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RURAL ELECTRIFICATION PROJECTS

INDONESIA



NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

JAKARTA, INDONESIA

NRECA TEAM REPORT

PDO

INDONESIA

MAY 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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DESCRIPTION AND OBJECTIVES OF PROJECT (DGC)

The Government of Indonesia (GOI) has initiated a demonstration rural electrification program which is planned to provide areawide electric power distribution in ten specified areas within the next four or five years. The objective of this program is to demonstrate conclusively that reliable electric service and the social and economic benefits that accrue therefrom can be made available to the very poor people at a price they are able to pay.

Three of the electrical distribution systems will be located on separate islands outside of Java and will be implemented through rural electric cooperatives organized by the Directorate General of Cooperatives (DGC). The National Electric Power Agency (PLN) operates an extensive electric system in Central Java, and is responsible for constructing, operating and maintaining the seven systems located on that island.

The U.S. Agency for International Development (USAID) is assisting the GOI in this demonstration by making available AID grant funds to provide organizational, management and technical advisory services. The National Rural Electric Cooperative Association (NRECA), through its International Programs Division, was contracted by AID to provide these services because of its demonstrated capability and experience in assisting rural electric cooperatives in developing nations throughout the world.

NRECA is working with the two separate agencies charged with implementing the project. Because of the different organization, management, training and experience of these two agencies, the services provided by NRECA differ in scope and location. The services for DGC include complete assistance in the organization of the individual cooperatives; including staffing patterns, job descriptions, cost accounting, O&M methods, training, planning, policies and procedures, housewiring and etc. The NRECA services and progress to date for the seven systems in Central Java are the subject of a separate report.

The three outer island projects are located on Central Lampung (South Sumatra), East Lombok, and Luwu (South Sulawesi) and are to be constructed and developed

by the member-consumers themselves through the organization of rural electric cooperatives. Each Cooperative will construct, own and operate a diesel generating plant to provide power for the distribution system. (The Canadian Government is assisting with the generating project.) A special agency known as the Project Development Office (PDO) under the Directorate General for Cooperatives (DGC) is the GOI implementing agency for the Cooperatives.

The key personnel which NRECA has agreed to furnish for the performance of this contract are as follows:

<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 Inc. 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

NRECA Jakarta Team Activities

General --- The NRECA Jakarta team was at full strength during this reporting period. In addition to regular duties in Jakarta, six trips were made to the three outer island projects by Jakarta-based team members.

--- An NRECA team meeting was held in Jakarta during this reporting period. Meetings are held at six-week intervals and this meeting was scheduled just prior to home-leave departure by Paul Swanson. Representatives of USAID/PTE, C.T. Main and PDO-RE attended this meeting and participated in project status review.

--- The NRECA Team Leader, Peter McNeill, continued coordination of team activities with officials of USAID, Director General of Cooperatives (DGC), Project Development Office for Rural Electrification (PDO-RE), co-consultants, C.T. Main and Sandwell Inc. USAID/NRECA contract extension was a subject included in USAID/NRECA coordination; proposals for additional feasibility studies was given attention in DGC/NRECA coordination; and increased emphasis on project implementation was the by-words in PDO-RE/co-consultants/NRECA coordination.

Highlights of team activities follow:

Organization/Management --- As a matter of daily routine, NRECA team members have maintained contact with representatives of PDO-RE at the office shared by PDO-RE and NRECA, eleventh floor of the Sarinah Building. During this reporting period, the NRECA team implemented a program to expand our advisory efforts by holding separate meetings with employees of key departments in PDO-RE. Schedules for weekly meetings with the Chief of Administration and Finance, Ir. Budhiman Sirod, and his staff, were prepared and two meetings held. Agenda items, selected in advance, included "PDO-RE Guidelines for the Cooperatives" and "Reports and Reporting Procedures".

It is planned that the scheduled-meeting and pre-arranged agenda concept will be continued with Ir. Sirod and his staff, to be expanded later to include other key PDO-RE departments. Major efforts have been exerted by the

NRECA team in the past to develop functional organizations at the outer island projects. Considering the advanced stage of organizational development at the project level, plans now include greater emphasis on assistance to PDO-RE at all levels.

--- Representatives of the West German Government have shown interest in funding a rural electrification project in the Kabupaten of West Pasaman, located in West Sumatra. As a result, PDO-RE officials, with the assistance of NRECA team members, compiled the necessary data as the preliminary step in providing necessary basic information on the area.

--- The NRECA team leader assisted the Chief of PDO-RE, Mr. Sjoufjan Awal, by supplying information to be included in a presentation to be made by Mr. Awal at a conference of the Indonesian Society of Electrical Engineers. The theme for this conference was "Village Electrification", a subject of great interest to the conference participants. The presentation included a comparison of urban electrification to rural electrification, the inherent differences, and support requirements for a successful rural electrification program.

--- Specific plans for proposed feasibility studies was the subject for discussion at a meeting called by Mr. Ibnoe Soedjono, Director of Cooperatives Development and Research, at which the NRECA team leader was in attendance. DGC-PDO-RE personnel have been gathering field data for several months and present plans include NRECA team participation beginning in September of this year. Studies will be made in ten (10) selected areas.

--- The NRECA International Programs Division (IPD) continued to plan for a Mini Hydro Workshop to be held in Bangkok during the month of June. Four of the resource speakers will come from the ranks of GOI and USAID Jakarta. As a result, NRECA Jakarta team members provided background information and assisted with travel plans for the workshop participants.

--- NRECA continued to assist PDO-RE in the preparation of Guidelines to be issued to the cooperatives. A guideline on care and use of vehicles was

completed and forwarded to the Chief of PDO. Reporting requirements were included in a guideline submitted to the cooperatives at an earlier date. During this reporting period, NRECA team members prepared an outline for PDO-RE staff members to follow while analyzing reports.

--- The NRECA administrative/finance officer continued to refine the English version of the uniform system of accounts now in use at the cooperatives. Several revisions were necessary due to changing conditions over the two year period that has elapsed since the accounting system was first produced. The corrected English version is now being translated to bahasa Indonesia.

--- Several coordination meetings were held with C.T. Main staff members during this reporting period. Subjects for discussion included; final material and equipment quantities for IFBs; review of planned headquarters facilities for the outer island projects; project REIL implementation at the Luwu Cooperative; and progress at the REIL project, Lampung.

Training --- NRECA team members assisted USAID and PDO-RE in preparations for an RE observation/study tour to be conducted in the Philippines for top-level GOI officials. Printed materials were compiled, coordination sessions held and a briefing session conducted for the group of eight (8) persons who left Jakarta on May 24th. General L.M. Abdulkadir, Secretary General, Department of Trade and Cooperatives, and Admiral Hotma Harahap of the Indonesian Parliament (DPR) were the group leaders.

--- The NRECA training officer spent considerable time preparing for five in-country training courses held at the project sites during this reporting period. Daily coordination was maintained with the PDO-RE Training Officer, Mr. Alfian Nur Malay, as training course outlines were finalized, resource speakers selected, and training materials updated. (The details of on-site training activities are included in the outer island sections of this report.)

--- Drawings and material listings for service line and kWh meter construction assembly units were prepared by the NRECA training officer during this period.

A step by step installation procedure, written and by flow charts, was prepared. These materials have been adopted by PDO-RE for use in future training course presentations.

--- As a point of interest in this section of the NRECA report, the total number of training courses conducted by PDO-RE/NRECA now stands at thirty-five (35). The number of participants totals four hundred sixty-two (462), including PDO-RE personnel and personnel from the cooperatives. (It is understandable that several people have attended more than one training course.)

OUTER ISLAND PROJECTS

LOMBOK - Sinar Rinjani Electric Cooperative

General --- The NRECA Project Advisor, Paul Swanson, was in Lombok during the first half of this reporting period, traveling to the project site at Aikmel on a daily basis. He left for the United States on regular home-leave in mid-May and is scheduled to return July 1st. During his six weeks absence, NRECA Jakarta team members are making periodic project visitations.

Organization/Management --- The annual meeting of members that was recessed on March 25th resumed on May 23rd. The major business function was a change in the by-laws to permit the addition of a seventh board member. This change was made at the request of DGC provincial officials who explained the benefits of having a Board of Directors with odd-number seven rather than six members. As a result, a member from Aikmel was elected to serve a three-year term effective as of May 23rd.

--- NRECA team members continued to provide maximum assistance to Mr. Ridwan, Acting Manager of the Cooperative. During this reporting period, team members responded to the manager's request and interviewed applicants for the position of chief accountant for the cooperative. An NRECA recommendation was followed and Mr. Tobing, an experienced accountant who originally hails from Sumatra, was selected. He is scheduled to report to duty in Lombok on June 1st, 1981 to fill this all important position.

--- The NRECA project advisor provided assistance to staff members in the cooperative-owned appliance store in Aikmel. Inventory control, profit and loss statements and other reporting forms were devised and put to use. The accounting system will follow the format and procedures for the regular operating activities of the cooperative, electric energy sales accounting.

--- Time-keeping was another area in which the NRECA advisor provided assistance during this reporting period. Since the operations of the cooperative is

relatively small at this time with only 27 employees involved in business operation activities, a full-time payroll clerk/time-keeper cannot be justified. Therefore training is being given to another employee who will serve in dual capacity.

--- The NRECA administrative/finance officer visited the project during this reporting period. Assistance was provided to the recently-hired cashier on the preparation of daily cash reports. Check voucher utilization was improved and the cash disbursement register updated.

Training --- There were no regular training courses held at this cooperative during this reporting period however on-the-job training continued as referred to in previous paragraphs. As new employees join the cooperative and positions of employees become well defined, additional training courses will be scheduled.

Operations --- The cooperative continues to provide electric service to three villages on a 24-hour basis. The connected-consumer total grew to fourteen hundred fifty-nine (1459) during this reporting period and may approach two thousand (2000) by the end of this calendar year as consumers in a fourth village are connected. (See statistics on page 17.)

Cash operating expenses still exceed operating income each month. Difficulty is encountered in the preparation of accurate financial reports since DGC-DIP funds are used to pay almost all of the operating expenses and detailed expenditure reports are not available to the cooperative's accounting staff. However, the general fund balance in the cooperative bank account continues to grow and reached a total of thirteen million rupiah (Rp 13,000,000) at the end of this reporting period, reflecting the benefit of DGC-DIP fund utilization.

Housewiring collections are improving as a result of increased collection efforts by the cooperative. At the end of this reporting period, almost seven million five hundred thousand rupiah (Rp 7,500,000) was on-deposit in the

housewiring revolving-fund bank account. This amount represents approximately forty-five per cent of the total labor and material costs for the one thousand seven hundred (1700) houses wired to-date. The balance is in accounts receivable for loans extended under the cooperative's policy, maximum loan period being twenty months.

--- Productive use of electricity is on the increase but the improvement in sales is gradual. Twenty-four hour service has only been provided for three months however, and much improvement is expected in the months ahead. In this regard, funding will soon be made available through a GOI-DGC source to assist the members of the cooperative in the procurement of electric motors and other electrical equipment/apparatus. The availability of these funds and increased productive use promotion efforts on the part of the cooperative's personnel should produce favorable results. (See productive use pictures, page 19 .)

Visitations --- The Lombok Cooperative continues to be a showplace for rural electrification as numerous officials from national, regional and local government visit the project. Among the visitors during this reporting period was U.S. Ambassador to Indonesia, Mr. Edward E. Masters. The ambassador and staff met with members of the cooperative's Board of Directors, manager and staff members. The NRECA advisor assisted in briefing sessions and a tour of the cooperative's service area.

Problem Areas --- A problem which should be of short duration can be identified on page 17 of this report, operating statistics, and page 18 which contains a load-curve relating to electric demand recorded at the cooperative-owned power plant. When twelve-hour service was being provided, prior to March 1st, fuel cost per kWh generated was Rp 16 (February 1981 figure). Concurrently, system losses (the percent of generation not available for resale to consumers --- wasted energy) were unusually low at 5%.

After 24-hour service began in March, fuel cost per kWh generated increased to Rp 23 and system losses increased drastically to 28%. The reason can be

found on the load chart which reflects the undesirable condition where daytime load approximates 20 kw, peaking at 183 kw for a short duration in the evening and dropping to 74 kw after midnight for the remaining hours of darkness. The result is, high cost per kwh generated and high system losses since approximately three-fourths of the daytime generation is actually system losses.

The cooperative is faced with the "chicken and the egg" proposition --- which comes first. Continuity of service on a 24-hour basis is necessary to encourage the addition of daytime electric loads --- appliances and productive use equipment. On the other hand, providing twenty-four hour service is costly and may be hard to justify in some ways. We are confident however that management of this electric cooperative has made the right decision and 24-hour service should continue. Gradual improvement is visible, comparing March to May statistics, and this trend may continue in the months that follow.

--- Another major problem facing the cooperative is disconnections for non-payment of electric bills. Since the cooperative began operation in August of 1980, one hundred and forty-nine (149) consumers have been disconnected for delinquent accounts. Of this total, one hundred and sixteen (116) remained disconnected as of the end of this reporting period. This figure represents approximately eight percent of total consumer-connections made during this same period.

By industry standards, this is a high percentage and an answer must be found. Preliminary studies indicate that applicants were not screened to determine their ability to pay for electric service. Also, electric rates were not set in advance of connection, hence, the consumers did not know their possible monthly financial obligation. Lessons can be learned from this demonstration project --- further study must follow.

LUWU - Samabotuna Rural Electric Cooperative

General --- Except for attendance at an NRECA team meeting in Jakarta, the Project Advisor, John DeFoor, was on duty in Luwu throughout this reporting period. Aside from his activities with the cooperative, the advisor continued to assist in completion of the home assigned to him at the cooperative headquarters site, seven kilometers east of Bone Bone. He plans to transfer from his temporary residence to the headquarters site in the month of June.

--- This was an important period for the NRECA project advisor and his co-workers at this cooperative. The first materials for the electrical distribution system arrived, housewiring began and on-site employee training courses started. Details are in the paragraphs that follow.

Organization/Management --- The cooperative rented office and warehouse space in Bone Bone, located within the proposed area of the demonstration electrification project. These facilities are now being utilized and proving very beneficial. Travel time is minimized and concentration of personnel within the construction area has increased efficiency.

--- The NRECA project advisor continued to coordinate with Acting Manager, Mr. Bagio and DGC Coordinator, Mr. Hassan. Special meetings were held between these three men and members of the Board of Directors. Major subjects discussed related to organization of manpower and facilities to properly implement the demonstration electrification project.

--- A major activity during this reporting period was assignment of personnel to specific employment positions. Although tentative assignment had previously been made, the beginning of on-site training courses prompted confirmation of assignments to assure that the right employee was trained for a specific position. The NRECA advisor, acting manager and project coordinator have now completed this task.

Training --- A linemens training course was held during this period for twelve employees of the cooperative. The NRECA training officer, project advisor and C.T. Main Project Advisor, Mr. Roman Garcia, served as instructors for this four-week course held at the headquarters site in Minna. The participants proved to be fast-learners both in the classroom and in the pole climbing techniques (see picture, page 22).

--- A housewiring training course was conducted for a one-week period in Bone Bone during this reporting period. Valuable assistance was provided by Mr. Rashid Ali, PDO-RE Technical Department staff member. Mr. Ali, the NRECA Training Officer and NRECA advisor trained eight contract electricians and four employees from the member services department of the cooperative. Training began with classroom instruction and continuing into field practice (see page 21).

Housewiring materials, tools and work equipment were procured locally and the twelve training course participants wired twenty-four houses during the training (by the end of this reporting period, one hundred fifty-seven (157) houses had been wired).

--- A construction-cost accounting seminar was also held in Bone Bone in May with twelve participants receiving the training. The participants represented six departments or sub-departments in the cooperative's organization; two from the warehouse section; one Stock Record Clerk; two from Engineering; five from the accounting department; one payroll clerk; and the work order clerk.

The NRECA administrative/finance officer, the NRECA project advisor, Mr. Waluyan of the PDO-RE Administrative staff, and the PDO-RE Training Officer, Mr. Alfian Nur Malay, conducted the six-day training course. Maximum utilization of time was accomplished as seven-hour daytime training sessions were followed by three-hour evening workshops (see page 20).

Although the majority of training course participants were newly appointed to their respective positions and had no experience in their respective

assignments, the results of the training course examinations were very encouraging. Continued on-the-job training will follow since Mr. Waluyan is assigned at this project for several months and will assist the NRECA advisor in this endeavor.

Problem Areas --- Mother nature rated number one in problem areas during this reporting period. Rain continued on a daily basis, hindering outdoor training activities and disruption training course daily schedules. On the seven kilometers of road between Bone Bone and Minna, three bridges washed out and at times, the road was impassable. Delivery of housewiring materials from Ujungpandang and poles from Woro was halted during certain periods and proper acceptance of these materials at Bone Bone was also affected (see page 22).

--- Wood poles are being procured through a contract executed between the cooperative and a pole supplier in the Luwu area. Some poles received were not of the species designated in the contract. In addition, several poles show signs of decay and large cracks are visible. The poles are not treated and therefore they may last only a few years (see page 22).

Although construction material control does not fall within NRECA's scope of work, we have a sincere interest in material control. The safety of line personnel and financial aspects are considerations for our OMT team. The NRECA project advisor is assisting Mr. Garcia and the cooperative's management in finding a solution to this problem.

LAMPUNG - Sinar Siwomego Rural Electric Cooperative

General --- The NRECA Project Advisor, Lloyd Lake, is now within three months of retirement from his long-term role as electrification advisor with NRECA. He takes pleasure in the fact that the Lampung Cooperative is moving through the construction stage (the demonstration project REIL) and has entered the operating period. The first energization took place on May 21st.

The advisor is exerting all efforts to assure that a well organized cooperative; a viable entity and a beneficial service organization exists prior to this departure from Indonesia in the month of August. Key indicators of success can be found in the paragraphs that follow --- a tribute to the advisors untiring efforts.

Organization/Management --- Membership sign-up continued this reporting period in a well organized membership drive. thousand five hundred and thirty-five (1535) applications have now been received from applicants located within the demonstration project area (project REIL). Membership fees have been paid, deposited and properly recorded in the cooperative's accounting records. Applications are being processed and approved by the Board of Directors in the proper manner.

An additional one hundred and twenty-five (125) applications have been received from applicants outside of the project REIL service area. Although the cooperative is not actively soliciting members outside the REIL area, local residents are eager to receive electric service and are applying without solicitation.

--- Completed housewiring installations now total one thousand three hundred fifty (1350) of which one hundred eighty-two (182) were installed during this reporting period. It is encouraging to note that five hundred one (501) members have paid the cost of their housewiring installation in full and the balance are repaying short-term loans on a monthly basis.

--- kWh meters have been installed on four hundred ninety-one (491) homes. Approximately four hundred (400) of these installations had been energized and receiving electric service at the end of this reporting period.

Training --- The injection of demonstration electrification projects into the overall RE project implementation has altered original training plans to a large extent. Training courses originally scheduled for future years are being conducted at a rapid pace.

--- The construction-cost accounting seminar which began during the last reporting period continued to completion. The advisors weekly reports indicate that procedures for controlling labor and material quantities and costs, included in this training course, are now being implemented.

--- A training course on "operations, maintenance and safety" was conducted during this reporting period. Thirty participants; twenty from the line department; four from the member services department; and six from the power production department, attended this two-day course which was conducted by the NRECA training officer, NRECA project advisor and the C.T. Main Project Advisor, Frank Cachin.

Course contents included trouble-shooting techniques and record-keeping for operation and maintenance of the electrical system. Coordination between power plant and line personnel was a key point stressed in the training course. Also, pole-top rescue and life-saving techniques were demonstrated by the NRECA training officer.

--- On-the-job training was a continuing activity of the NRECA advisor. Follow-up was made on all previous training course presentations to assure that recommended procedures were being followed. Assistance was provided to individual employees to fully implement these procedures.

Problem Areas --- Although the cooperative has energized segments of the distribution system and are serving members, a retail electric rate has not

been established. The NRECA project advisor and NRECA Jakarta staff have proposed a rate which is now under study by PDO-RE and management of the cooperative. Hopefully a rate will be adopted well in advance of the first meter reading rate.

--- Revenue from the sale of electric energy will soon be received. At present, the cooperative has not opened a special bank account at the BRI Metro branch for depositing these funds. NRECA team members are urging prompt action by the Board of Directors and the acting manager to assure that collections from energy sales will not be mixed with membership fees, loan funds or housewiring funds.

LOMBOK ELECTRIC COOPERATIVE

OPERATING STATISTICS

FIRST FIVE MONTHS OF 1981

	JAN	FEB	MAR	APR	MAY
Number consumers billed	1301	1401	1424	1430	1459
Total revenue	Rp 2,000,060	Rp 2,048,545	Rp 2,175,465	Rp 2,145,785	Rp 2,339,065
Total kWh billed	31,016	28,704	27,518	28,106	32,349
Average revenue per consumer	Rp 1,537	Rp 1,462	Rp 1,528	Rp 1,501	Rp 1,603
Average number kWh per consumer	23.8	20.5	19.3	19.7	22.2
kWh generated	32,250	30,270	38,302	38,377	41,849
Liters diesel fuel consumed	10,062	9,182	14,740	14,545	16,970
kWh's generated per liter	3.2	3.3	2.6	2.6	2.5
Fuel and lube oil cost	Rp 583,000	Rp 486,000	Rp 883,000	Rp 858,000	Rp 898,000
Fuel cost per kWh generated	Rp 18	Rp 16	Rp 23	Rp 22	Rp 21
% system losses	4%	5%	28%	27%	23%
Peak kw demand	173	-	-	-	181

NOTE: Some January through March statistics differ slightly from those included in previous NRECA Monthly Reports. This is due to the incomplete information which was received initially.

LOAD CURVE, JUNE 22ND

LOMBOK ELECTRIC COOPERA

KILOWATT

200

180

160

140

120

100

80

60

40

20

0

16

1615

1630

1645

17

1715

1730

1745

18

1815

1830

1845

19

1915

1930

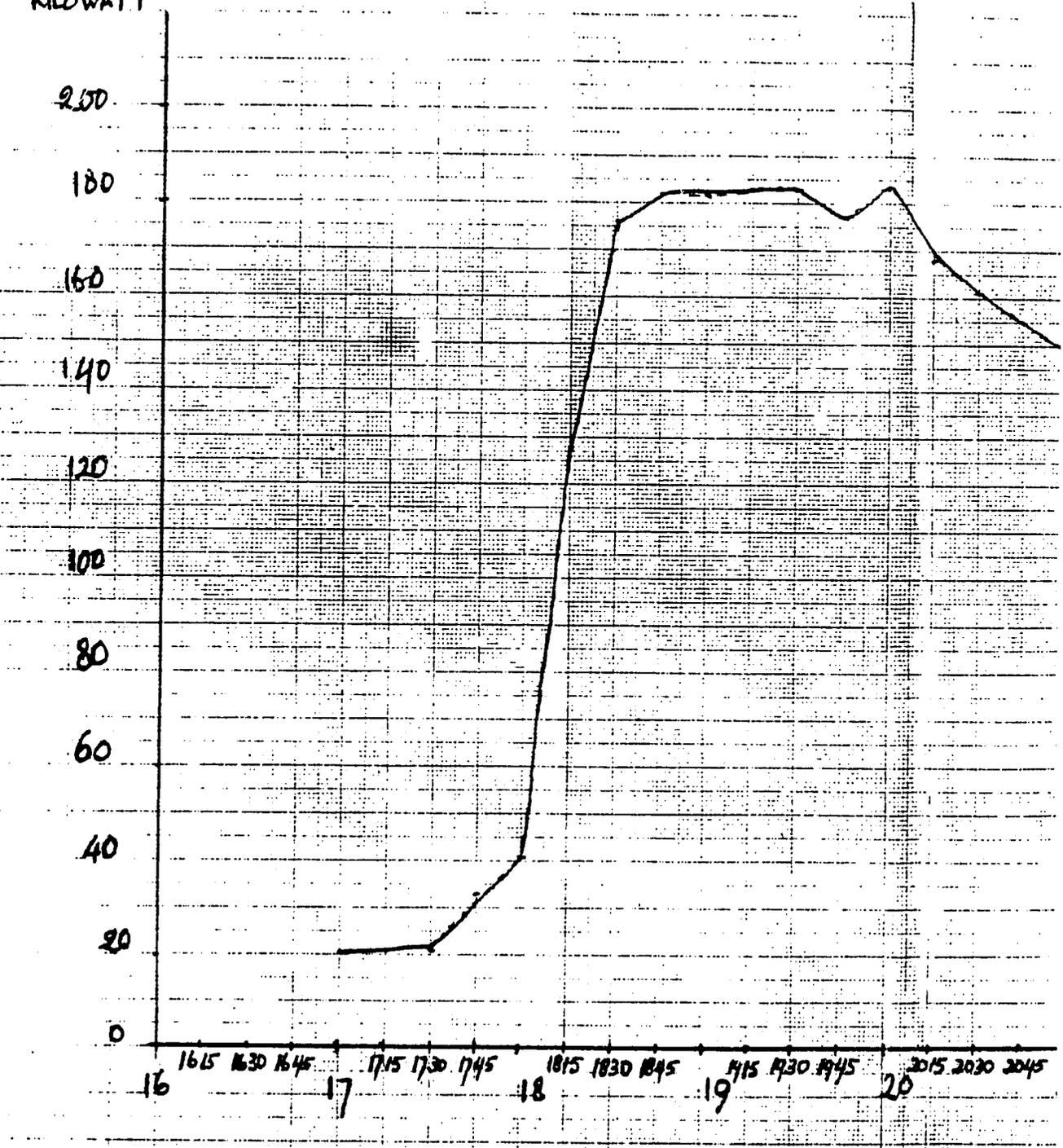
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2015

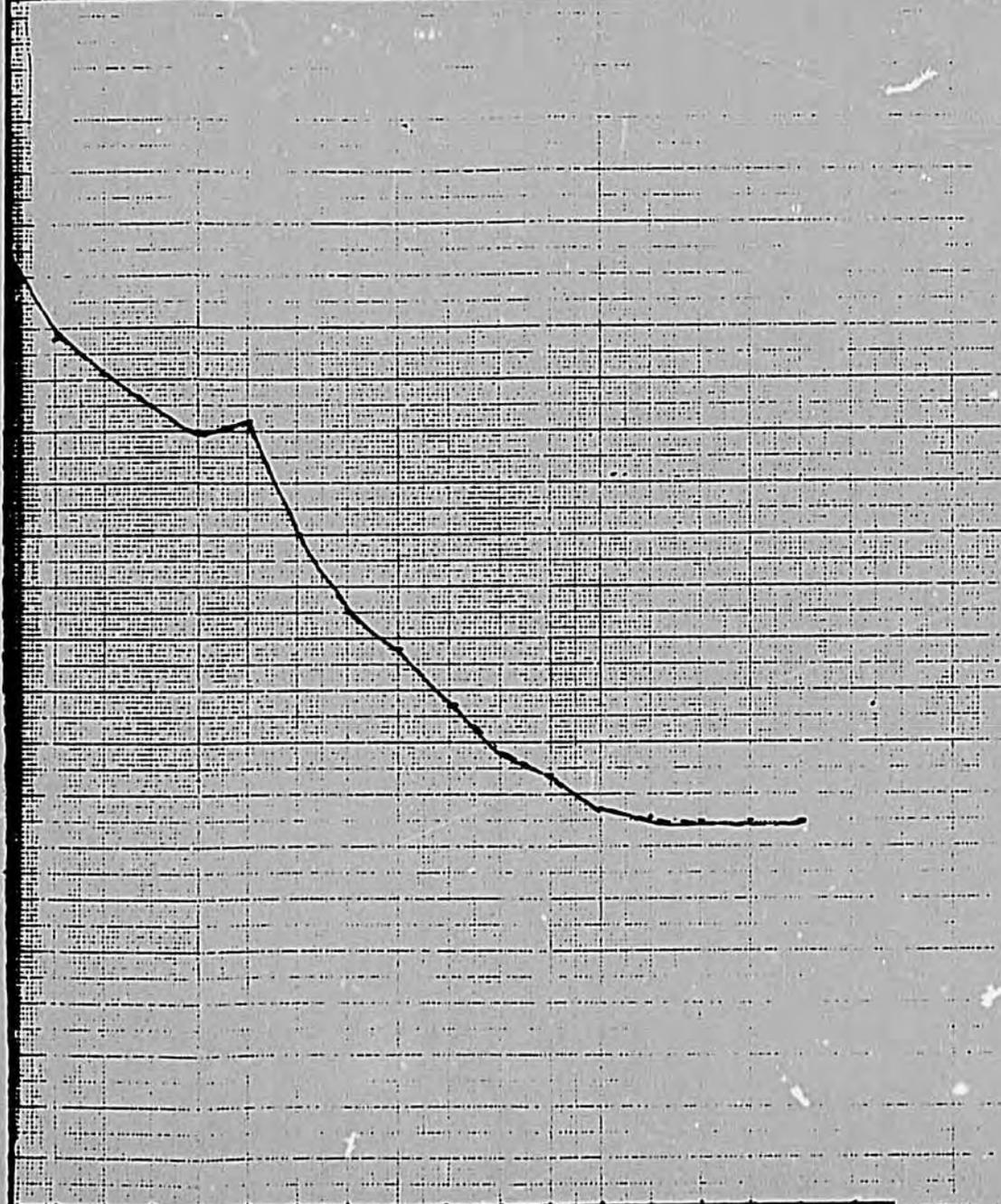
2030

2045



Ha

F 22ND 1981, EVENING HOURS
COOPERATIVE POWER PLANT



20 2015 2030 2045 21 2115 2130 2145 22 2215 2230 2245 23 2315 2330 2345 24 O'CLOCK

LOMBOK ELECTRIC COOPERATIVE
Productive use of Electric Service



An employee of the Member Service Department demonstrates the use of an electric saw at Aikmel, Lombok.



Colonel Sanders speciality in the production stage in an electric incubator, Anjani, Lombok.

LWU ELECTRIC COOPERATIVE

"Construction-cost Accounting" training course
May 1981, Bone Bone, Lulu, Sulawesi



Employees from the Accounting Department performing evening-workshop assignments. PDO-RE representative, Mr. Waluyan (left side) explains an accounting entry as NRECA Administrative/Finance Officer, Ray Shoff, prepares another assignment.



The warehouseman and assistant warehouseman performing "construction material quantity control" assignments in an evening-workshop. (Engineering section employees, payroll clerk, stock record clerk and work-order clerk in the background.)

LWU ELECTRIC COOPERATIVE

Electricians Training Course
May 1981, Bone Bone, Luwu, Sulawesi



Two training course participants installing electrical wiring, as a part of their training.



An electrician trainee testing the completed wiring installation.

LUWU ELECTRIC COOPERATIVE

May 1981, Bone Bone, Luwu, Sulawesi



First deliveries of wood poles for project REIL, a demonstration electrification project to be constructed in Bone Bone. Due to continuous rainfall, it was necessary to unload the poles along side the highway rather than inside the warehouse area (upper right side of picture).



"First use of wood poles", for practice climbing at the linemens training course conducted at the cooperative headquarters site, seven kilometers east of Bone Bone. Training course instructors, Mr. Garcia, C.T. Main and Mr. DeFoor, NRECA, observe as linemen-trainees show-off their newly acquired ability.

LAMPUNG ELECTRIC COOPERATIVE

Construction Activities



Wood poles being delivered to site by the cooperative's personnel.

A linemen, who was trained at a PDO-RE/NRECA sponsored linemens training course, installing secondary conductors.



PERSON-MONTHS BY POSITION, NRECA CONSULTANT TEAM

POSITION	PRESENTLY FILLED BY	CONTRACT PERSON-MONTHS	EXPENDED THIS PERIOD	EXPENDED THROUGH MAY	PERCENT OF CONTRACT
Team Leader	Peter McNeill	36	1	32	89
Training Officer	Louie Sansing	36	1	28	73
Administrative Officer	Ray Shoff	19	1	19	100
PLN Advisor	Sam Adkins	42	1	27	64
Lampung Advisor	Lloyd Lake	44	1	32	73
Lombok Advisor	Paul Swanson	44	1	28	64
Luwu Advisor	John DeFoor	44	1	27	61
Short-term Advisors		27	0	18	67
Consultants		31	0	0	0
		323	7	211	65

Summary of Expenditures

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

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

	Budget	Total Expense To Date	Prior Billings	Current Billings
Salaries - Field	\$ 874,520	576,487.86	554,283.88	22,203.98
Salaries - Home	140,050	98,720.49	95,689.18	3,031.31
Fringe Benefits	256,664	217,147.18	208,834.19	8,312.99
Consultant Fees	95,800	33,906.625	33,906.25	
Allowances	366,145	219,851.94	215,294.34	4,557.60
Travel and Transportation	310,000	206,094.91	196,736.19	9,358.72
Other Direct Costs	125,900	69,886.08	67,727.47	2,158.61
Overhead	225,960	154,486.97	148,682.85	5,804.12
Equipment and Materials	15,000	15,705.27	15,705.27	-
TOTAL	\$ 2,410,000	1,592,286.95	1,536,859.62	55,427.33

PDO - RE OUTER ISLANDS

COOPERATIVE TRAINING COURSE SCHEDULE

NRECA NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

NO.	TITLE	TARGET DATE IMPLEMENTATION PLAN	COURSE DURATION	1979				1980				1981				1982		
				1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
200	COOPERATIVE MANAGEMENT	MAY 1979	30 hrs.	⑩	⑫	⑬	⑭											
205	RMSS TRAINING	JUNE 1979	30 hrs.		⑮													
206	ACCOUNTING - REPORTING	JUNE 1979	40 hrs.															
210	STAFF ORIENTATION	AUGUST 1979	20 hrs.				⑯											
220	TRAINERS TRAINING (CONSTRUCTION)	OCT/NOV 1979	200 hrs.						⑰									
230	TRAINERS TRAINING (HOUSEWIRING)	NOV/DEC 1979	40 hrs.				⑱											
240	LINEMAN'S TRAINING	JAN/FEB 1980	200 hrs.						⑲									
250	ELECTRICIAN TRAINING	JAN/FEB 1980	40 hrs.															
260	PRODUCTIVE USE SPECIALIST	MARCH 1980	60 hrs.															
300	MATERIAL LOGISTICS	JANUARY 1980	40 hrs.															
310	ACCOUNTING - REPORTING	FEBRUARY 1980	40 hrs.						⑳									
320	ELECTRICAL APPARATUS	MARCH 1980	80 hrs.															
330	ENGINEERING	MAR/APR 1980	40 hrs.															
340	METER READING	JULY 1980	40 hrs.															
350	OPERATIONS MAINTENANCE	SEPTEMBER 1980	60 hrs.															
360	ACCOUNTING - REPORTING	NOVEMBER 1980	40 hrs.															
370	WORK ORDER CONTROL	JANUARY 1981	40 hrs.															
380	SUPERVISORY SKILL	FEBRUARY 1981	15 hrs.															
390	SAFETY TRAINING	MARCH 1981	15 hrs.															
400	INFORMATION SEMINAR	MARCH 1981	16 hrs.															
410	LINE MAINTENANCE	APRIL 1981	16 hrs.															
	POWER PLANT OPERATORS**																	
320*	REPEAT COURSE						㉑											
330*	REPEAT COURSE																	
330*	REPEAT COURSE																	
390*	REPEAT COURSE																	

*Repeat courses as needed

**Course added

Courses completed and number of people trained ○

Course scheduled □

RURAL ELECTRIFICATION COOPERATIVE PROJECT SITES

