[illegible]
6	55.15	1.57	1.57	-1.00	77.66	0.0	9.80	25.07	0.61	0.0	0.0
7	50.93	1.32	1.32	-1.00	125.29	0.0	13.55	28.80	0.47	0.0	0.0
8	48.04	1.24	1.24	-1.00	170.80	0.0	16.52	31.38	0.46	0.0	0.0
9	47.66	0.74	0.74	-1.00	215.04	0.0	19.65	34.16	0.29	0.0	0.0
10	45.50	0.17	0.17	-1.00	277.66	0.0	21.55	35.97	0.06	0.0	0.0
11	9.19	8.32	8.32	-1.00	277.70	0.0	21.55	35.97	2.44	0.0	0.0
12	1.75	23.27	23.27	-1.00	248.33	0.0	20.20	34.74	10.59	2879.12	213[illegible]
MEAN	200.04						28.83	5.70		TOTAL	455[illegible]

YEAR 11

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H
1	0.0	47.39	47.39	-1.00	197.90	0.0	17.32	32.43	17.66	4200.00	3124000.00
2	0.0	44.19	44.19	-1.00	150.90	0.0	15.17	30.01	16.27	4200.00	3023400.00
3	0.0	24.22	24.22	-1.00	124.28	0.0	13.35	28.32	9.04	2007.04	1493300.00
4	0.0	2.23	2.23	-1.00	116.19	0.0	12.63	27.65	0.00	0.0	0.0
5	0.0	34.39	34.39	-1.00	76.00	0.0	10.02	25.22	12.84	2918.90	1684933.00
6	39.29	10.51	10.51	-1.00	102.96	0.0	12.19	27.24	4.00	809.94	623478.74
7	40.75	6.79	6.79	-1.00	136.31	0.0	14.40	29.27	2.54	0.0	0.0
8	38.44	7.28	7.28	-1.00	167.57	0.0	16.17	30.94	2.72	0.0	0.0
9	32.98	0.74	0.74	-1.00	197.60	0.0	17.81	32.47	0.29	0.0	0.0
10	32.39	0.17	0.17	-1.00	227.44	0.0	19.29	33.84	0.06	0.0	0.0
11	7.35	8.44	8.44	-1.00	223.84	0.0	19.12	33.68	3.25	859.91	619137.50
12	1.40	28.68	28.68	-1.00	194.05	0.0	17.62	32.29	10.71	2710.70	2014764.00
MEAN	192.60							30.21	6.66		TOTAL 12589172.0

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YEAR 12

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H
1	0.0	47.19	47.19	-1.00	144.21	0.0	14.76	29.65	17.62	4095.30	3046998.00
2	0.0	44.19	44.19	-1.00	97.42	0.0	11.55	26.64	16.27	3615.71	2554154.00
3	0.0	24.14	24.14	-1.00	73.06	0.0	9.25	24.31	9.01	1762.23	1263768.00
4	0.0	2.16	2.16	-1.00	65.00	0.0	8.79	24.00	0.81	0.0	0.0
5	0.11	24.14	24.14	-1.00	38.84	0.0	6.01	21.49	9.01	1518.00	1124863.00
6	52.27	1.57	1.57	-1.00	88.28	0.0	10.62	25.97	0.61	0.0	0.0
7	48.29	1.32	1.32	-1.00	135.76	0.0	14.11	29.03	0.49	0.0	0.0
8	45.55	1.24	1.24	-1.00	176.21	0.0	16.66	31.40	0.46	0.0	0.0
9	37.02	0.74	0.74	-1.00	230.87	0.0	19.46	33.84	0.28	0.0	0.0
10	43.15	0.17	0.17	-1.00	271.16	0.0	21.27	35.65	0.06	0.0	0.0
11	8.71	6.87	6.37	-1.00	270.21	0.0	21.23	35.60	2.63	0.0	0.0
12	1.00	28.37	28.37	-1.00	240.69	0.0	19.51	34.02	10.54	2655.26	2166543.00
MEAN	257.50							29.58	5.82		TOTAL 20156305.0

YEAR 13

M	INFLOW	I. & MD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT %	A V	A A F
1	0.0	47.26	47.26	-1.00	140.39	0.0	17.45	32.11	17.65	4200.00	21[illegible]
2	0.0	44.19	44.19	-1.00	142.14	0.0	14.71	29.58	18.27	4200.00	[illegible]
3	0.0	24.19	24.19	-1.00	114.99	0.0	12.64	27.04	4.05	1971.57	14[illegible]
4	0.0	2.20	2.20	-1.00	109.05	0.0	12.42	27.45	0.65	0.0	0.0
5	0.0	30.30	30.30	-1.00	75.72	0.0	9.70	24.90	11.31	2215.50	1e4[illegible]
6	44.71	3.77	3.77	-1.00	115.22	0.0	12.60	27.60	1.45	0.0	0.0
7	43.67	2.92	2.92	-1.00	154.47	0.0	15.40	30.22	1.09	0.0	0.0
8	41.39	2.29	2.29	-1.00	191.55	0.0	17.49	32.17	0.65	0.0	0.0
9	40.65	0.74	0.74	-1.00	229.30	0.0	19.30	33.95	0.29	0.0	0.0
10	39.20	0.17	0.17	-1.00	265.00	0.0	21.03	35.48	0.06	0.0	0.0
11	7.92	7.79	7.79	-1.00	268.05	0.0	20.92	35.36	2.81	0.0	0.0
12	1.51	28.55	28.55	-1.00	238.22	0.0	19.56	34.07	10.66	2047.19	3119[illegible]
MEAN	219.43							30.92	6.21		TOTAL 1[illegible]

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YEAR 14

M	INFLOW	I. & MD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT %	A V	A A F
1	0.0	47.06	47.06	-1.00	133.10	0.0	17.04	31.79	17.56	4200.00	3124[illegible]
2	0.0	44.19	44.19	-1.00	130.00	0.0	14.26	29.10	18.27	4170.64	28[illegible]
3	0.0	24.09	24.09	-1.00	105.00	0.0	12.24	27.55	4.79	1920.65	14[illegible]
4	0.0	2.11	12.00	3.74	91.72	0.0	11.07	26.19	4.65	990.16	71[illegible]
5	3.35	17.97	28.40	2.77	63.85	0.0	8.65	23.54	20.02	1994.97	14[illegible]
6	57.62	1.57	12.00	1.37	106.04	0.0	12.31	27.25	4.65	997.51	71[illegible]
7	53.23	1.32	11.82	1.66	147.81	0.0	14.96	29.82	4.41	1050.63	7[illegible]
8	54.83	1.24	11.73	1.97	188.94	0.0	17.31	32.00	4.30	1048.59	8[illegible]
9	71.80	0.74	11.25	2.38	247.13	0.0	20.16	34.60	4.03	1177.00	9[illegible]
10	47.56	0.17	10.00	2.80	280.00	0.0	21.60	33.97	2.93	1122.31	3[illegible]
11	9.00	5.34	6.95	-1.00	280.00	0.0	21.64	35.97	2.64	0.0	0.0
12	1.83	20.17	28.17	-1.00	290.79	0.0	20.37	34.65	10.56	2[illegible]	1[illegible]
MEAN	299.82							30.76	7.94		TOTAL 1[illegible]

8 YEAR 10

M	INFLOW	I. DID	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H	
1	0.0	47.40	47.40	-1.00	200.29	0.0	17.94	32.57	17.70	4200.00	3124800.00	
2	0.0	44.19	44.19	-1.00	152.95	0.0	15.31	30.14	16.27	4200.00	2902400.00	
3	0.0	24.24	24.24	-1.00	124.59	0.0	13.50	28.46	9.05	2619.19	1502279.00	
4	0.0	2.25	2.25	-1.00	116.44	0.0	13.08	28.07	0.87	0.0	0.0	
5	0.0	37.24	37.24	-1.00	78.05	0.0	9.50	25.17	15.90	2743.24	2040454.00	
6	35.54	15.09	15.09	-1.00	98.43	0.0	11.47	26.57	6.05	1200.95	907082.00	
7	38.59	10.86	10.86	-1.00	122.60	0.0	13.37	28.34	4.05	900.73	670191.00	
8	30.41	11.43	11.43	-1.00	145.80	0.0	14.67	29.75	4.27	944.75	740091.06	
9	31.25	0.04	0.04	-1.00	174.20	0.0	16.54	31.29	0.32	0.0	0.0	
10	24.00	0.17	0.17	-1.00	195.76	0.0	17.71	32.37	0.06	0.0	0.0	
11	6.96	8.89	8.89	-1.00	191.53	0.0	17.49	32.17	3.42	800.00	622800.31	
12	1.33	23.77	23.77	-1.00	161.81	0.0	15.84	30.65	10.74	2574.00	1919574.00	
MEAN	174.06							29.65	7.39		TOTAL	14550771.0

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TOTAL
MEAN 244.30 30.07 7.02 TOTAL 12950077.0

PLANT FACTOR = 0.352

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THE CALCULATION OF GENERATION

TAUNYO

YEAR 1

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT ..	K W	K W H
1	0.0	24.70	24.70	1.66	37.65	0.0	6.51	24.47	9.22	1763.86	1312049.00
2	0.0	22.50	22.50	1.79	63.35	0.0	5.61	21.96	9.30	1601.16	1075977.00
3	0.0	10.92	10.92	1.99	50.42	0.0	4.09	20.39	4.08	650.57	484024.06
4	0.0	0.64	10.57	1.83	37.95	0.0	2.11	16.52	4.06	592.90	426890.37
5	2.07	11.64	11.64	1.26	27.20	0.0	0.02	16.57	4.35	564.63	420056.06
6	57.50	0.0	24.85	0.60	59.25	0.0	5.29	21.46	9.59	1614.30	1162293.00
7	53.12	0.0	24.85	0.95	86.59	0.0	8.40	24.37	9.22	1772.61	1318815.00
8	50.11	0.0	24.85	1.20	110.66	0.0	10.63	26.44	9.28	1800.00	1339200.00
9	71.18	0.0	24.85	1.48	130.00	25.51	14.04	27.90	9.59	1800.00	1296000.00
10	47.46	0.0	24.85	1.86	130.00	46.26	15.40	27.90	9.25	1800.00	1339200.00
11	9.56	1.40	10.59	1.61	127.36	0.0	12.00	27.71	4.05	837.37	653960.69
12	1.83	13.68	13.63	1.55	115.94	0.0	10.92	26.71	5.11	1069.35	795590.56
MEAN	292.85							23.70	7.27		TOTAL [illegible]

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YEAR 2

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT ..	K W	K W H
1	0.0	24.64	24.64	1.66	37.37	0.0	6.43	24.44	9.20	1762.36	1311163.00
2	0.0	22.50	22.50	1.79	63.09	0.0	5.78	21.95	9.30	1599.14	1074615.00
3	0.0	10.90	12.05	1.99	49.05	0.0	3.69	20.17	4.50	711.25	529155.00
4	0.0	0.63	12.05	1.85	35.16	0.0	1.61	16.65	4.65	657.76	473562.25
5	5.21	8.11	12.05	1.20	27.20	0.0	0.02	16.57	4.50	584.40	434793.12
6	62.66	0.0	24.85	0.60	64.45	0.0	5.95	22.04	9.59	1654.4	[illegible]
7	57.90	0.0	24.85	0.95	96.50	0.0	9.27	25.26	9.22	1800.00	1339200.00
8	65.89	0.0	24.85	1.29	130.00	6.25	12.67	27.90	9.28	1800.00	1339200.00
9	78.10	0.0	24.85	1.70	130.00	57.80	16.11	27.90	9.59	1800.00	1296000.00
10	51.73	0.0	24.85	2.11	130.00	32.53	17.54	27.90	9.25	1800.00	1339200.00
11	10.45	0.97	12.05	1.61	126.79	0.0	11.95	27.67	4.65	1030.25	765344.19
12	1.99	13.55	13.55	1.54	115.67	0.0	10.89	26.65	5.06	1054.05	737312.06
MEAN	333.35							23.65	7.41		TOTAL [illegible]

YEAR 3

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT Q.	K.W	K.W.H
1	0.0	24.65	24.65	1.66	67.36	0.0	8.40	24.44	9.20	1760.50	1312041.00
2	0.0	22.50	22.50	1.79	63.07	0.0	5.78	21.93	9.30	1598.93	1074474.00
3	0.0	10.90	11.63	1.99	49.25	0.0	3.91	20.14	4.42	869.47	520407.00
4	0.0	0.63	11.63	1.35	35.56	0.0	1.68	18.12	4.57	846.31	466924.76
5	4.59	8.81	11.63	1.20	27.29	0.0	0.02	16.57	4.42	574.00	427053.87
6	61.65	0.0	24.65	0.60	53.40	0.0	5.82	21.97	9.54	1651.10	1184794.00
7	56.96	0.0	24.65	0.57	94.54	0.0	9.18	25.69	9.23	1800.00	1339200.00
8	62.68	0.0	24.65	1.27	130.00	1.10	12.23	27.90	9.28	1800.00	1339200.00
9	76.82	0.0	24.65	1.66	130.00	51.41	15.72	27.90	9.59	1800.00	1296000.00
10	50.69	0.0	24.65	2.06	130.00	75.40	17.14	27.90	9.28	1800.00	1339200.00
11	10.28	1.01	11.63	1.61	126.84	0.0	11.96	27.67	4.57	990.44	713113.69
12	1.96	13.59	13.59	1.54	113.66	0.0	10.69	26.65	5.07	1061.31	749617.94
MEAN	325.83							23.86	7.38	TOTAL	11630000.00

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YEAR 4

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT Q.	K.W	K.W.H
1	0.0	24.81	24.81	1.66	69.53	6.01	6.73	24.64	9.26	1789.55	1331410.00
2	0.0	22.50	22.50	1.82	65.21	3.70	6.04	22.17	9.30	1616.62	1066504.00
3	0.0	10.97	10.97	2.05	[illegible]	0.0	4.34	21.59	4.10	661.10	471921.31
4	0.0	0.66	2.33	1.93	47.45	0.0	3.65	19.95	1.09	0.0	0.0
5	0.0	18.88	18.83	1.46	27.20	0.63	0.00	16.57	7.65	915.63	681370.94
6	43.13	0.38	18.83	0.60	50.93	0.0	4.16	20.42	7.25	1161.25	835100.44
7	43.65	0.0	18.60	0.84	74.94	0.0	7.17	23.22	7.02	1276.04	[illegible]
8	41.18	0.0	18.83	1.09	96.24	0.0	9.34	25.24	7.02	1389.02	1033413.25
9	35.35	0.0	18.83	1.35	111.42	0.0	10.75	26.50	7.25	1507.00	1085065.00
10	38.86	0.0	16.30	1.49	129.99	0.0	12.25	27.90	7.03	1535.23	1142247.00
11	7.88	2.04	5.27	1.61	130.00	0.0	[illegible]	27.90	2.42	529.21	381032.01
12	1.50	13.91	13.91	1.57	116.02	0.0	11.05	26.66	5.13	1095.75	813758.00
MEAN	211.53							23.50	6.16	TOTAL	9335725.00

YEAR 5

M	INFLOW	I. DIG	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT E.	KW	KWH
1	0.0	24.00	24.00	1.68	89.59	4.50	8.70	24.05	9.28	1709.21	1251109.00
2	0.0	22.50	22.50	1.82	65.27	2.20	6.05	22.18	9.30	1617.31	1080330.00
3	0.0	10.96	10.96	2.03	52.28	0.0	4.35	20.60	4.03	660.67	491124.44
4	0.0	0.66	3.55	1.93	40.79	0.0	3.53	19.85	1.37	0.0	0.0
5	0.0	18.24	18.24	1.45	27.20	0.0	0.02	16.57	6.81	904.76	656279.50
6	44.69	0.0	20.30	0.60	50.99	0.0	4.17	20.45	7.83	1254.56	903235.44
7	44.55	0.0	20.30	0.64	74.40	0.0	7.11	23.17	7.53	1370.77	1024319.75
8	42.02	0.0	20.30	1.03	95.04	0.0	9.23	25.14	7.56	1493.71	1111321.00
9	38.59	0.0	20.30	1.34	111.99	0.0	10.75	26.55	7.62	1650.20	1173746.00
10	39.80	0.0	20.30	1.49	129.99	0.0	12.20	27.90	7.58	1657.92	1233492.00
11	8.04	2.53	6.43	1.61	130.00	0.0	12.20	27.90	2.43	542.71	390755.94
12	1.53	13.89	13.89	1.57	116.07	0.0	11.07	26.67	5.19	1092.34	812557.12
MEAN	219.22							25.40	6.41		TOTAL 10117526.0

YEAR 6

M	INFLOW	I. ORD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT E.	KW	KWH
1	0.0	24.82	24.82	1.66	89.45	7.95	8.69	24.63	9.27	1709.72	1331554.00
2	0.0	22.50	22.50	1.82	65.14	5.05	6.03	22.10	9.30	1616.16	1080069.00
3	0.0	10.97	10.97	2.03	52.15	0.0	4.33	20.56	4.10	660.30	491060.94
4	0.0	0.07	1.55	1.93	40.25	0.0	3.77	20.06	0.75	0.0	0.0
5	0.0	19.63	19.63	1.46	27.20	2.61	0.02	16.57	7.35	954.54	710241.62
6	41.14	1.98	16.67	0.60	50.87	0.0	4.13	20.41	6.51	1041.75	750056.44
7	42.51	0.0	16.67	0.64	75.67	0.0	7.25	23.30	6.30	1150.86	856282.56
8	40.10	0.21	16.87	1.09	97.80	0.0	9.49	25.35	6.30	1255.29	932450.81
9	34.40	0.0	16.67	1.36	115.97	0.0	10.91	26.70	6.51	1362.74	951172.94
10	34.40	0.0	16.67	1.51	129.99	0.0	12.20	27.90	6.30	1377.81	1025095.94
11	7.67	2.76	6.06	1.61	130.00	0.0	12.20	27.90	2.34	511.47	380276.09
12	1.46	13.94	13.94	1.57	115.95	0.0	11.08	26.86	5.26	1095.57	815344.44
MEAN	201.08							23.54	5.85		TOTAL 9145026.00

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YEAR 7

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT %	K W	K W H
1	0.0	24.66	24.66	1.66	87.35	0.0	8.48	24.44	9.21	1764.15	1312515.00
2	0.0	22.50	22.50	1.79	63.66	0.0	5.78	21.93	9.30	1596.39	1074424.00
3	0.0	10.91	11.59	1.99	49.46	0.0	3.95	20.25	4.33	656.27	310361.25
4	0.0	0.03	11.59	1.56	36.05	0.0	1.77	18.20	4.47	639.04	455292.31
5	3.95	9.55	11.59	1.21	27.20	0.0	0.02	16.57	4.33	582.26	415357.50
6	60.57	0.0	24.65	0.60	82.32	0.0	5.69	21.84	9.59	1641.00	1102010.00
7	55.96	0.0	24.65	0.96	92.47	0.0	8.98	24.91	9.26	1800.00	1339200.00
8	59.29	0.0	24.65	1.25	125.66	0.0	11.66	27.59	9.26	1800.00	1339200.00
9	75.48	0.0	24.65	1.61	150.00	74.63	15.30	27.90	9.59	1800.00	1296000.00
10	50.00	0.0	24.65	2.01	150.00	67.82	16.70	27.90	9.26	1800.00	1339200.00
11	10.10	1.10	11.59	1.61	126.90	0.0	11.96	27.65	4.47	970.37	695865.44
12	1.92	13.61	15.61	1.54	113.67	0.0	10.89	26.66	5.06	1062.66	790762.94
MEAN	317.25							23.82	7.35		TOTAL 11760519.0

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YEAR 8

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT %	K W	K W H
1	0.0	24.77	24.77	1.63	89.74	1.21	8.72	24.66	9.25	1783.05	1330293.00
2	0.0	22.50	22.50	1.82	65.42	0.0	6.07	22.20	9.30	1616.52	1207643.00
3	0.0	10.95	10.95	2.04	52.43	0.0	4.37	20.62	4.67	660.91	493716.50
4	0.0	0.00	5.21	1.93	45.29	0.0	3.32	19.64	2.01	0.0	0.0
5	0.0	10.70	10.70	1.41	27.20	0.0	0.02	16.57	6.26	912.93	681660.19
6	48.06	0.0	25.56	0.60	51.10	0.0	4.13	20.44	9.09	1466.54	1094956.00
7	46.49	0.0	25.56	0.94	73.19	0.0	6.98	23.04	9.30	1906.10	1422991.00
8	43.86	0.0	25.56	1.07	92.42	0.0	8.93	24.90	9.60	2717.47	1277734.00
9	45.96	0.0	25.56	1.31	113.55	0.0	10.88	26.67	9.09	1800.00	1296000.00
10	41.54	0.0	25.56	1.51	130.00	0.0	12.20	27.90	9.60	1800.00	1339200.00
11	8.39	2.28	9.75	1.61	130.00	0.0	12.20	27.90	2.62	572.25	412314.75
12	1.00	13.84	13.84	1.57	116.19	0.0	11.10	26.89	5.17	1063.78	810052.50
MEAN	235.92							23.45	6.94		TOTAL 13740372.0

YEAR 9

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT ..	K W	K W H	
1	0.0	24.84	24.84	1.68	89.35	10.57	3.68	24.60	9.27	1790.50	[illegible]	
2	0.0	22.50	22.50	1.82	90.04	8.23	6.02	22.15	9.30	1615.37	[illegible]	
3	0.0	10.93	10.93	2.03	92.03	0.0	4.91	20.57	4.10	661.02	[illegible]	
4	0.0	0.67	0.75	1.92	49.35	0.0	3.93	20.21	0.25	0.0	0.0	
5	0.0	20.77	20.77	1.30	27.20	0.50	0.02	18.57	7.75	1007.51	7495[illegible].67	
6	38.45	4.25	14.27	0.66	50.76	0.0	4.14	20.40	5.51	800.66	6[illegible]371.[illegible]	
7	40.96	1.39	14.27	0.84	76.63	0.0	7.36	23.40	5.33	977.40	7271[illegible].67	
8	38.64	2.25	14.27	1.10	99.90	0.0	9.68	25.56	5.33	1067.61	7943[illegible].21	
9	33.15	0.0	14.27	1.33	117.39	0.0	11.20	26.97	5.51	1164.11	8681[illegible].37	
10	28.40	0.0	14.27	1.54	129.55	0.0	12.20	27.90	5.33	1105.42	8[illegible]7375.21	
11	7.39	2.97	5.75	1.61	130.00	0.0	12.20	27.90	2.23	467.06	3512[illegible].67	
12	1.41	13.97	13.97	1.57	115.67	0.0	11.07	26.85	5.22	1090.00	81[illegible]911.00	
MEAN	188.40							25.59	5.43		TOTAL	3[illegible]3[illegible].00

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YEAR 10

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT ..	K W	K W H	
1	0.0	24.70	24.70	1.66	87.76	0.0	8.52	24.40	9.22	1769.79	1316[illegible].00	
2	0.0	22.50	22.50	1.80	83.47	0.0	5.83	21.97	9.30	1602.26	1076[illegible].00	
3	0.0	10.92	10.92	2.00	80.55	0.0	4.10	20.37	4.08	651.13	484[illegible].81	
4	0.0	0.64	10.39	1.89	56.23	0.0	2.17	18.97	4.01	563.40	420[illegible].19	
5	1.91	11.82	11.82	1.26	27.20	0.0	0.02	18.57	4.41	575.30	428[illegible].23	
6	57.23	0.0	24.25	0.60	58.98	0.0	5.26	21.44	9.59	1611.84	1160527.00	
7	52.87	0.0	24.25	0.93	88.08	0.0	8.35	24.32	9.26	1739.07	1316[illegible].00	
8	49.87	0.0	24.30	1.19	109.91	0.0	10.57	26.30	9.24	1800.00	1339[illegible].00	
9	70.25	0.0	24.25	1.47	130.00	23.81	13.92	27.90	9.59	1800.00	1296[illegible].00	
10	47.24	0.0	24.25	1.34	130.00	44.30	15.25	27.90	9.23	1800.00	1334[illegible].00	
11	9.54	1.49	10.[illegible]	1.61	127.54	0.0	12.01	27.72	4.31	871.14	6[illegible]23.44	
12	1.82	13.09	13.[illegible]	1.55	114.12	0.0	10.93	26.72	5.11	1070.58	7[illegible].[illegible]	
MEAN	290.71							23.70	7.26		TOTAL	[illegible]

YEAR 11

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H
1	0.0	24.82	24.82	1.63	89.44	8.25	8.89	24.85	9.27	1759.30	1331900.00
2	0.0	22.50	22.50	1.82	85.13	5.36	6.03	22.10	9.30	1610.10	1203015.00
3	0.0	10.97	10.97	2.05	52.12	0.0	4.33	20.58	4.10	800.32	491620.75
4	0.0	0.67	1.00	1.95	48.40	0.0	3.79	20.08	0.70	0.0	0.0
5	0.0	19.82	19.82	1.48	27.20	3.26	0.02	16.57	7.40	961.45	715321.62
6	40.79	2.26	19.94	0.60	50.86	0.0	4.15	20.41	6.38	1049.94	736077.37
7	42.31	0.0	19.94	0.84	75.79	0.0	7.27	23.31	6.17	1126.39	839519.00
8	39.91	0.46	19.54	1.19	96.07	0.0	9.51	25.40	6.17	1249.49	914741.81
9	34.24	0.0	19.54	1.37	114.41	0.0	10.95	26.74	6.38	1337.36	962899.75
10	33.63	0.0	16.94	1.51	129.99	0.0	12.20	27.90	6.17	1350.43	1004717.62
11	7.63	2.81	6.02	1.61	130.00	0.0	12.20	27.90	2.32	503.11	365042.25
12	1.45	13.94	13.94	1.57	115.94	0.0	11.08	26.86	5.20	1095.86	815520.19
MEAN	199.96							23.55	5.80	TOT-L	92625307.00

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YEAR 12

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H
1	0.0	24.73	24.73	1.63	89.47	0.0	8.89	24.84	9.23	1760.31	1320762.00
2	0.0	22.50	22.50	1.82	85.15	0.0	8.03	22.17	9.30	1616.27	1208132.00
3	0.0	10.93	10.93	2.03	52.19	0.0	4.34	20.59	4.08	800.67	490048.19
4	0.0	0.65	7.90	1.93	42.29	0.0	2.64	19.23	5.37	4824.42	3229450.37
5	0.12	13.94	13.94	1.35	27.20	0.0	0.02	16.57	5.20	870.20	582052.69
6	54.20	0.0	24.85	0.60	56.01	0.0	4.87	21.06	9.59	1504.35	1140731.00
7	50.13	0.0	24.85	0.90	80.40	0.0	7.76	23.77	9.23	1709.32	1256824.00
8	47.29	0.0	24.85	1.14	101.70	0.0	9.84	25.71	9.25	1800.00	1339200.00
9	39.81	0.0	24.85	1.40	130.00	5.26	12.60	27.90	9.59	1800.00	1296000.00
10	44.79	0.0	24.85	1.69	130.00	23.91	13.31	27.90	9.23	1800.00	1339200.00
11	9.04	1.33	7.90	1.61	129.47	0.0	12.16	27.86	5.37	971.21	485287.31
12	1.72	13.75	13.75	1.56	115.67	0.0	11.07	26.85	9.13	1360.71	814347.81
MEAN	207.16							23.64	7.19	TOT-L	11423078.0

YEAR 15

M	INFLOW	I. AND	DISCHARGE	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT %	K W	K W H
1	0.0	24.78	24.78	1.66	89.66	2.81	8.71	24.66	9.25	1766.56	1330[illegible].06
2	0.0	22.56	22.56	1.62	65.36	0.53	6.06	22.19	9.36	1616.06	10[illegible]7.00
3	0.0	10.96	10.96	2.04	52.36	0.0	4.36	20.61	4.09	561.26	49[illegible].69
4	0.0	0.66	7.41	1.53	46.62	0.0	3.43	19.74	1.70	0.0	0.0
5	0.0	17.46	17.46	1.43	27.20	0.0	0.02	16.57	8.56	847.62	83[illegible].74
6	46.42	0.0	21.97	0.60	51.05	0.0	4.18	20.44	8.49	1356.36	97757[illegible].44
7	45.55	0.0	21.97	0.84	75.79	0.0	7.04	23.10	8.20	1466.06	1105[illegible].06
8	42.96	0.0	21.97	1.08	98.70	0.0	9.10	25.02	8.20	1609.06	1147[illegible].06
9	42.38	0.0	21.97	1.33	112.78	0.0	10.81	26.61	8.48	1766.57	1273[illegible].06
10	40.69	0.0	21.97	1.50	130.00	0.0	12.20	27.90	8.20	1794.44	1335[illegible].06
11	8.22	2.40	8.61	1.61	130.00	0.0	12.20	27.90	2.55	557.90	401[illegible].69
12	1.57	13.86	15.36	1.57	116.14	0.0	11.09	26.87	5.17	1090.20	811[illegible].87
MEAN	227.79	-						23.47	6.66		TOTAL 10[illegible]0.0

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YEAR 14

M	INFLOW	I. AND	DISCHARGE	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT %	K W	K W H
1	0.0	24.67	24.67	1.66	87.36	0.0	8.46	24.44	9.21	1764.72	1312[illegible].06
2	0.0	22.50	22.50	1.70	63.64	0.0	5.77	21.92	9.36	1596.87	1[illegible].06
3	0.0	10.91	11.43	1.99	49.62	0.0	3.97	20.24	4.27	577.51	5[illegible].69
4	0.0	0.66	11.43	1.56	36.32	0.0	1.82	18.25	4.41	601.02	45[illegible].06
5	3.48	10.07	11.45	1.22	27.20	0.0	0.02	16.57	4.27	554.59	41[illegible].69
6	59.82	0.0	24.65	0.60	81.57	0.0	5.59	21.75	9.57	1636.07	11772[illegible].06
7	55.26	0.0	24.65	0.89	91.05	0.0	6.64	24.76	9.21	1800.00	133[illegible].06
8	56.92	0.0	24.65	1.24	121.86	0.0	11.56	27.61	9.25	1800.00	133[illegible].06
9	74.54	0.0	24.65	1.58	130.00	39.97	12.00	27.90	9.57	1800.00	1296[illegible].06
10	49.38	0.0	24.65	1.97	130.00	82.55	10.37	27.90	9.21	1800.00	133[illegible].06
11	9.97	1.19	11.43	1.61	126.93	0.0	11.96	27.63	4.41	957.17	68[illegible].50
12	1.90	13.63	15.63	1.54	113.65	0.0	10.69	26.66	5.63	1064.41	7[illegible].06
MEAN	311.27							23.79	7.35		TOTAL [illegible]0.0

YEAR 15

M	INFLOW	I. DIS	DISCHARGE	EVAP.	STORAGE	SPILL	DEPTH	E. HEAD	PLANT ..	K W	K W H
1	0.0	24.65	24.65	1.66	89.30	12.09	3.07	24.02	[illegible]	1756.35	1332570.00
2	0.0	22.50	22.50	1.82	84.96	9.74	5.01	22.15	9.36	1624.56	1065199.00
3	0.0	10.99	10.99	2.03	51.96	0.0	4.31	20.56	4.10	[illegible]	492031.12
4	0.0	0.67	0.67	1.92	49.37	0.0	3.93	20.21	0.26	0.0	0.0
5	0.0	21.45	21.45	1.50	27.20	6.09	0.02	16.57	5.01	1040.49	774127.75
6	36.90	5.62	12.76	0.60	50.74	0.0	4.13	20.40	4.92	767.47	566951.01
7	40.06	2.56	12.76	0.34	77.20	0.0	7.42	23.45	4.77	876.37	652016.94
8	37.79	3.13	12.76	1.11	101.11	0.0	9.79	25.66	4.77	956.73	713327.00
9	32.42	0.0	12.76	1.39	119.37	0.0	11.36	27.12	4.92	1047.05	753374.75
10	24.91	0.0	12.76	1.56	129.96	0.0	12.20	27.90	4.77	1042.35	775511.59
11	7.23	3.08	5.62	1.61	130.00	0.0	12.20	27.90	2.17	474.36	341533.12
12	1.36	13.99	13.99	1.57	115.32	1.25	11.07	26.85	5.22	1094.41	817963.06
MEAN	160.69							23.62	5.21		TOTAL [illegible]

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TOTAL
MEAN 253.61 23.04 6.04 TOTAL 10337[illegible]

PLANT FACTOR = 0.672

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THE CALCULATION OF GENERATION

BAMBIN

YEAR 1

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H
1	0.0	19.38	18.38	-1.00	74.51	0.0	17.60	34.70	6.00	1700.00	1294800.00
2	0.0	17.01	17.01	-1.00	56.30	0.0	14.81	32.19	7.03	1700.00	1194240.00
3	0.0	8.96	8.96	-1.00	45.90	0.0	12.97	30.48	5.35	801.05	595605.69
4	0.0	0.73	0.08	1.47	38.35	0.0	11.52	29.15	2.35	535.61	386639.37
5	0.0	11.87	17.22	1.08	20.05	0.0	7.25	25.10	6.43	1267.85	943281.62
6	22.31	0.0	5.35	0.48	36.53	0.0	11.15	28.78	2.00	405.00	338527.12
7	21.02	0.0	5.35	0.50	52.42	0.0	14.16	31.50	2.00	494.39	367820.37
8	20.59	0.0	5.35	0.70	66.96	0.0	16.50	33.76	2.00	528.56	393225.31
9	20.59	0.0	5.35	0.84	81.30	0.0	18.56	35.68	2.00	577.15	415548.25
10	19.50	0.0	5.35	0.94	94.00	0.0	20.20	37.20	2.00	602.40	433305.12
11	3.94	0.28	3.03	-1.00	94.00	0.0	20.19	37.19	1.17	340.48	245145.31
12	0.75	10.38	10.38	-1.00	83.40	0.0	18.82	35.92	3.00	1091.27	811908.44
MEAN	109.50							32.65	3.43		TOTAL 7534377.00

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YEAR 2

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT C.	K W	K W H
1	0.0	18.34	18.34	-1.00	84.02	0.0	18.04	33.33	6.35	1700.00	1294800.00
2	0.0	17.01	17.01	-1.00	65.96	0.0	12.98	30.49	7.03	1680.51	1125300.00
3	0.0	8.96	8.96	-1.00	35.07	0.0	10.95	28.60	5.35	790.03	595601.37
4	0.0	0.72	7.35	1.30	27.04	0.0	9.03	26.62	2.33	544.37	428610.00
5	0.0	9.69	16.30	0.92	9.82	0.0	4.11	22.24	6.09	1301.21	989519.06
6	25.73	0.0	0.61	0.37	20.56	0.0	9.39	27.15	6.55	543.17	410744.30
7	25.79	0.0	0.61	0.52	45.24	0.0	12.66	30.38	2.47	565.09	427540.23
8	22.44	0.0	0.61	0.65	66.40	0.0	15.48	32.81	2.47	669.26	472063.00
9	28.06	0.0	0.61	0.79	81.05	0.0	16.52	33.64	2.55	714.93	513310.37
10	21.26	0.0	0.61	0.94	94.00	0.0	20.20	37.20	2.47	720.23	555642.00
11	4.29	0.0	3.03	-1.00	94.00	0.0	20.19	37.19	1.30	378.63	273941.14
12	0.82	10.27	10.27	-1.00	83.53	0.0	18.85	35.94	3.03	1089.56	810520.62
MEAN	126.39							31.43	5.05		TOTAL 7597707.00

YEAR 3

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT e.	K n	K n h	
1	0.0	18.45	18.45	-1.00	84.16	0.0	16.06	35.35	6.89	1700.00	1264800.00	
2	0.0	17.01	17.01	-1.00	48.15	0.0	12.01	30.51	7.03	1662.04	1130333.00	
3	0.0	8.96	8.96	-1.00	39.93	0.0	10.56	28.65	3.35	750.76	550563.87	
4	0.0	0.72	0.83	1.00	27.70	0.0	9.19	26.96	2.64	557.11	401121.87	
5	0.0	10.13	10.24	0.93	10.53	0.0	4.36	22.47	6.06	1060.00	794595.19	
6	25.05	0.0	6.11	0.36	29.09	0.0	9.52	27.26	2.36	505.19	36287.12	
7	23.40	0.0	6.11	0.52	45.85	0.0	12.98	30.49	2.28	545.35	405742.25	
8	22.07	0.0	6.11	0.65	61.16	0.0	15.60	32.95	2.28	568.99	423210.19	
9	20.56	0.0	6.11	0.80	80.83	0.0	18.49	35.61	2.36	658.22	473919.25	
10	20.91	0.0	6.11	0.93	94.00	0.0	20.20	37.20	2.28	665.47	495100.87	
11	4.22	0.0	3.31	-1.00	94.00	0.0	20.19	37.19	1.23	371.34	267022.06	
12	0.80	10.30	10.30	-1.00	83.54	0.0	18.84	35.94	3.68	1008.42	800000.31	
MEAN	123.03							31.54	3.55		TOTAL	7397149.00

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YEAR 4

M	INFLOW	I. DMD	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT e.	K n	K n h	
1	0.0	18.45	18.45	-1.00	84.05	0.0	16.04	35.33	6.89	1700.00	1264800.00	
2	0.0	17.01	17.01	-1.00	48.03	0.0	12.99	30.49	7.03	1661.02	1129644.00	
3	0.0	9.01	9.01	-1.00	35.66	0.0	10.65	28.60	3.31	754.21	561133.37	
4	0.0	0.76	0.76	-1.00	25.65	0.0	10.52	28.20	0.29	0.0	0.0	
5	0.0	16.00	16.00	-1.00	16.65	0.0	6.27	24.25	5.97	1155.49	844600.50	
6	15.55	0.0	0.0	-1.00	31.77	0.0	10.11	27.62	0.0	0.0	0.0	
7	17.93	0.0	0.0	-1.00	49.17	0.0	13.57	31.03	0.0	0.0	0.0	
8	16.92	0.0	0.0	-1.00	65.41	0.0	16.25	33.53	0.0	0.0	0.0	
9	14.51	0.0	0.0	-1.00	79.13	0.0	18.24	35.33	0.0	0.0	0.0	
10	9.61	0.0	0.0	-1.00	87.82	0.0	19.40	36.46	0.0	0.0	0.0	
11	1.94	2.19	2.19	-1.00	86.65	0.0	19.25	36.32	0.84	0.0	0.0	
12	0.37	10.75	10.75	-1.00	75.35	0.0	17.71	34.63	4.01	1067.69	816000.31	
MEAN	76.83							31.69	2.37		TOTAL	4017003.00

YEAR 5

M	INFLOW	I. AND	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT %		
1	0.0	18.44	[illegible]	-1.00	55.92	0.0	14.73	32.11	6.83	1700.00	[illegible]
2	0.0	17.01	17.01	-1.00	37.94	0.0	11.42	29.03	7.03	1600.55	[illegible]
3	0.0	9.00	[illegible]	-1.00	27.75	0.0	9.10	26.95	5.36	710.01	[illegible]
4	0.0	0.75	0.75	-1.00	25.87	0.0	8.73	26.53	0.29	0.0	0.0
5	0.0	15.59	[illegible]	-1.00	9.38	0.0	3.95	22.07	5.82	1007.00	[illegible]
6	18.20	0.0	0.0	-1.00	25.22	0.0	8.57	26.36	0.0	0.0	0.0
7	18.30	0.0	0.0	-1.00	43.04	0.0	12.43	29.97	0.0	0.0	0.0
8	17.27	0.0	0.0	-1.00	59.67	0.0	15.35	32.87	0.0	0.0	0.0
9	14.81	0.0	0.0	-1.00	73.75	0.0	17.43	34.87	0.0	0.0	0.0
10	9.81	0.0	0.0	-1.00	82.65	0.0	18.72	35.82	0.0	0.0	0.0
11	2.23	1.95	1.95	-1.00	82.04	0.0	18.64	35.75	0.75	0.0	0.0
12	0.63	10.57	10.57	-1.00	71.21	0.0	17.12	34.34	5.95	1062.33	[illegible]
MEAN	79.25							30.53	2.34		TOTAL [illegible]

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YEAR 6

M	INFLOW	I. AND	DISCHARGE	EVAP.	STRAGE	SPILL	DEPTH	E. HEAD	PLANT %		
1	0.0	18.45	18.45	-1.00	51.80	0.0	14.03	31.46	6.69	1699.11	[illegible]
2	0.0	17.01	17.01	-1.00	35.80	0.0	10.56	28.23	7.03	1600.44	[illegible]
3	0.0	9.01	9.01	-1.00	23.71	0.0	8.15	26.03	5.36	886.52	[illegible]
4	0.0	0.76	0.76	-1.00	21.91	0.0	7.73	25.60	0.29	0.0	0.0
5	0.0	16.52	16.52	-1.00	4.59	0.0	2.09	20.30	6.17	984.42	[illegible]
6	14.74	0.0	0.0	-1.00	16.99	0.0	6.45	24.00	0.0	0.0	0.0
7	17.46	0.0	0.0	-1.00	36.02	0.0	11.02	28.80	0.0	0.0	0.0
8	16.47	0.0	0.0	-1.00	51.92	0.0	14.05	31.46	0.0	0.0	0.0
9	14.13	0.0	0.0	-1.00	65.35	0.0	16.24	33.52	0.0	0.0	0.0
10	9.36	0.0	0.0	-1.00	73.66	0.0	17.51	34.70	0.0	0.0	0.0
11	1.89	2.30	2.30	-1.00	72.63	0.0	17.35	34.53	0.89	0.0	0.0
12	0.30	10.77	10.77	-1.00	61.34	0.0	15.62	32.94	4.03	1026.46	[illegible]
MEAN	74.41							29.30	2.39		TOTAL [illegible]