

AID / ISERST / VITA
ENERGY INITIATIVES PROJECT

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

NINTH PROJECT QUARTERLY REPORT

October - December 1984

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Submitted: AID / Djibouti

Submitted: Steve Hirsch, VITA Chief of Party, Djibouti

SUMMARY OF IMPORTANT NINTH QUARTER EVENTS

The key events of the quarter were the energy-efficient housing design consultancy of architect Dan Dunham in connection with the Djibouti Urban Development Project and the evaluation of the Energy Initiatives Project by a team of three energy specialists organized by USAID.

Requests for ISERST / VITA collaboration were received from the French National Energy Agency and the German Organization for Social Housing in Developing Countries.

Collaborative agreements were signed between ISERST / VITA and Génie Rural in relation to wind and solar pumping as interest in both these technical areas increased noticeably.

Copies of both French and English versions of the Djibouti National Energy Assessment were received in the field and distributed to key GROD and private sector services.

Best Available Document

NINTH QUARTER ACTIVITIES

1. Information Acquisition, Assessment and Dissemination

a) Meteorological Data Collection

Meteorological data continue to be collected and analyzed from 7 sites by ISERST / VITA staff using the Climatronics equipment. Technical problems continue to occur with the equipment requiring replacement parts from abroad and considerable demands on staff time and resources.

b) Apple IIe Computer

Repairs on the Apple IIe computer were completed and the machine put back in service in the ISERST Renewable Energy Building. Mme Tourkia Hachim began receiving training from Engineer Judy Hirsch in the operation and programming of the machine the use of packaged programs that relate to work processing, accounting and energy-related analyses. A progress report has been prepared by Mme Tourkia and discussions will be held next quarter with Counterpart Abdourahman and Anis Abuallan to plan for the future use of the computer by our project as well as, if possible, other sections of ISERST.

c) Energy Initiatives Library Holdings Being Put on Computer

One use to which the computer is already being put is to facilitate access to the holdings of the Energy Initiatives library. Having been trained at VITA / Rosslyn in the use of the VITA classification system, Technician Abdoukarim Moussa Yacin has almost completed cataloging the holdings of the Energy Initiatives library and has begun working with Mme Tourkia to enter each document on discs using the Apple computer. This will be done under the project as books and articles are received and will facilitate access to information on specific energy-related topics for project and other personnel as well as for private sector services.

d) Energy Assessment Reports Received in the Field and Distribution

Nine copies of the French version of the Diabouli Energy Assessment Reports were received from the field and copies were distributed by Energy Unit Director Anis Abuallan to a variety of GPOD and private sector service providers. The Director Anis Abuallan, Oblik Carton, Moussa Yacin and Abdourahman Yacin met at a meeting will be arranged in the near future to

discuss the assessment results with key GROD officials and an action plan prepared to address the issues raised in the 433 page report.

One hundred Energy Assessment summaries in French were also received this quarter from VITA / Rosslyn which are being distributed by the Energy Service to other GROD and private sector services less directly involved in energy-related issues.

2. Pilot Interventions / Prototype Research

a) Wind and Solar Pump Agreements Signed with Génie Rural

Two agreements between ISERST and Génie Rural were signed this quarter relating to collaborative activities in the fields of the wind and solar pumping.

Under the wind pumping agreement, a joint effort will be undertaken to repair or dismantle a number of the five existing but non-functioning windmills in the northern portion of the country. Technicians from both services and local inhabitants will be trained in the repair, maintenance and operation of the windmills. Before any repairwork is begun, however, arrangements will be made to ensure that the necessary maintenance of the windmills will be performed so as to prevent the machines from again falling into disrepair. If any of the existing windmills are not considered worthwhile repairing, they will be dismantled and the parts cleaned and stored for future use.

Under the solar pump agreement, ISERST / VITA will purchase three solar pump systems that conform to common water pumping needs as defined by Génie Rural. These pumps will be tested by ISERST and Génie Rural upon their arrival in Djibouti and technicians trained from both services in installation, operation and maintenance procedures. The pumps will then be installed in the field and used on an experimental basis by Djiboutian farmers. The results of these experiments will be reviewed and analyzed by both ISERST and Génie Rural. If they prove satisfactory and the user (a) wishes to continue to use the pump; (b) demonstrates the necessary technical capability to use and maintain it and (c) is able to cover at least a portion of the cost of maintenance / repair, the pump will be left with the Djiboutian user on a loan basis and continuing supervision provided by ISERST / VITA.

b) Repair of Asagueyla Windmill Begun

Under the terms of the windmill agreement with Génie Rural, the repair of a 12 foot Aeromotor windmill was begun in Asagueyla, a military settlement north of Tadjourah. A great deal of interest was expressed in the repair of the windmill by the post commander since Asagueyla is a long distance from the nearest supply depot and water must be pumped from a well to supply the settlement. Repair parts for the windmill were provided by Génie Rural from stock they already had on hand. It is not anticipated that parts will have to be imported for this effort.

Under the same agreement, the Bissidirou windmill will be dismantled next quarter since, in light of its poor condition, it is not felt to be economically worthwhile to repair.

c) Solar Electric International Solar Pump Tested in Asela

Under the recently signed solar pump agreement with Génie Rural, the SEI Sunpun was demonstrated and tested in Asela in collaboration with the local agricultural cooperative. The pump was found to be very compatible with the recharge rate of the well and the needs of the cooperative farmer. As a result, the farmer is continuing to use the pump and it is expected that a long term arrangement will be made with him during the next quarter whereby he will continue to use the pump but ISERST / VITA will retain ownership and have access to it when needed.

d) Solar Pump Training Session Held at ISERST Renewable Energy Building

A one day solar pump training program was held at the ISERST Energy Building on the installation, operation and maintenance of an ARCO CSB 50D pump set purchased recently by the UN High Commission for Refugees for ONARS (the National Social Assistance Organization).

Representatives from ONARS, Génie Rural, the Agriculture Service and SOTRACO attended the session which was prepared and presented by ISERST Project technicians and counterpart Abdourahman.

It is anticipated that additional training sessions of this type will be organized as new model pumps and other energy related equipment is introduced in Djibouti under the Project.

e) Oasis Wind Pump Modified

Following the completion of tests performed by project staff on the Oasis windmill located at Douda, computer simulated changes in the pump were made by VITA / Rosslyn. As a result it was found that a 3 inch pump cylinder could be used with the windmill (and the output doubled) instead of the 4 inch cylinder with which it was originally installed. A 3 inch pump cylinder was then purchased for the project and installed this quarter on the windmill.

Tests with the new pump cylinder will be carried out next quarter to see if the output of the windmill will, in fact, double as a result of the change.

f) A.Y. Mc... Solar Pump System Ordered

Under the solar pump agreement with Génie Rural described in section a) a second solar pump system was ordered from the United States. This 320 watt system

produced by A.Y. Mc Donald makes use of a surface mounted suction pump and is considerably less expensive than the SEI Sunpump (which uses a submersible centrifugal pump). The pump set will arrive next quarter and ISERST, Génie Rural and Agriculture service technicians will be familiarized with its operation before it is put into service on a long term basis upcountry where it will continue to be monitored by ISERST technicians.

g) CARITAS Provided with Wind Measurement Equipment

CARITAS is a French non-governmental organization which provides humanitarian assistance in developing countries. They expect to initiate a program in Sagalou (in the Tadjourah district) to assist school children in developing skills related to fishing and small scale agriculture. As part of this project a windmill pump and, possibly, a solar refrigerator are planned for the school. Before deciding to purchase a windmill pump, CARITAS was advised by ISERST / VITA to collect wind data at the proposed windmill site for at least one year. In order to do so, CARITAS asked ISERST / VITA for the use of an anemometer with which they could take the readings. This loan was agreed to by ISERST / VITA on the conditions that (a) CARITAS assume responsibility for the care and maintenance of the equipment and (b) ISERST / VITA receive a copy of the data collected at the Sagalou site.

If CARITAS does eventually decide to purchase a windmill pump, ISERST / VITA has offered to help them with the selection of a suitable model.

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J. Energy Conservation Practices

a) ISERST Renewable Energy Building

New furniture ordered from the United States was uncrated and moved into the completed north wing of the IREB. The furniture, including tables, desks, file cabinets, chairs and library shelves have made the north wing a very comfortable place to work and both the COP and ISERST Director Anis Abdallah have already used the new library to hold a number of technical meetings on energy as well as non-energy related matters.

As a result of the agreements reached between the COP, USAID, and Touzet, the landscaping around the building was completed. Direct payment was made by VITA to concerned subcontractor which enabled him to finish his job. ISERST has provided a full time watchman / gardner and cleaning woman to oversee maintenance of the building.

Due to the continued construction delays by Touzet, the COP in collaboration with ISERST and USAID, decided to break the VITA / Touzet contract. At the suggestion of USAID / Djibouti, the COP engaged a local lawyer to prepare the termination papers which were delivered to Touzet by an official process server on November 22, 1984. Immediately following the breaking of the contract, the COP applied to the bank of Commerce and Industry of the Red Sea for the guarantee funds retained by the bank. It is possible that approximately \$ 47,057 will be obtained from the bank guarantees in addition to the \$ 134,303 retained by VITA as a result of the penalty clause in the VITA / Touzet contract.

A problem still remains in relation to payment of the aluminum and electrical subcontractors for work which they have completed and for which VITA has paid Touzet but for which Touzet never forwarded payment to the subcontractors.

At present, VITA is awaiting instructions from AID / Djibouti on how much should be paid to each subcontractor and on what basis.

During this quarter VITA requested and received bids from six local constructions contractors to finish the work on the south wing of the IREB. REDSO construction advisor Bob Adams, during a late november to Djibouti, reviewed the bids with the VITA staff and architect Bernard Cazaban and authorized VITA to begin contract negotiations with either of two firms. One of the two presently preparing information on the type of waterproofing they propose.

to use on the roof and it is hoped that a contract will be signed in January.

b) ISERST / VITA Support to Djibouti Urban Development Project

Architect Dan Dunham visited Djibouti from October 21 to November 10 to design four prototype houses which, it is hoped, will be used as models for 106 units to be built under the USAID / W.B. - financed Djibouti Urban Development Project. En route to Djibouti, Dan spent one week in Paris with the French architectural firm selected by the World Bank and the GROD to formally prepare and submit the designs.

During his Djibouti stay, Dan met with a wide range of people involved in the Urban Development Project and worked closely with Project Director Ahmed Ali Ahmed and Engineer Judy Hirsch. Designs and a model of a proposed basic unit were prepared by Dunham and Hirsch and approved by Ahmed Ali Ahmed. A number of problems in the housing component of the original W.B. project plan were identified by Dan and both USAID and Ahmed Ali Ahmed were informed accordingly.

Although neither USAID nor ISERST / VITA have a direct management role in the Urban Development Project, it is hoped that Dan's proposed housing designs and project suggestions will be taken into consideration by the World Bank and the GROD.

As a follow up to Dan's consultancy it has been suggested that VITA build one or two prototypes either at the Salines Ouest site or in back of the ISERST building to examine their climatic suitability, energy efficiency and social acceptability.

c) Collaboration with Deval Company on Evaluation of Space Cooling Methods

A proposal from Deval was received by ISERST / VITA which outlines a suggested program for the study of various space cooling methods which are applicable in Djibouti. Copies of this proposal were submitted by USAID / DJIBOUTI and the AID Evaluation Team. ISERST / VITA is presently waiting for a decision from AID / Djibouti on whether it should undertake this collaborative effort.

d) Jarmul Energy Conservation Manuals in the Field

Copies of both the English and French versions of Sy Jarmul's manual entitled "Reducing Energy Consumption in Buildings - The Potential for Conservation

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in Djibouti" were received in the field and a distribution list prepared by Energy Service Director Oblik Carton. The manuals will be distributed early next quarter and a seminar organized jointly by ISERST / VITA and Travaux Publics in early February, 1985 to review the results with the various government and private sector services involved. It is anticipated that this seminar will serve as the beginning of the new emphasis of the project on energy conservation and that a number of initiatives in this field will be proposed for implementation by ISERST / VITA in collaboration with Travaux Publics.

e) Energy Efficient Building Designs Prepared for Three Djiboutian Houses

Based on the results of studies carried out by architects Dan Dunham and Sy Jarmul, Engineer Judy Hirsch prepared designs for 3 houses to be built by Djiboutians in Balbala and Douda. The houses will each be built with CIMVA RAM blocks (see section 4 (b)) and will serve as demonstrations of the use of the blocks as well as the Dunham / Jarmul principles in districts where most other houses are built out of plywood and tin with little attention paid to climatic suitability.

f) National Women's Union Builds Climatically Adapted Center

The Djiboutian National Women's Union has begun construction of a women's center in Hol-Hol that was designed by Judy Hirsch last spring using the principles described in the Dunham architectural manual. The center which will include a sewing room, and offices, will cover approximately 145 square meters.

g) ISERST / VITA Arranges French Assistance to Utility Company

As a result of the COP's visit to the offices of the Agence Française pour la Maîtrise de l'Énergie in Paris last summer and the AFME's review of Sy Jarmul's conservation manual, the AFME has proposed sending a utility management specialist to study what can be done to better balance the seasonal demand for electrical power provided by Electricité de Djibouti (EDD). At present, the peak summer demand is approximately three times the demand during the winter season and requires a great deal of installed generation capacity that sits idle during the cool season.

EDD Director Roger Becquet has expressed interest in working with the AFME on this problem and provided the COP with energy production / demand information that was sent to the AFME for review. The COP has requested the return of the information the AFME proposes to send, his proposed scope of work and approximate timetable for the visit.

4. Private Sector Initiatives

a) SOTRACO becomes Distributor for Arco Solar

As a result of support provided by ISERST / VITA, SOTRACO a local water pump dealer, signed a distributionship agreement with Arco Solar of Chatsworth, California whereby SOTRACO will become the Djibouti agent for Arco Solar. Arco Solar is presently the largest producer of photovoltaic panels in the world and it is expected that having a dealership in Djibouti will help promote the use of photovoltaics locally.

b) demonstration of Stabilized Earth Bricks Held in Balbala

As part of ISERST / VITA's continuing support to businessman Abdullahi Farah Abanaeh in his effort to market stabilized earth bricks, ISERST / VITA organized a weekend demonstration of the production and use of the bricks in Balbala. M. Abanaeh's mixer, brick machine and technician were brought to the market site in Balbala along with supplies of earth and cement. Project technicians assisted with the production of the bricks, and the construction of two walls to illustrate their use. Between 50 and 100 people witnessed the demonstration each day and the local inhabitants were inquisitive and expressed a lively interest in the technique.

As a follow up to this demonstration, it was decided that ISERST / VITA would provide stabilized earth bricks free of charge to two Djiboutians who agree to use them to build houses in Balbala. The bricks will be purchased from M. Abanaeh by the Project and given to the selected Djiboutians if they have furnished proof that they

- a) own land on which they can build a house in Balbala in the near future ;
- b) have the resources necessary to pay and supervise the construction effort including laying of a foundation, installation of a water supply facilities, roof, etc... ;
- c) are willing to have their homes serve as demonstration models of stabilized earth construction once they are completed.

Two Djiboutians have been identified who fulfill these requirements (one of whom is an ISERST employee) and arrangements are presently being made with M. Abanaeh so that the bricks are ready for delivery once the foundations are laid.

The OCP has introduced M. Abanaeh to Hervé Chatelet, the French consultant

Assistant working at ISERST analyzing earth samples in the Djibouti area for their possible use as a construction material. M. Chatelet has recently identified earth deposits close to Djibouti town which he feels are promising for the production of stabilized earth bricks. Samples from these deposits will be used by M. Abanen next quarter to produce a small number of bricks which will then be tested in the Travaux Publics laboratory.

5. Policy and Planning Recommendations to Government / Miscellaneous

a) AID Evaluation Of Energy Initiatives Project Takes place

The Energy Initiatives Project was evaluated by a team of three specialists during the period December 9-23, 1984. Evaluators Norm Brown, Alain Streicher and Mike Bess talked with Anis Abdallah, Project staff members, and other GROD and private sector services to assess the project's accomplishments during the past two years and recommend to AID/ Djibouti the areas in which the project should concentrate during the next two years. Team Leader Norm Brown expects to submit his final report to AID/ Washington on January 25 after which it is expected that AID will review the team's recommendations and revise the USAID / VITA contract accordingly.

b) New Technician Hired Under Project

Idriss Ibrahim Ismael completed a one month trial period on the VITA payroll as a project technician replacing Farah Joseph Abdoulatif. Before joining the Project, Idriss completed his Brevet de Technicien Supérieur (engineering aid) degree in France specializing in machine design and mechanics.

An evaluation on Idriss' work during the month of December turned out very positive and it is anticipated he will be put on the ISERST payroll beginning January 1, 1985.

c) ISERST / VITA Support to Ministry of Industry on Waste Recycling

At the request of Anis Abdallah, the COP and Counterpart Abdourahmanou participated in an interministerial review of a large scale waste recycling project that is being proposed to the GROD by a private French firm. The firm expects to recycle between 180,000 and 490,000 tons per year of industrial waste that will be imported to Djibouti from Europe. An outside investment of approximately \$ 23 million is projected for the first seven years of the project by the French firm. The GROD is being requested to provide use of 50% of the project located 12 kilometers from Djibouti town as well as use of the port facilities. In return, the GROD would receive approximately \$10 per ton of industrial waste imported to Djibouti for recycling .

Since the Project has an energy-production component, both Anis Abdallah and USAID agreed that VITA should honor a request from the Minister of Industry to provide technical advice and guidance under the Energy Initiatives Project. As a result, two VITA volunteers with experience in industrial waste processing were designated by VITA / Roussly and their evaluations of the project forwarded to the DOP who reviewed them with the Minister of Industry.

If the Minister requests further assistance, it has been agreed that VITA could provide more help either through the convening of a meeting of W industrial waste specialists in the U.S. or a short term Vita Volunteer consultancy in Djibouti.

d) Photovoltaic Training Kit Received

As described in section 6, (c) of the eighth quarterly report, a photovoltaic training kit was purchased and arrived from the Enelec Company, Mornant, France. The kit was immediately put to use by ISERST Project technicians who began the technical exercises outlined in the accompanying literature. It is planned that Project personnel will prepare a series of technical presentations on photovoltaics using the kit which they will present to Génie Rural, ONARS, SOTRACO and other public and private sector organizations as well as the Lycee and L.E.P.

e) Training Plan Completed

Since the training of Djiboutian nationals in various aspects of energy-related technologies occupies a high priority under the Project, it was felt important by the COP to have a working paper on this topic to (a) discuss and review with Project personnel, and the AID Evaluation team, (b) develop a training schedule for both in country and overseas training activities and to (c) identify suitable training institution both in the U.S. and abroad.

A training plan was prepared this quarter by the COP, submitted to the AID Evaluation TEAM and a copy sent to VITA /Rosslyn for assistance in identifying suitable institutions. A French translation of the document is presently being typed.

f) Workshop Tools Installed in the Energy Building

Workshop tools, benches, shelves and equipment arrived from the . . . and were unpacked and set up in the new ISERST Building. The availability of the tools and equipment greatly facilitated the repair of the Oasis and Asagueyla windmills as well as a number of other tasks undertaken by the Project technicians. Following receipt of this shipment a second tool / equipment order was prepared and sent to VITA / Rosslyn for additional items which were felt necessary. At present, the workshop is operational and will play an increasing role in project activities in the future.

6. Collaboration with Other Donors

a) French (AFME) Collaboration in Solar Pumping and Refrigeration

In addition to the visit of a technical expert in the field of electrical load management proposed by the AFME (see section 3 (g)), the AFME has also proposed a collaborative project with ISERST / VITA to test three different types of French solar pumping systems and a solar refrigerator under field conditions in Djibouti. The AFME proposal was discussed with Génie Rural personnel who indicated a strong interest in participating in the solar pump component. It was also discussed by the COP with the Director of French Technical Assistance in Djibouti, Yves Dominoni, who also indicated his support for the activity.

An outline of the proposal AFME program was submitted by the COP to the AID Evaluation Team and a final decision is expected from AID / Djibouti by the end of January.

b) German Low Cost Housing Organization Requests ISERST / VITA Assistance

The German Development Assistance Organization for Social Housing in Developing Countries (DESWOS) requested ISERST / VITA assistance in preparing a project document which includes as one of its components the construction of 120 houses in Balbala using CINVA RAM bricks and self-help construction techniques. DESWOS Project Planner Harold Loyschter worked closely with Engineer Judy Hirsch during much of the quarter to familiarize himself with construction materials and costs in Djibouti and to take advantage of the ISERST / VITA work done to date in the field of low cost energy efficient housing. As a result, Mr Loyschter indicated he planned to use housing designs prepared by Dan Dunham for the World Bank Urban Development Project as the models for his project. He also indicated that DESWOS would be interested in having ISERST / VITA participate in the implementation phase of the project in an advisory capacity.

The project is scheduled to begin toward the end of 1985 and will have a budget of approximately \$ 600,000 .

7. Problems and Issues

a) Completion of the IGERST Energy Building

Completion of the IREB is still the major project priority and progress is being made toward resolving the Touzet subcontractor issue and the signing a contract with a new builder to complete the work.

Although it is still not clear how much money will be returned to VITA under the bank guarantees nor how much it will actually cost to complete the remaining work on the building, it is certain that VITA will require a contract amendment to increase the funds presently available in the building construction budget line item.

b) Results of the AID Mid Project Evaluation

Evaluation Team Leader Norm Brown indicated he would submit his final report to AID / D. Libon by January 25. AID / D. Libon has indicated that the results of the evaluation will then be reviewed both in Washington and Djibouti and the VITA contract amended accordingly.

In light of the fact that both the AFME and Société Dev' are waiting responses from VITA on their proposals for collaboration, it is hoped that the evaluation / amendment process can be expedited rapidly and definitive answers given to both organizations by mid February 1985.

8. Tenth Quarter Projections

1. Arrangements will be finalized with the Touzet subcontractors for completion of their work and final payment by VITA ;
2. A contract will be signed with a new builder to complete the ISERST Energy building ;
3. An energy conservation seminar will be held in early February to review results of the Sy Jarmul report ;
4. Architect Dan Dunham's report on the housing component of the Djibouti Urban Development Project will be received and distributed ;
5. Repairs will be completed on the Asagueyla windmill ;
6. The Bissidirou windmill will be dismantled ;
7. Plans will be made for review by the GROD of the National Energy Assessment
8. The A.Y. Mc Donald solar pump will arrive and tests begun on its operation ;
9. Responses will be provided to both the AFME and Société Deval on their proposed collaborative projects ;
10. CINVA RAM blocks will be provided for the construction of 2 houses in Balbala
11. Technician Idriss Ibrahim Ismael will become a permanent ISERST employee.

Copies : Anis Abdallah ISERST (French and English)
 USAID / Djibouti (French and English)
 USAID / Mali - Leso (French)
 USAID / Khartoum (English)
 USAID / Mogadishu (English)
 USAID / Gabarone (English)
 USAID / Maseru (English)
 VITA / Rosslyn (French and English)
 REDSO /Nairobi (English)