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**RURAL ELECTRIFICATION PROJECTS**

**INDONESIA**



**NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION**

**JAKARTA, INDONESIA**

NRECA TEAM REPORT

PDO

INDONESIA

(MARCH 1982)

MONTHLY REPORT

NRECA INDONESIAN TEAM REPORT

UNITED STATES AGENCY FOR  
INTERNATIONAL DEVELOPMENT

Contract No. AID/ASIA C1347  
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

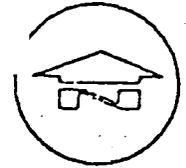
by the member-consumers themselves through the organization of rural electric cooperatives. Each cooperative will construct, own and operate a diesel generating plant to provide power for the distribution system. (The Canadian Government is assisting with the generating project.) A special agency known 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<br>Bukit Hijau VIII/31<br>PH: 761132                              |
| Louie Sansing | Sr. RE Specialist                 | Ratu Plaza<br>Apartment #1103<br>Jl. Jenderal Sudirman<br>PH: 712209 ext. 2020 |
| *Sam Adkins   | Sr. RE Specialist                 | c/o C.T. Main Inc.<br>Box 26<br>Semarang<br>PH: 024-311832                     |
| Paul Swanson  | Sr. RE Specialist                 | Kotak Pos 43<br>Anpanan, Lombok<br>PH: 0364-23517                              |
| John DeFoor   | RE Specialist                     | c/o Bina Marga Office<br>Jl. Imam Bonjol 8<br>Palopo. S. Sulawesi              |
| Ray Shoff     | Administrative/Finance<br>Officer | Ratu Plaza<br>Apartment #1002<br>Jl. Jenderal Sudirman<br>PH: 712209 ext. 2015 |
| Claude Franke | RE Specialist                     | P.O. Box 88<br>Tanjungkarang<br>Lampung<br>PH: 0721-53701                      |

\* PLN Advisor

# RURAL ELECTRIFICATION COOPERATIVE PROJECT SITES



## NRECA Jakarta Team Activities

### I. General

--- The NRECA team leader accompanied C.T. Main's lead engineer on a field trip to a South Sumatra timber development company. The NRECA training officer and the administrative-finance officer assisted the Luwu and Lampung Cooperatives. The remainder of the month, all three Jakarta-based team members performed their assignments at the Project Development Office for Rural Electrification (PDO-RE), Sarinah Building.

--- A bi-monthly NRECA team meeting was held in Jakarta this month with all seven team members in attendance. Representatives of C.T. Main and Sandwell Inc. participate in sessions for in-depth review of project status, and consultant coordination.

--- The NRECA team leader attended a coordination meeting of expatriate contractors held at the Department of Trade and Cooperatives. Status reports were received from each of the ten (10) firms in attendance. Discussion centered on resources available within the organizations, problem areas and solutions.

--- In compliance with a requirement of the Secretary General of the Department of Trade and Cooperatives, the NRECA team prepared a semi-annual report on R.E. This report, which related primarily to progress and status at the three outer island projects, was finalized and submitted during March.

--- The team met on several occasions with Sandwell's Canada-based staff members. Load projections for the three R.E. projects were reviewed and related to time-frames. Training programs for power plant personnel was another major topic for discussion.

Two meetings were held with PLN training department personnel, Sandwell and NRECA in attendance. PLN indicated their training staff and facilities may be available for training personnel of the Cooperatives in power plant operation.

## II. PDO-RE Activities

--- Team members participated in meetings with representative of the Canadian International Development Agency (CIDA) and the PDO-RE. The focal point of discussion was financing of generation requirements for the three R.E. projects.

CIDA proposed that the GOI assist in funding a generation-package of approximately seven thousand three hundred (7300) kw's for each of the three sites. The possible division of costs may be two-thirds CIDA and one-third GOI. Proposals are now understudy.

--- At the request of PDO-RE, NRECA staff developed an estimate of USAID Grant-Fund expenditures for fiscal year 1982-83. This information was requested by BAPPENAS for budgeting purposes.

--- Meetings were held with PDO-RE staff members to discuss data-development for feasibility studies. Steps to be followed in F.S. preparation were reviewed and guidelines given.

--- PDO-RE and NRECA staff continued coordination on construction-cost closeout for the three REIL projects. Final documents for the Lampung and Lombok projects were prepared, and the Luwu project REIL closeout is in progress.

--- Meetings were held with PDO-RE and C.T. Main staff on material/equipment storage problems at the three R.E. sites. The USAID loan-procurement delivery schedules were reviewed and the need for temporary warehouse space explored.

### III. Training

--- Two formal training courses were conducted this month at the R.E. sites. Details are included in later sections of this report.

In preparation for these courses, PDO-RE and NRECA training officers coordinated in training material and training schedule preparation.

### IV. Problem Areas

--- Since 1980, PDO-RE and NRECA have developed numerous GUIDELINES and many of these have already been issued to the Cooperatives. These guidelines are to be followed by management of the Cooperatives in their daily operations.

In the translation and distribution process, continuity and documentation was not maintained. The receipt and use of the guidelines at the Cooperatives has not been determined.

PDO-RE should now assign the responsibility for guideline control to one particular staff member. Records of issue should be updated, and a method of feed-back from the Cooperatives established. This important activity needs prompt attention.

## OUTER ISLAND PROJECTS

### LOMBOK - Sinar Rinjani Rural Electric Cooperative

#### I. General

--- Construction of distribution system facilities to the desa of Suralaga continued at an accelerated pace this month. Consumer connections in this desa, the fifth desa to receive electric service from the Cooperative, are expected to reach one hundred fifty (150) by the April energization date. Twice this number of consumers should be receiving service in Suralaga by the end of May 1982.

Employees of the Cooperative are constructing the distribution lines and installing services. Contract-electricians are wiring the houses. Overall supervision is being provided by the DGC project coordinator and PDO-RE staff members.

This construction effort is being monitored closely by PDO-RE, C.T. Main, and NRECA. If the quality of completed construction meets standards, and the total cost is deemed reasonable, PDO-RE may recommend that the distribution lines in the main project be constructed by the Cooperative's personnel.

--- Aside from construction activities; operation and maintenance of energized distribution facilities, power plant operation, and meter reading/billing/collecting were the major activities at Sinar Rinjani this month.

#### II. Organization/Management

--- The NRECA consultant at Lombok worked with the manager and staff members on numerous routine functions. Special emphasis was placed on defining key performance indicators (KPI's), and the use of KPI's in evaluating operations.

--- Greater efforts were exerted to add off-peak electric load. PDO-RE is assisting the Cooperative in the procurement of electrical apparatus for connection of a rice-mill, which is located in Aikmel. Outside-services were obtained to design a water system for a kampung of Anjani.

--- Plans are formulated for the 1982 meeting of members. This annual event will be held in the month of May at the Cooperative's headquarters in Aikmel.

### III. Operations

--- Improvements in the Cooperative's power plant were noted this month. A foundation was fabricated for a sixth gen-set. This 50 kw USAID-furnished unit should be operational by the month of May and will be used to serve the day-time electric load.

--- Consumer-connections surpassed the nineteen hundred (1900) mark. After the energization of the fifth desa in the month of April, more than two thousand members will be receiving electric service from their Cooperative.

### IV. Visitations

--- Among the visitors at the Cooperative this month was Mr. John Rumondor, PLN Deputy Director in charge of Rural Electrification. The manager, and members of the Board of Directors, explained the operations and status of the Cooperative. A tour of electrical facilities was also conducted.

Dr. Amin Pary and Dr. Atan Gaffar, faculty members of the University of Gadjah Mada, Jogjakarta, visited the Cooperative on March 22nd.

The NRECA advisor transported these gentlemen on a tour of the project area.

V. Problem Areas

--- It may be noted that current financial and statistical information is not included in this report. Herein lies a major problem at this Cooperative --- accounting and reporting deficiencies.

The general accounting department consists of one accountant. Although he is a capable individual, the work load is too great. As a result, report preparation is consistently delayed. Management of the Cooperative, and the supervising agency (PDO-RE) should give special attention to this problem.

--- In the field of power production, gen-set failure is becoming a serious problem. At the end of this reporting period, only three of the original five gen-sets were operational. The peak load is at a level that requires operation of three gen-sets each evening.

The Cooperatives' power plant employees are capable of handling minor mechanical and electrical problems. Beyond that, an outside firm must be called upon for assistance. This is time consuming and costly

NRECA is urging PDO-RE to employ a qualified power plant technician who can assist all three Cooperatives. A person in this "roving" position could assist in preventive-maintenance, and teach maintenance techniques to power plant personnel.

LUWU - Sama Botuna Rural Electric Cooperative

I. General

--- Construction during the month of March was limited to minor service drop extensions. Major activity was operation and maintenance of the RE demonstration project in Bone Bone.

--- Management of the Cooperative and PDO-RE staff continued to study the possibility of expanding the RE demonstration area to include another desa. At the end of this reporting period, it was generally agreed that electrical facilities would be installed in Mangkutana, a desa in the eastern part of the project area. Construction may begin in April.

--- The Chief of PDO-RE, Mr. Sjoufjan Awal, completed his management-audit at this Cooperative in March. Jakarta team members, and the NRECA project advisor, participated in various auditing aspects. Results of the audit may be found on pages that follow.

--- Officials of the Cooperative requested the NRECA advisor to negotiate for small-size gen-sets with Inco Mining Company, Soroako. It was learned that two or more units could be obtained at minimal cost. Negotiations are in process.

II. Organization/Management

--- On March 27th, a regular meeting of the Board of Directors was held at the Cooperative's temporary office in Bone Bone. The NRECA project advisor participated in the agenda items which included; personnel problems; RE demonstration project expansion; headquarters complex construction plans; and other items.

--- The manager and project advisor re-worked organization charts to match the needs for system expansion and operation. Approximately thirty employment positions will be required by mid-1982.

--- Personnel changes were necessary this month as the billing-clerk resigned from the Cooperative. The advisor is assisting in training an employee who was transferred to the billing-clerk position.

--- The NRECA administrative-finance officer spent one week at the Cooperative assisting the project advisor and employees. Staking sheets for the RE demonstration project were tabulated and the construction-cost closeout process started.

In connection with this activity, construction material inventory and control records were reviewed and updated. Material pricing was completed on stock record cards.

### III. Operations

--- The Cooperative continued to provide 12-hour electric service to members in Bone Bone throughout the month of March. Four hundred and eight (408) consumers used an average of 26 kwh for a total billing of nearly nine hundred thousand rupiah (Rp 900,000).

A study of consumption levels revealed the following:

- 90 consumers used 10 kwh or less
- 140 consumers used from 11 to 20 kwh's
- 100 consumers used from 21 to 30 kwh's
- 49 consumers used from 31 to 50 kwh's
- 22 consumers used from 51 to 100 kwh's
- 7 consumers used in excess of 100 kwhs

--- Peak load at the power plant reached sixty-five (65) kilowatts which computes at an average demand per consumer, at the point of supply, of approximately 160 watts.

Line-losses remain at a reasonable level, for a secondary distribution system (14%). System load factor computes at 22%. (44% if the 12-hour daily operation is used in computations.)

#### IV. Training

--- The NRECA training officer and the project advisor conducted a seminar at the Cooperative for a five-day period. This seminar, titled Cooperative "Work Flow Procedures", was attended by the Cooperative's manager and thirteen (13) employees. Also in attendance was; one representative from DGC-Palopo; and a representative of the BRI Palopo branch.

--- The NRECA administrative-finance officer and the project advisor conducted a training course on labor cost-accounting. This one-day course for six employees was followed by a refresher course on general accounting practices.

--- A course was held for one day on construction material identification. Thirteen employees were present as the project advisor displayed and identified various construction material items.

#### V. Problem Areas

--- The management audit performed by the chief of PDO-RE, revealed the same problem areas that has been reported by NRECA team members. Major deficiencies are defined as follows:

- absenteeism and lack of dedication among employees
- accounting records not properly maintained
- absence of financial and statistical reports
- improper cash controls
- interference by Board members in the managers' functions
- undefined role of the project coordinator as related to the managers' functions

The chief of PDO-RE addressed the problems during a meeting attended by all employees of the Cooperative. A time-frame was established within which corrected action must be taken.

### LAMPUNG - Sinar Siwomego Rural Electric Cooperative

#### I. General

--- The Cooperative pursued their business functions relating to operation and maintenance of the RE demonstration project. Engineering activities were maintained at a high level. Nearly one-fourth of the Cooperatives' employees are temporarily assigned to the C.T. Main field supervisor, to complete staking for the main distribution system.

--- Although distribution-system construction activities were at a standstill, receipt and warehousing of construction materials was a major activity. Numerous construction material items, procured through the USAID loan, arrived at docking facilities and were transported overland to a storage area near Kotagadjah (pictures on page 22 ).

--- Additional office space was obtained in Metro to supplement the present facilities. A residence, located adjacent to the present temporary office, was leased and put to use as a multi-purpose building.

--- The Cooperative continued to receive visitors who were associated with, or interested in, rural electrification. Management and staff welcomed the visit of USAID RE project manager, Jim Baird (and party), who was on the visitors list this month.

## II. Organization/Management

--- The Board of Directors, manager, and NRECA advisor coordinated on several major assignments. Priority tasks were; preparations for receiving bids for construction of headquarters facilities; and storage space for the multi-million dollar construction material procurement.

--- The manager and NRECA advisor maintained daily communication in the office they share in Metro. Major attention was given to; power supply for the RE demonstration project; revisions in meter-reading/billing/collecting procedures; improvements in accounting and reporting activities; construction material control; personnel training; and inter-relations, Board of Directors, manager, and supervisory agencies.

--- The transfer of responsibility for monthly energy collections, from the Member Services Department of the Cooperative to the office services department, progressed smoothly this period. A full-time cashier is now responsible for all cash receipts and MSD personnel can now concentrate on their regular functions.

In connection with this transition, efforts were exerted to shorten the meter-reading period. The NRECA advisor and key staff member trained line-department personnel for meter-reading. The present goal is completion of meter-reading in a three-day period which will expedite billing/collection.

--- The NRECA project advisor and the administrative-finance officer provided on-the-job training in financial and statistical reporting. Reporting format was improved and important operating expense items, such as interest and depreciation charges, were incorporated in monthly reports.

### III. Operations

--- Monitoring power-plant operations continued to be an important duty of the NRECA advisor. Gen-set loading capabilities and fuel consumption, major elements of power-production costs, were the primary factors understudy.

--- In the financial area, the Cooperative retained first-place among the three pilot RE projects. Their income to expense ratio exceeded one-to-one in the first quarter of 1982. (Gross billing for energy sales exceeded cash expenses, excluding loan-fund interest charges and depreciation reserve accumulation.) This surpasses feasibility study projections.

The major reason for a favorable financial picture is retail-rate levels. The rates that apply at this Cooperative are 25% higher than the rates applicable at the other two pilot RE projects, (still comparable with rates of other electric energy supplies in the area).

Aside from rate differentials, strict collection policies for both energy sales and housewiring installations have contributed to financial success. The Cooperative has now accumulated more than thirty million rupiah (Rp 30,000,000) which is being placed in short-term interest bearing deposits.

#### IV. Training

--- The NRECA training officer and the project advisor conducted a six-day training course in Metro this month. This course, titled Cooperative Work Flow Procedures, was attended by eleven employees of the Cooperative plus the manager. BRI Metro-branch and the local DGC office were also represented.

--- The NRECA project advisor and the administrative-finance officer, conducted a review of labor-cost accounting. Two employees from the accounting and payroll sections were in attendance.

#### V.. Problem Areas

--- Storage space for USAID-loan procurement is presently a problem. Space requirements for material storage is extremely large and the permanent warehouse will not be available for several months.

C.T. Main and NRECA representatives have recommended expansion and improvements of the area presently being utilized for storage. (Pictures on page 22.) Efforts are being exerted to locate rental space to supplement existing storage areas.

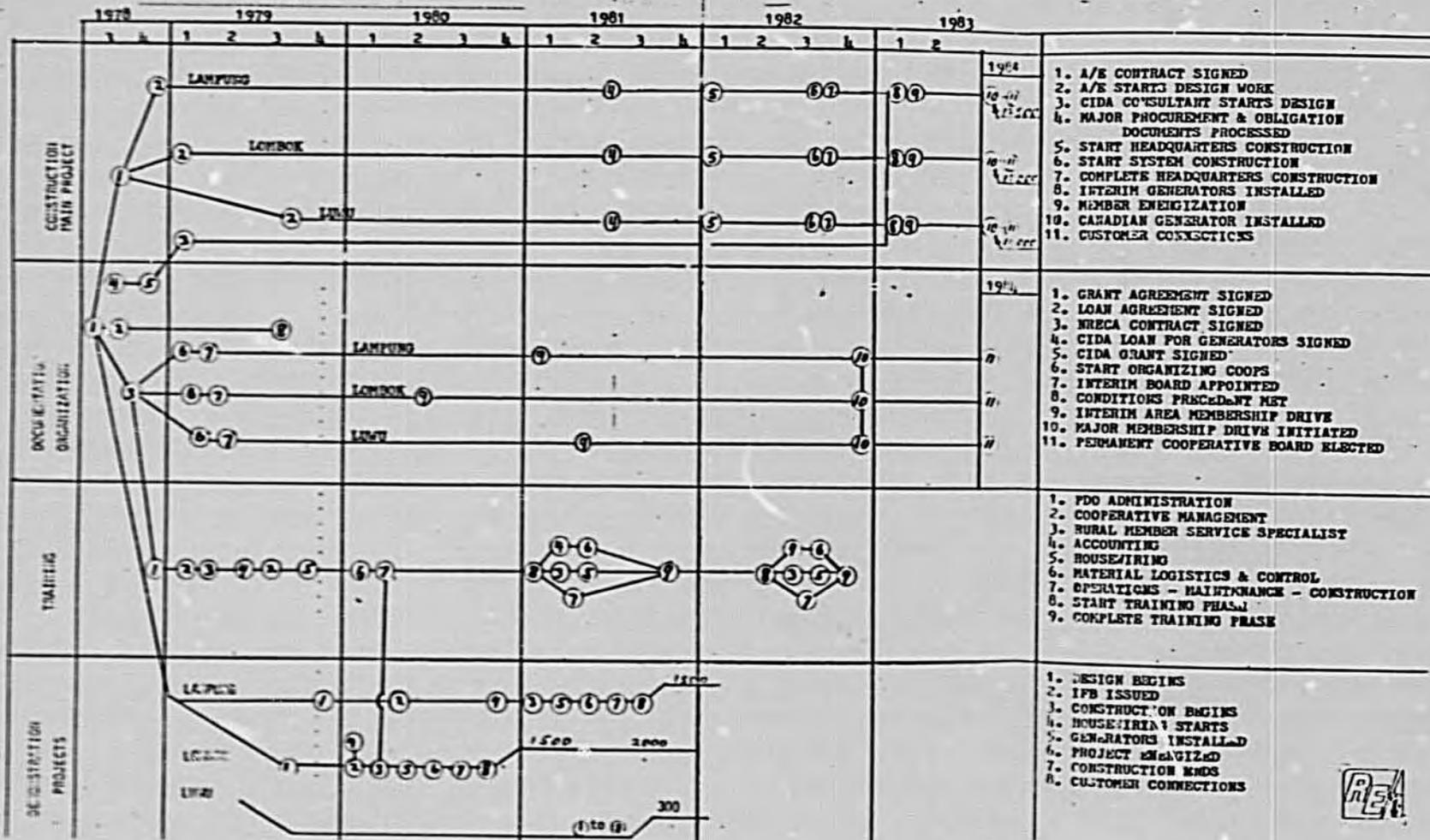
--- The distribution system constructed for the RE demonstration project is within reach of nearly two thousand (2000) consumers. However, only one thousand three hundred and seventeen (1317) were billed during the last reporting month, as reflected in the statistical data included on page 18 of this report.

NRECA has urged PDO-RE and the Cooperative to proceed with service drop and housewiring installations in an effort to reach the original goal of consumer-connections (2000). The only limiting factor to-date has been uncertainty of sufficient power from the excess-property gen-sets.

However, with the arrival of electrical repair-parts which are now in transit, at least three hundred (300) kilowatts of firm power will be available. Power-supply should not be used as an excuse to maintain status quo.

COMPARATIVE OPERATING STATISTICS  
Two Outer-island Cooperatives

|   | LOMBOK<br>November 1981 | LOMBOK<br>December 1981 | LOMBOK<br>January 1982 | LAMPUNG<br>January 1982 | LAMPUNG<br>February 1982 | LAMPUNG<br>March 1982 |
|---|-------------------------|-------------------------|------------------------|-------------------------|--------------------------|-----------------------|
| Number consumers billed                               | 1,829                   | 1,843                   | 1,876                  | 1,346                   | 1,325                    | 1,317                 |
| Temporary disconnects<br>(non payment) (accumulative) | -                       | 120                     | 145                    | 35                      | 108                      | 122                   |
| Total revenue   | Rp 2,919,100            | Rp 2,968,000            | Rp 3,017,515           | Rp 3,107,890            | Rp 3,063,215             | Rp 3,126,730          |
| Total kwh billed                                      | 38,820*                 | 40,834*                 | 41,259                 | 28,475                  | 27,339                   | 30,427                |
| Average revenue per consumer                          | Rp 1,596                | Rp 1,610                | Rp 1,608               | Rp 2,308                | Rp 2,291                 | Rp 2,374              |
| Average number kwh per consumer                       | 21.2                    | 22.2                    | 22                     | 21.16                   | 21                       | 23                    |
| kwh generated   | 53,246                  | 54,050                  | 58,176                 | 29,174                  | 23,214                   | 25,754                |
| Liters diesel fuel consumed                           | 21,546                  | 20,034                  | 21,240                 | 10,980                  | 9,782                    | 11,485                |
| kwh's generated per liter                             | 2.47                    | 2.4                     | 2.74                   | 2.71                    | 2.37                     | 2.24                  |
| Fuel and lube oil cost                                | Rp 1,243,338            | Rp 1,145,802            | -                      | Rp 778,370              | Rp 924,096               | Rp 1,078,981          |
| Fuel cost per kwh generated                           | Rp 23.4                 | Rp 21.2                 | -                      | Rp 26.17                | Rp 40                    | Rp 42                 |
| % system losses                                       | 23.2                    | 20.1                    | 29                     | 4.5                     | -                        | -                     |
| Peak kw demand  | 248                     | 239                     | 238                    | 143                     | 145                      | 145                   |





LUWU RE ACTIVITIES



Employees of the Cooperative in attendance at a training course conducted by PDO-RE Training Officer, Alfian Nurmalay, and NRECA Project Advisor, John DeFoor.



During workshops, employees have the opportunity to apply what they have learned.

LAMPUNG RE COOPERATIVE



A "guesthouse", constructed by DGC-Lampung at the Cooperative's personnel office site near Kotagadjah, being utilized as the storage area for USAID-procurred construction materials.



The storage area for conductors, next to the guesthouse.

Summary of Expenditures

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

AID/ASIA - C 1347  
Date: February 1982  
Period of contract: 8/25/78 - 8/25/82

|                           | Budget       | Total<br>Expense<br>To Date | Prior<br>Billings | Current<br>Billings |
|---------------------------|--------------|-----------------------------|-------------------|---------------------|
| Salaries - Field          | \$ 1,095,000 | \$ 844,303.94               | \$ 820,422.20     | \$ 23,881.74        |
| Salaries - Home           | 187,000      | 132,018.27                  | 126,599.90        | 5,418.37            |
| Fringe Benefits           | 416,000      | 314,543.42                  | 304,688.81        | 9,954.61            |
| Consultant Fees           | 34,706       | 33,906.25                   | 33,906.25         |                     |
| Allowances                | 398,000      | 288,764.09                  | 281,319.89        | 7,444.20            |
| Travel and Transportation | 386,470      | 278,601.54                  | 274,793.33        | 3,808.21            |
| Other Direct Costs        | 140,000      | 85,731.75                   | 34,071.50         | 1,660.25            |
| Overhead                  | 292,000      | 222,937.14                  | 216,198.11        | 6,739.03            |
| Equipment and Materials   | 28,000       | 17,999.14                   | 17,999.14         | -                   |
| TOTAL                     | \$ 2,977,176 | \$ 2,218,905.54             | \$ 2,159,999.13   | \$ 58,906.41        |