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**RURAL ELECTRIFICATION PROJECTS**

**INDONESIA**



**NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION**

**JAKARTA, INDONESIA**

NRECA TEAM REPORT

PLN

INDONESIA

(OCTOBER 1981)

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NRECA TEAM MEMBERS AS OF SEPTEMBER, 1981

| <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: 713850 |
| *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>Ampenan, 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: 712034 |
| Claude Franke | RE Specialist                     | P.O. Box 88<br>Tanjungkarang<br>Lampung<br>PH: 0721-52058            |

\* PLN Advisor

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 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.

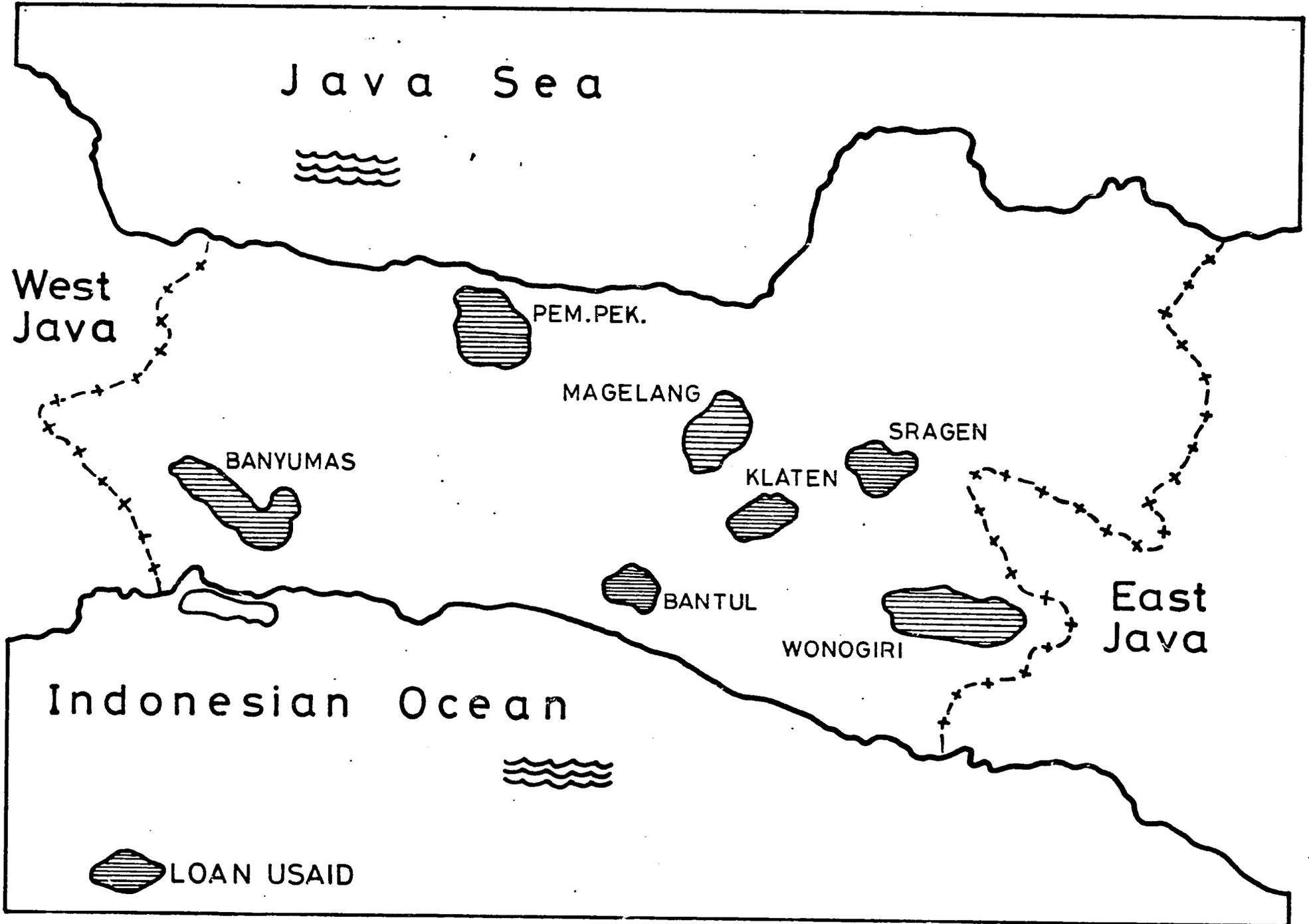
The National Rural Electric Cooperative Association through their International Programs Division is serving as consultant to PLN in organization, management and technical areas. Services for PLN includes providing assistance in organization of staffs to operate the systems in Central Java, as well as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

-----  
SEVEN PLN PROJECTS

| <u>SERVICE AREA</u> | <u>VILLAGES TO BE SERVED</u> | <u>APPROXIMATE NO. OF CONNLCTIONS</u> | <u>ESTIMATED NO. OF RECEIPIENTS</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 are estimates for the end of the third year of commercial operation.

# CENTRAL JAVA



## II. PROJECT ACTIVITIES

### A. Organization/Management

NRECA-Jakarta Office --- The NRECA team leader in Bangladesh, Mr. Ed Gaither, visited Indonesia during this reporting period. After a visit to the PLN-RE office in Jakarta, Mr. Gaither and the NRECA team leader in Indonesia, Mr. Peter McNeill, traveled to Central Java where they visited the Klaten R.E. demonstration project area and the Magelang Headquarters site.

--- Former NRECA-Indonesia team member, Charles Ham, came from his assignment in Bangladesh to observe progress in the Indonesia R.E. program. During visits to the office of Ir. John Rumondor, PLN Deputy Director for Rural Electrification, and Ir. Soemarto Soedirman, PLN Chief Training and Productive Uses R.E., information was exchanged on the two R.E. programs, Bangladesh and Indonesia.

--- The NRECA-Indonesia team leader met with Ir. Rumondor this month to discuss plans for a joint field-trip to Central Java. Among other locations, R.E. facilities of PLN's in the Dieng Plateau will be inspected.

--- Two meetings were held between NRECA staff and Ir. Pasaribu, Chief of PLN-RE Technical Branch. A USAID-audit report was reviewed and related to required comment or input from PLN.

Another subject during these meetings was meter-entrances for the seven R.E. projects. It was noted that the kWh meter sockets included in the IFBs have a hub (conductor opening) in excess of the size of the meter entrance-wire. Ir. Pasaribu will explore possible corrective measures and provide the follow-up.

NRECA-Central Java Office --- At the request of C.T. Main Inc., NRECA and Wilayah XIII staff prepared information regarding housewiring material requirements for each respective R.E. project. As a basis for this information, an estimate was made of customer requests for service during the pre-construction and construction period, project by project. The per cent of total housewiring materials to be allocated to each project was then computed.

--- The NRECA advisor in Central Java met with officials of PLN Wilayah XIII to discuss the sockets to be used for installing the kilowatt-hour meters in the R.E. projects. A problem exists, referred to earlier in this report, which is now under study at both PLN-RE Pusat and PLN-Semarang.

--- NRECA provided Fichner Engineer Co. with information from the R.E. Project Feasibility Studies relative to electrical load projections in the Purwokerto R.E. project area. This West German consulting firm, assisting PLN in the design of transmission circuits and substations in the SW area of Central Java, requested electrical load-projections for use in sizing substation transformers.

--- The NRECA advisor continued to prepare recommendations and guidelines for future use in operating and maintaining the seven R.E. systems. This month, a publication was completed on the subject of metering and was forwarded to PLN Wilayah XIII officials in Semarang.

The metering guideline, fifteen (15) pages in total, included a format of recommended forms and other exhibits relating to the following subjects:

PART I

Kilowatt-hour Meters

- preparations for receiving meters
- receipts of meters
- storage and processing
- pre-installation testing
- transporting and handling
- installation

- PART II
  - program for meter reading
  - meter-readers
  
- PART III
  - monitoring the MR program
  - analyzing meter-readings

Although the activities listed above are certainly not new to PLN, the magnitude of the meter procurement program for the R.E. systems (approximately 100,000 kWh meters with a value in excess of two million dollars) dictates that special attention be given to this subject. Aside from the physical aspects of meter receipt and handling, efficiency in meter reading and supplier/consumer relations are very important considerations in planning a broad-scale operation and maintenance program.

--- NRECA conferred with Wilayah XIII officials and suggested that the 20KV circuit serving the Klaten R.E. Demonstration Project be provided with a KW Demand Meter. The purpose of this meter is to indicate the highest kilowatt demand on the circuit during any particular month. This information will be used to study the growth of the circuit and to monitor the load-factor.

--- As a note of interest, this month PLN Wilayah XIII Logistics Section received a portion of the laboratory and test equipment ordered for the seven R.E. projects. This equipment; watt-hour-meter test tables, voltmeters, amp meters, radio equipment and switching tools; will be used in the operation of the R.E. projects. A picture of this USAID-loan procurement is on page 13 of this report.

#### B. Training

--- Training activities for the month of October consisted primarily of preparation for the Housewiring Trainors Course to be held in November. Wilayah XIII has selected key employees to work with NRECA to prepare the

training materials to be used in this ten-section course. The contents is designed to orient the participant in all phases of the housewiring program, from the first contact with the prospective PLN customer, to energizing the service.

Training material was completed and submitted to the PLN Training Section in Jakarta for their approval. Thereafter, the material was printed in book form for distribution to course participants who are PLN employees already experienced in housewiring. This training course will prepare them to transfer this experience to the contract-employees who will perform the housewiring in the R.E. projects.

C. Klaten PLN, R.E. Demonstration Unit

--- The PLN Rural Electrification Demonstration Unit at Klaten, Central Java, constructed by PLN in early 1979, continued to serve as an excellent location to monitor the acceptability of electric service by the rural population. The project, built with provisions to serve approximately 2,000 customers, was actually serving 1964 customers at the end of this reporting period. The average consumption per customer in October, 1981, was 42 kilowatt hours as compared to a consumption of 32 kilowatt-hours for the same month in 1980. (See statistics on page 9. )

D. Meetings and Trips (Central Java Advisor)

- Oct. 3 Meeting in Semarang at the office of Beenie & Partners, British Consultant doing Groundwater Survey in Central Java, to discuss cost of pumping with electricity versus diesel.
  
- Oct. 10 Meeting in Semarang at the office of Fichner Engineering, German firm assisting PLN with transmission and substations, to discuss Rural Electric load in the Purwokerto area of Central Java.

- Oct. 12 Meeting at PLN Wilayah XIII, Semarang, to discuss possible methods of determining the daily KW load on the Klaten R.E. Demonstration 20 KV circuit.
- Oct. 14 Meeting with the chief of the Computer Section, PLN Wilayah XIII, to discuss customer billing for the PLN Klaten R.E. Demonstration Project.
- Oct. 16 Meeting in Semarang with representatives of USAID to discuss customer sign-up rate at the R.E. projects, transformer loading and types of meter sockets.
- Oct. 17 Meeting in Semarang at PLN Wilayah with the deputy director to discuss meter-sockets and the status of the R.E. Housewiring Training Program.
- Oct. 20 Meeting in Semarang at PLN Wilayah XIII with Metering Department officials to discuss facilities for training meter-testers for the R.E. projects.
- Oct. 28 Meeting in Semarang at PLN Wilayah XIII with chief of Rural Development, PLN Pusat, to discuss the R.E. Training Program.

KLATEN RE DEMONSTRATION UNIT

BILLING STATISTICS 13 MONTH PERIOD

| COLUMN NUMBER |        |      |    |           |      |      |      |    |
|---------------|--------|------|----|-----------|------|------|------|----|
| 1             | 2      | 3    | 4  | 5         | 6    | 7    | 8    | 9  |
| OCTOBER 1980  | 62,316 | 1903 | 32 | 5,347,175 | 2890 | 1611 | 1198 | 86 |
| NOVEMBER      | 62,020 | 1912 | 32 | 5,482,130 | 1872 | 1609 | 1262 | 88 |
| DECEMBER      | 61,533 | 1922 | 32 | 5,436,135 | 2828 | 1593 | 1234 | 88 |
| JANUARY 1981  | 63,133 | 1927 | 33 | 5,488,030 | 2848 | 1610 | 1238 | 87 |
| FEBRUARY      | 64,127 | 1927 | 34 | 5,424,930 | 2815 | 1624 | 1189 | 85 |
| MARCH         | 77,843 | 1932 | 40 | 5,753,450 | 2978 | 1816 | 1162 | 74 |
| APRIL         | 67,750 | 1932 | 35 | 5,411,925 | 2801 | 1655 | 1147 | 80 |
| MAY           | 77,873 | 1946 | 40 | 5,753,855 | 2856 | 1808 | 1148 | 74 |
| JUNE          | 75,153 | 1950 | 39 | 5,652,455 | 2899 | 1770 | 1129 | 75 |
| JULY          | 81,678 | 1955 | 42 | 5,825,350 | 2980 | 1831 | 1116 | 71 |
| AUGUST        | 76,007 | 1960 | 39 | 5,712,755 | 2915 | 1781 | 1134 | 75 |
| SEPTEMBER     | 86,202 | 1960 | 43 | 5,932,410 | 3027 | 1919 | 1108 | 69 |
| OCTOBER 1981  | 83,385 | 1964 | 42 | 5,806,480 | 2956 | 1880 | 1076 | 70 |

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)

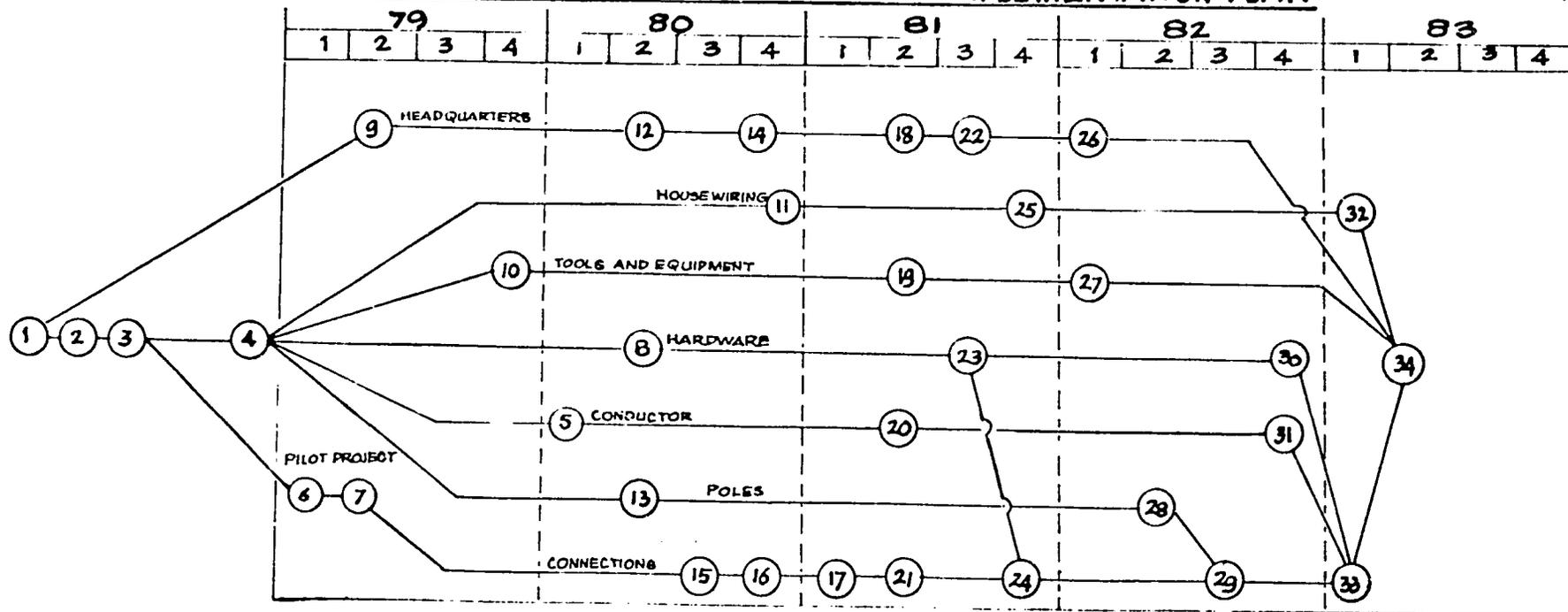
7. AVERAGE ENERGY CHARGE PER CUSTOMER

8. INSTALLATION & HOUSEWIRING CHARGE

9. COST PER KWH (RUPIAH)

# RURAL ELECTRIFICATION - PLN IMPLEMENTATION PLAN

- 10



## 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 HOUSEWIRING                    |
| 5. IFB <sup>s</sup> ISSUED - CONDUCTOR                          | 26. HQ <sup>s</sup> COMPLETED                        |
| 6. BEGIN CONSTRUCTION OF KLATEN PILOT PROJECT                   | 27. FINAL DELIVERY OF TOOLS                          |
| 7. BEGIN OPERATION OF KLATEN PILOT PROJECT                      | 28. ALL POLES DELIVERED                              |
| 8. IFB <sup>s</sup> ISSUED - HARDWARE                           | 29. COMPLETE SETTING OF POLES                        |
| 9. BEGIN PURCHASE OF HQ SITES                                   | 30. FINAL DELIVERY OF HARDWARE                       |
| 10. IFB <sup>s</sup> ISSUED - TOOLS AND EQUIPMENT               | 31. FINAL DELIVERY OF CONDUCTOR                      |
| 11. IFB <sup>s</sup> ISSUED - HOUSE WIRING                      | 32. FINAL DELIVERY OF HOUSEWIRING                    |
| 12. SURVEY PROPERTY & SOIL TESTING                              | 33. SYSTEM COMPLETION                                |
| 13. FIRST DELIVERY OF POLES                                     | 34. HOUSE CONNECTIONS IN PROCESS<br>SYSTEM OPERATING |
| 14. CONTRACTS LET. FOR SITE PREPARATION                         |  |
| 15. CENTER LINE STAKING COMPLETED                               |  |
| 16. SYSTEM DESIGN COMPLETED                                     |  |
| 17. CONSTRUCTION ENSIN. (STAKING) COMPL.                        |  |
| 18. SITES PREPARED  |  |
| 19. FIRST DELIVERY OF TOOLS & EQUIPMENT                         |  |
| 20. FIRST DELIVERY OF CONDUCTOR                                 |  |
| 21. BEGIN TRIMMING RIGHT OF WAY<br>SETTING AND FRAMING OF POLES |  |

11A

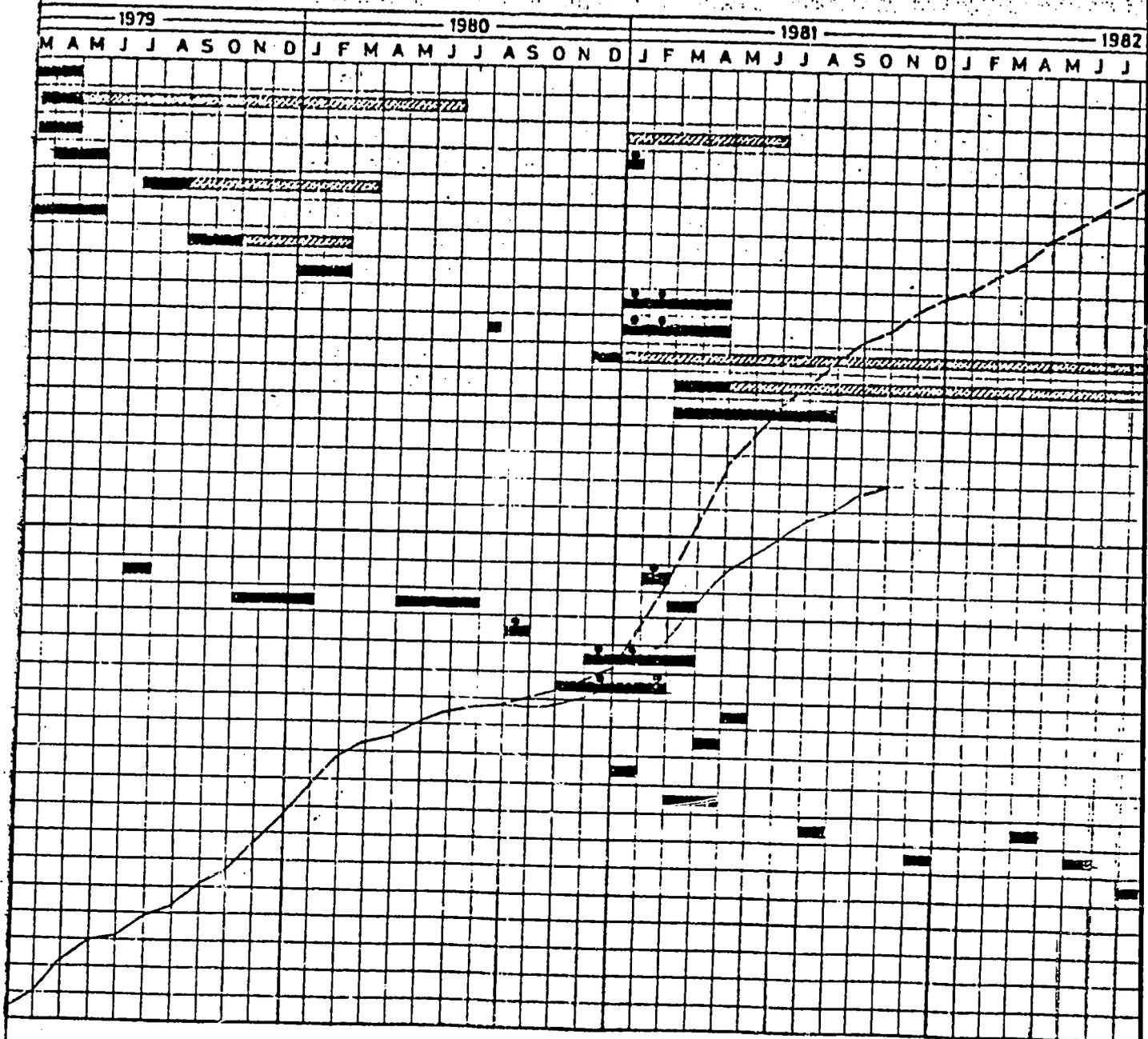
## ORGINIZATION MANAGEMENT RURAL ELECTRIC

INDICATES PERIOD OF PERFORMANCE  
INDICATES PERIOD OF EVALUATION

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

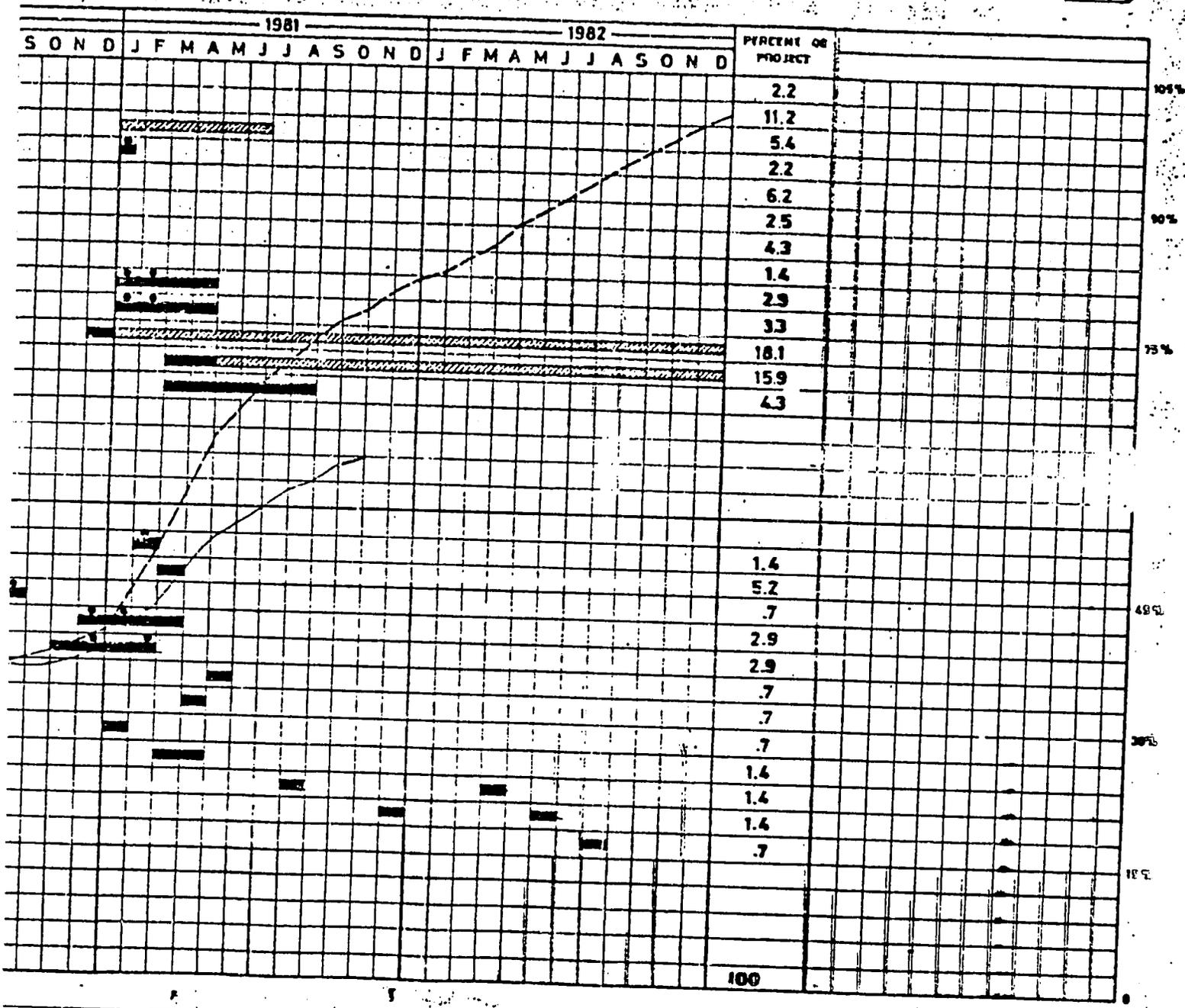
LEGEND:  WORK SCHEDULED - 77%  
 WORK COMPLETED - 60%

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



# TRAINING PROGRESS SCHEDULE IFICATION - I - P.L.N.

NRECA



12 A

PLN-CENTRAL JAVA RUP  
TRAINING

| COURSE | TITLE                         | 1979 |    |    |    |
|--------|-------------------------------|------|----|----|----|
|        |                               | Q1   | Q2 | Q3 | Q4 |
|        | LANGUAGE TR.-MANAGEMENT       |      | 25 | 10 | 11 |
|        | OUT-OF-COUNTRY TRAINING       |      |    |    | 12 |
| I      | INTRODUCTION SUPERVISION      |      | 25 |    |    |
| II     | ORIENTATION-CUSTOMER CONTACT  |      |    |    |    |
| III    | CONSTRUCTION SUPERVISION      |      |    |    |    |
| IV     | TRAINERS TRAINING-HOUSEWIRING |      |    |    |    |
| V      | DISTRIBUTION PLAN-DESIGN      |      |    |    |    |
| VI     | APPRENTICE LINEMAN            |      |    |    |    |
| VII    | HOUSEWIRING                   |      |    |    |    |
| VIII   | MATERIAL LOGISTICS            |      |    |    |    |
| IX     | ACCNT. REPORTING-CONST.       |      |    |    |    |
| X      | ELECTRIC APPARATUS            |      |    |    |    |
| XI     | METER READING                 |      |    |    |    |
| XII    | PRODUCTIVE USE-OJT            |      |    |    |    |
| XIII   | ENGINEERING DIST. SYSTEM      |      |    |    |    |
| XIV    | MATERIAL WAREHOUSE            |      |    |    |    |
| XV     | ACCNT. REPORTING-OPERATIONS   |      |    |    |    |
| XVI    | SECTIONALIZING-PROTECTION     |      |    |    |    |
| XVII   | OPERATIONS-MAINTENANCE        |      |    |    |    |
| XVIII  | SUPERVISION                   |      |    |    |    |
| XIX    | SAFETY                        |      |    |    |    |
| XX     | EMPLOYEE INFO. SEMINAR        |      |    |    |    |
| XXI    | COMM. SYSTEMS OPERATIONS      |      |    |    |    |
| XXII   | LINE MAINT. TECHNIQUES        |      |    |    |    |

COURSES COMPLETED —   
 COURSES SCHEDULED — 

PARTICIPANTS — 





PLN Central Java Activities



Construction work in progress



Part of "General Plant" equipment (procured through the USAID-loan) upon its arrival in Semarang. This equipment will be used in the operation and maintenance of electrical distribution system in the seven R.E. project areas.

Summary of Expenditures

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

AID/ASIA - C 1347  
Date: September, 1981  
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 | \$ 721,061.02               | \$ 695,732.16     | \$ 25,328.86        |
| Salaries - Home           | 187,000      | 116,465.10                  | 113,618.37        | 2,846.73            |
| Fringe Benefits           | 416,000      | 264,754.01                  | 256,439.76        | 8,314.25            |
| Consultant Fees           | 34,706       | 33,906.25                   | 33,906.25         |                     |
| Allowances                | 398,000      | 254,814.46                  | 258,497.44        | (3,682.98)          |
| Travel and Transportation | 386,470      | 250,683.15                  | 231,662.54        | 19,020.61           |
| Other Direct Costs        | 140,000      | 78,956.50                   | 77,183.93         | 1,772.57            |
| Overhead                  | 292,000      | 191,819.60                  | 185,339.70        | 6,479.90            |
| Equipment and Materials   | 28,000       | 18,292.46                   | 18,292.46         |                     |
| TOTAL                     | \$ 2,977,176 | \$ 1,930,752.55             | \$ 870,672.61     | \$ 60,079.94        |

PERSON-MONTHS BY POSITION, NRECA CONSULTANT TEAM

(Contract as amended September 11, 1981)

| POSITION               | PRESENTLY FILLED BY | CONTRACT<br>PERSON-MONTHS | EXPENDED<br>THIS PERIOD | EXPENDED<br>THROUGH OCTOBER |      | PERCENT<br>OF<br>CONTRACT |
|------------------------|---------------------|---------------------------|-------------------------|-----------------------------|------|---------------------------|
|                        |                     |                           |                         | PLN                         | PDO  |                           |
| Team Leader            | Peter McNeill       | 54                        | 1                       | 6.5                         | 30.5 | 69                        |
| Training Officer       | Louie Sansing       | 45                        | 1                       | 7                           | 26   | 73                        |
| Administrative Officer | Ray Shoff           | 33                        | 1                       | 3                           | 21   | 73                        |
| PLN Advisor            | Sam Adkins          | 42                        | 1                       | 31.5                        | .5   | 76                        |
| Lampung Advisor        | Claude Franke       | 54                        | 1                       | .5                          | 36.5 | 69                        |
| Lombok Advisor         | Paul Swanson        | 50                        | 1                       | 0                           | 33   | 66                        |
| Luwu Advisor           | John DeFoor         | 49                        | 1                       | 0                           | 32   | 65                        |
| Short-term Advisors    |                     | 19                        | 0                       | 14                          | 3    |                           |
| Consultants            |                     | 8                         | 0                       | 7.5                         | .5   |                           |
|                        |                     | 354                       | 7                       | 70                          | 183  | 71                        |