

PN-111A-1110

May 1986

39

NEEDS IDENTIFICATION AND RECOMMENDED
TRAINING/INFORMATION DISSEMINATION PROJECT

(TASK 4.2)

May 1986

RENEWABLE ENERGY RESOURCES

FIELD TESTING PROJECT

NEEDS IDENTIFICATION AND RECOMMENDED

TRAINING/INFORMATION DISSEMINATION PROJECT

(TASK 4.2)

Prepared for

Egyptian Electricity Authority
Cairo, Egypt

and

U.S. Agency for International Development
USAID Mission, Cairo, Egypt
(Project AID 263-0123.2)

Submitted by

Louis Berger International, Inc.
Washington, D.C., and Cairo, Egypt

Prepared by

Project Training Coordinators

Reda Botros
Egyptian Electricity Authority
Cairo, Egypt

David Tyler
Louis Berger International, Inc.
Washington, D.C.

MAY 1986

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 EXECUTIVE SUMMARY	1
2.0 BACKGROUND AND OBJECTIVES	2
2.1 INTRODUCTION AND OBJECTIVE	2
2.2 OVERALL PROJECT OBJECTIVES	2
2.3 INSTITUTIONAL STRENGTHENING TASK REQUIREMENTS	2
2.4 NEEDS IDENTIFICATION REQUIREMENTS	3
3.0 TASK AREA ACCOMPLISHMENTS	5
3.1 INTRODUCTION	5
3.2 EVALUATION REPORT SUMMARY	5
3.3 BRIEF TASK HISTORY	6
4.0 RECOMMENDED TRAINING COMPONENT	9
4.1 INTRODUCTION AND APPROACH	9
4.2 NEEDS	9
4.3 OBJECTIVES . . . . .	.17
4.4 STRATEGY . . . . .	.20
4.5 SCOPE-OF-WORK . . . . .	.21
4.6 RESOURCES . . . . .	.24
5.0 RECOMMENDED INFORMATION DISSEMINATION COMPONENT . . . . .	.27
5.1 INTRODUCTION . . . . .	.27
5.2 NEEDS . . . . .	.28
5.3 OBJECTIVES . . . . .	.28
5.4 STRATEGY . . . . .	.29
5.5 SCOPE-OF-WORK . . . . .	.30
5.6 RESOURCES . . . . .	.34
6.0 BUDGET . . . . .	.36
 EXHIBITS	
1. BRIEF TASK HISTORY	7
2. FIELD TEST INSTALLATION START DATES . . . . .	.13
3. EEA STUDY IN EGYPT . . . . .	.19
4. EEA STUDY IN THE U.S. . . . .	.19
5. EGYPTIAN EDUCATION AND TRAINING RESOURCES . . . . .	.25
6. BUDGET . . . . .	.36

APPENDICES

- A. SAMPLE NEEDS IDENTIFICATION QUESTIONNAIRE
- B. RECOMMENDED FIELD TEST CONTRACTOR TRAINING ACTIVITY
- C. OVERVIEW OF EGYPTIAN RENEWABLE ENERGY DEVELOPMENT ORGANIZATION
- D. OVERVIEW OF EGYPTIAN MEDIA COSTS
- E. CONTRACTING OPTIONS AND ANALYSIS

1.0 EXECUTIVE SUMMARY

This draft report presents a comprehensive plan for a project in training and information dissemination for the Renewable Energy Resources Field Testing Project. This project plan is a synthesis of information collected by the training coordinators, who surveyed available resources and EEA needs in November-December, 1985. The coordinators assessed training needs at the individual, program and institutional levels. They also assessed the feasibility of conducting formal education and training for EEA staff in the U.S. and Egypt.

The basic objective of the recommended training program is to increase the capability of the EEA project team to work independently in the four basic task areas--project management, supporting analysis, field tests and training/ information dissemination--by assisting the EEA in the design, development, coordination, conduct and monitoring of on-the-job training, special training events, and more formal education and training courses for designated EEA project team members in both Egypt and the U.S. For example, it is recommended that a total of 13 EEA individuals receive formal education in the U.S. over the two-year duration of the project (1987-88).

Key implementation strategies for the training program include a resident trainer in Egypt; very close coordination among the participants--EEA, AID, PARTNERS, contractors, and subcontractors; the optimum use and development of Egyptian training resources, in part through initiation of a grants program to promote collaborative work; and strengthening of field test training activity. The training scope-of-work and required budget are set forth.

The objective of the information dissemination program is to positively affect Egyptian public and private sector audiences concerning the need for and benefits of renewable energy development in Egypt. This is to be accomplished by developing and disseminating information that both informs and involves appropriate target audiences.

Recommended activities include presenting short courses to external audiences in high priority renewable energy technologies and applications; conducting field trips for selected individuals and groups to the most promising field test sites; participating in radio and television interviews on the nature and scope of EEA renewable energy activity; preparation and presentation on television of a video film on the project; and production of a REFT Project Newsletter. This plan also includes a scope-of-work and budget.

Appendix E presents contracting options and analysis for EEA/AID consideration, as requested during the U.S. training coordinator's May, 1986 visit to Egypt.

2.0 BACKGROUND AND OBJECTIVES

2.1 INTRODUCTION AND OBJECTIVE

The purpose of this report is to present a comprehensive plan for a project in training and information dissemination which will enable the renewable energy resources field testing project personnel to achieve their objectives. In order to provide perspective it will be useful to present project objectives and training/information dissemination task area objectives and requirements, as set forth in the contract.

2.2 OVERALL PROJECT OBJECTIVES

In Annex A, page 1, the contract states overall project objectives:

The Renewable Energy Resources Field Testing Project has several mutually supportive objectives including:

- o Developing a data base and associated information system on renewable energy systems which can be readily used by public and private sector enterprises in Egypt;
- o Improving the capabilities of the GOE and the private sector to analyze and evaluate renewable energy system technologies, applications, economics, and markets to design, install, operate, and maintain the required equipment; and
- o Evaluating the performance of and developing data from a series of field tests which utilize commercially available technologies in applications having potential for widespread use in Egypt.

2.3 INSTITUTIONAL STRENGTHENING TASK REQUIREMENTS

In Annex A, page 17, the contract sets forth the requirements for task 1, Institutional Strengthening (4.1):

The Contractor with EEA and in consultation with USAID project officer, shall prepare an "EEA Staff Training Plan." The minimum number of QPMT staff to include in this plan is 22. When approved by the EEA, the Contractor will implement this plan with EEA-designated personnel.

In essence, the Contractor will be giving the EEA staff practical experience in project management and planning renewable technologies and their applications which will enable them to increase their cadre of managers to replicate the field tests elsewhere in Egypt. It will also enable them to plan and implement the new initiatives in renewable energy technologies and applications for the long-range benefit of

Egypt. The Contractor shall provide on-the-job training for the EEA staff pursuant to the above plan in the following fields:

- o engineering analysis of solar thermal, photovoltaic and wind systems;
- o structural analysis;
- o cost engineering;
- o computer simulation;
- o benefit-cost analysis;
- o project planning/management;
- o data base management and software;
- o solar energy measurement and instrumentation;
- o industrial process analysis;
- o social analysis and design; and
- o market analysis.

2.4 NEEDS IDENTIFICATION REQUIREMENTS

In Annex A, page 18, the contract states the requirements for Training/Information Task 2, Needs Identification (4.2):

In addition to Task 1, the contractor shall with EEA assistance identify other training and information dissemination needs both for the near term and as the project develops over a four-year period. This activity will include determining the nature of the audience (government planners, businessmen, etc.) for different modes of training and information transfers. The approach to the needs identification shall be in accordance with the Contractor's technical proposal on pages 3-132 to 3-135.

Based on the above information, the contractor, jointly with the EEA, will plan a comprehensive training and information dissemination project to be contracted by USAID upon EEA approval to reach a wide range of decision-makers and industrialists in government and the private sector.

Activities that should be included are:

- o Academic course work for key staff of EEA in Egypt or the U.S.;
- o Short course in solar technologies, economics and management for government and private sector planners, engineers, and managers;
- o Seminars on the commercial status of specific solar systems for interested private sector businesses, and the general public;
- o Field trips for government and private sector personnel to

test sites showing near-term commercial promise;

- o Preparation of brochures on the field test experience, other relevant Egyptian experience and other relevant solar technologies; and
- o Preparation of video programs on the project for use in schools and/or television.

3.0 TASK AREA ACCOMPLISHMENTS

3.1 INTRODUCTION

Because the training plan to be recommended below is in some respects a continuation of the work performed under the Institutional Strengthening Task (4.1), it will be useful to describe briefly what has already been accomplished.

3.2 EVALUATION REPORT SUMMARY

In early March, 1986, LBII forwarded The Institutional Strengthening Task: Evaluation Report to EEA/AID, from which the following is excerpted (pages 1-2):

The aim of this task is to increase the overall capability of the EEA project team to replicate independently all components of the project. Institutional strengthening is accomplished through (a) on-the-job training and (b) special training, consisting of the conduct of workshops and seminars in both Egypt and the U.S.

To the credit of all members of the project team, it may be happily stated that training accomplishments have been significant. The initial training needs assessment activity (4.1.1 in the current plan) achieved its basic objectives and put the training program on a sound basis.

The project management team is to be commended for the successful effort to develop a core group of over 60 individuals, including EEA, contractor/subcontractor staff and consultants available to the project on a part- to full- time basis. Training organization personnel have received a total of 31.3 person-months of on-the-job and special training in the U.S. through November 1985.

These visits to the U.S. have been evaluated in detail and the general consensus is that the on-the-job and special training provided to the EEA trainees in the U.S. has been of above-average to excellent quality, although there remains ample room for improvement in both content and coordination. A full program of special training, including the conduct of eleven workshops and seminars ranging over the field test and supporting analysis task areas, has been presented over the 12/84 to 11/85 period.

The project has made good progress in stocking the library; to date 45 publications have been shipped to the project office and another 24 have been ordered.

Also, a full range of audio-visual equipment and supplies, to support training and information dissemination activity, has been delivered to the project office.

In the complicated and time-consuming activity of training coordination and planning, the project has made considerable

progress. The EEA training coordinator has been responsible for coordination in Egypt and has established good working relationships with the USAID/Cairo training offices. The U.S. training coordinator has worked with the contractor and sub-contractor task leaders to coordinate U.S.-based training and has served as a focal point for training communications between the U.S. and Egypt. LBII's liaison project manager and training specialist has also made valuable contributions to training coordination and planning, an activity which will continue to require very focused attention in 1986.

3.3 BRIEF TASK HISTORY

Exhibit 1 provides a brief chronology of the major training events to date.

BRIEF TASK HISTORY

<u>Activity</u>	<u>Date</u>
Training Needs Assessment Visit by U.S. Training Coordinator (Egypt)	September - October 1984
Staff Training Plan	November 1984
English Instruction (Egypt)	November 1984 to Present
Wind Turbine Siting Workshop (Egypt)	December 1984
Data Collection Seminar (Egypt)	February 1985
U.S. Training Coordinator's second visit to Egypt	May 1985
Preliminary Solar Technology Course (Egypt)	May 1985
Photovoltaic Systems Applications Workshop (Egypt)	May 1985
Photovoltaic Site Visit Methodology Workshop (Egypt)	May 1985
Visit of EEA Deputy Chairman to U.S. for Task Area 1	June - July 1985
Visit of EEA Project Manager to U.S. for Task Area 1	June - July 1985
Visit of EEA Task Leader for Wind Field Tests to U.S. for field test 3.11	June - July 1985
Visit of EEA Wind Engineers and General Petroleum Company Engineers to U.S. for field test 3.11	June - August 1985
Visit of EEA IPH Task Leader, Engineer and General Poultry Company Engineer to U.S. for field test 3.3	July - August 1985
First Solar and IPH Course (U.S.) for field test 3.3	August 1985
Visit of EEA Training/Photovoltaic Task Leader to U.S. for field test 3.6	August - September 1985
Visit of EEA Photovoltaic Engineer and Fish Resources and Development Authority Engineer to U.S. for field test 3.6	September - October 1985
Technology/Application Options Evaluation and Data Collection and Analysis Workshop (Egypt)	September 1985
Visits of EEA IPH and Helwan Textile General Manager to U. S. for field test 3.4	October - November 1985

Second Solar and IPH Course for field test 3.4 (U.S.)	October 1985
Wind Characteristics for Wind Energy Use Seminar (Egypt)	November 1985
Finding and Evaluating Sites for Wind Energy Use Short Course (Egypt)	November 1985
Third Visit of U.S. Training Coordinator to Egypt	November - December 1985
Reverse Osmosis Desalting Technology Workshop (Egypt)	November 1985
Visit of EEA Wind Engineer and EEA Canal Distribution Company Engineer to U.S. for field test 3.10	April - May 1986
Wind Energy and Desalination Course for field test 3.10 (U.S.)	April 1986
Wind Energy Data Processing and Analysis for field test 3.10 (U.S.)	April 1986
Fourth Visit of U.S. Training Coordinator to Egypt	May 1986
Site Visit Methodology Workshop for field test 3.7 (Egypt)	May 1986
Field Test Task General Methodology Workshop (Egypt)	May 1986
Workshop on Conceptual Design for PV Systems (Egypt)	May 1986
Technical Assistance Workshop: Photovoltaics System Computer Models (Egypt)	May 1986
REIS QJT Intensive (Egypt)	May 1986

4.0 RECOMMENDED TRAINING COMPONENT

4.1 INTRODUCTION AND APPROACH

The purpose of this section is to present a recommended training plan (4.2.1) for review and approval by EEA/AID. The approved plan will be converted into a statement-of-work (4.3) that will in turn be incorporated into a request for proposals (4.3), followed by proposal review by EEA/AID and the selection of a contractor (4.4). Working with the EEA, the U.S. training coordinator will then provide technical direction to the new contractor (4.5) and evaluate its performance (4.6), over the duration of the project.

This plan is a synthesis of information collected by the training coordinators, who conducted the needs identification survey in Egypt in November-December 1985. They interviewed EEA task leaders and senior engineers and administered a survey instrument, the results of which were incorporated into the plan. A sample questionnaire may be found in Appendix A. In addition, the training coordinators surveyed Egyptian agencies and organization that might provide education and training resources to EEA project personnel under this plan. Finally, this plan also drew information from these works recently submitted to EEA:

- o A Guide to Project Education and Training (working draft, December 1985);
- o Training Needs Assessment and Recommended Staff Training Plan (Updated draft final, February 1986); and
- o The Institutional Strengthening Task: Evaluation Report (draft for comment, March 1986).

The recommended training component plan is organized as follows:

- o Needs,
- o Objectives,
- o Strategy,
- o Scope-of-Work,
- o Resources, and
- o Budget.

4.2 NEEDS

The contractor's technical proposal requires that training plan needs be assessed in relation to the following factors (pp. 3-132 to 3-135), all of which have been taken into account and will be discussed in this plan:

- o The future role of EEA in the development of renewable energy applications in Egypt.

- o The degree to which technical capabilities will reside within EEA, or be provided by private sector and university sources in Egypt.
- o The size and scope of the future institution of which EEA is the developing nucleus.
- o The balance between short-term special purpose training vs. longer-term academic training.
- o The deficits diagnosed in the course of the on-the-job training.
- o The preferences and objectives of the EEA project management team.
- o The preferences and experiences of individual trainees.

4.2.1 Needs of the Trainees

The overall group of trainees under the project may be generally subdivided for our purposes into these categories: (a) juniors, (b) mid-levels, (c) seniors/executives.

4.2.1.1 Juniors

The youngest and most inexperienced members of the project team, the juniors are recent graduates of the university system, many with B.Sc. degrees in electrical and mechanical engineering. Some have studied renewable energy subjects at the university and may even have been exposed to the renewable energy projects at university laboratories. Juniors may have up to two years working experience at EEA, including participating in wind, IPH and photovoltaic data collection activity, under this and related projects. They are usually assigned to positions on the field test and supporting analysis teams.

The most important need of the juniors is immediate and intensive exposure to the technical areas to which they have been assigned.

Second, the juniors need direction. Their learning and performance should be guided by mid-levels and senior engineers in order to assist the juniors to integrate their learning with the objectives and activities of the basic task to be performed.

Third, the juniors require practical, hands-on experience in project work, which may be gained by completing specific exercises and assignments.

Fourth, they need to begin developing those secondary skills--data collection and analysis, computer operations and applications, project management, and technical report writing--that form a substantial capability for their career development.

Fifth, the juniors may require English instruction.

4.2.1.2 Mid-Levels

The mid-levels are project team members with two to six years of experience at the EEA, two of which may have been spent in the renewable energy field or elsewhere in the energy sector. Typically, their major renewable energy experience has consisted of data collection activity prior to and in the first phase of the REFT project. More recently they have begun to participate in a more systematic way in the technology review, applications review, and to a lesser extent, conceptual design sub-tasks of our field-test activity. They constitute a key group for longer-term accomplishments in the project.

The most important need of the mid-levels, particularly the younger among them, is to acquire a first-rate grounding in the primary areas of responsibility.

Second, the mid-levels should be given more responsibility for accomplishing discrete assignments, using their primary technical skills and knowledge. Stated in another way, the senior managers should delegate more work to the mid-levels in order to build their capability and confidence.

Third, the mid-levels need to develop a solid base of experience in field test operations, maintenance and repair.

Fourth, the mid-levels need to continue surveying technologies and working applications similar to those anticipated in Egypt under the project. The mid-levels need to see that the intended technologies work and to understand the management, technical, and resource aspects of the successful project, including problem-solving tactics.

Fifth, the mid-levels need to improve their abilities in data collection and analysis techniques. To date, this has been the province of the seniors and executives but these functions rightly should be carried out in large part by the mid-levels, with monitoring and guidance from the seniors. Training in data collection and analysis and the methods for conducting feasibility studies should be incorporated into the long-term study programs and also be presented in short courses.

Sixth, the mid-levels need to become proficient in computer software programs and applications relevant to their assigned tasks.

Seventh, today's mid-levels may become tomorrow's senior managers; at this point in their careers they need a solid preparation and continuing experience in management. Training should be provided in advanced project management and management planning, in both Egypt and the U.S. It is also important for senior managers to become more actively involved the mid-levels in the regular management planning exercises that produce the quarterly and annual operating plans.

4.2.1.3 Senior Managers/Executives

This category includes the project task and sub-task leaders, the Project Manager, and the Deputy Chairman. These personnel bear the responsibility for project accomplishments and carry out the essential management tasks of planning, organizing, directing, communicating, and controlling the key project activities.

Project management team members have indicated to the training coordinators a very important need for management training, including such subjects as advanced project management, management planning, and organizational development.

Second, in order to assure higher management that a particular investment in a renewable energy technology application will be productive and cost efficient, there is a need for senior managers to direct and assess technical and economic feasibility studies.

Third, the REFT project requires a considerable amount of data base development activity, mostly centering around the REIS task. Senior managers need sufficient general knowledge of data base systems, computer operations, and the relevant software applications to adequately monitor the data base development work that is to be performed in the areas of their specific responsibility.

4.2.2 Program Training Needs

We are also concerned with the identification of training needs at the program level.

4.2.2.1 Field Test Training Needs

The 14-month period between November 1986 and January 1988 is an extremely important one for the renewable energy devices for nine separate field tests will be installed then, according to the recently submitted Project Management Task Review (February 1986, Appendix 1, pp. 4-6). Field tests and their installation start dates are provided in Exhibit 2. Each field test installation will require about six months.

Seventh, today's mid-levels may become tomorrow's senior managers; at this point in their careers they need a solid preparation and continuing experience in management. Training should be provided in advanced project management and management planning, in both Egypt and the U.S. It is also important for senior managers to become more actively involved the mid-levels in the regular management planning exercises that produce the quarterly and annual operating plans.

4.2.1.3 Senior Managers/Executives

This category includes the project task and sub-task leaders, the Project Manager, and the Deputy Chairman. These personnel bear the responsibility for project accomplishments and carry out the essential management tasks of planning, organizing, directing, communicating, and controlling the key project activities.

Project management team members have indicated to the training coordinators a very important need for management training, including such subjects as advanced project management, management planning, and organizational development.

Second, in order to assure higher management that a particular investment in a renewable energy technology application will be productive and cost efficient, there is a need for senior managers to direct and assess technical and economic feasibility studies.

Third, the REFT project requires a considerable amount of data base development activity, mostly centering around the REIS task. Senior managers need sufficient general knowledge of data base systems, computer operations, and the relevant software applications to adequately monitor the data base development work that is to be performed in the areas of their specific responsibility.

4.2.2 Program Training Needs

We are also concerned with the identification of training needs at the program level.

4.2.2.1 Field Test Training Needs

The 14-month period between November 1986 and January 1988 is an extremely important one for the renewable energy devices for nine separate field tests will be installed then, according to the recently submitted Project Management Task Review (February 1986, Appendix 1, pp. 4-6). Field tests and their installation start dates are provided in Exhibit 2. Each field test installation will require about six months.

EXHIBIT 2

FIELD TEST INSTALLATION START DATES

<u>FT</u>	<u>Title</u>	<u>Date</u>
3.6	Ice-making	11/21/86
3.11	Windfarm	11/25/86
3.3	Poultry	2/1/87
3.8	Desalination	4/15/87
3.7	Village	5/1/87
3.10	Desalination	5/1/87
3.9	Village	5/15/87
3.4	Textile	5/15/87
3.2	Fruit	7/15/87

During this period there will be a great need for training support for the field tests. Training will be provided to engineers and technicians in the fields of construction project management; the operations, maintenance, and repair of the devices and equipment; configuration management (assuring that the right equipment arrives at the right site at the proper time); equipment performance testing, user training and related subjects. Although the field test contractors will be primarily responsible for conducting this training there will be an additional need for training and technical assistance in program design, curriculum development, materials development, scheduling of training events and monitoring. These services will be provided by the training subcontractor, who will work closely with the field test contractors.

A more detailed description of field test contractor training activity is provided in Appendix B.

4.2.2.2 Supporting Analysis Training Needs

The Economics/Market Analysis Task (2.1) provides data on the cost effectiveness and market potential of the renewable energy technologies to be employed in the field tests at various sites in Egypt. The Task Review shows that the majority of these economic/market analyses will be submitted to EEA/AID as draft finals and final reports in 1987, the preliminary analyses being accomplished in 1986.

There exists at present a real need to develop a core team of EEA staff capable of designing, conducting, and reviewing economic feasibility and market assessment studies. To some extent the project will remedy this gap during the second half of 1986 but significant progress will not be made unless longer term training in economics, feasibility studies, and market research is provided to EEA staff, through formal and intensive study.

In the Options Assessment Task (2.2), the task leaders seek to identify promising renewable energy technologies and applications for use in Egypt. Studies in six areas have begun and will continue through 1987. A need exists to train a core group of EEA staff to collect relevant data, match technologies and applications to needs, site conditions, and available resources, and conduct the necessary technical and economic feasibility studies. In 1987 and 1988 there will be a need to provide extended study and training to designated EEA personnel in these fields.

In the Renewable Energy Information System Task (REIS, 2.3), considerable work will take place in 1986, culminating in the turnover and operation of the system late in the year. While an extensive program of on-the-job and special training will be provided in 1986 to support REIS development, there will exist in 1987-1988 additional needs to provide more formal and longer-term education and training to develop a core group capable in systems analysis and design, computer languages, and management information systems.

4.2.2.3 Training/Information Dissemination

Training accomplishments to date have been examined above in section 3, while the training/information dissemination agenda for 1986 consists of submitting the final needs identification project paper and the final statement-of-work; reviewing proposals; and selecting the contractor. The oversight task (4.5) is expected to begin in early 1987.

There is a serious need to develop a training unit at EEA to offer a wide range of training services to the project. The training coordinators will focus their efforts in 1986 on (a) developing a core training unit and (b) providing preliminary train-the-trainer courses to the designated EEA personnel. In 1987-1988 it will be necessary to provide advanced education and training in the human resources management field and also upgrade the skills of the junior trainers so as to create a dedicated and high quality training team.

In the information dissemination field, our efforts, which are in the preliminary stage, will expand in 1986. Activity to be accomplished includes developing project brochures and short descriptive statements, holding seminars for information dissemination purposes, and continuing to build the information base by documenting and photographing project progress. Task needs include the designation by EEA of personnel to work on the task and their short-term training. Subjects for this training should encompass public relations, promotional strategies, audio-visual materials development, and hands-on instruction in the use of the audio-visual equipment already delivered to the project. In 1987-88, the need will be to create an independently functioning core information dissemination unit capable of high quality work, with a focus on conducting the scope-of-work presented in Section 5.5.

4.2.2.4 Project Management

In the Project Management Task (1.0), a variety of short courses and on-the-job training will be presented in 1986 in order to strengthen the EEA capability in this field. In the 1978-88 period, there will be a need to further develop this capability by providing advanced management training to designated EEA staff.

4.2.2.5 Library Development

During 1986 there will be continuing efforts to organize and stock the library, designate and train personnel, and provide a wide range of services to users. During the 1987-88 period, there will be a need for short-term training and technical assistance in the general area of library science in order to develop professional staff with upgraded skills, fully systematize project library operations and procedures, and provide the widest range of services to users.

4.2.3 Institutional Training Needs

The proposal also requires consideration of the training needs of EEA as an institution, over and above the individual and program needs discussed above.

4.2.3.1 Egyptian Renewable Energy Development Organization

Future development of renewable energy technologies and applications will be accomplished through the work of the Egyptian Renewable Energy Development Organization (EREDO), which is now in a preliminary stage of development. EEA has the predominant role in renewable energy development in Egypt in that overall activity.

In the fields of energy conservation and renewable energy development, EREDO will carry out these activities, according to the EREDO Work Program Study (p. 38):

- o providing a sound data base and strategies concerning
 - energy resource potential
 - energy needs
 - state of the art of technologies applicable to the specific situation in Egypt
 - forecasts, strategies, market analysis;
- o testing, performance control, and quality assurance of equipment to be used commercially in Egypt;
- o technology development and adaptation;
- o demonstration projects for technologies in the above-mentioned fields;

- o data collection on demonstration units, actually working installations and systems;
- o establishing codes, standards, regulatory procedures and testing procedures for NRSE and CE equipment in Egypt, and
- o promotion of NRSE, including
 - information campaigns, consultantancy services to potential customers, technical assistance for running units, and
 - manpower formation programs.

Appendix C provides an overview of EREDO priorities, tasks, manpower formation and preliminary training activities. The EREDO project, which is funded in large part by the European Economic Community, envisages a six-year project ultimately employing over 100 individuals (see Appendix C, Exhibit 1), of which at least 54 will be working in the planning and technical sectors (see Appendix C, Exhibit 2).

For our training support purposes, it is important to note that it appears that EREDO will be developed primarily from EEA resources. At present the Acting Director of EREDO is also the Project Manager for the REFT project. The REFT team constitutes the core group for EREDO, according to statements by our task leaders. It is also important to note that many of the priority foci and operating tasks of EREDO are similar to the objectives, task areas, and activities of the REFT project.

The similarities of purposes, activities, and staffing between the REFT project and EREDO mean that REFT project training directly benefits EREDO. It would be useful for new EREDO personnel, those not already on the REFT project management team, to participate in the special training courses to be presented over the 1986-88 period.

Second, there may be particular areas of expertise and experience in the REFT project, such as the REIS, or specific field tests, that constitute valuable training resources for EREDO. In these cases, it would be very useful to present additional short-term training and/or materials to EREDO personnel.

Third, there will be a need to provide longer-term formal education and training to EREDO personnel in certain priority areas, including photovoltaic conversion, biomass energy, solar thermal and wind technologies and applications.

Fourth, there is a need for training in energy conservation, energy management, energy policy/planning, and energy extension services.

4.2.3.2 Other Institutional Training Needs

Several of the universities located in and around Cairo have been involved in the field of renewable energy research and have considerable resources, such as electrical and mechanical engineering academic staff and laboratories, to offer the project. To date these highly qualified academic resources have not been a significant part of the REFT project with the exception that a few members of the project management team are independently pursuing advanced degrees, with a focus on renewable energy, at some of these schools. The survey conducted by the training coordinators in late 1985 demonstrated the willingness of key university personnel to provide training to EEA staff under contract. There is a need to involve these institutions in our project.

4.3 OBJECTIVES

4.3.1 Basic Objective

The basic objective of the proposed training program is to increase the capability of the EEA project team members to work independently in the four basic task areas--project management, supporting analysis, field tests and training/information dissemination--by assisting the EEA, in the design, development, coordination, conduct and monitoring of (a) on-the-job training and (b) special training events and (c) more formal training and education courses for EEA project team members in both Egypt and the U.S.

4.3.2. Results

It is important to state the objectives in terms of quantifiably achievable results. Over a two-year period, the training contractor shall achieve the following:

4.3.2.1 Project Management (Egypt)

The contractor shall have primary responsibility for the design, develop, conduct and monitoring at least six one-to-two day workshops and seminars in the fields of project management, management planning, and organizational development.

4.3.2.2 Economics/Market Research (Egypt)

The contractor shall assist the task leaders, in the design, development, conduct, coordination and monitoring of at least four one-to-two day workshops and seminars in the fields of economics, economic feasibility studies, energy economics, economic feasibility studies, and market research and analysis.

4.3.2.3 Renewable Energy Information System

The contractor shall assist the task leaders in the design, development, conduct, coordination and monitoring of at least four one-to-two day workshops and seminars in the fields of computer operations, software applications relevant to REFT tasks, data base development, and management information systems.

4.3.2.4 Options Assessment (Egypt)

The contractor shall assist the task leaders in the design, development, conduct, coordination, and monitoring of at least three one-to-two day workshops and seminars in the technology and applications assessment field, covering the strategies, methodologies, and techniques for evaluating renewable energy technologies and applications, with a concentration on those selected for study under the options assessment task.

4.3.2.5 Train-the-Trainer (Egypt)

The contractor shall have primary responsibility for the design, development, coordination, conduct, and monitoring of at least three one-to-two day workshops and seminars in the train-the-trainer field.

4.3.2.6 Technical Assistance to Field Tests (Egypt)

The contractor shall provide training services to the EEA and field test subcontractors to assure the successful training of EEA engineers and technicians for field test installation and operations.

4.3.2.7 Formal Education and Training (Egypt)

The contractor shall assist in the development and implementation of a training program for EEA staff at academic institutions and technical institutes in and around Cairo. Course duration ranges from one week to one year, based on consultation with task leaders, subject to EEA approval. Exhibit 3 matches students and subjects. It is suggested that EEA team members take courses in at least eight subject areas.

EXHIBIT 3

EEA STUDY AT EGYPTIAN INSTITUTIONS

<u>Subject</u>	<u>1987</u>	<u>1988</u>	<u>Total</u>
Project Management	5(S)	5(S)	10
Management/Organization	5(S)	5(S)	10
Economics/Market Analysis	2(L)	2(L)	4
Feasibility Studies	5(S)	5(S)	10
IPH	3(S)	3(S)	6
Wind	3(S)	3(S)	6
PV	3(S)	3(S)	6
Library Science	1(S)	1(S)	2
	=====	=====	=====
	27	27	54

Notes: "S" = shorter-term courses ranging from a week to two months.

"L" = longer-term courses, ranging from two months to a year.

Figures refer to the number of students to receive study in a particular subject. Thus ten EEA team members will study project management over the 1/87 - 5/88 period. A team member may receive education in more than one subject.

4.3.2.8 Formal Education and Training (U.S.)

The contractor shall assist in the design, development, and monitoring of formal education and training programs for EEA staff in the U.S. It is recommended that EEA nominate at least 13 EEA staff to participate in half year and one-year certificate and/or regular degree programs over the two-year period. Exhibit 4 matches students and subjects.

EXHIBIT 4

EEA ADVANCED STUDY IN THE U.S.

<u>Subject</u>	<u>1987</u>	<u>1988</u>	<u>Total</u>
Economics	*	*	2
REIS	*	*	2
Photovoltaics	*	*	2
Wind	*	*	2
IPH	*	*	2
Energy Conservation	*	*	2
Energy Policy/Planning		*	1
	===	===	===
TOTAL	6	7	13

4.3.2.9 Library Development (Egypt)

The contractor shall assist in the design, development, and conduct of at least three workshops to strengthen project library organization, planning, and services. The contractor shall also oversee library development, provide technical assistance, and monitor progress.

4.4 STRATEGY

The proposed training program includes these key strategy elements:

- o Resident Trainer. A skilled trainer will reside in Egypt over the 1/1/87 - 5/21/88 period and provide full-time training services to the project in the areas of training coordination, programming, monitoring, and technical assistance. Constituting an additional member of the U.S. team, and having a secondary specialization in management planning and organizational development, the trainer will contribute significantly to the project. This person will also take the lead role in the information dissemination component.
- o Close Coordination. Close coordination of training activity among the major participants--EEA, the resident U.S. team, AID/CAIRO, LBII and the various subcontractors is recommended. The resident U.S. trainer will be largely responsible for assuring this coordination in Egypt.
- o Supportive Training Role. In part, the role of the training contractor is to support on-going training activity, such as the special training and field test training components. Also, the training contractor will take a primary role in the provision of formal education and training to EEA staff in Egypt and the U.S. In the cases of both on-going and new activity, the training contractor will be supporting and working closely with the EEA and U.S. task leaders.
- o Formal Education and Training. The provision of formal education and longer-term intensive training in all four task areas to designated staff is a major step in developing highly qualified and effective mid- and senior-level engineers, analysts, trainers, and managers. This education and training will be in both Egyptian and American academic institutions and technical institutes.
- o Strengthening the Field Test Component. The availability of a full-time U.S. trainer in Egypt will markedly increase the quality of on-the-job and special training to occur in support of the nine field tests currently foreseen. The emphasis will

be on setting objectives, designing curricula and staffing support for specialized training programs in operations, maintenance and repair of the field test devices and related equipment.

- o Optimum Use and Development of Egyptian Resources. The needs identification survey results make clear the abundant and high quality technical, education and training resources of Egyptian universities and technical institutes. It is recommended that the project design, develop and implement a small grants program to assist these institutions and organizations to increase their capabilities in the renewable energy field, by funding research projects that would afford relevant education and training opportunities for EEA trainees. A special feature of the small grants program is the provision of funding to enable grantees to acquire small amounts of needed technical equipment for their solar energy laboratories.

4.5 SCOPE OF WORK

The purpose of this section is to set forth the nature, scope and details of the work to be performed.

4.5.1 Training Support for the Field Tests (Egypt)

Over the 11/86 to 1/88 period, the project will install renewable energy devices and related equipment for the nine field tests specified above in Exhibit 2. Top level EEA management has repeatedly emphasized the importance of providing on-the-job and special training to engineers and technicians at EEA headquarters and the sites. The responsibility for this training lies in large part with the successful field test tenderers. The role of the successful training tenderer will be to provide technical assistance and support to this training effort. Particular attention has been focused on specifying the training to be provided; the model training SOW for the field test tenderers may be found in Appendix B. The activity of the successful tenderer will include:

- o Review of the project plans for the installation phase of all scheduled field tests;
- o Review and comment on the training plans of the field test subcontractors;
- o Provision of training support services to the field test subcontractors in the formulation of objectives, curricula, and strategies for conducting training in Egypt;
- o Assistance in mobilization of audio-visual resources and equipment necessary for the conduct of the training events;

- o Assistance in the scheduling of field test training events in Egypt and related coordination of efforts with EEA field test and training personnel;
- o Attendance, participation in, monitoring of field test training exercises and events, including documenting the training, assessing its effectiveness and efficiency, and providing suggestions for improvement to field test contractors and EEA.

4.5.2 Special Training (Egypt)

The successful tenderer shall be expected to take major responsibility for the design, development, and conduct in Egypt of the following special training workshops and seminars:

- o At least six one-to-two day workshops in the fields of project management, advanced project management, management planning, and organization development;
- o At least three one-to-two day workshops in the fields of training administration, training program design, audio-visual materials development, use of training equipment and related subjects.

The successful tenderer shall be expected to play a secondary, supporting role in the design, development, scheduling, conduct, and monitoring of these training events:

- o At least four one-to-two day workshops and seminars in the fields of economics, economic feasibility studies, energy economics, and market research and analysis;
- o At least four one-to-two day workshops and seminars in the fields of computer operations, software applications, data base development, and management information systems; and
- o At least three one-to-two day workshops and seminars in the technology review and applications assessment fields, covering the strategies, methodologies, and techniques for evaluating renewable energy technologies.

4.5.3 Formal Education and Training (Egypt)

The successful tenderer shall assist in the development and implementation of a training program for EEA staff in academic institutions and technical institutes in and around Cairo. Subjects for instruction may be drawn from all four task areas. In order to accomplish this, the new training contractor shall:

- o Work with the project training coordinators to develop a list of EEA staff to receive formal education and training for project purposes in Egypt (see Exhibit 3).
- o Match these needs against the list of potentially participating Egyptian academic institutions and technical institutes.
- o Design, develop and implement a small grants program to enable selected institutions and technical institutes to receive funding for the acquisition of laboratory equipment useful for the training.
- o Work with the appropriate personnel of the resource organizations, set program objectives, curricula, teaching/learning strategy and evaluation methodology for each individual or group of EEA staff participating in this program;
- o Assist in the enrollment of students in the designated programs;
- o Monitor student progress and provide relevant evaluation results to EEA/AID, and the training coordinators.

4.5.4 Formal Education and Training (U.S.)

The successful tenderer shall assist in the design, development and monitoring of formal education and training programs for designated EEA staff in the U.S. Subjects for instruction may be drawn from all four task areas. In order to accomplish this objective, the new training contractor shall:

- o Work with the training coordinators to develop and confirm the list of EEA staff to receive formal education and training in the U.S. At present it is recommended that six EEA team members be designated for one-year academic programs in 1987 (see Exhibit 4).
- o Identify U.S. academic and training resources appropriate to the needs of EEA staff (see section 4.6.2 regarding such resources).
- o Work with the training coordinators to develop precise objectives and strategies to assure the success of each individual's learning program in the U.S.
- o Work with EEA, AID, and PARTNERS to implement these learning programs in the U.S. PARTNERS will be responsible for carrying out all the activities for meeting USAID's participant training requirements. The new training contractor will play a major role in the initial design and

monitoring of programs, while PARTNERS will play the major role in providing financial, logistical, health and primary monitoring services.

- o Provide reports and assessments on the U.S.-based learning programs in order to assure the continuing success of this component.

4.5.5 Special Training (U.S.)

The successful tenderer shall assist in the design, development and monitoring of special workshops and seminars to be conducted in the U.S. for EEA project team members. In order to accomplish this, the new training contractor shall:

- o Work with the training coordinators and other team members, particularly those in the U.S. to assure a continuing flow of information to the EEA on opportunities for participation in special workshops and seminars, and/or attendance at renewable energy conferences, in the U.S.
- o Assist in the design, development, scheduling, conduct and monitoring of these events.

4.6 RESOURCES

The objective of this section is to describe the training resources available to the project in both Egypt and the U.S.

4.6.1 Egyptian Education and Training Resources

With a view to placing EEA REFT staff in Egyptian educational and training programs, the training coordinators conducted a survey of Egyptian academic institutions and technical institutes; those recommended to provide education and training to EEA staff are presented in Exhibit 5. Others will most likely be added to this list as a result of subsequent surveys to be conducted in 1986.

EXHIBIT 5

EGYPTIAN EDUCATION AND TRAINING RESOURCES

<u>Institution</u>	<u>Unit</u>	<u>Resources</u>	<u>Task Area</u>
Ain Shams University	-Electrical Engineering Department	Diploma, B.Sc., M.Sc., Special training	-Field tests -Supporting Analysis
	-Electrical Power and Mechanics Department	Diploma, B.Sc., M.Sc., Special training	-Field tests -Supporting Analysis
American University in Cairo	-Desert Development Demonstration and Training Center	-Multidisciplinary seminars -Special Training	-Supporting Analysis -Field tests
	-Division of Management Development	-Special Training	-Project Management -Training
	-English Language Institute	AID supported courses	Training
	-Department of Economics/ Political Science/ Mass Communication	B.A., M.A., Special training	Supporting Analysis
Cairo University	-Mechanical Power Department	Diploma, B.Sc., M.Sc., Ph.D., Special training	-Field tests -Supporting Analysis
	-Center of Engineering Research and Training	Special Training	-Field tests -Supporting Analysis
Ministry of Industry	Engineering and Industrial Design and Development Center	Special Training in technical skills	Field tests
Ministry of Planning	National Institute of Planning	Special Training	-Project Management -Support Analysis
National Research Center	Program of Training Courses	Special Training	-Field tests -Supporting Analysis

4.6.2 U.S. Education and Training Resources

U.S.-based education and training resources to support the proposed training program are considerable. In late 1985, LBII delivered to the project management team copies of A Guide to Project Education and Training Resources which listed academic and technical organizations offering both short- and long-term education and training in all four task areas. The purpose of this volume is to serve the training coordinators, training subcontractor, and EEA as a reference document and first step in identifying the institutions and programs that may provide formal training to EEA personnel.

4.6.3 Resources Required

The staffing resources required to achieve project objectives include the following:

- o Resident Trainer. A skilled trainer, this individual will reside in Egypt and assume responsibility for both the training and information dissemination components.
- o Training Coordinator. A member of the U.S. team, this individual will devote 20% of available time to the project in the U.S., assisting in the coordination of the formal education and training programs for EEA participants in the U.S.

5.0 RECOMMENDED INFORMATION DISSEMINATION COMPONENT

5.1 INTRODUCTION

The purpose of this section is to present an information dissemination plan (4.2.2) for EEA/AID review and approval, as required in the contract and the technical proposal.

As an agency with new responsibilities for the development of new and renewable energy resources, there is a definite need for the EEA to get the message out and enlist support for its new activity.

The objective of the information dissemination component is to positively affect Egyptian public and private sector audiences concerning the need for and benefits of renewable energy development in Egypt. This is to be accomplished by developing and disseminating information that both informs and involves appropriate target audiences.

The contract, Annex A, (p. 18) states that related project supporting activities should include:

- o Short courses in solar technologies, economics and management for government and private sector planners, engineers, and managers;
- o Seminars on the commercial status of specific solar systems for interested private sector businesses, and the general public;
- o Field trips for government and private sector personnel to test sites showing near term commercial promise;
- o Preparation of brochures on the field test experience, other relevant Egyptian experience and other relevant solar technologies; and
- o Preparation of video programs on the project for use in schools and/or television.

The contractor's technical proposal (pp. 3-135 to 3-136) requires the information dissemination plan report to consider these factors in the needs assessment report:

- o Statement of "messages" about Qattara and renewable energy development in Egypt;
- o Strategy for reaching each of the target audiences;
- o Appropriate media to employ in reaching people
 - television and radio

- magazines, journals, etc.
- brochures, posters and special publications
- speaker's circuit
- demonstrations.

5.2 NEEDS

The overall need for the information dissemination component of the REFT projects springs from the realization that, briefly, renewable energy development, applications, and commercialization will not succeed in Egypt unless key public and private-sector decision-makers are persuaded that it is in their best interest to participate in the EEA's overall program of renewable energy development. Persuasion requires communication. There is an important need for EEA to develop and disseminate the appropriate information.

At the implementation level, EEA will need to determine:

- o the key decision-makers
- o the content of the messages
- o the format of the messages
- o how to develop the information packages
- o how to communicate this information
- o when to communicate it, and
- o how to organize in order to accomplish this work within the required time.

5.3 OBJECTIVES

5.3.1 Basic Objectives

The basic objectives of the proposed information dissemination component are as follows:

- o Strengthen the capability of the EEA project management team to design, develop, implement, and evaluate renewable energy information dissemination programs; and
- o Obtain the support of key public and private sector agencies, institutions, and organization on behalf of EEA's efforts and progress in the field of renewable energy development.

5.3.2 Anticipated Results

It will be useful to specify quantifiably verifiable results to assist in the determination of the extent to which the project will achieve its objectives. Thus, at the end of the two-year period of implementation; EEA project personnel will accomplish the following:

- o Present at least three short courses for external audiences in the high priority renewable energy technologies and applications featured in the project;
- o Conduct at least three field trips for high priority target audiences to the most promising field test sites;
- o Conduct at least two seminars on the commercial status of specific renewable energy technologies for interested private sector business;
- o Conduct a round of introductory renewable energy orientation meetings with high-level governmental officials from Ministries with promising projects for the employment of renewable energy technologies;
- o Give two radio presentations/interviews on renewable energy development for Egypt, with attention to the objectives benefits, and progress of the project, and
- o Preparation, production, and presentation of a video film suitable for use on Egyptian television and in other high-impact media; and
- o Produce a REFT Project Newsletter on a regular basis.

5.4 STRATEGY

The proposed information dissemination component includes these key strategy elements:

- o Resident Trainer. The resident U.S. trainer will take major responsibility for achieving the objectives of this component. Available full-time and cooperating with the EEA team personnel this individual will provide direction to the effort and coordinate the activities of the various participants. Please note that the trainer will work in Egypt in both training and information dissemination activities.
- o EEA Role. It is recommended that the information dissemination component be designed and developed within EEA. It should not be contracted out as a whole. Given the activity of EREDO in information dissemination and extension work, it is both logical and timely to build an internal capability.
- o Egyptian Resources. At certain times it will be necessary to obtain the services of outside contractors, particularly in the field of audio-visual materials

development. It is recommended that the project contract for these and other information dissemination-related services from among Egyptian firms.

5.5 SCOPE OF WORK

The recommended scope of work for the information dissemination component is as follows:

5.5.1 Work Plan

The objective of this subtask is to formulate a recommended work plan for the 1987-88 period.

Supporting activity will include the following:

- o The resident trainer will review the accomplishments of all task areas, including information dissemination activity in 1986.
- o The trainer will conduct an assessment of information development and dissemination needs for the 1987-88 period. Close coordination with the training coordinators, EEA task leaders and project manager is recommended.
- o The trainer will review the information collected to draft an information dissemination work plan and submit it to EEA/AID for review/approval.

5.5.2 Team Building

The objective of this subtask is to build the overall capacity to accomplish the work plan requirements. Supporting activity will include the following:

- o The trainer will assess the available personnel resources for, and develop staffing and training needs to build, a core information dissemination team. Sources of personnel to be included are the trainer, U.S.-based staff, the members of the EEA project team, the U.S. and EEA training coordinators, the public relations departments of the EEA, the Ministry of Electricity and Energy and their preferred consultants.
- o The trainer will form the team and undertake to provide the required training. The team-building subtask is to be accomplished primarily through on-the-job and special training strategies.

5.5.3 Inter-Ministerial Information Exchange

The objective of this subtask is to communicate information about EEA's REFT project to those key GOE ministries whose activities may be improved through a greater understanding and application of renewable energy technologies and/or whose support the EEA requires for its renewable energy mission. Supporting activity will include the following:

- o Working with EEA, REFT project management and key members of the information dissemination team, the resident trainer will develop an approved list of target ministries and key personnel to be informed of EEA REFT project goals and activity.
- o The trainer will develop and implement a phased plan for the conduct of REFT project familiarization meetings and presentations.
- o The trainer shall assist in the conduct of these events, which will most likely involve the active participation of the EEA project manager and task leaders. The trainer will be responsible, with the information dissemination counterpart, in providing reports to project management on each event.
- o The trainer will be primarily responsible for developing the text and audio-visual materials presented in these events.

5.5.4 Private Sector Outreach

The objective of this subtask is to assist the EEA to establish relationships with key elements of the private sector in order to provide information and ultimately short-term training and technical assistance to enhance the use of renewable energy applications in the private sector. Supporting activity will include the following:

- o Working with the project management team and drawing on the knowledge and practical experience of staff with the private sector, develop a prioritized list of private sector companies and related organizations to which to communicate information about the REFT project and EEA's role in renewable energy development in Egypt.
- o Design, develop and implement an information dissemination and outreach plan for informing and involving the private sector in promoting and using renewable energy technologies. This plan will include the provision of short-term seminars and field trips to renewable energy project sites for private sector personnel. Subjects to

be covered should include technology overviews geared to the progress of the field tests; information developed from the applications assessments for the field tests and other applications considered under the supporting analysis task area; the results of the economics and market research studies, and information on financing for renewable energy development.

- o Develop appropriate presentations and audio-visual materials to support accomplishment of this subtask.
- o Monitor these activities and provide assessments to each project management.

5.5.5 Media Relations and Support

The object of this subtask is to obtain positive coverage by the Egyptian media--newspapers, magazines, radio, and television--in support of EEA's role and activity in national renewable energy development. Supporting activity will include the following:

- o Establishment of friendly relations with key media organizations and personnel, in order to arrange such activities as interviews, field trips to project sites, and, as project progress permits, more in-depth, extended and thematic coverage of REFT activities, including preparation and dissemination of a video film on television.
- o Design and development of specific information programs and plans required to support specific interviews, visits and media events.
- o Designation of EEA personnel to participate and preparation of those personnel to perform effectively.
- o Monitoring and assessment of the effectiveness of the conduct of these events and evaluations of the results of this activity.

5.5.6 Renewable Energy Project Information Collection and Exchange

The objective of this subtask is to better coordinate the activities of the REFT project with those of others to exchange information on projects, featured technologies, range of applications and related equipment. Supporting activity will include the following:

- o Coordinate efforts with REFT project REIS and library staff to design and develop an information system to collect, store, retrieve, and package information about all renewable energy activities in Egypt.

- o Conduct a literature search in the EEA in order to build the data base.
- o Collect information from other projects and personnel on: project goals, objectives, implementation strategies, technologies, applications, results, and significant lessons learned.
- o Hold workshops, seminars, and conferences bringing together renewable energy project personnel in order to share information and experience, focus on problem-solving strategies, analyze and document common problems, pool resources and better coordinate the overall effort in renewable energy development.
- o Based on the needs for information generated in the activities mentioned above, develop a list of priority topics for the development and dissemination of practical studies, management, technical, and field manuals, audio-visual packages and related products.
- o Implement the information development and dissemination component, within the framework of available personnel and budget resources.

5.5.7 Special Projects

The objective of this subtask is to design, develop, and disseminate information products and provide services that are outside the scope of the above-mentioned subtasks.

It is recommended that the project produce and distribute to interested parties in Egypt, and internationally, a quarterly REFT Project Newsletter, to document the progress of the project and note recent activities of the staff across the four major task areas. With modest initial efforts by the project staff, as directed by the resident trainer, the newsletter could grow into a very interesting and informative publication.

It is also suggested that, after sufficient development work has occurred to assure the regular publication of this newsletter, EEA focus efforts on the development, publication, and distribution of a semi-annual Journal of Egyptian Renewable Energy Development, to consist of more technical and scholarly papers and analysis of the opportunities for, and barriers to, renewable energy development. Under the direction of the resident trainer, who will coordinate closely with the project staff, this journal will draw upon the contributions of renewable energy experts in the academic, industrial, commercial and governmental sectors both in Egypt and internationally.

Supporting activity will include the following basic steps for both publications:

- o Development and submission to EEA/AID for review and approval concept papers describing: objectives; subjects to be covered; format; length; development plans and schedule; resources and staffing requirements, and budget.
- o Upon approval, development of model products for submission to EEA/AID in order to test the effectiveness and efficiency of the strategy described in the concept papers.
- o Implementation and monitoring.

5.6 RESOURCES

5.6.1 Available Resources

During the needs identification survey conducted in late 1985, the training coordinators assessed the Egyptian resources available to the project.

The Ministry of Electricity and Energy has a public relations department. The General Director was particularly helpful and stated the interest of the department in participating in the information dissemination component. The department staff number ten and at least three speak English. The General Director stated that the Arab Public Relations Association provide services, references and resources in the field of public relations.

The training coordinators also met with appropriate staff from the United States Information Service (USIS) in Cairo. It is important to note that USIS personnel stated that there are sufficient resources in and around Cairo to produce the work that will be required under the information dissemination component.

A major resource may be found in the program in mass communication in the department of economics/political science/mass communication at the American University in Cairo. Offering 31 courses for the B.A., major; and B.A., minor; and the M.A. programs, this concentration offers potential training, expertise, and information to assist our efforts.

In addition to organizational resources, it needs to be stated that the following audio-visual equipment has already been delivered to the project office:

- o video camera/case;
- o video recorder/case;
- o video TV/monitor;
- o box of blank video tapes;
- o tripod for video camera;
- o rolling cart for video transport/storage;
- o 35mm camera (single lens reflex)/case;
- o camera bag with accessory equipment;
- o zoom lens for 35mm camera;

- o flash attachment for 35mm camera;
- o 35mm slide projector with cassette recorder and built-in viewing screen;
- o projection screen for slide/movie shows;
- o 35mm film for camera;
- o slide viewing device;
- o plastic envelopes for storing slides;
- o portable presentation board/case;
- o cork bulletin board, and
- o white magnetic writing board.

5.7.2 Required Resources

The major resource requirement is the resident trainer/information specialist. This is the resident trainer specified in the training component. This person will also direct the overall efforts of the information dissemination component.

6.0 BUDGET

This tentative budget is proposed in order to accomplish the work of the training/information dissemination components described above. It assumes a U.S. contractor. The budget period is tentatively 1/1/87--5/21/88.

It is assumed that the resident trainer will work full-time in Egypt during that period. It is also assumed that neither IBII nor a new training contractor would receive funds for the proposed participant training in the U.S. This cost is thus separately budgeted. The budget is provided in Exhibit 6.

EXHIBIT 6

BUDGET

Direct Labor

Resident Trainer	352 days @ \$170	\$ 59,840
Training Specialist	75 days @ 115	8,625
Consultants (US)	40 days @ 261	10,440
	Subtotal	<u>\$ 78,905</u>
	Overhead	
	@ 1.285	101,392
		=====
	Total DL	\$180,297

Other Direct Costs

Consultants (Egypt)	50 days @ \$100	\$ 5,000
Academic/Technical Instruction Fees (Egypt)		7,500
Technical/Laboratory Equipment		
(small grants program)		25,000
International air travel	7 trips @ \$1200	8,400
Per Diem	80 days @ \$66	5,280
Materials Development		12,500
Communications		3,000
Shipping		2,000
Resident Trainer Benefits		32,000
	Total ODC	<u>\$100,680</u>
	Total DL+ODC	280,977
	Fee @ 7%	19,668
		=====
	Total	\$300,645

Participant Training

13 One-year programs (U.S.) @ \$25,000	\$325,000
(includes all costs)	=====
GRAND TOTAL	\$625,645

APPENDIX A

APPENDIX A

RENEWABLE ENERGY FIELD TESTING PROJECT

(A.I.D. 263-0123.2)

CODE 302705 C

17 November 80

TRAINING/INFORMATION DISSEMINATION

NEEDS IDENTIFICATION (4.2)

QUESTIONNAIRE

The purpose of this questionnaire is to collect information on the formal training and information dissemination needs of the REFT Project and its management team. It is to be administered during interviews with team members. The resulting information will be used to develop formal training and information dissemination projects.

A. BACKGROUND

1. Name:
2. Project Assignment: (Task/Sub-task/Field Test)
3. Job Category:
4. Job Grade

Junior	Executive
Middle	Clerical/Admin.
Senior	Other
5. Years at EEA:

B. TRAINING FY 85

6. Training Received FY 85

7. For which tasks or sub-tasks was there no training? Why?

8. For which tasks or sub-tasks was your training inadequate? Why?

8A. How might that training have been improved?

C. TRAINING FY 86

9. FY 86 assignment/responsibilities

10. What training will be required to assist you to accomplish that work or replicate it later?

D. TRAINING FY 87-88 (for the seniors, based on the workplan).

11. What training would be useful for your project work in
FY 87-88?

E. EDUCATION

12. Are you receiving formal education or training now outside
the project? If so...

a. Objective?

b. Program?

c. Special features / focus?

d. Organization / institution?

e. Duration of program?

f. Effect on career?

F. CAREER DEVELOPMENT?

13. what is your preferred career path?

14. What education or formal training would best advance your career?

a. In the short-term?

b. In the long-term?

G. AVAILABILITY OF FMT MEMBERS

15. How many EEA staff are now on your team?

16. Do you intend to recruit new staff for this project? If so, how many?

FY 86 _____

FY 87 _____

FY 88 _____

17. Given the scope of work for your team and its present and anticipated size, how many team members are available for training, for what time periods, over the duration of the project?

<u>YEAR</u>	<u>NUMBER</u>	<u>PERIOD (PERSON/MONTHS)</u>
FY 86		
FY 87		
FY 88		

H. PROJECT TRAINING NEEDS: (Questions to seniors/executives)

18. OJI has been in operations for six months now. What subjects for training have been underemphasized or neglected in OJI that might be supplied by the proposed training sub-project?
19. Special training, consisting mostly of 2-5 day workshops and seminars in Egypt and the U.S., has also been in operations for 6 months. An ambitious program of special training is suggested for FY 86 under task 4.1 - Institutional Strengthening. Please note any gaps in this overall program, including topics which might be developed further for inclusion into the new training sub-project.

I. Non-Training Solutions

20. Please review the list of potential subjects for training, which you developed in #s 18 and 19. Remember the list represents technical capabilities not presently well developed in the EEA PHU. Which of these capabilities might be supplied by the private sector and university sources in Egypt, rather than by internal training?

41

J. RECOMMENDED DURATION OF COURSES

21. Please classify the potential subjects (from SS 18 and 19) for sub-projects training into the following categories. A subject may be listed in more than one category.

- a. OJT
- b. Courses of 1-2 day duration
- c. Courses of 3-5 day duration
- d. Courses of 1-2 week duration
- e. Course of 2-4 week duration
- f. Courses of 1-2 month duration
- g. Courses of 2-3 month duration
- h. Courses of 4-6 month duration

117

i. Courses of 6-12 month duration

j. Courses of 12-24 month durations

K. INSTITUTIONAL STRENGTHENING

22. What is the anticipated role of the EEA FMI in the development of renewable energy applications in Egypt?

23. To what extent does the present EEA FMI constitute the core group for the development of EREDU?

24. What is the anticipated size manpower of EREDU and how quickly will it develop over the preparation, construction, and operating phases? Please refer to EREDU study, Table 15, p. 167, and continue.

PREPARATORY

CONSTRUCTION

OPERATING

FY 86

FY 87

FY 88

FY 89

29. Based on the above-mentioned needs, what topics do you recommend for EREDO training workshops, seminars, and formal courses? A subject may be designated more than once.

<u>WORKSHOP</u>	<u>SEMINAR</u>	<u>FORMAL COURSE</u>
-----------------	----------------	----------------------

30. How many EREDO individuals, apart from those already on the EEA RII, will be available for training? For what periods of time will they be available?

<u>YEAR</u>	<u>NUMBER</u>	<u>PERIOD (in months)</u>
FY 86		
FY 87		
FY 88		

L. INFORMATION DISSEMINATION

31. Information dissemination seeks to influence behavior of selected target audiences towards EEA renewable energy program objectives. Please suggest a range of such objectives.

32. What are the public sector agencies and institutions which EEA wishes to affect?

33. What are some of the private sector organizations that the EEA wishes to affect?

34. Please rate the probability of success in Egypt of the following information dissemination strategies:

STRATEGY	LOW	MEDIUM	HIGH
- Seminars at EEA			
- Visits to the field test sites			
- Workshops at the sites			
- newspaper articles			
- Magazine articles			
- Item on TV news program			
- TV feature story			
- Feature on radio show			
- Internships at EEA for University professors, students			
- Sponsorship of energy conferences, exhibits			
- Small grants programs			

11/17

38. What Egyptian organizations might offer technical assistance and resources to the ECA FBI in the area of information dissemination?

c.: Chrono
Washington DC Office (for files)
Questionnaire File
Training File

4

APPENDIX B

APPENDIX B

Recommended Contractor Training Activity

1.0 Goals of the Training Component

Training figures prominently in the REFT project. The overall objective of the training component is to increase the capacity of the EEA to design, operate, and maintain renewable energy systems; conduct related supporting analysis, and develop other renewable energy technologies and applications through a broad, comprehensive training program for members of the EEA project management team. To date, this objective has been achieved by on-the-job training and special workshops, both in Egypt and the U.S.

2.0 Special Training

Special training consists of seminars and workshops of two-to-five day duration in Egypt or the U.S. on subjects of particular importance to the project. The contractor shall provide additional special training as described below.

3.0 On-the-Job Training

The on-the-job training program has covered all areas of the project and involves focused activity at the sub-task level. EEA PMT engineers have already received on-the-job training in these field test sub-tasks; (1) field test applications review; (2) field test technology review; (3) conceptual design/performance specifications, and (4) RFP preparation.

3.1 Assuring the Success of On-the-Job Training

The basic strategy to be employed in on-the-job training is a three-fold process designed to reinforce trainee learning and achieve sub-task objectives efficiently. The contractor shall design on-the-job training programs that incorporate this model. The process is as follows:

3.1.1 Initial Orientation Session

For all PMT involved in the particular sub-task to be accomplished, the expert, working with the senior counterpart, shall present an initial task orientation session of not more than a half-day in duration. This session shall include a presentation on the objectives, strategy, and related activities to accomplish the sub-task. It is particularly important at this stage that trainees understand their assignments throughout the duration of the sub-task.

3.1.2 Monitoring Progress

The expert, working with the senior counterpart, shall assess the extent to which the trainees understand their tasks and are able to accomplish them effectively and efficiently. Supplemental guidance shall be provided to trainees who require it. They may be provided additional information to study, or may be asked to repeat certain sub-task related activities in order to better learn new skills or acquire new knowledge.

3.1.3 Final Reinforcement

End-product exercises shall be given to trainees to assist them to demonstrate their complete understanding and newly acquired proficiency in certain required skills and activities. For example, trainees may be requested to contribute to final reports and make detailed technical presentations to other PMT staff.

4.0 Training Scope-of-Work

On-the-job or special training shall be provided for each of the key tasks in the overall scope-of-work. They are as follows:

- o Engineering design
- o Procurement of equipment
- o System installation
- o Engineering and user training
- o Check-out testing
- o Acceptance testing
- o Supporting system operation, including maintenance and repair

4.1 Engineering Design

The contractor shall provide on-the-job training to designated EEA PMT members in the production of the system design. It is the training objective of this sub-task to increase the engineering design skills and knowledge of the lead or senior EEA engineer(s) and to assure a thorough understanding in the junior engineers of the design content and processes. The contractor shall be expected to provide on-the-job training at its U.S. office to at least two EEA PMT engineers (one senior, one junior) for a period of time necessary to achieve the above-mentioned objectives.

4.2 Procurement of Equipment

The contractor shall provide on-the-job training to designated EEA PMT members in the U.S. in all aspects of procurement of the equipment, materials, and spare parts necessary to install, maintain, and repair the system. The objective of this training task is to familiarize the designated EEA team with the overall system and processes employed in procurement. Subjects to be covered would include writing and reviewing equipment specifications; conducting formal bids; preparation of quotations and solicitation documents, and inspecting equipment,

either at the site of manufacturer in the U.S. or at the site of installation in Egypt. Additional subjects for on-the-job training in equipment procurement shall be developed and presented by the contractor. Such training relates to the provision, shipment, delivery, receiving, unloading, inspection, storage, and on-site transportation of the necessary equipment, materials, and spare parts.

4.2.1 Equipment Familiarization

At the same time as EEA and host country team personnel are in the U.S. for the procurement training, the contractor shall provide in the U.S. a program of familiarization to the team members in the operation and maintenance of systems similar to those which are to be installed on-site in Egypt.

4.3 System Installation

The contractor shall provide on-the-job training in Egypt to the designated EEA team in all aspects of system installation. Subjects for which the contractor shall develop on-the-job training programs include setting, installing, aligning, and adjustment of necessary equipment in addition to other topics mentioned below. For the engineers from EEA headquarters in Cairo, the objective of this training is to build skills in and increase knowledge of in the overall management of the system installation sub-task. The objective of this training for the EEA and host organization engineers and technicians on-site is to increase significantly their ability to install systems, through intensive, hands-on doing.

4.3.1 Special Training/Construction Management

The contractor shall design, develop, and conduct in Egypt a two-day construction management workshop for the EEA team and other designed EEA and host organization personnel. The objective of this workshop shall be to better prepare the project participants to manage the construction/installation phase, through a greater understanding of the planning and technical requirements and applicable methodologies, procedures, and practices.

4.4 Engineering and User Training

In general, the contractor shall provide technical manhours by qualified personnel, including manufacturer's representatives, to cover the instruction and familiarization with installed equipment and systems.

4.4.1 Equipment and Systems

At the time of initial acceptance, all systems shall be fully operational and ready for turn-over to the host organization and EEA personnel. Instruction and familiarization shall be presented to host organization and EEA personnel. The period of familiarization will not commence earlier than three (3) months prior to Initial Acceptance. The presence of host organization and EEA personnel at the worksite

during the three months of instruction and familiarization shall constitute a scheduled part of the contractor's performance of the work.

4.5 Check-out Testing

The contractor shall provide on-the-job training to designated EEA team members in order to increase their knowledge and ability to test the performance of the installed system in general and its motor - and/or electrical-driven equipment in particular. The contractor shall develop an on-the-job training program which strongly prepares EEA team members to assist in the conduct of these activities.

4.6 Acceptance Testing

The contractor shall provide on-the-job training in Egypt to EEA team members to increase their ability to independently accomplish acceptance testing of the systems and their components. This is a particularly important activity for the team for which the training shall be clearly presented, comprehensive in scope, and detailed in treatment.

4.7 Supporting System Operation, Maintenance and Repair

The objective of this training component is to prepare the EEA and host-country team to independently operate, maintain, and repair the installed system.

4.7.1 Equipment Operating Personnel

Training for equipment operating personnel shall consist of instruction and education on the use, function, routine maintenance, replacement of minor parts, safety precautions, testing and operating of various items of equipment as determined applicable by the LBII or his representative. The contractor shall prepare and submit a plan for a EEA/host organization user training program to instruct personnel in system operation, maintenance, and repair requirements, procedures, and practices. This training plan shall include both on-the-job and special training components.

4.7.2 Familiarization for Mechanics

The contractor shall design and conduct a training course to be provided to two host organization mechanics on-site in Egypt, in system operation, maintenance, and repair. This course will be given in Arabic by an EEA engineer working with contractor, and using materials developed by it.

APPENDIX C

APPENDIX C

OVERVIEW:

EGYPTIAN RENEWABLE ENERGY DEVELOPMENT ORGANIZATION

1.0 INTRODUCTION

Commonly called EREDO, this organization has the basic mission of promoting the development of renewable energies in Egypt. EREDO is very closely linked to the EEA; in fact, the Acting Director of EREDO is also the Project Manager for our REFT project. In order to ascertain the needs for training that might be met through the proposed training component, it will be useful to provide an overview of EREDO priorities, scope of work and operating tasks.

According to the January 1985 EREDO Work Program Study (page 25), the organization conducted a priority estimation exercise, in order to determine a prioritized list of subjects for EREDO focus. From high-to-low priority, they are:

- o Energy conservation;
- o Photovoltaic conversion;
- o Biomass energy;
- o Low temperature solar;
- o Wind;
- o Small-scale hydro;
- o High temperature solar, and
- o Geothermal and new technologies.

2.0 EREDO'S OPERATIONAL TASKS

According to the same Study EREDO's operational tasks closely follow the prioritized subject list and include the following:

- A. Planning and systems analysis in order to provide the statistical data and strategies for implementation of NRSE and CE in Egypt. Evaluating the potentials and screening possible technological solutions.
- B. Conservation energy.

Implementation of programs for more rational use of energy in industry, household and commerce. Consultancy services to promote programs, to inform about technical solutions, to train people and to perform or supervise seminars, training and information campaigns. Screening and qualifying of CE equipment, procedures and organizational measures in industries and with other energy consumers.
- C. Technology for solar energy conversion.
 - Low temperature (below 100^o C) Heat generation for industrial processes, households, crop-drying in agriculture, etc.
 - Medium and high temperature (above 100^o C). Heat generation for industrial processes.
 - Passive solar energy for buildings.
 - Electricity generation by photovoltaics for communication, small refrigerators, water pumping in remote areas, and lighting.
- D. Technology for converting biomass resources to energy.
 - Chemical/physical conversion (drying, compressing, charring, gasifying, burning).
 - Conversion by micro-organisms (fermentation, biogas).
- E. Wind energy conversion.
 - Pumping and direct motion power,
 - Electricity generation.
- F. Technologies for utilizing small-scale hydropower
- G. Applying technologies for utilizing geothermal energy potentials and advanced technologies.

3.0 EREDO SUPPORTING ACTIVITIES

In all of these areas EREDO will be involved in the following activity, according to the Study (p. 38):

- o providing a sound data base and strategies concerning
 - energy resource potential
 - energy needs
 - state of the art of technologies applicable to the specific situation in Egypt
 - forecasts, strategies, market analysis;
- o testing, performance control, and quality assurance of equipment to be used commercially in Egypt;
- o technology development and adaptation;
- o demonstration projects for technologies in the above-mentioned fields;
- o data collection on demonstration units, actually working installations and systems;
- o establishing codes, standards, regulatory procedures and testing procedures for NRSE and CE equipment in Egypt, and
- o promotion of NRSE, including
 - information campaigns, consultantancy services to potential customers, technical assistance for tuning units, and
 - manpower formation programs.

4.0 EREDO DEPARTMENTS

The key units in EREDO's organizational structure are the departments. They correspond closely with the prioritized list of subjects and operating tasks given above with a few exceptions and additions, according to the Study (pp 44-114):

- o Planning Department;
- o Resource Assessment, Data Processing and Data Bank Department;
- o Energy Conservation Department;
- o Solar Thermal Energy Department;
- o Photovoltaic Conversion Department;
- o Biomass Energy Department;
- o Wind Energy Department;
- o Hydraulic Energy Department; and
- o Geothermal and Advanced Technology Department.

5.0 EREDO MANPOWER NEEDS

With regard to projected manpower needs, an earlier, undated study entitled, "EREDO", provides this information (Table 15, p. 163):

EXHIBIT 1

EREDO MANPOWER NEEDS

QUALIFICATION	PREPARATORY PHASE	CONSTRUCTION PHASE		OPERATING PHASE
Higher Management Area				
Chairman			1	1
Executive Chairman	1	1	1	1
Technical Secretariat	1	1	2	1
Legal Advisor		1	1	1
Public Relations			1	1
Nat. and Int. Coordinators		1	2	2
Directional Secretary	1	1	2	2
Sector Managers		4	4	4
Manager Secretaries		4	4	4
Department Directors		6	8	10
Administrative Sector				
Senior Experts		4	4	4
Senior Tech. & Clerks		3	5	5
Clerks & Tech.		2	4	4
Laborers		3	5	7
Drivers		5	10	10
Planning Sector				
Senior Experts		2	4	5
Engineers & Economists		2	3	3
Senior Secretary		1	1	1
Typists		2	3	4
Analysts			2	4
Technical Sector				
Senior Experts	3	6	8	8
Senior Engineers		5	8	12
Engineers		4	7	12
Senior Technicians			1	1
Technicians		6	12	18
Labcrers		3	3	3
Training and Extension Services				
Coordinator			1	1
Field Inspector			1	1
TOTAL	6	67	108	131

6.0 OVERVIEW OF EREDO MANPOWER NEEDS

In considering possible training support for the development and strengthening of EREDO, we should confine our attention to the planning, technical, and training and extension services sectors that are listed above in Exhibit 1 and look more closely at the Work Program Study forecasts of manpower needs in those sectors.

As a preface to the discussion of sector and department staffing needs of EREDO, the Study sets forth the general needs in the area of manpower formation as follows (page 41):

There is a tremendous need for people with the knowledge in construction, building, maintenance, operation, testing, and promoting of NRSE and CE technologies, equipment, and systems. EREDO will play a major role in manpower formation programs on all levels, especially on the industry and user level. The first priority would be the formation of equipment test personnel. These should be acquainted with standard test procedures as laid down in the national rules and regulations. They will work mainly in EREDO laboratories, partly in industry firms producing NRSE and CE equipment.

Also of high priority will be formation of users, especially in rural areas. Special courses could be given to personnel from industry for special fabrication methods, for service, and for maintenance.

Specific staffing requirements, by sector and department, are as follows (Study, pp. 145-147):

Appendix C - Exhibit 2

EREDO STAFFING FOR PLANNING AND TECHNICAL BY DEPARTMENTS

Department	1st Year	2nd Year	3rd Year
Planning	-Director -Senior Analyst (resource assessment and data processing) -Senior Expert (data bank)	-Analyst (4) -Senior Engineer	Not Specified
Energy Conservation	-Director -Senior Expert -Technician	-Senior Engineer	-Senior Engineers (2) -Engineer
Solar Thermal Energy	-Director	Not Applicable	Not Applicable
Low Temperature Group	-Senior Expert -Engineer -Architect	-Engineer -Technician	-Senior Engineer -Technician
High Temperature Group	-Senior Expert -Senior Engineer -Engineer -Technician	-Technician	Not Specified
Photovoltaic Conversion	-Director -Senior Expert -Senior Engineer -Engineer	Senior Engineer	-Technician
Biomass Energy	-Director -Senior Expert -Technician	Senior Engineer	-Analyst
Wind Energy	-Director? -Senior Expert -Senior Engineer -Engineer	-Senior Engineer	-Technician
Hydraulic Energy	-Director? -Senior Expert	-Engineer	-Technician
Geothermal and Advanced Technology	-Director -Geologist -Hydrogeologist -Geophysicist		Not Specified
TOTAL	31	13	10

7.0 OVERVIEW OF TRAINING FOR EREDO PERSONNEL

The earlier EREDO report stated (P. 154):

EREDO personnel engaged in scientific activities will have to be trained in their specific field both during the first and operational phases.

During the first phases an intensive training will be carried out in Egypt and in foreign countries, in order to give highly qualified knowledge to the newly hired personnel. In particular, each person involved in technical activities (Senior Experts, Engineers and Analysts) will have to attend immediately a specialized training course given by the best experts of Egyptian Universities and R & D centers.

This course will last about 2-3 months and will have to concern the basic knowledge of the most up-to-date techniques regarding renewable energy resources, with particular interest to their specific field. As an alternative this course may be given by international training schools.

EREDO will therefore previously define contracts and general agreements with these Organizations and Industries directly or by means of governmental programs. These courses will last about 4-6 months.

The managing personnel (Chairman, Chairman staff and Managers) will be supported by foreign scientists and highly qualified managers, chosen for their outstanding personal qualities. Those consultants may be appointed temporarily for particular problems. They may also be assimilated into the organization because of the benefits they can bring to the high qualified facilities of EREDO.

During the operational phase, managing personnel and scientific staff will also be sent, when necessary, to foreign R & D Organizations and Industries in order to follow the progress of the new developing techniques and technologies.

7.1 TRAINING IN THE WORK PROGRAM STUDY

The Study does not present a detailed, overall training program to support the work of the above-mentioned departments but provides briefer statements about needed training activity throughout the workplan. These are summarized in Exhibit 3.

EXHIBIT 3

EREDO Training

<u>Department</u>	<u>1st Year</u>	<u>2nd Year</u>	<u>3rd Year</u>	<u>Years 4-6</u>
<u>Planning</u>	Study visit to planning groups which are working on renewable energy in other countries, especially, in EC countries.	Training of own personnel abroad in specialized centers.	None Specified	None Specified
-Marketing Studies	One-year training program of the senior expert aboard.	None Specified	None Specified	None Specified
-Resource Assessment Data Collection, and Processing	-Collecting know-how on data processing for NRSE purposes -Extended visits to international institutes working in this field	None Specified	None Specified	None Specified
-Data Bank	None Specified	None Specified	None Specified	None Specified
<u>Energy Consumption</u>	-Review of internationally applied methodology, systems and technology for energy conservation (subcontracted): may provide training opportunities	-Organization of management seminars for rational use of energy -Study visits to European countries	Continuing management seminars	
-Low temperature	Extended study visits to renowned solar passive laboratories Egypt and abroad	-Training of personnel -Study visits and elaboration of a program for passive solar energy utilization	Training of personnel	-Formulation of curricula for training courses (4) -Training courses (4-5-6) -Training of lecturers (5-6)
-High temperature	-Extended study visits to Adriano and Almeria -Temporary exchange of scientific personnel with Adriano or Almeria	-Temporary exchange of scientific personnel -Training of personnel	-Temporary exchange of scientific personnel	-Training Courses (5-6) -Training of lecturers (6)
<u>Photovoltaic Conversion</u>	-Study visit to ISPRA	-Study visits to ISPRA and European photocell manufacturers	-Study visits to ISPRA and European photocell manufacturers -Training of personnel	-Training of personnel (4) -Training courses (4-5-6) -Training of lecturers (6)
<u>Biomass Energy</u>	None Specified. "The whole resource assessment study will be subcontracted in large parts"	None Specified	None Specified. Note, however, that a biogas extension service is to be established, which will require training of extension agents	None Specified
<u>Wind Energy</u>	-Study visits to European experiments and manufacturers (no time indication) -Scientific and technical follow-up of construction of Nasr City and El Alamein experimental facilities (no time indication)	None Specified	None Specified	None Specified
<u>Hydraulic Energy</u>	None Specified	None Specified	None Specified	None Specified
<u>Geothermal and Advanced Technology</u>	None Specified	None Specified	None Specified	None Specified

APPENDIX D

APPENDIX D

OVERVIEW OF EGYPTIAN MEDIA COSTS

<u>Medium</u>	<u>Channel/Station</u>	<u>Time/Space</u>	<u>Cost*</u>
Television	1	30"	708 LE
		45"	1062 LE
		1'	1180 LE
	2	30"	637 LE
		45"	944 LE
		1'	1062 LE
3	30"	354 LE	
	45'	472 LE	
Radio		30" **	71 LE
Newspapers	Al Ahran	One Full Page z	1500 LE
	Al Akbar	"	1500 LE
Weekly Magazines	Akhir Saa	"	900 LE
	El Musawwar	"	1000 LE
	Rosa El Yusef	"	900 LE
	Oktobar	"	1500 LE

* Includes 18% tax. Assumes prime time (6 pm - 12pm) airing

**Will only accept 30" spots.

z Black and White. Color 50% higher.

Sources of Information:

Television/Radio: Nihal Rizk Abdel Rahman
United States Information Service
Cairo

Newspapers/Magazines: Reda Botros
Egyptian Electricity Authority
Cairo

APPENDIX E

APPENDIX E

CONTRACTING OPTIONS AND ANALYSIS

1. INTRODUCTION

During the May, 1986 visit of the U.S. training coordinator to Egypt, EEA/AID project officers requested LBII to develop and discuss in this final draft project paper a brief series of contracting options to accomplish the work that is described in this report. The following is in response to these requests.

2. CONTRACT REQUIREMENTS

As you may be aware, the contract requires LBII, working with the EEA training coordinator and other task leaders, to produce a training and information dissemination project paper (4.2), convert that report into a statement of work (4.3), oversee the work that contractor (4.5), and evaluate its performance (4.6). The last two tasks are to run through the end of the contract.

3. RATIONAL FOR CONSIDERING OPTIONS

A. Contract Intent: Academic and Technical Training

Both the LBII proposal and the contract state that part of the training task, including the longer-term academic and technical training component in the U.S., would be provided in part by an additional training contractor. During proposal preparation, a primary focus was on the best way to manage the participant training process whereby EEA staff would receive longer-term education and training in the U.S. At the time it was not known that the USAID contractor, PARTNERS, was already providing comprehensive participant training services to USAID/Cairo. Since LBII did not specialize in that activity itself, it was thought necessary to contract the participant training activity to another provider. This is not necessary, as PARTNERS continues to provide these services, under a recently awarded contract.

B. Contract Intent: Information Dissemination

Similarly, it was thought in the proposal preparation phase that it would be necessary to contract out in order to receive services for the purposes of the information dissemination component. Our research to date indicates that it is not necessary to do this. There are more than sufficient expertise and resources in the current contractor's team, the EEA staff and the Department of Public Relations of the Ministry of Electricity and Energy. The information dissemination component should be accomplished by EEA, with assistance.

C. Scheduling

Under the current schedule, the project is not expected to obtain the services of a training contractor before January 15, 1987. EEA staff could not be placed in the U.S. universities before late spring 1987 at best. If the project is not required to contract out, it would be possible to send the first group of participants to the U.S. in time for the fall 1987 academic year.

Similarly, a new contractor would not be able to prepare on-the-job training plans for the site preparation and installation phases of the field tests until March or April of 1987.

D. Cost

It is important to note that the contracting options entail significantly different costs.

4. CONTRACTING OPTIONS

This section is intended to provide introductory information on contracting options, including advantages and disadvantages, in order to stimulate discussion in EEA and AID.

A. External Contract/U.S. Firm/Periodic Visits of the Trainer to Egypt

Strategy: USAID contracts to a U.S. firm by January, 1987. The principal trainer makes periodic visits to Egypt, perhaps three to four times a year, to accomplish the work. The trainer would likely be assisted by the firm's staff and some consultants.

Advantages:

1. This option meets the current requirement for an external contract.
2. It is a relatively low-cost option, but only if the use of the firm's staff and outside consultants is minimized.

Disadvantages:

3. Periodic visits insufficient to develop program of training at local Egyptian training institutions.
4. Periodic visits do not really accomplish EEA capacity-building and counterpart formation.
5. Lower return on investment as contract funds will be spent in part for U.S.--based project activity.

6. Too late for 1986 academic and technical school placements in U.S.

B. EXTERNAL CONTRACT/U.S. FIRM/RESIDENT TRAINER

Strategy: USAID contracts to U.S. firm by January, 1987. Firm places resident trainer in Egypt for the remaining period of the project, 17 months. Trainer accomplishes the bulk of the work, with very limited support from the U.S. Trainer works with EEA counterpart.

Advantages:

1. In-country presence facilitates capacity-building and counterpart formation.
2. Resident will improve coordination of training activity in Egypt.
3. Increasing use of local Egyptian training and education resources.
4. Improved needs identification and selection process for candidates for longer-term academic and technical training in the U.S.
5. This option meets the current requirements for an external contract.

Disadvantages:

6. Periodic visits insufficient to develop programs of training at local Egyptian training institutions.
7. Too late for 1986 academic and technical school placements in U.S.
8. This is a relatively costly option, particularly if the resident trainer works in Egypt for the 17 month period and is also supported by U.S. - based staff and consultants.

C. EXTERNAL CONTRACT/EGYPTIAN FIRM OR CONSORTIUM

Strategy: USAID contracts to a Egyptian firm or consortium. Work is overseen by EEA and LBII training coordinators. LBII performs liaison work in the U.S. with PARTNERS for purposes of longer-term academic placements of EEA team members.

Advantages:

1. This option may meet a need for increasing Egyptian participation in the project.
2. Increasing use of local Egyptian training and education resources.
3. This option meets the current requirement for an external contract.
4. In-country presence facilitates capacity-building and counterpart formation.
5. This is a relatively low-cost option.

Disadvantages:

6. Too late for 1986 academic and technical school placements in U.S.
7. Although the EEA and US training coordinators have assessed local Egyptian education and training resources for purposes of EEA and have found those listed in Exhibit 5 to be suitable training providers, the coordinators do not have sufficient information to forecast the quality of a local contractor's performance.
8. Contractor lack of familiarity with US education and training resources may delay the progress of the US academic and technical training sub-task.

D. LBII MAJOR ROLE/U.S. BASE/PERIODIC VISITS TO EGYPT

Strategy: USAID amends contract to enable LBII to take major role in assuring accomplishment of scope-of-work. Current U training coordinator directs both training and information dissemination activity. Training coordinator increases the number of trips to Egypt and duration of time in Egypt somewhat but stays within the four-year allocated budget.

Advantages:

1. Familiarity with project personnel and procedures enables on-going activity to proceed smoothly.
2. EEA academic and technical school programs in the U.S. could begin in 1986.
3. Very little addition to current budget, if any. A very low-cost option.

Disadvantages:

4. Periodic visits do not really accomplish EEA capacity-building and counterpart formation.
5. Lower return on investment as contract funds will be spent in part for U.S.--based project activity.

E. LBII MAJOR ROLE/RESIDENT TRAINER EGYPT

Strategy: USAID amends contract to enable LBII to take major role in accomplishing the scope-of-work over the duration of the project. LBII assigns current training coordinator (or person similar knowledge and experience) to the project for a one-year period beginning the fall, 1986. Resident trainer, working with counterpart under the direction of current EEA training coordinator, takes responsibility for accomplishing scope-of-work.

Advantages:

1. In-country presence facilitates capacity-building and counterpart formation.
2. Resident will improve coordination of training activity in Egypt.
3. Increasing use of local Egyptian training and education resources.
4. Improved needs identification and selection process for candidates for longer-term academic and technical training in the U.S.
5. Familiarity with project personnel and procedures enables on-going activity to proceed smoothly.
6. EEA academic and technical school programs in the U.S. could begin in 1986.
7. A very low-cost option.

Disadvantages:

There do not appear to be any significant disadvantages.