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B P 486 - DJIBOUTI
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PROJET ENERGIE RENOUVELABLE
ISERST VITA

REPUBLIQUE DE DJIBOUTI
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ATD / ISERST / VITA

ENERGY INITIATIVES PROJECT

Contract n° 603 - 0013 - C - 00 - 2001 - 00

FIRST PROJECT QUARTERLY REPORT

October - December 1982

Submitted to : ATD/Djibouti

Submitted by : Steve Hirsch, VITA Chief of Party, Djibouti

January 9, 1983

This is the first quarterly report prepared by VITA (Volunteers in Technical Assistance) under the Djibouti Energy Initiatives Project. This, as well as subsequent quarterly reports, will attempt to focus on progress toward achievement of the End of Project Status (EOPS) as described in the Project Paper. It is hoped that those reading these reports will provide feedback to VITA and ISERST to help us profit from relevant experiences elsewhere in the field of technological assistance to developing countries.

General Comments on the Past Quarter

Steve Hirsch, the VITA Chief of Party, arrived in Djibouti on October 10, 1982 to begin his tour of duty.

En route to Djibouti he spent 5 days reviewing the Mali Renewable Energy Project in Bamako with Mali Solar Lab engineers and AID Project officer Jon Anderson. Areas of possible collaboration were defined and it was agreed to exchange quarterly project reports on a regular basis.

In addition to 3 days during contract negotiations, that took place in early June, the COP had spent 3 weeks TDY in Djibouti from August 24 - September 12 to participate in negotiations with ISERST, AID and a Danish Architect in relation to the construction of the AID-financed ISERST building.

The Chief of Party's housing had been arranged by AID/Djibouti, as had the purchase of the first project vehicle, a long-wheel base, Toyota diesel Land Cruiser. Temporary space for the ISERST/VITA office had also been rented by AID/Djibouti.

During the past quarter, the VITA/ISERST office was equipped, a secretary was hired and contacts were made with personnel at ISERST as well as other organizations, both governmental and private, concerned with the project.

In addition to a night security guard for the office, ISERST hired the first of two technicians to work on the project on a full time basis. Abdul Karim is a 20 year old physics/chemistry graduate of the Djibouti Lycée who is interested in energy-related matters but has had no previous practical experience.

In addition, a VITA project bank account was set up and a second project vehicle (front wheel drive pickup) was purchased for the use of consultants and the COP's Djiboutian counterpart, when he is assigned to the project.

As a result of the groundwork done by AID/Djibouti prior to the COP's arrival and the CCP's 3 week TDY, a great deal was accomplished during the first quarter. The VITA home office provided technical information and logistic support that also facilitated project startup activities in a number of areas.

Highlights of the past quarter include :

- Establishment of the VITA/ISERST Djibouti office;
- Consultancy by VITA Architect Dan Dunham and preparation of preliminary plans for the Renewable Energy building by Dunham and Engineer Judy Hirsch. Approval of these plans by ISERST and REDSO/Nairobi;
- Signature of a contract with a local architect to prepare bid documents and provide on-site supervision;
- Preparation of a manual on energy conserving construction techniques for Djibouti by Dan Dunham and Judy Hirsch;
- Consultancy by VITA staff engineer Hank Cauley on wind energy and cinva ram block construction;
- Consultancy, at VITA request, of REDSO/West Africa Energy Advisor Clarence Kooi on solar ponds and renewable energy technologies in general;
- Establishment of a collaborative agreement between VITA/ISERST and the Civil Aviation and Meteorological Bureau on the collection of energy-related climatological data;
- Establishment of a collaborative agreement between VITA/ISERST, the Ministry of Agriculture and Catholic Relief Services for the repair of an already-existing Aermotor windmill pump;
- Initiation of planning for a photovoltaic installation at the Djibouti Lycée;
- Establishment of an agreement with a local entrepreneur to promote the sale of photovoltaic refrigerators, battery chargers and other photovoltaic devices.

The Energy Initiatives Project Paper lists five "Expected Project Outputs" that should result in an "End of Project Status", that is also detailed in the Project Paper. The five "Expected Project Outputs" are in the following areas :

1. Informational and Analytical Base;
2. Pilot Interventions and Prototype Research;

3. Assessment and Dissemination of Research Results;
4. Energy Conservation Practices;
5. Policy and planning Recommendations to the Government of Djibouti.

Activities undertaken during the past quarter will be described in relation to these expected outputs.

1. Informational and Analytical Base

- Four sets of Climatronics meteorological data gathering equipment were received through USAID and three supplementary sets were ordered by VITA. Arrangements have been made with the national Civil Aviation and Meteorological Service (DACM) to collaborate on the installation, maintenance and analysis of the data gathered by this equipment throughout the country. Installation of the main meteorological site was begun under the auspices of the DACM on the roof of the Ministry of Industry and Tourism.

A formal accord between ISERST and DACM, prepared by VITA, has been agreed upon verbally and is currently awaiting signature. This agreement includes DACM support for ISERST data gathering and analysis activities both in the town of Djibouti as well as in the interior of the country.

- As a result of discussions with ISERST personnel, a preliminary plan for the use of a minicomputer by ISERST has been prepared. Although this computer will be purchased by VITA under the RE project, it is anticipated that other sections within ISERST will also be able to make use of this equipment. The minicomputer will not be delivered to Djibouti until the ISERST Renewable Energy Building is completed.

- En route to Djibouti, the COP consulted with the Agence Française pour la Maitrise d'Energie (the equivalent of the US Department of Energy) in Paris. As part of the material the AFME provide was a set of full size colored posters describing energy sources and uses. The Djibouti vocational high school (Lycée d'Enseignement Professionnel - LEP) principal requested VITA/ISERST assistance in mounting the posters and preparing a presentation on the topic of energy--both conventional and renewable --for his own students as well as those of the local Lycée. The posters have been mounted and a presentation is now being prepared.

2. Pilot Interventions/Prototype Research

- As a result of interest the project has generated within the chemistry and physics departments of the Djibouti Lycée, two instructors have submitted a proposal to the Ministry of Education for the installation of a photovoltaic unit to provide power to the Lycée laboratory. VITA/ISERST has been requested to advise on materials selection and provide technical oversight and training. It is expected that financing will come either from the Ministry of Education or the French Technical Assistance Mission.

- The sole existing windmill in Djibouti town (Ambouli) is a 12' Chicago Aermotor pump that has been out of commission for the past few years. Catholic Relief Services, working in collaboration with the Ministry of Agriculture, has requested VITA/ISERST assistance in repairing the windmill and setting it up at Aramadoule Agriculture Station, which is located near Ali Sabieh. Although wind data is not yet available, people who have worked in the area indicate that strong winds are usually present. Since only a few replacement parts are needed to repair the machine, VITA/ISERST has made plans to refurbish the machine beginning in January. Financing for the replacement parts will come from the VITA budget and the repair effort will be headed by VITA staff member Jon Hodgkin. Two Djiboutians will be trained as part of the repair project.

- Five photovoltaic battery chargers were presented to the COP by VV Loren Clark. The COP demonstrated them to a local entrepreneur who has expressed interest in marketing these prototypes as well as photovoltaic refrigerators and lighting systems. Discussions are underway with the entrepreneur, Georges Bonfanti, and support will be provided under the project to help promote commercial sale of this hardware in Djibouti.

- An advisor to the office of Rural Engineering (Genie Rural) has offered to provide VITA/ISERST with a 200 liter photovoltaic refrigerator for demonstration purposes. The refrigerator is presently installed at Atar (approximately 15 km from Djibouti town) and is not being used. The COP has discussed use of the refrigerator with the Djibouti Fisheries Cooperative representative.

3. Assessment and Dissemination of Research Results

- As part of the energy conservation portion of the project, VITA intends to organize a review of the building codes presently followed in Djibouti and make recommendations to the GROD as to how these codes could be modified to (1) better reflect Djiboutian climatic conditions and (2) promote energy conservation. Discussions with the Djibouti office of Veritas, a French Building inspection services organization, have resulted in interest on the part of Veritas in this effort. A statement of work has been given to Veritas for consideration and a response from their Paris office is expected shortly.

- VITA Engineer Hank Cauley paid a one week visit to Djibouti to assess the potential for cinva ram block construction. He also took advantage of his stay to prepare a replacement parts list for the Ambouli windmill (see page 4). Cauley concluded that the salinity of the coastal soils as well as the high cost of labor in Djibouti town were strong negative factors in regard to cinva ram block production, but that additional analysis should be carried out in the interior of the country, where these conditions might differ and access to cement block is more difficult.

- En route to Djibouti, the COP met with REDSO West Africa Energy Advisor Clarence Kooi in Abidjan. They agreed that the COP would request a visit by Kooi in late November since Kooi planned to be in Nairobi at that time. Kooi's visit (November 21-28) was extremely useful in that he (1) gave a presentation to ISERST on solar ponds; (2) provided preliminary design calculations for the construction of a solar pond as part of the ISERST Renewable Energy Building; and (3) critiqued the Djibouti Energy Initiatives Project Paper in regard to prototype interventions.

4. Energy Conservation Practices

- VITA Architect Consultant Dan Dunham spent two months in Djibouti

- (a) preparing preliminary plans for the ISERST Renewable Energy Building;
- (b) helping with the selection of a local architect who would prepare working drawings, bid documents and provide construction supervision services;
- (c) preparing the draft of an architectural energy conservation construction manual.

Preliminary plans for the building were completed by Dan Dunham and Judy Hirsch and were approved by both REDSO and ISERST. At the request of ISERST, the 650 square meter building will house the ISERST Renewable Energy section only and not the entire Earth Sciences Division, as was originally envisioned. It will make use mainly of passive techniques to reduce the cooling load on the airconditioning system.

Selection of a local architect required establishment of a list of criteria and at least two interviews with each of the four architectural firms currently active in Djibouti. A joint ISERST/AID/VITA decision was then made based on qualifications, past experience in Djibouti and cost estimates provided by each of the candidates. Bernard Cazaban was selected as the local architect and the COP signed a contract on VITA's behalf with Bernard Cazaban on December 26, 1982. Per this contract, working drawings and bid documents will be prepared by the end of February and actual construction could begin by mid April.

As part of his 2 month consultancy, Dan Dunham completed the draft of an architectural energy conservation construction manual that will be edited and translated into French by the VITA home office. The manual will then be distributed to local government officials, architects and builders to promote energy efficient construction in Djibouti.

5. Policy and Planning Recommendations to Government

- The COP provided advisory assistance to the ISERST director in regard to a proposal from a Swiss Technical Assistance Organization, regarding solar desalination and industrial production of oxygen and hydrogen from organic wastes.

Problems and Issues

- The lack of a Djiboutian counterpart for the Chief of Party has been the major problem to date. Although the GROD has designated Mr. Abdi Miganeh for the position, administrative problems have prevented his actually coming on board. As a result, the COP has not been able to prepare a work plan for the first year and installation of the data gathering equipment has been delayed. As the project progresses, this problem will create increasing difficulties and delays in implementation. It has been suggested to AID that alternate solutions to this problem be explored with the GROD.

- A secondary but related problem is the lack of skilled labor to implement the project. Even when a HCN counterpart is assigned, the project will still be understaffed, particularly on the technical side. This issues will become more evident when the Rebewable Energy Building is completed and shop and laboratory facilities are available. A similar AID project, presently being implemented in Mali, employs between 15 and 20 Malian engineers/technicians. Discussions should be begun in the near future with ISERST, so that the required number of personnel are available to the project.

- Regarding the ISERST building. It is not clear whether AID wishes to incorporate innovations that only make use of locally available material and equipment or whether U.S. manufactured materials/equipment (such as photovoltaic lighting/fan systems, improved insulation material and high efficiency window airconditioners) should be specifically imported for use in this building. Differing opinions have been expressed on this issues by AID/Djibouti and REDSO, and the COP has asked AID/Djibouti for a clarification on the approach to be followed by VITA.

The VITA home office has been asked to assemble a team of volunteer advisors with expertise in airconditioning and insulation to provide recommendations on energy efficient U.S. manufactured materials/equipment that could be employed in the ISERST building.

PROJECTIONS FOR THE SECOND PROJECT QUARTER

Due to the uncertainty of ISERST providing a counterpart for the VITA Chief of Party, it is proposed that the COP continue to follow the Illustrative Sequence of Action Items to be Done by Chief of Party contained in the AID/VITA contract for the next project quarter and not prepare a revised work plan. REDSO Energy Advisor Wes Fisher will be visiting Djibouti February 13-16 and the subject of establishing a work plan under the present circumstances will be discussed with him at that time.

Also to be reviewed during the visit of Wes Fisher will be the prototype interventions listed in the project paper and planning for the energy assessment component of the project.

In light of the reviews of the building plans required by REDSO and Dan Dunham, it is anticipated that a subcontract for construction services will not be signed until the third project quarter.

It has been agreed between the COP and AID/Djibouti that the construction of the ISERST building and installation of the meteorological data gathering equipment should be considered the priority project activities for the second quarter.

In light of the suggestions made by Clarence Kooi, the counterpart problem and the planned visit of Wes Fisher, the energy assessment specialist's consultancy will not take place during the second quarter, as indicated in the AID/VITA contract.

VITA Wind Specialist Jon Hodgkin will be in Djibouti on a volunteer basis for at least one month beginning January 9. Jon will assist with (1) the installation of the meteorological data gathering equipment, (2) the repair of the Ambouli windmill, (3) make recommendations on the feasibility of wind energy powered refrigeration systems for Obock and advise on shop equipment/personnel necessary to prepare the ISERST workshop for wind mill testing and fabrication.

Without additional skilled manpower and accurate meteorological data, the COP feels it is unwise to order marketed energy prototypes at this time, as is suggested in the project paper. With minimal financial investment it is expected that the Ambouli windmill, Atar refrigeration and Lycée photo-

voltaic installations can be brought under the auspices of the project and used as pilot/demonstration prototypes. Lack of skilled manpower will, however, limit the rate at which these installations can be completed, maintained and monitored.

During the second project quarter a list of workshop equipment will be prepared and procedures initiated for procurement and shipment to Djibouti.

CONCLUSION

Work under the Djibouti Energy Initiatives Project has gotten off to a rapid start and interest in the project within both the Djiboutian public and private sectors has proven high.

Activities have been initiated according to the Illustrative Sequence of Action Items to be Done By Chief of Party as well as in response to interest and opportunities that have arisen through contacts with local organizations and individuals.

Plans for the construction of the ISERST Renewable Energy building are on schedule and bid documents should be ready for review by REDSO at the end of February, 1983.

Installation of meteorological data gathering equipment has begun and will continue until seven stations are up and running.

Lack of a ISERST Djiboutian counterpart is proving an increasingly significant problem, as is the general lack of skilled manpower.

Support to the project from both AID/Djibouti and VITA/Rossllyn has been very positive and has led to increasing requests from ISERST for technical assistance.

Quarterly report Distribution

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