質　問　事　項	回　答
1. General Information of the FSM and POHNPEI Island (1)Area of country (FSM) /(POHNPEI) km² (2)Situation of POHNPEI Latitude Longitude (3)National Plan for five years(1992-1997) (4)Economic Indices	添付の回答書参照 (別冊)

FSM/POHNPEI Is.

		1987		1988		1989		1990		1991	
		FSM	POH	FSM	POH	FSM	POH	FSM	POH	FSM	POH
1	Population										
2	The rate of increase of Population										
3	Foreign Trade (x 10^6US$) - Export - Import										
4	Budget (x 10^6US$)										
5	Electrification ratio										
6	Electric Energy Consumption (MWH)										
7	GNP (x 10^6US$)										
8	Foreign Exchange Holding (x 10^6US$)										
9	Debt on Foreign-exchange (x 10^6US$)										

(5)Population of main towns and village in the POHNPEI Island

(6)Industrial statistics of Agricultual, Fishery, Commertial,Tourist Industry and etc. in POHNPEI Island

(7)Main civil construction companies in the POHNPEI Island,and Nos. of their employee

質　問　事　項	回　答
(8)Climatic condition of POHNPEI Island a. Temperature, humidity and rainfall	

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Temperature (°C)												
Average Humidity (%)												
Rainfall (mm)												

b. Recorded max. wind velocity in Typhoon c. Earthquake d. IKL(Isokelannic Level), Thunders	
2. Iformation of the POHNPEI UTILITIES CORPORATION(PUC) (1)Organizatiion of the FSM government and POHNPEI State government (2)Position of PUC in the FSM government organization and others (3)Law for PUC (4)Organization of PUC a. Organization and Nos. of staff b. Location of head office c. Location of local office d. Supporting organization for PUC, if any (5)Administration of PUC a. Annual report b. Accounting report c. Tariff system d. Program for the progress of financial administration	添付の回答書参照

質　問　事　項	回　　答
(6)Main Facilities a. Generator plant b. Transmission/Distribution line (High tension,Low tension) (7)Main contents/items and maintenance work for the facility, being carried out by PUC's staffs How does the PUC carry out the maintenance work for the diesel generator plant and distribution line? (8)Histrical record of cut-off for electric supplying due to the Distribution Line or Generator Plant Accident (9)Generated energy by PUC power stations and present electric power consumption and estimated demand in the service area(MWH) (10)Nos. of consumers, and their category in terms of KWH	配電線事故に起因する停電は平均３回／週 発電電力不足による停電はAttachment 2-(8) 参照
3. Information of the Proposed Project (1)Upgrading masterplan for the future in regarding to the electric utility system, including Hydro Power, in the whole POHNPEI Island (2)Study data for water flow of rivers in POHNPEI Island, or potential hydro energy	添付の回答書参照

質　問　事　項	回　　答
(3)Situation of the proposed project in the masterplan (4)Budget preparation for the project and cost of maintenance (5)Diesel Engine Generator Prant and operation a. Area map, and location of plant b. Scope which will be prepared by PUC (Access road, Land conditioning, Fuel storage facilities, Cooling water supply system, and etc.) and preparing time schedule, and budget (6)Automated Distribution System Protection a. Single line diagram of the Distribution System in the whole POHNPEI Island b. Applied location of Vacuum Switches(27 pc.) c. Applied scheme and installed location of Reclosing Relay(4 pc.) d. Figure and dimensions of typical distribution line pole in the Island (wooden pole, concrete pole and etc.) e. Technical data on the strength of the pole under the condition of Vacuum Switch mounting f. Scope which will be prerared by PUC, and budget (7)Three-phase Distribution Line for Backfeeder a. Applied location,line length, and relation to the existing system b. Voltage c. Type of line(Over-head or Under-ground) d. Scope which will be prerared by PUC, and budget	24pc.に訂正 設置場所; Nanphonmal

質　問　事　項	回　　答
(8)List of international assistance projects related to the Project and their outline, if any	
4. Others (1)How many volume of Typhoon Damage(ex. FMS and Pohnpei Is.)? (2)Applicable Industrial Standards in FSM, especially in the field of electrical and mechanical engineering (3)Where is the fuel for diesel generator imported from?, and price of the fuel(US $/l)? (4)How many consumers have the private generator?, and their capacity(KVA)?	添付の回答書参照

ORIGINAL

POHNPEI STATE RESPONSE TO

"THE PRELIMINARY STUDY"
"ON"
'THE FEDERATED STATES OF MICRONESIA"
"FOR"
"POHNPEI ELECTRIC UTILITIES UPGRADING PROJECT"

"QUESTIONNAIRE"
OF
APRIL, 1992

This document has been prepared using the format outlined in the "Questionnaire" submitted by the Japan International Cooperation Agency, JICA. The original format is included for reference at Attachment A.

Prepared by

Pohnpei State

Office of Budget, Planning, and Statistics

Pohnpei State Government
Kolonia, Pohnpei, FSM, 96941

Pohnpei State Response to JICA Questionnaire

on

Pohnpei Electric Utilities Upgrading Project

Preface

The State Government of Pohnpei, on behalf of the people of Pohnpei, wish to express our sincere thanks to the JICA Study Team for their courtesy, assistance with preparation of documentation, and professionalism displayed during discussions with Pohnpei State Government Officials.

It is our hope that the information provided will support our request for Japanese Grant Aid Assistance in 1992. If there is any additional information required by the JICA Study team after their departure, please immediately notify Pohnpei State Representative, Mr. Nick Solomon, Assistant to the Governor for the Office of Budget, Planning and Statistics. Mr. Solomon will provide the information necessary and forward it to the JICA Study Team.

The following documentation has been gathered together in response to the Preliminary Study Questionnaire received from the JICA Study Team.

The Honorable Johnny P. David,
Governor, State of Pohnpei
Federated States of Micronesia

4/16/92
Date

1. General Information of the FSM and Pohnpei Island:

(1) Area of Country:

a. FSM = 699.3 km^2

b. Pohnpei State = 345.51 km_2

Note: This is land area. The State's of the FSM are spread across more than a million square miles of the Western Pacific Ocean within an east-west chain of islands known collectively as the Carolinian archipelago. The Federated States of Micronesia lies between the equator and 14 degrees north latitude and between 135 and 166 degrees east longitude.

The 28 islands of Pohnpei include seven inhabited islands. Pohnpei Island is approximately 334.1 km^2, with additional lagoon areas of 178.4 km^2. Pohnpei island will be the island where all of the electrical utilities upgrading project will occur.

(2) Situation of POHNPEI: (Geographic Grid location):

a. 6^0 54' North Latitude,

b. 158^0 14' East Longitude.

(3) National Plan for Five Years (1992-1996):

A copy of the FSM National Plan can be obtained at FSM National Government Department of External Affairs. If a copy has not been received by the JICA Study Team, we will obtain a copy for you.

A copy of the latest Pohnpei State Plan has been presented to the JICA Study Team. A copy of the latest State Statistical Yearbook (1991) has been presented to the JICA Study Team. (別冊により受領)

(4) Economic Indices:

(See Table on Following Page)

ECONOMIC INDICES

PREPARED FOR JICA STUDY TEAM [JAPANESE GRANT AID 1992]

YEARS	19 87		19 88		19 89		19 90		19 91	
	FSM	POH	FSM	POH	FSM	POH	FSM	POH	FSM	POH
1. POPULATION:		30594		31604		32647	100520	33724		34837
2. RATE OF INCREASE OF POPULATION:	> 3%	3.3%	>3%	3.3%	>3%	3.3%	>3%	3.3%	>3%	3.3%
3. FOREIGN TRADE:										
3.1: EXPORT: (IN MILLION, U.S.$)	7.96	2.49	13.17	3.18	17.27	3.04		3.75		
3.2: IMPORT: (IN MILLION,U.S.$)	41.89	16.57	67.7	22.06	72.72	26.73		29.19		
4. BUDGET: (IN MILLION, U.S.$)		22.7	115.46	18.6		34		26.6		35.1
5. ELECTRIFICATION RATIO:(HOUSEHOLDS):	?	0.4	?	0.39	?	0.39	?	0.43	?	0.44
6. ELECTRICAL ENERGY CONSUMPTION(mwh)		20683		21956		24408		25183		26700
7. GNP (IN MILLIONS, U.S.$)			123.8		130.8					
8. FOREIGN EXCHANGE HOLDING: (NOT APPLICABLE TO FSM)										
9. DEBT ON FOREIGN EXCHANGE: (NOT APPLICABLE TO FSM)										

(5) Population of Main Towns and Villages in the Pohnpei Island.

There is only one town or village on Pohnpei and that is Kolonia Town: The population distribution on Pohnpei is as follows:

POHNPEI POPULATION ESTIMATIONS: 1990

CIVIL DIVISIONS	ESTIMATED POPULATION 1990
TOTAL POHNPEI STATE:	33,724
TOTAL POHNPEI ISLAND:	30,816
KOLONIA TOWN:.....	7,256
KITTI:.....	4,690
MADOLENIHMW:.....	5,105
NETT:.....	4,784
SOKEHS:.....	5,938
U:.....	3,043
TOTAL OUTER ISLANDS:	2,908

Outside of Kolonia Town the population is scattered farmsteads. The greatest clustering of residents occurs along the road. It is estimated that about 80% of the Pohnpei Island population lives within one half mile of established roads; primarily along the circumferential road.

The map on the following page is of Kitti Municipality. This shows the general distribution of residents (as of the 1985 Census Enumeration) that is found all around the island. These are actual house plots.

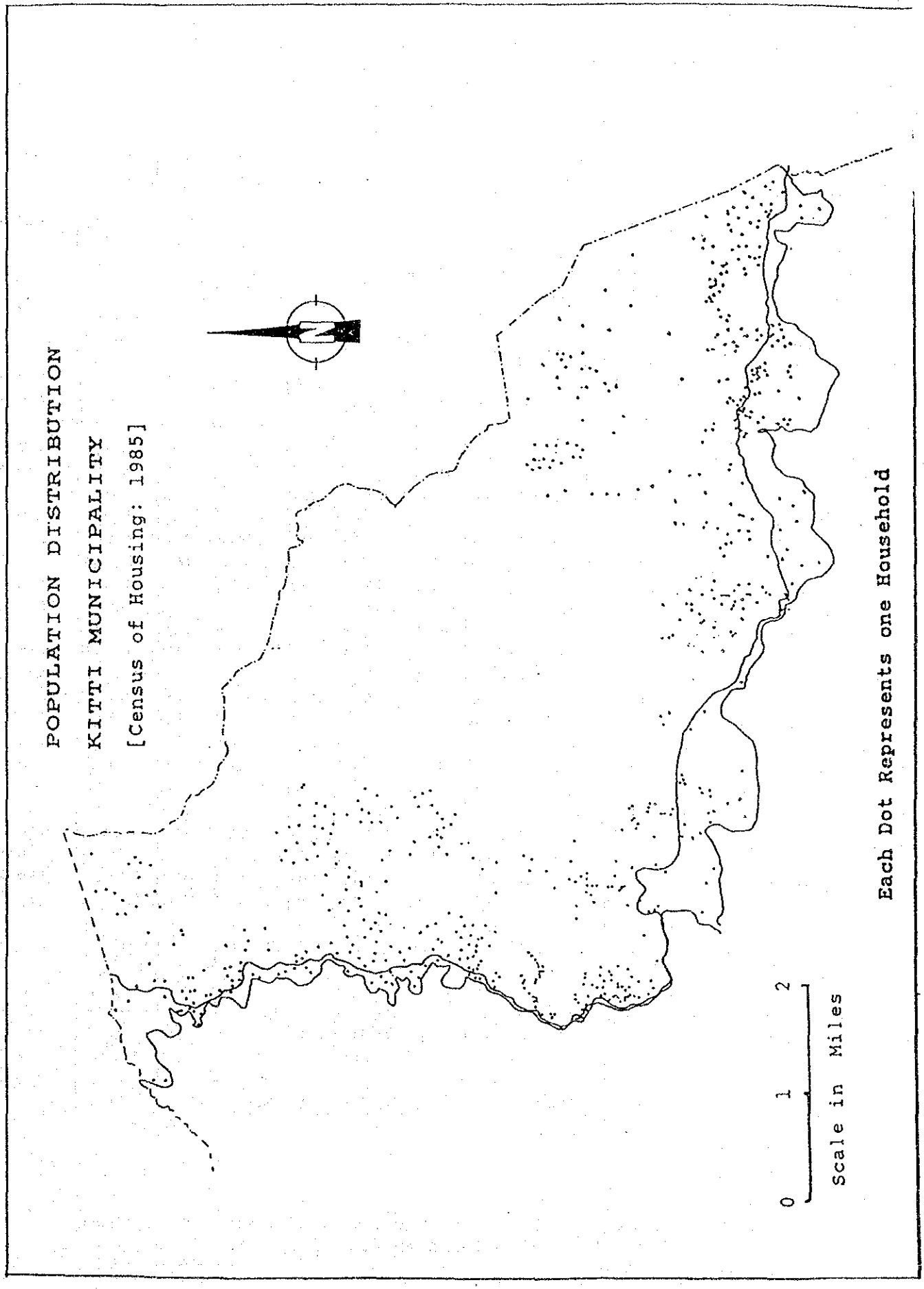
The estimations for total number of households on Pohnpei Island are as follows; for a total of 3,626:

-Kolonia Town:	893
-Madolenihmw:	618
-Sokehs:	662
-Nett:	596
-U:	336

(6) Industrial statistics of Agricultural, Fishery, Commercial, Tourist Industry and etc. in POHNPEI Island.

Business and Industry Statistics can be found in Chapter 7: of the Pohnpei State Statistics Yearbook, 1991. Pages: 70 to 73. Additional Statistics from on Business and Industry are included in the following tables.

Kitti Population Distribution



PRIVATE SECTOR AVERAGE NUMBER OF EMPLOYEES AND GROSS WAGES BY STATE AND INDUSTRY - CALENDAR YEAR 1989

IND CODE	INDUSTRY TYPE	KOSRAE STATE		POHNPEI STATE		CHUUK STATE		YAP STATE		FSM TOTALS		
		Ave No. of Emp.	Gross Wages	Ave No. of Emp.	Gross Wages	Ave No. of Emp.	Gross Wages	Ave No. of Emp.	Gross Wages	Ave No. of Emp.	Gross Wages	Average Wages per Employee
1	AGRICULTURE	4.00	11,309.00	10.25	69,349.00	0	0	2.00	3,420.00	16.25	81,078.00	4,989.42
5	ENTERTAINMENT	1.00	1,147.08	5.50	16,432.67	1.00	3,392.56	0	0	7.50	20,972.31	2,796.31
9	FISHING	0.25	1,000.00	7.25	11,466.00	110.75	227,903.00	0.50	1,753.07	118.75	242,122.07	2,038.92
15	CONSTRUCTION	17.25	23,491.97	473.75	1,777,876.69	116.50	403,654.35	48.25	119,289.91	655.75	2,324,312.92	3,544.51
20	MANUFACTURING	0.00	0	52.00	127,346.00	29.75	79,837.95	16.00	26,701.50	97.75	233,885.45	2,392.69
41	LAND TRANSPORTATION	1.00	2057.00	24.50	65,437.76	17.50	54,087.63	12.25	41,613.30	55.25	163,195.69	2,953.77
44	WATER TRANSPORTATION	1.25	4,950.00	108.75	210,704.73	23.25	72,202.55	0.25	481.51	133.50	288,338.79	2,159.84
45	AIR TRANSPORTATION	6.25	13,695.64	45.50	312,001.97	0	0	4.25	30,568.32	56.00	356,265.93	6,361.89
47	TOURIST SERVICES	0.00	0	106.50	436,713.36	15.00	77,446.64	0	0	121.50	514,160.00	4,231.77
48	UTILITIES	0.00	0	0	0	0	0	0	0	0	0.00	0.00
49	BROADCASTING	0.00	0	1.75	9,838.34	0	0	0	0	1.75	9,838.34	5,621.91
50	WHOLESALE TRADE	0.00	0	100.25	463,679.10	19.00	42,882.92	0	0	119.25	506,562.02	4,247.90
53	GEN. MERCHANDISE-RETAIL	139.75	345,502.12	405.25	1,034,240.74	571.75	1,139,658.86	113.75	308,000.56	1,230.50	2,827,402.28	2,297.77
54	FOOD STORES - RETAIL	7.50	10,082.37	49.75	116,615.46	15.00	16,320.15	0.00	0.00	72.25	143,017.98	1,979.49
55	AUTO & SERVICE STATIONS	2.50	9,435.59	62.75	186,297.16	9.50	31,660.02	8.00	18,801.44	82.75	246,194.21	2,975.16
58	EATING & DRINKING ESTAB.	0.50	1,104.82	24.25	44,659.54	18.25	25,297.33	15.50	23,929.22	58.50	94,990.91	1,623.78
59	MISCELLANEOUS RETAIL	9.25	22,725.65	52.00	240,514.34	58.25	101,553.19	1.00	2,058.01	120.50	366,851.19	3,044.41
60	BANKING	0.00	0.00	84.00	672,273.37	18.75	196,327.57	0	0	102.75	868,600.94	8,453.54
61	CREDIT UNIONS/SAVINGS/FINANCE	40.00	95,076.29	1.50	13,152.51	13.50	73,873.90	0	0	55.00	182,102.70	3,310.96
63	INSURANCE AGENTS	0.00	0	7.75	100,878.99	3.00	13,346.50	0	0	10.75	114,225.49	10,625.63
65	TRAVEL AGENTS	0.00	0	6.50	65,916.00	10.75	34,216.80	0	0	17.25	100,132.80	5,804.80
70	HOTELS	17.00	26,672.78	28.50	67,563.85	69.00	171,151.67	19.00	60,571.12	133.50	325,959.42	2,441.64
75	LEASED HOUSING/APARTMENTS	0.00	0	16.75	36,088.86	11.75	17,819.90	0.00	0.00	28.50	53,908.76	1,891.54
81	LEGAL SERVICES	0.00	0	7.00	34,649.16	0	0	2.00	4,999.20	9.00	39,648.36	4,405.37
86	RELIGIOUS ORGANIZATIONS	1.50	2,205.00	31.75	137,694.07	98.75	136,734.90	23.50	44,909.85	155.50	321,543.82	2,067.81
87	NON-PROFIT ORGANIZATIONS	0.00	0	0.25	480.00	0	0	0	0	0.25	480.00	1,920.00
88	PRIVATE HOUSEHOLDS	1.75	1,621.64	19.00	27,141.32	13.5	11,291.85	0	0	34.25	40,054.81	1,169.48
89	MISCELLANEOUS SERVICES	3.25	8,695.75	84.25	466,751.91	24.75	80,741.62	28.50	89,998.97	140.75	646,188.25	4,591.04
100	PRIVATE EDUCATION	0.00	0	77	182,039.73	92.25	197,598.01	4.00	7,040.70	173.25	386,678.44	2,231.91
130	COOPERATIVE ASSOCIATIONS	9.25	35,444.30	82	346,965.68	9.00	3,440.00	59.00	175,543.13	159.25	561,393.11	3,525.23
140	CONGLOMERATE***	0.00	0	83	239,493.72	0.00	0.00	82.00	398,150.40	165.00	637,644.12	3,864.51
	STATE TOTALS	263.25	616,217.00	2,059.25	7,511,262.03	1,370.50	3,212,439.87	439.75	1,357,830.21	4,132.75	12,697,749.11	3,072.47
91	PUBLIC ADM. *	0.25	541.38	8.5	151,422.60	0	0	0	0	8.75	151,963.98	17,367.31
110	INDEPENDENT AGENCIES **	3.00	3,396.86	322.5	2,192,012.63	302.25	795,960.14	101.00	400,523.90	728.75	3,391,893.53	4,654.40
120	MUNCIPAL GOVERNMENTS	57.50	102,658.94	162.75	472,142.73	152.25	124,098.67	0.00	0.00	372.50	698,900.34	1,876.24
150	U.S. FEDERAL GOVT.	0.75	2,120.00	94.25	673,894.30	5.25	10,365.27	2.25	8,604.36	102.50	694,983.93	6,780.33
	GRAND TOTALS	324.75	724,934.18	2,647.25	11,000,734.29	1,830.25	4,142,863.95	543.00	1,766,958.47	5,345.25	17,635,490.89	

*Include Embassies/Congress delegation offices.

**Include State and National Government agencies.

***Multi-industries.

[Statistics shown are for employers that filed taxes. Employees include both FSM citizens and foreign labor.]

[Data for 1990 and 1991 will be published when available.]

(7) Main civil construction companies in the Pohnpei Island, and Nos. of their employees. Specific data for the two major civil construction companies; Black Construction, and M.E.I. Engineering and Construction have been given to the JICA Study Team. The data for Black Construction is with the Study Team, the data for M.E.I. Engineering and Construction is included as Attachment 1-(7)-a.

A listing of small construction companies generally with less than 10 full-time workers is provided in Attachment B. In addition, a listing of major suppliers is provided in Attachment 1-(7)-b, along with a pohnpei Business Directory..

(8) Climatic condition of Pohnpei Island:

a. Temperature, humidity, and rainfall:

	1990 Temperature: (°C)	1990 Raninfall: Kolonia Town (Inches)	(cm)
January:	27.6	11.72	29.77
February:	27.1	8.24	20.93
March:	27.8	13.2	33.53
April:	27.4	17.87	45.39
May:	27.4	21.56	54.76
June:	27.5	15.13	38.43
July:	27.3	8.37	21.26
August:	27.2	20.37	51.74
September:	26.9	26.72	67.87
October:	27.4	15.94	40.49
November:	27.3	15.12	38.40
December:	26.8	15.34	38.96

Avg. Humidity: Humidity is fairly constant between 80% and 85%.

b. Recorded Max. wind Velocity in Typhoon: 65 kts.

c. Earthquake: Pohnpei is not in an earthquake zone.

d. IKL (Isokelannic Level), Thunders: The majority of storms on Pohnpei have no thunder. When thunder occurs, maybe once every year, it is not loud in the lower residential areas of the island.

2. Information of the POHNPEI UTILITIES CORPORATION (PUC)

(1) Organization of the FSM National Government and Government of Pohnpei State:

The organization charts for FSM National Government and Pohnpei State Government are included as Attachment 2-(1).

(2) Position of PUC in the State Government organization and others:

The PUC is a "statutory corporation" of the Pohnpei State Government. The corporation was created by the Pohnpei State Public Law, and it is answerable to a Board of Directors appointed by the Governor of the State.

(3) Law for the PUC: See Attachment 2-(3).

(4) Organization of PUC:

a. Organization and Nos.of Staff: See Attachment 2-(4)-a. See also staff listing in PUC Budget Documents.

b. Location of Head Office: Kolonia Town, Pohnpei.

c. Location of local Office: There are no local offices.

d. Supporting organization for PUC if any:

1. There are specific programs which are available to the PUC through the U.S. Department of Interior, Office of Insular and Territorial Affairs. These include current programs such as the Operations and Maintenance Improvement Program; and previously funded programs such as the Technical Assistance Programs, the Power Fund Program, the Deficiency Fund Program, and the Enhanced Maintenance Program. (General program funding accounts are available on page #3 of Attachment H.)

2. The PUC is also eligible for occasional assistance from the Federal Emergency Management Agency Relief Agency. These funds are for the repair of property and equipment that sustained damage from natural disasters i.e. typhoons or other non-preventable occurrences.

(5) Administration of PUC:

a. Annual Report:

PUC was initiated in October 1991. Therefore there is no annual report to date. The budget for 1992 reflects both real expenditures and revenues, and the forecast revenues and expenditures for 1992. The PUC operates on the U.S. fiscal year which begins in October 1st each year. We are now in PUC Accounting year, FY 1992.

During the Trust Territory Administration of the U.S. all electrical utilities were administered by the Department of Public Works, in the State Government. This operation was not efficient. The ability to adequately operate and maintain the facility was dependent on the financing State Legislature provided each year. Most years there was no money for spare parts and maintenance. Spare parts were only bought to fix broken engines. No preventative, or scheduled maintenance occurred. Maintenance was performed only when the machines broke down. In addition, collections were difficult because cutting off power to non-payers was difficult for political reasons. Thus, revenues were not great. The State Legislature had to subsidize the electrical power production with over $2.0 million in appropriations each year for operations.

Because of budget difficulties, legislature has decided to create a public corporation and mandate that it levy electrical consumption rates that will enable the corporation to operate without subsidy from the State Government. PUC is now in its first year of operation.

b. Accounting Report: See Attachment 2-(5)-b.

c. Tariff System:

The present tariff is as follows:

- minimum charge is $2.50 per month.
- 0 - 1000 KWH's per month: @ 5 cents per KW hour.
- 1001 - 10,000 KWH's /Mo.: @ 12 cents per KW hour.
- Over 10,000 KWH's /Mo. : @ 23 cents per KW hour.

These tariffs were put into effect in January of this year. Rates will be increased another 60% in June of this year. A contract has been funded and is now out for bids to conduct a medium-term rate study. This detailed technical study will determine the rates required to establish the revenue stream necessary to run PUC as a commercial entity. The new rates will go into effect by the end of the summer, or for the next operating year.

d. Program for the progress of financial administration:

-the international accounting firm of Deloitte and Touche has been hired on contract to set up a computerized accounting system; create a corporate accounting manual; implement internal financial controls; and review overall accounting, inventory, purchasing, and payment systems.

A five-year budget has been prepared for PUC Board Approval and as a guideline for short-term program development: See Attachment 2-(5)-d.

(6) Main Facilities:

a. Generator Plant: PUC has three separate generating facilities:

*1. Nanpohnmal: The Nanpohnmal plant houses six Caterpillar diesel driven generators. Three D-351a's which produce 1MW each, and three D-399s which produce 400 kw each (site rating).

*2. ALCO Barge: The ALCO Barge, which is located in the harbor near the airport, houses four ALCO diesel generators which produce 1.6 MW each (site rating). One of the four generators has been decommissioned. At present only one of the remaining generators is operating.

*3. Nanpil Hydro Plant: The hydro plant is a fully computerized facility which was constructed, by the U.S. Army Corps of Engineers, on the Nanpil River. This plant has two turbine generators which can respectively produce 1100 and 600 kw. Productivity at this plant is dependent on water levels. The facility does not have the ability to store water.

b. Transmission/Distribution Line:(High Tension)

The distribution of power is carried by a main feeder line which runs between the ALCO Barge and the Nanpohnmal at 13.8 Kv. A separate line comes off the same bus at 4160 volts and supplies power to an older distribution system that is still left from territorial times. The rest of the island's power is carried at 13.8 kv.
See also Attachment 2-(6)-b.

(7) Main Characteristics and Maintenance for the PUC:

Main contents/items and maintenance work for the facility being carried out by PUC maintenance staff.

- The corporation's maintenance effort is carried out on a daily basis by PUC full-time employees. The maintenance tasks fall into three distinct categories: generation, distribution, and general maintenance.

*1. Generation Maintenance: includes preventative maintenance such as changing or cleaning filters, conditioning water, checking oil levels, and monitoring gauges. The generation division also has the ability to perform major and minor repairs and overhauls.

*2. The Distribution Maintenance: includes maintaining, repairing, and/or replacing poles, lines, transformers, insulators, fuses, etc. These individuals also run the customer hookup program.

*3. The General Maintenance: crew handles upkeep, construction, and repair/refurbishment of the physical plant. This responsibility includes carpentry, painting, fabricating, and mechanical work.

Maintenance costing and scheduling is also referenced in the five-year budget forecasts included as an attachment to this package.

(8) There are no Historical records for cut-off or faults for the PUC distribution system or for the generating facilities.

(9) Generated energy by PUC power stations and present electrical power consumption, and estimated demand in the service area (MWH).

Estimates of the historical annual production are presented in the "Economic Indices" Table in Section 1. above. Additional information is presented here:

A. Available Dry-Weather Energy Generation Today:

1. ALCO Barge	1 x 1.8 MW	=	1.8	MW
2. Nanpohnmal	1 x 0.8 MW	=	.8	MW
	2 x 1.1 MW	=	2.2	MW
Total:.....		=	4.8	MW

NOTE: At present we are load shedding to all customers.

It is expected that one additional ALCO engine will come back on line this month adding an additional 1.8 MW to the supply system. We are also waiting correct parts and tools from Catepiller and when these come in we should be able to bring one additional .8 MW engine on line, and an additional 1.1 MW engine on line. With these repairs, and without further breakdowns, we should be operating with about 8.5 MW by the end of the summer. Our peak load demand now is between 5.5 MW and 6.0 MW. Approximately 250 additional line connections will be in operations this summer.

B. Estimated Annual Production:

Date	MWh's	
1982	13,146	
1983	14,647	
1984	16,437	
1985	18,270	
1986	20,000	
1987	20,683	
1988	21,956	
1989	24,408	
1990	25,183	
1991	26,700	Estimated
1992	28,200	Estimated

C. Estimated Peak-Load Demand: See also actual production logs, for week sample, documents already given to JICA Team.

Date:.....MW

1992:.....	5.5	MW	to	6.5 MW
1993:.....	7.01	MW	to	9.0 MW
1994:.....	10.5	MW	to	10.8 MW
1995:.....	11.5	MW	to	12.0 MW

The increased demand for 1992, 1993, and 1994 are based on project that have been financed and are in the construction stage. We consider these to be fairly firm estimations. The estimations of demand for 1995 and beyond are not based on firm construction commitments. We expect residential power users to move toward 80% of total households which means that we will double residential (domestic) demand over the next five-year period. We also expect continued growth in tourism hotels and service activities. A forecast of 15% growth per year from 1996 to 2000 would be a conservative estimate.

(10) Numbers of consumers and their category in terms of KWH.

There are approximately 2,400 metered customers on the present system. At the present time, the corporation is pursuing a policy of metering all power customers. (In the past Government buildings were unmetered.)

An analysis of the consumption variance among consumers shows that the majority of customers fall into the 1000 kwh or lower range of monthly consumption. See Attachment 2-(10).

3. Information of the Proposed Project:

(1) Upgrading masterplan for the future regarding the electric utility system, including the Hydro Power, in the whole of Pohnpei Island.

Pohnpei is in the process of bring in two slow-speed diesel generators which should be on line in November 1992 and should provide an additional 5.0 MW of electricity (Probably actual production will be between 4.0 MW and 4.5 MW.

Pohnpei is currently reviewing its distribution system, and has contracted to document the system. Major emphasis over the next two years will be to firm up production, and to get the distribution system up to standard. In addition, a major emphasis will be placed on training and establishing a regular maintenance schedule.

A medium term PUC development plan will be created during the second year of PUC operations. Additional hydro power is not expected to contribute to the supply or production of electricity over the next five to ten years. The Nanpil hydro-facility will continue to be operated as the river flow permits.

(2) Study data for water flow of rivers in POHNPEI Island, or potential hydro electric energy.

A study document for the development of mini-hydro electric generation for Pohnpei has been given to the JICA Study Team. Pohnpei does not plan to increase the hydro-generating potential of Pohnpei. We have found the mini-hydro concept not workable here on Pohnpei; the systems are difficult to build and maintain. (Attachment 3-(2))

(3) Situation of the Proposed Project in the Masterplan.

A masterplan for the development of PUC will not be documented until the second year of operation. The State of Pohnpei is relying on the Japanese Grant Aid Project proposed to provide the much needed base power supply for the whole island. The ALCO generators have proven to be unreliable and will be retired as soon as the new slow-speed generators are on line. In addition, PUC is considering taking off line as many of the high-speed Caterpillar Diesels as possible to be used as stand-by generating systems for scheduled overhaul and maintenance of the primary generating units. These high speed Caterpillar engines and generators have difficult to maintain, and it is difficult to get the proper tooling for repairs. The high-speed engines and generating units are much more costly to operate. These engines are breaking down continually. They will be used for peak-load requirements, emergency, and for carrying loads as we repair the primary slow-speed units.

(4) Budget Preparation for the Project and Cost of Maintenance.

See Five-Year Budget included in this package: Attachment 2-(5)-d.

The slow-speed twin 2.5 MW engines that are now being installed will come with 5-years of spare parts. In addition, a technician will come down from Japan to assist and oversee the major maintenance tasks for the first year of operation. In addition, maintenance personnel from PUC are currently in Japan training on the new diesels maintenance programs.

We are proposing that the Japanese Grant Aid Project for two additional slow-speed, twin 2.5 MW generating units will come with similar package of parts,repair, maintenance and warranty. In addition, we have budget for the Grant Aid Generating units in the Five-Year Budget Forecasts included.

(5) Diesel Engine Generator Plant and Operation:

a. Area map, and location of Plant: We have provided the JICA Study team with the location maps, and the site map. (Attachment 3-(5))

b. Scope of work that will be prepared by the State of Pohnpei:

Pohnpei State agrees to the provision of site preparations, and supporting civil works, and materials and supplies as stipulated in The Preliminary Study....Inception Report, Section titled "Undertakings to be taken by Each Government."

The major costs and civil works support that have been completed or are planned in preparation for the Japanese Grant Aid project include, but are not limited to,:

1.	Access Road Improvements:.....	$ 75,000
2.	Land Conditioning:.....	$ 50,000
3.	Fuel Storage:.....	$ 50,000
4.	Water Storage:.....	$ 25,700
5.	Line Clearage for Backfeeders:...	$ 20,000
6.	Fencing:.....	$ 21,500
First Estimate Direct Costs Total:...		$ ~~220,000~~ 242,200

These are initial estimates only. Pohnpei will directly support all phases of the project requiring civil works and administrative support. Where road construction and/or clearing is required for installation of the line protective system, and the back feeder lines, Pohnpei PUC will provide site and right-of-way clearance and civil works.

(6) Automated Distribution System Protection:

a. Single line diagram of the Distribution System in the whole POHNPEI Island. Provided to the JICA Team. (Attachment 3-(6)-a)

b. Applied Location of the Vacuum Switches (24 pcs):

An initial, preliminary sketch was given to the JICA Study Team. A more detailed sketch can be worked out when the technical design team comes should the project be approved by the Japanese Government.

c. Applied scheme and installed location of Reclosing Relays: (4 pcs.).

A line drawing showing the location of these Relays was given to the JICA Study Team.

d. Figure and dimensions of typical distribution line pole on the island.

Pohnpei is upgrading all poles to cement poles because of typhoon wind damage to wooden poles, and because of termite infestation. A brief discussion was held with the JICA Study Team regarding the dimensions of the concrete poles.

e. Technical data on strength of pole under conditions of Vacuum Switch mounting.

This technical detail was discussed with the JICA Study Team. There will be no problem with mounting the Vacuum Switches.

(7) Three-Phase Distribution Line Backfeeder:

a. Applied location, line length, and relation to existing system.

This information was given to the JICA Study Team. (Attachment 3-(7)-a)

b. Voltage: 13.8 kv.

c. Type of line: Overhead:

Please note: We are not certain concerning the Nett Loop backfeeder line. The line may go as an overhead around the loop (as traveled by the JICA Study Team),or as a bundled overhead high line across over the bridge, or as an underground cable under the bridge parallel to the existing line. This configuration should be decided by the detailed technical design team.

d. Scope of work has been discussed with the JICA Team.

(8) List of International Assistance projects realted to the Project and their outline, if any. There are no other international assistance projects associated with the Japanese Grant Aid Project of 1992 for the State of Pohnpei.

4 Others:

(1) How many volume of Typhoon Damage:

This information has been given to the JICA Study Team.

(2) Applicable Industrial Standards in FSM, especially in the field of electrical and mechanical engineering.

This question was discussed with the JICA team. U.S. Standards are used.

(3) Where is the fuel for diesel generator imported from? Price of fuel? See budget documents included. Fuel comes from Mobil Oil. Price of fuel varies; current price around .90 cents a gallon delivered.

(4) How many consumers have the private generator? Approximately 10 consumers. All of these generators are under 100 KW systems.

M.E.I. ENGINEERING & CONSTRUCTION
P.O. Box 146, Kolonia, Pohnpei State
FSM 96941

A. EXPERIENCES:

1. General Construction Contractor - - - - - - - - - 1987
2. Architect/Engineer Consultancy Services - - - 1987

B. PROJECT UNDERTAKEN, ADMINISTERED and COMPLETED

Name of Project	Owner	Project Cost	Category	Completed	Remarks
a. Kolonia Activity Court Kolonia, Pohnpei	Pohnpei State	$ 11,000	Prime Contractor	Oct. 1987	Completed
b. Mesihsuo Water System Madolenihmw, Pohnpei	Pohnpei State	52,000	Prime Contractor	Sep. 1988	Completed
c. Mobil Residence Renov. Pohnpei Bulk Plant	Mobil Oil Micronesia	12,200	Prime Contractor	Jun. 1988	Completed
d. Mobil Oil Office/Warhse Pohnpei Bulk Plant	Mobil Oil Micronesia	15,000	Prime Contractor	Sep. 1988	Completed
e. Mobil Signs Pohnpei	Mobil Oil Micronesia	4,800	Prime Contractor	Sep. 1988	Completed
f. Mobil Pumps, Jets Mobil Pohnpei	Mobil Oil Micronesia	6,000	Prime Contractor	Oct. 1988	Completed
g. Mobil Emergency Signs Mobil Pohnpei	Mobil Oil Micronesia	2,543	Prime Contractor	Dec. 1988	Completed
h. Mobil Plant Street Lights Mobil Pohnpei	Mobil Oil Micronesia	5,000	Prime Contractor	Jul. 1989	Completed
i. Kolonia House Sewer Kolonia, Pohnpei	FSM Govt.	350,000	Prime Contractor	Mar. 1989	Completed
j. Bernard Service Station Kolonia, Pohnpei	Bernard Helgenberger	171,578	Const. Manager		Completed
k. Capitol ComplexOverhead Transmission Line Palikir, Pohnpei	FSM Govt.	28,000	Installation/Manpower Supply (Subcontractor from Hanil)		Completed
l. Residential Bldg, Nanpohnmal, Pohnpei	Kohne Ramon	12,000	Skilled Labor	Jun. 1987	Completed
m. Residential House Kitti, Pohnppei	Alter Paul	1,000	A&E Services		Completed
n. Apartment Building	Y. Helgenberger	1,600	A&E Services		Completed

o. Yap Post Office Renov. Yap, Caroline Island	FSM Postal Service	$ 8,750	Prime Contractor	Jun. 1989	Completed
p. Sekere Water System Sekere, Pohnpei	Pohnpei State	92,486	Prime Contractor	Dec. 1989	Completed
q. FSM Capital Power Plant Palikir, Pohnpei	FSM Govt.	34,000	Prime Contractor	Sep. 1989	Completed
r. Overhead Electrical Proj. Palikir, Pohnpei	FSM Govt.	28,000	Prime Contractor	Mar. 1990	Completed
s. Lukop Water System Lukop, Madolenihmw	Pohnpei State	24,000	Prime Contractor	Mar. 1990	Completed
t. Mesihsuo Water Ext. Mesihsuo, Madolenihmw	Pohnpei State	36,000	Prime Contractor	Mar. 1990	Completed
u. Office Building	Federated Ship	18,000	Prime Contractor	Apr. 1990	Completed
v. FSM Congress Electrical Revisions & A/C Palikir, Pohnpei	FSM National Govt.	179,000	Prime Contractor	Nov. 1990	Completed
w. CCM Field Office Palikir, Pohnpei	FSM National Govt.	24,000	Prime Contractor	Dec. 1990	Completed
x. FSM Capitol Electrical Revision & 100% A/C Palikir, Pohnpei	FSM National Govt.	398,730	Prime Contractor	Feb. 1991	Completed
y. Dau Mwokaotoa Bridge Sokehs, Pohnpei	Pohnpei State Govt.	207,305	Prime Contractor	May 1991	Completed
z. Mobil Residence/Mobil Warehouse, Pump House, Electrical Revisions & Office renovations, Back up Generator Installation.	Mobil Oil Micronesia	32,830	Prime Contrctor	Sep. 1991	Completed
aa. Postal Office bldg. repairs Old FSM Supreme Court Building repair/ Renovation	FSM/State Govt.	12,200	Prime Contractor	Sep. 1991	Completed
bb. Pohnpei State 5MW Diesel Power Plant	Pohnpei State Government	247,500(Civil)	Sub-Civil Work	Feb. 1992	June 1992

C. KEY PERSONNEL

1. MADILINA IKOSIA	- Owner/Proprietor
2. BERNABE P. ABAT	- General Manager/Civil-Structural Engineer/MBA
3. DOMINADOR ABAT	- Gen. Supervisor/Foreman/Civil Engineer
4. FEDERICO MADAMBA	- Supervisor/Foreman Electrical Works
5. ALEJANDRO PADUA , JR.	- Chief Mechanic/Heavy Equipment Operator
6. BENJAMIN C. TIPAY	- Foreman, Plumbing, Sewer/Waterworks
7. ROGELIO BALAGOT	- Master Electrician/Telephone/Lineman/Operator
8. LUIS RANCUDO JR.	- Master Electrician/First Class Lineman/Operator
9. ROGELIO A. TIPAY	-Foreman, Welding & Steel Works
10. HAYDEN PADUA	- Equipment Operator
11. RICARDO V. LOPEZ	- Foreman, Masonry & Concrete
12. ROMUALDO A. ABAT	- Carpenter/Mason
13. ROGER P. SALAZAR	- Carpenter/Mason/Tinsmith
14. TEOFILO L. LAGUIT	- Mason/Carpenter/Welder

15. 45 -Local Workers/Helpers & semi skilled as of April 1992

D.EDUCATIONAL BACKGROUND & WORK EXPERIENCE OF THE KEY PERSONNEL.

1. BERNABE P. ABAT - **General Manager**

Educational Background	* Bachelor of Science n Civil Engineering 1974 * Master in Business Administration 1983
Professional License	* Professional Engineer 1976 No. 15513
Work Experiences	* General Manager, MEI Company , Pohnpei,1987- Present * Engineering Consultant,Universal Engineering,Guam 85-86 * Project Manager, Josman Company, Yap 1984-1985 * VP, Engineering & Operation, BP Abat & Asso. 1980-1984 * Civil Engineers Board Reviewer, Baguio RP 1980-1984 * College Professor, Baguio, 1976-1984 * Asst. Provincial Engineer, Benguet, NIA, 1977-1980 * Project Investigator, NIA, 1976-1977 * Engineer Trainee- Field Engineer 1974-1976

Trainings, Workshops

* Construction Planning & Management, Phil. Inst. of Civil Engineers, 1977
* Supervisory Training & Workshop, NIA, Phil., 1978
* Human relations & Management Training, UP, 1978
* Post Graduate Training on Integrated River Basin Management, UNESCO, MAB, UNEP, Asia 1979
* Faculty Development Seminar Workshop I 1981
* Faculty Development Seminar II 1981

2. DOMINADOR P. ABAT - **Project Engineer/Structural Civil Engineer**

Educational Background

* Bachelor of Science in Civil Engineering
* Bachelor of Science in Geodetic Engineering

Profession License

* Civil Engineer, Professional Regulations Commission
* Geodetic Engineer, Prof. Regulations Commission

Work Experience

* Project Engineer, BP Abat & Associates 1984-1987
* Civil Engineer, MEI Engineering & Construction, 1987-Pres.

3. FEDERICO MADAMBA - **Master Electrician-Lineman/Foreman**

Educational Background

* Associate in Electrical Engineering
* Practical electricity

Professional License

* Master Electrician, Prof. Regulation Commission

Work Experiences

* Master Electrician-lineman/Foreman, MEI, Pohnpei
* Lineman-Foreman-Supervisor, Elec. Const. & Maintenance Company, Guam-Pohnpei, 1980-1983
* Foreman, MERALCO, 1977-1980 (Manila Electric Company)
* Leadman, MERALCO, 1972-1977
* Lineman-Electrician, MERALCO,1964-1972

4. ALEJANDRO M. PADUA JR - **Heavy Equipment Mechanic/Operator**

Educational Background

* Heavy Equipment Mechanic
* Automotive Mechanic
* Heavy Equipment Operator

Professional License

* Mechanic

Work Experiences

* H.E. Operator/Mechanic, MEI, Pohnpei 1987 - present
* Engine Mechanic, Balicha Motor Works 1984-1987

4. BENJAMIN C. TIPAY - **Master Plumber**

Educational Background

* Practical Plumbing & Carpentry
* Master Cutter

Professional License

* Master Plumber

Work Experiences

* Plumber/Foreman, MEI 1989-present
* Master Plumber/Black Micro Corp., Yap 1987-1989
* Master Plumber/Josman Company, Yap 1986-1987
* Plumber/Carpenter, Litton Phillip Holzman, K.S.A. 1983-1984
* Plumber, Rosendo Silvestre & Associates, RP 1979-1980

6. ROGELIO BALAGOT - **Master Electrician/Telephone/Lineman/Operator**

Educational Background	* Practical Electricity * Telecommunication Engineering
Professional License	* Master Electrician
Work Experiences	* Master Electrician Lineman, MEI 1987-Present * Asst. Wire Transmission Engineer, Sumitomo Electric Industries, Ltd., 1983-1 * Maintenance Electrician, Sergs Product, Inc. 1980-1983

7. LUIS RANCUDO, JR. - **Electrician**

Educational Background	* Practical Electricity * Electronic Technician
Profession	* Electrician/Journeyman
Work Experiences	* Electrician, MEI 1990 - Present * Electrician-Lineman, National Power Corporation 1986-1990

8. ROGELIO A. TIPAY - **Master Carpenter/Mason/Welder**

Educational Background	* Practical Carpentry/Masonry * Arc Welding & Oxy-Acetylene Welding
Work Experiences	* Carpenter/Mason Foreman, MEI 1989-Present * Carpenter Foreman, Litton Phillipp Holzman, K.S.A. 1983- 1984 * Carpenter, Metallum Engineering Corp., RP 1973-1976 * Welder, Batumbuhay Mines Inc, RP 1976 - 1983

E. LISTS OF EQUIPMENTS

1. Yanmar Backhoe	Acquired 1988- From Dainichi, Japan	Good Condition
2. Case Backhoe Loader Model 580 C	Acquired 1989- From Pacific Orient, USA	Good Condition
3. Case Backhoe Loader Model Case 580 E	Acquired 1991- From Intracor, USA	Good Condition
4. Mitsubishi Damp Truck 5 Ton Capacity	Acquired 1988- From Dainichi, Japan	Good Condition
5. Hino Dump Truck 5 Ton Capacity	Acquired 1988- From Dainichi, Japan	Good Condition
6. Isuzu Dump Truck 2 Ton Capacity	Acquired 1987- From Dainichi, Japan	Good Condition
7. Concrete Mixer 1bagger capacity	Acquired 1987- From Dainichi, Japan	Good Condition
8. Concrete Mixer 1 bagger capacity	Acquired 1989- From Dainichi, Japan	Good Condition
9. Concrete Cutter	Acquired 1990- From IBC, USA	NEW

10. Heavy Duty Jack Hammer Hydraulic operated	Acquired 1990- From IBC, USA	NEW
11. Concrete Vibrator	Acquired 1990- From IBC, USA	NEW
12. Concrete Vibrator	Acquired 1987- From IBC, USA	Good Condition
13. Compactor/Plate Tamper	Acquired 1988- From IBC, USA	Good Condition
14. Compactor, Jumping Jack	Acquired 1990- From IBC, USA	NEW
15. Pick Up Truck , Toyota	Acquired 1989- From Dainichi, Japan	Good Condition
16. Pick Up Truck , Isuzu	Acquired 1988- From PTR, Pohnpei	Good Condition
17. Isuzu Jeep Wagon	Acquired 1987- From PTR, Pohnpei	Good Condition
18. Welding Machine, Arc	Acquired 1988- From IBC, USA	Good Conditon
19. Welding Machine, Arc	Acquired 1990- ACE Pohnpei	New
20. Pick Up, Double Cab, 4Wheel, Toyota	Acquired June 1991, Bernard, Pohnpei	New
21. Compactor, Rammer	Acquired 1992, Mikasa , Japan	New
22. Compactor, Rammer	Acquired 1992, Mikasa, Japan	New
23. Compactor, Rammer	Acquired 1992, Mikasa, Japan	New
24. Compactor, Rammer	Acquired 1992, Mikasa, Japan	New
25. Compactor, Rammer	Acquired 1992, Mikasa, Japan	New
26. Compactor, Plate Tamper	Acquired 1992, Mikasa, Japan	New

F. ON GOING PROJECTS

1. 5MegaWatt Diesel Power Generator Plant (Civil Works)	$247,500.00	70% Complete

LIST OF CONTRACTORS

1. ACE/M.N. CONSTRUCTION CO.
   Box 38
   Tel. 3202-515
   Mr. Robert Etschiet
   Mr. Stive Nix

2. APPROPRIATE TECH. ENTERPRISES
   Box 607
   Tel. 3202-633

3. B & G CONSTRUCTION CO.
   Box
   Tel.
   Mr. Murphy Lipai

4. BLACK MICRO CONSTRUCTION CORP.
   Box 337
   Tel. 3202-924
   Engr. Jaime Ledesma

5. CIVIC ACTION TEAM, U.S. AIR FORCE
   Box 570
   Tel. 3202-996
   Lt. Daniel Costello

6. CAPITOL FABRICATION & TRADING CO.
   Box 43
   Tel. 3202-623
   Mr. Irving Bardelas

7. DANKE JOHNSON
   Box
   Tel.
   Mr. Dangke Johnson

8. DELCO CONSTRUCTION CO.
   Box 620
   Tel.3202-585
   Mr. Elmer David

9. D & R CONSTRUCTION CO.
   Box 272
   Tel. 3202-395
   Mr. Rolando H. Roque

10. D & R CONSTRUCTION CO.
    Box 267
    Tel. 3202-122

11. EFREN H. ROQUE, Architects
    Box 6
    Tel. 3202-585
    Arch. Efren H. Roque

12. EL'S ENTERPRISES
    Box 563
    Tel. 3202-906
    Mr. J. D. Lowe
    Engr. Bert Fortuna

13. ENERIKO IKALAP
    Box
    Tel.
    Mr. Enriko Ikalap

14. G.E.O. ENGINEERING
    Box 1349
    Tel. 3205-427
    Ukirt Siripusanan

15. GUIBER GENERAL CONSTRUCTION
    Box 1417
    Tel.
    Ms. Hilaria Bermanes
    Abelardo Guiao

16. HELMIS INC.
    Box 1653
    Tel. 3202-728

17. HEMON CONSTRUCTION CO.
    Box
    Tel. 3202-572
    Mr.Welsin Hemon

18. H & K BUILDERS
    Box 579
    Tel. 3202-342
    Mr. Hatler Gallen

19. ISLAND ENGINEERING & CONSTRUCTION
    Box 117
    Tel. 3202-816
    Mr.Hubert Yamada

20. JACK POBUK ENGINEERING FIRM
    Box 502
    Tel. 3202-360
    Engr. Jack Pobuk

J.N. IRON WORKS
Box 393
Tel.
Mr. Nixon Anson

22. L.A.R CONSTRUCTION
Box
Tel.
Mr. Tony Reyes

23. MEI CONSTRUCTION & ENGINEERING
Box 146
Tel. 3202-635
Ms. Madelihna Ikosia
Engr. Bernie Abat

24. M.J.S GENERAL CONSTRUCTION
Box
Tel.
Mr. Noriko Shonibèr

25. NATIONAL DEVELOPMENT CORPORATION
Box 12
Tel. 3202-525, 3202-154
Mr. Bailey Olter

26. POHNPEI ECONOMIC PROGRESS
Box 1416
Tel. 3202-779
Ms. Misco Edwin

27. P. T. A.
Box 36
Tel. 3202-377
Mr. Oliver Joseph

28. REYES & SONS CO.
Box 22
Tel. 3202-936
Mr. Prudencio Reyes

29. S.S. CONSTRUCTION CO.
Box 65
Tel. 3202-918
Mr.Silaiser Sokala

30. T & S STEEL CONSTRUCTION
Box 157
Tel. 3202- 368
Mr. Jesw Telles

31. ULTRA LIGHT ELECTRICAL CO.
Box
Tel.
Mr.Marcelo Panaligan

32. P & S CONSTRUCTION CO.
Box 44
Tel. 320-2151
Mr. Osaia Santos

LIST OF LOCAL SUPPLIERS

CIVIL WORKS CONSTRUCTION PROJECTS

A. CONSTRUCTION MATERIALS - Cement, Rebars, Wood, Hardware

1. Leo Eschait's Store
2. Ace Hardware
3. Panuelo Enterprises
4. Ambrose Store
5. Pohnpei True Value Store
6. EMC Construction Supplies

B. SAND/ CORAL

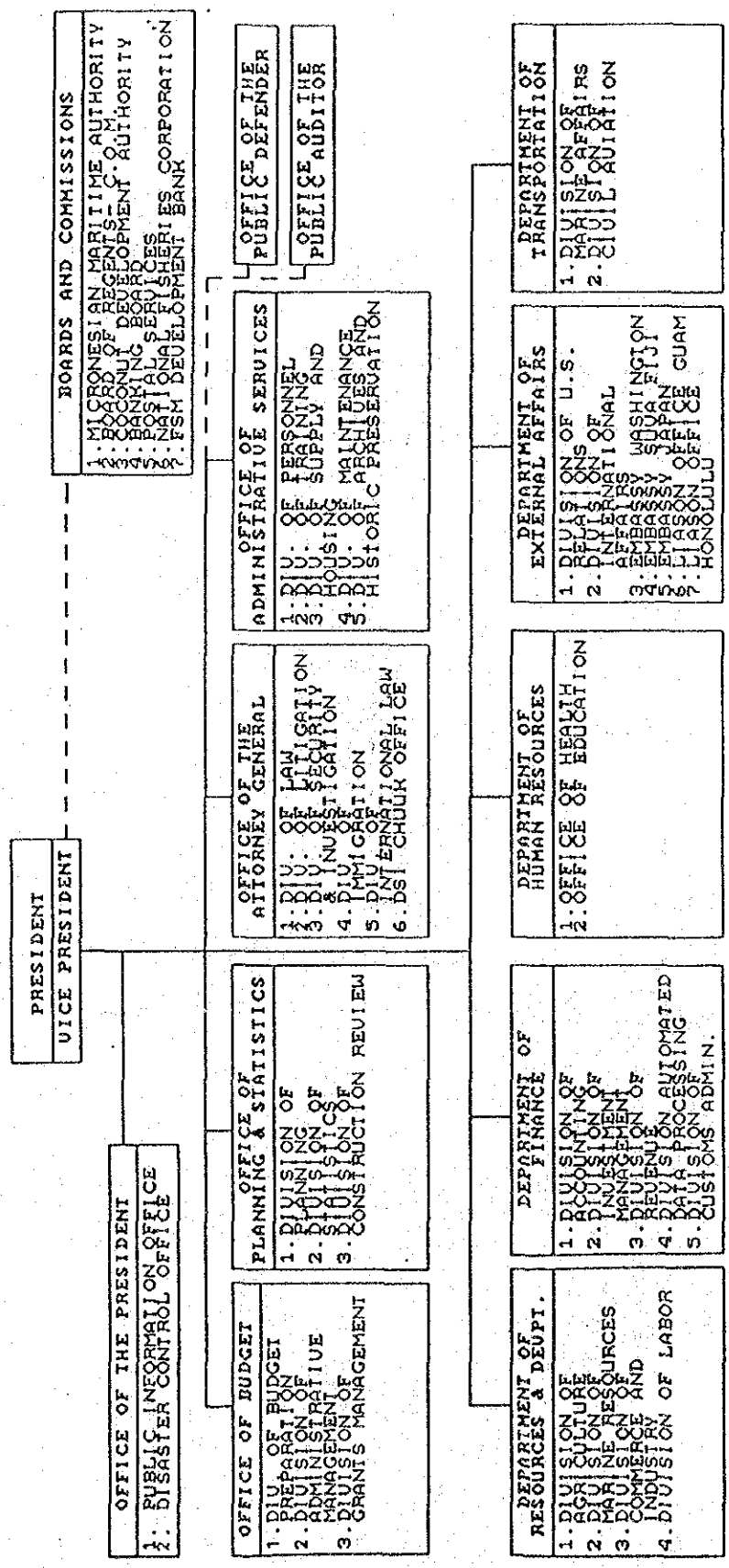
1. Ponape Economic Progress - c/o Misko Edwin
2. Martin's Enterprises - c/o Peter Christian
3. Ace M-N Construction - c/o Steve Mix

C. GRAVEL/ AGGREGATES

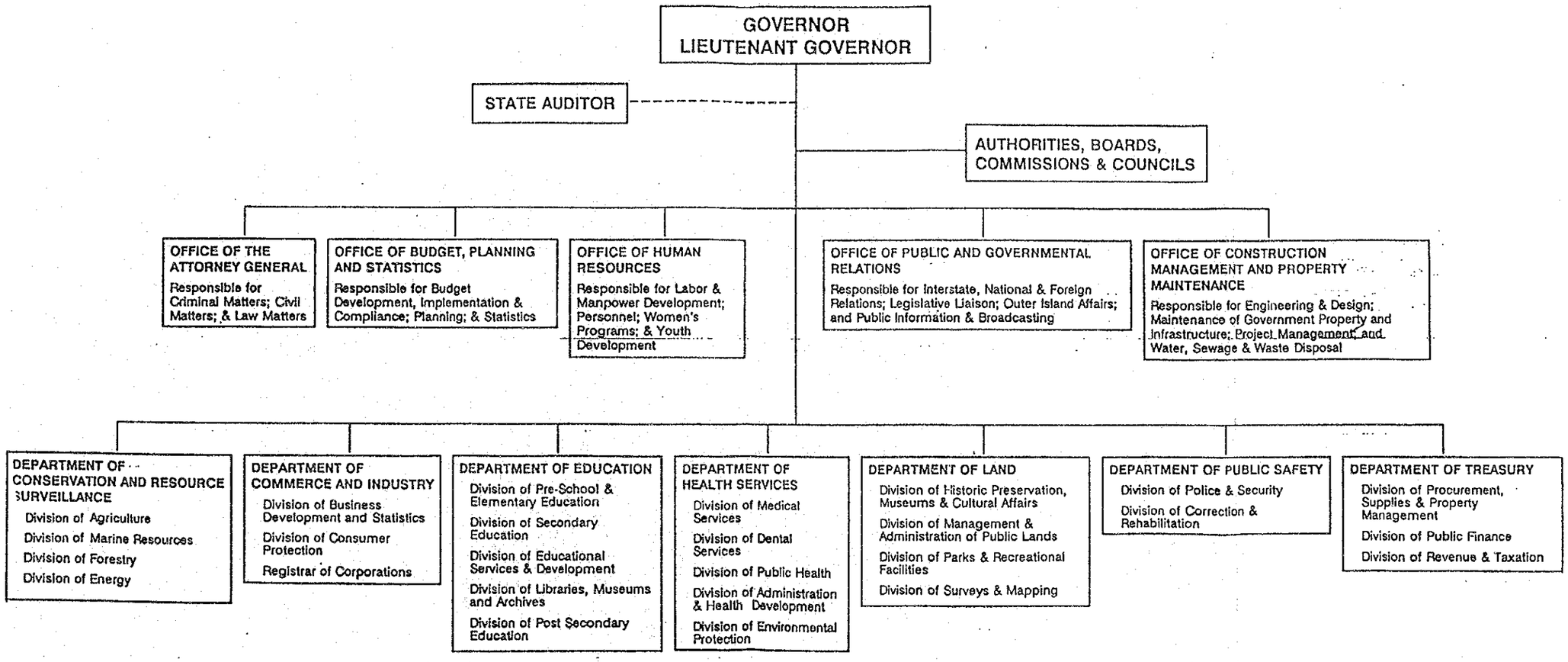
1. Ponape Aggregate Products - c/o Black Micro Construction

Figure 25.1 ORGANIZATION OF THE NATIONAL GOVERNMENT EXECUTIVE BRANCH

FSM NATIONAL ORGANIZATION OF THE EXECUTIVE BRANCH



EXECUTIVE ORGANIZATION OF THE POHNPEI STATE GOVERNMENT
(AS ADOPTED BY POHNPEI STATE LEGISLATURE, L.B. NO. 14-92)



ATTACHMENT 2 - (3)

L. B. No. 46-88
L. D. 1
L. D. 2
L. D. 3

S.L. 2L - 179 - 91.

AN ACT

Establishing the Pohnpei Utilities Corporation; and for other purposes.

BE IT ENACTED BY THE POHNPEI LEGISLATURE:

Section 1. Corporation established. There is hereby established in and for Pohnpei a public corporation to be known as the Pohnpei Utilities Corporation, hereinafter referred to as the "Corporation".

Section 2. Responsibilities, duties and powers of the Corporation. The Corporation is vested with the following powers, duties and responsibilities:

(1) To provide electrical services to the people of Pohnpei through the operation of the electric power system.

(2) To operate and manage the Pohnpei power system on the basis of commercially accepted practices, treating all users of the Corporation's services on equitable terms in accordance with its published fees and requiring all users to pay for services rendered.

(3) To expand and improve upon services offered to the public, and where practicable and necessary, construct and operate new facilities in densely populated or remote areas that are now beyond ready access to existing public services.

(4) To publish and implement a structure of rates for services rendered by the Corporation. Such rates are to be determined by the Board of Directors after consultation with the Board of Residential Properties and Public Utilities, and calculated to ensure that, to the extent practicable, adequate and equitable charges are imposed for services and that the fee structure promotes increased use of public electrical services; PROVIDED that nothing in this Subsection shall prevent the Corporation from using subsidies received from governmental, international or private sources to reduce the overall costs charged to users of electrical services.

(5) To acquire and maintain from the revenues and grants

received by the Corporation a program of liability insurance on all personnel, facilities, and equipment controlled by the Corporation; PROVIDED that if such insurance is not available or is prohibitively expensive, as determined by the Board of Directors of the Corporation, then the Corporation shall establish and maintain a special fund to protect personnel, facilities and equipment not covered by insurance and to satisfy judgements or settlements on tort claims brought against the Corporation for its operations under the provisions of this act.

(6) To invest all surplus revenues of the Corporation in the expansion and improvement of electrical services in Pohnpei.

(7) To acquire land for public purposes subject to Article 12 of the Pohnpei Constitution and applicable law.

(8) To enter on any private or public land, house, or building to which energy has been, is or will be supplied or through which utilities equipment or lines are or will be located in order to survey, take readings, make installations or fittings, remove meters or other instruments for measuring the quantity of energy supplied, to dig out and remove earth, stone, soil, sand and gravel whatsoever for the construction, maintenance or alteration of any equipment or line or any part thereof, to cut and remove any tree or any branch of a tree growing on such lands which may in any way effect or interfere with the operation of electric equipment, open or break up any road, erect and maintain posts, staywires, poles or pillars in or upon any land, or for any other purpose in connection with the continued provision of electricity as provided for by this act. In the exercise of the powers of entry onto private or public land as herein defined, the Corporation shall not be deemed to acquire any right other than

that of a user only in or over the soil of any land. Where such action shall become a nuisance or cause the loss of value to the owner of the land, such loss shall be at the expense of the Corporation, which shall give reasonable compensation as may be agreed upon or in the case of difference, to be determined by arbitration as set forth by rules established under this act.

Section 3. Legal characteristics and capacity of the Corporation. In performing the responsibilities and duties authorized by this act and other laws of this State, the Corporation shall have all of the characteristics of a public corporation and the capacity to exercise all powers normally exercised by a public corporation, including, but not limited to, the following:

(1) To adopt, alter, and use a corporate seal.

(2) To adopt and amend bylaws and other rules, regulations and directives governing the conduct of its business and the performance of the powers and duties granted to or imposed upon it by law. No bylaw, rule or regulation other than that covering the internal operation of the Corporation shall be adopted without a public hearing.

(3) To set interest charges or other monetary penalties, require security deposits, establish monetary penalties, and procedures for termination and to set such other procedures and policies to ensure timely payment and collection of electricity bills.

(4) To sue and be sued in its corporate name; PROVIDED that satisfaction of judgments or the settlement of claims on tort actions against the Corporation may only be paid out of insurance held by the Corporation or the special fund created by the Corporation pursuant to Section 2 (5) of this act, and not out of the other assets or operating capital of the Corporation, and for these

purposes the doctrine of sovereign immunity is recognized and maintained for this public Corporation to the extent not expressly waived by Pohnpei public law; PROVIDED FURTHER that nothing in this Subsection shall prevent the Pohnpei Legislature from making direct appropriations into the special fund created in Subsection (5) of Section 2 for the purpose of assisting the Corporation in the satisfaction of judgments and providing self-insurance protection for personnel, facilities and equipment not covered by insurance on such tort actions or settlement of tort claims brought against the Corporation.

(5) To acquire, in any lawful manner, real, personal, or mixed property, either tangible or intangible; to hold, maintain, use, and operate such property; and to sell, lease, or otherwise dispose of such property.

(6) To acquire and take over in any lawful manner the business, property, assets, and liabilities of any public entity of Pohnpei to the extent of its provision of public electrical services.

(7) To borrow or raise any sum or sums of money and to issue corporate bonds on such security and upon such terms as may from time to time be deemed necessary for the expansion and improvement of public electrical services.

(8) To retain and terminate the services of employees, agents, attorneys, auditors, and independent contractors upon such terms and conditions as the Corporation deems appropriate.

(9) To do all such things as may be incidental to or conducive to the attainment of the responsibilities and duties of the Corporation.

Section 4. Debts and obligations of the Corporation. Unless otherwise expressly provided by law, the debts and obligations of the Corporation shall

not be the debts or obligations of the Government of Pohnpei, nor shall the Government of Pohnpei be responsible for any such debts or obligations.

Section 5. Tax liability. The Corporation shall exist and operate solely for the benefit of the public and shall be exempt from any taxes or assessments on any of its property, operations or activities imposed by the Pohnpei Government or local governments and, to the extent allowable, the Government of the Federated States of Micronesia. Nothing herein shall be deemed to exempt employees and independent contractors of the Corporation from tax liability for services rendered to the Corporation, and the Corporation shall be liable for employers contributions to existing social security systems in the manner provided by law.

Section 6. Composition of the Board: removal; vacancies. All powers vested in the Corporation shall be exercised by the Board, which shall consist of seven members, called Directors who shall be appointed by the Governor with the advice and consent of the Pohnpei Legislature. Initially the Governor shall appoint four members of the Board to four year terms and three members to two year terms. Thereafter persons appointed shall hold membership on the Board for a period of four years, subject to reappointment, and until their successors have been appointed and qualify. Four members of the Board shall be appointed from the public sector and three members from the private sector. No member shall be appointed who is more than three months delinquent in paying his or her electric bill. Members of the Board of Directors may be removed for good cause by the Governor, good cause to include delinquency in the payment of electrical bills for a period greater than three months. All vacancies occurring on the Board shall be filled by the Governor with the

advice and consent of the Legislature, but only for the unexpired term of the member whose vacancy is being filled .

Section 7. Meetings of the Board. Within 15 days after the confirmation of the initial Board the Governor shall call an organizational meeting, and annually thereafter, the Board shall hold a meeting for the purpose of electing its officers for the ensuing year. The Board shall meet once a month and shall hold at least one public meeting each calendar quarter and other public meetings as it may deem necessary for the transaction of its general business.

Section 8. Organization of the Board; quorum; compensation and expenses. The Board shall organize by electing one of its members as Chairman and another as Vice-Chairman. The Board shall also designate from among its members a Secretary to keep the minutes and records of the Board. Any four members of the Board shall constitute a quorum, and a concurrence of four members shall be necessary for any official action taken by the Board unless otherwise provided herein. No vacancy in membership of the Board shall impair the right of a quorum to exercise all of the rights and perform all of the duties of the Board. Directors shall be compensated at the rates established by the State Government Officer's Salary Act of 1984, as amended or superseded by Pohnpei law, when actually attending meetings of the Board, except that those members who are government employees shall instead receive regular salaries while performing functions of the Board. Directors shall also receive travel expenses and per diem at Pohnpei Government rates when these amounts would be payable to Pohnpei Government employees in the same circumstances.

Section 9. Appointment of General Manager; duties; removal. The

Board shall appoint a General Manager pursuant to its articles and bylaws and fix his compensation. The General Manager shall have full charge and control of the operation and maintenance of all the electrical facilities and other real and personal property controlled by the Corporation, and of construction of any facilities, and necessary work on vehicles, vessels and equipment controlled by or required to be rebuilt or repaired by the Corporation. The Board may remove the General Manager for good cause upon a majority vote. During any period when the position of General Manager is vacant, the position shall be temporarily filled from within the organization pursuant to the Articles of Incorporation and bylaws.

Section 10. Powers of the General Manager. The General Manager of the Corporation shall have the following powers:

(1) To ensure that all fees and bills imposed by the Corporation are charged and collected.

(2) To attend all meetings of the Board and to submit a general report on the affairs of the Corporation.

(3) To keep the Board advised on the needs of the Corporation.

(4) To approve demands for payment of obligations within the purposes and amounts authorized by the Board.

(5) To prepare or cause to be prepared all plans and specifications for the construction and repair of facilities, vehicles, vessels, and equipment operated by the Corporation.

(6) To devote his entire time to the business of the Corporation; to select and appoint the employees of the Corporation except as otherwise provided in this act; to plan, organize, coordinate and control the services of

such employees in the exercise of the powers of the Corporation under the general direction of the Board; and, in lieu of hiring employees to perform any of the tasks, work or other services required by the Corporation, to contract with independent contractors, as persons, organizations, or corporations, to provide such services.

(7) To cause to be published within 60 days after the end of each fiscal year, a financial and operations statement showing the result of operations for the preceding fiscal year and the financial status of the Corporation on the last day thereof, which publication shall be made in the manner provided by the Board.

(8) To perform such other and additional duties as the Board may require.

Section 11. Appointment of comptroller and general counsel: duties of each. The General Manager shall appoint a comptroller and a general counsel, both of whom shall report to the General Manager. The comptroller and the general counsel may be terminated for good cause by the General Manager. The comptroller and the general counsel shall be compensated at a rate determined by the Board. Such officers may be full-time employees of the Corporation, shared with Pohnpei Government agencies, or be placed on retainer from the private sector. The General manager may appoint one or more assistants to any such office.

(1) The comptroller shall have custody of all monies of the Corporation and shall pay out such money only in accordance with the direction of the Board and as provided in the annual budget of the Corporation. The Board shall appoint an agent as its trustee for payment of bonds issued by it

and for such related purposes as the Board may provide.

(2) The general counsel shall advise the Board and the General Manager in all legal matters to which the Corporation is a party or in which the Corporation is legally interested and may represent the Corporation before the Congress of the Federated States of Micronesia, the Pohnpei Legislature, Boards, and governmental agencies of Pohnpei, the Federated States of Micronesia, and the United States of America.

(3) The Corporation may use the services of the attorneys for the Pohnpei Government to serve as attorneys for the Corporation, or it may appoint such attorney or attorneys as it may deem necessary, and it shall provide payment of all legal services rendered. All official documents, contracts, bonds and other instruments in writing shall be approved as to form and legality by the general counsel for the Corporation. Such approval may be conclusively evidenced by the signature of the general counsel thereon.

Section 12. Contract letting by the Board. The purchase of all supplies and materials and the construction of all works by independent contractors, when the expenditure exceeds $25,000, shall be by contract let to the lowest responsible bidder. Notice requesting bids shall be published at least 10 days before bids are received. The Board may reject any and all bids and readvertise at its discretion.

(1) If, after rejecting bids for materials and supplies, the Board determines that, in its opinion, the materials and supplies may be purchased at a lower price in the open market, the Board may authorize such purchases without further observance of the provisions requiring contracts, bids or notices.

(2) In case of major public calamity, or whenever it is in the

interest of public safety, or necessary to keep public electrical services operational, the Board may determine that the public interest and necessity demand the immediate expenditure of funds to keep the services operational or in a safe condition, and thereupon authorize the expenditure of such sums as may be needed without the observation of the provisions requiring contracts, bids or notices.

(3) Where reasonable, preference in the letting of contracts shall be given to local contractors.

(4) No Director shall vote on any contract awarded by the Board in which the Director has a direct or indirect financial interest. This provision shall not apply to contracts awarded to a corporation in which such Director owns less than 5 percent of the entire capital stock or in which he does not hold any office or employment. The Board shall establish procedures for the timely verification of this restriction by its general counsel.

Section 13. Accounting and reporting. The Board shall adopt and maintain a system of accounting which is in accordance with generally accepted accounting principles applicable to public corporations. The system adopted shall require that:

(1) The Board employ a firm of independent certified public accountants who shall examine and report to the Board, at least annually, upon the status of the financial records and accounts maintained by the Corporation, copies of any such reports to be furnished to the Governor and the Pohnpei Legislature.

(2) The Board shall report to the Governor and Pohnpei Legislature on the affairs of the Corporation. It shall present an annual report

within 60 days after the end of each fiscal year and, if requested by the Governor or the Pohnpei Legislature, shall present special reports within 30 days after the end of each intervening quarter.

Section 14. Budget preparation. The General Manager shall prepare in advance of each fiscal year, under the supervision of the Board, an annual budget for the Corporation, taking into consideration anticipated capital and operational expenditures and anticipated revenues. The Corporation shall use the same fiscal calendar as that of the Pohnpei Government. The budget shall indicate the operational, capital, and maintenance requirements of the Corporation that will be met with the anticipated revenues of the Corporation, and such essential requirements as cannot be met without increase in the rate of revenues or outside financial assistance.

Section 15. Supplemental budget requests. To the extent that the Corporation deems it necessary and advisable, the Corporation is authorized to seek appropriations from the Pohnpei Legislature and, to the extent approved by the Governor, grants from sources outside of Pohnpei, of such funds as are necessary to supplement revenues to provide for the operations, maintenance, and expansion of the public electrical services in Pohnpei.

Section 16. Manual of Administration. The Board shall establish a Manual of Administration to include rules and regulations governing the selection, promotion, performance evaluation, demotion, suspension, dismissal, and other disciplinary rules for employees of the Corporation. Employees of the Corporation shall be eligible to participate in any health insurance plan, life insurance plan, retirement fund, and workmen's compensation fund available to Pohnpei Government employees. The Corporation shall contribute to such

programs on the basis of periodic billings as determined by the governing authorities thereof.

Section 17. Preference. The Board shall attempt to employ qualified legal residents of this jurisdiction if at all possible. However, the Board shall have as its primary concern in employing or contracting for services, the maintenance of safe, self-sufficient, modern and convenient services and facilities for the improvement of electrical services within Pohnpei.

Section 18. Government assistance to the Corporation in carrying out its functions. For the purpose of aiding in the planning, undertaking or carrying out of the provisions of this act and of the projects contemplated herein, and the subsequent operation and maintenance of the electrical services system, the Pohnpei Government or any department, division, agency, authority or political subdivision thereof, may, if the Chief Executive of the respective governmental subdivision determines that such project will benefit and further the public purposes of the respective governmental subdivision and be of advantage to them, and if the intended action is consistent with the laws of the respective jurisdiction:

(1) Dedicate, sell, convey or lease interests in real or personal properties, rights, or privileges that it may have to the Corporation.

(2) Incur expenses on behalf of the Corporation subject to reimbursement under such terms and conditions as may be agreed upon with the Corporation.

(3) Do any and all things necessary to aid or cooperate in the planning or carrying out of the duties, powers and obligations of the Corporation.

(4) Lend or advance, grant or contribute funds to the Corporation, and provide for or waive the repayment of any such funds loaned or advanced.

(5) Contract with or furnish services to the Corporation upon such terms and conditions as may be agreed upon.

(6) Enter into any agreements which may extend over any period of time notwithstanding any rule of law to the contrary applicable to public corporations or other public bodies unless specifically applied to the Corporation.

Section 19. Waiver. The provisions of the Financial Organization and Management Act of 1987, the State Public Service System Act of 1981, the Contract Review Board Act of 1987 and the Pohnpei Government Salary Conversion Act of 1985 shall not be applied to the Pohnpei Utilities Corporation.

Section 20. Transition. Following organization of the Corporation and upon request of the Board thereof, the Director of the Department of Public Works and the Pohnpei Public Lands Board of Trustees shall, with approval of the Governor and within 120 days, transfer to the Corporation, the entire electrical power system facilities and grounds, along with all equipment and supplies therefor and along with that portion of the Department budget allocated to the operation of the electrical power system, on terms mutually agreed by the Department Director and the General Manager of the Corporation. All deeds, bonds, agreements, instruments and working arrangements existing immediately before the commencement of this act, affecting any of the undertakings which are transferred to the Corporation by the

Government shall continue in full force and effect against or in favor of the Corporation. Any proceedings or cause of action pending or existing immediately before the commencement of this act by or against the Government or any person acting on behalf or the Government in respect to any such transferred undertakings may be continued or enforced by or against the Corporation. Transfer shall be accomplished without disruption of electric power which shall continue at a level at least equal to that provided by the Department of Public Works at the time of the transfer. The Corporation shall for six months offer continuing employment to all employees at levels no less than they received from the Department of Public Works and with recognition of their seniority with the Government in personnel plans established by the Corporation. The Financial Management Act of 1987, as amended, shall apply to the Pohnpei Utilities Corporation until Section 13 of this act is fully complied with as certified by the Pohnpei Auditor.

Section 21. Severability. If any provision of this act or any rule, regulation, or order promulgated hereunder, or the application of any such provision, rule, regulation, or order to any person or circumstances shall be held invalid, the remainder of this act, or any rules, regulations, or orders promulgated pursuant thereto, or the application of such provisions, regulations, rules or orders to persons or circumstances other than those to which it is held invalid, shall not be affected thereby.

Section 22. Effective date. This act shall take effect upon approval by the Governor, or upon its becoming law without such approval.

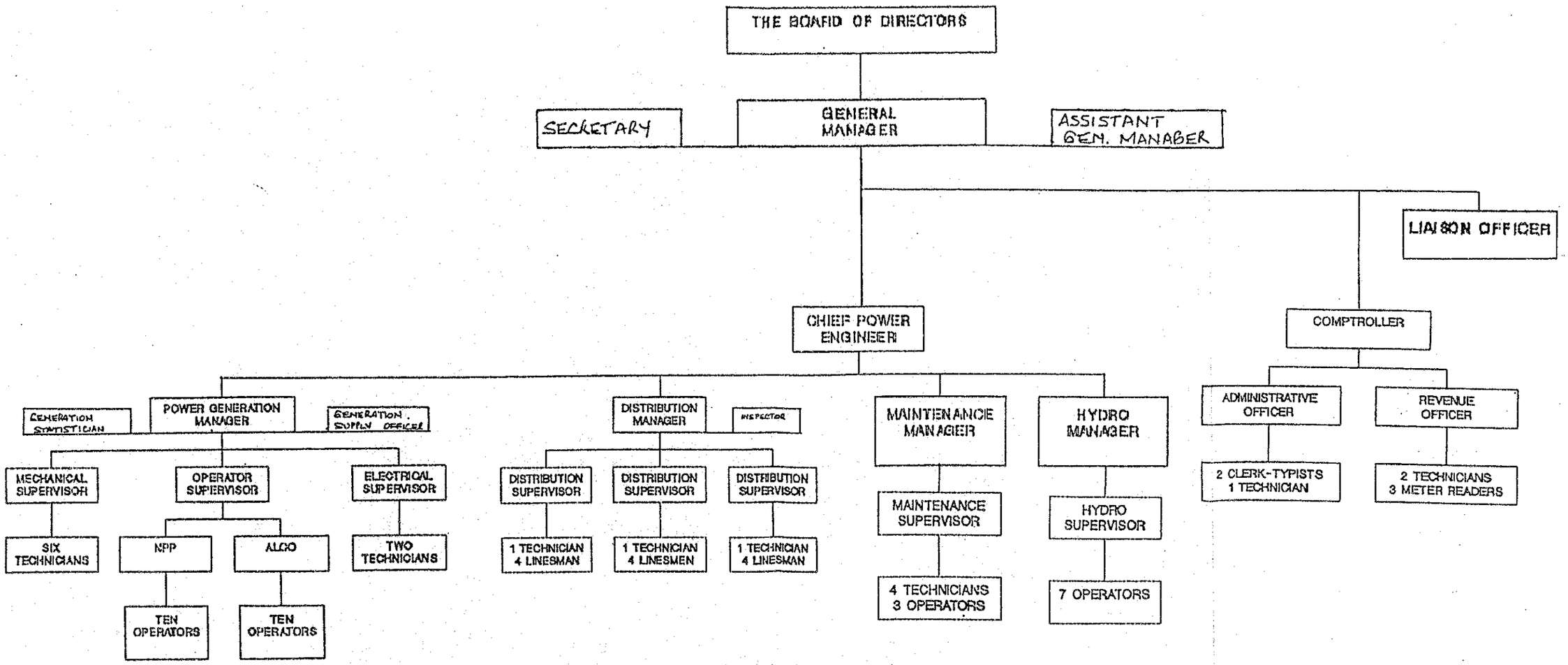
PASSED BY THE POHNPEI LEGISLATURE ON THE 9TH DAY OF FEBRUARY, 1991.

_____
Speaker, Pohnpei Legislature

Attest:_____
Legislative Clerk

Approved:_____ _____
Governor, Pohnpei Date

POHNPEI UTILITIES CORPORATION
ORGANIZATION CHART



POHNPEI UTILITIES CORPORATION.
INCOME AND EXPENDITURE COMPARED TO BUDGET.
FROM 01-Oct-91 TO 31-Mar-92
DATE OF PREPARATION 10-Apr-92

	BUDGET FROM 01-Oct-91 TO 30-Sep-92	BUDGET FROM 01-Oct-91 TO 31-Mar-92	ACTUAL FROM 01-Oct-91 TO 31-Mar-92
INCOME			
Government Sudsidy	700,000.00	700,000.00	700,000.00
Energy Block Grant	1,000,000.00	1,000,000.00	1,000,000.00
Collections	1,650,000.00	729,332.17	729,332.17
Totals	3,350,000.00	2,429,332.17	2,429,332.17
EXPENDITURES			
Salaries	740,050.00	370,025.00	372,096.79
Travel	10,000.00	5,000.00	9,510.60
Consumerable goods			
Office Expenses			
Office Refurbishment			
Cat. Parts			
ALCO Parts			
Typhoon Yuri			
Distrib. Supplies			
Vehicle Supplies			
Other			
Barge			
Govt. Meters			
Totals	80,100.00	40,050.00	134,801.78
Fixed Assets	291,000.00	145,500.00	56,672.45
POL for Vehicles	21,500.00	5,000.00	5,000.00
POL for Generators	2,145,000.00	1,072,500.00	1,000,000.00
Communication	5,000.00	2,500.00	3,500.00
Contractural Service	52,000.00	52,000.00	43,400.00
Totals	3,344,650.00	1,692,575.00	1,624,981.62
BALANCE	5,350.00	736,757.17	804,350.55
BILLINGS	1,650,000.00	825,000.00	922,339.82
Collections	1,650,000.00	825,000.00	729,332.17
% Collections			79.1%

OMIP PROGRAM			
INCOME			
PUC Share			322,250.00
DOI Share			430,250.00
Total	752,500.00		752,500.00
EXPENDITURE			
PUC Share			124,938.75
DOI Share			64,812.25
Total	752,500.00		189,751.00
BALANCE	0.00		562,749.00
TECHNICAL ASSISTANCE GRANT PROGRAM			
INCOME	110,000.00	110,000.00	110,000.00
EXPENDITURE			
Deloitte and Touche			19,000.00
Merz			58,500.00
Total			77,500.00
BALANCE			32,500.00

Five Year (F1991-96) Budget for PUC (抜粋)

Revenues

Energy Grant - The energy block grant monies come to Pohnpei State from the Compact of Free Association. The funds arrive quarterly and have been designated for the use of the Pohnpei Utility Corporation. Future year funds will be adjusted by an inflation factor.

Collections - Collections are based on hours of usage billed through the use of meters at the customers premises. In the past, the rate paid by customers has remained unchanged, and the State Legislature has covered any financial shortfall. Since the new corporation will does not enjoy the past arrangement, it has become necessary to raise rates, and additional rate increases loom on the horizon.

State Subsidy - The legislative subsidy was reduced for Fiscal 92 by the amount of $1,000,000.00. This reduction left an existing subsidy of $700,000.00. Continued legislative support after Fiscal 92 is an open question; however, the corporation will strongly pursue assistance for the cost of service hookups. With over 700 requests per annum, the cost of hookups is close to $500,000.00 per year. Customers receive service hookups free of charge.

C.I.P. - This revenue item reflects the States matching funds for the OMIP Initialization Program. At the present time, funds have not been identified for the second phase of the OMIP program.

OMIP 1 & 2 - The Operations and Maintenance Improvement Program of the U.S. Department of Interior, Office of Insular and Territorial Affairs is assisting in funding the initialization of the Pohnpei Utility Corporation. Through a matching fund program the OMIP funds are available for the implementation or refurbishment of specific areas of need within the corporation.

Deficiency Funds, Enhanced Maintenance, Power Funds, and OTIA Technical Assistance are all present or past programs under the U.S. Department of Interior(including prior Trust Territory programs). These funds are being used in Fiscal 92 to assist in the first year operations of the corporation.

FEMA - Typhoon relief has been made available for prior storm damage, however, it is not possible to quantify this type of assistance in future fiscal years.

OPERATIONAL BUDGETS

REVENUES (MASTER)

ITEM	F91	F92	F93	F94	F95	F96
ENERGY GRANT 214(b)	$915,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000	$1,000,000
COLLECTIONS	$893,098	$1,789,719	$2,292,056	$2,627,419	$2,923,912	$3,283,803
STATE SUBSIDY	$1,750,425	$700,000	$0	$0	$0	$0
C.I.P.*	$0	$315,500	$6,750	$0	$0	$0
OMIP YEAR 1	$0	$369,500	$60,750	$0	$0	$0
OMIP YEAR 2	$0	$38,468	$235,000	$0	$0	$0
DEFICIENCY FUNDS	$0	$328,000	$0	$0	$0	$0
ENHANCED MAINTENANCE	$0	$100,000	$0	$0	$0	$0
POWER FUNDS	$0	$100,000	$0	$0	$0	$0
OTIA TECH. ASST.	$0	$110,000	$0	$0	$0	$0
FEMA	$0	$135,740	$0	$0	$0	$0
JAPANESE ASSISTANCE		$0				
TOTALS	$3,558,523	$4,986,927	$3,594,556	$3,627,419	$3,923,912	$4,283,803

EXPENDITURES (MASTER)

ITEM	F91	F92	F93	F94	F95	F96
SALARIES & WAGES						
STANDARD	$0	$759,688	$903,337	$938,504	$975,429	$1,009,994
EMERGENCY	$0	$0	$0	$0	$0	$0
OVERTIME	$0	$52,000	$54,600	$57,330	$60,197	$63,206
HAZARDOUS PAY	$0	$25,117	$26,373	$27,691	$29,076	$30,530
NIGHT DIFFERENTIAL	$0	$28,900	$30,345	$31,862	$33,455	$35,128
TOTAL	$0	$865,704	$1,014,655	$1,055,387	$1,098,157	$1,138,858
EMPLOYEE BENEFITS						
WORKERS COMP.	$0	$18,640	$37,280	$38,398	$39,547	$40,727
GROUP HEALTH INS.	$0	$21,720	$43,440	$44,652	$45,897	$47,176
GROUP LIFE INS.	$0	$23,782	$28,857	$29,589	$30,332	$30,971
HOUSING	$0	$20,000	$30,000	$30,000	$30,000	$30,000
SOCIAL SECURITY	$0	$24,086	$26,316	$27,003	$27,697	$28,292
TOTAL	$0	$97,273	$162,689	$166,368	$170,136	$173,886
POL						
FUEL	$2,053,844	$2,139,532	$2,292,707	$2,451,829	$3,115,411	$4,164,653
OIL	$37,795	$38,600	$41,998	$30,648	$38,943	$52,058
LUBRICATION	$6,360	$6,550	$6,996	$3,678	$4,673	$6,247
TOTAL	$2,098,000	$2,184,682	$2,341,702	$2,486,155	$3,159,027	$4,222,958
REPAIR & MAINTENANCE						
OVERHAULS	$0	$504,000	$0	$0	$75,000	$75,000
PARTS	$33,500	$145,000	$95,450	$83,328	$85,827	$88,402
REPAIRS	$0	$215,460	$50,000	$15,914	$16,391	$16,883
TOTAL	$33,500	$864,460	$145,450	$99,242	$177,219	$180,285

ITEM	F91	F92	F93	F94	F95	F96
INSURANCE						
VEHICLES	$0	$13,750	$27,500	$28,325	$29,175	$30,050
GENERAL LIABILITY	$0	$5,000	$10,000	$10,300	$10,609	$10,927
PROPERTY	$0	$30,000	$60,000	$61,800	$63,654	$65,564
TOTAL	$0	$48,750	$97,500	$100,425	$103,438	$106,541
FIXED ASSETS						
EQUIPMENT	$0	$736,336	$0	$0	$0	$0
VEHICLES	$0	$105,000	$0	$0	$0	$0
COMPUTERS	$0	$33,000	$5,000	$0	$0	$0
TOTAL	$0	$874,336	$5,000	$0	$0	$0
CONSUMABLE GOODS						
VEHICLE POL	$0	$23,000	$23,690	$24,309	$25,039	$25,790
PRINT AND COPY	$0	$5,000	$5,150	$5,305	$5,464	$5,628
OFFICE SUPPLIES	$0	$3,800	$4,514	$4,613	$4,751	$4,894
MISCELLANEOUS	$0	$28,100	$28,310	$27,356	$28,176	$29,022
TOTAL	$0	$59,900	$61,664	$61,583	$63,430	$65,333
CONTRACTUAL SERVICES						
PROFESSIONAL SERV.	$0	$142,000	$0	$0	$7,000	$7,210
TOTAL	$0	$142,000	$0	$0	$7,000	$7,210
SAFETY & TRAINING						
SUPPLIES	$0	$15,000	$3,000	$2,060	$2,122	$2,185
TRAINING	$0	$148,000	$0	$5,000	$5,150	$5,305
TOTAL	$0	$163,000	$3,000	$7,060	$7,272	$7,490
TRAVEL						
AIRFARE	$0	$6,000	$9,000	$9,270	$9,548	$9,835
PER DIEM	$0	$3,000	$9,000	$9,270	$9,548	$9,835
AUTO RENTAL	$0	$1,000	$2,000	$2,060	$2,122	$2,185
TOTAL	$0	$10,000	$20,000	$20,600	$21,218	$21,855
COMMUNICATIONS						
TELEPHONE	$0	$6,000	$6,180	$6,365	$6,556	$6,753
RADIO	$0	$34,000	$500	$515	$530	$546
TOTAL	$0	$40,000	$6,680	$6,880	$7,087	$7,299
MISCELLANEOUS						
LEGAL FEES	$0	$20,000	$20,600	$21,218	$21,855	$22,510
EASEMENT COSTS	$0	$5,000	$5,150	$5,305	$5,464	$5,628
MEMBERSHIP FEES	$0	$5,035	$5,186	$5,342	$5,502	$5,667
CONFERENCE COSTS	$0	$0	$0	$20,000	$0	$0
DISCRETIONARY FUND	$0	$5,000	$5,150	$5,305	$5,464	$5,628
OTHER	$0	$89,500	$0	$0	$0	$0

ITEM	F91	F92	F93	F94	F95	F96
TOTAL	$0	$124,535	$36,086	$57,169	$38,284	$39,432
ANNUAL EXPENDITURES		$5,474,640	$3,894,426	$4,060,868	$4,852,266	$5,971,147
ANNUAL REVENUES	$3,558,523	$4,986,927	$3,594,556	$3,627,419	$3,923,912	$4,283,803
SURPLUS/(DEFICIT)		($487,712)	($299,870)	($433,449)	($928,355)	($1,687,344)

Power Generation

Electric power is produced at three different locations on the island of Pohnpei. Four large generators are situated on a barge near the airport, three large generators and three smaller generators are located in a power plant at Nanpohnmal, and two generators are located at the hydro plant on the Nanpil River. All of the generators, with the exception of the hydro plant, are driven by diesel engines. The generators at the hydro plant are driven by water powered turbines.

The generation of electric power makes the largest demand on the Pohnpei Utility Corporation budget due to the constant demand for diesel fuel. The company, at the present time, is constrained to dealing with one fuel supplier who has a monopoly on the island of Pohnpei. Two events in the future may partially alleviate the high cost of operating with diesel engines. The first event will be the construction, installation, and use of two new ~~Beimat~~ Fairbanks low speed generators which will come on line in November of 1992. A total of four ~~Beimat~~ Fairbanks generators will be available for power generation by 1995. The second possible future event would be the introduction of a competitor for the supply of diesel fuel. The new low speed generators, and a competitive environment for fuel supply would have a very positive impact on the overall budget.

The power generation budget is a consolidation of the three separate budgets for each of the generation plants - Alco (the barge), Nanpohnmal, and the Hydro Plant.

EXPENDITURES (POWER GENERATION)

ITEM	F91	F92	F93	F94	F95	F96
SALARIES & WAGES						
STANDARD	$0	$339,943	$365,929	$382,725	$400,361	$418,879
EMERGENCY	$0	$0	$0	$0	$0	$0
OVERTIME	$0	$28,000	$29,400	$30,870	$32,414	$34,034
HAZARDOUS PAY	$0	$0	$0	$0	$0	$0
NIGHT DIFFERENTIAL	$0	$28,900	$30,345	$31,862	$33,455	$35,128
TOTAL	$0	$396,843	$425,673	$445,457	$466,230	$488,041
EMPLOYEE BENEFITS						
WORKERS COMP.	$0	$5,750	$11,500	$11,845	$12,200	$12,566
GROUP HEALTH	$0	$10,500	$21,000	$21,630	$22,279	$22,947
GROUP LIFE	$0	$11,560	$23,120	$23,813	$24,528	$25,264
SOCIAL SECURITY	$0	$12,283	$13,069	$13,515	$13,967	$14,425
TOTAL	$0	$40,093	$68,689	$70,803	$72,974	$75,203
POL						
FUEL	$2,053,844	$2,139,532	$2,292,707	$2,451,829	$3,115,411	$4,164,653
LUB/OIL	$37,795	$38,600	$41,998	$30,648	$38,943	$52,058
SOLVENT	$6,360	$6,550	$6,996	$3,678	$4,673	$6,247
TOTAL	$2,098,000	$2,184,682	$2,341,702	$2,486,155	$3,159,027	$4,222,958
REPAIR & MAINTENANCE						
OVERHAULS	$0	$504,000	$0	$0	$75,000	$75,000
PARTS	$33,500	$130,000	$80,000	$67,414	$69,436	$71,520
REPAIRS	$0	$16,980	$0	$0	$0	$0
TOTAL	$33,500	$650,980	$80,000	$67,414	$144,436	$146,520
FIXED ASSETS						
EQUIPMENT	$0	$15,000	$0	$0	$0	$0
VEHICLES	$0	$5,000	$0	$0	$0	$0
COMPUTERS	$0	$3,000	$0	$0	$0	$0
TOTAL	$0	$23,000	$0	$0	$0	$0
CONSUMABLE GOODS						
VEHICLE POL	$0	$3,000	$3,090	$3,091	$3,184	$3,280
PRINT AND COPY	$0	$0	$0	$0	$0	$0
OFFICE SUPPLIES	$0	$1,200	$1,236	$1,237	$1,274	$1,312
MISCELLANEOUS	$0	$4,200	$4,326	$2,652	$2,732	$2,814
TOTAL	$0	$8,400	$8,652	$6,980	$7,190	$7,405
CONTRACTUAL SERVICES	$0	$12,000	$0	$0	$7,000	$7,210
TOTAL	$0	$12,000	$0	$0	$7,000	$7,210
SAFETY						
SUPPLIES	$0	$10,000	$2,000	$1,030	$1,061	$1,093
TRAINING	$0	$75,000	$0	$5,000	$5,150	$5,305
TOTAL	$0	$85,000	$2,000	$6,030	$6,211	$6,397

EXPENDITURES (POWER GENERATION)

ITEM	F91	F92	F93	F94	F95	F96
MISCELLANEOUS	$0	$10,000	$0	$0	$0	$0
TOTAL	$0	$10,000	$0	$0	$0	$0
ANNUAL TOTALS	$2,131,500	$3,410,998	$2,926,716	$3,082,839	$3,863,067	$4,953,734

Nanphonmal Budget

Detailed Explanations

Salaries & Wages

- PUC employees will transfer from the State system to a PUC personnel system in fiscal 92.
- Salaries have been reviewed and adjustments will be implemented in April of fiscal 92.
- A new Electrical Technician position will be added in fiscal 92(split with Alco).
- A new Trade Specialist position will be added in fiscal 92.
- Subsequent annual salaries include 5% per annum raises.

* note - The * designates those individuals that split time between Nanpohnmal and Alco.(salaries for these individuals are divided between the two plants)

Employee Benefits

- Workers Comp., group health, and group life are "ballpark" figures. These benefits will be negotiated during fiscal 92.
- Social security is the 4% paid by the corporation.

POL

-POL requirements are based on the following assumptions-

1. .88 per gallon cost in fiscal 92.
2. a 5% per annum increase in the price of fuel.
3. a 10% per annum increase in KWH demand.
4. Integration of the Belmat generators in F93 and F95.
5. F94 shutdown of the Alco plant.
6. Lub/oil is figured at 3.5% of total diesel.
7. Solvent is figured at .75% of total diesel.

Repair & Maintenance

- Three generators will undergo minor overhauls in F92.
- Cost of CAT parts should decrease after the new Belmat generators come on line.
- Typhoon repair funds are from FEMA.

Fixed Assets

- The equipment line item is for dedicated CAT tools. The purchase was funded by OMIP.

Consumable Goods

- Uniforms and work boots are being issued to each employee.

Contractual Services

- Professional Cat or Belmat technicians are required to assist in overhaul programs.

Safety & Training

- Safety supplies in F92 are funded by FEMA.
- Supervisory and OJT training for F92 is funded by the first and second year OMIP program.
- The training line items include travel for off island training programs.

EXPENDITURES (NANPOHNMAL) DETAIL

ITEM	F91	F92	F93	F94	F95	F96
SALARIES & WAGES						
STANDARD						
TRADE SPECIALIST		$5,745	$6,032	$6,334	$6,651	$6,983
* J. MANASA						
TRADE SPECIALIST		$5,114	$5,370	$5,638	$5,920	$6,216
* D. KILAFWAKUN						
TRADE SPECIALIST		$6,090	$6,395	$6,714	$7,050	$7,402
* D. SOLOMON						
TRADE SPECIALIST		$5,745	$6,032	$6,334	$6,651	$6,983
* E. SANTOS						
TRADE SPECIALIST		$5,755	$6,090	$6,395	$6,714	$7,050
* V. BARTOLOME						
TRADE SPECIALIST		$6,123	$6,500	$6,825	$7,166	$7,525
* S. HENRY						
TRADE SPECIALIST		$12,186	$12,795	$13,435	$14,107	$14,812
VACANT						
HVY. EQUIP. MECH.		$8,025	$8,426	$8,848	$9,290	$9,754
K. THOSES						
PWR. PL. OPER.		$8,586	$9,015	$9,466	$9,939	$10,436
K. SALADIER						
PWR. PL. OPER.		$8,586	$9,015	$9,466	$9,939	$10,436
R. DAKANO						
PWR. PL. OPER.		$8,586	$9,015	$9,466	$9,939	$10,436
P. SELESTINE						
PWR. PL. OPER.		$4,012	$4,213	$4,423	$4,644	$4,877
* J. DOBIAS						
PWR. PL. OPER.		$6,122	$6,428	$6,750	$7,087	$7,441
P. DAKANO						
PWR. PL. OPER.		$4,792	$5,000	$5,250	$5,513	$5,788
R. HADLEY						
PWR. PL. OPER.		$8,025	$8,426	$8,848	$9,290	$9,754
K. PRETERICK						
PWR. PL. OPER.		$4,241	$5,420	$5,691	$5,976	$6,274
* H. NANPEI						
PWR. PL. OPER.		$7,009	$7,359	$7,727	$8,114	$8,519
J. JIM						
PWR. PL. OPER.		$8,025	$8,426	$8,848	$9,290	$9,754
S. HADLEY						
PWR. PL. OPER.		$6,112	$6,418	$6,738	$7,075	$7,429
S. PETER						
PWR. PL. OPER.		$6,550	$6,878	$7,221	$7,582	$7,962
S. SEIKAP						
SUPPLY OFFICER		$9,013	$10,000	$10,500	$11,025	$11,576
H. EDMUND						
ELECTRICAL TECH.		$15,000	$15,000	$15,000	$15,000	$15,000
* VACANT						
TOTAL STANDARD		$159,442	$168,254	$175,917	$183,962	$192,411
EMERGENCY		$0	$0	$0	$0	$0
OVERTIME		$10,000	$10,500	$11,025	$11,576	$12,155
HAZARDOUS PAY		$0	$0	$0	$0	$0

EXPENDITURES (NANPOHNMAL) DETAIL

ITEM	F91	F92	F93	F94	F95	F96
NIGHT DIFFERENTIAL		$13,352	$14,020	$14,721	$15,457	$16,229
TOTAL S & W		$182,794	$192,774	$201,662	$210,995	$220,795
EMPLOYEE BENEFITS						
WORKERS COMP.		$2,530	$5,060	$5,212	$5,368	$5,529
GROUP HEALTH		$4,620	$9,240	$9,517	$9,803	$10,097
GROUP LIFE		$4,987	$9,973	$10,272	$10,581	$10,898
SOCIAL SECURITY		$5,816	$6,005	$6,162	$6,321	$6,477
TOTAL		$17,953	$30,279	$31,163	$32,073	$33,001
POL						
FUEL	$1,507,554	$1,555,481	$1,699,842	$2,451,829	$3,115,411	$4,164,653
LUB/OIL	$18,226	$18,600	$21,248	$30,648	$38,943	$52,058
SOLVENT	$2,332	$2,400	$2,550	$3,678	$4,673	$6,247
TOTAL	$1,528,113	$1,576,481	$1,723,640	$2,486,155	$3,159,027	$4,222,958
REPAIR & MAINTENANCE						
MAJOR OVERHAULS		$0	$0	$0	$0	$0
MINOR OVERHAULS		$150,000	$0	$0	$75,000	$75,000
PARTS		$60,000	$50,000	$51,500	$53,045	$54,636
REPAIRS (TYPHOON DAMAGE)		$1,000	$0	$0	$0	$0
TOTAL	$0	$211,000	$50,000	$51,500	$128,045	$129,636
FIXED ASSETS						
EQUIPMENT		$15,000	$0	$0	$0	$0
VEHICLES		$0	$0	$0	$0	$0
COMPUTERS		$0	$0	$0	$0	$0
TOTAL		$15,000	$0	$0	$0	$0
CONSUMABLE GOODS						
VEHICLE POL		$1,500	$1,545	$1,591	$1,639	$1,688
PRINT AND COPY		$0	$0	$0	$0	$0

K# 18,000

EXPENDITURES (NANPOHNMAL) DETAIL

ITEM	F91	F92	F93	F94	F95	F96
OFFICE SUPPLIES		$600	$618	$637	$656	$675
MISCELLANEOUS						
UNIFORMS/BOOTS(17)		$1,700	$1,751	$1,804	$1,858	$1,913
TOTAL		$3,800	$3,914	$4,031	$4,152	$4,277
CONTRACTUAL SERVICES						
CAT/BELMAT MECH. (MINOR OVERHAUL)		$6,000	$0	$0	$7,000	$7,210
TOTAL		$6,000	$0	$0	$7,000	$7,210
SAFETY & TRAINING						
SUPPLIES		$5,000	$1,000	$1,030	$1,061	$1,093
TRAINING						
SUPERVISORY TR.		$5,000	$3,000	$3,090	$3,183	$3,278
OJT		$25,000	$20,000	$20,600	$21,218	$21,855
TOTAL		$35,000	$24,000	$24,720	$25,462	$26,225
MISCELLANEOUS		$0	$0	$0	$0	$0
TOTAL		$0	$0	$0	$0	$0
ANNUAL TOTALS	$1,528,113	$2,048,028	$2,024,606	$2,799,231	$3,566,754	$4,644,103

Power Distribution

The power distribution system is a combination of two separate power delivery systems. One system distributes at 13,800 volts, and the other system distributes at 4160 volts. The 4160 system is a vestige of the Trust Territory days and will be phased out over the next three years. An extensive refurbishment and upgrade program will be implemented in F92 and F93 using funding from the OMIP program. System upgrades and protection include installation of items such as reclosure devices, fuse coordination systems, and surge arresters. Line surveys and distribution documentation will also contribute to the overall improvement of the system.

EXPENDITURES (DISTRIBUTION)

ITEM	F91	F92	F93	F94	F95	F96
SALARIES & WAGES						
STANDARD		$150,543	$171,078	$179,632	$188,613	$198,044
EMERGENCY		$0	$0	$0	$0	$0
OVERTIME		$15,000	$15,750	$16,538	$17,364	$18,233
HAZARDOUS PAY		$25,117	$26,373	$27,691	$29,076	$30,530
NIGHT DIFFERENTIAL		$0	$0	$0	$0	$0
TOTAL		$190,660	$213,201	$223,861	$235,054	$246,807
EMPLOYEE BENEFITS						
WORKERS COMP.		$2,415	$4,830	$4,975	$5,124	$5,278
GROUP HEALTH		$4,410	$8,820	$9,085	$9,357	$9,638
GROUP LIFE		$4,760	$9,520	$9,806	$10,100	$10,403
SOCIAL SECURITY		$5,276	$5,740	$5,899	$6,066	$6,241
TOTAL		$16,861	$28,910	$29,764	$30,647	$31,560
REPAIR & MAINTENANCE						
OVERHAULS		$0	$0	$0	$0	$0
PARTS		$0	$0	$0	$0	$0
REPAIRS		$173,480	$0	$0	$0	$0
TOTAL		$173,480	$0	$0	$0	$0
FIXED ASSETS						
EQUIPMENT		$617,336	$0	$0	$0	$0
VEHICLES		$55,000	$0	$0	$0	$0
COMPUTERS		$0	$0	$0	$0	$0
TOTAL		$672,336	$0	$0	$0	$0
CONSUMABLE GOODS						
VEHICLE POL		$14,000	$14,420	$14,853	$15,298	$15,757
PRINT AND COPY		$0	$0	$0	$0	$0
OFFICE SUPPLIES		$600	$618	$637	$656	$675
MISCELLANEOUS		$22,200	$22,866	$23,552	$24,259	$24,986
TOTAL		$36,800	$37,904	$39,041	$40,212	$41,419
CONTRACTUAL SERVICES		$60,000	$0	$0	$0	$0
TOTAL		$60,000	$0	$0	$0	$0
SAFETY						
SUPPLIES		$5,000	$1,000	$1,030	$1,061	$1,093
TRAINING		$73,000	$0	$0	$0	$0
TOTAL		$78,000	$1,000	$1,030	$1,061	$1,093
MISCELLANEOUS		$50,000	$0	$0	$0	$0
TOTAL		$50,000	$0	$0	$0	$0
ANNUAL TOTALS	$0	$1,278,137	$281,015	$293,696	$306,974	$320,878

LENGHT OF POWER DISTRIBUTION LINES

A. KOLONIA TOWN

The preliminary estimate of 11 miles (17.7 km.) has to be the accepted measure at this time, as CMD has no available data on the Kolonia distribution line. The information given was that the Kolonia lines were installed prior to the establishment of the CMD. The DPWH Utility Division was also unable to furnish any information on this item.

B. CIRCUMFERENTIAL ROAD GRID

The figures given by CMD on the total lenght of the distribution line for the Circumferential Road Grid is approximately 53.1 miles or 85.4 km. The line hugs the total lenght of the island's circumferential road.

C. SECONDARY SPUR LINES

The secondary spur lines connecting 13 villages in Kitti and Madolenihmw municipalities has a total lenght of 17.98 miles (28.93 km.)., per contract documents on covering the secondary power distribution project.

1. Kitti

a. Wone	- 1.5 miles
b. Enpein Pah	- 2.5
c. Enpein Powe	- 1.0
d. Kipar	- 1.0
e. Olopoal	- 1.0
f. Moakot	- 1.5

2. Madolenihmw

a. Areu Pah	- 0.98 mile
b. Areu Powe	- 1.28
c. Nanpahlap	- 1.37
d. Mand	- 1.04
e. Lohd	- 2.00
f. Nansaloi	- 1.56
g. Pohnpaip	- 1.28

発電電力不足に対応するための停電計画表

	AREAS AFFECTED	8:00 AM TO 12:00 AM	12:00 AM TO 4:00 PM	4:00 PM TO 8:00 PM	8:00 PM TO 12:00 PM	8:00 PM TO 11:00 PM
A	Ocean View, Nanmadol Hotel, Sokehs Island, Carl Kohler's Apartments, Dolonier Pah, Nan Kiwi, Sekere, FSM Capitol, Army Camp to Wone, Kitti.	OFF				
B	ACE Commercial, Roby's Apartments., Roby's Gas Station Dousokele Bridge, Nett, Pali Ais, Pali Powe, Village Hotel all the way to Wone, Kitti including PATS. Australian Boat Basin, Max Malarme's Apartments, Nett District Office, PTA Office, Kahmar & Meitik areas.		OFF			
C	Joy Resturant, Likinkel, Mapwusi, Nintu, Ohmine, Cliff Rainbow Hotel, Sewer Treatment Plant, Kepinle, Komwonlaid, Iakpia, Ambros Warehouse and all near by areas. Telecomm. Head Quarter			OFF		
D	U.S. Ambassy, Land Grant, Ag. Station., Lower Samoan Housing, Roby's Saw Mill, Etscheit Apartment and all near by areas. Bank & Insurance Building, Air Mike, PTA Office, Land Management Office, CMM, Kolonia School and all near by areas.				OFF	
E	All Deketik - Sea and Air Port, Cold Storage, Harbor View Hotel, FSCO Misko Beach and near by areas.					OFF

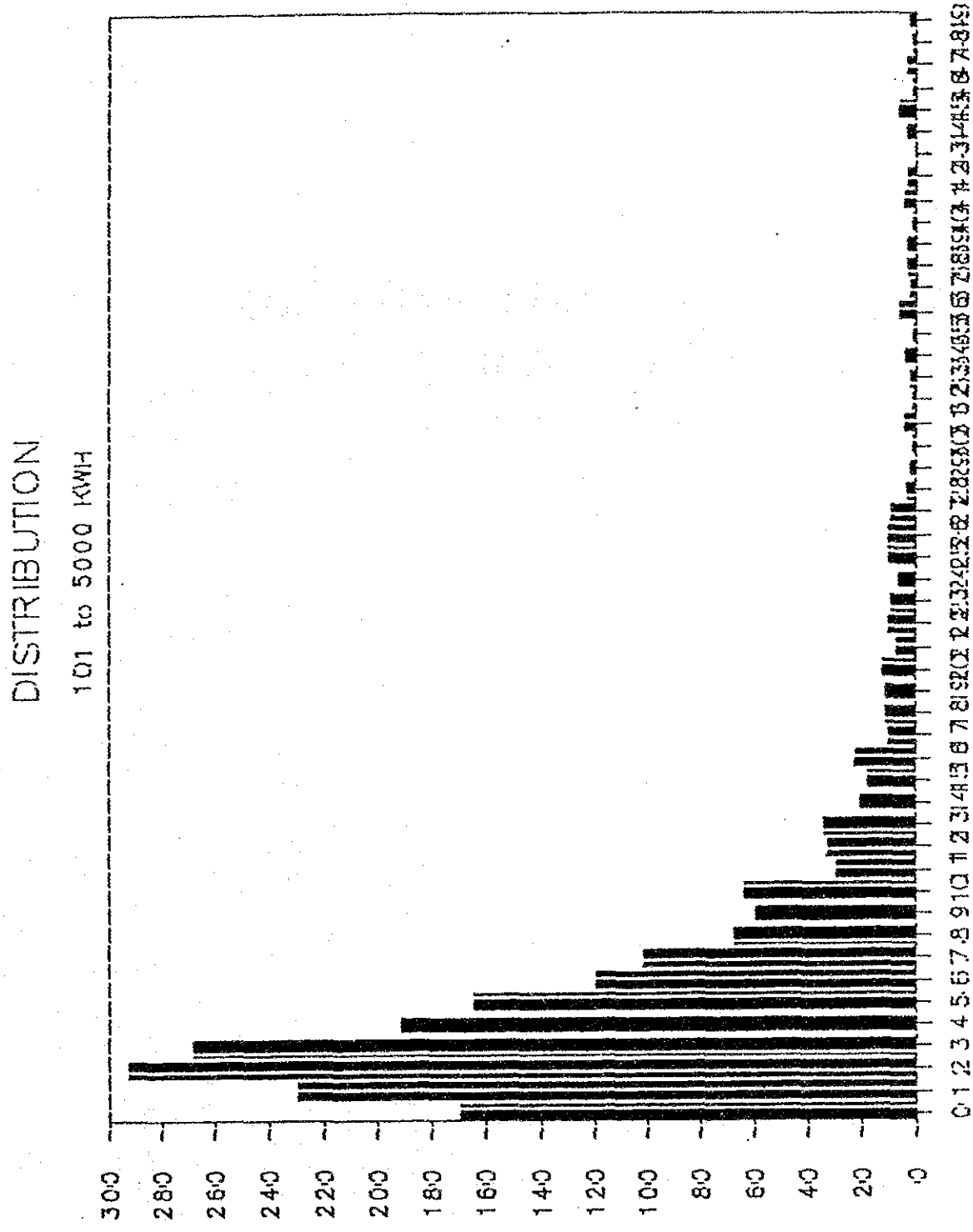
NOTE: Other than this schedule, ~~the~~ The 4160 line can be shut off any time, depending on the load of the system.

Prepared by: MCamacho
Mikel Camacho
Power Distribution Manager

Date: 2-13-92

Approved by: David Morgan
David Morgan
PUC General Manager

Date: 2/13/92


DISTRIBUTION
101 to 5000 KWH
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
KILOWWATT HOURS
100 KWH INCREMENTS

Pohnpei State Government

Mini Hydro-Electric Power Study
(5kW-300kW)

(抜　粋)

KRTA Limited
Engineers Architects Scientists Planners
Ph. (09) 506-069 P.O. Box 9806 Auckland
Ph. (04) 847-725 P.O. Box 3582 Wellington NZ

P8080/6 May 1988

EXECUTIVE SUMMARY

The State Government of Pohnpei has assigned a high priority to the development of its mini hydro resources, perceiving them to be an economic means of reducing the State's dependance on imported diesel fuel for power generation.

As part of this the Pohnpei Public Works Department commissioned KRTA Ltd, Engineering Consultants of Auckland, New Zealand to undertake site reconnaisance and feasibility studies of schemes with capacities in the range 5 - 150kW. The study was managed by the Acting Director of the Public Works Department on behalf of the Chief of the Energy Division, Department of Conservation and Resource Surveillance.

Pohnpei currently has 13,400kW of diesel generating capacity in three power stations, and 1700kW in the recently completed Nanpil hydro facility. All generating stations are interconnected to the Kolonia network. Peak demand is presently around 3600kW with a minimum of 2100kW. Demand stays over 3000kW from 9.00am to 11.30pm. Energy ~~demand is around~~ ~~24,000,000~~kwh/year. The power system has a high level of outages mainly due to poor maintanance. Steps are currently being taken to improve the situation.

Field reconnaisance work and site investigations on the island were undertaken during March 1988. Data evaluation and report preparation was completed during April 1988. The studies were designed to identify mini hydro-electric power schemes (other than the larger schemes already identified on the Lehn Mesi and Nanpil Rivers), establish a national mini hydro resource inventory, and carry out brief feasibility studies of the six most preferred schemes. During the course of the study the upper capacity limit was increased to 300 kW to allow the inclusion of 2 favourable schemes with capabilities greater than 150 kW.

A total of 22 potential mini hydro sites varying in capacity from 7kW to 275kw were identified. Of these 14 sites had been previously reported and 8 sites were newly identified. Data sheets were prepared for each site and these form a miñi hydro resource inventory of the island (see Appendix A).

The possibilities for providing storage at each site were examined. Only one site could have been easily developed for storage but a preliminary economic analysis showed that it was not worthwhile. In general the following factors precluded development:

- the steep catchments meant that a relatively high dam was required to obtain significant storage,

- access for construction equipment to the dam sites was difficult,

- suitable construction materials were not available within a reasonable distance.

Development cost estimates were prepared for 10 sites showing favourable development characteristics. These 10 schemes were compared on the basis of capital cost ($/kW) and lifetime energy cost ($/kWh) and the six best sites selected for feasibility study.

The scheme layout and cost estimates for each site selected for feasibility study were refined. Each site was compared with equivalent diesel generation and the equalising discount rate calculated. The annual savings in diesel fuel and oil costs and in variable maintenance costs that would accrue if each scheme was to be implemented were calculated.

The main statistics of the six sites selected for feasibility study are as follows:

Site No.	Site Name	Capacity (kW)	Energy (kWh/yr)	Development Cost	Cost/kW ($/kW)	Energy Cost ($/kWh)+	EDR *
1	Nanpil 2	275	1,205,000	$1,190,000	$4330	$0.12	11.1%
2	Senipehn	210	920,000	$1,115,000	$5310	$0.15	7.8%
4	Nankewi	100	412,000	$489,000	$4890	$0.15	7.5%
3	Mahnd 1	110	463,000	$590,000	$5360	$0.16	7.0%
5	Pahlap	90	347,000	$401,000	$4460	$0.16	7.0%
6	Pohnahtik-Kidar	75	296,000	$541,000	$7210	$0.23	1.8%

\+ at 8% over 30 years

* EDR: equalising discount rate with diesel generation

Assuming that finance can be obtained at a real annual interest rate of 5% then 5 schemes would produce cheaper energy than diesel generation. The schemes are:

- Nanpil 2
- Senipehn
- Nankewi
- Mahnd 1
- Pahlap

All other schemes would produce more expensive energy than diesel generation at current diesel costs.

The five schemes, if constructed, would:

- have a combined installed capacity of 785kW
- have a combined energy output of 3,347,000 kWh/year
- have a combined development cost of US$3,785,000
- have an average unit development cost of US$4820/kW

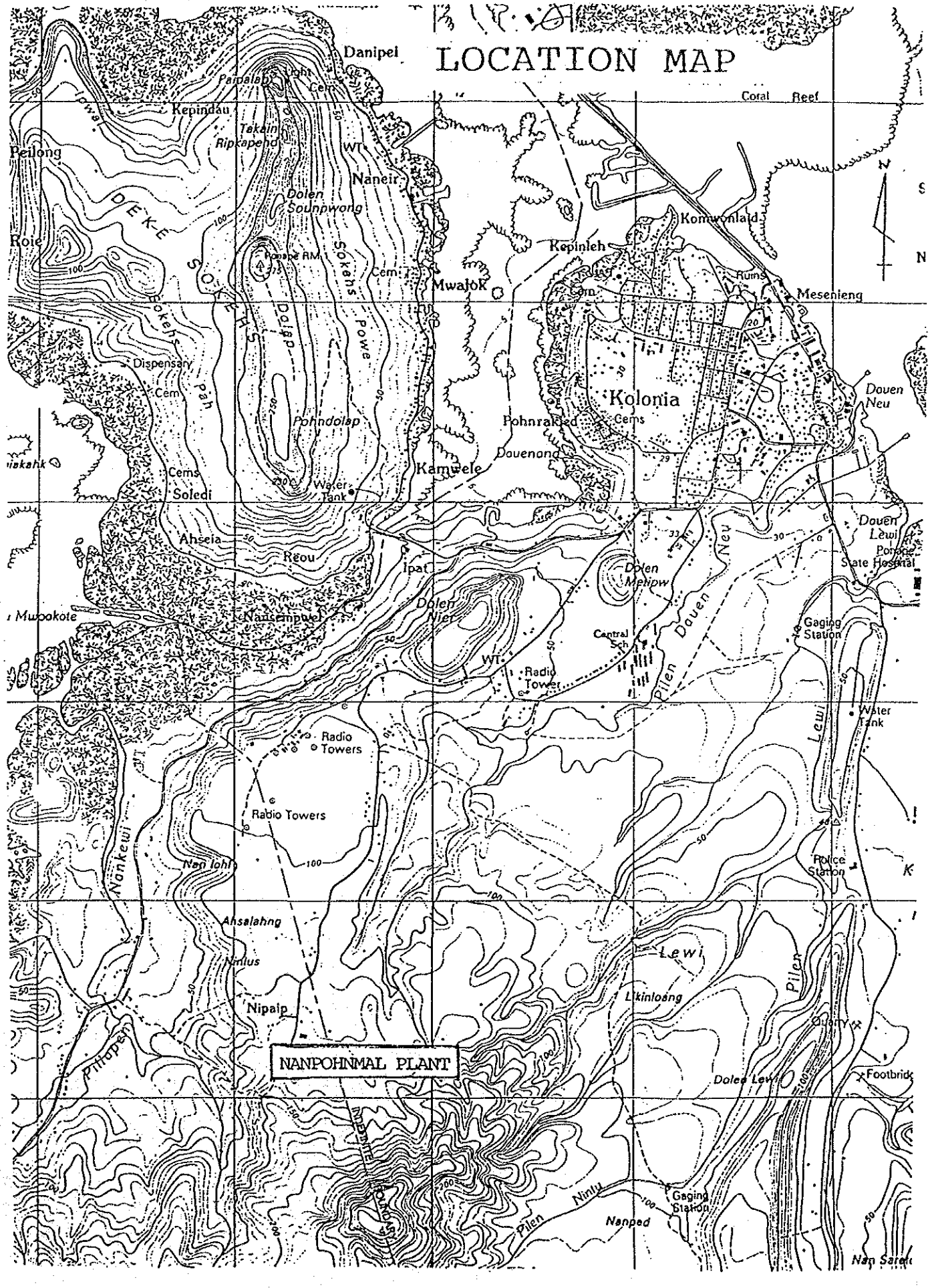
- have a combined operating cost of $142,000/year
- save the island US$434,000/year in diesel fuel, lubricating oil and diesel variable maintenance costs.
- have a payback perid of 11 years.
- save $6,441,000 in total generation costs over 30 years, or $1,337,000 at the 5% discount rate.

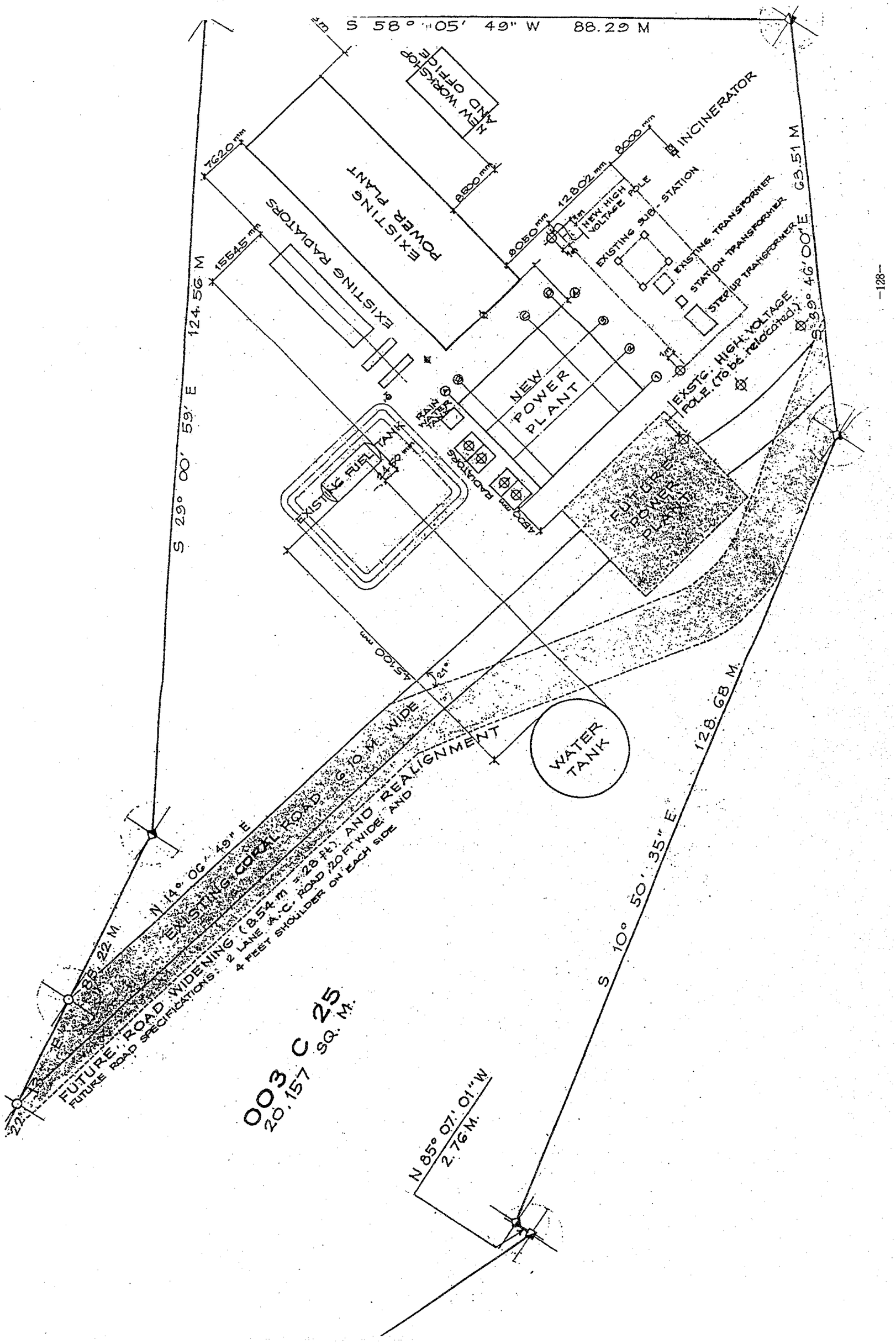
In view of the small capacities of the schemes, it is recommended that the five schemes be developed simultaneously. This could result in a reduced development cost (10-15% not included above) due to reduced mobilisation costs, reduced engineering and management costs and reduced generating equipment costs (due to bulk buying).

In addition, two other larger schemes which appear promising have already been proposed for development on the island. They are:

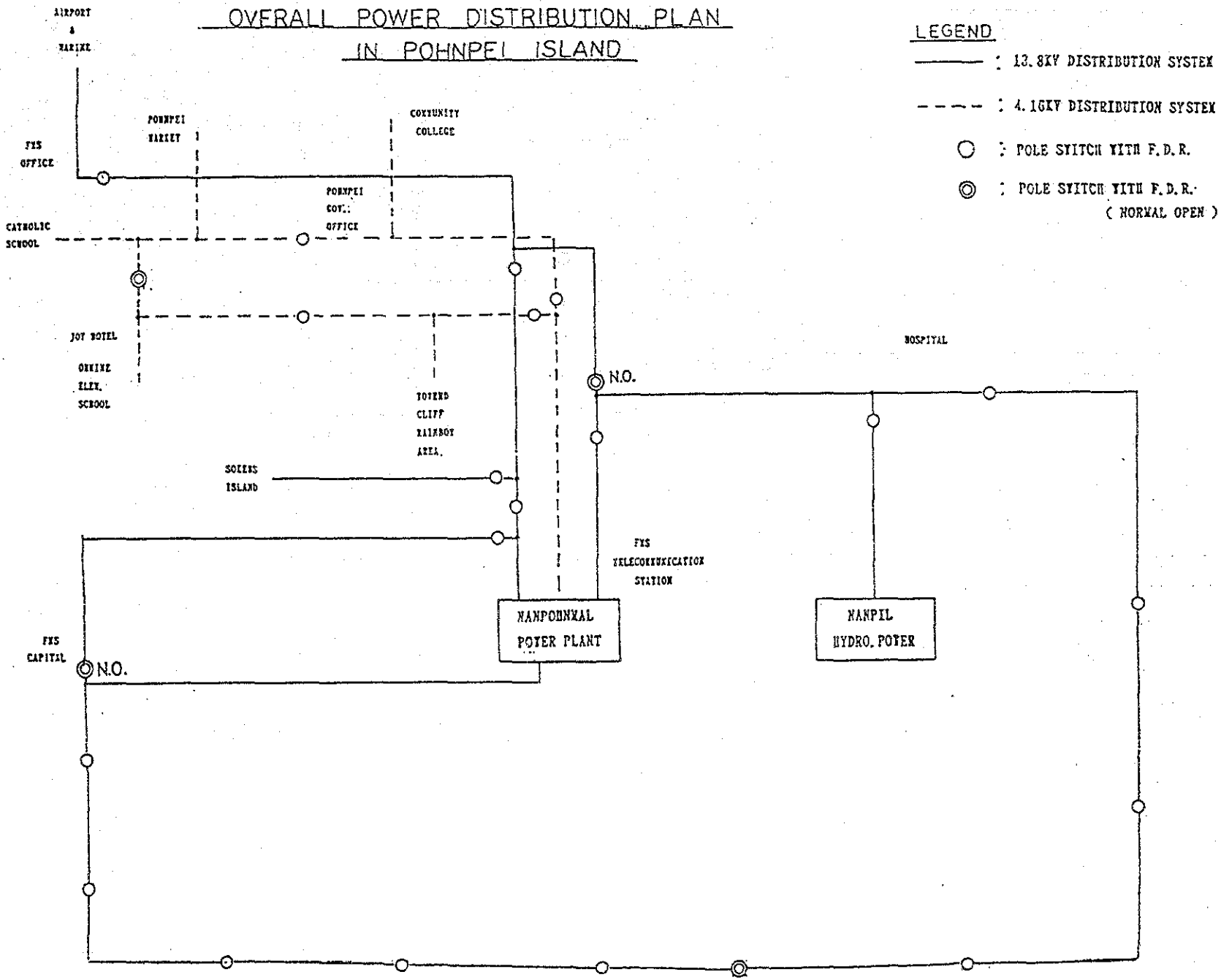
Nanpil 1 extension; this involves diverting the headwaters from three adjacent rivers into the Nanpil headpond to generate an additional 3,000,000 kWh. Feasibility studies have been undertaken and further investigatory work is understood to be proceeding under US Government Aid Funding.

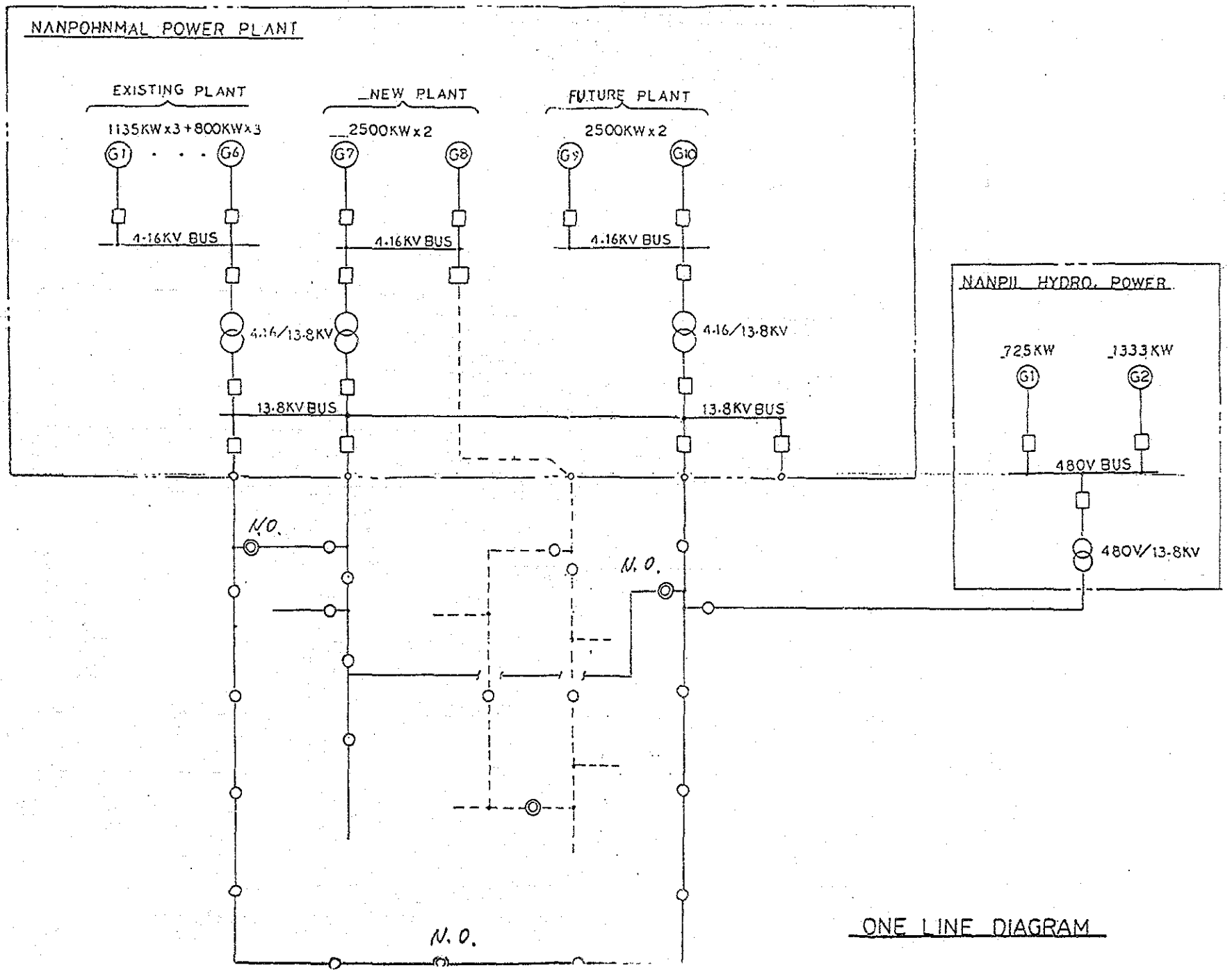
~~Lehn Mesi;~~ ~~feasibility~~ studies of several schemes on this river have been carried out by the US Army Corps of Engineers and the Japan Consulting Institute. The most promising scheme is 1080kW in capacity and would produce 4,870,000kWh/year. A more detailed technical feasibility study of this scheme is understood to be included in the 1988/89 State Government budget.


LOCATION MAP
Danipei
Light
Cem
Coral Reef
Kepindau
Takain
Ripkapehd
WT
Peilong
Naneir
Dolen Sounpwong
Roie
DOEKE
SOKEHS
Sokehs Powe
Sokehs Dalap
Kepinleh
Komwonlaid
Mwajok
Ruins
Mesenieng
Dispensary
Cem
Sokehs Pah
Pohndolap
Kolonia
Douen Neu
Pohnrakied
Cems
Douenand
Kamwele
Cems
Soledi
Water Tank
Douen Lewi
Ahseia
Regou
Ipat
Dolen Melipw
Douen New
Police Station
Mwookole
Nansempuel
Dolen Niet
Central Sch
Gaging Station
WT
Radio Tower
Pilen Douen
Water Tank
Radio Towers
Radio Towers
Nankewi
Nan Iohl
Police Station
Ahsalahng
Ninlus
Lewi
Likinloang
Pilen
Nipaip
Quarry
NANPOHNMAL PLANT
Pittopen
Footbridge
Dolee Lewi
Gaging Station
Ninlu
Pilen
Nanped
Nan Sarei


S 58° 05' 49" W 88.29 M
NEW WORKSHOP AND OFFICE
EXISTING POWER PLANT
EXISTING RADIATORS
7620 mm
15545 mm
8500 mm
8050 mm
12802 mm
8000 mm
INCINERATOR
11m
NEW HIGH VOLTAGE POLE
EXISTING SUB-STATION
EXISTING TRANSFORMER
STATION TRANSFORMER
STEP UP TRANSFORMER
1 CT.
EXSTG. HIGH VOLTAGE POLE (To be relocated)
S 29° 00' 59" E 124.56 M
NEW POWER PLANT
RAIN WATER TANK
EXISTING FUEL TANK
11.50 mm
RADIATORS
4800 mm
FUTURE POWER PLANT
S 39° 46' 00" E 63.51 M
45.100 mm
21°
WATER TANK
S 10° 50' 35" E 128.68 M.
N 14° 06' 49" E
38.22 M
EXISTING CIRCAL ROAD 16 TO M. WIDE
FUTURE ROAD WIDENING (8.54 m = 28 ft.) AND REALIGNMENT
FUTURE ROAD SPECIFICATIONS: 2 LANE A.C. ROAD, 20 FT WIDE AND 4 FEET SHOULDER ON EACH SIDE
22°
003 C 25
20,157 SQ. M.
N 85° 07' 01" W
2.76 M.

OVERALL POWER DISTRIBUTION PLAN IN POHNPEI ISLAND





ONE LINE DIAGRAM

KEY PLAN
FOR POWER DISTRIBUTION LINE IN POHNPEI ISLAND