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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

NICARAGUA

PROJECT PAPER

ATLANTIC COAST ELECTRIFICATION

AID/LAC/P-704

PROJECT NUMBER: 524-0324

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE

A = Add
 C = Change
 D = Delete

Amendment Number

DOCUMENT CODE

3

COUNTRY, ENTITY

NICARAGUA

3. PROJECT NUMBER

524-0324

4. BUREAU/OFFICE

LAC

524

5. PROJECT TITLE (maximum 40 characters)

ATLANTIC COAST ELECTRIFICATION

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
08/31/94

7. ESTIMATED DATE OF OBLIGATION
(Under 8." below, enter 1, 2, 3, or 4)

A. Initial FY 91

B. Quarter 3

C. Final FY 94

8. COSTS (\$000 OR EQUIVALENT \$) =

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AD Appropriated Total						
Grants	2,350			2,650		5,000
Loans						
Other						
U.S.						
Host Country						
Other Donors						
TOTALS	2,350		2,350	2,650		5,000

9. SCHEDULE OF AID FUNDING (\$000)

A. APPROPRIATION/PURPOSE CODE	B. PRIMARY TECH. CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) DA	B240					5,000		5,000	
(2)									
(3)									
(4)									
TOTALS						5,000		5,000	

10. SECONDARY TECHNICAL CODES (maximum 8 codes of 3 positions each)

110

112

11. SECONDARY PURPOSE CODE

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

RR

RL

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To assist INE to provide sufficient, stable and sustainable electric power to meet current and future demand over the next three years in Bluefields and Puerto Cabezas.

14. SCHEDULED EVALUATIONS

Start MM YY 03/93 Final MM YY 08/94

15. SOURCE, ORIGIN OF GOODS AND SERVICES

300 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a ___ page PP. (amendments))

17. APPROVED BY

Signature

Scott Ballantyne

Title Mission Director

Date Signed

MM DD YY
08/27/94

18. DATE DOCUMENT RECEIVED IN AID/W. OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION

MM DD YY

U S AGENCY FOR INTERNATIONAL DEVELOPMENT
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PROJECT AUTHORIZATION

Name of Country: Nicaragua
Name of Project: Atlantic Coast Electrification Project
Number of Project: 524-0324

1. Pursuant to Section 106 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Atlantic Coast Electrification Project for Nicaragua involving an obligation not to exceed Five Million United States Dollars (\$5,000,000) in Grant funds over the period from the date of obligation through a Project Assistance Completion Date of August 31, 1994, subject to the availability of funds in accordance with the AID/OYB allotment process, to help in financing foreign exchange and local currency costs for the Project.

2. The Project will provide assistance to the GON to develop sufficient, stable, and sustainable electric power in both Bluefields and Puerto Cabezas by targeting support to the following strategic areas: 1) electrical system rehabilitation and installation to provide supplemental generation and renovation and upgrading of existing distribution systems to improve service to both existing and potential customers; and 2) technical assistance and training for line construction, line maintenance, equipment maintenance, utility administration, customer relations, Rural Electrification Association (REA) Uniform System of Accounts, billing and collection, and seminars on productive uses of electricity.

3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with AID Regulations and Delegations of Authority, shall be subject to the following essential terms and conditions, together with such other terms and conditions as AID may deem appropriate:

A. Source and Origin of Goods and Services

Commodities financed by AID under the Grant shall have their source and origin in the United States or in the Cooperating Country or in any other Central American Common Market country, except as AID may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have countries which are members of the Central American Common Market, the Cooperating Country, or the United States (AID

Geographic Code 000) as their place of nationality, except as AID may otherwise agree in writing. Ocean shipping financed by AID under the Grant shall, except as AID may otherwise agree in writing, be financed only on flag vessels of the United States.

B. Special Covenants

INE shall make every effort to ensure that its counterpart contribution is made available in a timely and satisfactory manner. Should INE fail to make its counterpart contribution available in a timely and satisfactory manner as determined by AID, AID may suspend Project assistance.

Janet C. Ballantyne

Janet C. Ballantyne
Mission Director
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Date: 7/20/91
Date: 7/22/91
Date: 7/24/91
Date: 8/15/91
Date: 8/14/91
Date: 8/20/91
Date: 8/27

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Project Title and Number: Atlantic Coast Electrification (ACE)

<u>NARRATIVE SUMMARY</u>	<u>OBJECTIVELY VERIFIABLY INDICATORS</u>	<u>MEANS OF VERIFICATIONS</u>	<u>IMPORTANT ASSUMPTIONS</u>
<p>Outputs: Continued</p> <p>Institutional Development Component:</p> <p>1. Economic and financial rationalization plan</p> <p>2. Improved institutional organization and management plan</p> <p>3. Improved consumer service</p>	<p>Outputs</p> <p>1. General framework and methodology developed for financial operations</p> <p>2. Options paper including decentralization and/or privatization for Atlantic Coast</p> <p>3. Increase in responses to consumer requests for assistance, reduce response time</p>	<p>1. Project study reports, INE financial records</p> <p>2. Options paper</p> <p>3. Consumer reports</p>	<p>Assumptions for achieving Outputs:</p> <p>1. INE desire and/or need to reduce subsidies</p> <p>2. GON cooperation on tariff issues</p> <p>3. Consumer acceptance of reduced subsidies</p> <p>4. Qualified consultants available on a timely basis</p> <p>5. Participation by INE staff</p>

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ABBREVIATIONS AND ACRONYMS

CARES = Central America Rural Electrification Support Program.

USAID/N = the US Agency for International Development Mission in Managua, Nicaragua

NRECA = National Rural Electric Cooperative Association

INE = Instituto Nicaragüense de Energía (the power utility of Nicaragua)

GON = Government of Nicaragua

RAAN = Región Autónoma Atlántico Norte (the newly formed Atlantic Coast autonomous region, of which Puerto Cabezas is the principal city)

RAAS = Región Autónoma Atlántico Sur (the newly formed Atlantic Coast autonomous region, of which Bluefields is the principal city)

ROCAP = USAID Regional Office of Central American Programs, located in Guatemala City, Guatemala.

IDB = Inter-American Development Bank

UNDP = United Nations Development Program

MOU = Memorandum of Understanding

PACD = Project Activities Completion Date

GLOSSARY

Derated engine = an engine that cannot sustain its rated capacity.

Isolated Systems = electrical systems not connected to the national network.

Load shed = reduction of load on power plant in order to not exceed power plant capacity; for example during maintenance shutdown and peak periods.

Substation = the part of the electrical system where load is distributed from the power plant to the user, where voltage is stepped up by transformer to increase the capacity of the lines.

PREVAILING EXCHANGE RATE \$C5 = US\$1

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I. SUMMARY

A. Background

Bluefields and Puerto Cabezas are the principal port towns of the Atlantic Coast of Nicaragua and have potential as important centers for shipping, communications, production and tourism. Their economic potential is constrained by insufficient infrastructure, as well as by their geographical and cultural isolation from the rest of the country. The development of the Atlantic Coast's basic infrastructure to serve its estimated population of 85,000, presents a serious challenge to the Government of Nicaragua and to the Instituto Nicaragüense de Energía (INE), the public electric utility.

B. Project Problem

Sufficient, stable, and sustainable electric power supply is essential to the economic and social development of the Atlantic Coast, but has not been achieved because of technical and organizational deficiencies in the current system. INE acknowledges difficulties in meeting the demand for electric power. Outages and load shedding are frequent nationwide, and especially frequent on the Atlantic Coast.

INE anticipates an average annual growth in national demand for electricity of 4.4% through the year 2010. While not a particularly high rate of growth, it is already beyond INE's capacity to meet. Demand for electricity on the Atlantic Coast has not been estimated, but will probably increase at a higher rate because demand has been suppressed by supply constraints, while the populations of Bluefields and Puerto Cabezas have grown through immigration as well as natural increase. Further, consumers of electricity tend to increase demand as they become more and more accustomed to electricity use.

INE anticipates that, by the year 2010, geothermal and hydroelectric power plants will provide most of Nicaragua's needs. Meanwhile, power service on the Atlantic Coast remains poor and economic development is hindered.

In Bluefields, the generation system and the primary and secondary distribution systems are in disrepair and electricity supply does not meet peak demand. Low reliability, frequent load shedding, inadequate safety practices, and limited metering impede power service and delivery. In Puerto Cabezas, much of the distribution system is in disrepair and the system voltage of 2.4 kV is insufficient for current consumer load. Operation and maintenance of both power systems is inadequate because of undertrained staff and lack of spare parts. Revenue from power sales covers only a small part of the cost of delivery.

The isolated systems of Bluefields and Puerto Cabezas are managed by INE. Absent a national electric network that includes the Atlantic Coast, both systems are distant from central INE facilities. Consequently, communications, access to spare parts and fuel, and management support are inadequate.

A further constraint to improving the electric service system in the project areas is its financial situation. Tariff rates are set by the government. While it is INE policy to cut off power to non-paying consumers, for local socio-political reasons this is rarely enforced.

C. Project Description

To increase the supply and reliability of electricity in Nicaragua's Atlantic Coast Region, the National Rural Electric Cooperative Association (NRECA) proposes to implement, under U.S.A.I.D. funding, a three-year project (PACD 8/31/94) of system rehabilitation, construction, and training. The project activities will allow the isolated systems in Bluefields and Puerto Cabezas to meet estimated current demand and demand over the short term (three years). In Bluefields, the Atlantic Coast Electrification (ACE) project will increase power plant capacity, upgrade the substations, and rehabilitate the primary and secondary systems. In Puerto Cabezas, the current system will be upgraded to a 13.2 kV wye configuration while repairing the primary and secondary distribution systems. Procurement of needed equipment will be financed by the project.

Training and technical assistance in generator and distribution operations, and maintenance and utility management will be provided for the local staffs of INE. A program to promote productive uses of electricity through public education and demonstration programs will help maximize economic and social benefits of electricity and manage system load.

An important assumption is that the Government of Nicaragua and INE will contribute a specified amount of local currency financing for personnel, labor, construction logistical support, and materials from INE's warehouse.

D. Project Inputs

Major project inputs, measured in person-months and funding, are summarized in Tables S1 and S2 below.

E. Project Relationship to AID Country Strategy

The USAID Mission's strategy in Nicaragua is to assist government efforts to revive the economy. The civil war and economic embargo of the 1980s, combined with economic mismanagement, severely affected the entire country. On the

Table S1. Project financial inputs over three years.

Source/Item	US\$ millions	
AID/N		
Equipment, commodities, and installation	3.000	
Technical assistance and Training	1.500	
Project administration	0.300	
Energy audits and Evaluations	<u>0.200</u>	
	Subtotal	5.000
GON/INE		
Personnel, construction, logistical support		
	<u>1.770</u>	
	Subtotal	1.770
ROCAP/CARES*		
Equipment, technical assistance and training, project design		
	<u>0.353</u>	
	Subtotal	<u>0.353</u>
	Total	7.123

* The USAID Regional Office for Central America and Panama (ROCAP) Central America Rural Electrification Support Project (CARES) which is implemented by NRECA. The funds allocated to Nicaragua in this project are available until March, 1994, the CARES PACD. The CARES Project provides support to Central American countries in rural electrification planning, organizational development, least-cost system design, management and technical training, and promotion of productive uses.

Table S2. Project level of effort over three years.

Item	Person-months
Long-term professional staff	66
Local support staff	36
Short-term technical assistant	
Consultants	60
Home-office administration	20

Atlantic Coast, these disruptions were exacerbated by Hurricane Joan, which devastated Bluefields in October 1988. The result was migration of significant numbers of people from the countryside to Bluefields and Puerto Cabezas, and greater stress on fragile basic services and physical infrastructure in the region.

Implementation of Mission strategy requires activities that encourage the private sector, generate employment, reactivate

agriculture, facilitate refugee resettlement, improve health and nutrition, and protect natural resources. The proposed project will support existing businesses and encourage their expansion, and encourage creation of new ones in the Atlantic region by providing increased and more reliable electricity, thus easing one of the infrastructural constraints to economic growth. Electricity for lighting and refrigeration can also improve health services, and perhaps nutrition and living standards.

F. Project Relationship to Host Country and Other Donors

The rehabilitation and construction component of the proposed project will increase INE's technical capacity to meet current suppressed demand and projected short-term demand in the target areas, thus promoting economic growth. The project's training and technical assistance component will address the capability of INE and the GON in areas of management and financial viability of the systems, which are critical for the system's stability and sustainability.

International donors are offering support to the electricity subsector. An IDB project will measure demand and capacity for delivery in Managua, and significant capital infusions are planned toward the rehabilitation of generating and distribution. The UNDP is assessing regional power problems. The Government of Spain is considering construction of a 70 km 69 kV line from the river town of Rama to Bluefields that would connect Bluefields (but not Puerto Cabezas) to the national electric grid.

NRECA will work with donors involved in the electric power subsector to promote sustained improvement in, for example, areas of pricing, cost recovery, system decentralization or privatization, and the orientation of electrification programs toward consumer service and responsive management.

G. Conformance with Agency Policies

The improvement of an important infrastructure on the Atlantic Coast will reinforce AID emphasis on promoting economic growth by supporting private sector initiatives. Improved electricity should contribute to the survival, and potentially the expansion, of existing businesses in both productive and service sectors, and will encourage creation of new enterprise. This would in turn create new employment.

Efforts to rationalize the policy context which affects the financial and operational viability and efficiency of electric systems will open an important dialogue on decentralization and/or privatization as well as tariff reform.

II. BACKGROUND AND PROJECT RATIONALE

A. Setting

In the 1980s, Nicaragua suffered serious economic decline in a context of profound global economic crisis and domestic disruption. As the decade began, the country emerged from a civil war that had destroyed the productive structure and bankrupted the financial system. After brief recovery between 1980 and 1983, civil war renewed and the resulting war economy was marked by extensive price controls, important military expenditure, declining output and exports, and the U.S. economic embargo. Government interventionist policies--nationalization of the financial system, confiscation of private business and property linked to the former regime, and agrarian reform--were opposed by the business sector. Investment fell sharply as capital flight soared.

In 1990, general elections brought the opposition to power. The new agenda is to dismantle the state-dominated economic system and create an environment that favors the development of free market forces. The U.S. government and some Latin American and European countries are offering assistance. Government plans are to revitalize growth in the agricultural and productive sectors, and improve standards of living and health. A program to rehabilitate infrastructure, including health, education and housing as well as transport, is planned.

The Atlantic Coast Electrification Project target area consists of two administrative units, now known as the Southern Atlantic Autonomous Region (RAAS), which includes the town of Bluefields, and the Northern Atlantic Autonomous Region (RAAN), which includes the town of Puerto Cabezas. For much of Nicaragua's history, the central governments have neglected this Atlantic Coast region. It has an estimated population of 85,000 in small, dispersed villages and towns that are significantly different from each other and from the rest of the country.

Bluefields and Puerto Cabezas are the principal port towns of the Atlantic Coast and have the potential to become important centers for shipping, communications, production and tourism. This economic potential is now constrained by insufficient and poor infrastructure, as well as by physical and cultural isolation from the rest of the country. The government licenses the extraction of the area's three principal resources: lumber, fish/crustaceans, and gold. Under previous administrations, however, little has been invested in the Atlantic Coast region for basic services such as health and education, or for infrastructure.

The major hurricane in 1988 and the increased price of fuel and other inputs over the past decade have left the Atlantic Coast particularly economically depressed in a nation which itself faces monumental economic difficulties.

B. Power Sector on the Atlantic Coast

Bluefields has an installed electricity generation capacity of 6,964 kW, but only 3,760 kW are currently available. This loss of nearly one-half of capacity is primarily caused by a lack of spare parts. Consequently, an average load of some 250 kW is shed daily on an established schedule, barrio by barrio. Additional outages are frequent and without warning.

Puerto Cabezas has an installed capacity of 2,649 kW, of which 1,299 kW are lost. According to industry standards, it would take 3,000 to 3,500 kW total installed capacity to sustain the peak load, because of machine downtime and scheduled maintenance.

INE anticipates an average annual growth in national demand for electricity of 4.4% through the year 2010. While not a particularly high rate of growth, it is already beyond INE's capacity to meet. Demand for electricity on the Atlantic Coast has not been estimated, but will probably increase at a higher rate because demand has been suppressed by supply constraints, while the populations of Bluefields and Puerto Cabezas have grown through immigration as well as natural increase. Further, consumers of electricity tend to increase demand as they become more and more accustomed to electricity use.

INE anticipates that, by the year 2010, geothermal and hydroelectric power plants will provide most of Nicaragua's needs. Meanwhile, power service on the Atlantic Coast remains poor and economic development is hindered.

The isolated systems of Bluefields and Puerto Cabezas are managed by INE. Absent a national electric network that includes the Atlantic Coast, both systems are distant from central INE facilities.

Until recently, the operation of the electric systems in the Atlantic region had been largely subsidized by INE's operations elsewhere. With the change in national government and the staggering economic problems confronted by the country, these subsidies have been reduced substantially. Tariff rates, set by the government, have been somewhat politicized in the past, but were increased substantially in March, 1991 (from an average price of US\$0.019 to US\$0.098 per kilowatt hour for the first 1,000 kilowatt hours). This still does not cover costs of generation.

It has been increasingly difficult for INE to maintain its

principal Atlantic Coast electric systems in Bluefields and Puerto Cabezas, or to expand service to the growing population and to the fish processing plants and sawmills that provide many of the region's jobs.

C. Project Problem

Sufficient, stable, and sustainable electric power supply is essential to the economic and social development of the Atlantic Coast. Without sufficient electrical generating capacity or system reliability to serve economic and social needs, the two principal ports of the Atlantic Coast of Nicaragua have not realized their potential as productive centers. INE acknowledges difficulties in meeting the demand for electric power. Outages and load shedding are frequent nationwide, and especially frequent on the Atlantic Coast.

In Bluefields, current supply does not meet demand, and the generation system and the primary and secondary distribution systems are in disrepair. Low reliability, frequent load shedding, inadequate safety practices, and limited metering impede power service and delivery. In Puerto Cabezas, the system voltage of 2.4 kV is insufficient for current consumer load and much of the distribution system is in disrepair. Operation and maintenance of both power systems is inadequate because of undertrained staff and lack of spare parts.

To summarize, the major constraints to sufficient and stable electricity delivery are the following:

- an acute shortage of spare parts, tools and line equipment needed to maintain the distribution lines and generators;
- inadequately trained and motivated technical and administrative staff;
- a lack of equipment for testing fuel to assure that water, introduced during transport, does not corrode the engines;
- overloaded circuits, with poor connections and undersized wire;
- a poorly rebuilt electrical system in Bluefields due to hastily carried out reconstruction, with inadequate materials, in the aftermath of Hurricane Joan in 1988;
- a large proportion of illegal and unmetered service which impedes revenue collection and creates unacceptably high system losses;
- inefficiencies caused by centralized organizational

control in Managua; and

- explosive growth in demand for services, due in part to the repatriation of former residents to the region and particularly, to immigration of newcomers.

The lack of spare parts is the single most pressing problem of the power sector in Bluefields and Puerto Cabezas. While generators received from Czechoslovakia during the previous government's administration are new and of high quality, distance, logistics, and politics impede procurement of parts from Europe.

Distribution inefficiencies caused by poor construction techniques and lack of proper materials also burden the power systems. Poor connections and undersized conductors produce heat which directly translates into line loss. The amount of line loss can be determined though proper metering, presently non-existent in Bluefields and unreliable in Puerto Cabezas. Without distribution equipment and trained staff to maintain the lines, install meters, measure consumption, and bill consumers, the Atlantic Coast will continue to be a drain on INE resources. The poor construction has contributed to system-wide and localized outages, and low voltages. This has negative effects on the economy and standard of living in the area.

A further constraint INE faces in improving the electric service systems in the project areas is poor financial operations. Revenue from power sales covers only a part of the cost of delivery. Illegal connections and unmetered legal connections charged at flat rates represent an important proportion of all connections, and tariff rates are set by the government. While it is INE policy to cut off power to non-paying consumers, for local socio-political reasons this is rarely enforced.

Organizationally, INE remains highly centralized, with control exercised from distant Managua. Consequently, communications, access to spare parts and fuel, and management support are inadequate.

The situation of the isolated Atlantic Coast electrical systems has been one of deterioration, resulting in uneconomic utilization of the invested resources, which in turn contributes to the financial weakness of the system--reflecting the overall financial difficulties of INE and the country as a whole.

III. PROJECT DESCRIPTION AND MAJOR OUTPUTS

A Project Logical Framework for the ACE Project appears in Annex A. This section contains a description of the project's main elements.

A. Project Objectives

The goal of the Atlantic Coast Electrification Project is to increase the standard of living of the people of the Atlantic Coast region of Nicaragua by improving the electrical power infrastructure to promote, in the short-term, growth of the business, production and fish processing sectors, and improved health and education possibilities.

The project purpose is to assist INE to provide sufficient, stable and sustainable electric power to meet current and future demand over the next three years in Bluefields and Puerto Cabezas.

The direct project beneficiaries are INE and its consumers. The population not directly receiving electricity among the estimated 85,000 inhabitants of the Atlantic Coast region can be considered an indirect beneficiary inasmuch as it will benefit from increased economic activity in the regional centers.

B. Project Components and Major Outputs

The project, which will have a life of three years, will fund the acquisition of electric power generating and distribution equipment for power plants in Bluefields and Puerto Cabezas, and provide training and technical assistance to local INE personnel. Project-funded activities will be limited to these two principal Atlantic port cities. When appropriate, minimal funding may be provided to acquire donated surplus equipment from electric cooperatives in the U.S. through the nonprofit NRECA International Foundation.

1. System rehabilitation and construction

Based on data collected by CARES/ROCAP-financed design studies, generation capacity will be augmented to meet current demand and future short term demand (three years from the start of the project). Training and technical assistance described below will provide a basis for continued capability to maintain the level of energy supply.

a. Generator plant in Bluefields

The project will finance the procurement of two 1,200 kW generators for the Bluefields power plant in order to increase capacity to 6,160 kW. This will meet existing and future short

term demand, and standard power industry maintenance procedure which require built-in redundancy.

b. Distribution system in Puerto Cabezas

The project will finance the procurement of spare parts and materials for Puerto Cabezas to increase system capacity and reliability by repairing and upgrading the primary and secondary distribution systems, and upgrading the primary voltage from 2.4 kV delta to 13.2 kV wye. Currently INE is proceeding with plans to install a new 825 kW generator of Czech origin in the power plant. This should satisfy essential supply needs for the foreseeable future, again noting the potential problems of parts accessibility.

Meters will be installed, as required, as the secondary system is upgraded.

c. System rehabilitation and construction outputs

Major outputs of the system rehabilitation and construction component of the project are expected to be:

- a 25% increase in available generation capacity;
- 50 km of new line installed;
- 100 km of existing line rehabilitated;
- an estimated 80% reduction in power outage time, such that consumers in Bluefields and Puerto Cabezas receive electric power 96% and 90% of the time, respectively, up from the current 80% and 50%;
- an estimated 33% increase in the number of legal connections; that is, approximately 2,000 additional connections, for either new consumers or for consumers previously connected illegally;
- an estimated 80% increase in the number of metered connections; that is, up to 3,000 new meters installed on existing legally connected but unmetered (flat rate) services.

It is also anticipated that improvements in generation operational efficiency will take place, but these improvements cannot be quantified at present.

It should be noted that the quantified outputs expected above are based on unaudited data regarding number of existing and metered connection and power outage time provided by INE. Early in the project implementation, data will be gathered that will serve to

refine the above output targets.

2. Technical assistance and training

Technical assistance and training described below will be provided for appropriate INE staff in Bluefields and Puerto Cabezas. INE currently employs 63 persons in Bluefields, approximately 50 in Puerto Cabezas, and 11 in surrounding areas.

a. Generator operations and maintenance

Generator life can be extended, and capacity increased, through proper operations and maintenance procedures. The capability of INE power plant staff to maintain the upgraded capacity of the new engines will be improved through an intensive program of on-the-job training and technical assistance in operations and maintenance.

The operations and maintenance program, together with the procurement of spare parts and equipment, should improve the capacity of the existing generators by an estimated 25%. It should be noted that if spare parts are not readily available for units from Eastern Europe, the improvement achieved would be smaller.

b. Distribution operations and maintenance

An intensive program of training and technical assistance will improve the capability of power plant and line crew employees to operate and maintain the power generation and distribution systems. Technical assistance and a program to provide on-the-job training for line construction, line maintenance, and equipment maintenance will improve the operational efficiency of the electrical distribution systems. In conjunction with the meter purchase, technical assistance and training will be introduced for the proper installation, testing and minor repair of meters.

c. Utility management

In order to achieve a higher level efficiency in operations, technical assistance and training will be offered to the INE administrative and operational staff in electrical utility administration, customer relations, uniform system of accounts, and billing and collecting. This will be provided in Nicaragua and in specialized centers outside the country.

d. Training and technical assistance outputs

The major outputs of these technical assistance and training subcomponents will be:

- 70 linemen/technicians/managers trained, yielding a minimum of a 20% increase in productivity;
- 20 procedural manuals developed or adapted for INE use;
- a reduction of system losses of approximately 15%.

3. Productive uses of electricity

a. Productive uses programs

Programs to promote productive uses of electricity will be implemented in both Bluefields and Puerto Cabezas. The aim of the programs is to increase the economic impact of electrification by promoting productive, economically viable, income-generating uses of electricity by owners of small and medium-sized businesses. The productive uses program will also give priority to evaluation of appropriate energy conservation and demand-side programs that will optimize use of the installed generation capacity by optimizing the system load factor.

Programs will target the electricity-consuming public and will include raising public awareness of productive uses, training, demonstration, promotion and facilitation of acquisition of electrical equipment. Local INE administrators and managers will be trained in methods for promoting such uses so that the programs will become an integral part of the electric system operations.

Project activities to facilitate involvement of at least three nongovernmental organizations (NGOs) in productive uses promotion will also be undertaken.

In the early part of the project, baseline data on existing and potential productive uses of electricity in the project area will be collected. The data will be used to elaborate the productive use promotion program.

b. Productive uses program output

The energy audit, or baseline survey, data on existing productive uses of electricity will also be used to refine the quantified expected outputs enumerated below. The impact of this activity can then be measured in a post-project assessment of economic benefits from productive uses of electricity. The estimated outputs of the program are:

- an energy audit to identify present productive uses of electricity;
- an assessment of current demand for productive uses of

electricity and demand under the improved system to be provided under the project;

- a detailed productive uses promotion program based on demand assessment;
- at least 20 workshops/training seminars on productive uses of electricity;
- a 20% increase in the number of productive uses of electricity in target area communities.

In addition, it is anticipated that, as a result of promotion of efficient residential and commercial uses of electricity, it will be possible to manage demand to optimize system load factor.

4. Institutional issues and sustainability

Utility specialists will analyze policy options in areas that affect sustainability of expanded capacity to supply electricity, maintenance of the improved system, and improvement of its financial viability.

The policy options, which will be researched and discussed with INE, GON and local governments, will involve areas of tariff rates and cost recovery, and on-going financing requirements of the systems, and institutional organization and long-term system ownership/management, including the feasibility of decentralizing the two isolated systems into autonomous utilities, with a view to making them financially self-sufficient and operationally self-sustaining.

Expected outputs from activities addressing institutional issues and sustainability of electrical system improvements are the following:

- a general framework and methodology for economic and financial rationalization of the two systems;
- a less centralized institutional arrangement, perhaps decentralizing certain services now provided by INE/Managua to the Atlantic Coast regions,
- an options paper for decentralizing or eventually privatizing the isolated electrical systems of the Atlantic Coast.

5. On-going system improvements

As the electric power systems in Bluefields and Puerto Cabezas are stabilized, project priority will include the upgrading of

the distribution system of Bluefields and the power generation system of Puerto Cabezas. In conjunction with an ongoing training and technical assistance program, the project will continue to finance the procurement of parts and materials to ensure the operational stability of the project.

C. Project Inputs

1. Financial inputs and level of effort.

Major project inputs appear in Tables 1 and 2. Inputs consist of financial resources provided by USAID/N, ROCAP and GON/INE counterpart resources; and technical assistance, training, and management provided by NRECA. NRECA will provide long-term resident personnel, short-term specialists, project administration, and some local support staffing. The counterpart agreement will also provide for counterpart professional personnel for liaison and training, among other things to be determined.

A detailed project budget is presented in Annex B. Budget items are based on preliminary estimations and may vary when bids for commodities are solicited.

Table 1. Project financial inputs over three years.

Source/Item	US\$ millions	
USAID/N and ROCAP*		
System rehabilitation and construction		
Generation systems	0.80	
Distribution systems	2.00	
Other	<u>0.45</u>	
Subtotal		3.25
Technical assistance and training		
Generator operations and maintenance,		
Distribution operations and maintenance,		
Utility management,		
Productive uses of electricity,		
Institutional development		
Subtotal		1.50
Project administration	0.40	
Evaluations, surveys, audit	<u>0.20</u>	
Total AID/N and ROCAP		5.35
INE/GON counterpart	<u>1.77</u>	

Total INE/GON 1.77

TOTAL PROJECT 7.12

* The USAID Regional Office for Central America and Panama (ROCAP), and the Central America Rural Electrification Support Project (CARES), which is implemented by NRECA. The funds allocated to Nicaragua under the CARES Project are available until March, 1994, the CARES PACD. The CARES Project provides support to Central American countries in rural electrification planning, organizational development, least-cost system design, management and technical training, and promotion of productive uses.

Table 2. Project level of effort over three years.

Item	Person-months
Long-term professional staff	66
Local support staff	36
Short-term technical assistance consultants	60
Home-office administration	20

2. Other inputs

NRECA proposes to integrate donated surplus materials to the rehabilitation and construction program. When available, appropriate, serviceable salvaged equipment, such as meters and line material, will be used to extend project resources. These donated inputs will come from NRECA member utilities through the NRECA International Foundation.

3. Host country contribution

It is anticipated that the GON and INE will provide the equivalent of US\$ 1,770,000 in counterpart resources for the project, either through the direct provision of local resources for project activities, or in local currency. NRECA, the GON, and INE, have been discussing a Memorandum of Understanding in which the GON and INE agree to provide for the following:

- Local procurement costs for the renovation of the electrical facilities in Bluefields and Puerto Cabezas and for construction of electrification facilities to serve up to 2,000 new consumers;
- Counterpart participation by appropriate INE or GON personnel in technical studies, planning activities, training, administrative activities, or other activities carried out under the project;

- Warehouse space, staff training facilities, office space, telecommunications and other services, office supplies, and clerical assistance to support NRECA project staff/activities, and;
- Support for vehicle operation including fuel, maintenance and general repair.

The proposed MOU will also provide for duty exemption, title transfer for electric power commodities, and other matters requiring explicit understandings between NRECA and the GON. A draft MOU, which has been discussed with INE as the probable GON signatory, is provided at Annex E.

D. Disbursement Schedule

Annex C provides a detailed schedule for disbursement of project funds from USAID. Approximately 55% of the total USAID funds (US\$5.45m) will be used for diesel generation and electric distribution equipment, with the balance for administration, technical assistance, and training. Counterpart funds equivalent to US\$1.77m are mainly devoted to local materials and construction services, and do not appear here.

Of the US\$0.453m of budgeted ROCAP/CARES Project funds, \$0.100m are intended for project design. Approximately US\$0.250m of ROCAP/CARES funds will finance commodities, in particular, diesel generator equipment for Bluefields, which is a priority.

Table 3. Summary project disbursement schedule in US\$ millions*

	Project Year							
	Year 1		Year 2		Year 3		Total	
	M	R	M	R	M	R	M	R
1.	1.80	0.25	1.05	0.00	0.15	0.00	3.00	0.25
2.	0.40	0.06	0.80	0.03	0.40	0.01	1.60	0.10
3.	0.09	0.00	0.06	0.00	0.05	0.00	0.20	0.00
4.	0.06	0.00	0.04	0.00	0.10	0.00	0.20	0.00
Total	2.35	0.31	1.95	0.03	0.70	0.01	5.00	0.35

Key to table:

1. Equipment, commodities, installation
2. Technical assistance and training
3. Administration
4. Evaluations, surveys, audit

*N = USAID/Nicaragua funds
R = ROCAP/CARES Project funds

IV. IMPLEMENTATION PLAN

A. Project Management and Staff

The project will be implemented under a Cooperative Agreement between NRECA and USAID/N. NRECA will be responsible for management of the project and for obtaining USAID/N approval of project workplans, activities and procurement, through the Mission's technical representative.

Three resident project staff will be located in the Atlantic Coast: a project manager (for the three years of the project life); a diesel generation specialist (for a total of two years); and an electrical distribution specialist (also for a total of two years). The project manager and diesel generation specialists will be stationed in Bluefields. The distribution specialist will reside in Puerto Cabezas. Project position descriptions appear in Annex F.

All long-term and short-term personnel retained under the project will report to the NRECA project manager, who will be responsible for implementing the project. Overall responsibility for the project will be held by NRECA's assistant administrator for Latin America, who will be based in Costa Rica.

The project manager will be responsible for administering ROCAP/CARES Project funds as well as GON/INE counterpart contributions. The CARES project manager will obtain necessary approval from ROCAP, and NRECA's assistant administrator for Latin America will ensure coordination between the two projects. Specific responsibilities of NRECA and INE for programming, implementation, and reporting will be specified in the MOU between them.

B. Methods of Implementation and Financing

Table 4 presents a summary budget for the ACE Project, including both USAID/N and ROCAP sources (detail for this budget is provided in Annex B.) This format follows NRECA's internal accounting system, which will be used in preparing project financial progress reports. Table 5 presents the method of implementation and financing for the project. Technical

assistance, training, and commodities will be provided under a proposed Cooperative Agreement between USAID/N and NRECA. Funding for the evaluations and audits will be provided under the US\$5.0 million USAID/N funding available to the project, and will be included in the Cooperative Agreement.

Table 4: Project budget summary

Line Items	USAID/M	ROCAP	TOTAL
Salaries	682,940	26,550	709,490
Fringe Benefits	201,330	10,890	212,220
Overhead	332,000	25,400	357,400
Travel, Transportation, and Per Diem Allowances	289,530	16,520	306,050
Other Direct Cost	128,380	6,640	135,020
Equipment, Vehicles, Material, and Supplies	357,320	4,000	361,320
Commodities	328,500	10,000	338,500
	2,680,000	253,000	2,933,000
			Total 5,353,000

TABLE 5: Presents the Methods of Implementation and Financing which are the preferred methods. NRECA is a certified PVO and as such will not require a pre-award assessment prior to the first disbursement of Grant funds.

Budget Item	Method of Implementation	Method of Financing	Estimated US\$
Project T/A and T	Cooperative Agreement	LOC-TFCS or Direct Pay	1,900,000
Project commodities	Cooperative Agreement	see above	3,000,000
USAID/N/evaluations	Cooperative Agreement	see above	55,000*
Audit	Cooperative Agreement	see above	45,000*
		Subtotal	5,000,000
CARES Contribution	NRECA/ROCAP		
	Cooperative Agreement	see above	353,000
		Total	5,353,000

Notes: T/A and T = Technical assistance and training
RIG = Regional Inspector General

C. Implementation Schedule

The project implementation schedule is designed to expedite work on the Bluefields generation plant and essential rehabilitation of the distribution network at both locations. NRECA expects to begin installing long-term staff within 60 days of obligation of USAID/N funds, although ROCAP/CARES Project funds and staff can be used to begin work on logistics and procurement. A detailed time-line for the major project elements is found at Annex D. A brief discussion of major activities in each project year follows.

First year:

procurement of diesel engines and materials, maintenance and operations technical assistance and training, design of distribution facilities, energy audit

Second Year:

procurement, construction, installation and rehabilitation, technical assistance and training for INE management and operational personnel

Third Year:

construction, technical assistance and training

D. Procurement Plan

NRECA's generation and line construction specialist team has visited the proposed project sites and obtained sufficient data to permit early commodity procurement. Line material specifications developed from similar projects in the region and specifications prepared by the team will be included in bid documents. This preliminary work provides significant time savings in pre-procurement preparations.

NRECA will be responsible for the procurement of commodities subject to standard AID procurement regulations. All procurement with US dollar funds will be coordinated from the NRECA office in El Salvador using already-established procedures. NRECA-El Salvador will carry out document preparation, evaluation, contract award, and tracking of commodities.

Procurements will follow formal approval and reporting procedures, described in section IV (G). This proposed procedure draws on experience acquired in procurement through the El Salvador Rural Electrification Project. The proposed Invitation for Bid (IFB) document and time frame for procurement under the project appear in Annex G. The port facilities at both Bluefields and Puerto Cabezas are sufficient to permit direct importation of commodities to the project sites. This will facilitate material and equipment handling and distribution.

The ACE project team will be responsible, in coordination with INE personnel, for inspecting the materials, their clearance through customs, warehousing, and distribution to project sites.

E. Logistical Constraints

Both Bluefields and Puerto Cabezas are remote from Managua. Overland access to Puerto Cabezas takes two days by truck when the dirt road is passable. Travel to Bluefields requires a five-hour drive to Rama, then two to three hours by motor launch. Aeronica, the national airlines, has flights from Managua most days, but space is limited and departures erratic. It may require authorization from the governor to get a seat on the return flight. In general, aviation is limited by the state of disrepair of navigation aids. Lack of reliable power supply is a prime contributor to the failure of this equipment.

There is occasional telephone service in Bluefields and none in Puerto Cabezas. Most communication is by UHF radio from one branch office to another, then messages must be delivered in person.

Water supply in Puerto Cabezas is unreliable.

Because of very poor housing conditions, modular living quarters will be imported for project staff based in Puerto Cabezas.

Given these conditions, the budget includes an allowance for logistical difficulties. For example, use of chartered boats or the acquisition of radios for communication may be desirable.

F. Monitoring, Evaluation and Audit Plan

Ongoing monitoring, two project evaluations, and an audit will be carried out under the ACE Project. These activities are interrelated parts of a continuous process. Their purpose is to examine project implementation with respect to planned inputs, expected outputs, and the accomplishment of the project purpose. Monitoring and evaluation of the project's ultimate goal, which is to improve of living standards of the project target area population, will not be required. Its measurement would require significant resources; moreover, its achievement depends on many important factors other than this project.

The Project Logical Framework presents the list of project monitoring and evaluation elements (See Annex A). Intended outputs and indicators are given for each project component (system rehabilitation and construction, training and technical assistance, productive uses promotion, and institutional development). The project purpose refers to the impact of the project as a whole.

The monitoring and evaluation process involves the following steps:

1. Monitoring the planned inputs to establish whether or not they have been supplied in a timely manner,
2. Determining whether or not inputs have permitted the intended outputs (the output objectively verifiable indicators), and
3. Determining whether or not the project purpose has been achieved (project purpose objectively verifiable indicators). This involves assessing whether or not the change intended by the project, as a response to the development problem, has taken place.

1. Monitoring

Monitoring will be an ongoing project function to collect data on inputs, expenditures, procurement and construction activities, training activities and participants, progress in achieving intended outputs, and tracking other factors which influence the success of the project. No separate system will be needed for monitoring purpose-level indicators.

The project manager will be responsible for monitoring, recording and reporting the data through the normal project documentation. This includes financial reports and Semi-Annual Activity Reports. To facilitate the evaluations, monitoring will refer to the Project Logical Framework elements. In addition, the project manager will refer to an annual workplan for accomplishing output indicators.

At the project design stage, insufficient data was available to refine quantitative output indicators, many of which are estimates. Therefore, early in the project life, an energy audit (or baseline survey) of the project areas will be carried out and the data and analyses of electricity supply and use will be used to refine or confirm the output targets.

While in some cases the means of verification of intended outputs are straightforward and readily available, in others it will be necessary to determine whether the means are available and of sufficient quality. If they are not, then improvements in data collection should be made or other means of verification established.

2. Evaluation

Two evaluations of the project will be carried out at the request of USAID/N. After one and one-half years, a mid-point evaluation will measure progress in achieving the intended project outputs as well as the project purpose. The second evaluation will take

place upon project completion. Funding for the evaluations will come from project internal resources.

The evaluation team will refer to objectively verifiable indicators and means of verification as specified in the Project Logical Framework. One important task of evaluation is assessing the appropriateness of the initial indicators and objectives. The evaluators will also assess whether or not the following has taken place: project management is delivering inputs in a timely way, implementation is proceeding as planned, technical assistance has been adequate and appropriate, procurement and construction activities are being effectively carried out, and monitoring is sufficient to provide information needed for management decisions.

3. Audit

The project will provide for a contract in coordination with NRECA, A.I.D.'s Regional Inspector General for Audit and USAID/N for the services of a Certified Public Accounting firm to perform a compliance audit of the Project prior to the termination of the Agreement. The audit will be performed in accordance with generally accepted auditing standards as prescribed by the U.S. General Accounting Office. Funding for the audit requirement is included in the Project budget under other direct costs.

G. Workplans and Progress Reports

Annual workplans will be submitted to USAID for review and approval one month prior to the completion of each fiscal year. The workplans will refer to key outputs and activities that are planned in order to reach those outputs.

V. ANALYSES

A. Technical Analyses of Generation and Distribution Plant

1. INE power plants in Bluefields and Puerto Cabezas

There are significant differences between the power plants in Bluefields and Puerto Cabezas. The former was reactivated in haste after the 1988 hurricane and requires considerably more operation and maintenance attention than the facility in Puerto Cabezas. The power plant in Puerto Cabezas was installed new and has not suffered any basic setback other than the lack of spare parts and fuel rationing. In Puerto Cabezas, operation and maintenance management is not a problem, although the lack of spare parts and equipment is recognized as one.

a. Bluefields

The INE power plant in Bluefields has an installed capacity of 6,964 kW. However, it is currently possible to generate only 3,760 kW. As a result, power outages are frequent and without warning. The power plant does not have enough residual power to permit taking units out of service for regular maintenance; therefore load shedding is mandatory.

The loss of generating capacity is due to the fact that spare parts are not available from Czechoslovakia. There are seven engines in the Bluefields power plant, four of which are Czech:

- Unit 1 - rated capacity 1,380 kW, attainable capacity 900 kW
- Unit 2 - rated capacity 608 kW, attainable capacity 340 kW
- Unit 3 - rated capacity 608 kW, attainable capacity 180 kW
- Unit 4 - rated capacity 608 kW, attainable capacity 270 kW.

There are three Lister-Blackstones: two with a rated capacity of 579 kW, having an attainable capacity of 180 kW, and one that is out of service. There are also older units, including some old Fairbanks-Morris gen-sets, that are out of service.

The engines are all in very poor condition. Several of the engines, while still in the plant, are being dismantled for spare parts to keep two other engines running. A new 825 kW engine

from Managua was expected, but is not likely to be delivered, as it has the wrong generator on it. Spare parts for it have already arrived and may be of some use in Puerto Cabezas, where there are 825 kW engines.

The Czech engines should be phased out over the next few years. The project should fund purchase of two 1,200 kW containerized units to be placed next to the existing power plant to solve the immediate problem of having to shed load. This would also allow mechanics to perform some of the much needed maintenance on the existing units. The last major overhaul took place in November 1990 and at that time 50% of the town was without power. When asked when the next overhaul would take place, plant staff said none was planned, as no spare parts were available.

On Bluff, which is a few minutes by motor launch from the present Bluefields power plant, there are two East German 880 kW medium-speed diesel engines. These new engines, intended for use in conjunction with the deep water port project, appear to be in excellent condition. They were built in 1983 and delivered in 1986. There are four containers full of parts for these engines and an inventory of these should be made.

The overall condition of the Bluefields power plant is poor. The building is in fair condition, but is sited on a hill so that plant spills and debris flow to the bayshore, leaving a black oil slick along the shoreline. Oil runs down from the plant under the fuel tank. With lack of maintenance it has become a potential fire hazard. The power plant is in a congested barrio, and several families have built wood houses less than ten feet from the fuel storage tanks. They cook with wood or oil, placing their lives at risk and presenting a fire hazard to the plant. The power plant should be relocated away from residential areas, perhaps to a new site near a proposed industrial zone. The following should be considered when selecting a new site:

- The area should be flat, not hilly, to minimize need for grading and to minimize runoff of contaminants.
- Proximity to a deepwater dock to facilitate off-loading fuel is desirable. Currently, a barge is sent to Bluff every six days to obtain 13,000 gallons of fuel and transport it to Bluefields. It is difficult for the barge to deliver to the plant when the tide is out. There is also risk of an oil spill as the three tanks chained to the barge were not designed for that use. During storms and hurricanes, fuel delivery is not possible and the plant must load shed more than normal, or even shut down completely.
- The power plant should be located close to the proposed industrial site in order to offer reliable service to the

larger consumers who pay higher tariffs and provide jobs.

- Relocating the plant away from residential areas would keep noise and pollution away from people.
- The transmission/distribution department needs room to store equipment, which should be provided by a new building.
- Space for office and training facilities should be provided.

Any new engines purchased for Bluefields under the project should be placed in the old plant only with the stipulation that a new plant be located and that these engines be moved to a new site within a specified length of time.

The longer-range solution to the Bluefields power supply problem, which is outside the scope and financing of this project, must be dealt with relatively soon. Currently, three options present themselves. If a new powerhouse is built, it is advisable to add two additional units of 2,000 kW each, rather than attempt to repair and relocate the existing units. Alternatively, an adequate supply of spare parts for the Czech machines would be required, but this seems problematic. Apparently, Czech parts are manufactured only as the orders are placed, and a delivery date cannot be assured. Six months to a year's delay has not been uncommon in the past. Payment is only accepted in hard currency, which would be difficult for INE to provide.

The optimal solution would be to build the proposed 69 kV line from El Rama, as is being discussed with the Government of Spain. However, further load development in Bluefields would be required to make this economic and it is by no means certain that the Spaniards will provide the support for this proposed project.

b. Puerto Cabezas

In Puerto Cabezas, the installed rated capacity is 2,649 kW but the machines are capable of producing only 1,350 kW. This reduction of capacity is due to a lack of spare parts, and insufficient training and lack of experience of plant personnel. INE is shedding load at Puerto Cabezas in order to extend the life of the existing engines. There are plans to add 825 kW to the system, for a capacity of 2,175 kW. This should be sufficient to meet demand for a maximum of two years. Although there is no immediate need for new engines at this time, a need will develop within the time frame of the project. Project funds will be best put to use in Puerto Cabezas for distribution system rehabilitation, power plant improvements, and technical assistance and training. Additional funding for downstream expansion of the generating plant should be sought during the

first year of the project.

A thorough study of engine fuel consumption in Puerto Cabezas should be made. It is likely to indicate that improvement can be expected by using centrifuges to clean the lubrication oil in the engines, thus extending the life of the oil and reducing cost. Centrifuges may also be used to remove salt water and other contaminants from the diesel fuel to extend the life of the fuel components of the engines--fuel injectors, fuel pumps, and fuel transfer pumps. Fuel rationing must stop if electric service in the area is to improve.

In addition to centrifuges, the power plant requires proper valve grinding equipment, and technical training on the proper use of this equipment. New fuel injection test equipment will also be required, again with the proper training and use of the equipment. Training needs for both Puerto Cabezas and Bluefields power plant personnel are discussed later in the System Operations and Management analysis section below.

2. INE distribution systems in Bluefields and Puerto Cabezas

In both Bluefields and Puerto Cabezas, the electrical distribution systems are inadequate to distribute power efficiently to consumers. The circuits have insufficient load-carrying capacity, defective connections and unbalanced loads. Training and monitoring of system operation personnel will ensure that the proposed renovations and subsequent benefits will be sustained.

In both towns, the warehousing and workmen's facilities are inadequate to provide storage and shelter for the men, their equipment and materials. Storage facilities for poles, transformers and wire are not adequate. It is recommended that counterpart funding be provided either to upgrade the existing facilities or to build new facilities more suited for the purpose. Facilities for training should also be provided.

Equipment used by linemen can only be described as "junk". Tools are of inferior quality or have been used and abused for so long that they are worn out and are becoming hazardous. Safety belts are worn well past the discard point; hoists are worn past their usefulness. Block and tackle equipment is rendered useless by a lack of spare parts and replacements. It is recommended that equipment and training in the correct care and use of that equipment be provided to the crews.

The materials supply situation is a case of "feast or famine": some items are overstocked and others are non-existent. Many items are for other systems. Materials to implement the construction and maintenance of this project, along with a small

reserve for future use, should be provided under the project.

a. Bluefields

In Bluefields, the primary distribution system was hastily erected after the hurricane. Construction specifications were ignored in order to provide electricity as rapidly as possible to the consumer. Conductor and transformer overloading is common and system protection is minimal. The substation has no protection or backup at this time and there is no way to work on the equipment without de-energizing the town. In the interest of providing safe and reliable service, it is recommended that the system be upgraded to correct these deficiencies.

The secondary voltage system in Bluefields has also evolved without safeguards or service reliability for the consumer. Under present conditions, a minor problem in one area can cause loss of service to many consumers, hence the high incidence of outages. Overloaded and over-extended service lines and service drops cause low voltage problems for many consumers. This overloading of the secondary system has created a serious fire hazard and if left unchecked will undoubtedly cause loss of life. The secondary system must be rebuilt to provide reliable and safe electricity to the consumer.

Most of the houses are connected directly to the secondary system, and no individual household protection has been installed. If an electrical short were to develop in one house, the transformer on the pole would have to be de-energized in order to isolate the fault. By the time this was done, the surrounding houses would have been exposed to the danger and set ablaze. A program to provide needed protection should be initiated as soon as possible.

Energy metering of all types in Bluefields is sparse. There is currently no way to tell how much each consumer uses. Without some form of metering, there is also no way to collect data; without reliable data, the true line losses cannot be calculated. Meters, and meter test equipment, with the appropriate training, must be provided to keep the metering system operational once it has been installed.

b. Puerto Cabezas

Puerto Cabezas primary and secondary systems were built in the first half of the century. Since then, there have been few upgrades to this obsolete and deteriorating 2.4 kV delta system. Expansion of the system (both primary and secondary) has overloaded the existing conductors and circuits to the point that low voltage has become the norm and system losses have skyrocketed. Many of the poles and crossarms have outlived their safe life and must be replaced as the system is upgraded or they will become public safety hazards.

In order to effectively revitalize this system it will be necessary to upgrade the current system to a 13.2 kV wye configuration. This will require new crossarms and insulators system-wide, as well as introduction of a neutral conductor. Old conductors will have to be replaced and grounds installed to provide a proper ground return to plant. This will also require the expansion of the substation to include step-up transformers, switch gear and circuit protection.

INE intended to upgrade the distribution systems in both Bluefields and Puerto Cabezas to 24.9 kV wye voltage levels. The rationale is that this voltage is compatible with that of other rural areas in Nicaragua. While compatibility is a reasonable goal and usually to be encouraged, NRECA recommends a 13.2 kV wye system in both communities for the following reasons:

- 13.2 kV system is a less costly solution, both because the new materials purchased are less expensive, and because much of the existing 13.2 kV materials in Bluefields can be used in the rehabilitated system.
- Reliability will be higher with a 13.2 kV voltage. The 24.9 kV voltage, while generally very well suited to rural construction, has lower insulation margins of safety to resist atmospheric contamination problems. For this reason, experience has shown that the use of this voltage level along the coastline, which would be the case in these two communities, results in operational problems caused by salt spray contamination and an unacceptably high incidence of flashovers, resulting in outages and damaged equipment.
- Safety will be less of a problem. Since the training of the local INE employees is very limited in the area of high voltage work, and the community as a whole is not well versed in safety precautions regarding high distribution voltages, the less hazardous 13.2 kV level is an advantage.
- The benefit of compatibility will not be lost with 13.2 kV. This voltage is already standard in Nicaragua for the urban areas. In addition, the characteristics of the systems in Bluefields and Puerto Cabezas could be better classified as isolated urban areas rather than as isolated rural areas. The load areas are relatively well defined and concentrated enough so that voltage loss due to long distances will not be a problem. Also, there is no possibility in the foreseeable future of interconnection with other isolated systems in the Atlantic Coast area.

B. System Operations and Management

1. Diesel plants

There is little or no training available in diesel engine operation and maintenance in either Bluefields or Puerto Cabezas. Under the project, technical training will be offered to power plant staff, to operators of other generators in both towns, and to anyone interested in diesel generator operations and maintenance. While much of the training is specialized, it is also fundamental mechanical knowledge which is potentially useful in many fields. The level of training should begin with the fundamentals, and increase in complexity as skills improve. The proposed training program will include at least three separate levels of complexity, each level containing similar subject matter but becoming increasingly more technical. As the students' level of skill increases, there will be more hands-on, on-the-job training (OJT).

Every level of training will emphasize the ethics of high quality power plant operation and maintenance through instruction in safety, cleanliness and reliability in the work place, and responsibility to the consumer. Subject-matter for the power plant operator courses will include:

- fundamental principles of how a diesel engine works,
- fundamental principles of how a generator works,
- how the power factor affects the operation,
- frequency control and effects,
- line loss control and effects, and
- utility management information systems.

After completing the three levels of training, which will cover diesel engine fundamentals and operations, the student will have a thorough knowledge of the diesel engine.

The student will also have gained an understanding of the reasons for proper maintenance and the best methods of maintenance. Each course will include maintenance and repair of the peripheral equipment such as centrifuges, air compressors, and transfer pumps. Topics will include the following:

- base and foundation preparation for a new engine,
- engine head removal, inspection, cleaning, repairing, reinstallation,
- valve gear complete inspection and repair,

- piston rings, cylinder liners, connecting rods, big and small bearings,
- crankcase explosion precautions,
- timing a diesel engine,
- fuel injectors, fuel pumps and how to inspect, test and repair them,
- understanding how a governor works and how to check and install it on an engine, and
- hydromechanical protective systems.

Although it depends on the experience and educational level of the student, the average course length is approximately five weeks, which may be extended if hands-on and OJT is required.

2. Distribution systems

The current training and manpower levels of INE personnel in both towns are insufficient for the needs of this project. In order to build reliability and safety into the system in the time period of this project, it will be necessary to employ additional manpower on site. Training will be provided to allow personnel to become safe and proficient in their field. This training will include, but not be limited to, the following: basic electricity, transformers and connections, primary and secondary construction specifications, basic metering, substation maintenance, basic first aid, pole top rescue and CPR resuscitation, street light repair, and hot (energized) line safety. An apprenticeship training course will provide future linemen with the training necessary for them to carry out their jobs in a safe and effective manner.

3. Utility management functions

In order to improve the overall efficiency and long-term sustainability of these isolated systems, technical assistance and training will also be given to those in management and supervisory positions. Short-term specialists will assist in gathering and analyzing information regarding future needs of the physical systems as well as institutional needs.

Training will include the following subjects: electrical utility administration, customer relations, uniform system of accounts, cost recovery, and billing and collection procedures. Information management will also be addressed, to include training in the use of personal computers to improve efficiency.

C. Productive Uses of Electricity

Productive uses of electricity are those end-user activities that utilize electrical equipment for increased financial and economic gain. Such uses greatly increase the economic impact of rural electrification and are the target of intensive promotion in NRECA programs throughout the world. A recent study in Bolivia shows greater economic impact of electrification may be possible by increasing the number of productive uses through an aggressive promotion program.

The goal of the ACE Project's productive uses promotion component is to increase the economic impact of the project investment by promoting uses of electrical equipment that provide opportunity for financial gain by owners of small- and medium-size businesses. In addition, the productive uses program will evaluate appropriate energy conservation and demand-side activities, including residential loads, to optimize use of the installed generation capacity. The program will include activities to increase public awareness, training, demonstration, promotion, and facilitation of electrical equipment acquisition.

The need for such a program is evident from the relatively low ratio of productive uses of electricity to residential load in both Bluefields and Puerto Cabezas. The deteriorated condition of the electrical system inhibits consumers from entering into productive uses of electricity because present electrical service is unreliable, and there is risk of equipment damage from low voltage. Interviews with residents confirmed reluctance to invest in electrical equipment that might be damaged due to low voltage conditions.

1. Assessment of existing productive uses

A detailed inventory of productive uses of electricity will be completed early in the ACE Project. This information will serve as baseline data for measuring project progress, and provide information on present demand for electricity. The demand estimation will take into account suppressed demand caused by poor system operation (low voltage, outages, etc). The NRECA Demand Assessment and Site Selection Methodology (DAM), a computer-based model for evaluating rural electrification projects in financial and economic terms, will be used in this assessment. This model not only provides a clear framework for quantifying residential and productive use activities as they presently exist, but will also allow for financial and economic evaluation of the proposed productive use program.

Based on the existing productive uses assessment, specific productive use activities and corresponding electrical equipment will be identified as areas of promotion. Target numbers of productive use activities will be developed and an economic

analysis of the expected impact will be prepared. A detailed promotion plan will then be developed that will outline training, demonstration and promotion activities to accomplish this goal.

2. Demand management and energy conservation

Rural electrification system costs are partly a function of characteristics of demand such as time, duration, and frequency of electrical equipment and appliance use. These uses can be managed to optimize system utilization through a well-designed plan. As an example, simple ice making can be done during nighttime hours when other loads are minimal, thus improving the efficiency of the generation unit.

Energy conservation will be promoted throughout the productive uses activity. In residential applications, high efficiency lighting will be promoted. Street lighting will be assessed to assure maximum use of electrical energy.

3. NGO involvement

Demand for electricity for productive uses should not be left to grow spontaneously if maximum economic benefits are to be obtained from investment. A long-term plan to ensure growth of such uses is needed. NGOs provide a possible institutional base for formulating and implementing productive use plans. These organizations are often involved in small business promotion, credit, and training activities, which are key components of programs to encourage productive uses. NGOs may be willing to collaborate in a well-focused technical program. Therefore, every effort will be made to coordinate ACE activities in productive uses promotion with NGO's working in the target areas.

NGOs operating in Puerto Cabezas include the Oficina de Promoción Humanitaria y Desarrollo de la Costa Atlántica (OPHDESCA), and Ayuda Popular Noruega (APN). OPHDESCA is re-initiating a "commercial" program to promote small businesses in the region with an annual budget of about US\$85,000. Activities include promotion of enterprises such as sewing, rice processing, and carpentry, as well as potable water and street lighting. OPHDESCA was the implementing agency for an electrification and water project in Waspam with ANP funds.

The recent USAID/N inventory and assessment of NGOs in Nicaragua will be reviewed to identify other NGOs with goals that may complement the ACE program.

4. Productive uses and credit

A major constraint to greater use of electricity for productive ends in the communities of Bluefields and Puerto Cabezas is the

lack of electrical equipment sales and service. Villagers must travel to Managua to buy or repair such equipment. Credit for the purchase of electrical equipment, or to establish sales outlets, is extremely difficult for most Atlantic Coast inhabitants to obtain.

Although no funding for credit programs is provided through the ACE project budget, the issue of credit needs and sale of equipment will be addressed in the productive use program activities. Possible solutions include: (1) assistance/training to persons interested in establishing an electrical equipment sales/repair outlet, (2) linkage with NGO or GON credit programs.

D. Institutional Capacities

The logistical difficulties confronting INE, as a highly centralized utility that delegates little authority to district offices, in providing proper electric service in the target communities demand that options for decentralization be considered. These options include the following:

- Control and ownership maintained by INE with considerable autonomy of the district office managers.
- Ownership of the systems shifted to local governments, who could operate them as municipally-owned systems.
- Private-sector ownership, including a consumer-owned format, or an investor-owned format which could involve ownership by the employees, local investors, foreign investors, or a combination of these.
- An intermediate option to retain GON ownership, but permit a leasing or contracting arrangement with a utility services firm or group that would operate the systems for INE or the local government.

A critical issue related to the matter of management/ownership is the financial basis for the systems, especially tariffs, collection of bills, and sources of financing. Dramatic changes in the prevailing practice would be required to make these systems financially sound, and certainly if any private investment is to be feasible.

E. Social Impact

During the dislocations of the 1980s, the people of the Atlantic Coast may have sought little more than safety and shelter as they migrated from the countryside to the town. Now, they expect the new government to provide stability and a better standard of living.

The project will bring adequate and reliable electric power to Bluefields and Puerto Cabezas. Without more detailed and more reliable data on income levels, employment, and potential and existing productive and social uses of electricity, it is not possible at present to estimate the employment, income and health effects the project can be expected to have.

Nevertheless, it is clear that electricity has been a constraint to economic activity in the two towns. Electricity to satisfy unmet demand will no doubt help to provide new means of employment and income to a region whose geographical isolation and poor infrastructure limit opportunities for economic growth.

Household income is low. Metering of previously estimated electricity consumption may therefore result in a reduction in household demand for electricity, where estimates have been lower than actual use.

New productive uses of electricity will be constrained by the high cost of electrical appliances on the Atlantic Coast. Low levels of income indicate small or no savings with which to finance new cottage or small business activities. The implications for productive uses promotion programs are that there will be a need for credit to finance appliance and tools purchase, as well as a reliable supply of these. However, it is possible that remittances from family members in the United States may be a source of funds for such investments. The project itself is designed to last three years. Whether or not a short-term response to programs to promote productive uses of electricity will be possible remains to be seen.

It is not clear whether government investment in social services or economic activities is planned for the short term, but it is possible that new health and water plant facilities may be installed, and that a new deep water port may be built. These could benefit from adequate and reliable electricity for lighting, refrigeration and power for pumps.

A brief description of economic and social conditions in the proposed project area follows.

Puerto Cabezas and Bluefields, principal port cities of the Northern Atlantic Autonomous Region and Southern Atlantic Autonomous Region, respectively, are characterized by their isolation from the rest of Nicaragua. The first road to the Atlantic Coast, which connects Managua to Rama, was not opened until 1967 and is still not fully paved. The trip to Rama takes five hours by car, and it is a further two or three hours by motorboat to Bluefields. No road connected Managua to Puerto Cabezas until 1983. The journey takes two days by truck on an unpaved surface, and is impassible in the rainy season. The first telephone line from the Pacific Coast of Nicaragua to its

Atlantic Coast was not operational until 1982, and is not reliable. Commerce between the North and South Atlantic Regions is as irregular as commerce with Managua.

The population of Bluefields is estimated between 30,000 and 50,000. The town's early inhabitants were known as "creoles", descendents of West Indians imported as slaves who interbred with European, Chinese or native populations. The creoles spoke West Indian English and acquired nearly universal literacy from the Protestant Moravian missionary schools. They are now outnumbered, two-to-one, by mestizos, Nicaraguans of mixed European and native descent, whose language is Spanish and whose religion has traditionally been Catholicism.

Puerto Cabezas has an estimated population of nearly 30,000, twenty percent of whom are mestizo and ten percent of whom are creole. The Miskito Indians, who were at one time the sole inhabitants of the area, now live alongside these other groups. Spanish and the Miskito language are spoken in the street.

With a population growth estimated at 3.4%, and a stagnant economy, unemployment in Bluefields may be as high as 80%. In Puerto Cabezas, the rate is probably nearly as high.

Monthly wages are low compared to the cost of the basket of basic commodities, which includes rice, beans and sugar, among other items--even for professionals and skilled labor. The estimated monthly cost of basic commodities in Bluefields in 1991 is 1,000 cordobas (US\$200). INE linemen earn 622 to 745 cordobas monthly (US\$125 to \$150), while a secondary school teacher earns only 305 to 370 cordobas per month (US\$61 to \$74).

A shrimp and lobster processing plant is the principal industry in Puerto Cabezas. Thirty women and three men process some 9,000 pounds every ten days for delivery to the United States. INE transmission lines stop at the edge of company property, but do not service the plant because of insufficient capacity. The plant avoids risk of spoilage from power outages by relying on its own aging generators.

There seem to be few cottage industries in the towns, but a Puerto Cabezas clergyman says the women of his parish would like to sell handicrafts and prepared food at the market.

Electrical appliances are expensive on the Atlantic Coast, an estimated three or four times their Managua price. Those who can afford it buy and run generators rather than rely on INE service.

Health and housing conditions are generally poor in Bluefields. A local doctor believes every well in Bluefields is contaminated by being too closely located to latrines. Overcrowding is evident in most Bluefields neighborhoods, and pathways turn to mud in the

rain. Haphazard, pirated electrical connections can be seen.

A housing survey in 1989 by University of Managua architecture students counted only 5,136 houses in Bluefields, 860 of which had been reduced to rubble by the hurricane that struck the previous year. The hurricane also destroyed docks, businesses and offices, and ripped the roofs off schools and churches.

Housing conditions appear to be better in Puerto Cabezas. It was not struck by the hurricane, and the town may suffer less from overcrowding. However, newcomers--Miskitos, mestizos and demobilized forces of the former guerrilla opposition--have begun to build makeshift houses on unoccupied land.

Both Puerto Cabezas and Bluefields have primary and secondary schools. Local INE staff include many with university degrees.

F. Economic Aspects

1. Project investment

Electric system rehabilitation and expansion made now will provide a more reliable energy source for the isolated population centers of Puerto Cabezas and Bluefields on Nicaragua's eastern coast.

Total project investment will be \$7.22 millions. (See Table 1, Project financial inputs.) USAID/N will provide \$5.0 million for rural electrification of Nicaragua's Atlantic Coast region. Additional monies of \$.453 million from the ROCAP/CARES Project, currently being implemented by NRECA, are available for project design and implementation. A counterpart contribution equivalent to \$1.77 million will be made by INE/GON.

A rigorous economic analysis comparing project costs with benefits was not carried out within the time frame of the project design. It is anticipated that operating costs of the improved electrical system in Puerto Cabezas and Bluefields will not be fully recovered under the existing tariff structure. However, the proposed investment should be undertaken to expand the electrical systems to meet current demand and make them more reliable, for the following reasons:

- the subsidy to operating costs of the two systems has recently been reduced;
- there are economic and social benefits from an improved electrical system, including greater safety and the promotion of regional economic growth, which itself would render cost recovery more likely in the future; and
- upgrading of the existing system is a prerequisite to any future financial and economic rationalization or

privatization.

The proposed project will assist INE to improve financial operations in the medium-term in the most promising way: through improved recovery of operating costs using a combination of gradual tariff reform and technical improvements that will increase customer satisfaction and and consumption, as well as allow reliable measurement of consumption, and more efficient system management.

Some financial aspects that will influence operations of the new system are discussed in this section.

2. Cost recovery and tariffs

The last tariff study was reportedly carried out 15 years ago. Historically, the Nicaraguan central government has subsidized the cost of electricity and set the tariff schedule. More recently, the new government has developed a more market-oriented philosophy. However, it is still not expected that revenue from the improved system obtained under the project will cover operating costs.

The cost of generating a kilowatt hour in Puerto Cabezas and Bluefields, according to the February, 1991 generation report, was about US\$0.13. Tariff rates were increased substantially in March, 1991, from an average price of \$US 0.019 to \$US 0.098 per kilowatt hour for the first 1,000 kilowatt hours. The average price of this block of energy would still have to be increased by roughly one-third to recover the cost of generation. Generation costs refer only to direct costs; plant investment and at other operational costs are not included.

The effects of the recent tariff increase on consumption is not yet known. If the energy is metered and the tariff increased to cover the full cost, the rate shock could cause a fall in demand.

Installation of meters and breaker boxes at business and residences in Bluefields will insure more accurate accounting of energy use and assist in cost recovery. This measure will also allow INE to plan generation and load growth. Breaker boxes will greatly insure the safety of the occupants of buildings.

3. Demand for electricity

The main variable affecting the present and projected demand is the limited supply available. There are required power outages because of lack of generation capability at various times during the day.

Demand in the project area through 2010 is expected to grow at a rate higher than the projected average annual national growth rate of 4.4% . Demand for electricity on the Atlantic Coast has

been suppressed, while population of Bluefields and Puerto Cabezas have grown through immigration as well as natural increase.

The productive uses promotion of the project, described in Section B 4 above, is intended to encourage productive uses of electricity and facilitate load management. It may be possible to increase total demand, primarily in nonpeak hours, thus improving the economic efficiency of the systems. Expanded seafood processing, saw milling, and gold refining, along with the secondary businesses these industries will attract, could add substantial loads to the Atlantic Coast region. As Nicaragua attempts to attract foreign and domestic investment into the country, some industries may look to develop raw natural resources for export. Some of these resources could be processed and refined using electrical energy.

Future short-term demand, however, may be affected by the installation of meters planned under the project. When customers are billed for what is metered, rather than an estimated amount based on the number of outlets and appliances, as has been the case for a substantial proportion of consumers, the residential customer may be pushed into the higher priced blocks of power on INE's inverted rate. Thus, under a new metering system, consumers may reduce their demand because of the inability to pay for all the electricity they use.

4. Power generation efficiencies

Power generation efficiencies are expected to reduce costs of generation. Two new 1200 kW generators will be installed in Bluefields. These generators will increase the reliability of the Bluefields system by eliminating the need for load shedding when the system reaches peak loading hours. The purchase of auxiliary items, such as valve seat grinder and centrifuge equipment, will, along with training in the use of this equipment, contribute toward the sustainability of the improvements in reliability.

Generation efficiencies are expected to increase by 46%, from the present 13 kWh per gallon of diesel to 19 kWh per gallon for the new units. Using data from the February 1981 Autonomous Region's report (\$1.54 per gallon of diesel, 88 gallons of fuel per hour, 720 hours of operation per month) the estimated total fuel cost for 1200 kW of output is \$97,574 per month. A new generator would lower the fuel input to 60 gallons per hour. In practice, there will be two units, each operating for an estimated 70% of the time (due to maintenance requirements) for an estimated total fuel savings of approximately \$43,500 per month. Additional fuel savings are possible in both cities, depending on the success in obtaining spare parts and improved maintenance procedures for the existing generating units. These numbers do not include other fuel costs such as handling and storage.

5. Efficiencies from improved distribution

The average electricity consumer in Puerto Cabezas can expect to have power only about 50% of the time, and in Bluefields about 80% of the time. Distribution improvements from the project are expected to reduce outages and technical loss significantly, and, together with generation improvements should result in an 80% reduction in outage time in both places. This means that Bluefields and Puerto Cabezas consumers would receive electricity 96% and 90% of the time, respectively.

Distribution improvements in general will yield efficiencies that will reduce the use of expensive foreign oil. The value for these benefits is likely to be significant but cannot be determined yet as there are not sufficient records, or even meters, to know what the present status may be. Present estimates are not firm enough to use for projections.

6. Demand management

Once the voltage is stabilized in the distribution system, demand management strategy can be employed to effect energy, and therefore cost, savings. For example, energy-efficient lighting can be utilized to reduce up to 210 kW of generation.

Installation of 5,000 new, energy-efficient, 18-watt "compact" fluorescent bulbs in place of 60-watt incandescent ones could reduce lighting demand during peak hours by 70%. The cost of the new bulbs, which provide comparable illumination with lower wattage, is an estimated \$100,000. The bulbs last about 10,000 hours as compared to 1,000 for the incandescent.

If these lights were used for 1,000 hours each during the year there would be a savings of 210,000 kilowatt hours or 11,053 gallons of diesel annually. At the February 1991 cost of \$1.54 per gallon, the annual savings for fuel would be approximately \$17,000. If the consumer contributed 25% of the cost of the lights, then the simple payback for the utility would be 4.4 years. This would vary based on the efficiency of generation and the price per gallon of fuel. Future replacements could be made through the utility. The utility benefits from this type of strategy would be the delay of future generation requirements.

Installation of photocells in the street lighting could save four to five hours of wasted lighting since the lights are turned on manually before it is dark and turned off manually the following morning. The labor required to connect and disconnect the street lighting could then be redirected to other utility services. Refer to the section on productive uses of electricity to identify other efficiency strategies.

G. Environmental Issues

A draft Initial Environmental Evaluation of the Project is found in Annex H. The project activities which could directly affect the environment fall into two general categories: that of modifications to the power generation capacity in the two communities, and that of renovating and upgrading the electrical distribution systems.

Of the two categories mentioned, generation is the most important, since diesel generation necessarily involves the transportation, storing, and burning of fossil fuels and use of petroleum products for lubrication. In summary, there are two environmental consequences of the proposed interventions in generation, which can be expected to cancel each other out. The replacement of inefficient generation with new and more efficient generation, and the improving the efficiency of existing units, result in a savings of fuel, with a corresponding reduction in potential environmental ill effects. These fuel savings are significant, very possibly as much as 100,000 gallons of diesel per month. However, since the proposed modifications will result in a capacity to deliver more electricity over time, the eventual result will be to use more fuel to generate more electricity. The net result is to deliver significantly more electricity while using close to the same amount of fuel as at present.

The second category concerns the building and rebuilding of electrical distribution lines. This proposed project intervention potentially has only a slight effect on the local environment, because it will be necessary to trim or cut trees or other foliage located in the power line rights-of-way. However, the effect will be minimal since no wholesale clearing is involved and since the area under question is already urbanized.

The conclusion is that, the ACE Project should not have a significant effect on the environment if the recommendations listed in the IEE are followed. The recommendations involve:

- Activities and procedures to prevent and contain spills of petroleum products, and the provision for noise mitigation in connection with the power generation facilities, and
- Compliance with construction safety standards and wood pole treatment and storage requirements, along with minimizing any vegetation removal in connection with distribution system construction.

Two other environmental aspects which are not specifically treated in the IEE, should result in positive environmental impacts. The first is safety to the community residents. The project will result in a much more resistant construction of lines than exists presently, and therefore should reduce danger from such things as fallen lines or broken poles. In addition, the upgrading of electrical service lines will result in much

less danger of fires from overloaded and overheated wiring both inside and outside buildings.

The second impact relates to risk of fire in connection with the generation plants. If the IEE recommendations are followed, there will be a reduced risk of fire, both to the plants themselves and to the nearby residences and other improvements. This is especially true in Bluefields, if the generation plant is relocated to a more environmentally acceptable site, or replaced with a transmission power source from the national power grid.

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ANNEX A

LOGICAL FRAMEWORK

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Project Title and Number: Atlantic Coast Electrification (ACE)

<u>NARRATIVE SUMMARY</u>	<u>OBJECTIVELY VERIFIABLY INDICATORS</u>	<u>MEANS OF VERIFICATIONS</u>	<u>IMPORTANT ASSUMPTIONS</u>
<p>Program or Sector Goal - The broader objective to which this project contributes:</p>	<p>Measures of Goal Achievement:</p>		
<p>To increase the standard of living of the people of the Atlantic Coast by improving the basic infrastructure for increased productivity and private sector expansion in Bluefields and Puerto Cabezas</p>	<p>1. Increase in number of businesses & commercial operations in productive, service and food processing sectors</p> <p>2. Reduction of unemployment</p> <p>3. Increase in average income</p>	<p>1. Energy audits</p> <p>2. Government and community surveys</p> <p>3. Government and community surveys</p>	<p>1. No resumption of civil war</p> <p>2. International economic situation does not markedly deteriorate</p> <p>3. Credit is available for businesses</p>

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NARRATIVE SUMMARY

**OBJECTIVELY
VERIFIABLY
INDICATORS**

4. Increased use of electricity for health and education activities

**MEANS OF
VERIFICATIONS**

4. Government and community surveys

**IMPORTANT
ASSUMPTIONS**

4. Other planned investments in electric sector are made

5. Financing and planning for health and education is available

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**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Project Title and Number: Atlantic Coast Electrification (ACE) Project

<u>NARRATIVE SUMMARY</u>	<u>OBJECTIVELY VERIFIABLY INDICATORS</u>	<u>MEANS OF VERIFICATIONS</u>	<u>IMPORTANT ASSUMPTIONS</u>
Project purpose	Conditions that will indicate purpose has been achieved: (End of project status)		Assumptions for achieving purposes:
To assist INE to provide sufficient, stable, and sustainable electric power in Bluefields and Puerto Cabezas	<ol style="list-style-type: none"> <li data-bbox="703 707 1039 766">1. Regular load shedding no longer occurs <li data-bbox="703 895 1039 954">2. Voltage fluctuations are reduced <li data-bbox="703 1018 1039 1172">3. Increased ratio of productive uses of electricity to residential load obtained through increased consumption of electricity 	<ol style="list-style-type: none"> <li data-bbox="1122 715 1456 774">1. Generation plant records, system metering records <li data-bbox="1122 903 1456 962">2. System meter readings, consumer surveys, reports <li data-bbox="1122 1026 1456 1085">3. Energy audits, system metering records 	<ol style="list-style-type: none"> <li data-bbox="1541 720 1865 816">1. Project equipment and materials are available on a timely basis <li data-bbox="1541 912 1865 1006">2. Local counterpart support for project is forthcoming <li data-bbox="1541 1034 1865 1128">3. Fuel rationing/shortages are eliminated or much reduced <li data-bbox="1541 1191 1865 1244">4. Credit is available for businesses

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**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Project Title and Number: Atlantic Coast Electrification (ACE) Project

<u>NARRATIVE SUMMARY</u>	<u>OBJECTIVELY VERIFIABLY INDICATORS</u>	<u>MEANS OF VERIFICATIONS</u>	<u>IMPORTANT ASSUMPTIONS</u>
Inputs:	Implementation Targets (also refer to timeline, Annex D)		Assumptions for achieving inputs:
1. Project Manager	18 person months	Project records	1. Qualified consultants and contractor personnel are available on a timely basis
2. Diesel Generation Specialist	24 person months	Project records	2. Necessary local INE and other personnel and services are made available to support project
3. Electrical Distribution Specialist	24 person months	Project records	3. Materials and equipment are delivered and available on a timely basis
4. Support staff	36 person months	Project records	4. Funding approvals from ROCAP and USAID/Nicaragua are secured on a timely basis

NARRATIVE SUMMARY

**OBJECTIVELY
VERIFIABLY
INDICATORS**

**MEANS OF
VERIFICATIONS**

**IMPORTANT
ASSUMPTIONS**

5. Short-term consultants training and technical assistance, productive uses promotion, and energy audit

60 person months

Project records

5. No serious natural disasters such as hurricane or earthquake

6. Home-office administration

20 person months

Project records

6. Civil war does not resume

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**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Project Title and Number: Atlantic Coast Electrification (ACE) Project

<u>NARRATIVE SUMMARY</u>	<u>OBJECTIVELY VERIFIABLY INDICATORS</u>	<u>MEANS OF VERIFICATIONS</u>	<u>IMPORTANT ASSUMPTIONS</u>
<p>Outputs for Bluefield and Puerto Cabezas systems</p> <p>Systems Rehabilitation and Construction Component:</p> <p>1. Increase in obtainable generation capacity</p> <p>2. Reduction in power outages</p> <p>3. Generation operational efficiency</p> <p>4. New lines installed</p> <p>5. Existing lines rehabilitated</p>	<p>Magnitude of outputs: (1)</p> <p>1. 25% increase</p> <p>2. 80% reduction (2) in power outage time</p> <p>3. Some positive increase in efficiency</p> <p>4. 50 kilometers total</p> <p>5. 100 kilometers total</p>	<p>1. Generation plant records, Systems meter readings</p> <p>2. INE records and customer reports system meter readings</p> <p>3. Generation plant electrical and fuel consumption records</p> <p>4. Project records</p> <p>5. Project records</p>	<p>Assumptions for achieving outputs:</p> <p>1. Existing generators maintains expected useful life</p> <p>2. System protection recommendations are implemented</p> <p>3. Recommendations are implemented</p> <p>4. Spare parts are available</p> <p>5. Materials are available on a timely basis</p>

1. These quantified outputs are estimates based on unaudited data regarding number of existing and metered connections and power outage time provided by INE. They will be verified or revised based on an energy audit, or baseline survey, to be carried out early in the project implementation.

2. The 80% reduction in power outage time will increase power availability to consumers. In Bluefields, power will be available 96% of the time, up from 80%. In Puerto Cabezas, power will be available 90% of the time, up from only 50%.

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NARRATIVE SUMMARY

**OBJECTIVELY
VERIFIABLY
INDICATORS**

**MEANS OF
VERIFICATIONS**

**IMPORTANT
ASSUMPTIONS**

6. Increase in number of metered connections

6. 3,000 meters installed on legal but unmetered services (80% increase)

6. Project records and INE billing records

6. INE counterpart personnel are made available

7. Increase in number of connections

7. 2,000 new connections from new or previously illegal connections (33% increase)

7. Project records and INE billing records

7. Customers will accept metered services

8. Service extension policies are devised

9. System capacity constraints are resolved

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Project Title and Number: Atlantic Coast Electrification (ACE) Project

<u>NARRATIVE SUMMARY</u>	<u>OBJECTIVELY VERIFIABLY INDICATORS</u>	<u>MEANS OF VERIFICATIONS</u>	<u>IMPORTANT ASSUMPTIONS</u>
Outputs: Continued Technical Assistance & Training Component: 1. Linemen, technicians, and managers trained 2. Increased technical staff productivity 3. Procedural manuals available to staff	Magnitude of outputs: (1) 1. 70 persons trained 2. 20% productivity increase 3. 20 manuals developed or adapted for INE use	1. Project records, INE construction and employee records 2. Project records 3. Project records	Assumptions for achieving outputs: 1. INE personnel made available for training. No significant opposition by unions 2. INE personnel made available for training. No significant opposition by unions 3. Manual needs are identified with INE participation

1. The quantified output indications are estimates. They will be verified or revised based on an energy audit, or baseline survey, to be carried out early in the project implementation.

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NARRATIVE SUMMARY

4. Reduction of system energy losses

5. Maintain 80% outage reduction level

OBJECTIVELY VERIFIABLY INDICATORS

4. 15% reduction in system energy losses

5. Maintain reduced levels after project completion

MEANS OF VERIFICATIONS

4. INE generation and billing records system meter readings

5. INE records & customer reports system meter reading

IMPORTANT ASSUMPTIONS

4. Metering is installed to monitor losses. System rehabilitation and construction outputs completed

5. System protection recommendations are implemented

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

Project Title and Number: Atlantic Coast Electrification (ACE)

<u>NARRATIVE SUMMARY</u>	<u>OBJECTIVELY VERIFIABLY INDICATORS</u>	<u>MEANS OF VERIFICATIONS</u>	<u>IMPORTANT ASSUMPTIONS</u>
<p>Outputs: Continued</p> <p>Productive uses component</p> <p>1. Inventory of present productive uses of electricity</p> <p>2. Consumers educated on productive uses of electricity</p> <p>3. Greater demand for electricity for productive uses</p>	<p>Magnitude of outputs: (1)</p> <p>1. Baseline audit completed in first project year</p> <p>2. Detailed program developed, 20 workshops/training seminars</p> <p>3. Number of productive uses increased by 20%</p>	<p>1. Project records</p> <p>2. Project records, lists of participants</p> <p>3. Project records INE billing records</p>	<p>Assumptions for achieving outputs:</p> <p>1. Local cooperation in survey</p> <p>2. Demand assessment completed</p> <p>3. Local interest shown in training activities</p>

1. The quantified output indications are estimates. They will be verified or revised based on an energy audit, or baseline survey, to be carried out early in the project implementation.

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NARRATIVE SUMMARY

**OBJECTIVELY
VERIFIABLY
INDICATORS**

**MEANS OF
VERIFICATIONS**

**IMPORTANT
ASSUMPTIONS**

4. Improved system load factor

4. Increased load factor ratio (2) Efficiency gains in nighttime electrical loads (2)

4. Generation hourly records

5. Project records

6. Project records

4. Electrical equipment made available on Atlantic Coast

5. Second energy audit completed

6. Credit is available to users

7. Acceptance of efficient residential and commercial electrical equipment and appliances

2. Output indicators to be quantified based on the baseline survey.

Annex B
ACE Illustrative Budget



Annex B

LINE ITEM BUDGET
ATLANTIC COAST ELECTRIFICATION PROJECT

Line Items	ROCAP	USAID/N	Total Dollars	Page #
Salaries				
a. U.S. Personnel:				
Home Office Personnel		78,920	\$78,920	2
Field Staff Personnel	26,550	540,970	567,520	2
Subtotal U.S. Salaries	26,550	619,890	646,440	
b. Local Support	0	63,050	63,050	2
Total Salaries	26,550	682,940	709,490	
Fringe Benefits	10,890	201,330	212,220	2
Overhead	25,400	332,000	357,400	2
Travel, Transportation, and Per Diem	15,520	289,530	306,050	3
Allowances	6,640	128,380	135,020	4
Other Direct Costs	4,000	357,320	361,320	5
Equipment, Vehicles, Material, and Supplies	10,000	328,500	338,500	6
Commodities	253,000	2,680,000	2,933,000	7

GRAND TOTAL: \$353,000 \$5,000,000 \$5,353,000

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Position	Annual Salary	Monthly Salary	Year 1		Year 2		Year 3		TOTAL
			Mo.	Cost	Mo.	Cost	Mo.	Cost	
Field Staff									
Resident Chief of Party/ Systems Specialist /1	54,550.00	4,550.00	6	27,300.00	6	28,670.00	6	30,100.00	\$86,070.00
Systems Specialist	62,400.00	5,200.00	12	62,400.00	12	65,520.00	0	0.00	127,920.00
Systems Specialist	36,000.00	3,010.00	12	36,120.00	12	37,930.00	0	0.00	74,050.00
Subtotal NRECA Long-term Salaries			30	125,820.00	30	132,120.00	6	30,100.00	288,040.00
NRECA/DC Professionals	50,400.00	4,200.00	0	0.00	3.3	14,550.00	0	0.00	14,550.00
NRECA Consultants	65,520.00	5,460.00	0	0.00	19	108,930.00	0	0.00	108,930.00
NRECA Consultants	37,800.00	3,150.00	0	0.00	11	36,380.00	0	0.00	36,380.00
Subtotal NRECA			30	125,820.00	33.3	291,860.00	6.0	30,100.00	447,800.00
Contractor #1	75,000.00	6,300.00	0	0.00	15.7	103,860.00	0	0.00	103,860.00
Contractor #2	18,900.00	1,580.00	0	0.00	9.5	15,760.00	0	0.00	15,760.00
Total Field Salaries			30	125,820.00	58.5	411,600.00	6.0	30,100.00	567,520.00
Home Office									
NRECA/DC Professionals	50,400.00	4,200.00	0	0.00	4.8	21,170.00	0	0.00	21,170.00
NRECA Consultants	65,520.00	5,460.00	0	0.00	2.4	13,760.00	0	0.00	13,760.00
NRECA Consultants	37,800.00	3,150.00	0	0.00	13.3	43,990.00	0	0.00	43,990.00
Subtotal NRECA			0	0.00	20.5	78,920.00	0	0.00	78,920.00
Local Administrative Support	20,000.00	1,666.67	12.0	20,000.00	12.0	21,000.00	12.0	22,050.00	63,050.00

TOTAL SALARIES:

181 \$709,490.00

Fringe Benefits /2	(of Subtotal NRECA Salaries)	47,810.00	152,070.00	12,340.00	<u>\$212,220.00</u>
Overhead @ 67.84%	(of Subtotal NRECA Salaries)	85,360.00	251,620.00	20,420.00	<u>\$357,400.00</u>
Post Differential @ 25%	(of Subtotal Long-term Field Salaries)	31,480.00	33,030.00	7,530.00	<u>\$72,020.00</u>

Salaries include a 5% annual increase, base is "Year 1"

/1 The Resident Chief of Party's time will be split between this and other projects.

/2 Fringe Benefits are calculated @ 38% for Year 1, and at 41% for each subsequent year.

**Estimated Expense
Travel, Transportation, and Per Diem**

Item	Estimated # of Units	Rate	Total Cost
International Travel - WDC/Managua/WDC			
Relocation Travel	6	975	5,850
Staff Personnel	68	975	64,350
Home Leave	1	975	975
R&R	3	500	1,500
Regional International Travel	70	500	35,000
Subtotal-International Travel			107,675
Freight and Storage of Personal Effects:			
Air Freight Personal Effects (150 lbs. @ \$8/lb.)	6	1,200	7,200
Household Shipment	3	2,555	7,665
Storage (84 mos. @ \$85/mo.)			7,140
Subtotal-Freight and Storage			22,005
Local travel			
Local Travel and Transportation			51,650
Subtotal-Local Travel			51,650
Per Diem			
International Travel Per Diem	76	12	910
Urban - Managua	335	166	55,810
Rural - Other	1,240	55	68,200
Subtotal-Per Diem			124,720

TOTAL - TRAVEL AND TRANSPORTATION:

\$306,050

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**Estimated Expenses
Allowances**

Item	Estimated Rate	Number of Years	Estimated Amount
Post Differential			72,020
Housing Allowance	8,800	5	43,000
Household Furnishing and Improvements	20,000		20,000

TOTAL - ALLOWANCES:

\$135,020

59'

**Estimated Expensed
Other Direct Costs**

Item	Estimated Amount
Defense Base Act Insurance 3.44% of Subtotal Field Staff Salaries + Post Differential	\$16,120
Communication - Field Office Postage, telex, fax, courier, LD telephone \$1,500 x 36 months	54,000
Communication - Home Office Postage, telex, fax, courier, LD telephone \$800 x 36 months	28,800
Office Space \$7,000/yr. x 3 yrs	21,000
Logistical Contingencies	100,000
Passports, Visas, Photos, Health Examinations (11 People, \$200/each)	2,200
Miscellaneous Other Direct Costs	29,200
Atlantic Electrification Long Range Study	65,000
Other Direct Costs - Audit	45,000

TOTAL-OTHER DIRECT COSTS: \$381,320

**Estimated Expenses
Equipment, Vehicles, Supplies, and Maintenance**

Item	Estimated Amt/Period	Cost/Unit	Estimated Cost
Office Equipment (Photocopier, Fax, Computer, Printer, etc.)			40,000
Office Maintenance (as required)	3 years	\$125/mo	4,500
Office Supplies	3 years	\$250/mo	9,000
Other Equipment Vehicle Operations	3 years	5,000/year	15,000
Modular Housing			60,000
Miscellaneous Equipment and Supplies			220,000

TOTAL - EQUIPMENT, SUPPLIES:

338,500

**Estimated Expenses
Commodities**

Item	Estimated Cost
New Distribution	600,000
System Rehabilitation	1,150,000
Substation	250,000
Generation System	400,000
Technician Tools & Equipment	40,000
Test Equipment	75,000
Vehicles	100,000
Office/Training Equipment	118,000

TOTAL - COMMODITIES **2,933,000**

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ANNEX C

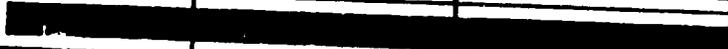
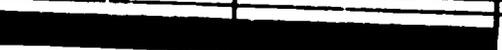
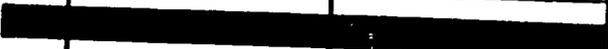
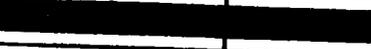
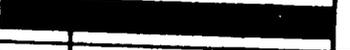
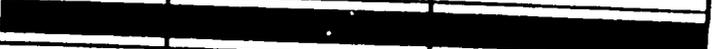
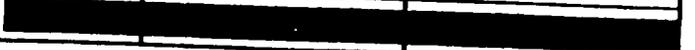
Disbursement Schedule for Nicaragua Atlantic Coast Electrification Project
(Planned expenditures are in US dollars)

	YEAR 1		YEAR 2		YEAR 3		THREE YEAR TOTAL	
	USAID	CON	USAID	CON	USAID	CON	USAID	CON
Institutional development, Training & T/A funded activities	\$553,000	\$100,000	\$1,000,000	\$200,000	\$400,000	\$100,000	\$2,153,000	\$400,000
Distribution (new) purchased materials	\$400,000	\$50,000	\$200,000	\$167,000		\$750,000	\$600,000	\$1367,000
km. of line			25		25		50	
number of users			1000		1000		2000	
Distribution rehabilitation purchased materials	\$850,000	\$100,000	\$300,000	\$300,000		\$300,000	\$1,150,000	\$700,000
km. of line			50		50		100	
number of users			1500		1500		3000	
Generation purchased materials	\$400,000	\$100,000	\$200,000	\$50,000		\$750,000	\$600,000	\$200,000
number of units			2				2	
Substation purchased materials	\$200,000	\$20,000	\$50,000	\$00,000			\$250,000	\$100,000
number of substations			1				1	
T/A tools, equipment, supplies purchased materials	\$400,000		\$100,000		\$100,000		\$600,000	
TOTAL IN US DOLLARS							\$5,353,000	\$1,767,000
TOTAL NICARAGUANI CORDOBAS								8,835,000

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Activity Time Line

ATLANTIC COAST ELECTRIFICATION PROJECT (ACE)

Activities	Year 0	Year 1	Year 2	Year 3
Project Preparation				
Bluefields Office in Operation				
Pto. Cabezas in Operation				
Line Material Procurement				
Line Construction (new and renovation)				
Linemen T/A & Training				
Generation Procurement				
Generation Installation				
Generation T/A & Training				
Management, Finance T/A & Training				
Productive Uses T/A & Training				



CARES Contribution



ACE Funded Activities

6/4

Annex E

Illustrative Memorandum of Understanding

Draft

Government of Nicaragua

Memorandum of Understanding for the Atlantic Coast Electrification Program (ACE) in Nicaragua

ARTICLE I. General Provision

The purpose of this Memorandum of Understanding is to establish a general agreement between the Government of Nicaragua (GON) and the National Rural Electric Cooperative Association ("NRECA"), hereinafter referred to as "the parties", regarding the implementation of a cooperative agreement between NRECA and the U.S. Agency for International Development/Nicaragua (AID/N) to carry out an electrification project ("Project") in Nicaragua.

The project is closely related and will be carried out in parallel to the Central American Rural Electrification Support (CARES) Project.

Upon concluding this agreement, the Ministry of External Cooperation ("MCE"), the duly authorized representative of the GON, will inform NRECA that the Instituto Nicaraguense de Energia ("INE") will be the authorized executing agency of the Project and in what capacity they will assist in the implementation of the Project.

ARTICLE II. The Agreement

The above named parties hereby mutually agree to carry out the Project which is the subject of this agreement in accordance with the terms and conditions set forth herein.

ARTICLE III. The Project

A. General Description

The Project will provide for institutional development and technical support for electrification development on the eastern coast of Nicaragua, the development of electricity use demonstrations, consumer credit support, and other initiatives to encourage the productive use of electricity in the project area, and for the procurement of electric equipment and materials, and construction of electric system in selected areas of Nicaragua. The Project will commence on August 15, 1991, and will terminate after three years.

B. Source of Funding and Cost

The parties to this MOU agree that the funds for the Project will consist of U.S. Dollar funds to be provided from the referenced NRECA/AID cooperative agreement, CARES project assistance, and a GON counterpart contribution to the project equivalent to approximately US\$1.767 million in local currency. The total project cost over the three-year period is estimated to be \$7.120 million, including AID/N \$5.0 million in U.S. Dollar funds, CARES \$0.353 million in U.S. Dollar funds, and the estimated \$1.767 million in local currency funds as in kind.

ARTICLE IV. Responsibilities

A. NRECA

With the \$5 million in AID/N funds made available under the referenced cooperative agreement, NRECA agrees to provide to the GON the following:

1. A Grant-in-Aid of imported commodities totalling approximately \$2.9 million for system construction including approximately 3 x 1200 KW generators;
2. Institutional development, training, and technical assistance for the implementation of the Project; and
3. Other assistance as mutually determined by the parties to this agreement and contemplated in the referenced cooperative agreement.

B. GON

The GON agrees to provide or cause to be carried out the following:

1. Local currency counterpart funding as estimated under Article III of this agreement;
2. Renovation of the electrical facilities in Bluefields and Puerto Cabezas and construction of electrification facilities to serve up to 2,000 new consumers. The geographical location, technical design, and implementation of these systems will be subsequently agreed to based upon the institutional development and technical assistance activities carried out under this Project and CARES Project;
3. Counterpart participation by personnel of the appropriated implementing agencies in technical studies, planning activities, training, administrative activities, or other activities carried out under the Project;
4. Logistical support in the form of warehousing space, training

facilities, office space, telecommunications, xeroxing and other services, office supplies, and full time secretarial assistance to support NRECA personnel. Logistical support for vehicle operation in the form of fuel, maintenance and general repair. These contributions may be counted as in-kind contributions toward satisfying the local currency counterpart contribution requirement of the GON under this agreement; and

5. All necessary actions required to expedite the clearance through customs of all commodities and equipment purchased under the Project.

ARTICLE V. Procurement and Disposition of Imported Commodities

A. Procurement of Materials

NRECA will be responsible for the procurement and importation of commodities, subject to standard procurement regulations of the U.S. Government.

B. Transfer of Title

NRECA will have use of Property financed under this Agreement until the termination of Project activities. Upon termination of the Project, AID-financed and imported property, other than goods installed on the electric systems, will be returned to AID for final disposition as provided by standard U.S. Government regulations; furthermore, title to AID-financed goods imported for the electric systems will be vested in the GON.

ARTICLE VI. Administrative and Special Provisions

A. Annual Action Plans

1. The specific Project activities, and procurement, as well as the timing of such, that are funded under the U.S. Dollar portion will be determined jointly by the Parties on the basis of comprehensive 12-month action plans that will be subject to the approval of AID.
2. The specific project activities as well as the timing of such, that are funded under the local currency portion will be determined jointly by the Parties on the basis of comprehensive 12-month action plans for submission to the GON and AID for approval.

B. Import Taxation Waiver

Any commodity procurement financed under the Project will be free from any import duties or fees imposed under laws in effect in the territory of the GON.

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C. Reporting

The recipient of transferred commodities will provide monthly reports to NRECA and MCE giving detailed information regarding the allocation and status of project commodities imported by NRECA for the electric system construction. Such report will be incorporated into comprehensive reports to be provided by NRECA to AID on the intermediate status and final results of the Project.

ARTICLE VII. Annexes

A. Aide Memoire

An Aide Memoire presenting the discussions and events leading to this agreement is attached to and forms part of this agreement.

B. Illustrative Financial Table

An illustrative Financial Plan,* is attached to and forms part of this agreement.

IN WITNESS WHEREOF, The GON and NRECA, each acting through its duly authorized representative, have caused this Memorandum of Understanding to be signed in their names and delivered in Managua on the date shown in the first page of this document.

Bob Bergland
Executive Vice-President
National Rural Electric
Cooperative Association

Acknowledged By:
Janet Ballantyne
Director

INE

*To be provided when in final for signature by each party.

69.

Atlantic Coast Electrification (ACE) Project

Project 524-0324

This PP-like document complies with current Agency Guidance on methods of financing and implementation and has provided for adequate audit coverage in accordance with the Payment Verification Policy Implementation Guidance.



Richard Layton
Controller

ANNEX F
POSITION DESCRIPTIONS

POSITION DESCRIPTION

DIESEL GENERATION SPECIALIST

ATLANTIC COAST ELECTRIFICATION (ACE) PROJECT

- Summary:** Advise and assist all diesel generation activities carried out by NRECA in Nicaragua under long-term funding agreements with USAID, stationed in Bluefields and focusing in the Atlantic Coast project region.
- Reports to:** Project Manager for ACE
- Supervises:** Any short-term consultants in Nicaragua involved in isolated generation and diesel operation training.

Responsibilities:

1. To serve as the Diesel Generation Specialist for NRECA's Long-term team, reporting as appropriate to the ACE NRECA Project Manager.
2. Develop training programs, including the appropriate manuals, in diesel generation operation and maintenance.
3. Assume responsibility for the technical assistance coordination for the installation, operation and maintenance of the proposed generator installation.
4. Take responsibility for preparing progress reports related to NRECA's diesel generation technical assistance.
5. Undertake travel to Managua and the ACE field locations as required to carry out the activities described in the Workplan.
6. Initiate and ensure coordination between NRECA/Nicaragua field staff and INE field counterparts involved in the diesel generation component of this program.
7. Carry out other activities as be assigned by the ACE NRECA Project Manager.

POSITION DESCRIPTION
ELECTRICAL DISTRIBUTION SPECIALIST
ATLANTIC COAST ELECTRIFICATION (ACE) PROJECT

Summary: Advise and assist all electrical distribution activities carried out by NRECA in Nicaragua under long-term funding agreements with USAID, stationed in Bluefields and focusing in the Atlantic Coast project region.

Reports to: Project Manager for ACE

Supervises: Any short-term consultants in Nicaragua involved in isolated distribution and system operation training.

Responsibilities:

1. To serve as the Electrical Distribution Specialist for NRECA's Long-term team, reporting as appropriate to the ACE NRECA Project Manager.
2. Develop training programs, including the appropriate manuals, in electrical distribution operation and maintenance.
3. Assume responsibility for the technical assistance coordination for the installation, operation and maintenance of the proposed distribution renovation and construction.
4. Take responsibility for preparing progress reports related to NRECA's electrical distribution technical assistance.
5. Undertake travel to Managua and the ACE field locations as required to carry out the activities described in the Workplan.
6. Initiate and ensure coordination between NRECA/Nicaragua field staff and INE field counterparts involved in the electrical distribution component of this program.
7. Carry out other activities as be assigned by the ACE NRECA Project Manager.

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POSITION DESCRIPTION

PROJECT MANAGER

ATLANTIC COAST ELECTRIFICATION (ACE) PROJECT

- Summary:** Manage all activities carried out by NRECA in Nicaragua under long-term funding agreements with USAID, stationed in Bluefields and focusing in the Atlantic Coast project region.
- Reports to:** Assistant Administrator for Latin America and the Caribbean, International Programs Division (IPD), NRECA.
- Supervises:** All permanent NRECA/Nicaragua team members, expat and local hire, and any short-term consultants in Nicaragua on temporary or intermittent assignment.

Responsibilities:

1. Serve as Chief of Party for NRECA's long-term team, reporting to the appropriate NRECA headquarters supervisor.
2. Develop and maintain lines of communication with the USAID and Nicaraguan counterparts relating to project activities.
3. Assume primary responsibility for the Atlantic Coast Electrification (ACE) Project, and vigorously pursue the purpose, goals, and objectives pertaining thereto.
4. Negotiate, in coordination with USAID/N and NRECA/LAC all agreements with the GON necessary or convenient to achieve ACE project goals.
5. Conduct all routine reporting requirements with USAID as provided under the work plan and take primary responsibility for preparing such reporting documents. Maintain USAID/N project staff fully informed at all times of project activities.
6. Review programs, activities, and objectives of prior and on-going NRECA involvement in Nicaraguan rural electrification. Maintain a current knowledge of USAID's programs and policies having a bearing on the purpose, objectives, and implementation of NRECA's program activities in Nicaragua.
7. Supervise and coordinate the activities of permanent NRECA project staff in Nicaragua and all short-term professional personnel on temporary or intermittent assignment in Nicaragua.

8. Travel to Managua and other locations in Nicaragua as required to carry out the activities described in the workplan.
9. Coordinate with the substantially involved NRECA offices in the region and travel to IPD's headquarters locations and to other NRECA project offices in Central America as may be required and approved by USAID.
10. Initiate and ensure coordination of all necessary official clearances and approvals required by the project, including but not limited to such matters as travel, equipment procurement, etc. in accordance with USAID regulations.
11. Exercise primary responsibility for financial management of the project activities, including budgetary, expenditure, and accounting information, the local bank account, verification and approval of local expenditures, etc.
12. Coordinate any related adjunct NRECA or USAID activities, such as arrangements for surplus equipment, that are assigned to Nicaragua during the period.
13. Carry out other duties/activities as may be specified by NRECA supervisory staff.

Invitation for Bid No.
 -*-NRECA-91/01

The Instituto Nicaragüense de Energía (INE) invites interested suppliers to submit bids for the supply of equipment, parts, hardware, tools and/or materials, according to the technical specifications included in this IFB.

Bid Opening date: _____
 1430 hours, local time, San Salvador, El Salvador
 2a. Planta Edificio Administrativo de CEL
 9a. Calle Poniente No. 950, Centro de Gobierno
 San Salvador, El Salvador, C.A.

Mailing address for offer:
 National Rural Electric Cooperative Association
 NRECA
 2a. Planta Edificio Administrativo de CEL
 9a. Calle Poniente No. 950, Centro de Gobierno
 San Salvador, El Salvador, C.A.

Country: Nicaragua

Authority: Rural Electrification Project
 No. ***-****

Invitation for Bid: No. ***-****-NRECA-91/01

Purchaser: Instituto Nicaragüense de Energía
 INE
 (address)
 Managua, Nicaragua, C.A.

Delivery: Ex-Warehouse, Aduan Marítima Bluefields or Pto. Cabezas,
 Nicaragua, C.S.

IFB issued on: _____

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BID/AWARD/CONTRACT

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BID SCHEDULE

NOTICE OF ASSIGNMENT

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TECHNICAL SPECIFICATIONS

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INSTRUCTIONS TO BIDDERS

1. Introduction

The Instituto Nicaragüense de Energía, INE, Managua, Nicaragua, C. A., (Contracting Agency) invites firms to submit bids for the supply of equipment, parts, hardware, tools and/or materials as described in the attached Technical Specifications, as part of the "Title" Rural Electrification Project. The contract will be financed with U.S. Dollar funds provided to NRECA by the U.S. Agency for International Development (AID) through an AID/NRECA Cooperative Agreement (?) under Grant No. ###-####.

Firms are advised that they will not be reimbursed for any costs incurred in connection with the preparation and submission of their bids.

These Instructions to Bidders shall not form part of the bid or of the Contract. They are intended to aid bidders in the preparation of their bids.

For the purposes of interpretation of these Instructions to Bidders the periods named herein shall be consecutive calendar days.

This Invitation for Bid consists of (1) Instructions to Bidders, (2) Bid/Award/Contract, (3) Bidder Information, (4) Bid Schedule, (5) Notice of Assignment, (6) Bidder Checklist, (7) Conditions of Contract, and (8) the Technical Specifications attached hereto or incorporated by reference herein.

The authorized area of source and origin for the procurement of services and/or commodities (including commodity-related services) hereunder is the United States, (AID Geographic Code 000). Air or ocean transportation costs will be financed only on craft or vessels meeting the conditions found under the conditions of contract, Clause No. 10 entitled "Nationality and Source", or as may otherwise be agreed to in writing by the Transportation Support Division of AID's Office of Procurement, Tel. (703) 875-1300, Fax (703) 875-1119, or Telex 248-766 (COMUR). This Office will assist in verifying if proposed booking meets the transportation conditions as modified by AID Transportation Waiver No. 90-B-4, dated July 10, 1990.

Ocean transportation shall be prepaid by the Supplier from the port of exportation to the designated port in Nicaragua. Quotations shall be made on F.O.B. (Vessel) prices, port of exportation, plus ocean freight and insurance. Payment will be made on the basis of actual freight and insurance costs but not to exceed the bidders' quoted Ex-Warehouse price. **OFFERS MUST STATE THE FLAG OF THE AIR OR OCEAN TRANSPORTATION VESSEL PROPOSED.**

Any goods shipped as a result of contract award under this IFB must be clearly marked and identified on the exterior of packages or crates with the IFB number and Letter of Credit number. Separate Bills of Lading are required for items funded under different Letters of Credit.

Bidders should note that submission of the "Supplier's Certificate and Agreement for Project Commodities/Invoices and Contract Abstract," Form AID 1450-4 is required by the payment clause in the "Conditions of Contract." This form must be completed in order for the Supplier to receive payment.

Payment will be made under a Letter of Credit issued by the _____ Bank, (address) for the National Rural Electric Cooperative Association (NRECA) under the Rural Electrification Project No. ###-####.

Bidders are advised that funds due or to become due from NRECA may be assigned to a Bank as assignee or as agent for or in behalf of the Supplier only in accordance with the provisions of the Assignment of Claims Act of 1940 (31 U.S.C. 3737, 41 U.S.C. Section 15.) If the Bidder's intention is to assign funds to a bank, this must be so stated in the offer, by filling out the Notice of Assignment Form, included on page 14 of this IFB.

Partial shipments are allowed, only if full item quantities are to be shipped. However, payments will be processed only after the entire order has been shipped.

The proposed delivery period shall be within (# of days for delivery) calendar days after receipt of the L/C. Delivery date shall be considered as the date of unloading the cargo at the point of delivery, as specified in the cover page of this IFB.

2. Bid Opening

Sealed bids in ORIGINAL AND THREE COPIES will be received until 1430 hours, local time, on _____. Offers must be valid for ninety (90) calendar days thereafter. Offers submitted after the closing hour will be returned unopened. See Instructions to Bidders, Clause No. 7 entitled "Late Bids."

Mailing address for offer is:

National Rural Electric Cooperative Association
NRECA
2a. Planta Edificio Administrativo de CEL
9a. Calle Poniente No. 950, Centro de Gobierno
San Salvador, El Salvador, C.A.

It is recommended that bids be forwarded in double mailing envelopes via courier rather than by air mail, parcel post or other means. To avoid delay and possible opening of bids during customs clearance, envelopes shall be marked in Spanish as follows:

PAPELES COMERCIALES. NO CONTIENE MERCANCIAS
LICITACION PARA SER ABIERTA EL _____
A LAS 1430 HORAS, HORA LOCAL
PROYECTO NRECA No. ###-####
IFB No. ###-####-NRECA-91/01

Which means in English:

COMMERCIAL PAPERS. CONTAINS NO MERCHANDISE
BID TO BE OPENED ON _____
AT 1430 HOURS, LOCAL TIME
PROJECT NRECA No. ###-####
IFB No. ###-####-NRECA-91/01

The bids will be opened at that time in the office of the Contracting Agency in the presence of the public. The Bidder's names, the items offered and the bid prices, will be announced.

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3. Preparation of Bids

- (a) Bidders are expected to examine the specifications and all instructions contained in this Invitation for Bids. Failure to do so will be at the Bidder's risk.
- (b) Bids shall be made on an Ex-Warehouse price (delivered and unloaded at the Port of Importation) per chapter basis. All bids that meet the specifications of this request will be evaluated for the most advantageous price. Only Ex-Warehouse prices will be acceptable for evaluation purposes, other proposals such as F.O.B., F.A.S., C & F or C.I.F. prices will not be considered. Ex-Warehouse prices should indicate the cost of each element (F.O.B. (Vessel) item price, insurance, and freight). The costs of ocean transportation are eligible for NRECA financing provided that such transportation meets the conditions set forth in the Conditions of Contracts, Section 10.D.1.
- (c) The Contracting Agency reserves the right to increase or decrease the quantity of an item duly awarded in accordance with this IFB by 25 percent plus any fraction necessary to equal a whole number of the quantity bid, at the unit price offered. This option shall be exercised, if at all, at the time award is made.
- (d) Bidders are advised that if they intend to subcontract any part of the work they are required to make it known at the time they submit their bids. Furthermore, any subcontracting must be in accordance with Conditions of Contract, Clauses 8 and 12.
- (e) Bidders are requested to include with the offer a discount chart to be applied to the prices detailed in the Bid Schedule correlated to the amount awarded, using the following format:

	<u>Amount awarded (\$)</u>	<u>Discount (%)</u>
1. Less than	100,000	_____
2. Including and more than but less than	100,000 250,000	_____
3. Including and more than but less than	250,000 500,000	_____
4. Including and more than but less than	500,000 1,000,000	_____
5. Including and more than	1,000,000	_____

Note: Discounts will be applied to prices during bid evaluation.

- (f) All correspondence in connection with the bid and the Contract shall be in English.

4. Contents of Bids

Bidders are required to complete the following IN AN ORIGINAL AND THREE COPIES:

- (a) Bid/Award/Contract
- (b) Bidder Information
- (c) Bid Schedule

Bidders may bid on any number of chapters listed, but must bid the full quantity of the items as called for. Bidders are advised that BIDS OFFERING QUOTATIONS OF PARTIAL CHAPTERS WILL BE CONSIDERED ONLY IF FEWER THAN THREE BIDDERS QUOTE THE FULL CHAPTER.

(1) Bidders shall fill in the F.O.B. (Vessel) Unit Price for each item in the Bid Schedule. For each item the quantity given in the "Quantity" column shall be multiplied by the F.O.B. (Vessel) Unit Price and the result entered in the F.O.B. (Vessel) Total Item Price. Estimated costs for insurance and freight must also be entered item by item under Insurance Item and Freight Item. The F.O.B. (Vessel) Total Item Price should then be summed with Insurance and Freight Item costs and the result entered under Ex-Warehouse Item.

(2) Next, Bidders must combine all item costs within the chapter (F.O.B. (Vessel), Insurance, and Freight) and enter the Total Chapter Costs under Total Price F.O.B. (Vessel), Total Estimated Insurance, and Total Estimated Freight. Finally, Bidders must then sum the Total Chapter Costs and enter the result under Total Ex-Warehouse Price - Port of Entry. In case of any discrepancy between a unit price and a total price, the F.O.B. (Vessel) Unit Price will be taken as correct and the total amount adjusted accordingly. It will be assumed that the Bidder is not bidding on any item for which a unit price or total amount is not shown.

The Bidder shall complete the form in type or in indelible ink making no alterations to the form provided. The completed form shall have no strikeovers, interlineations or erasures except those necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

The term Ex-Warehouse used in this document will be defined as the cost of the goods (free of expense to the Contracting Agency) insured (at 110% of material value), placed and unloaded at the point of delivery, as specified in the cover page of this LFB.

The Supplier must:

- (1) Provide and pay for all transportation to deliver and unload the goods in good order and condition at the Aduana Maritima, Bluefields or Pto. Cabezas, Nicaragua, C.A.

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- (2) Pay and bear all charges up to the point of delivery, including but not limited to; export or other fees or taxes, cost of wharfage and landing, costs of certificates of origin, consular invoices and other documents that may be required for exportation.
- (3) Be responsible for any loss and/or damage to the goods occurring before delivery of the shipment to the point of delivery as specified.

All importation fees and arrangements will be taken care of by the Contracting Agency.

One original copy of the completed bid is to be clearly marked "ORIGINAL BID", on all pages, and the other completed copies are to be marked "COPY OF BID" in the same fashion as the original. In case of any discrepancy, the copy marked "ORIGINAL BID" shall govern.

- (d) Manufacturer's Standard Warranty.
- (e) Discount chart, per paragraph 3(e) of these Instruction to Bidders.
- (f) Descriptive literature.

Descriptive literature for the items, including full technical specifications, must be submitted with each copy of the bid. This literature will be used to demonstrate compliance with the specifications of the bid and will not be considered to amend the bid in any way. Deviations from IFB requirements included in descriptive literature furnished must be fully explained. In case of any conflict between the specifications in the descriptive literature and specifications in the bid, the latter will control. See Conditions of Contract, Clause No. 10 entitled "Nationality and Source" regarding the eligibility of suppliers, commodities and delivery services.

5. Bid Acceptance Period

Bids offering less than ninety (90) calendar days for acceptance by the Contracting Agency from the date set for opening will be considered nonresponsive and will be rejected.

Award will be made by FAX within the 90 day period in which the bid is valid. The date of the FAX shall be considered as the formal date of award. The L/C shall be received within 30 days of the formal date of award.

6. Signature of Bid

The Bid must be signed by a person duly authorized to commit the Bidder to price, delivery and all Conditions of Contract. A Power-of-Attorney should be supplied to authorize the signature of a local representative or any other person not normally accorded such authority.

Associated companies or joint ventures shall jointly designate power-of-attorney in one person authorized to obligate all the companies of the association or joint venture. A bid submitted by a joint venture must be accompanied by the document of formation of the joint venture, duly registered or authenticated, in which is defined precisely the conditions under which it will function, its period or duration, the persons authorized to represent and obligate it, the participation of the several firms forming the joint venture, the principal member of the joint venture and address for correspondence for the joint venture. Bidders are advised that the joint venture agreement must include a clause stating that the members of the joint venture are severally and jointly bound.

7. Late Bids

Bidders will be held responsible for ensuring that their bids are received in accordance with the instructions stated herein and a late bid will not be considered even though it became late as a result of circumstances beyond the Bidder's control. A late bid will be considered only if the sole cause of its becoming a late bid was attributable to the Contracting Agency, its employees or agents.

8. Modification of Bids

Any Bidder has the right to withdraw, modify, or correct its bid after it has been delivered to the Contracting Agency, provided the request for such a withdrawal, modification, or correction together with full details of such modification or correction is received by the Contracting Agency at the address given above by letter, before the time set for opening bids. The original bid, as amended by such communication will be considered as the Bidder's offer. The Contracting Agency may ask any Bidder for a clarification of its bid, nevertheless no Bidder will be permitted to alter its Bid Price or make any other material modification after bids have been opened. A material modification is one which affects the price, quantity, quality, delivery or installation date of equipment or materials, or which limits in any way any responsibilities, duties, or liabilities of the Bidder or any rights of the Contracting Agency or NRECA as any of the foregoing have been specified or defined in the IFB. However, clarifications which do not change the Bid Price may be accepted.

9. Amendments to the Invitation for Bid

If for any reason prior to bid opening it becomes necessary to modify the Bid Documents, an amendment will be issued to and be binding on all Bidders. Receipt of all amendments shall be acknowledged by Bidders.

A. Amendments will be numbered consecutively commencing with No. 1 and Bidders are required to insert the numbers of amendments received in the Bid/Contract Form.

B. Should any Bidder have questions or doubts about the meaning of the Bid Documents, it should refer them in writing to the Contracting Agency not later than 15 (fifteen) days before the date set for opening of bids.

10. Bid Evaluation and Contract Award

A. Award will be made to the responsible and responsive bidder whose bid has been determined to be the lowest evaluated bid on the basis of lowest Ex-Warehouse price (delivered and unloaded at the Port of Importation) per chapter (or items subject to the criteria specified in the "Instructions to Bidders" sections 4(c) and 10(e)) offered at the point of delivery, as specified in the cover page of this IFB. **BIDDERS OFFERING QUOTATIONS OF PARTIAL CHAPTERS WILL BE CONSIDERED ONLY IF FEWER THAN THREE BIDDERS QUOTE THE FULL CHAPTER.**

Proposals or quotations from United States or Central American Common Market (CACM) firms must be denominated in U.S. Dollars; proposals from Nicaraguan firms must be denominated in Nicaraguan currency. Nicaraguan currency proposals or quotations will be evaluated using the highest legal rate of exchange as established by the Central Bank on the final date for receipt of proposals.

The lead times required by this IFB shall be evaluated in accordance with the following: the Ex-Warehouse price of each chapter will be increased by one half percent (1/2 %) of the price bid for each day exceeding the proposed delivery period.

B. Bidder discounts per Section 3(e) will be applied to the awarded contract upon determination of the total awarded amount in U.S. Dollars.

C. A responsive bid: To be considered for award, a bid must comply in all material respects with this IFB. Such compliance enables all bidders to stand on an equal footing and maintains the integrity of the sealed bidding system. Bids shall be filled out, executed, and submitted in accordance with the instructions in this IFB. If a bidder uses its own bid form or a letter to submit a bid, the bid may be considered only if:

- (1) The bidder accepts all the terms and conditions of the IFB, and
- (2) Award on the bid would result in a binding contract with terms and conditions that do not vary from the terms and conditions of this IFB.

D. The Contracting Agency will reject any bid that is nonresponsive. The Contracting Agency reserves the right to waive any minor informalities in the bids received if it appears in the Contracting Agency's best interests to do so, to reject the bid of any firm if in the Contracting Agency's judgment the firm is not fully qualified to provide the goods and services as specified in the Contract, or to reject all bids.

E. The Contracting Agency reserves the right to award a contract for a single item, several items or all items of this IFB, if such an award will result in a lower overall cost to the Contracting Agency.

F. If the Contractor fails to perform by the required delivery date, the Contracting Agency may invoke the provisions of the Conditions of Contract, Clauses 18 and 19.

G. The Bid of any Bidder which does not conform to the foregoing instructions may be rejected.

BID/AWARD/CONTRACT
IFB No. ###-###-NRECA-91/01

1 Bidder's Name and Address:

2 In response to Invitation for Bid (IFB) No. ###-###-NRECA-91/01 as modified by amendments 1 through _____, the Bidder agrees to furnish all or part of the items listed in the attached Award Letter at the prices listed therein and as awarded, in accordance with the Conditions of Contract and Technical Specifications.

Delivery of all equipment and/or materials will be made within (2) calendar days from receipt of a Letter of Credit issued by the _____ Bank for the National Rural Electric Cooperative Association (NRECA).

3 Name, title and signature of person authorized to sign the Contract:

Name: _____
Title: _____
Date: _____
Signature: _____

The National Rural Electric Cooperative Association, NRECA, acting on behalf of the Instituto Nicaraguense de Energía, INE, hereinafter called the "Contracting Agency", has accepted the bid of _____ hereinafter called the "Supplier", for the supply of equipment, materials, and related services as set forth in this Contract.

This Contract incorporates by reference the following documents:

- 1) Bid/Award/Contract
- 2) Award FAX
- 3) Bidder Information
- 4) Bid Schedule
- 5) Conditions of Contract
- 6) Technical Specifications
- 7) NRECA Letter of Credit

Name, title and signature of person authorized to sign the Award/Contract:

Name: _____
Title: _____
Date: _____
Signature: _____

BIDDER INFORMATION

IEB No. ###-###-NRECA-91/01

1. Date of Bid: _____

2. Bidder's Name and Address:

2.1) Bidder's Name: _____

2.2) Bidder's Address: _____

2.3) FAX No. and answer back: _____

2.4) Cable Address: _____

2.5) Telephone No.: _____

2.6) Name of person authorized to sign the Bid:

3. Authorized Agent in Nicaragua (if applicable):

3.1) Agent's Name: _____

3.2) Agent's Address: _____

3.3) FAX No. and Answer Back: _____

3.4) Cable Address: _____

3.5) Telephone No.: _____

3.6) Name of Manager: _____

NOTICE OF ASSIGNMENT

Procedure

(a) Assignments

- (1) Assignments by corporations should be (i) executed by an authorized representative, (ii) attested by the secretary or the assistant secretary of the corporation, and (iii) impressed with the corporate seal or accompanied by a certified copy of the resolution of the corporation's board of directors authorizing the signing representative to execute the assignment.
- (2) If the contractor is a partnership the assignment may be signed by one partner, if it is accompanied by an acknowledged certification that the signer is a general partner of the partnership.
- (3) If the contractor is an individual, the assignment must be signed by that individual and the signature acknowledged before a notary public or other person authorized to administer oaths.

(b) Filing. The assignee shall forward to the Office of the Controller, NRECA/ Washington D.C., an original and three copies of the Notice of Assignment, together with one true copy of the instrument of assignment. The true copy shall be a certified duplicate or photostat copy of the original assignment.

(c) Format for notice of assignment. The following is a suggested format for use by an assignee in providing the Notice of Assignment.

NOTICE OF ASSIGNMENT

**TO: OFFICE OF THE CONTROLLER, NRECA/1800 Massachusetts Ave. N.W./
Washington, D.C. 20036**

This is in reference to Contract No. _____, dated _____, entered into between _____ (contractor's name and address) and the Instituto Nicaraguense de Energia, I.N.E. (address), (describe nature of the contract.)

Monies due or to become due under the contract described above have been assigned to the undersigned under the provisions of the Assignment of Claims Act of 1940, as amended, 31 U.S.C. 3737.

A true copy of the instrument of assignment executed by the Contractor on _____ (date), is attached to the original notice.

Payments due or to become due under this contract should be made to the undersigned assignee.

Please return to the undersigned the three enclosed copies of this notice with appropriate notations showing the date and hour of receipt, and signed by the person acknowledging receipt on behalf of the addressee.

Very truly yours,

(name of assignee)

By _____
(signature of signing officer)

Title _____
(title of signing officer)

(address of assignee)

Telephone No. _____

Telex No. _____

Receipt is acknowledged of the above notice and of a copy of the instrument of assignment. They were received at _____ (a.m.) (p.m.) on _____, 19 _____.

(signature)

(title)

On behalf of

(name of addressee of this notice)

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BIDDER CHECKLIST**IFB No. ###-###-NRECA-91/01**

- 1 Authorized signature on Bid
- 2 Bid/Award/Contract Form
- 3 Bidder Information Form
- 4 Bid acceptance period
- 5 Delivery period
- 6 Bid Schedule, including total Ex-Warehouse price, (with components F.O.B. (Vessel) unit and total item prices, estimated insurance, and estimated freight)
- 7 Warranty
- 8 Discount Chart
- 9 Notice of Assignment (if applicable)
- 10 Descriptive literature which clearly shows the fulfillment of the specifications.
- 11 Prevailing tariff rate and flag of transportation vessel.
- 12 Original and three copies of all documents.

CONDITIONS OF CONTRACT

1. Definitions

Set forth below are terms used in the contract and reference to them shall be interpreted as follows:

- a. "NRECA" means the National Rural Electric Cooperative Association, with its principle offices located at 1800 Massachusetts Avenue, N.W., Washington, D.C. 20036.
- b. "AID" means the Agency for International Development.
- c. "Authorized Geographic Code" is AID Geographic Code 000 (US only).
- d. "Contract" means the Bid/Award/Contract forms signed by both bidder and Contracting Agency including all attachments and appendices thereto and all documents incorporated by reference therein, including these Conditions of Contract.
- e. "Contracting Agency" is Instituto Nicaguense de Energía, INE, Government of Nicaragua.
- f. "Supplier" is the person or firm supplying the equipment and materials called for under this contract.
- g. "Cooperating Country" means Nicaragua.

2. Governing Laws and Languages

- a. This contract shall be interpreted in accordance with the laws of Nicaragua.
- b. All notices pursuant to the provision of this contract shall be in English.

3. Delivery

Delivery of all equipment and materials to be supplied under this contract shall be made at the point of delivery, as specified in the cover page of this IFB, within calendar days after the receipt of the L/C. Under NRECA Letter of Credit provisions, delivery date shall be the date of unloading the cargo at the specified point of delivery: Port of Importation Ex-Warehouse.

4. Legal Effect of NRECA Approvals and Decisions

The parties hereto understand that the contract has reserved to NRECA certain rights such as, but not limited to, the right to approve the terms of this contract, the Supplier, and any or all plans, reports, specifications, subcontracts, bid documents, drawings, or other documents related to this contract and the project of which it is part. The parties hereto further understand and agree that NRECA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the

proper use of United States Government funds, and that any decision by NRECA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of financing this project and shall not be construed as making NRECA a party to the contract. The parties hereto understand and agree that NRECA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the project with the parties jointly or separately, without thereby incurring any responsibility or liability to the parties jointly or separately or to any of them. Any approval (or failure to disapprove) by NRECA shall not bar the Contracting Agency or NRECA from asserting any right, or relieve the Supplier from any liability which the Supplier might otherwise have to the Contracting Agency or NRECA.

5. Method of Payment

Payment to the Contractor will be arranged through a Letter of Credit issued directly by the _____ Bank, for NRECA to the Supplier based on the request for a Letter of Credit from the Contracting Agency and a copy of the Bid/Award/Contract. Payment will be processed in two steps:

1. 75% of the Contract value upon presentation of documents per Section 6.c., "Requests for Payment," paragraphs 1 through 9.
2. The remaining 25% of the Contract value after the commodities have been unloaded (as specified in the Contract), and documents presented in accordance with Section 6.c., paragraphs 1, 10, and 11.

6. Payment Procedure

- A. The Supplier will receive payment directly from NRECA upon submission of the appropriate documents discussed below.
- B. Payment to firms from the United States and CACM countries (with the exception of Nicaragua) will be made in U.S. Dollars. Payments to Nicaraguan firms will be in Nicaraguan Cordobas de Oro.
- C. Requests for Payment: Payment due to the Supplier under this contract shall be made based upon the Supplier's written request accompanied by the following documentation:

1. NRECA Voucher: AID Form 1034 with three (3) copies prepared by the addressee of the Letter of Credit or by the bank as assignee or agent for the addressee of the L/C.
2. Supplier's Invoice: The original and one copy of the Supplier's detailed invoice showing the following:
 - (a) The name and address of the Purchaser.
 - (b) The contract number and date.
 - (c) The invoice number, item numbers, and description of the material and/or equipment.

POSITION DESCRIPTION

DIESEL GENERATION SPECIALIST

ATLANTIC COAST ELECTRIFICATION (ACE) PROJECT

Summary: Advise and assist all diesel generation activities carried out by NRECA in Nicaragua under long-term funding agreements with USAID, stationed in Bluefields and focusing in the Atlantic Coast project region.

Reports to: Project Manager for ACE

Supervises: Any short-term consultants in Nicaragua involved in isolated generation and diesel operation training.

Responsibilities:

1. To serve as the Diesel Generation Specialist for NRECA's Long-term team, reporting as appropriate to the ACE NRECA Project Manager.
2. Develop training programs, including the appropriate manuals, in diesel generation operation and maintenance.
3. Assume responsibility for the technical assistance coordination for the installation, operation and maintenance of the proposed generator installation.
4. Take responsibility for preparing progress reports related to NRECA's diesel generation technical assistance.
5. Undertake travel to Managua and the ACE field locations as required to carry out the activities described in the Workplan.
6. Initiate and ensure coordination between NRECA/Nicaragua field staff and INE field counterparts involved in the diesel generation component of this program.
7. Carry out other activities as be assigned by the ACE NRECA Project Manager.

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POSITION DESCRIPTION

ELECTRICAL DISTRIBUTION SPECIALIST

ATLANTIC COAST ELECTRIFICATION (ACE) PROJECT

Summary: Advise and assist all electrical distribution activities carried out by NRECA in Nicaragua under long-term funding agreements with USAID, stationed in Bluefields and focusing in the Atlantic Coast project region.

Reports to: Project Manager for ACE

Supervises: Any short-term consultants in Nicaragua involved in isolated distribution and system operation training.

Responsibilities:

1. To serve as the Electrical Distribution Specialist for NRECA's Long-term team, reporting as appropriate to the ACE NRECA Project Manager.
2. Develop training programs, including the appropriate manuals, in electrical distribution operation and maintenance.
3. Assume responsibility for the technical assistance coordination for the installation, operation and maintenance of the proposed distribution renovation and construction.
4. Take responsibility for preparing progress reports related to NRECA's electrical distribution technical assistance.
5. Undertake travel to Managua and the ACE field locations as required to carry out the activities described in the Workplan.
6. Initiate and ensure coordination between NRECA/Nicaragua field staff and INE field counterparts involved in the electrical distribution component of this program.
7. Carry out other activities as be assigned by the ACE NRECA Project Manager.

POSITION DESCRIPTION

PROJECT MANAGER

ATLANTIC COAST ELECTRIFICATION (ACE) PROJECT

Summary: Manage all activities carried out by NRECA in Nicaragua under long-term funding agreements with USAID, stationed in Bluefields and focusing in the Atlantic Coast project region.

Reports to: Assistant Administrator for Latin America and the Caribbean, International Programs Division (IPD), NRECA.

Supervises: All permanent NRECA/Nicaragua team members, expat and local hire, and any short-term consultants in Nicaragua on temporary or intermittent assignment.

Responsibilities:

1. Serve as Chief of Party for NRECA's long-term team, reporting to the appropriate NRECA headquarters supervisor.
2. Develop and maintain lines of communication with the USAID and Nicaraguan counterparts relating to project activities.
3. Assume primary responsibility for the Atlantic Coast Electrification (ACE) Project, and vigorously pursue the purpose, goals, and objectives pertaining thereto.
4. Negotiate, in coordination with USAID/N and NRECA/LAC all agreements with the CON necessary or convenient to achieve ACE project goals.
5. Conduct all routine reporting requirements with USAID as provided under the work plan and take primary responsibility for preparing such reporting documents. Maintain USAID/N project staff fully informed at all times of project activities.
6. Review programs, activities, and objectives of prior and on-going NRECA involvement in Nicaraguan rural electrification. Maintain a current knowledge of USAID's programs and policies having a bearing on the purpose, objectives, and implementation of NRECA's program activities in Nicaragua.
7. Supervise and coordinate the activities of permanent NRECA project staff in Nicaragua and all short-term professional personnel on temporary or intermittent assignment in Nicaragua.

8. Travel to Managua and other locations in Nicaragua as required to carry out the activities described in the workplan.
9. Coordinate with the substantially involved NRECA offices in the region and travel to IPD's headquarters locations and to other NRECA project offices in Central America as may be required and approved by USAID.
10. Initiate and ensure coordination of all necessary official clearances and approvals required by the project, including but not limited to such matters as travel, equipment procurement, etc. in accordance with USAID regulations.
11. Exercise primary responsibility for financial management of the project activities, including budgetary, expenditure, and accounting information, the local bank account, verification and approval of local expenditures, etc.
12. Coordinate any related adjunct NRECA or USAID activities, such as arrangements for surplus equipment, that are assigned to Nicaragua during the period.
13. Carry out other duties/activities as may be specified by NRECA supervisory staff.

Annex G

Procurement Plan

Annex G.1

Illustrative Invitation For Bid (IFB) Package

Annex G.2

Illustrative Time Frame for Procurement

Invitation for Bid No.
###-###-NRECA-91/01

The Instituto Nicaraguense de Energia (INE) invites interested suppliers to submit bids for the supply of equipment, parts, hardware, tools and/or materials, according to the technical specifications included in this IFB.

Bid Opening date: _____
1430 hours, local time, San Salvador, El Salvador
2a. Planta Edificio Administrativo de CEL
9a. Calle Poniente No. 950, Centro de Gobierno
San Salvador, El Salvador, C.A.

Mailing address for offer: National Rural Electric Cooperative Association
NRECA
2a. Planta Edificio Administrativo de CEL
9a. Calle Poniente No. 950, Centro de Gobierno
San Salvador, El Salvador, C.A.

Country: Nicaragua

Authority: Rural Electrification Project
No. ###-###

Invitation for Bid: No. ###-###-NRECA-91/01

Purchaser: Instituto Nicaraguense de Energia
INE
(address)
Managua, Nicaragua, C.A.

Delivery: Ex-Warehouse, Aduan Maritima Bluefields or Pto. Cabezas,
Nicaragua, C.S.

IFB issued on: _____

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INSTRUCTIONS TO BIDDERS

1. Introduction

The Instituto Nicaraguense de Energía, INE, Managua, Nicaragua, C. A., (Contracting Agency) invites firms to submit bids for the supply of equipment, parts, hardware, tools and/or materials as described in the attached Technical Specifications, as part of the "Title" Rural Electrification Project. The contract will be financed with U.S. Dollar funds provided to NRECA by the U.S. Agency for International Development (AID) through an AID/NRECA Cooperative Agreement (?) under Grant No. ###-####.

Firms are advised that they will not be reimbursed for any costs incurred in connection with the preparation and submission of their bids.

These Instructions to Bidders shall not form part of the bid or of the Contract. They are intended to aid bidders in the preparation of their bids.

For the purposes of interpretation of these Instructions to Bidders the periods named herein shall be consecutive calendar days.

This Invitation for Bid consists of (1) Instructions to Bidders, (2) Bid/Award/Contract, (3) Bidder Information, (4) Bid Schedule, (5) Notice of Assignment, (6) Bidder Checklist, (7) Conditions of Contract, and (8) the Technical Specifications attached hereto or incorporated by reference herein.

The authorized area of source and origin for the procurement of services and/or commodities (including commodity-related services) hereunder is the United States, (AID Geographic Code 000). Air or ocean transportation costs will be financed only on craft or vessels meeting the conditions found under the conditions of contract, Clause No. 10 entitled "Nationality and Source", or as may otherwise be agreed to in writing by the Transportation Support Division of AID's Office of Procurement, Tel. (703) 875-1300, Fax (703) 875-1119, or Telex 248-766 (COMUR). This Office will assist in verifying if proposed booking meets the transportation conditions as modified by AID Transportation Waiver No. 90-B-4, dated July 10, 1990.

Ocean transportation shall be prepaid by the Supplier from the port of exportation to the designated port in Nicaragua. Quotations shall be made on F.O.B. (Vessel) prices, port of exportation, plus ocean freight and insurance. Payment will be made on the basis of actual freight and insurance costs but not to exceed the bidders' quoted Ex-Warehouse price. **OFFERS MUST STATE THE FLAG OF THE AIR OR OCEAN TRANSPORTATION VESSEL PROPOSED.**

Any goods shipped as a result of contract award under this IFB must be clearly marked and identified on the exterior of packages or crates with the IFB number and Letter of Credit number. Separate Bills of Lading are required for items funded under different Letters of Credit.

Bidders should note that submission of the "Supplier's Certificate and Agreement for Project Commodities/Invoices and Contract Abstract," Form AID 1450-4 is required by the payment clause in the "Conditions of Contract." This form must be completed in order for the Supplier to receive payment.

Payment will be made under a Letter of Credit issued by the _____ Bank, (address) for the National Rural Electric Cooperative Association (NRECA) under the Rural Electrification Project No. ###-###.

Bidders are advised that funds due or to become due from NRECA may be assigned to a Bank as assignee or as agent for or in behalf of the Supplier only in accordance with the provisions of the Assignment of Claims Act of 1940 (31 U.S.C. 3737, 41 U.S.C. Section 15.) If the Bidder's intention is to assign funds to a bank, this must be so stated in the offer, by filling out the Notice of Assignment Form, included on page 14 of this IFB.

Partial shipments are allowed, only if full item quantities are to be shipped. However, payments will be processed only after the entire order has been shipped.

The proposed delivery period shall be within (# of days for delivery) calendar days after receipt of the L/C. Delivery date shall be considered as the date of unloading the cargo at the point of delivery, as specified in the cover page of this IFB.

2. Bid Opening

Sealed bids in ORIGINAL AND THREE COPIES will be received until 1430 hours, local time, on _____. Offers must be valid for ninety (90) calendar days thereafter. Offers submitted after the closing hour will be returned unopened. See Instructions to Bidders, Clause No. 7 entitled "Late Bids."

Mailing address for offer is:

National Rural Electric Cooperative Association
NRECA
2a. Planta Edificio Administrativo de CEL
9a. Calle Poniente No. 950, Centro de Gobierno
San Salvador, El Salvador, C.A.

It is recommended that bids be forwarded in double mailing envelopes via courier rather than by air mail, parcel post or other means. To avoid delay and possible opening of bids during customs clearance, envelopes shall be marked in Spanish as follows:

PAPELES COMERCIALES. NO CONTIENE MERCANCIAS
LICITACION PARA SER ABIERTA EL _____
A LAS 1430 HORAS, HORA LOCAL
PROYECTO NRECA No. ###-###
IFB No. ###-###-NRECA-91/01

Which means in English:

COMMERCIAL PAPERS. CONTAINS NO MERCHANDISE
BID TO BE OPENED ON _____
AT 1430 HOURS, LOCAL TIME
PROJECT NRECA No. ###-###
IFB No. ###-###-NRECA-91/01

The bids will be opened at that time in the office of the Contracting Agency in the presence of the public. The Bidder's names, the items offered and the bid prices, will be announced.

3. Preparation of Bids

- (a) Bidders are expected to examine the specifications and all instructions contained in this Invitation for Bids. Failure to do so will be at the Bidder's risk.
- (b) Bids shall be made on an Ex-Warehouse price (delivered and unloaded at the Port of Importation) per chapter basis. All bids that meet the specifications of this request will be evaluated for the most advantageous price. Only Ex-Warehouse prices will be acceptable for evaluation purposes, other proposals such as F.O.B., F.A.S., C & F or C.I.F. prices will not be considered. Ex-Warehouse prices should indicate the cost of each element (F.O.B. (Vessel) item price, insurance, and freight). The costs of ocean transportation are eligible for NRECA financing provided that such transportation meets the conditions set forth in the Conditions of Contracts, Section 10.D.1.
- (c) The Contracting Agency reserves the right to increase or decrease the quantity of an item duly awarded in accordance with this IFB by 25 percent plus any fraction necessary to equal a whole number of the quantity bid, at the unit price offered. This option shall be exercised, if at all, at the time award is made.
- (d) Bidders are advised that if they intend to subcontract any part of the work they are required to make it known at the time they submit their bids. Furthermore, any subcontracting must be in accordance with Conditions of Contract, Clauses 8 and 12.
- (e) Bidders are requested to include with the offer a discount chart to be applied to the prices detailed in the Bid Schedule correlated to the amount awarded, using the following format:

	<u>Amount awarded (\$)</u>	<u>Discount (%)</u>
1. Less than	100,000	_____
2. Including and more than but less than	100,000 250,000	_____
3. Including and more than but less than	250,000 500,000	_____
4. Including and more than but less than	500,000 1,000,000	_____
5. Including and more than	1,000,000	_____

Note: Discounts will be applied to prices during bid evaluation.

- (f) All correspondence in connection with the bid and the Contract shall be in English.

4. Contents of Bids

Bidders are required to complete the following IN AN ORIGINAL AND THREE COPIES:

- (a) Bid/Award/Contract
- (b) Bidder Information
- (c) Bid Schedule

Bidders may bid on any number of chapters listed, but must bid the full quantity of the items as called for. Bidders are advised that BIDS OFFERING QUOTATIONS OF PARTIAL CHAPTERS WILL BE CONSIDERED ONLY IF FEWER THAN THREE BIDDERS QUOTE THE FULL CHAPTER.

(1) Bidders shall fill in the F.O.B. (Vessel) Unit Price for each item in the Bid Schedule. For each item the quantity given in the "Quantity" column shall be multiplied by the F.O.B. (Vessel) Unit Price and the result entered in the F.O.B. (Vessel) Total Item Price. Estimated costs for insurance and freight must also be entered item by item under Insurance Item and Freight Item. The F.O.B. (Vessel) Total Item Price should then be summed with Insurance and Freight Item costs and the result entered under Ex-Warehouse Item.

(2) Next, Bidders must combine all item costs within the chapter (F.O.B. (Vessel), Insurance, and Freight) and enter the Total Chapter Costs under Total Price F.O.B. (Vessel), Total Estimated Insurance, and Total Estimated Freight. Finally, Bidders must then sum the Total Chapter Costs and enter the result under Total Ex-Warehouse Price - Port of Entry. In case of any discrepancy between a unit price and a total price, the F.O.B. (Vessel) Unit Price will be taken as correct and the total amount adjusted accordingly. It will be assumed that the Bidder is not bidding on any item for which a unit price or total amount is not shown.

The Bidder shall complete the form in type or in indelible ink making no alterations to the form provided. The completed form shall have no strikeovers, interlineations or erasures except those necessary to correct errors made by the Bidder, in which case such corrections shall be initialled by the person or persons signing the bid.

The term Ex-Warehouse used in this document will be defined as the cost of the goods (free of expense to the Contracting Agency) insured (at 110% of material value), placed and unloaded at the point of delivery, as specified in the cover page of this IFB.

The Supplier must:

- (1) Provide and pay for all transportation to deliver and unload the goods in good order and condition at the Aduana Maritima, Bluefields or Pto. Cabezas, Nicaragua, C.A.

- (2) Pay and bear all charges up to the point of delivery, including but not limited to; export or other fees or taxes, cost of wharfage and landing, costs of certificates of origin, consular invoices and other documents that may be required for exportation.
- (3) Be responsible for any loss and/or damage to the goods occurring before delivery of the shipment to the point of delivery as specified.

All importation fees and arrangements will be taken care of by the Contracting Agency.

One original copy of the completed bid is to be clearly marked "ORIGINAL BID", on all pages, and the other completed copies are to be marked "COPY OF BID" in the same fashion as the original. In case of any discrepancy, the copy marked "ORIGINAL BID" shall govern.

- (d) Manufacturer's Standard Warranty.
- (e) Discount chart, per paragraph 3(e) of these Instruction to Bidders.
- (f) Descriptive literature.

Descriptive literature for the items, including full technical specifications, must be submitted with each copy of the bid. This literature will be used to demonstrate compliance with the specifications of the bid and will not be considered to amend the bid in any way. Deviations from IFB requirements included in descriptive literature furnished must be fully explained. In case of any conflict between the specifications in the descriptive literature and specifications in the bid, the latter will control. See Conditions of Contract, Clause No. 10 entitled "Nationality and Source" regarding the eligibility of suppliers, commodities and delivery services.

5. Bid Acceptance Period

Bids offering less than ninety (90) calendar days for acceptance by the Contracting Agency from the date set for opening will be considered nonresponsive and will be rejected.

Award will be made by FAX within the 90 day period in which the bid is valid. The date of the FAX shall be considered as the formal date of award. The L/C shall be received within 30 days of the formal date of award.

6. Signature of Bid

The Bid must be signed by a person duly authorized to commit the Bidder to price, delivery and all Conditions of Contract. A Power-of-Attorney should be supplied to authorize the signature of a local representative or any other person not normally accorded such authority.

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Associated companies or joint ventures shall jointly designate power-of-attorney in one person authorized to obligate all the companies of the association or joint venture. A bid submitted by a joint venture must be accompanied by the document of formation of the joint venture, duly registered or authenticated, in which is defined precisely the conditions under which it will function, its period or duration, the persons authorized to represent and obligate it, the participation of the several firms forming the joint venture, the principal member of the joint venture and address for correspondence for the joint venture. Bidders are advised that the joint venture agreement must include a clause stating that the members of the joint venture are severally and jointly bound.

7. Late Bids

Bidders will be held responsible for ensuring that their bids are received in accordance with the instructions stated herein and a late bid will not be considered even though it became late as a result of circumstances beyond the Bidder's control. A late bid will be considered only if the sole cause of its becoming a late bid was attributable to the Contracting Agency, its employees or agents.

8. Modification of Bids

Any Bidder has the right to withdraw, modify, or correct its bid after it has been delivered to the Contracting Agency, provided the request for such a withdrawal, modification, or correction together with full details of such modification or correction is received by the Contracting Agency at the address given above by letter, before the time set for opening bids. The original bid, as amended by such communication will be considered as the Bidder's offer. The Contracting Agency may ask any Bidder for a clarification of its bid, nevertheless no Bidder will be permitted to alter its Bid Price or make any other material modification after bids have been opened. A material modification is one which affects the price, quantity, quality, delivery or installation date of equipment or materials, or which limits in any way any responsibilities, duties, or liabilities of the Bidder or any rights of the Contracting Agency or NRECA as any of the foregoing have been specified or defined in the IFB. However, clarifications which do not change the Bid Price may be accepted.

9. Amendments to the Invitation for Bid

If for any reason prior to bid opening it becomes necessary to modify the Bid Documents, an amendment will be issued to and be binding on all Bidders. Receipt of all amendments shall be acknowledged by Bidders.

A. Amendments will be numbered consecutively commencing with No. 1 and Bidders are required to insert the numbers of amendments received in the Bid/Contract Form.

B. Should any Bidder have questions or doubts about the meaning of the Bid Documents, it should refer them in writing to the Contracting Agency not later than 15 (fifteen) days before the date set for opening of bids.

10. Bid Evaluation and Contract Award

A. Award will be made to the responsible and responsive bidder whose bid has been determined to be the lowest evaluated bid on the basis of lowest Ex-Warehouse price (delivered and unloaded at the Port of Importation) per chapter (or items subject to the criteria specified in the "Instructions to Bidders" sections 4(c) and 10(e)) offered at the point of delivery, as specified in the cover page of this IFB. **BIDDERS OFFERING QUOTATIONS OF PARTIAL CHAPTERS WILL BE CONSIDERED ONLY IF FEWER THAN THREE BIDDERS QUOTE THE FULL CHAPTER.**

Proposals or quotations from United States or Central American Common Market (CACM) firms must be denominated in U.S. Dollars; proposals from Nicaraguan firms must be denominated in Nicaraguan currency. Nicaraguan currency proposals or quotations will be evaluated using the highest legal rate of exchange as established by the Central Bank on the final date for receipt of proposals.

The lead times required by this IFB shall be evaluated in accordance with the following: the Ex-Warehouse price of each chapter will be increased by one half percent (1/2 %) of the price bid for each day exceeding the proposed delivery period.

B. Bidder discounts per Section 3(e) will be applied to the awarded contract upon determination of the total awarded amount in U.S. Dollars.

C. A responsive bid: To be considered for award, a bid must comply in all material respects with this IFB. Such compliance enables all bidders to stand on an equal footing and maintains the integrity of the sealed bidding system. Bids shall be filled out, executed, and submitted in accordance with the instructions in this IFB. If a bidder uses its own bid form or a letter to submit a bid, the bid may be considered only if:

- (1) The bidder accepts all the terms and conditions of the IFB, and
- (2) Award on the bid would result in a binding contract with terms and conditions that do not vary from the terms and conditions of this IFB.

D. The Contracting Agency will reject any bid that is nonresponsive. The Contracting Agency reserves the right to waive any minor informalities in the bids received if it appears in the Contracting Agency's best interests to do so, to reject the bid of any firm if in the Contracting Agency's judgment the firm is not fully qualified to provide the goods and services as specified in the Contract, or to reject all bids.

E. The Contracting Agency reserves the right to award a contract for a single item, several items or all items of this IFB, if such an award will result in a lower overall cost to the Contracting Agency.

F. If the Contractor fails to perform by the required delivery date, the Contracting Agency may invoke the provisions of the Conditions of Contract, Clauses 18 and 19.

G. The Bid of any Bidder which does not conform to the foregoing instructions may be rejected.

BID/AWARD/CONTRACT
IFB No. ###-###-NRECA-91/01

1 Bidder's Name and Address:

2 In response to Invitation for Bid (IFB) No. ###-###-NRECA-91/01 as modified by amendments 1 through _____, the Bidder agrees to furnish all or part of the items listed in the attached Award Letter at the prices listed therein and as awarded, in accordance with the Conditions of Contract and Technical Specifications.

Delivery of all equipment and/or materials will be made within (2) calendar days from receipt of a Letter of Credit issued by the _____ Bank for the National Rural Electric Cooperative Association (NRECA).

3 Name, title and signature of person authorized to sign the Contract:

Name: _____
Title: _____
Date: _____
Signature: _____

The National Rural Electric Cooperative Association, NRECA, acting on behalf of the Instituto Nicaraguense de Energia, INE, hereinafter called the "Contracting Agency", has accepted the bid of _____, hereinafter called the "Supplier", for the supply of equipment, materials, and related services as set forth in this Contract.

This Contract incorporates by reference the following documents:

- 1) Bid/Award/Contract
- 2) Award FAX
- 3) Bidder Information
- 4) Bid Schedule
- 5) Conditions of Contract
- 6) Technical Specifications
- 7) NRECA Letter of Credit

Name, title and signature of person authorized to sign the Award/Contract:

Name: _____
Title: _____
Date: _____
Signature: _____

BIDDER INFORMATION

IEB No. ~~###-###-###~~-NRECA-91/01

- 1. Date of Bid: _____
- 2. Bidder's Name and Address:
 - 2.1) Bidder's Name: _____
 - 2.2) Bidder's Address: _____

 - 2.3) FAX No. and answer back: _____
 - 2.4) Cable Address: _____
 - 2.5) Telephone No.: _____
 - 2.6) Name of person authorized to sign the Bid:

- 3. Authorized Agent in Nicaragua (if applicable):
 - 3.1) Agent's Name: _____
 - 3.2) Agent's Address: _____

 - 3.3) FAX No. and Answer Back: _____
 - 3.4) Cable Address: _____
 - 3.5) Telephone No.: _____
 - 3.6) Name of Manager: _____

NOTICE OF ASSIGNMENT

Procedure

- (a) **Assignments**
- (1) Assignments by corporations should be (i) executed by an authorized representative, (ii) attested by the secretary or the assistant secretary of the corporation, and (iii) impressed with the corporate seal or accompanied by a certified copy of the resolution of the corporation's board of directors authorizing the signing representative to execute the assignment.
 - (2) If the contractor is a partnership the assignment may be signed by one partner, if it is accompanied by an acknowledged certification that the signer is a general partner of the partnership.
 - (3) If the contractor is an individual, the assignment must be signed by that individual and the signature acknowledged before a notary public or other person authorized to administer oaths.
- (b) **Filing.** The assignee shall forward to the Office of the Controller, NRECA/ Washington D.C., an original and three copies of the Notice of Assignment, together with one true copy of the instrument of assignment. The true copy shall be a certified duplicate or photostat copy of the original assignment.
- (c) **Format for notice of assignment.** The following is a suggested format for use by an assignee in providing the Notice of Assignment.

NOTICE OF ASSIGNMENT

**TO: OFFICE OF THE CONTROLLER, NRECA/1800 Massachusetts Ave. N.W./
Washington, D.C. 20036**

This is in reference to Contract No. _____ dated _____
entered into between _____ (contractor's name and address) and the Instituto
Nicaragiense de Energia, I.N.E. (address), (describe nature of the contract.)

Monies due or to become due under the contract described above have been assigned to the
undersigned under the provisions of the Assignment of Claims Act of 1940, as amended,
31 U.S.C. 3737.

A true copy of the instrument of assignment executed by the Contractor on _____
(date), is attached to the original notice.

Payments due or to become due under this contract should be made to the undersigned
assignee.

Please return to the undersigned the three enclosed copies of this notice with appropriate
notations showing the date and hour of receipt, and signed by the person acknowledging
receipt on behalf of the addressee.

Very truly yours,

(name of assignee)

By _____
(signature of signing officer)

Title _____
(title of signing officer)

(address of assignee)

Telephone No. _____

Telex No. _____

Receipt is acknowledged of the above notice and of a copy of the instrument of assignment.
They were received at ____ (a.m.) (p.m.) on _____, 19 ____.

(signature)

(title)

On behalf of

(name of addressee of this notice)

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BIDDER CHECKLIST**IEB No. ###-###-NRECA-91/01**

- 1 Authorized signature on Bid
- 2 Bid/Award/Contract Form
- 3 Bidder Information Form
- 4 Bid acceptance period
- 5 Delivery period
- 6 Bid Schedule, including total Ex-Warehouse price, (with components F.O.B. (Vessel) unit and total item prices, estimated insurance, and estimated freight)
- 7 Warranty
- 8 Discount Chart
- 9 Notice of Assignment (if applicable)
- 10 Descriptive literature which clearly shows the fulfillment of the specifications.
- 11 Prevailing tariff rate and flag of transportation vessel.
- 12 Original and three copies of all documents.

CONDITIONS OF CONTRACT

1. Definitions

Set forth below are terms used in the contract and reference to them shall be interpreted as follows:

- a. "NRECA" means the National Rural Electric Cooperative Association, with its principle offices located at 1800 Massachusetts Avenue, N.W., Washington, D.C. 20036.
- b. "AID" means the Agency for International Development.
- c. "Authorized Geographic Code" is AID Geographic Code 000 (US only).
- d. "Contract" means the Bid/Award/Contract forms signed by both bidder and Contracting Agency including all attachments and appendices thereto and all documents incorporated by reference therein, including these Conditions of Contract.
- e. "Contracting Agency" is Instituto Nicaguense de Energía, INE, Government of Nicaragua.
- f. "Supplier" is the person or firm supplying the equipment and materials called for under this contract.
- g. "Cooperating Country" means Nicaragua.

2. Governing Laws and Languages

- a. This contract shall be interpreted in accordance with the laws of Nicaragua.
- b. All notices pursuant to the provision of this contract shall be in English.

3. Delivery

Delivery of all equipment and materials to be supplied under this contract shall be made at the point of delivery, as specified in the cover page of this IFB, within 97 calendar days after the receipt of the L/C. Under NRECA Letter of Credit provisions, delivery date shall be the date of unloading the cargo at the specified point of delivery: Port of Importation Ex-Warehouse.

4. Legal Effect of NRECA Approvals and Decisions

The parties hereto understand that the contract has reserved to NRECA certain rights such as, but not limited to, the right to approve the terms of this contract, the Supplier, and any or all plans, reports, specifications, subcontracts, bid documents, drawings, or other documents related to this contract and the project of which it is part. The parties hereto further understand and agree that NRECA, in reserving any or all of the foregoing approval rights, has acted solely as a financing entity to assure the

proper use of United States Government funds, and that any decision by NRECA to exercise or refrain from exercising these approval rights shall be made as a financier in the course of financing this project and shall not be construed as making NRECA a party to the contract. The parties hereto understand and agree that NRECA may, from time to time, exercise the foregoing approval rights, or discuss matters related to these rights and the project with the parties jointly or separately, without thereby incurring any responsibility or liability to the parties jointly or separately or to any of them. Any approval (or failure to disapprove) by NRECA shall not bar the Contracting Agency or NRECA from asserting any right, or relieve the Supplier from any liability which the Supplier might otherwise have to the Contracting Agency or NRECA.

5. Method of Payment

Payment to the Contractor will be arranged through a Letter of Credit issued directly by the _____ Bank, for NRECA to the Supplier based on the request for a Letter of Credit from the Contracting Agency and a copy of the Bid/Award/Contract. Payment will be processed in two steps:

1. 75% of the Contract value upon presentation of documents per Section 6.c., "Requests for Payment," paragraphs 1 through 9.
2. The remaining 25% of the Contract value after the commodities have been unloaded (as specified in the Contract), and documents presented in accordance with Section 6.c., paragraphs 1, 10, and 11.

6. Payment Procedure

- A. The Supplier will receive payment directly from NRECA upon submission of the appropriate documents discussed below.
- B. Payment to firms from the United States and CACM countries (with the exception of Nicaragua) will be made in U.S. Dollars. Payments to Nicaraguan firms will be in Nicaraguan Cordobas de Oro.
- C. Requests for Payment: Payment due to the Supplier under this contract shall be made based upon the Supplier's written request accompanied by the following documentation:

1. NRECA Voucher: AID Form 1034 with three (3) copies prepared by the addressee of the Letter of Credit or by the bank as assignee or agent for the addressee of the L/C.
2. Supplier's Invoice: The original and one copy of the Supplier's detailed invoice showing the following:
 - (a) The name and address of the Purchaser.
 - (b) The contract number and date.
 - (c) The invoice number, item numbers, and description of the material and/or equipment.

(d) The quantity of each item shipped, unit price, total item price, total actual insurance, total actual freight, and total invoice price Ex-Warehouse.

(e) The delivery terms.

NOTE: All certifications appearing on the Supplier's invoice must be signed by hand.

3. Bill of Lading: Two (2) copies (or photostats) of clean, non-negotiable ocean bills of lading showing the following:
 - (a) Name of vessel and date of loading.
 - (b) Port of Entry into Nicaragua.
 - (c) Invoice and packing list numbers.
 - (d) Total amount of freight charges clearly marked "PREPAID".
4. Packing List: One copy of the packing list.
5. Certificate of Inspection: One copy of the Inspection Certificate, if required, certifying that the items prepared for shipment are in strict conformity with the specifications stated in the IFB and further clarified in the L/C in quantity and quality.
6. Transmittal Letter: One copy of Freight Forwarder's transmittal evidencing that an original Bill of Lading was forwarded to the consignee immediately on sailing of the vessel.
7. Insurance Policy: One copy of the insurance policy, in the name of the supplier, showing coverage for 110% of the material value of the goods shipped.
8. AID Form 1450-4: Supplier's Certificate and Agreement for Project Commodities/Invoice and Contract Abstract.
9. Signed Certification (one original) that the full set of original ocean or airway bills of lading, original invoice, and packing list have been forwarded to the consignee.
10. Certificate from the Consignee, stating that the commodities have been unloaded at the point of delivery, have been inventoried, and have been visually inspected by a representative of the Contracting Agency. Will be issued within 10 working days of receipt of commodities.
11. Certificate from NRECA, stating whether liquidated damages are being assessed and their extent.

7. Audit and Records

- A. The Supplier shall maintain books, records, documents, and other evidence and shall apply consistent accounting procedures and practices sufficient to reflect properly all transactions under or in connection with the contract. The foregoing constitute "records" for the purpose of this clause.
- B. The Supplier shall maintain such records during the contract term and for a period of three years after final payment, unless any litigation, claim or audit is started before the expiration of the three year period. In such a case, records which relate to appeals under the "Disputes and Appeals" clause or litigation or the settlement of claims arising out of the performance of this contract shall be retained until such appeals, litigation, or claims have been finally settled.
- C. All records shall be subject to inspection and audit by the Contracting Agency (or its authorized agents) at all reasonable times. The Supplier shall afford Contracting Agency proper facilities for such inspection and audit. If this is a fixed price contract, it is not subject to audit of costs (except for any cost-reimbursable items) but is subject to audit for compliance with other provisions of this contract.
- D. The Supplier further agrees to include in all its subcontracts here under a provision that the subcontractor agrees that the Contracting Agency or any of its authorized agents, shall, until the expiration of three years after final payment under the subcontract, have access to and the right to examine any records of such subcontractor involving transactions related to the subcontract.

8. Assignment and Subcontracts

The Supplier may not assign or subcontract in whole or in part its obligation to perform under the contract except with the prior written consent of both the Contracting Agency and NRECA. The Supplier may not assign its rights to receive payment under the contract except with the prior written consent of both the Contracting Agency and NRECA.

Bidders are advised that funds due or to become due from NRECA may be assigned to a Bank as assignee or as agent for or in behalf of the supplier only in accordance with the provisions of the Assignment of Claims Act of 1940 (31 U.S.C. 3737, 41 U.S.C. Section 15.) If it is the Bidder's intention to assign funds to a bank, this must be so stated in the offer, filling out the Notice of Assignment form, included on page 14 of this IFB.

9. Taxes and Duties

The grant agreement applicable to the goods to be shipped hereunder does not permit use of NRECA funds to finance taxes, tariffs, duties or other levies imposed by any laws in effect in Nicaragua.

10. Nationality and Source

A. Eligibility of Suppliers

- (1) No equipment, materials or services shall be eligible for NRECA financing if offered by a supplier or subcontractor included on any list used by AID of suspended, debarred, or ineligible bidders.
- (2) The Supplier and any subcontractor(s) must be:
 - (a) An individual who is a citizen or legal resident of a country or area included in the authorized geographic code;
 - (b) A corporation or partnership organized under the laws of a country or area included in the authorized geographic code;
 - (c) A controlled foreign corporation, i.e. any foreign corporation of which more than 50 percent of the total voting power of all classes of stock is owned by United States shareholders within the meaning of Section 957 et seq. of the Internal Revenue Code (26 U.S.C. 957); or
 - (d) A joint venture or unincorporated association consisting entirely of individuals, corporations, or partnerships which fit any of the foregoing categories.
- (3) Citizens or firms of any country not included in AID Geographic Code 935 are ineligible as suppliers, contractors, subcontractors, or agents, in connection with NRECA-financed contracts for goods or services. However, non-U.S. citizens legally admitted for permanent residence in the United States are eligible.

B. Eligibility of Commodities

(1) Definitions

(a) Source

The "Source" means the country from which a commodity is shipped to the Cooperating Country or the Cooperating Country itself if the commodity is located therein at the time of purchase. However, where a commodity is shipped from a free port or bonded warehouse in the form in which received therein, "source" means the country from which the commodity was shipped to the free port or bonded warehouse.

(b) Origin

The "Origin" of a commodity is the country or area in which a commodity is mined, grown, or produced. A commodity is produced when through manufacturing, processing, or substantial and major assembling of components a commercially recognized new commodity results that is substantially different in basic characteristics or in purpose or utility from its components.

(c) Componentry

"Components" are the goods that go directly into the production of a produced commodity.

(2) Rules

All equipment and materials shall have their "Source" and "Origin" in the United States:

- (i) If the commodity contains no imported component, it is eligible for financing under the contract.
- (ii) Unless otherwise specified for the particular procurement, components from the United States, other countries included in AID Geographic Code 941, and the Cooperating Country may be utilized in unlimited amounts regardless of the geographic code authorized.
- (iii) Unless procurement is authorized from countries included in AID Geographic Code 899, components from free world countries not included in AID Geographic Code 941 are limited according to the following rules:
 - I. They are limited only if they are acquired by the producer in the form in which they are imported.
 - II. The total cost of such components to the producer of the commodity (delivered at the point of production of the commodity) may not exceed 50 percent of the lowest price (excluding the cost of ocean transportation and marine insurance) at which the supplier makes the commodity available for export sale (whether or not financed by NRECA).
 - III. NRECA may prescribe percentages other than 50 percent for specific commodities.
- (iv) No commodity shall be eligible for financing under this contract if it contains any component from a country not included in AID Geographic Code 935.

C. Motor Vehicles

Motor vehicles must be manufactured in the United States to be eligible for NRECA financing, i.e. the source may be any eligible country, the origin must be the United States, and componentry must meet the criteria in B(2) above. Vehicles which have been assembled in the United States but then subjected to minor disassembly to reduce shipping cost are considered U.S. manufactured vehicles. However, parts or subassemblies of vehicles shipped for final assembly elsewhere are not considered vehicles. Such parts or subassemblies are subject to the source rule in paragraph B above.

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D. Delivery Services

With respect to ocean or air freight, "source" means the flag of the vessel, carrier or aircraft.

(1) Ocean Freight

A. NRECA will finance ocean transportation costs only when such costs meet the following requirements:

- 1) When the authorized source for procurement is AID Geographic Code 000, NRECA will finance ocean transportation costs only on U.S. flag vessels.
- 2) When shipment is made under a Through Bill of Lading (TBL) issued by an eligible flag carrier, NRECA will finance costs incurred on vessels under flag registry of any Free World country (AID Geographic Code 899), if the costs are part of the total cost paid to the eligible flag carrier.

B. According to AID Transportation Waiver No. 90-B-4., dated July 10, 1990 and continuing to July 9, 1991 unless sooner rescinded, NRECA can finance transportation on AID source Code 935 registry vessels (any area or country in the Free World) for the following conditions:

- 1) Breakbulk and full container loads from the U.S. West Coast up to four hundred (400) metric tons.
- 2) Breakbulk up to four hundred (400) metric tons from the U.S. East Coast (including Miami/Port Everglades); and Ports/Points of Discharge Acajutla, Santo Tomás; and San Salvador, only.

This waiver does not cover shipments from the U.S. Gulf Coast and full container loads from the U.S. East Coast (including Miami/Port Everglades).

Note: Bidders are advised that all bookings utilizing Transportation Waiver No. 90-B-4 and any questions regarding the terms as modified by said waiver, should be referred to the Transportation Support Division of AID's Office of Procurement, Washington, D.C. 20523, Tel. (703) 875-1300, Fax (703) 875-1119, Telex 248-766 (COMUB).

(2) Air Freight

The Supplier will use U.S. flag air carriers to the extent they are available as set forth in the clause of this contract entitled "Air Travel and Transportation." When U.S. flag air carriers are not available, preference should be given to the use of host country or Code 941 flag air carriers before using Code 899 flag air carriers.

(3) Charters

All air or ocean charters, covering full or part cargo, for the transport of equipment, materials, or other goods procured for the performance of this contract must be approved by the Transportation Support Division of AID's Office of Procurement, AID/Washington D.C. in writing prior to shipment.

(4) General Transportation

Unless otherwise authorized, NRECA will not finance any transportation costs:

- A. For shipment beyond the point of entry in Nicaragua except when intermodal transportation service covering the carriage of cargo from point of origin to destination is used and the point of destination is established in the carrier's tariff and stated in the "Through Bill of Lading;"
- B. On a transportation medium owned, operated, or under the control of any country not included within Code 935;
- C. On any vessel designated by the Transportation Support Division of AID's Office of Procurement, AID/Washington D.C. as ineligible to carry NRECA-financed cargo; or
- D. Under any ocean or air carrier covering full or part cargo which has not received prior approval by the Transportation Support Division of AID's Office of Procurement, AID/Washington D.C.

11. Air Travel and Transportation

A. The Supplier shall utilize U.S. flag carriers for international air transportation of personnel or property to the extent service by such carrier is available, in accordance with the following criteria:

- (1) Passenger or freight service by a U.S. flag carrier is considered available even though:
 - (a) Comparable or different kinds of service by a non-U.S. flag air carrier cost less, or
 - (b) Service by a non-U.S. flag air-carrier can be paid for in excess of foreign currency, or
 - (c) Service by a non-U.S. flag air carrier is preferred by the Supplier or traveler needing air transportation, or
 - (d) Service by non-U.S. flag air carrier is more convenient for the Supplier or traveler needing air transportation.

- (2) Freight service by a U.S. flag air carrier will be considered to be unavailable:
- (a) When no U.S. flag air carrier provides scheduled air freight service from the airport serving the shipment's point of origin and a non-U.S. flag air carrier does.
 - (b) When the U.S. flag air carrier(s) serving the shipment's point of origin decline to issue a through airway bill for transportation to the shipment's final destination airport.
 - (c) When use of a U.S. flag air carrier would result in delivery to final destination at least seven days later than delivery by means of a non-U.S. flag air carrier.
 - (d) When the total weight of the consignment exceeds the maximum weight per shipment which the U.S. flag air carrier will accept and transport as a single shipment and a non-U.S. flag air carrier will accept and transport the entire consignment as a single shipment.
 - (e) When the dimensions (length, width, or height) or one or more of the items of a consignment exceed the limitations of the U.S. flag aircraft's cargo door opening, but do not exceed the acceptable dimensions for shipment on an available non-U.S. flag scheduled air carrier.

B. In the event that the Supplier selects a carrier other than a U.S. flag air carrier for international air transportation, it will include a certification on vouchers involving such transportation which is essentially as follows.

CERTIFICATION OF UNAVAILABILITY OF U.S. FLAG CARRIERS

I hereby certify that transportation service for personnel (and their personal effects) or property by U.S. flag air carriers was unavailable for the following reasons:

(state reasons)

C. The terms used in this clause have the following meanings:

- (1) "International air transportation" means transportation of persons (and their personal effects) or property by air between a place in the United States and a place outside the United States.
- (2) "U.S. flag air carrier" means one of a class of air carriers holding a certificate of public convenience and necessity issued by the Civil Aeronautics Board, approved by the president, authorizing operations between the United States and/or its territories and one or more foreign countries.

D. The Supplier shall include the substance of this clause, including this paragraph d., in each subcontract or purchase order hereunder, which may involve international air transportation.

12. Subcontracts

Subcontracts must comply with the nationality, source, origin, and componentry requirements of this contract. The Supplier agrees to include the following provisions of this contract in all subcontracts hereunder:

"Host Country Taxes"
 "Air Travel and Transportation"
 "Nationality and Source"
 "Workmen's Compensation Insurance" if incidental services are to be performed under the subcontract.

13. Change Orders

The Contracting Agency may at any time, by a written order, and without notice to the sureties, make changes within the general scope of this contract, in any one or more of the following:

- (a) drawings, designs, or specifications, where supplies to be furnished under this contract are to be specially manufactured for the Contracting Agency;
- (b) method of shipment or packing; or
- (c) place of delivery

If any such change causes an increase or decrease in the cost of, or the time required for, the performance of any part of the work under this contract, whether changed or not changed by any such order, an equitable adjustment shall be made in the contract price or delivery schedule or both, and the contract shall be modified in writing accordingly. Any claim by the Supplier for adjustment under this clause must be asserted within 30 days from the date of receipt by the Supplier of the modification or change.

14. Amendments

Modification of the terms of this contract shall be made by amendment signed by the parties. Any amendments, including letter amendments, which increase the contract amount or extend the completion date of the contract must be approved by the NRECA Office in El Salvador.

15. Disputes and Appeals

A. In the event of a disagreement under this contract, the Supplier shall submit a written statement to the Contracting Agency, briefly describing the nature of the problem, the position of the Supplier regarding the issue and a narrative of facts in support of the Supplier's position.

B. Within 10 days after receipt of the Supplier's statement, the Contracting Agency shall decide the issue and deliver a written statement of the decision to the Supplier, including the reasons supporting the decision, if adverse to the Supplier.

C. Within 30 days after receipt of the Contracting Agency's decision or the date such decision was due, the Supplier may submit to the Contracting Agency a written Notice of Appeal including a detailed description of the facts of the dispute with the dates of events, names of persons involved, references to documentation bearing on the matter (with copies attached), the relevant contract provision(s), the Supplier's contentions and conclusions, and a statement of why the Contracting Agency's decision is being questioned.

D. If within 30 days after delivery of a Notice of Appeal, the parties can not mutually agree to a satisfactory settlement, the matter shall be presented for arbitration following the rules of the International Chamber of Commerce.

16. Inspection

A. All supplies (including raw material, components, intermediate assemblies and products) shall be subject to inspection and testing by or on behalf of the Contracting Agency at the expense of the Contracting Agency prior to shipment. The Contracting Agency will notify the Supplier in writing of the names of any inspectors or inspection firms. It is understood that inspection and testing shall not in any way release the Supplier from any warranty or other obligations under this contract.

B. If any inspection or test is made by or on behalf of the Contracting Agency on the premises of the Supplier, the Supplier shall provide all reasonable facilities and assistance for the safety and convenience of the Contracting Agency or its inspectors in the performance of their duties without additional charge.

C. 30 (thirty) days before the commodity is ready for shipment the Supplier must give written or facsimile notice to the Contracting Agency that the commodity will be ready at a given date for inspection and testing. After successful inspection of the commodity, a certificate releasing the respective commodity for shipment will be issued by the purchaser's representative.

D. If the Supplier has not received a notice of intention to inspect from the Contracting Agency or its representative within five working days from the date that the Contracting Agency has received the Supplier's notice, the Supplier will then be authorized to carry out the inspection and testing and issue an Inspection Certificate stating that the commodity is in conformity with the specifications approved by the purchaser and release the commodity for shipment. An original of the inspection report and testing results will be forwarded to the Contracting Agency by the Supplier.

17. Force Majeure

A. Force Majeure shall mean unforeseeable causes, beyond the control and without the fault or negligence of the supplier including but not restricted to acts of God or caused by war, blockade, revolution, insurrection, civil commotions, riots, mobilization, floods, epidemics, quarantine restrictions freight, embargoes and obstructions of navigation at ports of exit or entry, or acts of governments, or delays of subcontractors due to such causes.

B. When, in the opinion of the Supplier, force majeure has occurred, the Supplier shall notify the Contracting Agency no later than ten (10) days after such occurrence as to the date, the nature, and possible extent of the force majeure.

C. If, in the opinion of the Contracting Agency, the cause of force majeure is sufficient to prevent the delivery of the material and/or equipment within a reasonable period of time after the delivery specified in the delivery schedule, the Contracting Agency shall have the right to cancel all or any part of this contract. In the event of such cancellation, the Supplier shall be entitled to payment for all material and/or equipment actually delivered to the port of exportation F.O.B. (Vessel), at the prices set forth herein.

18. Termination by the Contracting Agency for Default

A. The Contracting Agency may, by written notice of default sent to the Supplier by registered mail, terminate in whole or part this contract:

- (1) If the Supplier fails to make delivery of the equipment within the time specified herein or any extension thereof, or
- (2) If the Supplier fails to perform any of the other provisions of this contract, or so fails to make progress as to endanger performance of this contract in accordance with its terms, and
- (3) In either of these two circumstances, does not cure such failure within a period of ~~ten~~ (10) days (or such longer period as the Contracting Agency may authorize in writing) after receipt of notice from the Contracting Agency specifying such failure.

B. In the event the Contracting Agency terminates this contract in whole or in part as provided in paragraph a. of this clause, the Contracting Agency may procure, upon such terms and in such manner as the Contracting Agency may deem appropriate, supplies similar to those so terminated, and the Supplier shall be liable to the Contracting Agency for any excess costs for such similar supplies. However, the Supplier shall continue performance of this contract to the extent not terminated under the provisions of this clause.

19. Liquidated Damages

If the Supplier fails to deliver the commodities and/or equipment as scheduled in the Contract Award or Letter of Credit issued by NRECA, the Contracting Agency may assess the Supplier liquidated damages, of one half of one percent (1/2%) per day of the Ex-Warehouse value of goods received after the delivery date, for each day in excess of the delivery date, not to exceed a total of fifteen (15) percent of their value. For late delivery of partial shipment(s) of components or parts necessary for the operation or utilization of the goods financed under this contract, liquidated damages may be applied to the full contract value, notwithstanding the delivery of partial shipments on or before the delivery date.

20. Termination by the Contracting Agency for Convenience

A. This contract may be terminated by the Contracting Agency in whole, or from time to time in part, in accordance with this clause whenever the Contracting Agency shall determine that such termination is in the best interest of the Contracting Agency.

B. Termination shall be effected by Notice of Termination to the Supplier, specifying that termination is for the convenience of the Contracting Agency, the extent to which performance of work under the contract is terminated, and the date upon which such termination becomes effective.

C. After receipt of a Notice of Termination and except as otherwise directed by the Contracting Agency, the Supplier shall:

- (1) Stop work under the contract on the date and to the extent specified in the Notice of Termination, and place no further orders or subcontracts except as may be necessary for completion of the portion of the work under the contract which is not terminated;
- (2) Terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination;
- (3) Assign to the Contracting Agency as it may direct, all of the right, title, and interest of the Supplier under the orders and subcontracts so terminated, in which case the Contracting Agency shall have the right to settle or pay any claims arising out of the termination of such orders and subcontracts;
- (4) With the approval or ratification of the Contracting Agency, to the extent the Contracting Agency may require, which approval or ratification shall be final and conclusive for all purposes of this clause, settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts;
- (5) Transfer title to the Contracting Agency and deliver as directed by the Contracting Agency, the completed or partially completed equipment, material, and parts which would be required to be furnished to the Contracting Agency under this contract;

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- (6) Complete performance of the part of the work which has not been terminated by the Notice of Termination; and
- (7) Take such action as may be necessary for the protection of the property related to this contract which is in the possession of the Supplier and to which the Contracting Agency has title.

D. The Supplier shall submit to the Contracting Agency its written claim promptly but not later than three months from the effective date of termination, except as the Contracting Agency may agree in writing.

E. The Supplier and the Contracting Agency shall consult within 30 days of the submission of the claim concerning the whole or any part of the amount to be paid to the Supplier by reason of the termination of work. The contract shall be amended accordingly, and the Supplier shall be paid the agreed amount.

F. In deciding the amount due the Supplier, all settled claims which the Contracting Agency may have against the Supplier in connection with this contract; and the agreed price for, or the proceeds of sale of property acquired by the Supplier or sold and not otherwise recovered by or credited to the Contracting Agency, shall be deducted.

G. Any disagreement regarding termination amounts or procedures shall be settled under the clause of this contract entitled "Disputes and Appeals."

21. Warranty

Bidder warrants that all material and equipment to be furnished under this proposal shall be new and free of defects in workmanship and material, and shall be of the kind and quality specified herein. If, within one year from date of delivery to the port of entry specified in the delivery schedule, the Contracting Agency discovers defects in workmanship and/or material and so notifies the supplier promptly in writing the supplier shall remedy such defects of non-conformance to the specifications at his expense by adjustment, repair or replacement at the option of the Contracting Agency, within sixty (60) days of such notification. Power transformer warranty shall extend for one year longer than the time period mentioned above in this clause. In addition, the bidder shall furnish with his bid to and for the benefit of the Contracting Agency, standard warranties and guarantees in writing from all manufacturers of material or equipment proposed and to be furnished under this contract.

22. Export Packing

A. General Requirements

All materials and equipment shall be packed for export shipment to a tropical climate in wooden shipping boxes that are sufficiently durable to withstand numerous handlings. The shipping boxes shall be strong enough to prevent loss from pilferage or damage sustained from stacking, shipping or handling. Workmanship in the manufacture of the wooden shipping boxes shall be of the highest standard and the material used shall be in accordance with the best commercial practices. It shall be the Supplier's responsibility to provide packing acceptable to the insurance underwriters.

B. Packing Requirements

Sawn board lumber or plywood shall be used for the sheathing of the shipping boxes. All lumber used shall be new, well seasoned, sound, and free of splits, decay or excessive number of knots. Plywood used shall be new, free of splits and decay and shall be exterior grade quality. Each shipping box shall contain only commodities of like items. These commodities shall be primary packaged in units of numerical quantities consistent with the manufacturer's normal packaging practices, however, the maximum numerical quantities of each item per package shall not exceed the limit as stated in the material specification publication for that particular item. The minimum protection to be afforded to commodities subject to damage from the elements or those items which are packaged in cardboard cartons, is that a heavy plastic liner shall completely envelope the entire contents contained within the shipping box. Equipment shall be firmly bolted or strapped to the shipping box floor or otherwise braced, blocked or secured to the box to insure the security of the equipment during transit and handling. Special packing requirements that are stated in the material specification publications and the material schedule must be strictly observed.

C. Shipping Box Specifications

There are three (3) different shipping box designs that are to be used for packaging equipment and material for shipment. The shipping box to be constructed by the Supplier will be dependent upon what material or equipment he is shipping. The bidder must conform to the requirements as set forth in the following written specifications and the conceptual design as pictorially represented in the document. For equipment not listed below that exceeds the shipping box dimensions contained herein, the Supplier will submit packaging and shipping container designs with the bid.

(1) Shipping Box Design #1

Shall be used for the packaging and shipping of the following commodities:

- a. Line Hardware ("B" Items)
- b. Conductor to be Shipped in Coils ("D" Items)
- c. Conductor Accessories ("E" Items)
- d. Underground Cable Accessories ("F" Items)
- e. Sectionalizing Devices (except group operated air break switches or reclosures) ("H" Items)
- g. Connectors ("I" Items)
- h. Meters and Metering Accessories ("J" Items)
- i. Capacitors and Accessories ("K" Items)
- j. Street Lights and Accessories
- k. Miscellaneous ("ME" Items)
- l. Test Instruments ("TI" Items)
- m. Line Tools ("TL" Items)

The box sheathing shall be constructed from exterior grade plywood with a minimum thickness of three-eighths of an inch (3/8"), or sawn board lumber. The maximum width of the sawn boards shall be six inches (6"). The minimum thickness of the sawn board utilized for the sides and roof of the box shall be five-eighths of an inch (5/8"), whereas the floor boards shall have a minimum thickness of one inch (1"). The minimum dimensions of the skid

runner and header shall be three inches (3") by four inches (4"). The skid runners shall be hardwood. The minimum dimensions of the frames and cross braces shall be one inch (1") by four inches (4"). One half inch (1/2") bolts shall be used to secure the header to the skid runner. The box shall be strapped with four (4) flat steel strapping bands whose minimum width shall be three-fourths of an inch (3/4") and secured with crimped steel banding clips. Two (2) steel bands shall be installed vertically and two (2) steel bands shall be installed horizontally (lengthwise). The nominal dimensions of Shipping Box Design #1 shall be three-fourths (3/4) of a meter in height, three-fourths of a meter (3/4) in width and one meter in length (Height = 0.75M, Width = 0.75M, Length = 1.0M). Note that these are nominal dimensions and that the bidder may slightly vary these dimensions to better accommodate the packaged commodities.

(2) Shipping Box Design #2

Shall be used for the packaging and shipping of the following commodities:

- a. Transformers ("G" Items)
- b. Automatic Circuit Breaker ("H" Items)
- c. Group Operated Air Break Switches ("H" Items)
- d. Automatic Voltage Regulators ("K" Items)
- e. Static Converters ("M" Items)

The material and construction requirements for Shipping Box Design #2 shall be the same as the material and construction requirements for Shipping Box Design #1 except for the following differences: 1) crossbracing is not required, 2) only three (3) steel bands are required, two (2) bands installed vertically and one (1) band installed horizontally (lengthwise) and 3) there are no nominal dimensions. The size of the shipping boxes will be determined by the maximum number of pieces of equipment allowable per box. The maximum number of pieces of equipment allowable per box is as follows:

- a. Transformers, 15 KVA and below--2 per box
- b. Transformers, 25 KVA and above--1 per box
- c. Automatic Circuit Reclosers, single phase--2 per box
- d. Automatic Circuit Reclosers, three phase--1 per box
- e. Group Operated Air Break Switches--1 per box
- f. Automatic Voltage Regulators--1 per box
- g. Static Converters--1 per box

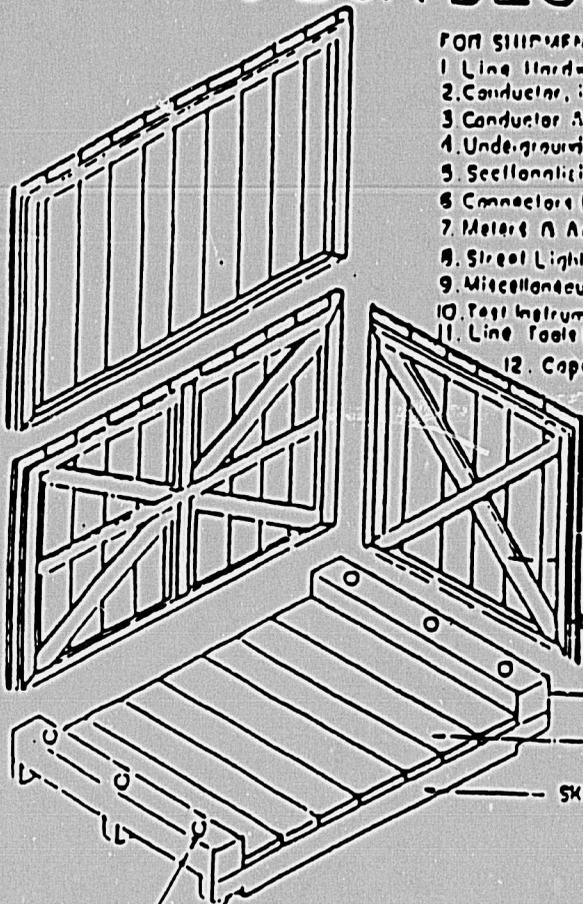
(3) Shipping Box Design #3

This box design shall be used for the packaging and shipping of insulators ("C" Items). The box shall be constructed from exterior grade plywood with a minimum thickness of one half inch (1/2"), or sawn board lumber. The maximum width of the sawn boards shall be six inches (6"). The minimum thickness of the sawn boards utilized for the sides, roof and floor shall be five-eighths of an inch (5/8"). The minimum dimensions of the frames shall be one inch (1") by four inches (4"). These frames shall be installed only on the outside of the box. Wooden separators shall be used to individually partition each insulator both horizontally and vertically. The box

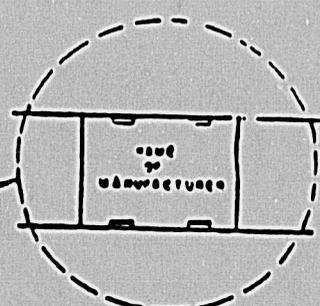
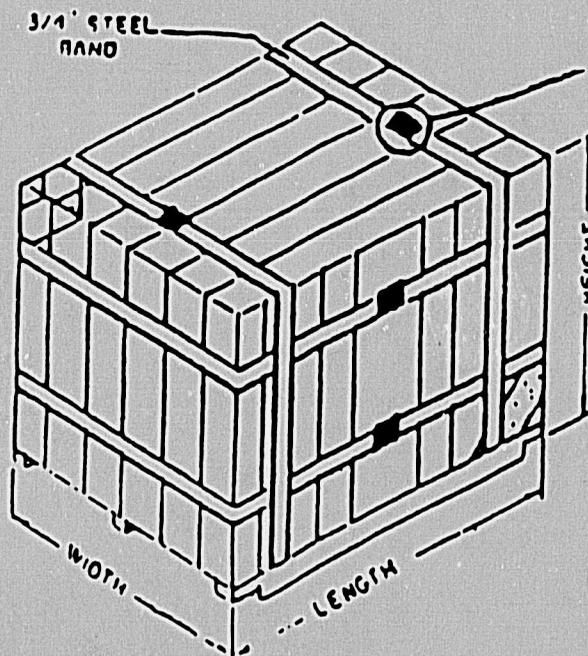
SHIPPING BOX DESIGN NO 1

FOR SHIPMENT OF

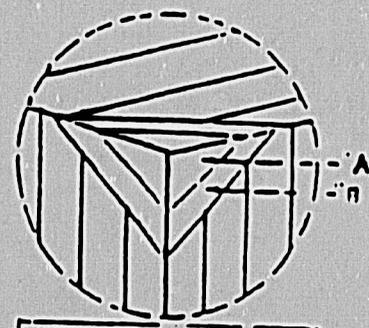
1. Line Hardware (R Items)
2. Conductor, in Coils (D Items)
3. Conductor Accessories (E Items)
4. Under-ground cable Accessories (F Items)
5. Sealing Devices (except APC AOCRA Items)
6. Connectors (I Items)
7. Metal A Accessories (J Items)
8. Street Light B Accessories (L Items)
9. Miscellaneous (ME Items)
10. Test Instruments (TI Items)
11. Line Tools (TL Items)
12. Capacitors and Accessories (K Items)



1/2" BOLTS
1"x8" NOTCH
3/4" STEEL BAND



DETAIL OF LID AND CLIP MANUFACTURER IDENTIFICATION



DETAIL OF PAINTED CORNER IDENTIFICATION

MANUFACTURER IDENTIFICATION
 1. 129
 2. 129
 3. 129
 4. 129

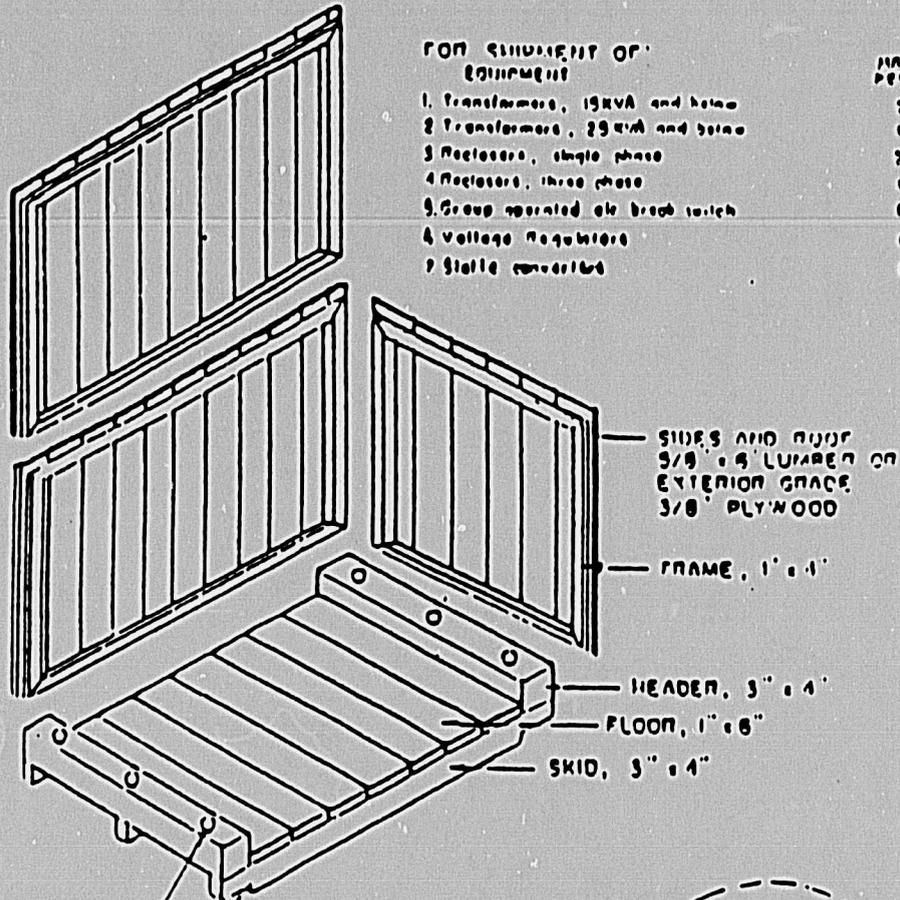
SHIPPING BOX DESIGN No 2

FOR SHIPMENT OF EQUIPMENT

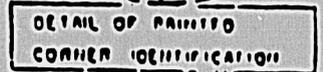
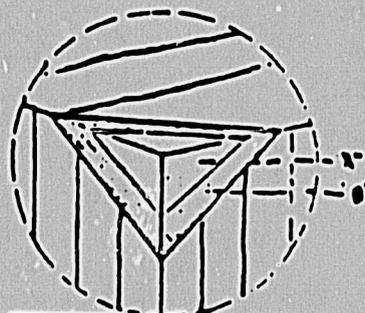
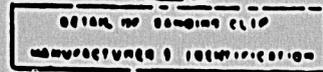
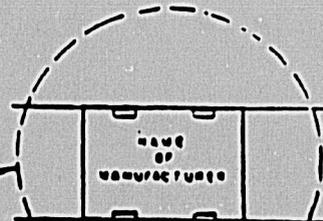
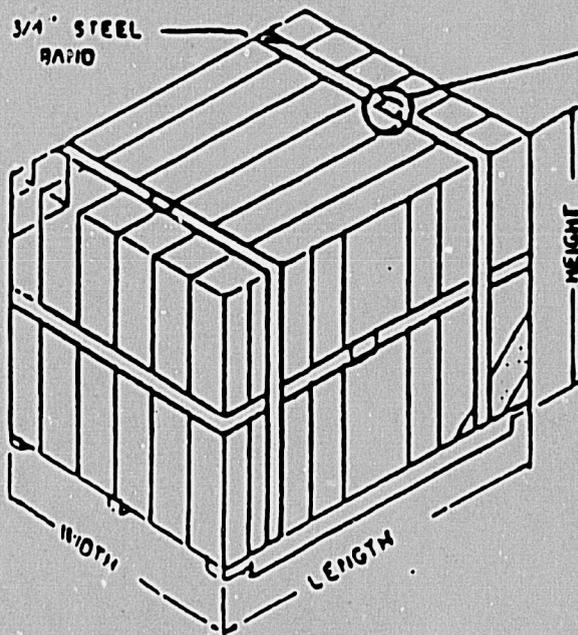
- 1 Transformer, 19KVA and below
- 2 Transformers, 25KVA and below
- 3 Rectifiers, single phase
- 4 Rectifiers, three phase
- 5 Group operated air break switch
- 6 Voltage Regulators
- 7 Static converters

MAXIMUM
PER BOX

- ?
- 1
- ?
- 1
- 1
- 1
- 1

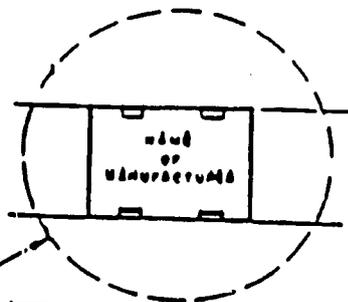
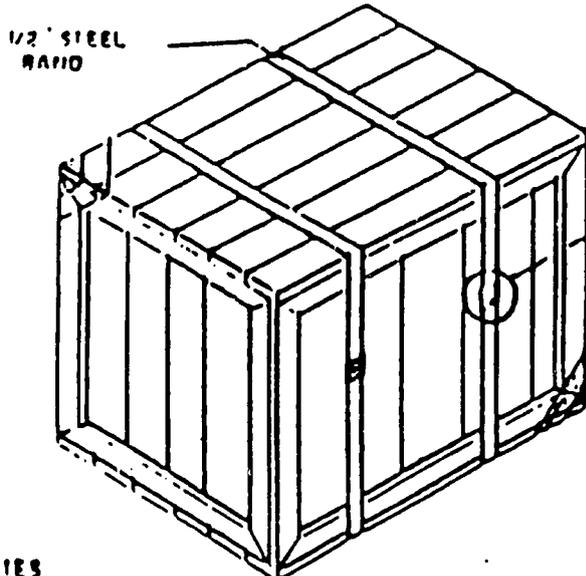
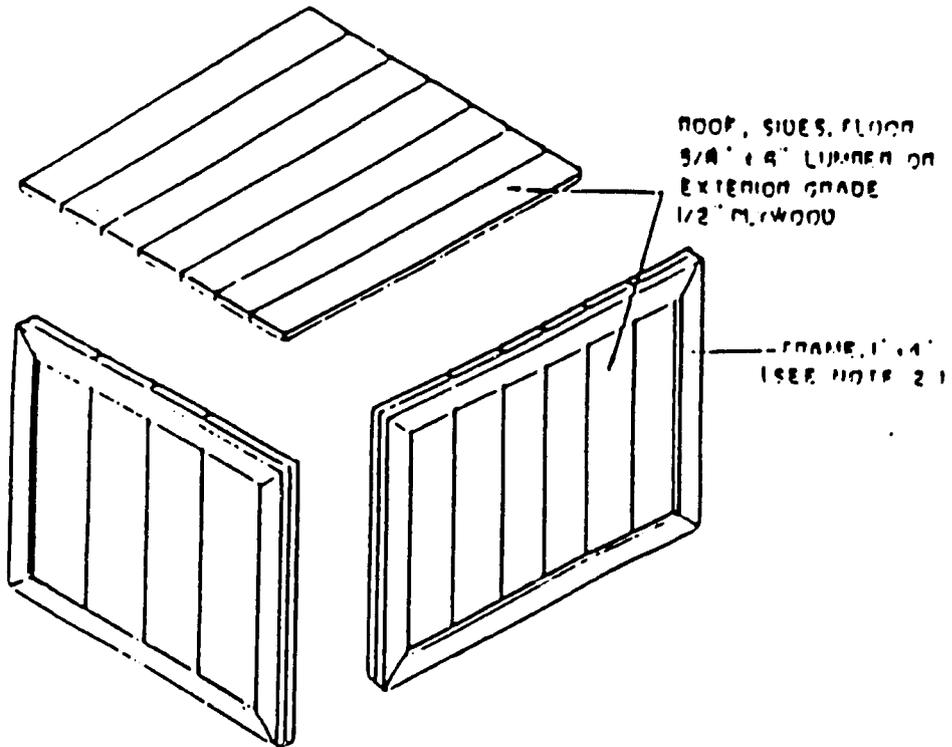


- 1/2" BOLTS
- 1" x 8" NUTS
- 3/4" STEEL BRAD

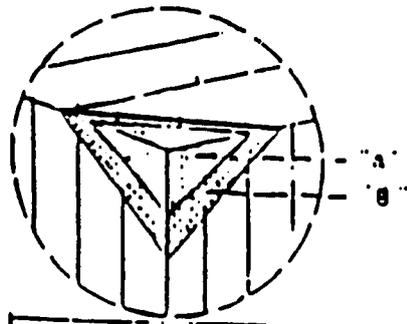


SHIPPING BOX DESIGN N° 3

FOR SHIPMENT OF:
1. Insulated (C' 116m6)



DETAIL OF TOP EDGE OF
LID IDENTIFICATION



DETAIL OF REINFORCED
CORNER IDENTIFICATION

NOTES

1. THE GROSS WEIGHT OF ONE BOX SHALL NOT EXCEED 50 KILOGRAMS.
2. ALL FRAMING SHALL BE LOCATED ON THE OUTSIDE OF THE BOX.
3. INSULATIONS SHALL BE SEPARATED, BOTH HORIZONTALLY AND VERTICALLY BY WOOD PARTITIONS.

shall be strapped with two (2) vertical flat steel strapping bands. The minimum width of these bands shall be one half inch (1/2"). The nominal gross weight of this shipping box shall be fifty kilograms (50kg). Note that this is the nominal weight and that if necessary the Bidder may slightly vary this weight to better accommodate the packaged insulators.

23. Marking

The marking of shipping boxes will be as follows:

Port of Shipment	_____
Port of Destination	_____
Consigner	_____
Consignee	_____
L/C No.	_____
Gross Weight	_____
Package/Case No.	_____

All external markings must be legible and durably painted or stenciled on two (2) sides, a minimum of four centimeters (4cm) high. Chalk or crayon shall not be used.

Packages must be numbered consecutively and no two packages delivered by the Supplier to the Contracting Agency may carry the same number regardless of the number of shipments. Net and gross weights, length in feet in case of conductors and wires shall be shown clearly.

INE/NRECA ###-### must be written legibly and durably, painted or stenciled diagonally on four (4) sides of all boxes. The size of the letters must be at least four (4) centimeters in each direction.

All steel banding clips used to secure the steel banding shall be legibly and indelibly marked with the manufacturer's name or symbol. Refer to Detail of Banding Clip Manufacturer's Identification as depicted on the Shipping Box Design drawing.

All boxes shall be marked with one (1) blue and one (1) yellow stripe depicted as "A" and "B" respectively on the painted corner detail identification of the Shipping Box Design drawing.

24. Spare Parts

The successful Supplier shall furnish with his offer a list of all special tools, spare parts and components necessary for proper and continuing functioning of each unit as required in the Technical Specifications. The list will be prepared in such form so that each line item can be readily identified by the manufacturer's part number, nomenclature, and F.O.B. (Vessel) Unit Price.

25. Equal Employment Opportunity

The Supplier will not discriminate in recruitment or employment conditions of personnel hired in the United States because of race, religion, color, sex, or national origin and must be in compliance with its equal employment opportunity obligations under Executive Order 11246 dated September 24, 1965.

122

26. Vesting of Title and Diversion Rights

NRECA reserves the right to vest in itself title to the goods financed under this contract, provided that such goods are in a deliverable state and have not yet been off-loaded in ports of entry in the Cooperating Country. NRECA may direct the carriers to divert these goods to alternative destination.

27. Insurance

The Supplier is reminded that payment will be made on an Ex-Warehouse, basis (delivered and unloaded at the Port of Importation). It is the responsibility of the Supplier to ensure compliance of all contractual terms (i.e. safe delivery of commodities to the specified point of delivery).

28. Notices

Any notice given by either party will be in writing or by FAX or cable and will be deemed duly given or sent when delivered to the following addresses:

To Supplier: To the address on the Bidder Information Form

To Contracting Agency: Instituto Nicaragüense de Electricidad
 INE
 c/o NRECA
 2a. Planta Edificio Administrativo de CEL
 9a. Calle Poniente No. 950, Centro de Gobierno
 San Salvador, El Salvador, C.A.
 Telephone: (503) 71-20-38 or 71-08-55
 FAX: (503) 21-45-24

Notices shall be effective when delivered or on the effective date of the notice, whichever is later.

12/23

BIDDER RESPONSE TO IFB NO. ###-###-NRECA-91/01

BIDDER: _____ (name of company)

BIDDERS MUST FILL IN THE FOLLOWING:

- 1) Quoted prices are Ex-Warehouse? Yes _____ No _____
- 2) Delivery Period _____
- 3) Port of Delivery _____
- 4) Validity of Bid _____
- 5) Flag of Vessel _____
- 6) Shipping route _____
- 7) Is there a discount? If yes, attach discount chart. Yes _____ No _____
- 8) Deviations of contractual conditions? If yes, attach detailed list of deviations. Yes _____ No _____
- 9) Does your manufacturing and delivery Schedule comply with the required Schedule? If no, state clearly the deviations _____ Yes _____ No _____
- 10) Remarks: _____

Reminder to Bidders:

- i) Indicate in your offer the catalog number of each item proposed.
- ii) Attach to your offer leaflets of each proposed item.

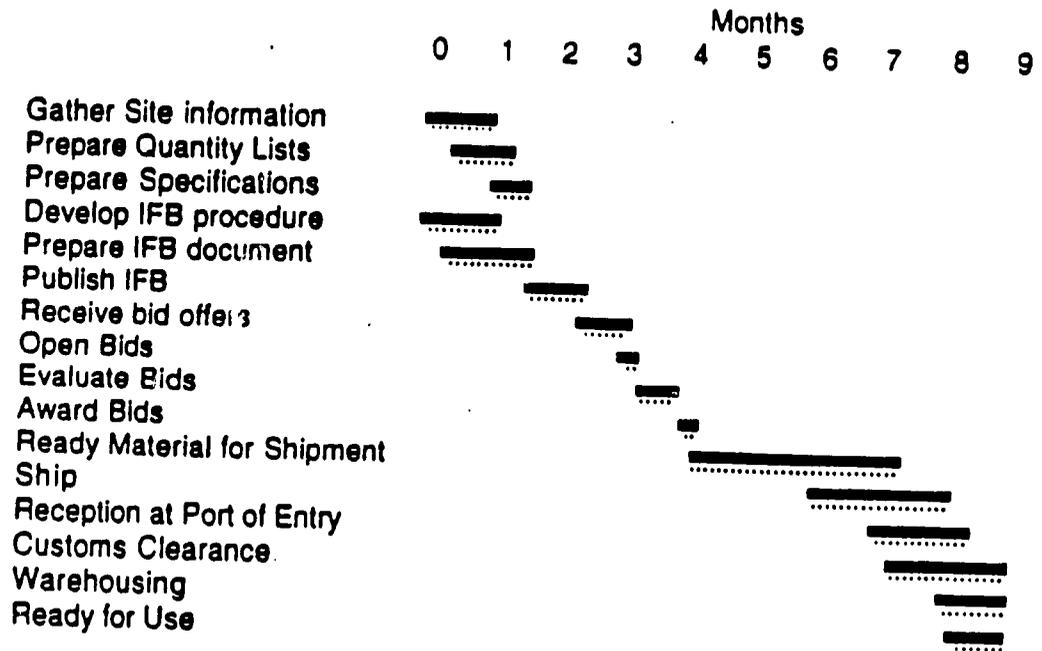
NOTE:

If there is any discrepancy between the catalog number indicated in your offer and the catalog number indicated in the leaflet, it will be assumed that the Bidder is not bidding this item.

Name: _____
 Title: _____
 Signature: _____
 Date: _____

Annex G.2

Time Frame for Procurement



ANNEX H

IEE STUDY

2/2

(5) ACTION: AID-2 INFO: DCM ADM

VZCZCMT0672
RR RUEHMU
DE RUEHC #9017 2011824
ZNR UUUUU ZZE
R 201021Z JUL 91
FM SECSTATE WASHDC
TO RUEHMU/AMEMBASSY MANAGUA 7635
INFO RUEHGT/AMEMBASSY GUATEMALA 3161
BT
UNCLAS STATE 239017

22-JUL-91 TOR: 12:50
CN: 46195
CHRG: AID
DIST: AIDA
ADD:

OFFICIAL FILE COPY

AIDAC MANAGUA FOR R. OWENS, GUATEMALA FOR W. WILLIAMS

P.O. 12356: N/A

TAGS:

SUBJECT: ENVIRONMENTAL THRESHOLD DECISION FOR
USAID/NICARAGUA ATLANTIC COAST ELECTRIFICATION PROJECT
(524-0324)

1. THE LAC DEPUTY CHIEF ENVIRONMENTAL OFFICER HAS
REVIEWED AND HEREBY APPROVES MISSION REQUEST FOR NEGATIVE
DETERMINATION FOR SUBJECT PROJECT.

2. NEGATIVE DETERMINATION IS SUBJECT TO IMPLEMENTATION OF
RECOMMENDATIONS IN THE INITIAL ENVIRONMENTAL EXAMINATION.
THESE CALL FOR REPLACEMENT OF UNSERVICEABLE OR INEFFICIENT
GENERATING UNITS, TRAINING PROGRAMS TO IMPROVE OPERATION
AND MAINTENANCE, REHABILITATION AND ENHANCEMENT OF
AFFILIATED GENERATION PLANT EQUIPMENT, A SYSTEMATIC
PROGRAM IMPLEMENTED TO STOP OIL AND FUEL LEAKS FROM ALL
GENERATION PLANT FACILITIES, IMPLEMENTATION OF A FUEL AND
OIL SPILL CONTAINMENT PROGRAM, IMPLEMENTATION OF A PLAN TO
PROTECT THE HEARING OF PLANT WORKERS, REHABILITATION OF
DISTRIBUTION SYSTEMS, PURCHASE OF POLES TREATED WITH THE
CCA PROCESS, PROPER STORAGE OF WOOD POLES, VEGETATION
REMOVAL NEAR PRIMARY DISTRIBUTION LINES, AND NEW
CONSTRUCTION CONDUCTED IN ACCORDANCE WITH NATIONALLY
RECOGNIZED AND APPROVED SAFETY STANDARDS. PROJECT

EVALUATIONS WILL EXAMINE THE SUCCESS OF THE ABOVE ACTIONS
IN MITIGATING ENVIRONMENTAL IMPACTS THAT MAY OCCUR DURING
PROJECT IMPLEMENTATION.

3. IFE NUMBER IS LACIEE-91-71. COPY OF IFE BEING
FORWARDED TO MISSION FOR INCLUSION IN PROJECT FILES.
BARTHOLOMEW

PT
#9017

NNNN

Date received	Act.	Info
21 JUL 91		
D		
DD		/
LA		/
EA		
PEPS		
UJO		
EXO		
CU		
FIN		
PUI		/
ARD	/	
Heading File		/
Chron		/

UNCLASSIFIED STATE 239017

Due Date: 7/26/91
Action Taken:
Inflator

137

Agency for International Development
Washington, D.C. 20523

LAC-IEE-91-71

ENVIRONMENTAL THRESHOLD DECISION

Project Location : Nicaragua

Project Title : Atlantic Coast Electrification

Project Number : 524-0324

Funding : \$5 million

Life of Project : 3 Years (FY 91-93)

IEE Prepared by : David A. Lieberman
USAID/Nicaragua

Recommended Threshold Decision : Negative Determination

Bureau Threshold Decision : Concur with Recommendation

Comments : Negative Determination subject to implementation of recommendations in the Initial Environmental Examination. These call for replacement of unserviceable or inefficient generating units, training programs to improve operation and maintenance, rehabilitation and enhancement of affiliated generation plant equipment, a systematic program implemented to stop oil and fuel leaks from all generation plant facilities, implementation of a fuel and oil spill containment program, implementation of a plan to protect the hearing of plant workers, rehabilitation of distribution systems, purchase of poles treated with the CC₁ process, proper storage of wood poles, vegetation removal near primary distribution lines, and new construction conducted in accordance with nationally recognized and approved safety standards. Project evaluations will examine the success of the

ENVIRONMENTAL THRESHOLD DECISION (cont.)

Comments (cont.) : above actions in mitigating environmental impacts that may occur during project implementation.

Copy to : Janet C. Ballantyne, Director
USAID/Nicaragua

Copy to : John Cloutier, USAID/Nicaragua

Copy to : Richard Owens, USAID/Nicaragua

Copy to : David Lieberman, USAID/Nicaragua

Copy to : Mark Silvermen, LAC/DR/CEN

Copy to : Wayne Williams, REA/CEN

Copy to : IEE File

John O Wilson Date JUL 19 1991
John O. Wilson
Deputy Chief Environmental Officer
Bureau for Latin America
and the Caribbean



AGENCY FOR INTERNATIONAL DEVELOPMENT

UNITED STATES A. I. D. MISSION TO NICARAGUA

INITIAL ENVIRONMENTAL EXAMINATION

Project Location : Nicaragua
Project Title : Atlantic Coast
Electrification Project
Project Number : 524-0324
Funding : \$5 million
Life of Project : 3 Years
IEE Prepared by : David A. Lieberman
USAID/Nicaragua

Recommended Threshold Determination: Negative Determination

Comments: A Negative Determination is recommended with the provision that the attached procedures are followed. In summary, these include replacement of unserviceable or inefficient generating units, training programs to improve maintenance and operation, rehabilitation and enhancement of affiliated generation Plant Equipment, a systematic program implemented to stop oil and fuel leaks from all generation plant facilities, implementation of a fuel and oil spill containment program, implementation of a plan to protect the hearing of plant workers, rehabilitation of distribution systems, treatment of wood poles with the CCA process, proper storage of wood poles, vegetation removal near primary distribution lines, and new construction conducted in accordance with nationally recognized and approved safety standards.

Project Evaluations will examine the success of the environmental review process in terms of minimizing any negative environmental impacts that may occur during Project implementation. Given the nature of the activities proposed under this Project, if the procedures recommended in the IEE are followed, there should be no significant harmful effects on the environment.

Concurrence: Janet C. Ballantyne
Janet C. Ballantyne, Director
USAID/Nicaragua

Date: 6/26/91

Drafted: PDIS:DLieberman: AK

Cleared: PDIS:JCloutier: JK

ARDO:BRudert: BR

DDIR:KSchofield: KS

I. BACKGROUND

Bluefields and Puerto Cabezas are the principal port towns of the Atlantic Coast of Nicaragua and have potential as important centers for shipping, communication, economic geography, infrastructure and culture. The Atlantic Coast presents serious developmental challenges to the Government of Nicaragua and to INE, the public electric utility.

II. BRIEF PROJECT DESCRIPTION

The National Rural Electric Cooperative Association (NRECA) will implement an A.I.D. funded project in Bluefields and Puerto Cabezas. In Bluefields, the project will improve power plant capacity, upgrade the substation, and rehabilitate the primary and secondary systems. In Puerto Cabezas, the project will upgrade the distribution voltage to 13.2 kV while repairing the primary and secondary distribution systems. The project will finance procurement of equipment, and of training and technical assistance programs for INE and its consumers. A Productive Uses of Electricity Component will maximize the economic and social benefits to consumers through a public education program and improvement of consumer services.

III. APPLICABILITY OF PROCEDURES

In accordance with the requirements set forth in AID Handbook 3, Appendix 2D, the ACE project is subject to AID environmental procedures to the extent that the project includes activities directly affecting the environment, such as construction of facilities, etc. Two classes of activities are planned which fall into this category, as follows:

1. Modifications to existing power generation facilities to improve fuel efficiency and electrical output capacity, and,
2. Renovation and upgrading of electrical distribution systems.

Other project components, dealing with education, technical assistance, and training programs, are not subject to AID environmental procedures.

IV. POTENTIAL ENVIRONMENTAL IMPACTS/CONSEQUENCES

Potential environmental impacts and consequences are discussed within the context of the two general classes of activities in question, and are further broken down into specific areas and analyzed with respect to anticipated intervention, potential environmental impact or consequence, and recommendations.

I. Power Generation Facilities.

Electrical power for both Bluefields and Puerto Cabezas is presently generated solely by diesel powered generating sets. Diesel engines have a potential for creating adverse environmental impacts in three general ways: a) through spillage of the petroleum products used for fuel and lubrication, b) gases and particulate matter contained in the exhausts, and c) noise generated by the internal combustion engines and generators.

Ia. Anticipated Interventions.

Interventions of the ACE project with respect to power generation facilities are for the purpose of increasing useable capacity, improving efficiency, and reducing safety hazards. This will be accomplished through replacement of unserviceable or inefficient generating units with new ones, modification and repair of other existing generating units, and rehabilitation and enhancement of affiliated generation plant equipment such as that used for cooling or fuel handling, and training programs to improve maintenance and operation.

Ib. Potential Environmental Impact.

Replacement of old generation units has a mixed potential for environmental impact. To the extent that the new units replace existing inefficient generation, the potential is for reduced fuel consumption and consequently reduced exhaust emissions and reduced chance for spillage of fuel. New units will also reduce the chances for leakage of lubricating fluids.

To the extent that the new units represent additional operating time (i.e., reduction of power outages and present lack of electrical service), the potential is for increased fuel consumption and consequently increased exhaust emissions. Additional noise is also a potential negative impact for plant workers and for residential neighbors, particularly in Bluefields.

Modification and repair of existing generation now in service has mainly the potential to reduce fuel consumption, exhaust emissions, and chances of leakage or spills of petroleum products.

Rehabilitation and enhancement of other related plant equipment will tend also to reduce fuel consumption, exhaust emissions, petroleum products loss, and use of water and chemical additives for cooling. Training programs will reinforce these reductions.

1c. Recommendations.

- A) A systematic program should be implemented to stop oil and fuel leaks from all generation plant facilities. This should be augmented by a general cleanup of existing petroleum products spills in the vicinity of the generation plants, which now constitute both a contamination problem and a fire hazard.
- B) A fuel and oil spills containment plan should be developed for each generation plant, including consideration of landscaping, oil absorbant materials, and physical barriers. In the case of Bluefields, consideration should be given to the possibility of eventually relocating the plant site, or of retiring the plant in the event that the transmission system grid is extended to Bluefields. If this is not feasible, special attention should be given to reduce any chance that fuel or oil spills might affect downhill residents or the nearby shoreline.
- C) New generation units should be equipped with sound muffling systems appropriate for use near residential areas.
- D) A plan should be developed and implemented to protect the hearing of plant workers. At a minimum, this should include the wearing of ear protection. Ideally, it should include the construction of facilities such that generation parameters could be monitored from within an area in the plant shielded from excess noise.
- E) An oil filter press or equivalent equipment should be made available to extend the life of lubricating oils.
- F) Diesel fuel transportation routes and methods should be reviewed to see if there are practical ways to reduce the potential for fuel spills.

2. Electrical Distribution Facilities.

Although electrical distribution lines may be considered as relatively benign with respect to direct environmental effects, particularly within a settled community, there do exist specific areas in which there is a potential for adverse environmental impact. In Bluefields and Puerto Cabezas, the specific areas identified are:

- a) chemical contamination from preservative treatment of wood power poles, b) removal of trees and other vegetation along line routes, and c) danger from short circuits of high voltage electric conductors.

2a. Anticipated Interventions.

Almost the entire distribution systems in the two project communities will be rehabilitated or upgraded, including the new installation of approximately 50 kilometers of new primary and secondary voltage circuits. No underground construction is planned; all construction will be of the overhead type, using bare conductors for primary voltage circuits, and a combination of bare and insulated conductors for secondary voltage circuits.

2b. Potential Environmental Impact.

Wood power poles are chemically treated to extend their service life. In a climate such as that along the Atlantic Coast of Nicaragua, the useful life of an untreated pole may be 3-4 years compared to a life of 20-30 years for a properly treated pole. However, with certain types of treatment, particularly those containing "penta" or creosote, there is a tendency in warm temperatures for the chemicals to bleed or leach into the adjacent soil. More recent CCA treatments avoid this potential because the preservative chemicals are fixed within the individual wood cells, and therefore do not leach out.

In many cases, clearing of vegetation along rights-of-way is necessary or desired for power line construction. In this case, where most construction will be to replace existing lines or in a more urban environment, a relatively small amount of trees will need to be trimmed or removed. It is not necessary to remove vegetation near ground level except for actual pole locations.

It is anticipated that the primary distribution lines be constructed for 7.6 kV between energized conductors, and 7.6 kV between any energized conductor and the ground. This voltage can be lethal upon human contact and can result in outages and/or fires upon contact by trees or other conductive materials. The secondary lines will be energized at 240 volts between energized conductors, and 120 volts from energized conductor to ground. This voltage can be dangerous to humans under certain conditions. When the energized conductors are insulated, they may be touched without danger to people or plants.

2c. Recommendations.

- 1) All wood poles purchased for this project should be treated with the CCA process.
- 2) Wood poles should be stored in such a manner that they are level and elevated from the ground, with air circulation between the poles and the ground.

- 3) Priority should be given to trimming trees which would interfere with primary distribution lines rather than cutting down the trees. Trees and vegetation should not be removed except when they pose a threat to the electric circuits.
- 4) Any trees or other vegetation removed should be disposed of properly.
- 5) All new construction should be built to nationally recognized and approved safety standards. Pole strength and clearance distances should not be less than those approved by the Rural Electrification Administration of the United States.

IV. THRESHOLD DECISION

The developers of the IEE recommend a negative determination for the environmental threshold decision. This negative determination is recommended with the provision that the specific activity recommendations herein described are followed, and that review process is developed to establish accountability and to evaluating the success in implementing proper environmental procedures in the ACE project activities.

Given the nature of the activities proposed, if the recommendations listed in the IEE are followed, the ACE project should not have a significant harmful effect on the environment.

ANNEX I
NPD GUIDANCE CABLE

MISSION: AID INFO: PCL DCM ECON

020010479
000000

23-APR-91

TO: 12:53
CV: 34252
CHRG: AID
DIST: AID
ADD:

005PC #1421/31 1130441

IP UUUUU ZZH

230475Z APR 91

1 SECSTATE WASHDC

1 AMEMBASSY MANAGUA PRIORITY 5452

ICLAS SECTION 31 OF 32 STATE 131421

DAC

0. 12355: N/A

AGS:

PROJECT: REVIEW OF THE NICARAGUA ATLANTIC COAST
ELECTRIFICATION NPD AND THE PRIVATE SECTOR
SUPPORT NPD

OFFICIAL FILE COPY

REF: CLOUTIER/BOURGAULT TELECON 24/09/91

ON APRIL 5, 1991 THE LAC BUREAU REVIEWED THE SUBJECT
PTS. THE NPDS AND THE MISSION'S REQUEST TO MOVE
PROJECTS TO THE PP STAGE OF PROJECT DESIGN FOR BOTH
PROJECTS WERE APPROVED SUBJECT TO THE FOLLOWING GUIDANCE.

THE ATLANTIC COAST ELECTRIFICATION PROJECT (524-0324)

POLICY STUDIES - THE BUREAU SUPPORTS THE MISSION
PLANS TO SET ASIDE FUNDING WITHIN THE PROJECT TO LOOK AT
ROADER ISSUES SUCH AS TARIFF RATIONALIZATION,
CENTRALIZATION MODELS AND THE POTENTIAL FOR
PRIVATEIZATION OF ISOLATED SYSTEMS. IN ADDITION, WE
ENCOURAGE THE MISSION TO CONSIDER LOOKING MORE
AGGRESSIVELY AT THE PROSPECTS FOR PRIVATE SECTOR
INVOLVEMENT IN THE POWER SECTOR IN NICARAGUA. WOULD IT
BE POSSIBLE TO FINANCE STUDIES WHICH WOULD IDENTIFY

POTENTIAL ACTIVITIES IN THE POWER SECTOR FOR OTHER DONOR
FINANCING - I.E. THE IDB AND THE WORLD BANK? IS THERE
ROOM FOR THIS KIND OF WORK UNDER THE ROPAP SUPPORTED
APES PROJECT?

TECHNICAL CONSIDERATIONS - SEVERAL TECHNICAL
CONSIDERATIONS WERE PUT FORTH BY OPDA CONCERNING
CONSTRUCTION AND IMPLEMENTATION OF THIS PROJECT. THE
MISSION REPRESENTATIVE WAS GIVEN A COPY OF THESE
RECOMMENDATIONS WHICH THE MISSION SHOULD CONSIDER IN
FUTURE PROJECT DESIGN.

ENERGY STRATEGY - DURING THE REVIEW, THE QUESTION OF
HOW THE PROPOSED ENERGY AUGMENTATION FITS INTO THE
LARGER FRAMEWORK OF PLANNED ELECTRIC POWER DISTRIBUTION
IN NICARAGUA WAS RAISED. IS THIS A TEMPORARY SOLUTION
OR A PERMANENT ONE? IS THIS PART OF A LARGER PLAN OR AN
AD HOC SOLUTION TO AN IMMEDIATE PROBLEM? WHAT OTHER
OPTIONS WERE CONSIDERED?

Date Received:	
Act.	Info
D	
DD	
LA	
EA	
OPP	
CUU	
EO	
CU	
Fin	
PDI	/
ARU	
Heading File	/
Chron	/

Due Date: 4/15/91
Action Taken:
Initials:

148

D. USE OF SURPLUS EQUIPMENT - THE REVIEW RAISED A SPECIFIC CONCERN WITH REGARD TO THE ROLE OF SURPLUS EQUIPMENT IN THE AUGMENTATION OF GENERATING CAPACITY. WHILE THE MISSION MAY CHOOSE TO UTILIZE SURPLUS EQUIPMENT IN SUPPORT OF PROJECT ACTIVITIES, THE PROJECT SHOULD NOT REPEAT NOT DEPEND ON SUCH EQUIPMENT. THE MISSION SHOULD ALSO BE ASSURED THAT THE SYSTEM WILL HAVE AN ADEQUATE LIFESPAN AND THAT NICARAGUA WILL BE ABLE TO MAINTAIN THE EQUIPMENT FINANCED UNDER THE PROJECT.

E. FUNDING FOR SURPLUS EQUIPMENT - PER REF TELCON, THE MISSION CLARIFIED THAT NO MISSION OR ROCAF FUNDS WILL BE USED FOR THE PURCHASE OR TRANSPORT OF DONATED, SURPLUS EQUIPMENT. FUNDING FOR THE PURCHASE AND TRANSPORT OF SURPLUS EQUIPMENT WILL BE PROVIDED AS PART OF THE HOST COUNTRY COUNTERPART CONTRIBUTION. IF THE MISSION DECIDES TO FUND ANY PORTION OF THE SURPLUS EQUIPMENT FOR THIS PROJECT THEY SHOULD FIRST CAREFULLY CONSIDER THE SPECIAL CONDITIONS SURROUNDING THE PROCUREMENT OF USED, REBUILT, AND RECONDITIONED PARTS OR ASSEMBLIES (REF. HANDBOOK 15, SECTION 5E AND HANDBOOK 1, SUPPLEMENT).

F. WORKPLAN - LAC/DR WOULD APPRECIATE THE MISSION FORWARDING A COPY OF THE VRECA WORKPLAN AND A BRIEF PROJECT DESCRIPTION OF THE PROJECT.

3. PRIVATE SECTOR SUPPORT PROJECT (524-2325)

A. ESTABLISHMENT OF PRIVATE BANKS - THE BUREAU FULLY SUPPORTS THE OBJECTIVES OF THIS COMPONENT. HOWEVER, WHILE THE RATIONALE BEHIND ASSISTING COOPERATIVES AND CREDIT UNIONS IS CLEAR, WE DO NOT UNDERSTAND WHY THE MISSION PROPOSES TO PROVIDE TRAINING AND TECHNICAL ASSISTANCE TO NEW PRIVATE BANKS TO ESTABLISH SOUND, PROFITABLE OPERATIONS. A MORE APPROPRIATE ROLE FOR A.I.D MAY BE TO ASSIST IN ESTABLISHING THE CAPACITY TO PROVIDE SUCH TRAINING. DURING PROJECT DESIGN, THE MISSION SHOULD DEFINE THE TYPES OF TRAINING/TECHNICAL ASSISTANCE TO BE PROVIDED TO THOSE PRIVATE INSTITUTIONS CLEARLY IN NEED OF SUCH ASSISTANCE.

B. ASSISTANCE TO STATE BANKS - THE REVIEW ALSO QUESTIONED THE FEASIBILITY OF ACHIEVING THE OUTPUT OF STREAMLINED, BETTER CONTROLLED STATE BANKS WITH OUR LIMITED ASSISTANCE. THE MISSION SHOULD IDENTIFY WHAT TYPE OF SPECIFIC ASSISTANCE WOULD BE MOST APPROPRIATE TO THE PUBLIC SYSTEM GIVEN LIMITED RESOURCES.

.. PROMOTION OF EXPORTS AND INVESTMENT - THE DESCRIPTIONS OF PROPOSED ACTIVITIES UNDER THIS COMPONENT WERE NOT CLEAR. THEREFORE, THE MISSION HAS PROVIDED THE BUREAU WITH THE FOLLOWING REVISED DESCRIPTION AND EXPLAINED THAT THE OUTPUT OF QUOTE PRIVATE SECTOR INVESTMENT/EXPORT PROMOTION ORGANIZATION ESTABLISHED AND OPERATING UNQUOTE HAS BEEN DROPPED.

POTENTIAL INVESTORS AND EXPORTERS REQUIRE RELIABLE INFORMATION AND BUSINESS CONTACTS TO TAKE ADVANTAGE OF THE IMPROVED BUSINESS CLIMATE PROVIDED BY MACROECONOMIC STABILIZATION AND THE STRUCTURAL REFORMS CARRIED OUT BY THE CON. THESE SERVICES CAN, IN PRINCIPLE, BE PROVIDED BY EITHER PUBLIC OR PRIVATE SECTOR ENTITIES. AID EXPERIENCE ELSEWHERE HAS SHOWN THAT THESE SERVICES ARE MOST EFFECTIVE IF THEY ARE PROVIDED BY PRIVATE SECTOR ENTITIES RESPONDING DIRECTLY TO THE NEEDS OF EXPORTERS AND INVESTORS. SUCH SERVICES WILL BE PARTICULARLY CRITICAL IN NICARAGUA. ELSEWHERE IN CENTRAL AMERICA, DURING THE 1980S, AS THE LIMITS OF IMPORT SUBSTITUTION WITHIN THE CACM BECAME INCREASINGLY APPARENT, GOVERNMENTS BEGAN A PROCESS OF REORIENTATION TOWARD THE OUTSIDE WORLD. AN IMPORTANT CONTRIBUTING FACTOR IN THIS PROCESS WAS THE DEVELOPMENT OF A SET OF INSTITUTIONS IN EACH

COUNTRY, MOST IN THE PRIVATE SECTOR, TO PROVIDE CRITICAL SUPPORT AND REPRESENTATIONAL SERVICES. THE SITUATION IN NICARAGUA, OF COURSE, WAS QUITE DIFFERENT. HERE, THE EFFORTS OF ORGANIZATIONS REPRESENTING THE PRIVATE SECTOR WERE DIRECTED TOWARD DEFENDING THE EXISTENCE OF THE PRIVATE SECTOR, FROM LEGAL AND EXTRALEGAL CHALLENGE. COSEP AND ITS MEMBER ASSOCIATIONS PLAYED THIS ROLE WELL. HOWEVER, COSEP'S STRUCTURE AND ORIENTATION DO NOT PARTICULARLY SUIT IT TO THE KIND OF SERVICE AND REPRESENTATIONAL ROLE NOW REQUIRED.

DURING THE PAST YEAR, A NUMBER OF PRIVATE ORGANIZATIONS AND ASSOCIATIONS HAVE BEEN INITIATED WITH THE INTENTION OF PROMOTING EITHER INVESTMENT AND EXPORTS IN GENERAL OR PARTICULAR TYPES OF EXPORTS. THESE INCLUDE IMPEI, A BROAD COORDINATING ORGANIZATION ORIGINATING IN THE MINISTRY OF ECONOMY PUT IN THE PROCESS OF BEING SPUN OFF, FEMIX, AN ORGANIZATION OF INDIVIDUALS IN THE PRIVATE SECTOR WITH A VERY SIMILAR OBJECTIVE TO THAT OF IMPEI, AND APENM, AN ORGANIZATION DEVOTED TO THE PROMOTION OF NONTRADITIONAL AGRICULTURAL EXPORTS. IN ADDITION, THE CAMARA DE INDUSTRIAS, A CONSTITUENT OF COSEP, IS INTERESTED IN BROADENING ITS ROLE TO THAT OF PROMOTING INDUSTRIAL EXPORTS, AND SEEMS CAPABLE OF DOING SO.

THIS PROJECT COMPONENT WILL WORK ALONG TWO PARALLEL TRACKS. FIRST, THE PROJECT WILL HELP NICARAGUA BEGIN A PROCESS OF REESTABLISHING NORMAL COMMERCIAL

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AND INVESTMENT CONTACTS. TO HIS FUND, THE PROJECT WILL CONTRACT WITH AN SA FIRM TO BEGIN TO DEVELOP INFORMATION PACKETS FOR POTENTIAL INVESTORS, PROVIDE ASSISTANCE TO NICARAGUAN EXPORTERS TO IDENTIFY POTENTIAL BUYERS, SOURCES OF FINANCING, IDENTIFY QUALITY CONTROL, INSPECTION, AND OTHER REQUIREMENTS, ETC. THIS ASSISTANCE WILL, INITIALLY, BE DIRECTED TOWARD THE U.S. MARKET AND POTENTIAL U.S. INVESTORS. IN LINE WITH THE AGENCY'S HIGH PRIORITY FOR PROMOTING U.S. EXPORTS, THE CONTRACTOR WILL ALSO ATTEMPT TO ASSIST U.S. BUYERS TO IDENTIFY NICARAGUAN CUSTOMERS AND DEALERS. SECOND, THE PROJECT WILL PROVIDE TECHNICAL ASSISTANCE AND VERY LIMITED COMMODITY SUPPORT TO SEVERAL LOCAL ORGANIZATIONS TO IMPROVE THEIR CAPABILITY TO EVENTUALLY ASSUME RESPONSIBILITY FOR THE INVESTMENT/EXPORT PROMOTION EFFORT.

D. OTHER PROPOSED ACTIVITIES - THE BUREAU SUPPORTS THE ADDITIONAL ACTIVITY OF LIMITED POLICY RESEARCH AND PLANNING IN SUPPORT OF SMALL AND MICRO ENTERPRISE ACTIVITIES WITH THE UNDERSTANDING THAT THE MISSION RESOURCES WILL NOT BE USED TO HELP ESTABLISH NEW INSTITUTIONS. THE MISSION'S PLANNED APPROACH TO TECHNICAL ASSISTANCE, TRAINING AND OPERATIONAL SUPPORT FOR THE PRIVATE SECTOR ASSOCIATIONS WAS NOT ENTIRELY CLEAR IN THE WPD. WE RECOMMEND THAT THE MISSION CONSIDER A TARGETED, MORE FOCUSED APPROACH TO WORK ONLY WITH THE KEY INSTITUTIONS CAPABLE OF MAKING A SUBSTANTIAL CONTRIBUTION TO PRIVATE SECTOR SUPPORTED INITIATIVES.

E. EVALUATION/AUDIT/MONITORING COSTS- THE WPD BUDGET DID NOT SHOW A PLAN TO COVER THE COSTS OF EVALUATION, AUDIT AND PROJECT MANAGEMENT/MONITORING. THE PP SHO LD PROVIDE FOR THESE REQUIREMENTS. EAGLEBURGER
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ANNEX J

AIDE MEMOIRE

AYUDA MEMORIA

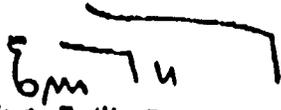
Esta memoria es provista como un antecedente al Memorandum de Entendimiento entre el Gobierno de Nicaragua (GON) y la Asociación Nacional de Cooperativas Rurales de Electricidad de los Estados Unidos (NRECA) con relación a un proyecto propuesto de electrificación de la costa Atlántica de Nicaragua.

1. En Mayo de 1978, AID y NRECA firmaron un convenio cooperativo el cual crea el Programa Apoyo a la Electrificación Rural en Centro América (CARES). Este programa consiste de varias actividades específicas a nivel regional y local que recomiendan una estrategia para mejorar las capacidades generales de los países de la región para financiar e implementar la inversión de electrificación rural.
2. Durante el segundo semestre de 1990, AID y NRECA discutieron la posibilidad de establecer un proyecto de asistencia bilateral paralelo en Nicaragua orientada al mejoramiento de los servicios eléctrico en la costa Atlántica del país. Este proyecto, una combinación de la asistencia técnica, capacitación, y apoyo a los sistemas de construcción, es una expansión de los esfuerzos de asistencia brindada por CARES en este momento.
3. Siguiendo las reuniones preliminares con el Instituto Nicaragüense de Energía (INE) en febrero y mayo de 1991, con relación a la propuesta presentada por AID-NRECA, se lograron convenios informales entre INE, NRECA y AID sobre la utilización y diseños generales para dicho proyecto. Referencia AYUDA MEMORIA fecha 28 de febrero, 1991 (INE).
4. En base a estas reuniones NRECA elaboró una propuesta para USAID basado en la descripción del proyecto para tres años, por un monto de \$7.15 millones. Fuentes del financiamiento proyectados serían de \$5.45 millones de AID y \$1.7 millones de GON como contraparte.
5. Como parte de la asistencia brindada por CARES durante el estudio del proyecto, CARES ha determinado el requerimiento inmediato de una planta eléctrica de 1200 KW para Bluefields y ha asignado recursos para la adquisición inmediata de la misma. La Adquisición de esta planta se basa en un entendimiento mutuo que el proyecto propuesto AID/NRECA sería implementado en un corto plazo. La continuidad de este programa es indispensable para sostener las necesidades de mantenimiento de la planta y la asistencia técnica involucrada de la misma, como capacitación en la operación de la planta y sus equipos.
6. En consideración de esta oferta contingente como solución interina a la deficiencia energética en Bluefields, NRECA solicita e INE acepta suministrar personal y soporte logístico en la recepción de la planta mencionada arriba en el puerto de entrada en Bluefields, el traslado a las acomodaciones de INE en Bluefields, y preparación del sitio para la instala-

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ción de la planta dentro de la misma edificación. NRECA trabajará en una estrecha coordinación con INE en todas fases de la instalación de la planta.

EN FE DE LO CUAL, El GON y NRECA, actuando cada uno de ellos por medio de sus representantes debidamente autorizados, han convenido firmar esta Ayuda Memoria, en esta ciudad en sus nombres, en el día, mes y años señalados por escrito al comienzo de este documento.


Ing. Emilio Rappacioli B.
Ministro-Director
INE.


Ing. Myk Manon
Aesor Residente de Proyecto
NRECA