

PD-AAJ-543

497-0267

**RURAL ELECTRIFICATION PROJECTS
INDONESIA**



NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

JAKARTA, INDONESIA

NRECA TEAM REPORT

PLN

INDONESIA

(MARCH 1981)

MONTHLY REPORT

NRECA INDONESIAN TEAM REPORT

UNITED STATES AGENCY FOR
INTERNATIONAL DEVELOPMENT

Contract No. AID/ASIA CI347

Loan No. 497-T-052

IMPLEMENTING AGENCIES:

DIREKTORAT JENDERAL KOPERASI
Directorate General of Cooperatives

PERUSAHAAN UMUM LISTRIK NEGARA
National Electric Power Agency

CONSULTANTS:

National Rural Electric Cooperative Association
Management, Organization and Training

C.T. Main International, Inc.
Architect and Engineering

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NRECA TEAM MEMBERS AS OF FEBRUARY, 1981

<u>NAME</u>	<u>TITLE</u>	<u>ADDRESS</u>
Peter McNeill	Team Leader	Pondok Indah Bukit Hijau VIII/31 PH: 761132
Lloyd Lake	Sr. RE Specialist	P.O. Box 88 Tanjungkarang Lampung PH: 0721-52058
Louie Sansing	Sr. RE Specialist	Jl. Dukuh Patra II/73 Jakarta Selatan PH: 824308 ext. 394
*Sam Adkins	Sr. RE Specialist	c/o C.T. Main I.c. Box 26 Semarang PH: 024-311832
Paul Swanson	Sr. RE Specialist	Kotak Pos 43 Ampenan Lombok PH: 0364-23517
John DeFoor	RE Specialist	c/o Bina Marga Office Jl. Imam Bonjol 8 Palopo, S. Sulawesi
Ray Shoff	Administrative/Finance Officer	Ratu Plaza Jl. Jenderal Sudirman PH: 712034
* PLN Advisor		

DESCRIPTION AND OBJECTIVES OF PROJECT (PLN)

The Government of Indonesia is vitally interested in the electrification of rural Indonesia, and has taken steps with the assistance of the United States Government (USAID) to implement pilot rural electrification programs. Fewer than 1% of the rural people in Indonesia presently enjoy the benefits of electric service. Rural electrification is essential in developing the wealth of forest and agricultural land, minerals, and water resources. The "area coverage" concept of electrification will bring better living conditions to millions of rural residents and will spread benefits to all of Indonesia.

Ten Pilot Rural Electrification Project areas have been selected. Seven of the projects are in Central Java and are to be constructed and developed by the state owned national power company (PLN) who will own and operate these systems. The source of power for these systems will be the existing PLN transmission grid in Central Java. (See tabulation below.)

The National Rural Electric Cooperative Association through their International Programs Division are serving as consultant to PLN in organization, management and technical areas. Services for PLN includes providing assistance in organization of staffs to operate the systems in Central Java, as well as in cost accounting, O&M methods, housewiring and training.

<u>SERVICE AREA</u>	<u>VILLAGES TO BE SERVED</u>	<u>APPROXIMATE NO. OF CONNECTIONS</u>	<u>ESTIMATED NO. OF RECIPIENTS</u>
Klaten	95	25,000	225,000
Pem/Pek	103	20,000	180,000
Bantul	21	20,000	180,000
Wonogiri	54	15,000	135,000
Sragen	49	15,000	135,000
Magelang	83	20,000	180,000
Banyumas	<u>35</u>	<u>15,000</u>	<u>135,000</u>
TOTALS	440	130,000	1,170,000

The above tabulations reflect project expectations after the first three years of commercial operation.

NRECA Jakarta Office

General --- The NRECA Jakarta team members maintained contact with officials at PLN's Headquarters in Jakarta through personnel contact, participation in meetings and scheduled use of the valuable office facilities provided by PLN's Rural Electrification Department. Highlights of contacts follows:

--- NRECA Team Leader Peter McNeill met with Ir. Mohd. Basoeki, PLN Director for Construction, during this reporting period. One of the purposes of the meeting was to discuss power sources, more specifically, mini-hydro installations. Discussion of this subject was prompted by the arrival of an NRECA International Program Division (IPD) engineer whose mission was to compile data on mini-hydro installations. The NRECA-IPD Engineer, Mr. Allen Inversin, is preparing a manual on MHI which will serve as a guide for installations in developing countries. Ir. Basoeki arranged for Mr. Ibnoe Soebroto of PLN-LMK to assist in developing an itinerary for Mr. Inversin.

The second purpose of the meeting was to review the role of the NRECA organization, management and training (OMT) team in the PLN-RE program. A review was considered timely in view of USAID's proposal to amend the Grant Agreement to provide additional funds for OMT assistance.

--- NRECA Jakarta staff members reviewed proposals prepared by the NRECA-PLN advisor in Central Java relating to "management" of the seven RE systems to be constructed in that area. The proposals, which were requested by officials of Wilayah XIII, PLN's regional operations office in Central Java, are explained in greater detail in the "Central Java Activities" section of this report.

--- Two meetings were held with representatives of USAID-PTE and USAID-RD to review the possibilities of coordinating our RE program with an irrigation project in Sragen, Central Java. This irrigation project, funded by IBRD, includes an area which overlaps a sector of the RE project. Availability of electric service in this area should be meaningful to irrigation planners and, as a result, the NRECA advisor in Central Java was requested to establish contact with personnel in the irrigation project field office at Madiun.

--- The NRECA team leader met with Ir. John Rumondor, Deputy Director for Rural Electrification, to discuss methods by which rural agriculture cooperatives (KUDs) and the PLN-RE Department could coordinate to expedite rural electrification. It is recognized that numerous members of KUDs will also be consumers of PLN's electric service in Central Java. Therefore, rapid implementation of the RE program should be a mutual goal. It was agreed that contact will be established with KUD officials and proposals presented for orientation and training of KUD members.

--- The NRECA Administrative-Finance Officer, Ray Shoff, met with PLN-RE Training and Productive Use Department Head, Ir. Soemarto Soedirman. The major subject for discussion was an Accounting and Reporting training course to be conducted in Central Java.

NRECA Central Java Activities

--- With the exception of one business trip to Jakarta, Mr. Sam Adkins, the NRECA advisor to PLN, was in Central Java all of this reporting period. With the arrival of distribution-system construction materials still a few months away, his activities continued to revolve around planning, coordinating, and training.

--- As previously reported, the NRECA advisor has met on several occasions with officials of the PLN Wilayah XIII, on planning for the housewiring program. During this reporting period, planning activity culminated in the documentation of a specific proposal containing detailed suggestions for completing this important activity in the seven RE project areas.

The NRECA advisor suggests in his proposal that management-trainees, key PLN employees who have received training in the U.S. and in the Philippines, be assigned to assist in housewiring program implementation. Their primary function would be coordination of all activities, beginning with the orientation and training of housewiring-trainers and continuing to the completion of housewiring in all four hundred and forty (440) villages.

As a prelude to the involvement of these management-level employees in the RE program, the NRECA advisor requests that a refresher seminar be conducted. Recognizing that nearly one year has passed since overseas training was completed, they should be briefed on RE program status and planning. NRECA staff members are available to assist PLN in seminar presentations.

--- The NRECA project advisor prepared and presented proposals for "management" of the seven RE projects. These relate to project status, Branch versus Sub-branch; and reporting relationship of the RE project managers. Three alternatives were included in the proposals which are now understudy by Wilayah XIII officials and at PLN Pusat.

--- As referred to earlier in this report, an NRECA engineer was in-country during this reporting period to inspect mini-hydro installations. After visiting PLN's small hydro laboratory in Cipayung, West Java, this engineer was accompanied by the NRECA advisor on a three-day inspection trip of seven small hydro installations in Central Java. (Picture on page 9.)

Training --- The construction department of PLN in Central Java, P.I. Ring, is sponsoring a "Linemens Training Course" which began during this reporting period. The thirty-one (31) participants attending this three (3) month course are PLN employees who are presently employed at various locations in Central Java. (Pictures on page 8 and 9.)

PLN instructors are training the participants in the operating principles, care and use of transformers, voltage regulators, and oil circuit reclosers. Pole-setting, pole framing, grounding and conductor stringing are other training course inclusions. Special emphasis is being placed on familiarization with material and equipment items to be used to the RE construction program since these apprentice linemen will perform an important function in this activity.

--- The preparation of "teaching plans" was a time-consuming activity for the NRECA advisor during this reporting period. Priority was given to a house-wiring "trainers-training" course which will be conducted in the last half of 1981. Teaching plans and visual aid preparation for this course are being

completed well in advance of this training period.

--- A format is being developed for use by trainers when they begin their task of training electricians. Although electrician training is not a difficult task, the magnitude of the training is staggering. Referring to page 2 of this report it may be noted that one hundred and thirty thousand (130,000) wiring installations must be made within the first three years of RE project operation. Approximately five hundred (500) electricians must be trained to accomplish this task.

--- An OMT progress schedule may be found on page 13 of this report. Due to the necessity of coordinating training with construction material procurement and delivery, training is behind schedule. Scheduled-training is reflected at 55% while actual completed training is 40.5%.

Construction progress --- The Rural Electrification demonstration project in the Klaten area continued to expand during this reporting period. One thousand nine hundred and thirty two (1,932) customers were reported as of the end of March which approximates ninety-six (96) percent of the potential customers (statistics are on page 10).

Setting of wood poles in the Magelang project area continues and four hundred and fifty (450) poles are now in-place. At the Klaten project, nearly one thousand (1,000) steel poles have been erected. PLN-P.I. Ring personnel are performing the construction work in both areas.

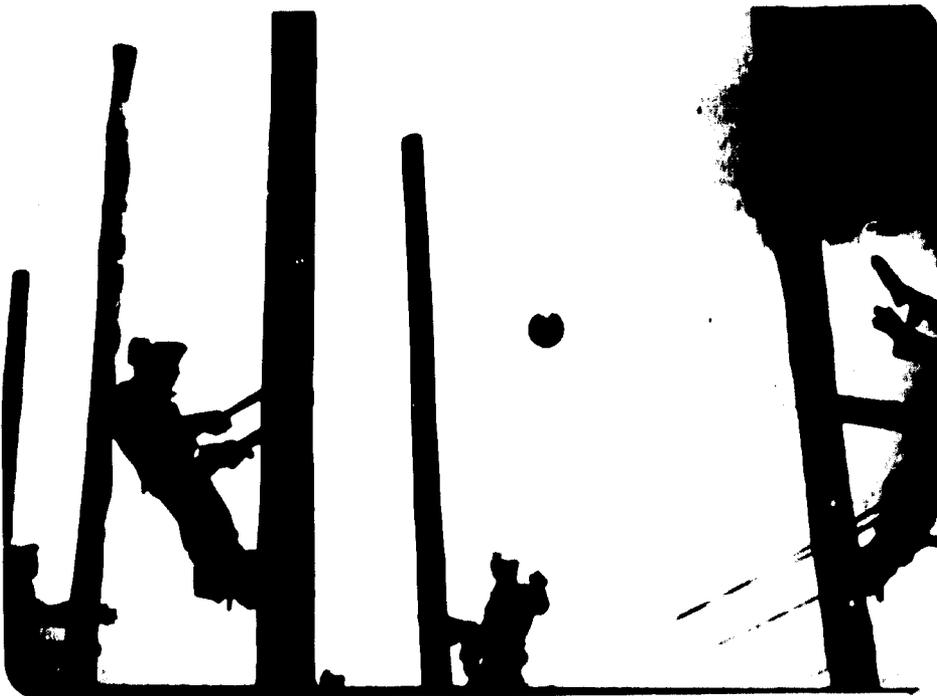
Trips and Conferences

- March 6 - The NRECA advisor met with representatives of USAID in Jakarta relative to ground-water studies in progress in Central Java. Also on this date, the advisor met with PLN-RE and Training Department officials in Jakarta.
- March 10 - A meeting was held in Central Java with representatives of a British firm, Binnie and Association, as a follow-up to the March 6 meeting on ground-water studies.
- March 17 - The NRECA advisor attended a ceremony at the PLN-P.I. Ring Headquarters in Semarang for the change of project manager.
- March 30 - The USAID-contracted productive use coordinator, Dr. Aziz Prabani, met with the NRECA advisor and PLN representatives to discuss status and planning in his assignment.

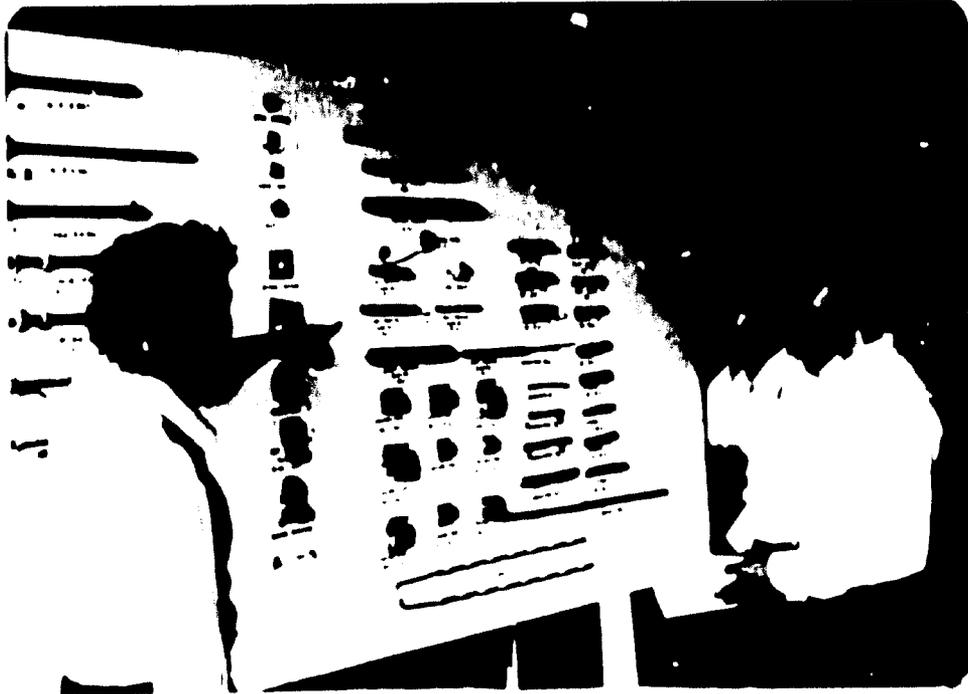
"Linemens Training"



Training course participants receive classroom training



Training course participants in their
"practice-climbing" area



"Display board" of construction material items,
a useful visual aid for training



A PLN small-hydro installation in progress in Central
Java, evidence of continuing efforts to save oil and
to reduce wholesale power costs

KLATEN RE DEMONSTRATION UNIT
BILLING STATISTICS, 13 MONTHS PERIOD

COLUMN NUMBER								
1	2	3	4	5	6	7	8	9
MARCH 1980	63,033	1846	34	3,954,020	2141	1106	1035	63
APRIL	54,152	1846	29	3,734,457	2033	988	1035	70
MAY	58,514	1844	32	5,929,585	3216	2181	1035	101
JUNE	54,406	1877	29	6,011,450	3202	2106	1097	110
JULY	53,969	1879	29	4,894,580	2605	1498	* 1107	91
AUGUST	56,150	1893	30	5,080,595	2684	1532	1152	90
SEPTEMBER	60,791	1903	31	5,311,065	2790	1592	1198	87
OCTOBER	62,316	1903	32	5,347,175	2809	1611	1198	86
NOVEMBER	62,020	1912	32	5,492,130	2872	1609	1262	88
DECEMBER	61,533	1912	32	5,436,115	2828	1593	1234	88
JANUARY 1981	63,133	1927	33	5,488,030	2848	1601	1238	87
FEBRUARY	64,127	1927	34	5,414,330	2815	1622	1189	85
MARCH	77,843	1932	40	5,753,450	2976	1816	1162	74

COLUMN NUMBER

1. Month

2. Total KWH Billed

3. Total Customers Billed

4. Average KWH Per. Customer

5. Total Rupiah Billed

6. Average Rupiah Per. Customer (total)

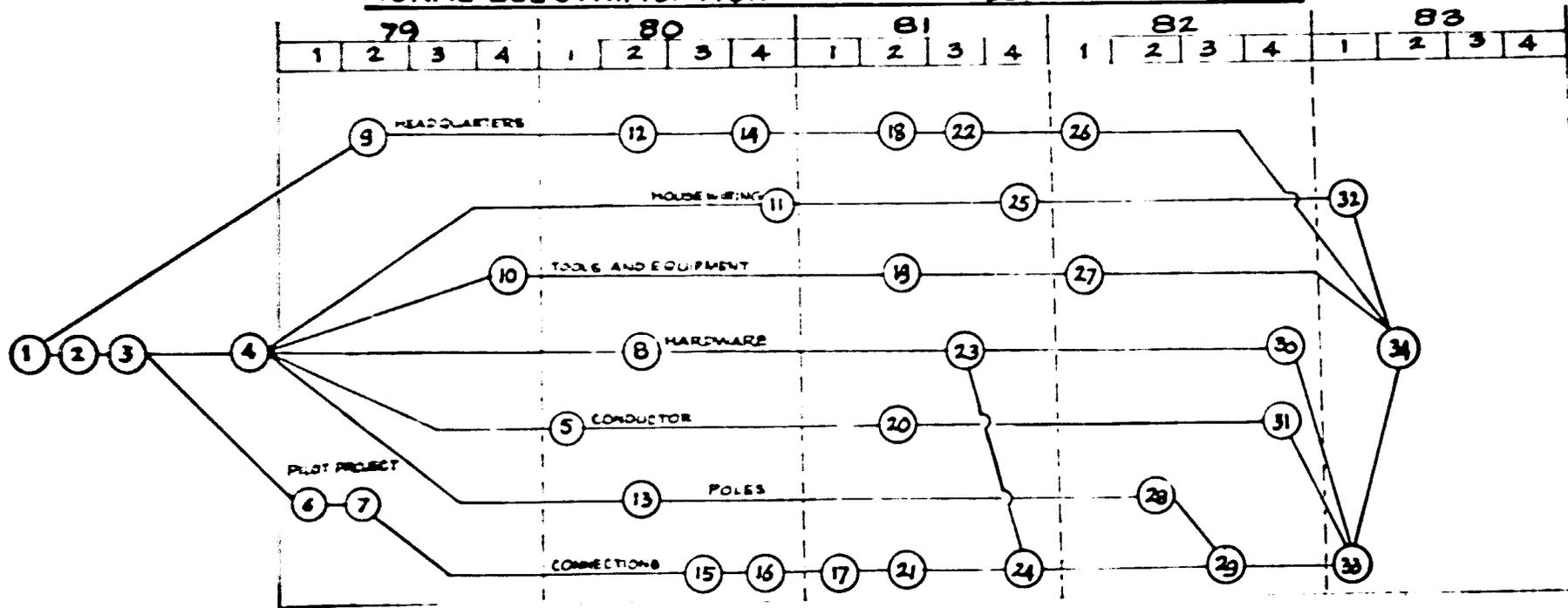
7. Average Energy Charge Per. Customer

8. Installation & Housewiring Charge

9. Cost Per. KWh (rupiah)

* Some customers began paying out installation & housewiring charge in 12 months rather than 48 months

RURAL ELECTRIFICATION - PLN IMPLEMENTATION PLAN



LEGEND

- | | |
|-----------------------------------------------------------------|---------------------------------------------------|
| 1 FEASIBILITY REPORTS COMPLETED (8/77) | 22 WAREHOUSES COMPLETED |
| 2 LOAN AGREEMENT SIGNED (5/78) | 23 FIRST DELIVERY OF HARDWARE & MATERIALS |
| 3 AE & OM CONTRACTS SIGNED (9/78 & 8/78) | 24 FIRST TESTING AND ENERGIZATION OF SYSTEM |
| 4 CENTER LINE STAKING BEGINS (10/78) | 25 FIRST DELIVERY OF HOUSE WIRING |
| 5 IFB ISSUED - CONDUCTOR | 26 HQ COMPLETED |
| 6 BEGIN CONSTRUCTION OF KATEN PLOT PROJECT | 27 FINAL DELIVERY OF TOOLS |
| 7 BEGIN OPERATION OF KATEN PLOT PROJECT | 28 ALL POLES DELIVERED |
| 8 IFB ISSUED - HARDWARE | 29 COMPLETE SETTING OF POLES |
| 9 BEGIN PURCHASE OF HQ SITES | 30 FINAL DELIVERY OF HARDWARE |
| 10 IFB ISSUED - TOOLS AND EQUIPMENT | 31 FINAL DELIVERY OF CONDUCTOR |
| 11 IFB ISSUED - HOUSE WIRING | 32 FINAL DELIVERY OF HOUSE WIRING |
| 12 SURVEY PROPERTY FOR TESTING | 33 SYSTEM COMPLETION |
| 13 FIRST DELIVERY OF POLES | 34 HOUSE CONNECTIONS IN PROCESS, SYSTEM OPERATING |
| 14 CONTRACTS LET FOR SITE PREPARATION | |
| 15 CENTER LINE STAKING COMPLETED | |
| 16 SYSTEM DESIGN COMPLETED | |
| 17 CONSTRUCTION BEGIN (STAKING) COMPL. | |
| 18 SITES PREPARED | |
| 19 FIRST DELIVERY OF TOOLS & EQUIPMENT | |
| 20 FIRST DELIVERY OF CONDUCTOR | |
| 21 BEGIN TRANSMITTING RIGHT OF WAY SETTING AND FRAMING OF POLES | |

13-1

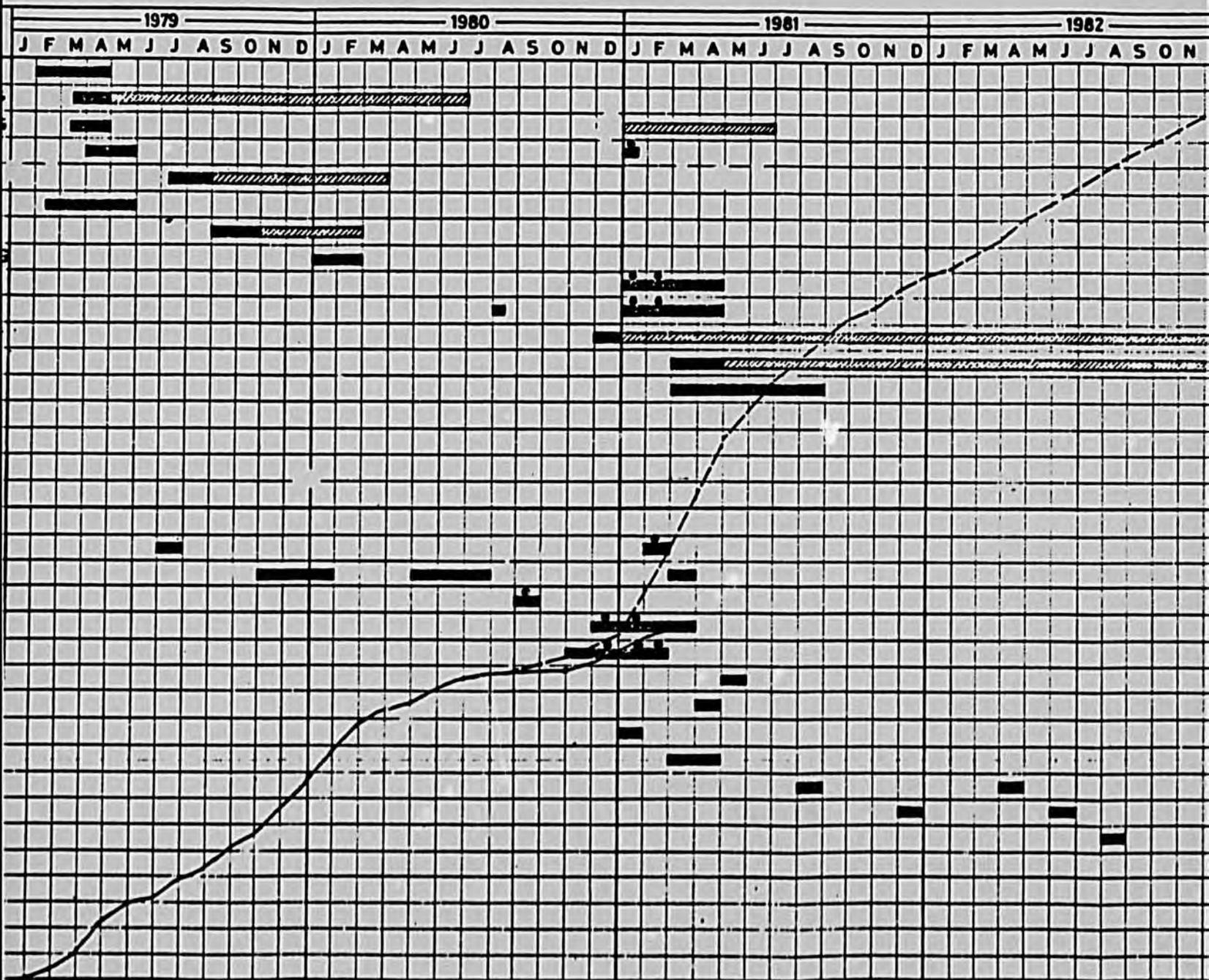
■ INDICATES PERIOD OF PERFORMANCE
 ▨ INDICATES PERIOD OF EVALUATION

ORGINIZATION MANAGEMENT RURAL ELECTR

DESCRIPTION		1979												1980											
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
ORGANIZATION & MANAGEMENT	PROJECT IMPLEMENTATION PLAN - PREPARATION	■																							
	MANPOWER REQUIREMENTS - CONST. - PLANNING	▨																							
	MANPOWER REQUIREMENTS - OPERATING - PLANNING	■																							
	SELECTION OF MANAGEMENT PERSONNEL - ADVISING	■																							
	HEADQUARTERS COMPLEX REQUIREMENT - ADVISING	▨																							
	TOOLS-WORK EQUIPT. REQUIREMENTS - ADVISING	■																							
	BILLING-ACCOUNTING REQUIREMENTS - ADVISING	▨																							
	SELECTION OF SERVICE / HOUSEWIRING DESIGN-PERFORMING	■																							
	SELECTION OF SERVICE / HOUSEWIRING PERSN'L-ADVISING	■																							
	SELECTION OF CONSUMER-CONTACT PERSONNEL-ADVISING	■																							
	PRODUCTIVE USE PROGRAM - ADVISING	■																							
	REPORTING & MONITORING SYSTEMS - PREPARATION	■																							
	SELECTION OF R.E. SYSTEM EMPLOYEES - ADVISING	■																							
TRAINING COURSES	MANAGEMENT PERSONNEL - IN COUNTRY	■																							
	MANAGEMENT PERSONNEL - OUT OF COUNTRY	■																							
	CONSUMER CONTACT PERSONNEL	■																							
	SERVICE / HOUSEWIRING PERSONNEL	■																							
	ENGINEERING / CONSTRUCTION PERSONNEL	■																							
	METER READING / BILLING PERSONNEL	■																							
	PRODUCTIVE-USE DLPT. PERSONNEL	■																							
	MATERIALS / EQUIPMENT PERSONNEL	■																							
	ACCOUNTING DEPT. PERSONNEL	■																							
	OPERATIONS AND MAINTENANCE PERSONNEL	■																							
	SAFETY AND TRAINING INFORMATION	■																							
	EMPLOYEE INFORMATION SEMINAR	■																							

LEGEND : - - - - - WORK SCHEDULED - 55%
 _____ WORK COMPLETED - 40.5%
 ● NOT COMPLETED.

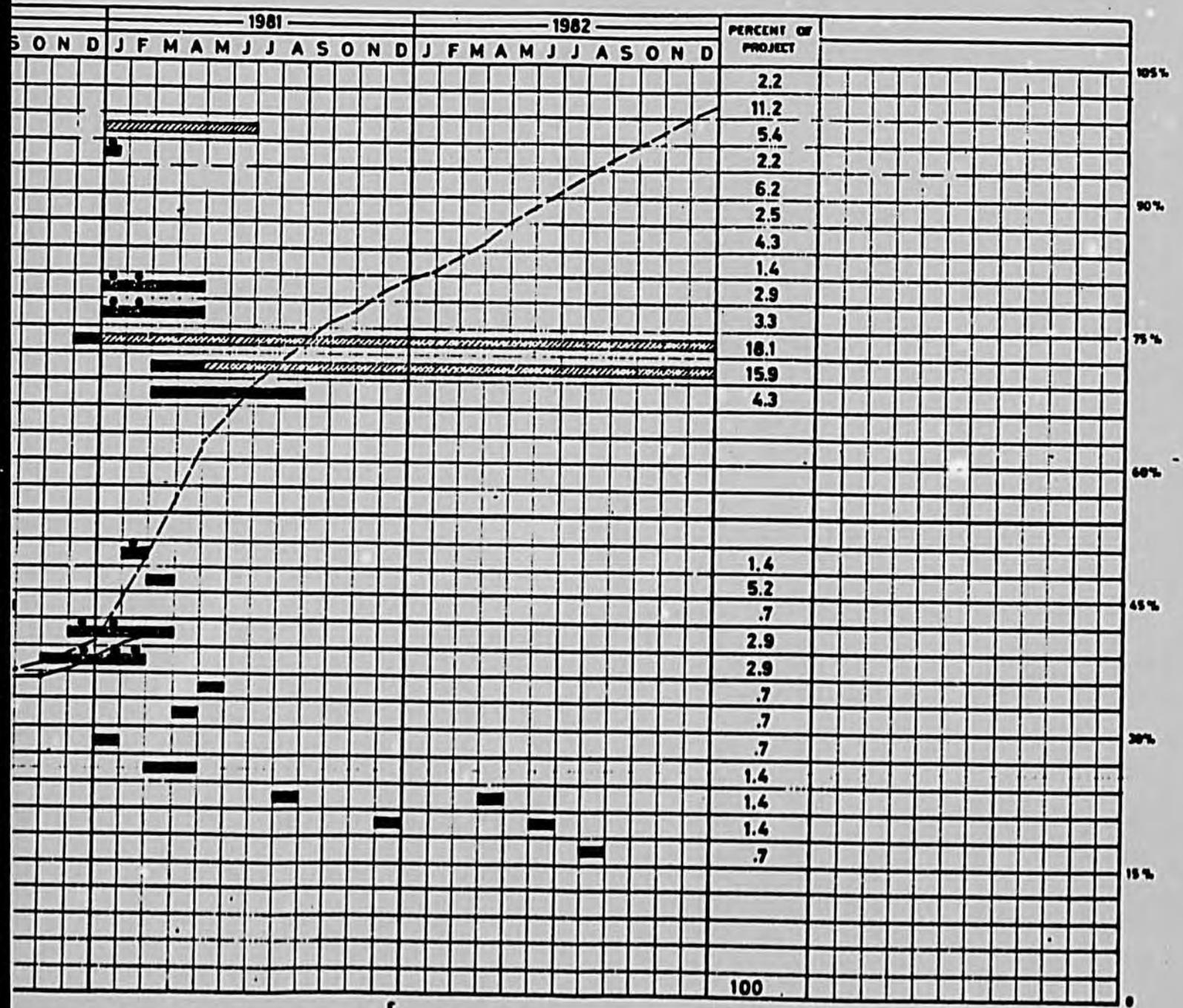
ORGINIZATION MANAGEMENT TRAINING PROGRESS SCHEDULE RURAL ELECTRIFICATION - I - P.L.N.



55%
40.5%

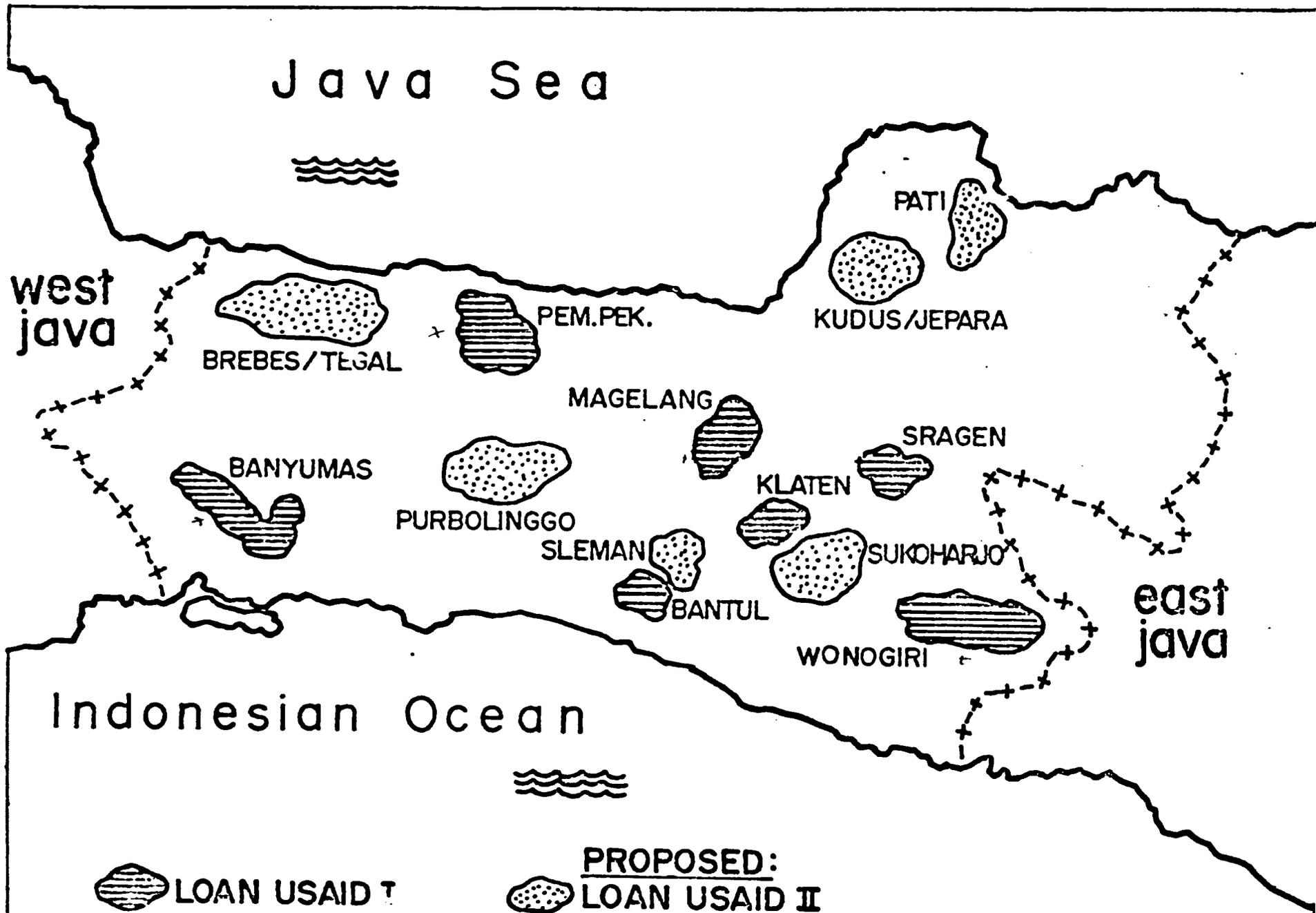
**TRAINING PROGRESS SCHEDULE
CLASSIFICATION - I - P.L.N.**

NRECA



CENTRAL JAVA

ANNEX G



PERSON-MONTHS BY POSITION, NRECA CONSULTANT TEAM

POSITION	PRESENTLY FILLED BY	CONTRACT PERSON-MONTHS	EXPENDED THIS PERIOD	EXPENDED THROUGH MARCH	PERCENT OF CONTRACT
Team Leader	Peter McNeill	36	1	30	83
Training Officer	Louie Sansing	36	1	26	72
Administrative Officer	Ray Shoff	19	1	17	89
PLN Advisor	Sam Adkins	42	1	25	60
Lampung Advisor	Lloyd Lake	44	1	30	68
Lombok Advisor	Paul Swanson	44	1	26	59
Luwu Advisor	John DeFoor	44	1	25	57
Short-term Advisors		27	0	18	67
Consultants		31	0	0	0
		323	14	197	61

Summary of Expenditures

National Rural Electrification Cooperative Association
 1800 Massachusetts Ave., N.W.
 Washington, D.C. 20036

AID/ASIA - C 1347
 Date: February 1981
 Period of contract: 8/25/78 - 8/25/82

	Budget	Total Expense To Date	Prior Billings	Current Billings
Salaries - Field	\$ 874,520	\$ 554,283.88	\$ 532,274.02	\$ 22,009.86
Salaries - Home	140,050	95,689.18	92,814.47	2,874.71
Fringe Benefits	256,664	208,834.19	197,794.62	11,039.57
Consultant Fees	95,800	33,906.25	33,906.25	
Allowances	366,145	215,294.34	205,949.57	9,344.77
Travel and Transportation	310,000	196,736.19	185,817.03	10,919.16
Other Direct Costs	125,900	67,727.47	66,821.03	906.44
Overhead	225,960	148,682.85	142,959.40	5,723.45
Equipment and Materials	15,000	15,705.27	15,705.27	
TOTAL	\$ 2,410,000	\$ 1,536,859.62	\$ 1,474,041.66	\$ 62,817.96