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RURAL ELECTRIFICATION PROJECTS

INDONESIA



NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

JAKARTA, INDONESIA

PDHMT 248

12M 34677

NRECA Team Report
PIN
Indonesia
Period ending March 31 st, 1984

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I. 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 2% 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 were selected. Seven of the projects are in Central Java and are being 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 is the existing PLN transmission grid in Central Java.

The National Rural Electric Cooperative Association (NRECA) through their International Programs Division, is serving as consultant to PLN in organization, management and training 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.

SEVEN PLN PROJECTS

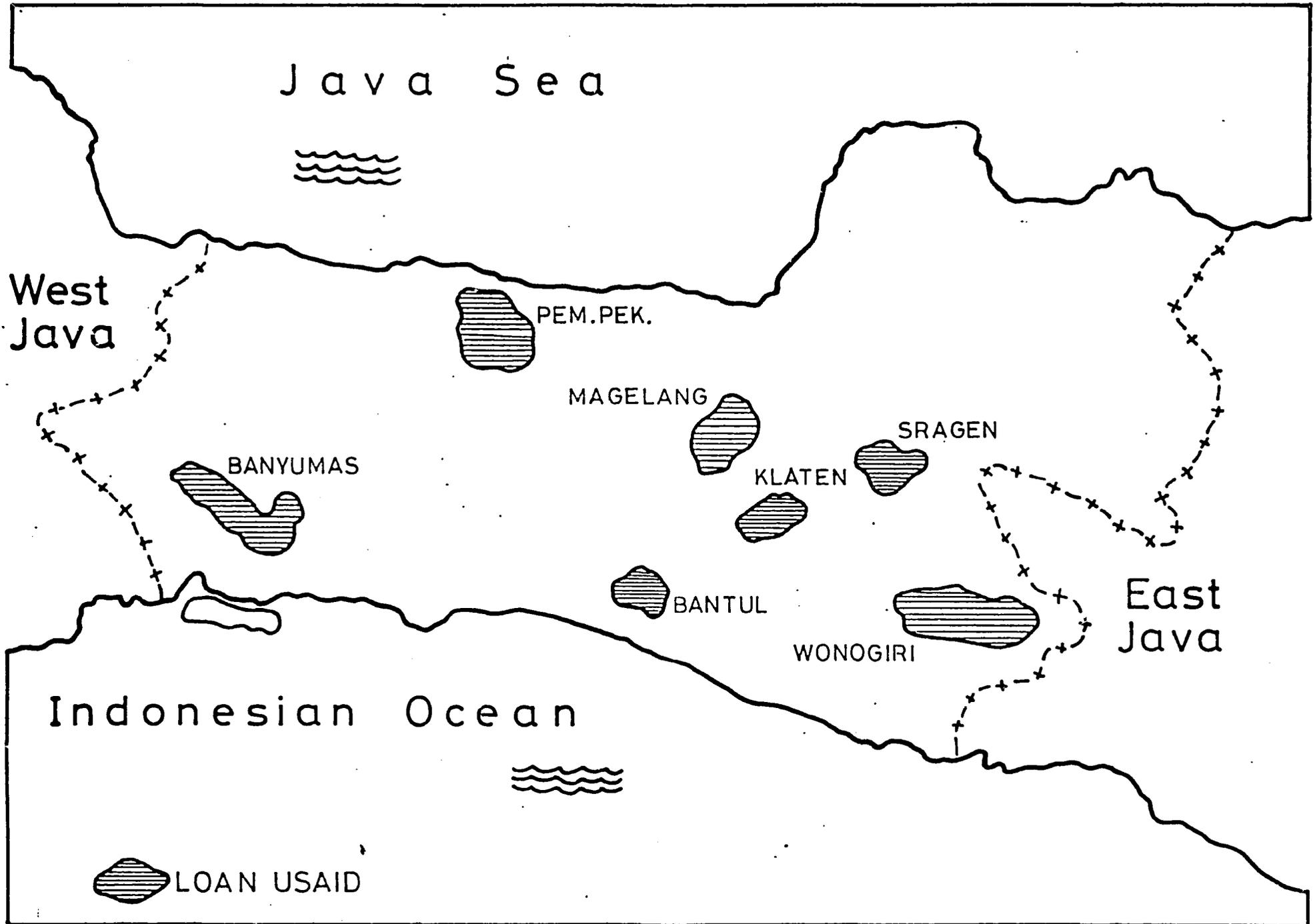
<u>SERVICE AREA</u>	<u>VILLAGES TO BE SERVED</u>	<u>APPROXIMATE NO. OF CONNECTIONS</u>	<u>ESTIMATED NO. OF RECIPIENTS</u>
Klaten	102	25,000	225,000
Pem/Pek	136	20,000	180,000
Bantul	21	20,000	180,000
Wonogiri	54	15,000	135,000
Sragen	55	15,000	135,000
Magelang	83	20,000	180,000
Banyumas	35	15,000	135,000
TOTALS	486	130,000	1,170,000

The above tabulations are estimates for the end of the third year of

In the early stages of project development, NRECA furnished a full-time Consultant who resided in Central Java, and consultants residing in Jakarta who provided part-time assistance. In this reporting period, the following NRECA personnel were available for project assistance :

<u>NAME</u>	<u>TITLE</u>	<u>ADDRESS</u>
Ray Shoff	Team Leader/ Administrative/ Finance Officer/ PLN Project Advisor	Ratu Plaza Apartment # 1002 Jl. Jenderal Sudirman PH : 730601
Louie Sansing	RE Project Advisor & PDO/Cooperative Training Coordinator	Jl. Galuh I/4A Kebayoran Baru PH : 735478

CENTRAL JAVA



NRECA - Team Status

--- This report covers the period September 1983 through March 1984. During this period, NRECA Jakarta-based consultants maintained coordination with PLN-Rural Electrification Department Staff in Jakarta, and the NRECA team leader/PLN-RE advisor traveled to Central Java semi-monthly to assist in project activities.

--- PLN Central Java continued to provide office space, secretarial service, transportation, and housing in Semarang for NRECA staff. Office space in Semarang is shared with co-consultant C.T. Main's Central Java representative. PLN Distribution Central Java (formerly referred to as Wilayah XIII) provides a counterpart who provides coordination, & travels with NRECA staff to the RE project sites.

--- It may be noted on page fifteen (15) of this report that NRECA's present assistance in PLN-RE is ninety-nine percent (99%) complete in terms of person-months per existing USAID/NRECA contract. However, action to amend the contract has been initiated by USAID, and approved by PLN, which will extend the team-leader/PLN advisor position through September, 1984.

--- A Summary of USAID/NRECA contract expenditures may be found on page sixteen (16) of this report. Approximately twenty seven per cent (27%) relate to assistance provided in the PLN-Central Java RE program during the period August, 1978, through January, 1984.

Central Java PLN-RE Activities

--- The Construction Division of PLN, Central Java, (P.I.Ring) continued electrical distribution-system construction at a rapid pace this reporting period. Contractors were selected to assist in the construction program, and it is now apparent that the distribution systems will be completed at two or three of the RE projects by mid-1984. The seven-project total kilometers of distribution line is now about 50% complete.

--- PLN Distribution Central Java (Operations Division) contracted with additional KUD's (local cooperatives) to provide assistance in the installation of service lines and housewiring. Training courses were conducted for KUD personnel in several RE project areas.

--- The headquarters facilities, warehouse & outside storage areas, are being utilized at all seven RE projects. P.I. Ring employees utilize one area of the warehouse as a construction-office, and the remaining area is utilized by the operations personnel for warehousing, office space & Kwh meter testing.

--- All seven sites now have an "Operations Coordinator" assigned full-time to expedite customer sign-up & housewiring. A staff of five or more PLN employees assist the coordinator at each of the sites.

--- In this reporting period, office furniture was obtained & the Magelang project is now utilizing the office building at the headquarters site. It is expected that additional office furnishings will be installed by mid 1984, and that all seven office buildings will be utilized.

Customer - Connection Levels

--- The original goal of this PLN/USAID joint effort in RE was to provide electric service to 440 desa (villages) with a targeted connection level, third year of operations, of one hundred thirty thousand customers (130,000).

The actual number of desa included in field engineering was four hundred eighty six (486). The December thirty-one, nineteen eighty four target still includes the original 440 desa with a connection level of seventy thousand customers (70,000).

--- On page number eight (8) of this report is shown the "Customer-billing" level up to March 1984. Considering the fact that customer billing lags behind customer-connection, it is evident that the 20,000 mark (customer connections) may have been reached by the end of March.

Problem Areas

--- As can be expected in any project of this magnitude, problems develop which are really minor in nature but slow-down project implementation. Problems which have affected customer-connections are : shortage of hand-tools for installing compression-type connectors in service-line installations; incorrect size cable-straps for housewiring cables; and a shortage of transportation equipment to transport housewiring materials from the headquarters-sites to the KUD's.

--- Through coordination of PLN-RE Jakarta, PLN construction Division, operations Division, and consultants, the problems are being overcome. A sizeable increase in customer-connection levels is expected in the months to follow.

Training

--- Training course "Distribution System operation & Maintenance" was held in Semarang in late 1983. This course was repeated with about thirty-five (35) participants in each session. A majority of the participants were P.I. Ring employees who will be assigned to the operations Department & will work in the RE project areas.

--- In early March, 1984, a meeting was held in Semarang to plan for the final training courses in the PLN/USAID RE program. Beginning in April, three one-week courses will be conducted in the project areas on the subjects " Electrical apparatus, tools/work equipment care & use ", and " Distribution-System Trouble-Shooting Techniques ".

Klaten RE Demonstration project

--- Beginning in May, 1979, PLN made electric service available to three (3) villages in the Klaten Area of Central Java as a rural electrification demonstration project. Separate billing statistics, and other customer data, has been maintained for this project. Pages number nine (9) and ten (10) of this report shows some of the results.

--- Page nine lists statistics during the first full year of operation when customer connection level averaged about 1885. It may be noted that the average Kwh/Month/Customer was 31 Kwhs, with an average cost per Kwh (energyonly) of Rp. 49.-

--- On page # 10, for the same months three years later, Kwh's/customer grew by 51% to an average of 47 Kwhs per month. This growth was realized in spite of the fact that tariff (retail electric rates) were adjusted upward with the average energy cost per Kwh for the 1983-84 period at Rp.74,

--- Another interesting comparison is found in column # 7 of the two pages. The major cost of housewiring (& service connection) was financed by PLN with long-term, low-interest applicable. It may be noted that the majority of these loans had been repaid by February 1984.

--- Page number eleven (11) of this report provides other statistics of interest. The Klaten project in total, demonstration area plus customers outside this demonstration area, reflects a Kwh/customer/month level of 56, less than in the Bantul, Wonogiri, Pemalang projects. This verifies that the demonstration project area is near the "Average" RE project.

CUSTOMER BILLING, 1983/84
PLN/USAID RE PROJECTS
CENTRAL JAVA

- 1985 -

- 1984 -

PROJECT	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH
KLATEN	4253	4366	4486	4599	4611	5012	5201	5599	5974	6108	6859	
BANTUL(YOGYAKARTA)	2573	2604	2772	3039	3061	3463	3.565	3.681	*3842	3713	3957	
MAGELANG	1167	1176	1191	1209	1239	1312	1365	* 1433	*1470	1377	1573	
PEMALANG (TEGAL)	2501	2562	2612	2656	2653	2681	2710	2711	2761	2913	3026	
PURWOKERTO	426	485	481	491	527	538	538	662	690	752	881	
WONOGIRI	270	270	322	459	533	702	738	987	1052	1053	1110	
SRAGEN	*	*	*	*	269	269	269	269	406	406	406	
TOTAL					12893	13977	14386	15342	16195	16322	17812	

* Incorrect information obtained from computer printout.

1	2	3	4	5	6	7	8	9	10
Feb.1980	1844	51771	Rp. 3.687.755,-	Rp. 2000,-	Rp.965	Rp.1035	28	Rp. 34	Rp. 71
March	1846	63033	3.954.020,-	2141	1106	1035	34	32	63
April	1846	54152	3.734.457,-	2033	988	1035	29	34	69
May	1844	58514	5.929.585,-	3216	2181	1035	32	69	101
June	1877	54406	6.011.450,-	3203	2106	1097	29	73	110
July	1879	53969	4.894.580,-	2605	1498	1107	29	52	91
August	1893	56150	5.080.895,-	2684	1532	1152	30	52	90
September	1903	60791	5.311.065,-	2790	1592	1198	31	50	87
October	1903	62316	5.347.175,-	2809	1611	1198	32	49	86
November	1932	62020	5.492.130,-	2843	1609	1234	32	50	88
December	1922	61533	5.436.135,-	2828	1593	1235	32	50	88
Jan. 1981	1927	63133	5.488.030,-	2848	1610	1238	33	49	87
February	1927	64127	5.424.930,-	2815	1624	1191	34	49	85
Monthly Average							31	49	86

Column :

- 1 - month/year
- 2 - total number customers billed
- 3 - total KWH billing
- 4 - total Rupiah billing (Rp.)
- 5 - Average bill per customer (total) (Rp.)
- 6 - Average bill, energy only (Rp.)
- 7 - Average billing for Housewiring loans (Rp.)
- 8 - Average KWH/customer
- 9 - Average Rupiah/KWH, energy
- 10 - Average Rupiah/KWH, total

KLATEN R.E. DEMONSTRATION PROJECT
BILLING STATISTICS 13 MONTH PERIOD

1983 - 1984

1	2	3	4	5	6	7	8	9	10
FEB. 1983	2062	118,870	Rp.8.286.905	Rp.5.045	Rp 4.019	Rp 1.026	58	Rp. 70	Rp. 88
MARCH	2069	94,206	8.966.390	4.334	3.313	1.021	45	75	95
APRIL	2074	84,399	8.486.160	4.091	3.110	981	41	76	100
MAY	2082	106,272	*				51		
JUNE	2092	111,460	*				53		
JULY	2149	105,085	9.321.160	4.337	3.648	689	49	75	89
AUGUST	2194	96,916	7.686.515	3.503	3.243	260	44	73	79
SEPTEMBER	2217	94,430	7.496.590	3.381	3.211	170	43	75	79
OCTOBER	2225	98.019	7.611.795	3.421	3.254	167	44	74	78
NOVEMBER	2284	96,553	7.865.715	3.444	3.174	270	42	75	81
DECEMBER	2300	107,321	8.469.705	3.682	3.423	259	47	75	79
JANUARY 1984	2310	113,034	8.693.150	3.763	3.681	82	49	75	77
FEBRUARY	2316	103,821	8.218.130	3.548	3.486	62	45	78	79
MONTHLY AVERAGE							47	74	84

* COMPUTER PRINTOUT PROBLEM

Column :

- 1 - month/year
- 2 - total number customers billed
- 3 - total KWH billing
- 4 - total Rupiah billing (Rp.)
- 5 - Average bill per customer (total) (Rp.)
- 6 - Average bill, energy only (Rp.)
- 7 - Average billing for Housewiring loans (Rp.)
- 8 - Average KWH/customer
- 9 - Average Rupiah/KWH, energy
- 10 - Average Rupiah/KWH, total

RE PROJECT STATISTICS
Calendar Year 1983 KWH useage per consumer

I.	<u>PROJECT LOCATION</u>	<u>AVERAGE KWH/CONSUMER</u>
1.	Bantul (Yogyakarta)	62
2.	Wonogiri	61
3.	Pemalang (Tegal)	60
4.	Sragen	56
5.	Klaten	56
6.	Banyumas (Purwokerto)	40
7.	Magelang	34

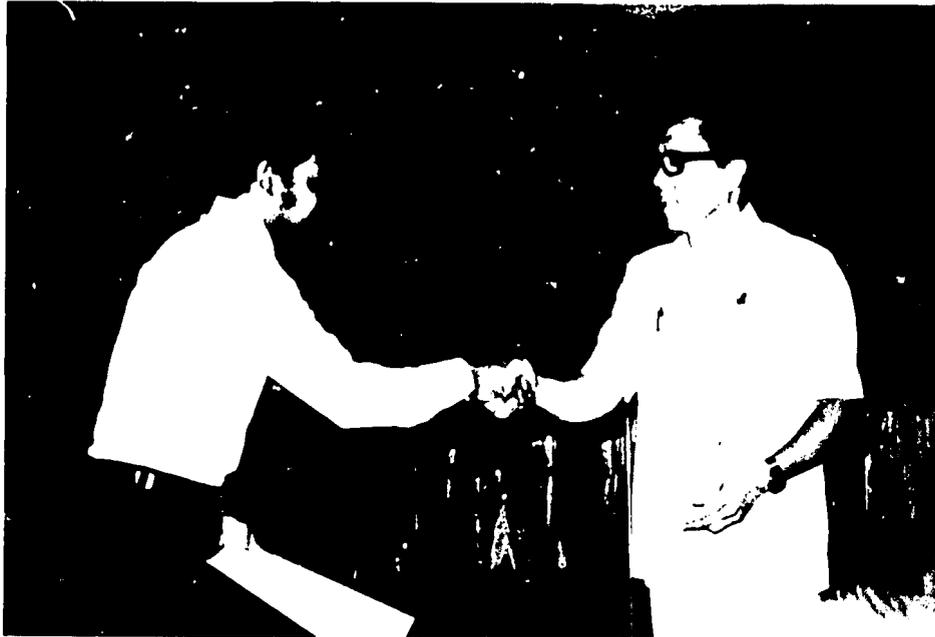
Seven project average = 55 KWH/Consumer.

II.	<u>Calendar Month</u>	<u>Seven-Project average KWH/Consumer</u>
	January	49
	February	48
	March	48
	April	54
	May	52
	June	54
	July	56
	August	56
	September	57
	October	51
	November	55
	December	59

Twelve Month Average = 53 KWH/Consumer.

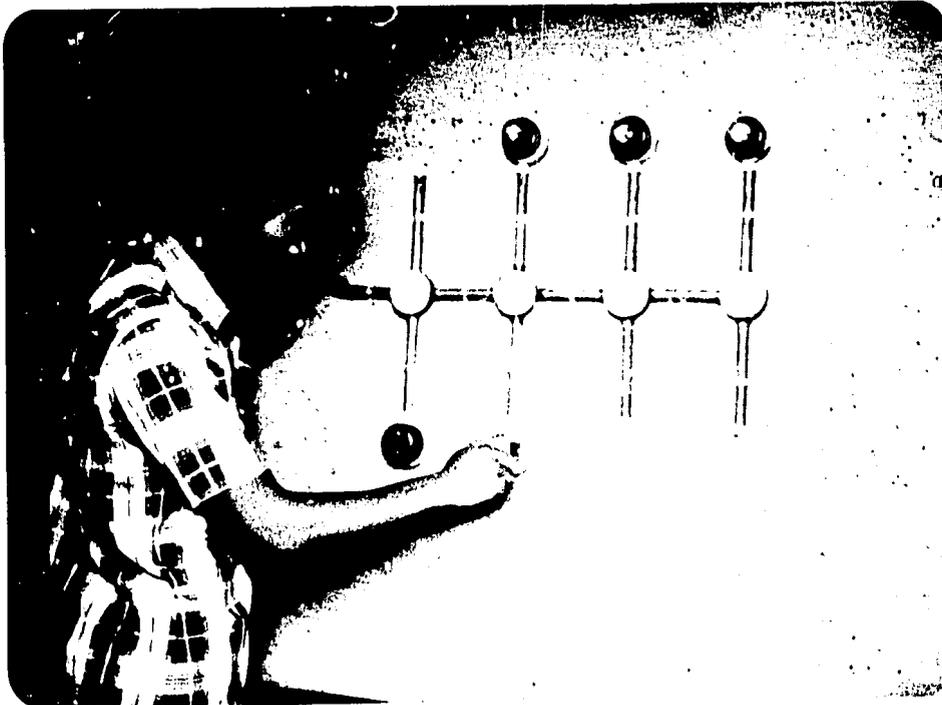
PROJECTIONS
PLN CENTRAL JAVA

R.E. Projects	Kilometers of Primary line	Kilometers of Secondary line	Total KM	Estimated Connections 3rd years Operations	Connections per KM
BANTUL	225	203	428	20,000	47
BANYUMAS	219	94	313	15,000	48
KLATEN	314	205	519	25,000	48
MAGELANG	343	81	424	20,000	47
PEMALANG/ PEKALONGAN	423	275	698	20,000	29
SRAGEN	261	238	499	15,000	50
WONOGIRI	412	254	666	15,000	23
T O T A L :	2197	1350	3547	130,000 Average	37/Km

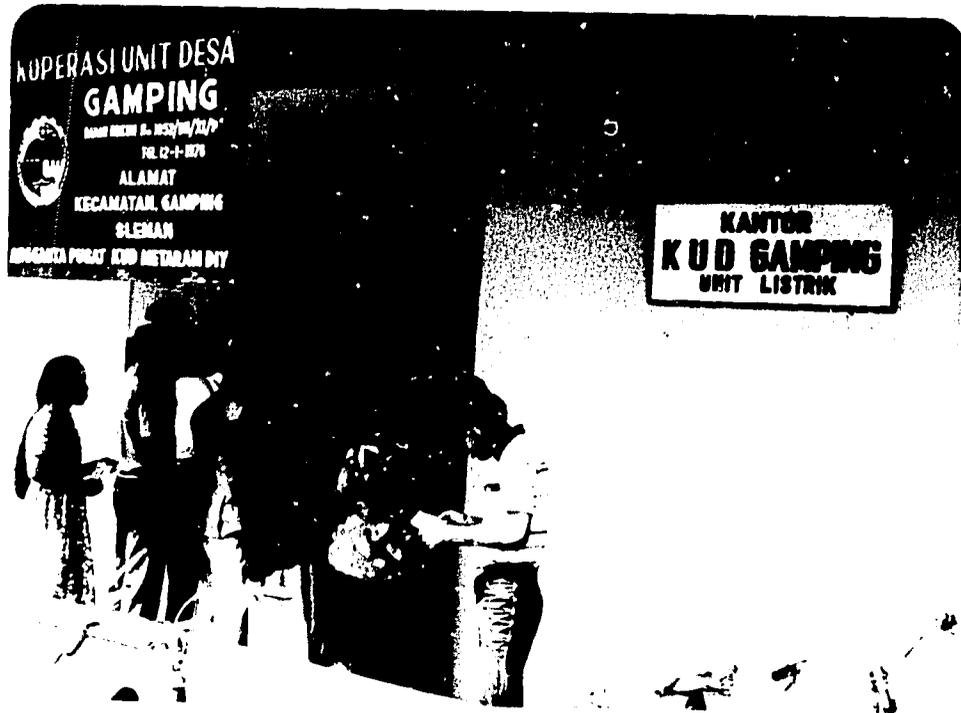
CENTRAL JAVA RE ACTIVITIES

APR 64

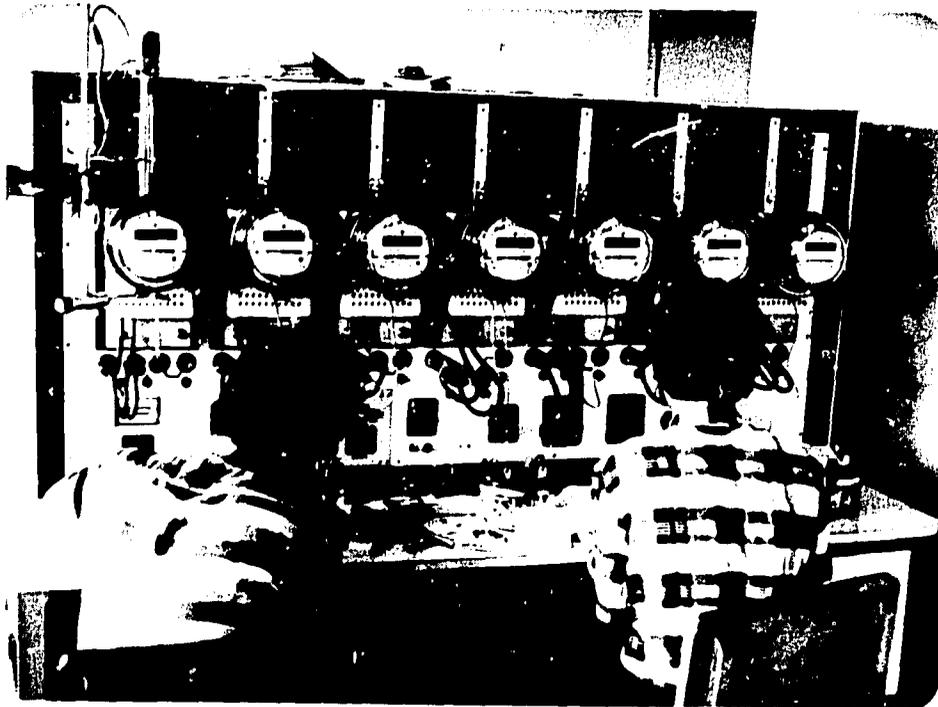
PLN Deputy Director for Rural Electrification, Mr. J.J. Rumondor, presenting a "Certificate of Completion" to a PLN employee who attended a training course, "Distribution System Operation & Maintenance", held in Semarang.



Employees of KUD's (local cooperatives) receiving training at an Electricians Training Course held at Yogyakarta. After training, these men will assist PLN in the RE project housewiring program.

CENTRAL JAVA RE ACTIVITIES

A "Collection office" for a KUD (near Yogyakarta) that has contracted to read kwh meters, & collect bills, for PLN.



KWH Meter Testing in progress at the Bantul RE Project Warehouse. With the modern meter-test equipment procured through the USAID Loan, nearly one hundred meters can be tested each day.

PERSON-MONTHS BY POSITION, NRECA CONSULTANT TEAM

(Contract as amended March 14, 1983)

POSITION	PRESENTLY FILLED BY	CONTRACT PERSON-MONTHS	EXPENDED THIS PERIOD	EXPENDED THROUGH MAR '84		PERSON MONTHS REMAINING	PERCENT OF CONTRACT EXPENDED
				PLN	PDO		
Team Leader (Administrative Finance Officer)	Ray Shoff	69	-	19	48	2	97%
** Senior RE Specialist/ Training Officer	Louie Sansing	63	-	7	56	0	100%
*Senior RE Specialist/ N - Advisor C - Advisor	Sam Adkins	53	-	49	4	-	100%
RE Specialist mu-project Advisor	John DeFoor	47	0	-	47	-	100%
Administrative Officer	-	33	0	5.5	27.5	-	100%
Lombok Advisor	-	42	0	-	42	-	100%
Lampung Advisor	-	46	0	.5	45.5	-	100%
Short Term Advisors	-	19	0	14	3	2	89%
Consultants	-	8	0	7.5	.5	-	100%
Positions vacated, July 31, 1982 Position vacated February 2, 1983 Position vacated July 31, 1983 Position vacated March 31, 1984		380	8	102.5	273.5	4	99%

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Summary of Expenditures

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

AID/ASIA - C 1347
 Date: January, 1984
 Period of contract: 8/25/78 - 6/30/84

	Budget	Total Expense To Date	Prior Billings	Current Billings
Salaries - Field	\$ 1,205,000	\$ 1,202,290.16	\$ 1,194,013.98	\$ 8,276.18
Salaries - Home	216,000	211,703.38	209,851.94	1,851.44
Fringe Benefits	448,000	447,156.99	443,833.47	3,323.52
Consultant Fees	34,706	33,906.25	33,906.25	-
Allowances	418,000	370,010.72	368,496.30	1,514.42
Travel and Transportation	396,470	379,439.77	379,064.66	375.11
Other Direct Costs	148,824	111,911.77	111,885.20	26.57
Overhead	603,000	599,102.28	594,848.68	4,253.60
Equipment and Materials	30,000	20,739.58	20,739.58	-
TOTAL	\$ 3,500,000	\$ 3,376,260.90	\$ 3,356,640.06	\$19,620.84

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