

VOLUNTEERS IN TECHNICAL ASSISTANCE
RENEWABLE ENERGY PROGRAM
EIGHTH QUARTER REPORT
JULY-SEPTEMBER 1981

AID/DSAN - CA - 0122

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TABLE OF CONTENTS

	<u>Page.No.</u>
I. Introduction	1
II. Message From the Director	3
III. Reprogramming Efforts	3
IV. Program/Technology Accomplishments	5
V. Field Office Accomplishments	7
VI. Field Visits and Consultancies	7
VII. Technology Transfer Service Accomplishments	10
VIII. Projections	11

I. INTRODUCTION

VITA is a private, non-profit organization that supports people working on technical problems in developing countries. It offers information, technical assistance, and other services aimed at helping people and groups use resources appropriate to their needs and objectives.

In August 1979 VITA and AID(DS/EY) signed a Cooperative Agreement for a five year program in "Low Cost Energy Technologies for the Rural and Urban Poor." The Agreement states that its purpose is:

"to make effective use of the broad experience and demonstrated competency of Volunteers in Technical Assistance (VITA) in the field of alternative energy technologies. It is to enable VITA to enhance its ability to extend appropriate technologies to the LDCs and to provide material, information, and human resources for the support and advancement of low cost energy technologies based on renewable resources."

The Renewable Energy Program (REP) was designed to make full use of VITA's Volunteers, technical information resources, and the vast network of individuals and organizations around the world involved in appropriate technology, and to strengthen VITA's capacity to deliver its services and expand their scope and demand.

VITA's Development System and Program Objectives

The VITA Renewable Energy Program builds upon the organization's time-tested core resources and activities—in particular VITA's volunteer roster of technicians and development experts and the Documentation Center/Technical Inquiry Service. The integration of these components into a VITA-wide development system enables VITA to respond to a variety of development needs.

(i) Technology transfer services expand existing technical assistance mechanisms through staff and volunteer consultancies, both on-site and by-mail, publications development and distribution and workshops.

(ii) Networking activities foster information exchanges, resource sharing, "switch-board" activities, and improved local capacities in information systems.

(iii) A program implementation fund assists local efforts to carry out demonstration projects in renewable energy technologies.

VITA has formulated the following program objectives for the Renewable Energy Program:

- (1) To generate increased interest in and use of renewable energy technologies in both the private and public sectors in developing countries and among bilateral and multilateral development agencies.
- (2) To strengthen the VITA development system so that it can respond more rapidly to increased demand while improving the quality of services delivered.

- (3) To encourage the widespread dissemination of renewable energy technologies in villages as well as urban areas by assisting responsible organizations and individuals in developing countries with small grants, technical assistance, and information.
- (4) To strengthen the capacity of organizations in developing countries to acquire, store, and disseminate technical information through training programs and transfer of documents, and to encourage the evolution of regional and national networks whose members are mutually supportive.
- (5) To assure the availability of information on projects, activities, and advances in renewable energy technologies and the organizations working on them to the broader development community through periodicals, manuals, workshops, seminars, etc.
- (6) To identify constraints to spreading use of renewable energy technologies at the village level and develop an analytical body of information through field activities and evaluations which will permit conclusions on techniques for overcoming such constraints.
- (7) To design and support major projects for the dissemination of technologies identified by the VITA system as responding effectively to felt needs.

Organizational Departments

All departments within VITA work together to achieve the program's objectives.

Executive and Administration Departments provide overall direction and support to VITA personnel.

The Information Resources Department consists of the Technical Inquiry Service, Documentation Center, and Volunteer Resources. Technical inquiry coordinators, librarians, and other specialized personnel mobilize human and information resources to respond to information requests from around the world and conduct information systems training programs.

Publications staff develop and distribute technical publications and news letters. Editors, writers, and other specialized personnel play a key role in disseminating technical publications around the world.

Regional Energy Operations Departments draw upon VITA's resources for over-seas program activities, program development, and networking; provide staff and volunteer consultancies; oversee small grants recipients' projects, and coordinate field office activities.

The following pages summarize VITA's activities over the past quarter, and make projections for the next quarter's activities. The reader is encouraged to ask VITA for any additional information that may be required.

II. MESSAGE FROM THE DIRECTOR

This quarterly report marks the end of the second year of the REP. A program anniversary is usually an occasion for a review of the past and making projections for the future. That review was undertaken by VITA with a certain sense of urgency in view of a funding cut in the program of more than half. Obviously, a cut of such magnitude dictates a major revision of the program.

The size and importance of the REP within VITA has tended to obscure the fact that VITA had been operating successfully for two decades before the REP was funded. The original unsolicited proposal described VITA's resources and laid out a plan of action which frankly stated that a priority consideration would be to build up those resources and vastly expand the scope of their application. We have emphasized that what is unique about VITA is that its departments and the services they provide constitute a development system in which the use of one element strengthens every other element and reinforces the system itself. The recently issued 18-month evaluation report underscored the validity of that emphasis with the observation "...VITA expertise in the whole range of renewable energy Technologies does not appear to be particularly unique, though their delivery methodology appears highly effective."

III. REPROGRAMMING EFFORTS

We have approached the task of revising the REP with these considerations in mind:

1. To protect our capacity to sustain the effectiveness of our delivery methodology cited by the evaluation report.
2. To be as responsive as possible to the recommendations of the evaluation report.
3. To emphasize those areas in which the greatest success was achieved during the first two years of the program.
4. To accelerate the movement of VITA toward self-sufficiency.

The actual revisions in the Cooperative Agreement will, of course, have to be negotiated with AID. However, in those areas touched on in the recommendations of the evaluation report we have moved unilaterally to implement them in anticipation of their incorporation in the Cooperative Agreement. They include:

1. A reduction of staff not directly involved in overseas activities. The organization chart dated April 8, 1980 and the chart dated October 1981 may be compared to see the concentration of REP paid personnel in the regional operations department at the present time.

2. While continuing to respond to inquiries on all technologies as it has done traditionally, VITA recognizes that a concentration on those for which there is greater demand and higher potential is appropriate in view of its reduced funding. For the near future VITA will focus its recruitment of staff and volunteers and will acquire information resources in the following technologies:

Energy - Solar, wind, micro-hydro, biomass, water pumping

Food - Agriculture, cooking systems, processing, storage and preservation.

Housing - Low cost housing, building materials, energy use.

Enterprise Development and Institution Building - management, training, financing.

There will also be a continuing emphasis on the application of these technologies to island and coastal areas.

3. Abolish the position of senior advisor and use volunteers where senior level technical skill and experience are required. The utilization of volunteers in all of VITA's activities will be intensified.
4. The recruiting of qualified but less senior and lower cost technical personnel in the technologies listed above. While the volunteers may well negate the necessity for senior technical people or staff as the evaluation report asserts, there can be little question about the necessity of having persons knowledgeable about each technology on staff. In addition to being a resource to the Information Resources and Publications Departments, they will assist in the recruitment, programming and coordination of volunteers, as well as perform consultancies themselves where appropriate.
5. Networking activities will be conducted independently of the REP and will no longer be a part of the program.
6. The freeze on small grants has been lifted and a sum in excess of 25% of the anticipated FY 1982 allocation of \$800,000 from AID has been budgeted for grants in that year.
7. Heavy stress will be placed on field activities which create jobs, develop enterprises, and produce economies in the use of fossil fuels or the substitution of alternatives.

8. VITA is aggressively pursuing alternative funding for its publications and for its inquiry services. We are exploring ways to increase VITA's self sufficiency, including program opportunities with multi-national corporations, bi-lateral aid programs of other governments, international development agencies, host governments and AID missions.

Despite the severe reductions in its program budget, VITA remains committed to the goals of the REP. The success of the program over the past two years has provided a foundation on which we hope to continue to build in the future. We are hopeful that alternative sources of income can be developed which will permit the continuation of the program at the level projected two years ago.

IV. PROGRAM/TECHNOLOGY ACCOMPLISHMENTS

In spite of the recent budget cuts a number of significant accomplishments have been achieved in the past quarter, representing returns on past investments under the REP. The following examples are the most significant of the past quarter's accomplishments. A more comprehensive discussion of all REP accomplishments, on-going projects, and projections follows this section.

Wood and Charcoal Production

A VITA staff member John Lippert and a consultant Nicholas Engalicher carried out a study for the Caribbean Community (CARICOM) to review existing and potential wood and charcoal production on the islands of Antigua and Montserrat. A detailed report was prepared and submitted and follow-up activities are being planned. The report recommended that the Departments of Agriculture on the islands should initiate a kiln testing and demonstration program. On Antigua, especially, there is great potential for the expansion of charcoal production, which could lead to the export of charcoal to other countries.

Diesel Fuel Savings

On the Caribbean island of Dominica the first prototype hybrid sailboats developed with funding provided under the Renewable Energy Program are now being tested. There is great local interest in the sailboats which are efficient and cost less to produce than those currently available. Production of this new sailboat will not only reduce local dependence on costly imported diesel fuel but provide much needed local employment.

Woodstove Activity Generates Additional Funds

As a result of VITA's extensive woodstove activity sponsored by AID in the Sahel, VITA was asked to perform the woodfuel portion of a renewable energy feasibility study for a planned \$42 million renewable energy center (acronym "CRRE") to be located in Bamako, Mali. VITA was paid \$10,000 for the preparation of the study and our recommendations were incorporated into the final project document that will be submitted to the West African Heads of State in the near future.

Also in relation to the CRES Project, VITA was requested to plan and implement a two week visit by two West African Renewable Energy Specialists. Their visit took place during the month of August and VITA received a letter of commendation from the French Project Coordinator for the way in which the visit was handled. VITA anticipates having an ongoing role in this Franco-German-UNDP-EEC funded project in the field of woodfuel as well as documentation and information resources.

VITA/Thai Pump a Success

Testing of the VITA prototype PVC adaption of the traditional Thai chain and pallet irrigation pump was completed in August with assistance from the staff of the National Energy Administration in Thailand. Several organizations have expressed interest in using the design in their various water resources development programs in different parts of the country. A commercial manufacturer of traditional Thai pumps would like to manufacture and sell the improved pump.

Nairobi Energy Conference

VITA sent a delegation to the Nairobi Conference on Renewable Energy during August. VITA activities at the Conference included having a booth as part of the U.S. exhibition, and organizing panels on the problems of field implementation as well as information systems. Numerous private discussions also took place with host country UNICEF and AID officials, and a collaborative VITA/UNICEF arrangement was agreed upon.

Small Grants

A grant of \$2,000 was made to the Blair Research Laboratory in Salisbury, Zimbabwe, to demonstrate and refine a spiral-tube waterwheel for pumping water.

The Thaba-Tseka Rural Development Project in Lesotho received a grant of \$3,600 for field testing and socioeconomic assessment of solar ovens in a mountain village.

A grant of \$7,080 went to the Direction Generale de la Recherche Scientifique et Technologique of Upper Volta, to publish for one year a bulletin that will link renewable energy technicians in the Sahel. This grant is made in coordination with the woodstove activities there of VITA's Tim Wood.

A wind pumping demonstration project in Roatan, Honduras, was awarded a grant of \$19,200.

\$5,000 went to a consultancy in Thailand for a wind energy irrigation project.

V. FIELD OFFICE ACCOMPLISHMENTS

Marcus Sherman, the VITA field representative in Bangkok, Thailand, was active in a variety of projects during the past quarter. A report was prepared for the United Nations High Commission for Refugees on a stove-testing project in the Kar-I-Deng refugee camp in Eastern Thailand. The stove was designed to use rice husks which are in plentiful supply and are a low-cost alternative to charcoal. VITA Volunteer Bill Stewart assisted in the project, providing consulting services and sharing in preparation of the report. UNHCR responded favorably to the results and recommendations of the evaluation and test report and requested that VITA work together with the Community Based Emergency Relief Services (CBERS) to formulate a plan and budget for final development and dissemination of the stoves. VITA's role in the project consisted of completion of the development of the stove design, development and training in the techniques required for mass production of the stoves by the refugees, and technical evaluation and follow-up of the stoves dissemination. At the end of September, 60 stoves were in use in the camp. Using information obtained from VITA's Inquiry Service in Mt. Rainier, Sherman was also able to build a bread oven. The construction went very well and the oven is in active use in the training class being conducted in the refugee camp.

Sherman now has a staff of two full-time Thai assistants and one part-time accountant to handle the increasing workload. With his two assistants he participated in a training seminar conducted by the Non-Formal Education Department in Thailand on the preparation of teaching materials about appropriate technologies. The seminar was designed to assist NFED staff from throughout the country who will be preparing AT teaching materials during the next few months. A wind consultant, Prawindra Mukhia, has also been hired as a consultant to carry out research in the area of wind energy for a proposed program to increase the income and productivity of Thai farmers through the use of wind powered irrigation pumping. (See the Program Technology Accomplishments section for a description of the VITA/Thai pump.)

VI. FIELD VISITS AND CONSULTANCIES

During the third quarter of 1981 VITA staff and volunteers maintained the large number of field visits and consultancies of the previous quarter. Most overseas travel reflected VITA's continuing emphasis on "hands-on" involvement, i.e. transferring appropriate skills through personal contact. Highlighter of the quarter's field visits and consultancies included:

Asia

Bangladesh--A VITA consultant Ron Alward, carried out a study for the USAID Mission in Bangladesh. He reviewed drafts of the preliminary review of the non-conventional energy sector and prepared a report summarizing his recommendations.

Latin America/Caribbean

Honduras--In the previous quarterly report a major project on the Bay Islands off the northern coast of Honduras was described. A demonstration project using a windmill to pump water for 100 low income families is now underway. A 14' Dempster windmill, which will be used to provide potable water, has been purchased and shipped to Roatan and will shortly be erected on the chosen site. VITA is now acquiring a wind generator which will provide lighting for a school house. A number of organizations have expressed interest in this project and it is anticipated that an expanded program of assistance to the Bay Islands will be put into effect in the near future.

Caribbean--VITA Director of Regional Operations, Richard Fera, and Technical Advisor Gary Garrriott, spent three weeks on the islands of Barbados, Montserrat, and St. Vincent, exploring opportunities for increased assistance in this area. There is great potential for the increased use of wind power in the Caribbean, and VITA will be directing its efforts to channel technical and financial resources into targeted islands. A major program is planned for the island of St. Vincent, and VITA will be working in close cooperation with the AID regional office in Barbados and the Caribbean Development Bank.

Africa

VITA has been asked by AID to participate in the planning of a 4-year \$16 million "Energy Initiatives in Africa" program. Staff members Liz Cecelski and Jack Downey have been heavily involved in preparing the technical analysis portion of the project.

West Africa/Sahel--VITA continued its coordination role in the Sahel woodstove program through the support of VITA field staff member Dr. Tim Wood. During the past six months, Dr. Wood arranged two of five planned national stove workshops in Niger and Mali. In the next few months, stove workshops are planned in Upper Volta, Gambia, and Senegal.

Tanzania--As a result of a woodstove related consultancy for the World Bank by Steve Hirsch, Dr. Wood was asked to come to Tanzania in August to hold a workshop on Sahel woodstove development techniques at the Arusha Appropriate Technology Project in Arusha. While in Arusha, Dr. Wood was trained by VITA Volunteer Ali Sheriff in an oil-drip heating technique that Mr. Sheriff had perfected. It is VITA's intention to take the oil drip heating technique developed in Tanzania and disseminate it throughout West Africa and elsewhere where it can be useful.

Guinea--As a followup to the appropriate technology survey done by VITA in Guinea last November, the team's report was completed, sent to the Government of Guinea for comment and their suggestions incorporated into the final version of the report. As one of the primary areas of interest of the Government of Guinea is in low cost construction techniques, VITA sent staff member Alan Wyatt to Guinea this past April along with a cinva ram block machine. During his 2 week stay in Guinea, Wyatt generated a lot of enthusiasm for cinva ram block construction as well as erected a windmill in Conakry which had been sitting in crates for some time. Following

Alan's visit, it has been planned to send VITA Volunteer Al Bush, a cinva ram construction specialist, to Guinea for two months to help set up a local production capability for the cinva ram machines.

Mali--Staff member Alan Wyatt spent three months at the Solar Energy Laboratory in Bamako, Mali to help develop a locally manufactured wind pumping system. During his stay there, he also worked on a number of other renewable energy devices and helped train local technicians in construction and test techniques.

VITA Volunteer Alex Roqueta also spent three months at the Mali Solar Energy Lab and helped construct the workshop buildings as well as arrange, start up, and maintain the newly arrived shop machinery and tools. The Mali Solar Energy Lab Project is funded by AID through the Solar Energy Research Institute of Golden, Colorado (SERI). Both Alan Wyatt and Alex Roqueta's consultancies were funded through VITA by SERI. As a result of the Wyatt/Roqueta consultancies, SERI has requested VITA to identify two additional VITA Volunteer Consultants with expertise in machine shop management and chinese biogas digester construction/maintenance. VITA anticipates an ongoing, long-term relationship with the Mali Solar Energy Lab.

Rwanda--This past spring, AID requested VITA's assistance in identifying a renewable energy technician to direct a project at the Butare University in Rwanda. VITA Volunteer Lane Branson was recruited and approved by AID for the position. Following an orientation at VITA, Lane arrived in Rwanda in August to begin his 18-month assignment. VITA, under a separate AID amendment to our REP, will be providing technical information and short term consultants for the project during the next 1 1/2 years.

Somalia--At the suggestion of Save the Children and AID, staff member Steve Hirsch spent three weeks in Somalia to (1) develop possible collaborative VITA/Save the Children projects in relation to the refugee situation in that country, and to (2) assess opportunities to implement renewable energy projects under our AID Cooperative Agreement. As a result of this consultancy, proposals have been prepared for VITA activities in the field of woodstoves, wind energy, and an appropriate technology survey similar to that done last year in Guinea. At the request of AID, a VITA Volunteer wind energy specialist will be going to Somalia within the next month to further develop a program in that country.

Also as a result of Steve's trip, VITA received a request for assistance in Somalia from Interchurch Response for the Horn of Africa in the field of cinva ram construction and woodstoves. Vita Volunteer Hank Cauley has been identified for the assignment and we are currently awaiting financial details from Interchurch Response before proceeding.

VII. TECHNOLOGY TRANSFER SERVICE ACCOMPLISHMENTS

Inquiry Service

Inquiry coordinators have continued to maximize the use of VITA's information resources for responding to technical inquiries. John Lippert and VITA Volunteers are working with the Botswana Technology Centre (BTC) in developing an Icy-Ball refrigerator which is capable of running on various fuels such as kerosene, wood, charcoal, and gas. The BTC plans on manufacturing this device for commercial purposes.

Mr. Lippert is also working with VITA Volunteer Nicolas Engalichev to examine fuelwood supply, charcoal production methods, and charcoal marketing and usage in Antique and Montserrat. As a result, the Caribbean Development Bank has asked VITA to provide technical assistance for their charcoal production project in Montserrat. (See Program/Technology Accomplishments.)

Documentation Center

During this past quarter, 394 energy related documents have been acquired and cataloged. The small second issue of the solar bibliography was published and the first issue of a "Windpower" bibliography was prepared. Documentation Exchange Agreements were established with 22 new organizations.

Volunteer Resources

During the third quarter of 1981, 126 new volunteers joined the VITA roster. Of these some 25% have energy as their principal skill area. As VITA activities in renewable energy have become known, this ratio has become the norm. An accelerating number of VITA's recent "energy" volunteers are non-U.S., another indication of increasing recognition of VITA as a significant presence overseas.

A completely revised skills list to accompany volunteer applications was completed in August. This halves the time needed to prepare information for the computer on new volunteers and allows for much more exact coding of volunteers' skills and level of expertise.

Publications

Reduction in REP funding forced sharp cutbacks in the publications program. The entire foreign language component was eliminated, as were the Energy Fact Sheet and the development of technical bulletins and manuals. The Energy Bulletin was reformatted as an insert to VITA News.

The annual special energy issue of VITA News was published this quarter. It highlighted commentary by leading figures in energy fields in the future energy situation for third world countries.

The Energy Bulletin for the quarter featured appropriate technology in Zimbabwe and a report by VITA staff member Alan Wyatt on the potential for wind energy in Africa.

Technical Bulletins on "used" oil kilns and windbreaks, and the second volume of the Solar Bibliography were also published.

Technical review and substantial editorial review were completed on the Renewable Energy Dictionary; it should be ready for publication by the end of next quarter.

Articles were prepared for an AT conference in China, and for Ceres, a publication of the FAO.

VIII. PROJECTIONS

- 1) VITA field representative Marcus Sherman will hold a workshop in Thailand on windmill fabrication, in conjunction with the Thai Department of Non-Formal Education.
- 2) A woodstove analysis/feasibility study will be carried out in the Gambia, at the request of AID.
- 3) The technical and sociological feasibility of increased use of peat for cooking in Burundi will be assessed, at the request of AID.
- 4) Program activities will begin in Somalia with a survey of high impact appropriate technologies: wind energy and woodstoves.
- 5) VITA will participate with AID and ETMA (Environmental Training and Management in Africa) in an energy conservation seminar in Mogadishu, Somalia in mid-December.
- 6) Program activities in Rwanda will continue.
- 7) VITA Volunteer Consultants with expertise in the field of biogas and machine shop management will be sent to the Mali Solar Energy Laboratory.
- 8) Program activities in Guinea will expand, possibly with the addition of a national woodstove program. Low cost construction will continue to be the main emphasis, however.
- 9) Activities in relation to the planned West African Regional Solar Energy Project (CRES) will be expanded.
- 10) Energy activities in Africa will expand as a result of VITA's involvement in the AID "Energy Initiatives in Africa" planning exercise.
- 11) A number of small enterprise development initiatives will be established, initially based on the field work of the Vice Chairman of VITA's Board of Directors, Jean Wilkowski, in Kenya and Zimbabwe.

- 12) Program activities in Egypt will be developed, based on VITA Executive Director Henry Norman's former Deputy Executive Director William Gross' consultancies in that country.
- 13) A subcontractor involvement in the AID-financed Morocco Renewable Energy Program will probably be discussed.
- 14) Long-and short-term technical assistance will be provided to the Dodoma Renewable Energy Project in Tanzania.
- 15) Under funding from General Electric, VITA Volunteer Alex Roqueta will be sent to Mexico to work on a windmill with the IIE (Institute for Electrical Research).
- 16) A proposal will be prepared to place a VITA staff member in Barbados under a regional Operational Program Grant. VITA's Dick Fera will provide assistance in project planning and implementation using VITA Volunteer consultants and technical information.
- 17) A proposal will be prepared for a 20-month charcoal kiln and charcoal and woodstove testing and commercialization program based in Montserrat, with regional components for other islands.
- 18) VITA will assist the Organization for Rural Development in St. Vincent in the preparation of a proposal for peanut production and marketing, and provide consultants on solar drying and storage.
- 19) A planning grant to investigate the feasibility of the electrification of the island of Canouan (St. Vincent/Grenadines) will be prepared.
- 20) The interest of the Government of St. Vincent in a biogas consultancy will be pursued.
- 21) Technical information will be provided on cool storage of produce for the Ministry of Agriculture on St. Vincent.
- 22) Preparations for the planning and expansion phase of the Roatan (Honduras) wind pumping demonstration project will be made.
- 23) A VITA staff consultancy will be provided to UCAMAMA University in the Dominican Republic for five day training course on micro-hydro.
- 24) The Jamaican Ministry of Mining and Energy's request for a three person/month consultancy on charcoal kilns and stoves will be followed up.
- 25) VITA Consultant Fred Hopman will go to Guatemala to follow up on a VITA-funded project on solar water heaters.

- 26) VITA Asia Regional Operations Director Richard Fera may go to Indonesia/Fiji/Thailand to follow up on program initiatives and a proposal to the AID regional office in Fiji to establish a VITA office in Suva.
- 27) VITA will participate jointly with Institute of Electrical Investigation in the Technology for the People Fair in Mexico City.
- 28) Two new staff/technical advisors, with expertise in cooking systems, food production, solar energy, wind energy, biomass conversion, water resources, small enterprise development, and/or low cost housing, will be hired.
- 29) AID/S&T will be assisted as necessary in incorporating recommendations of the 18-month/evaluation report into the Cooperative Agreement.
- 30) AID DS/S&T will be provided with the VITA Cooperative Agreement budget for the next two program years following the negotiated revision of the REP based on the 18-month evaluation.
- 31) The Documentation Center plans to acquire 350 new energy related documents during the next quarter. Cataloguing will continue at the rate of 650 per month.
- 32) An Agro-Forestry and Tree Crops annotated bibliography will be prepared.
- 33) Pre-packed responses on briquetting of agricultural wastes, wood, and charcoal will be completed.
- 34) The third issue of the Solar Bibliography will be published.
- 35) The first issue of the Windpower Bibliography will be published.

VOLUNTEERS IN TECHNICAL ASSISTANCE
 TABLE OF ORGANIZATION
 OCTOBER 1981

Present position
 Energy Program position*

14

P. GUZBINS



- H. Hyman
- A. Gerlach
- S. Hirsch
- R. Fera
- M. Crouch
- N. Shurway