REPUBLIC OF THE PHILIPPINES

REPORT ON INTERCONNECTED TRANSMISSION LINE AND SUBMARINE CABLE PROJECT IN THE VISAYAS

(APPENDIX)

VOLUME III

SEPTEMBER 1980

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A-1 METEOROLOGY OF VISAYAS REGION

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(1) Climate of the Philippines

The main factors governing the annual climate of the Philippines may be said to be the four type below.

i) Southwest Monsoons

These are caused by the Indian Ocean trade winds blowing from the Indian Ocean high produced in the winters of the Southern Hemisphere, and near the Philippines, they become southwesterly air currents. These monsoons start blowing from the beginning of June, become strongest in August, and blow until around the end of September, sometimes continuing until the end of October. These monsoons widely bring heavy rainfall to the western side (South China Seas side) of the Philippines from June through September, resulting in a so-called rainy season.

In the Visayas Region the prevailing winds are southwesterly, varying between south-southwesterly and westerly, and are comparatively strong at the Panay side and weak at the Leyte side. Wind speeds are approximately 3 to 6 kt in June, 2 to 6 kt in July, 3 to 8 kt in August, and 2 to 6 kt in September.

ii) Northeast Monsoons

These are strong cold air currents caused by the Asiatic winter high, and in the Philippines, they become northeasterly winds. They start blowing from around the end of October, become strongest in January, and normally blow until around the end of April. Because of the influences of these air currents, a comparatively cool climate continues and in the winter, heavy rains are brought to the eastern side (Pacific Ocean side).

In the Visayas Reigion, these winds are approximately northeasterly, and strong winds lash the Sulu Sea west of Panay Island. The wind speeds are 3 to 16 kt in January - February, 2 to 4 kt in March, 2 to 12 kt in April, 2 to 8 kt in October, 2 to 12 kt in November, and 3 to 16 kt in December.

iii) North Pacific Trade Winds

These are air currents from the North Pacific Ocean high, and in the Philippines they generally blow as northerly or easterly winds. They are predominant in April - May and October, and in the eastern regions they suppress the northeast monsoon air masses. A feature of these winds is that they are the warmest air currents affecting the Philippines. They bring clear weather although at times there are showers from cumulous clouds.

In the Visayas Region the wind direction is northeast in May and the wind speed is 2 to 10 kt.

iv) South Pacific Trade Winds

These are air currents from the South Pacific Ocean high originating in the Southern Hemispere, and in the Philippines they are southwesterly winds blowing in June. These are warm air currents with lower layers high in humidity whereas the upper layers are relatively dry, and the features are similar to the previously-mentioned southwest monsoons.

Other than the above four air currents, there are typhoons of tropical-seas nature which characterize the climate of the Philippines, and they will be discussed in more detail later. The Philippines are also affected by fronts and the equatorial windless zone, and since the Philippines consist of an archipelago surrounded by seas, the influences of ocean currents are also large.

The air temperatures in Manila are from 25.4°C to 29°C throughout the year with the mean temperature being 27°C, and the range in temperature difference is small. Including Manila, the South China Seas side has a distinct differentiation between wet and dry seasons, while on the Pacific Ocean side there is normally much rainfall throughout the year.

(2) Climate of The Visayas Region

The meteorological data of Iloilo, Cebu and Tacloban which are major cities in the Visayas Region are shown in Table A-1-(1). The observation periods differ depending on observation stations as indicated in the column at the far right of the table, but approximately, the statistics are for 15 to 16 years on air temperature, humidity and atmospheric pressure, 36 years on rainfall, 6 to 11 years on number of days of thunderstorms, and 5 years on wind speed.

Regarding the meteorology of the Visayas Region, the following summarization can be made based on Table A-1-(1).

i) The annual mean air temperatures are practically the same for the 3 localities, being approximately 27°C. The maximum and minimum air temperatures are 36.7°C and 17.8°C, respectively, but considering regional differences, differences in elevation, etc., it may be considered that for the Visayas Region the maximum is about 40°C and the minimum about 10°C.

ii) Regarding precipitation, there is a distinct differentiation between wet and dry seasons at Iloilo City, and the greater part of the annual precipitation is brought by squalls in the rainy season. In contrast, at Tacloban City there is no distinction of wet and dry seasons although there is rather more rain in the winter. Cebu City is in between the two and slightly more like Iloilo.

iii) The number of days of thunderstorms in 99.8 days at Iloilo City, 131.5 days at Cebu City and 69.5 days at Tacloban City, and all belong in zones of high isokerautic levels. The average for the three is 100 days, and although somewhat rare from December through March, thunderstorms occur throughout the year.

iv) A trend may be seen for mean wind speed to be somewhat lower in May and June. This can be seen also in the statistics on number of days of strong winds over 15.3 m/sec and on number of calm days.

(3) Strong Winds during Typhoons

The Philippines, particularly its northern part, is one of the most typhoon-prone areas of the world. An average of 20 typhoons a year enter the zone which affects the Philippines, and 42% directly hit the islands, and with respect to the Visayas Region, 31 to 40% pass the northern part of Samar, 21 to 30% the northern part of Leyte, 0 to 10% the northern part of Panay and the western part of Negros, and 11 to 20% pass other parts.

Typhoons causing damage somewhere in the Philippines average four annually, of which 32% or 1.3 a year cause loss of human life and economic damage.

The typoons are relatively more frequent from June to December, but do occur throughout the year. The frequencies of typoons by month are indicated in Table A-1-(2).

Next, from data concerning 36 typoons which passed the Visayas Region or nearby during the 28 year period of 1948 through 1975, those from first down to tenth with respect to maximum wind speed, minimum atmospheric pressure and maximum 24 hour rainfall are tabulated in Table A-1-(3). The extreme values observed in the Visayas Region are the following:

Maximum wind speed: 130 kt = 66.9 m/sec
(Cebu City, 1951)
Minimum atmospheric pressure: 956 mb
(Dumaguete City, Negros, 1968)
Maximum 24 hour rainfall: 565 mm
(Surigao City, Mindanao, 1968)

Meanwhile, a statistical analysis has been made of the return period of the annual maximum wind speed (1-minute evaluation) at major observation stations throughout the Philippines by Dr. Roman L. Kintanan of the Philippines Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). ("Climatology and Wind Related Problems in the Philippines") From this report, the wind speed map for a return period of 50 years is indicated in Fig. A-1-(1). In the Visayas Region, except for the northern part of Samar Island and the southern part of Leyte Island, practically the entire region is included in a zone of 90 kt (= 46.3 m/sec).

Table A-1-(1) Climatic Data in Visayas Region

Item		Station	Month												Annual	Observation period (years)
			Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.		
Temperature (°C)	Average	Ilo	25.6	25.6	26.7	27.8	27.8	27.2	26.7	26.7	26.7	26.7	26.7	26.1	26.7	16
		Ceb	26.1	26.1	26.7	27.8	28.3	27.8	27.2	27.8	27.2	27.2	26.7	26.7	27.8	16
		Tac	25.6	25.6	26.1	27.2	27.8	27.2	27.2	27.8	27.2	26.7	26.7	26.1	26.7	15
	Highest	Ilo	33.3	35.6	36.7	36.7	36.7	35.6	35.0	34.4	36.1	34.4	35.0	36.7	36.7	16
		Ceb	32.8	32.2	32.8	33.3	35.0	35.0	34.4	33.9	33.9	34.4	33.9	32.8	35.0	16
		Tac	33.3	34.4	34.4	36.1	36.1	36.1	35.6	35.6	36.1	35.6	34.4	33.3	36.1	16
	Lowest	Ilo	18.3	17.8	19.4	21.1	21.7	21.7	20.0	20.0	20.6	20.6	20.6	18.3	17.8	16
		Ceb	18.9	18.3	18.9	21.1	21.1	22.2	21.7	21.1	21.1	20.6	20.0	20.0	18.3	16
		Tac	18.9	17.8	17.8	20.0	22.2	22.2	21.7	21.1	21.7	21.7	20.0	17.8	17.8	16
Atmospheric pressure (mb) (sea level)		Ilo	1011	1010	1010	1009	1008	1008	1008	1008	1008	1009	1009	1009	1009	15
		Ceb	1009	1010	1011	1011	1009	1008	1008	1008	1008	1008	1008	1009	1009	15
Relative humidity (%)		Ilo	80	78	75	73	78	81	83	83	84	84	83	82	80	16
		Ceb	76	75	73	73	75	76	77	76	77	78	78	78	76	16
		Tac	84	82	80	81	82	83	82	80	81	84	85	86	82	15
Total rainfall (mm)		Ilo	64	46	33	43	157	264	448	386	315	269	211	119	2355	36
		Ceb	107	71	51	43	114	163	184	141	175	195	162	128	1540	36
		Tac	338	216	170	137	155	183	165	140	155	213	302	373	2541	34
Thunderstorm (day)		Ilo	0.8	0.7	3.0	4.8	19.3	17.8	11.0	8.8	10.8	12.8	6.7	2.3	98.8	6
		Ceb	1.8	2.5	5.4	9.8	15.8	18.0	15.9	14.9	14.8	16.9	9.1	6.5	131.5	11
		Tac	0.9	1.0	2.2	4.5	10.5	11.4	10.2	7.6	8.7	8.0	2.9	1.6	69.5	10
Average wind velocity (Knots)		Ilo	8.8	9.6	9.0	8.4	6.8	5.6	7.4	7.2	5.8	6.4	6.4	8.2	74	5
		Ceb	5.2	5.8	5.6	5.4	4.4	3.0	3.4	3.2	2.8	2.8	3.4	4.2	4.2	5
		Tac	5.4	5.8	4.4	5.0	4.2	4.0	4.6	4.0	4.4	5.4	6.0	4.8	5.0	5
Strong wind over 15.3 m/s (day)		Ilo	3	1	1	0.3	0.3	0.3	2	3	1	1	1	2	16	15
		Ceb	0.5	0.1	0.2	0.4	1	2	7	7	4	2	1.5	0.4	26	15
Calm day (%)		Ilo	1	2	1	3	12	19	13	11	13	13	5	3	8	18
		Ceb	23	24	23	28	37	37	33	30	35	37	32	26	30	16

Table A-1-(2) No. of Tropical Cyclones

Month	Cyclone affected to the Philippines	Disastrous cyclone	
		Philippines	Visayas
Jan.	11	3	2
Feb.	8	0	0
Mar.	8	0	0
Apr.	10	5	3
May	23	6	4
Jun.	36	10	2
Jul.	80	12	1
Aug.	84	9	0
Sep.	72	11	0
Oct.	59	17	4
Nov.	61	24	14
Dec.	31	13	6
Total	483	110	36
No. per Year	20.1	3.93	1.29
Period	1948-1971	1948-1975	1948-1975

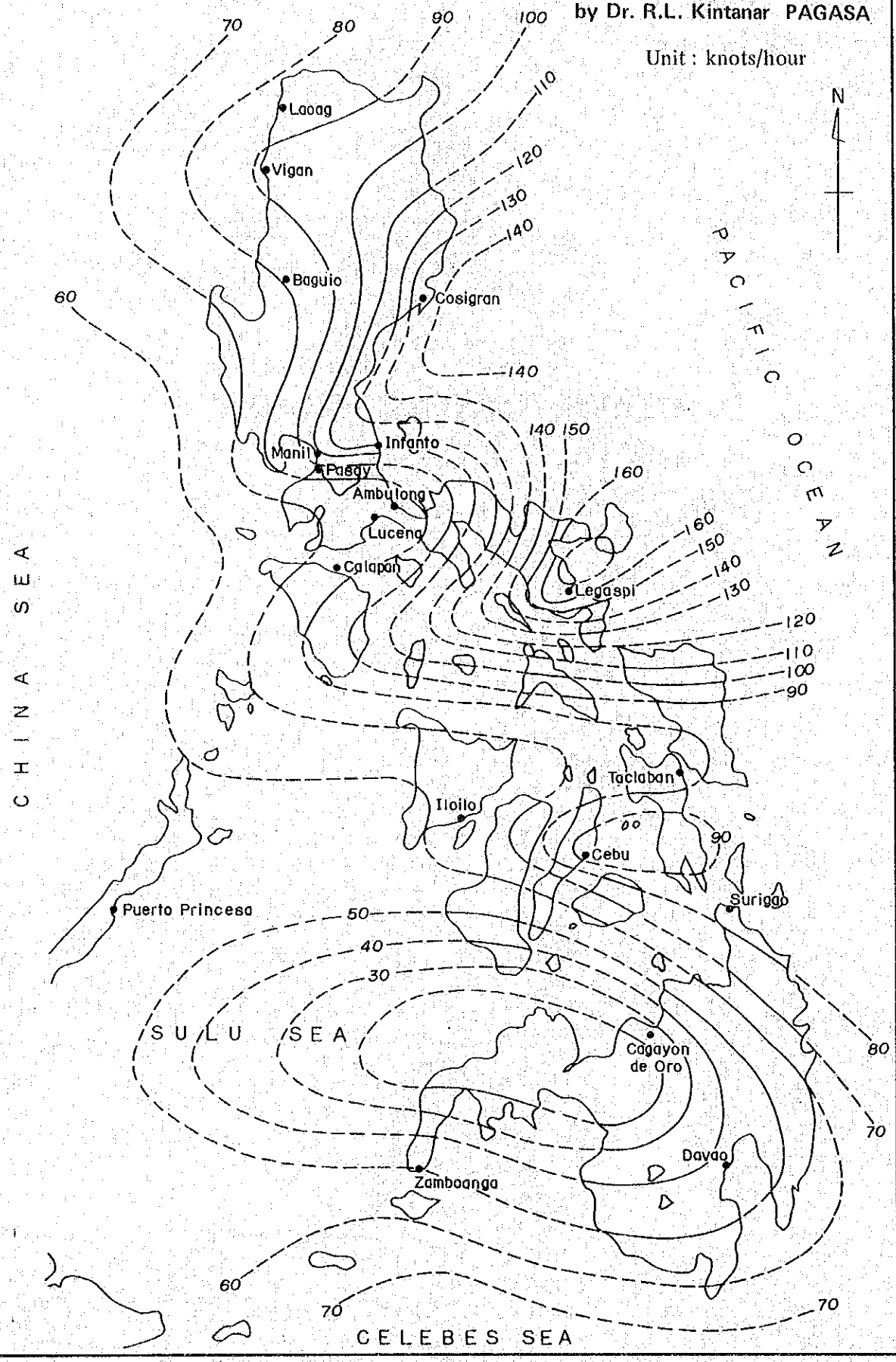
Table A-1-(3) Highest Magnitude on Toroupical Cyclone Data (in Visayas region 1948 - 1975)

Order	Max. wind speed (knots)	Min. pressure (mb)	Max. 24 hour rainfall (mm)
1	130 (Cebu)	956 (Negros)	565 (Surigao)
2	115 (Lyete)	968 (Samar)	521 (Negros)
3	105 (Negros)	970 (Daet)	518 (Cebu)
4	100 (Calopan)	970 (Samar)	484 (Samar)
5	100 (Masbate)	972 (Legaspi)	391 (Daet)
6	100 (Masbate)	972 (Samar)	388 (Samar)
7	100 (Cuye)	977 (Samar)	378 (Samar)
8	95 (Samar)	985 (Leyte)	356 (Cebu)
9	89 (Surigao)	988 (Masbate)	355 (Cebu)
10	85 (Cebu)	989 (Cuye)	330 (Samar)

Fig. A-1-(1) Annual Max-Wind Speed at 50 years Return Period

by Dr. R.L. Kintanar PAGASA

Unit : knots/hour



A-2 POWER DEMAND FORECAST

Table A-2-(1) Power Demand Forecast for Panay Grid

	Unit	Actual 1979	Estimated 1985	Estimated 1990
(1) Population				
PECO	10^3	271	314	347
AKELCO	10^3	282	294	303
ANTECO	10^3	459	499	533
CAPELCO	10^3	226	241	248
ILECO I	10^3	226	241	248
ILECO II	10^3	391	419	439
ILECO III	10^3	87	94	101
Total	10^3	2,053	2,224	2,354
(2) No. of customer and electrification ratio				
PECO	10^3/%	21.6/47.8	28.8/55	34.7/60
6 Cooperatives	10^3/%	59.1/19.9	95.5/30	133.8/40
Total	10^3/%	80.7/23.6	124.3/33.5	168.5/42.9
(3) Specific demand per customer				
PECO	kWh	3,205	3,310	4,220
6 Cooperatives	kWh	619	890	1,170
(4) Energy demand				
PECO	GWh	69	95	146
6 Cooperatives	GWh	37	85	157
(5) New industrial demand	GWh	0	50	56
(6) Total demand (4) + (5)	GWh	106	230	359
(A) Total demand at generation level	GWh	132	307	422
(B) NPC's estimated demand	GWh	114	283	366
(C) Relation (A)/(B)		1.16	1.08	1.15

Table A-2-(2) Power Demand Forecast for Negros Grid

	Unit	Actual 1979	Estimated 1985	Estimated 1990
(1) Population				
CENECO	10^3	427	453	471
NOCECO	10^3	575	615	641
VRESCO	10^3	575	610	636
NORECO I	10^3	364	391	413
NORECO II	10^3	383	415	442
Total	10^3	2,324	2,484	2,603
(2) No. of customer and electrification ratio				
CENECO	10^3/%	25.0/35.1	45.3/60	62.8/80
4 remains Cooperatives	10^3/%	31.5/10.0	186.2/55	248.7/70
Total	10^3/%	56.5/14.6	231.5/55.9	311.5/71.8
(3) Specific demand per customer				
CENECO	kWh	2,824	3,780	4,820
4 Cooperatives	kWh	1,380	1,850	2,360
(4) Energy demand				
CENECO	GWh	71	171	303
4 Cooperatives	GWh	44	344	587
(5) New industrial demand	GWh	0	251	282
(6) Total demand (4) + (5)	GWh	115	766	1,172
(A) Total demand at generation level	GWh	144	1,021	1,563
(B) NPC's estimated demand	GWh	145	1,301	1,674
(C) Relation (A)/(B)		0.99	0.78	0.93

Table A-2-(3) Power Demand Forecast for Cebu Grid

	Unit	Actual 1979	Estimated 1985	Estimated 1990
(1) Population				
VECO	10^3	778	883	952
CEBECO I	10^3	363	421	444
CEBECO II	10^3	248	265	270
CEBECO III	10^3	191	204	207
Total	10^3	1,580	1,773	1,873
(2) No. of customer and electrification ratio				
VECO	10^3/%	73.6/56.8	103.0/70	134.9/85
3 Cooperatives	10^3/%	5.9/ 4.4	66.7/45	107.5/70
Total	10^3/%	79.5/30.2	169.7/57.4	242.4/77.7
(3) Specific demand per customer				
VECO	kWh	3,837	5,140	6,560
3 Cooperatives	kWh	562	830	1,090
(4) Energy demand				
VECO	GWh	282	529	885
3 Cooperatives	GWh	3	55	117
(5) New industrial demand	GWh	0	139	156
(6) Total demand (4) + (5)	GWh	285	723	1,158
(A) Total demand at generation level	GWh	380	904	1,448
(B) NPC's estimated demand	GWh	453	1,123	1,664
(C) Relation (A)/(B)		0.84	0.81	0.87

Table A-2-(4) Power Demand Forecast for Leyte Grid

	Unit	Actual 1979	Estimated 1985	Estimated 1990
(1) Population				
DORELCO	10^3	259	272	281
LEYECO II	10^3	127	134	139
LEYECO III	10^3	165	173	179
LEYECO IV	10^3	175	183	189
LEYECO V	10^3	352	370	382
LEYECO VI	10^3	89	93	96
SOLECO	10^3	289	309	327
Total	10^3	1,456	1,534	1,593
(2) No. of customer and electrification ratio				
LEYECO II	10^3/%	12.3/58.0	14.5/65	16.2/70
6 Cooperatives	10^3/%	16.9/ 8.5	93.3/40	145.9/60
Total	10^3/%	29.2/12.0	107.8/42.2	162.1/61.1
(3) Specific demand per customer				
LEYECO II	kWh	1,286	1,720	2,190
6 Cooperatives	kWh	737	990	1,260
(4) Energy demand				
LEYECO II	GWh	16	25	35
6 Cooperatives	GWh	12	92	184
(5) New industrial demand	GWh	0	77	98
(6) Total demand (4) + (5)	GWh	28	194	317
(A) Total demand at generation level	GWh	35	259	422
(B) NPC's estimated demand	GWh	6	561	1,041
(C) Rleation (A)/(B)		-	0.43	0.41

Table A-2-(5) Power Demand Forecast for Samar Grid

	Unit	Actual 1979	Estimated 1985	Estimated 1990
(1) Population				
SAMELCO I	10^3	184	196	208
SAMELCO II	10^3	255	273	292
Northern Samar	10^3	344	364	397
Eastern Samar	10^3	301	318	332
Total	10^3	1,084	1,151	1,229
(2) No. of customer and electrification ratio				
SAMELCO II	10^3/%	4.2/13.7	8.2/25	10.4/30
Other Cooperatives	10^3/%	4.2/ 2.8	23.9/15	34.0/20
Total	10^3/%	8.4/ 4.5	32.1/16.7	44.4/21.7
(3) Specific demand per customer				
SAMELCO II	kWh	450	800	1,150
Other Cooperatives	kWh	-	710	1,090
(4) Energy demand				
SAMELCO II	GWh	2	7	12
Other Cooperatives	GWh	2	17	37
(5) New industrial demand	GWh	0	23	26
(6) Total demand (4) + (5)	GWh	4	47	75
(A) Total demand at generation level	GWh	5	59	94
(B) NPC's estimated demand	GWh	-	60	91
(C) Relation (A)/(B)		-	0.98	1.03

Table A-2-(6) Prospective Industrial Customers

Power Grid and Industrial Customers	Pick-up Year	Location	Initial Load (MW)	Initial Load (GWh)
A. Panay power grid				
1) PEPSI & 7-up INC.	1980	Iloilo City	0.17	0.95
2) SEAFDEC	1980	ditto	0.74	3.60
3) Barotac Ice Plant	1980	Barotac	0.12	0.22
4) Passi Sugar Central	1980	San Enrique	2.30	12.10
5) CALASUC	1980	Calinog	1.40	7.20
6) SANLOP Co. Inc.	1980	Barotac Passi	0.79	4.20
7) Alled Sugar Central	1980	Passi	0.88	4.60
8) Luxemburg Pulp. & Paper Co.	1980	Iloilo	2.00	10.50
9) Asturias Sugar Central	1980	Capiz	0.63	3.30
10) Pilar Sugar Central	1980	Capiz	0.57	3.00
11) Balasan Ice Plant	1982	Balasan	0.04	0.21
Total			9.64	49.88
B. Negros power grid				
(a) Talisay sub-grid				
1) Bacolod-Murcia Milling Co.	1981	Negros Occ.	0.90	1.28
2) MA-AO Sugar Central	1981	Negros Occ.	1.25	1.78
3) Hawaiian Phil. Sugar	1981	Negros Occ.	1.50	2.08
4) Talisay-Silay Milling Co., Inc.	1981	Talisay, Neg. Occ.	1.10	1.61
5) IST Parmer's Market & Milling Co.	1981	Negros Occ.	1.05	2.11
6) Aidisia Sugar Central	1981	Negros Occ.	1.80	3.28
7) North Negros Logging Ind. Corp.	1981	Negros Occ.	0.06	0.16
8) Planing Co. & Bejon Factory	1981	Negros Occ.	0.10	0.35
9) Kool Co-Alcohol Fermentation	1981	Negros Occ.	0.15	0.92
10) Victorias Milling Corp.	1982	Victorias, Neg. Occ.	5.12	11.20

Power Grid and Industrial Customers	Pick-up Year	Location	Initial Load (MW)	Initial Load (GWh)
11) Victorias Cattle Feedmill	1983	Neg. Occ.	0.30	1.05
12) Lopez Sugar Central	1983	Neg. Occ.	1.60	3.50
13) Sacay Sugar Central	1983	Neg. Occ.	1.50	3.28
14) Danao Dev. Corp.	1983	Neg. Occ.	0.70	1.15
15) San Carlos Sugar Central	1983	San Carlos City	1.15	5.44
16) Sagay Cattle Feedmill	1983	Neg. Occ	0.20	0.70
Sub-total			13.36	28.69
(b) Sipalay sub-grid				
1) CDCP	1982	Neg. Occ.	12.80	61.67
2) MMIC	1982	Neg. Occ.	10.24	49.34
3) Lepanto Consolidated Mining	1982	Honobaan, Neg. Occ.	8.96	43.17
4) Ilco Philippines	1983	Neg. Occ.	1.00	5.25
5) Asia Alcohol Corp.	1983	Neg. Occ.	0.19	1.33
6) Total Bulk Corp.	1983	Neg. Occ.	0.05	0.11
7) Phil. Bulk Corp.	1983	Neg. Occ.	0.36	1.26
8) Nat'l Warehousing Corp.	1983	Neg. Occ.	0.36	1.19
9) San Enrique Ice Plant	1983	Neg. Occ.	0.14	0.73
10) Tasmic Ice & Cold Storage	1983	Neg. Occ.	0.14	0.73
11) Negros Integrated Ind. Corp.	1983	Neg. Occ.	0.04	0.10
12) Central Azucarera de la Carlota	1983	La Carlota City	3.45	15.11
13) BISCOM	1984	Binalbagan, Neg. Occ.	2.65	13.93
14) SONEDCO	1984	Neg. Occ.	1.90	7.66
15) Dacongcogon Sugar Central	1984	Neg. Occ.	0.70	1.84
16) Hingaran Ice Plant	1984	Neg. Occ.	0.12	0.65
17) Hinalayan Ice Plant	1984	Neg. Occ.	0.10	0.55
18) Triple-A Trading	1984	Neg. Occ.	0.10	0.36
Sub-total			43.30	204.98

Power Grid and Industrial Customers	Pick-up Year	Location	Initial Load (MW)	Initial Load (GWh)
(c) Amlan sub-grid				
1) Ass. Agricola de Bais	1979	Bais City	0.21	0.56
2) Manuel L. Teves, Inc.	1979	Neg. Oriental	0.06	0.20
3) Mr. G. Fleisher	1979	Neg. Oriental	0.03	0.12
4) A.A. Ice Plant	1980	Neg. Oriental	0.01	0.08
5) UPSUMCO	1983	Neg. Oriental	1.20	5.78
6) NOROIL	1983	Neg. Oriental	0.60	3.42
7) PATIC	1983	Neg. Oriental	0.70	0.33
8) Tolong Sugar Central	1984	Neg. Oriental	1.15	4.73
9) Basay Sawmill	1984	Neg. Oriental	0.10	0.44
10) Pan Oriental Sawmill	1984	Neg. Oriental	0.25	1.09
11) Arnaiz Sawmill	1984	Neg. Oriental	0.15	0.65
12) Garvantiel Ice Plant	1984	Neg. Oriental	0.04	0.21
Sub-total			3.87	17.61
Total			60.53	251.28
C. Cebu power grid				
1) Dancar Ice Plant	1981	Danao City	0.55	1.40
2) Durano Industrial Complex	1981	Danao City	2.30	6.00
3) Liloan Shipyard	1981	Liloan	2.50	6.57
4) Bogo-Medellin Sugar Central	1981	Bogo	0.42	1.10
5) Dolomite Mining	1981	Dalaguete	1.50	3.90
6) Mactan Export Processing	1981	Lapu-Lapu City	2.19	5.70
7) General Milling Corp.	1981	Lapu-Lapu City	3.00	7.80
8) Cebu Shipyard	1981	Mactan	1.20	2.50
9) Apo Cement Corp.	1982	Naga	7.00	40.00
10) San Miguel Corp.	1982	Mandaue	6.70	35.20
11) Talisay Mini-Industrial	1982	Talisay	0.70	1.69
12) LUDO & LUYM	1982	Cebu City	4.40	19.30
13) Prime Cement	1983	Tuburan	1.50	7.50
Total			33.96	138.66

Power Grid and Industrial Customers	Pick-up Year	Location	Initial Load (MW)	(GWh)
D. Leyte power grid				
1) Fertilizer Plant	1981	Isabel	2.00	5.10
2) Pasar Copper Smelting	1981	Isabel	18.00	46.00
3) LSBDA (Sab-A Basin)	1982	Tacloban City	4.30	10.70
4) Ice Plant	1982	Carigara	0.02	0.11
5) FILMAG (Merida Bentamite Mine)	1982	Ormoc City	0.72	2.10
6) HIDECO	1982	Kananga	0.54	1.80
7) OSCO	1982	Ormoc City	0.19	0.67
8) BIOPHIL	1982	Ormoc City	3.40	10.60
9) Ice Plant	1982	Maasin	0.02	0.03
10) Ice Plant	1982	San Juan	0.03	0.04
11) VISCA	1983	Baybay	0.14	0.18
12) Ice Plant	1983	Hilongos	0.02	0.11
13) Ice Plant	1983	Almeria	0.01	0.03
Total			29.39	77.47
E. Samar power grid				
1) Ice Plant	1983	Catarman	0.05	0.26
2) Ice Plant	1983	Allen	0.10	0.53
3) Ice Plant	1983	Laoang	0.05	0.26
4) Bagacay Mines (MMIC)	1983	Hinabangan	3.10	19.10
5) UTIMCO	1983	S. Julian	0.45	2.40
6) MMIC Loading Sta.	1983	S. Julian	0.10	0.44
7) White Enterprises	1983	Sulat	0.03	0.11
Total			3.88	23.10

Fig. A-2-(1) Daily Load Curves of PECO System
(Iloilo City)

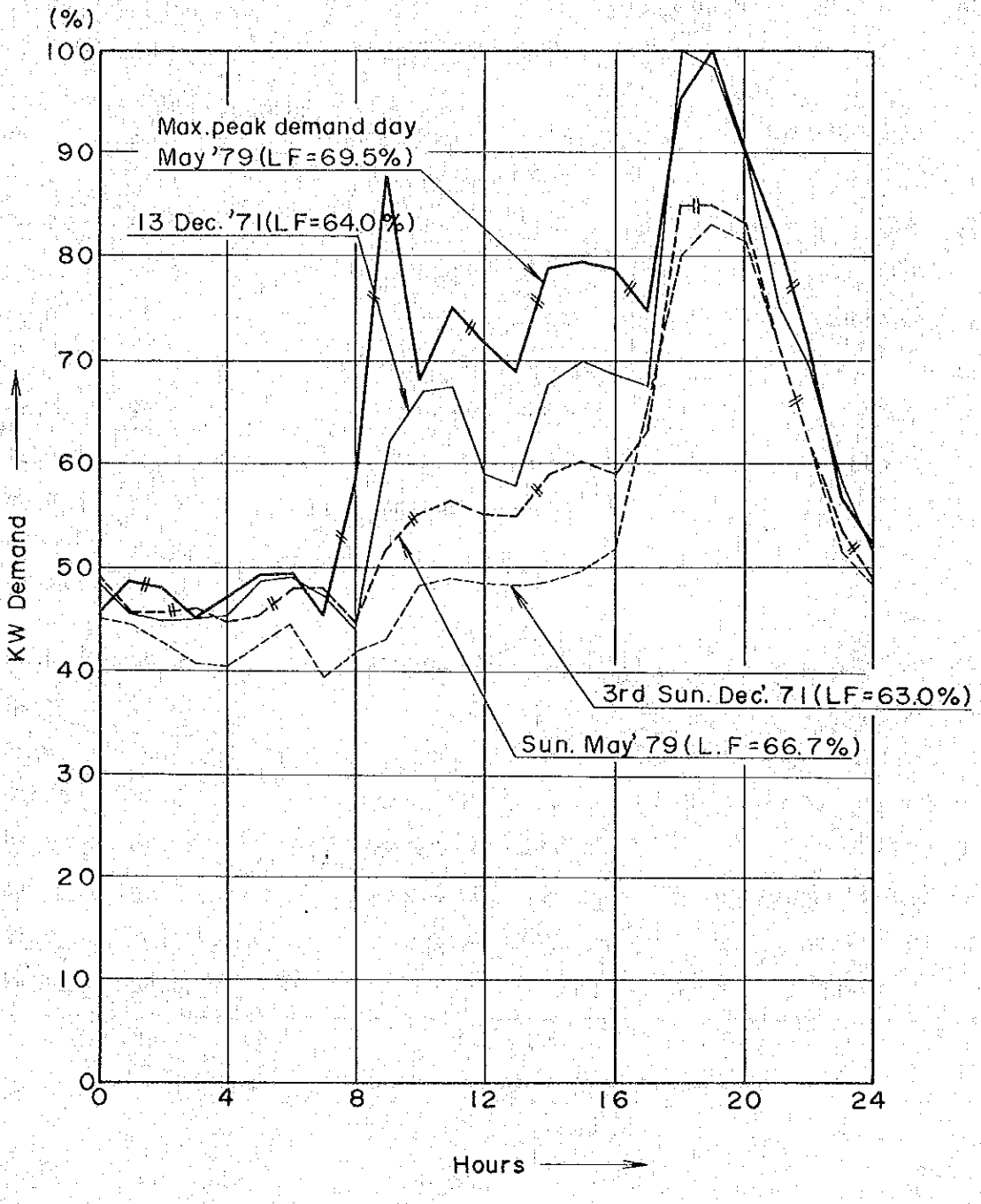


Fig. A-2-(2) Daily Load Curves of CENECO
(Bacolod City)

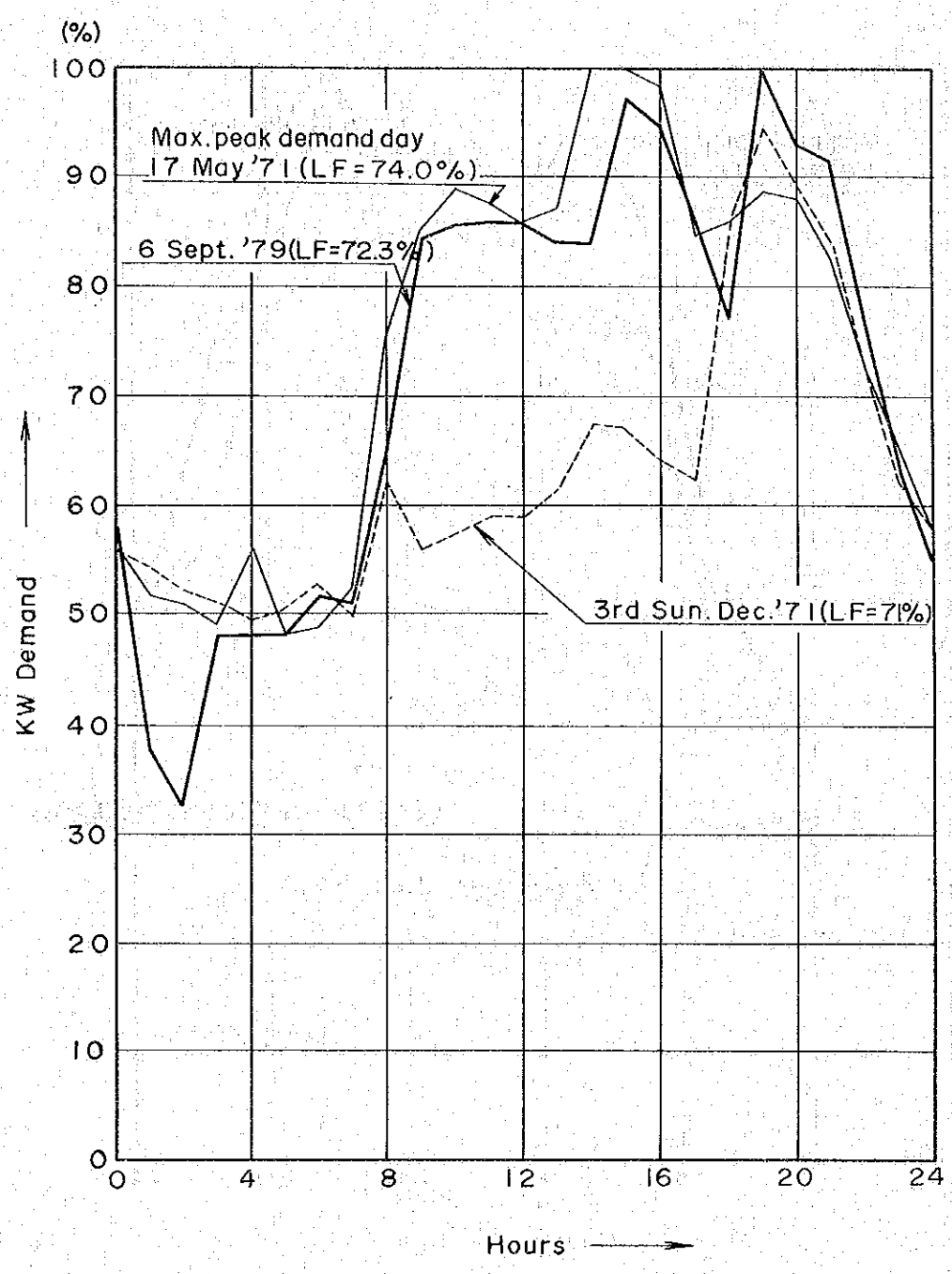


Fig. A-2-(3) Daily Load Curves of VECO System
(Cebu City)

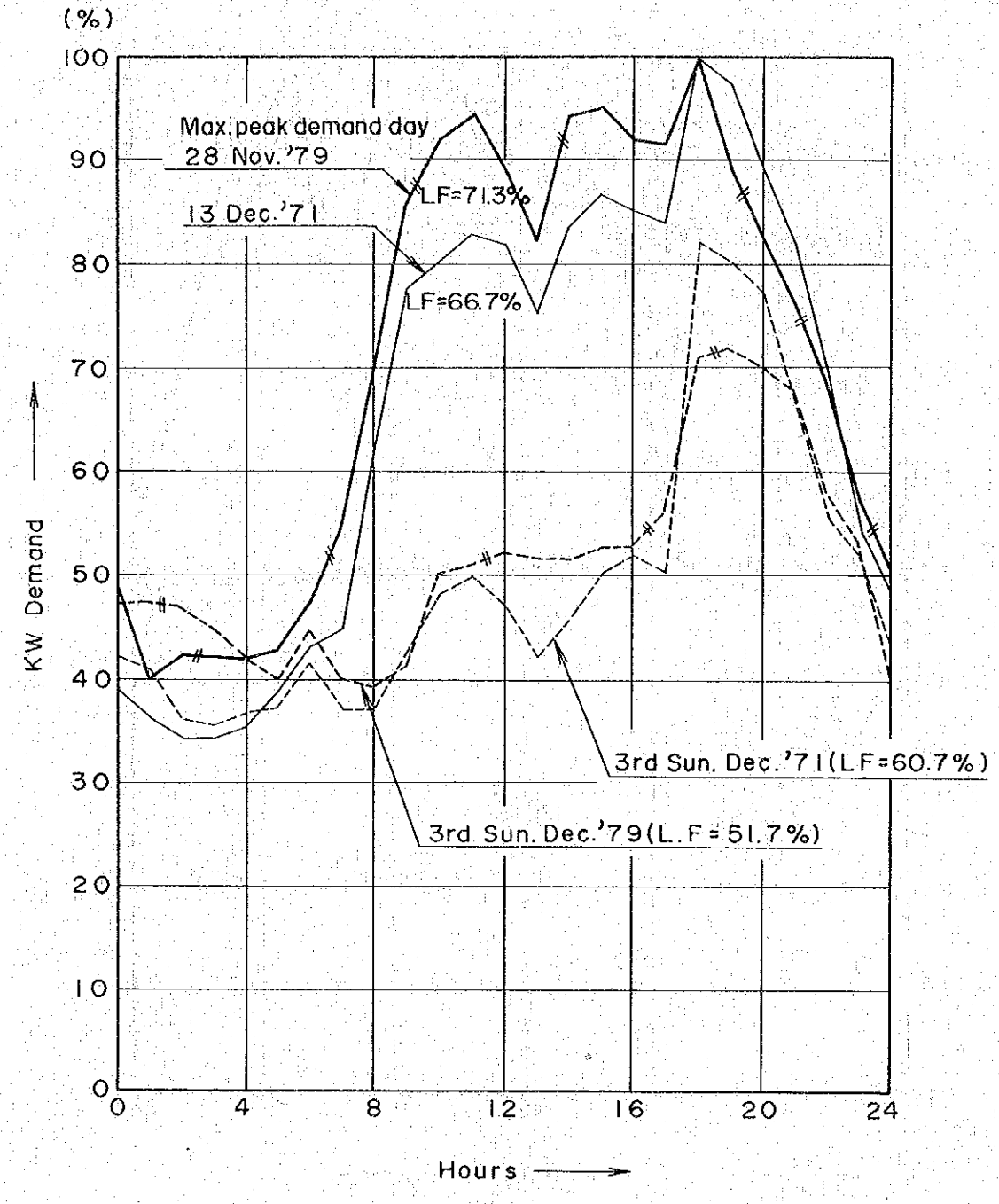


Fig. A-2-(4) Daily Load Curves of DORELCO
(Tacloban City)