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FISCAL YEAR 1989

ANNUAL REPORT

**OFFICE OF SCIENCE AND TECHNOLOGY
DIRECTORATE OF HUMAN RESOURCES DEVELOPMENT AND COOPERATION
USAID/CAIRO**

October 31, 1989

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INTRODUCTION

The Office of Science and Technology (OST) is the USAID/Cairo focal point for science and technology, energy management, technology transfer, natural resources, and geological & geophysical data collection and analysis. In addition to OST, the Directorate of Human Resources Development and Cooperation (HRDC), one of six SAID/Cairo directorates, includes three other offices: Health, Population, and Education & Training. The six person OST staff manages eight active projects with total AID funding of \$196.1 million.

PROJECT ACTIVITIES

OST project activities fall into two general groups. The first group, energy and natural resources, range from integrated energy planning, through improved oil exploration and expanded use of renewable energy, to energy conservation and energy manpower development. The second general group, research and development, includes targeted research focused on specific problems such as developing a vaccine for schistosomiasis or biotechnology applications in agriculture and industry. Annex I provides descriptions of the eight active OST projects.

Office of Science and Technology Projects

<u>Project Title and Duration</u>	<u>Life of Project Funding Amount</u>
Mineral, Petroleum & Groundwater Assessment Program (1980-90)	\$33.7 million
Energy Policy Planning (1982-90)	8.5 million
Renewable Energy Field Testing (1982-90)	17.3 million
Science & Technology Development (1986-91)	3.0 million
Science & Technology Cooperation (1987-95)	36.0 million
Schistosomiasis Research (1988-98)	39.5 million
Energy Conservation & Efficiency (1988-96)	49.5 million
Energy Manpower Development (1988-94)	<u>8.6</u> million
TOTAL	\$196.1 million

Activities supported by OST projects are implemented by fifteen different Government of Egypt (GOE) counterpart organizations assisted by seventeen major AID funded contracts and several smaller contracts. Annex II is a summary of major OST

contracts. In addition to technical assistance contracts, AID funds cover project equipment and commodities, training, project management units within GOE counterpart agencies, and targeted research grants to Egyptian scientists.

OTHER ACTIVITIES

While focusing primary attention on projects, OST also coordinates implementation of selected activities sponsored by AID/Washington such as grants made to Egyptian researchers under the Program in Science and Technology Cooperation (PSTC) or training of Egyptians under the Energy Training Program. In addition, OST advises USAID/Cairo on science, technology, energy, and natural resource issues, as well as maintaining liaison with Egyptian professionals in these fields.

OFFICE HIGHLIGHTS OF FISCAL YEAR 1989

ST was in a state of transition throughout FY 1989 (October 1, 1988 - September 30, 1989), but still made considerable progress. During the last fifteen months, the office experienced a fifty percent turnover in staff as well as two long vacancies which reduced available staff resources by twenty percent. Despite the vacancies and normal adjustment period for new staff, OST maintained implementation progress on five ongoing projects while starting implementation of three new projects. Expenditures for goods and services delivered under OST projects

during the year amounted to over \$12 million, compared to only about \$7.5 million in FY 1988 and FY 1987.

The previous Office Director, Lawrence Ervin, departed in September, 1988. He was replaced by Richard Rhoda who arrived a month earlier to fill an OST Project Officer position. The position vacated by Rhoda remained vacant until Marc Madland arrived in August 1989. Secretary, Maha Hawa, resigned in October 1988; the position was filled by Sanaa Malaka, who started work in March 1989. Laila Azer received an award for her outstanding performance while serving as the office's only secretary during the six month period.

Project Officer, Sherif Arif, travelled to the U.S. with high level Egyptian counterparts to visit energy manpower development systems at major utilities in September-October 1988 and to observe applications of energy conservation technologies in July-August 1989. Dr. Arif and Program Assistant Salwa Wahba were largely responsible for continuing implementation of ongoing projects and starting implementation of the three new projects. Project highlights of FY 1989 are described below; more detailed information on OST projects is available in Annex I.

PROJECT HIGHLIGHTS OF FISCAL YEAR 1990

Minerals, Petroleum and Groundwater Assessment Program (MPGAP)

objective is to improve Egyptian collection, analysis, utilization, and dissemination of essential data on mineral, petroleum and groundwater resources. MPGAP improved the current

information base by collecting and analyzing resource data, by compiling reports on newly surveyed areas, and by strengthening the institutional capacity of the four GOE implementing agencies: Egyptian General Petroleum Corporation (EGPC), Egyptian Geological Survey and Mining Authority (EGSMA), Desert Research Institute (DRI), and Remote Sensing Center (RSC). During the year, the project provided assistance through six major contracts. Three major contract activities focus on petroleum resources in the Western Desert: (1) Scientific Software International completed data collection activities and started analysis of oil and gas reserves; (2) Geosource completed collection of seismic data and initiated data processing; (3) Aeroservice is recompiling previously collected aeromagnetic data. Another contractor, Improved Petroleum Recovery, started an enhanced oil recovery system using the gas injection technique in the North Bakr field near the Gulf of Suez. Integrated Technologies (Core Labs) is completing work on an exploration, production and groundwater database. Bechtel started developing a management information system for EGPC. MPGAP-funded equipment and training (both in the U.S. and on-the-job) is helping build the institutional capacity of the counterpart agencies. The Desert Research Institute have completed survey of water wells in mineral areas in the Eastern Desert and is concentrating on exploring groundwater in the Bahreya oasis. The Remote Sensing Center has already printed forty five landsat maps at a scale of 1:250,000. Information generated from project activities have contributed to concession agreements with ESSO, Marathon, and AMOCO as well as three mineral companies. The concessions represent a potential investment of \$115 million. The wide range

of project activities are moving ahead rapidly and should be completed by the September 1990 project completion date.

Energy Policy Planning (EPP) Project purpose is to strengthen the institutional capability of the GOE in national energy planning and policy. The most notable event during the year was the external evaluation which concluded that the project had already substantially achieved its purpose of building the institutional capability of the Organization for Energy Planning (OEP). The evaluation recommended that OEP now focus more attention on outreach and influencing GOE energy policy. During FY 1989, OEP provided energy management training for about 600 professionals from the public and private sectors. OEP disseminated information from its first eleven industrial energy audits, completed three new audits under a contract with Hagler Bailly, and started five new energy audits with Foster Wheeler. With the assistance of Meta Systems, OEP began running scenarios on three sophisticated energy planning models. OEP signed two new contract amendments for over \$3 million with Meta. During FY 1990, the project's last year, we are planning to implement numerous activities including pilot demonstration of compressed natural gas powered vehicles; indepth energy policy analyses & seminars of agriculture, commercial & housing, and transportation sectors; hospital energy management system; and pilot industrial energy standards & monitoring program.

Renewable Energy Field Testing (REFT) Project aim is to promote the use of renewable energy technologies and improve the Egyptian capability to apply these technologies. During the year, the New and Renewable Energy Authority and USAID worked to improve

project management and plan activities for implementation during the final year of the project. In April 1989, USAID replaced the previous technical assistance contractor with International Development & Energy Associates (IDEA), an 8a firm, which immediately started implementation of the Renewable Energy Information System. Three contractors worked on field tests during the year. Wincon Inc. almost completed construction of four windmills on the Red Sea which are generating about 400 kilowatts of electricity. Solarex completed construction of a photovoltaic powered ice making facility and will conduct acceptance tests in early FY 1990. EA Mueller initiated work on two solar industrial process heat field tests; they started construction at a poultry plant and ordered commodities for the textile factory. All project activities should be completed by the August 1990 project completion date.

Science and Technology for Development is an umbrella project which was used to design and start implementation of the four new OST projects which are described below.

Science and Technology Cooperation (STC) Project objective is to apply Egyptian science and technology expertise to predefined, high priority development problems. In January 1989, USAID awarded a technical assistance contract to International Development and Energy Associates (IDEA), who is working with the Academy of Scientific Research and Technology to establish project management systems and procedures for making research grants. The grants will focus on the 23 specific technology-related development problems involving industrial minerals & chemicals, water & wastewater treatment, small scale

industry, micro-electronics, and biotechnology. So far, eight proposals have been submitted, reviewed by technical review panels, revised, and are ready to be awarded. Early in FY 1990, the Project Secretariat will make the first eight grant awards and will solicit proposals for an additional eight awards.

Schistosomiasis Research Project (SRP) seeks to control the disease through research on vaccine development; improved epidemiology, diagnostics, and chemotherapy; analyses of socio-economic factors; and operations research. The project moved rapidly in its first year. The Ministry of Health hired a Project Secretariat and housed them in nicely renovated offices. In January 1989, Lowell University started working with the Theodore Bilharz Research Institute on the development of biological materials for schistosomiasis research. USAID signed a \$2 million agreement with the Cairo based U.S. Naval Medical Research Unit - 3 (NAMRU-3) in April. In August, USAID awarded a \$5 million contract to Medical Services Consultants International (MSCI) for project management and technical assistance. With MSCI's assistance the Project Secretariat has established procedures for project operations and management of research grants. After formal review by a joint Egyptian - American Peer Review Panel, the project approved research grants to eight Egyptian principal investigators, who were invited to submit proposals in collaboration with scientists from NAMRU-3. The eight grants, amounting to about \$2 million, will focus on vaccine development research and immunodiagnostics. The Panel also approved three proposals submitted under the Young Scientists Program. The second set of research grants will be awarded in March 1990.

Energy Conservation and Efficiency Project (ECEP) objective is to promote widespread adoption of energy saving technologies in the public and private sectors. The project provides foreign exchange to companies interested in implementing energy saving subprojects. The Ministry of Industry, Tabbin Institute for Metallurgical Studies (TIMS) is implementing the public sector stream, while the Cairo University, Development Research and Technological Planning Center (DRTPC) is handling the private sector. During the project's first year, TIMS and DRTPC hired and provided office space for project staff, started training activities, and identified subprojects. Numerous private and public sector companies have expressed formal interest in project participation. With the help of the interim contractor, Hagler Bailly, TIMS and DRTPC are developing feasibility studies for ten technology applications. Five are in the private sector: power factor improvement in Seven-up Beverage Co., Giza Cables, and Arab Contractors Medical Center; energy management system at the Ramsis Hilton, and combustion control at Asfour Glass Company. Five others are in the public sector: utilization at waste heat for steam generation at Kafr El Zayat Pesticides Co., combustion efficiency in Egyptian Copper Works and Delta Steel, power factor in National Metals, and boiler improvement in El Nasr Coke Company. The project received technical and cost proposals for the long term management and technical assistance contractor in September and hope to award the contract by December 1, 1989.

Energy Manpower Development (EMD) purpose is to improve the technical and managerial capability of the Egyptian Electricity Authority (EEA), the Electricity Distribution Authority (EDA),

and the Egyptian General Petroleum Corporation (EGPC). The interim contractor, International Institute for Education (IIE), collaborated with the three agencies to develop Master Plans, train four Egyptian trainers in the U.S., and conducted two seminars and one training course in Cairo. The Request for Proposal (RFP) for the long term project management and technical assistance contractor will be issued in early FY 1990.

OFFICE OF SCIENCE AND TECHNOLOGY

DETAILED PROJECT DESCRIPTIONS

MINERAL, PETROLEUM AND
GROUNDWATER ASSESSMENT PROGRAM
PROJECT 263-0105

PROJECT PURPOSE AND DESCRIPTION

The purpose is to: (1) improve the organization of current data on potential mineral, petroleum, groundwater resources; (2) compile reports on newly surveyed areas of potential mineral, petroleum and related groundwater resources; and (3) improve GOE institutional capacity to acquire, organize, analyze, retrieve and disseminate data on potentially commercial mineral and petroleum resources. The Project is divided into two sectors: petroleum, being implemented by the Egyptian General Petroleum Corporation (EGPC); and mineral, being implemented by the Egyptian Geological Survey and Mining Authority (EGSMA), the Desert Research Institute (DRI), and the Remote Sensing Center (RSC). The major outputs are information from maps and reports, upgraded support services, and training.

IMPLEMENTATION PROGRESS

All activities focus on achievement of the three Project purposes:

- 1) Improvement of Current Data: Under its \$2.5M contract to assess the petroleum resources of the Western Desert, Scientific Software Intercomp (SSI) completed data collection, revenue, and database development tasks. We extended until October 31, 1989 the \$1.4 million contract with Integrated Technologies (IT) for the exploration, production, and groundwater database. EGSMA prepared mineral commodity packages. The Project strengthened libraries at EGPC, EGSMA, DRI, RSC and GPC (General Petroleum Corporation). The RSC currently is producing the

Landsat Atlas of Egypt, which will be printed with assistance from the Environmental Resources Institute of Michigan (ERIM), which also will help RSC establish a Geographic Information System. Under a \$1.2 million AID/W buy-in contract, Bechtel is developing a Management Information System for EGPC.

- 2) Compilation of Reports of Newly Surveyed Areas: Contract activities are encouraging potential investors to acquire concessions in areas of low oil exploration. Aeroservice recompiled and delivered maps of all aeromagnetic data for the Western Desert and the Delta, as a follow-on to a \$7.2 million extensive radiometric and aeromagnetic survey in the Eastern Desert. Geosource, under a \$2.0 million contract, conducted a seismic survey and analysis in the Guindi Basin in the Western Desert as a follow on to earlier work in the Assyut-Quena area. SSI completed two of its five tasks for estimating oil and gas reserves in the Western Desert and soon will start similar analyses in Northern Sinai and the Delta. Another contractor, Improved Petroleum Recovery (IPR), is undertaking a \$4.6 million pilot test of the gas injection technique for enhanced oil recovery from depleted North Bakr fields in the Gulf of Suez. The \$2.3 million of commodities order by IPR will arrive in October and gas injection will start in December 1989. SSI has also completed negotiations with EGPC to conduct a feasibility study of Assran heavy oil field. The GOE Desert Research Institute has surveyed all the water well points in the Eastern Desert and discovered three new aquifers in the Ras Ghareb and Hurghada regions.
- 3) Strengthening of Institutional Capacity: The Project is providing \$8.6 million in commodities, scientific equipment, computer hardware and software. It also is funding training in Egypt and U.S. for more than 220 participants from the four agencies. IT and SSI are providing on-the-job training in the application of software for modelling groundwater and petroleum reservoirs.

PERFORMANCE INDICATORS

<u>Project Targets</u>	<u>To Date</u>
- Oil companies using aeromagnetic data	5
- Oil companies using aeromagnetic data for concessions	3
- Oil companies interested in Assyut-Quena seismic report	12
- Oil companies interested in concessions in Assyut-Quena	5
- Oil companies which acquired computers and well log data	9
- Mineral companies using data to acquire concessions	3
- New Eastern Desert aquifers found	3
- 9 Groundwater areas fully surveyed by DRI	6
- 80 Landsat 1:250,000 maps developed	45

PROJECT IMPACT

ESSO, Total, Marathon, Shell, and AMOCO have purchased and are using aeromagnetic data collected and analyzed by Aeroservice. The data helped ESSO obtain a ten year concession for oil exploration in a 31,700 square kilometer area of the Eastern Desert. Marathon and AMOCO also used the aeromagnetic data for their respective concessions in the Gulf of Suez and in the Western Desert. The concessions could represent \$115 million in exploration expenditures and a far greater amount in potential new oil discoveries.

ESSO, Shell, Mobil, AMOCO, Phillips, TEXACO, and ARCO have expressed considerable interest in the regional seismic study by Geosource, which confirmed the presence of an oil bearing basin and could result in new oil exploration concessions.

Project data collection and analyses in the mineral sector have lead to concession agreements with international companies for gold exploration in the Eastern Desert, sulfur mining in North Sinai, and potash mining near the Gulf of Suez. These mineral concessions represent an additional investment of \$15 million in Egypt.

A side benefit of the project is the linkages established between U.S. contractors and the Egyptian and Middle Eastern operations of oil companies. To complete the Project contracts, U.S. oil industry service companies established temporary offices in Cairo. As a result of their contract work and the relationships established, some companies intend to maintain permanent offices in Cairo after the Project ends in September 1990. Improved Petroleum Recovery of Dallas is working with the GOE to obtain a license in Egypt as a Law 43 company. Integrated Technologies, a division of Western Atlas International of Houston, has committed to opening an office in Cairo to provide oil reservoir data management systems and engineering studies to clients throughout the Middle East. The Project enabled Scientific Software-Intercomp, Inc. to establish closer ties with Middle East clients which previously were difficult to serve from their London office and even more remote from their Denver headquarters. The company is now investigating the possibility of maintaining its Cairo office to meet the Middle East demand for their services in the fields of gas transmission and storage, determination of reserves, and enhanced oil recovery.

ENERGY POLICY PLANNING
PROJECT (263-0123.1)

PROJECT PURPOSE AND DESCRIPTION

The purpose is to strengthen the institutional capability of the GOE Organization for Energy Planning (OEP) in national energy planning and policy. This includes: establishment and maintenance of an energy information center and data base; analysis of data on integrated energy supply/demand, production technologies, and consumption needs; development and operation of energy planning models; selective energy auditing of representative industries; energy training programs for technical and managerial staff from Egyptian industries; and energy/economic planning and policy evaluation.

IMPLEMENTATION PROGRESS

The Project started slowly, but has made excellent progress since mid 1987 with the arrival of the new OEP Chairman and Meta Systems, the new technical Assistance contractor. The April 1989 evaluation indicates that the Project purpose has largely been achieved; OEP is developing into a competent energy planning institution. OEP has made excellent use of the 87 person-months of TA provided by Meta. It now has a well qualified professional staff of 54, a comprehensive and well organized Energy Information Center, 10 heavily used IBM PS/2 micros, a well equipganized Energy Information Center, 10 heavily used IBM PS/2 micros, a well equipped mobile energy van, seven energy task forces, and linkages with numerous GOE agencies. With assistance from Meta, the OEP staff is running scenarios on three sophisticated planning models - the MIT macroeconomic model with four energy sectors; the Argonne Lab (ENPEP) energy balance model; and several energy pricing models calibrated to fit conditions in Egypt.

Through its (four per month, week-long) courses, OEP has trained over 1800 plant energy managers, established a valuable network (among the 200 participating plants), and collected detailed data on industrial energy practices. Foster Wheeler, Hagler Bailly, and A.D.Little assisted OEP with 11 comprehensive industrial energy audits which recommend investments that would reduce annual energy costs by \$35 million

with an average payback period of 1.4 years. OEP is conducting eight new energy audits, which will be completed by mid FY 1990, and also is undertaking energy conservation studies of transportation and electricity consumption. In September 1989, OEP amended its contract with Meta adding \$1.895 million, which brings the total to \$5.191 million.

The comprehensive OEP cogeneration study of 13 factories identified unutilized capacity that could generate 431 megawatts of electricity at a cost of about \$180 million (roughly half the cost per kilowatt hour of conventional thermal power plants). The critical constraint is a law (Presidential Decree 1283 of 1967) prohibiting sales of power to the national grid.

PERFORMANCE INDICATORS

<u>Project Targets</u>	<u>To Date</u>
- Energy planning unit established	Completed
- Linkages established with U.S. institutions	Completed
- 10-15 Fulltime specialists trained	25
- 9 Policy studies completed	7
- 18 Industrial energy audits	11, 19 by 12/89
- Energy managers trained	1800
- Policy scenarios modelled	28
- GOE policy-level network established	OEP now initiating
- GOE adopts better energy policies	Price increase 3/89

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RENEWABLE ENERGY FIELD TESTING
PROJECT 263-0123.2

PROJECT PURPOSE AND DESCRIPTION

The purpose is to: (1) Develop a data base and associated information system on renewable energy technologies (solar, wind and photovoltaics) and disseminate information to public and private sector enterprises; (2) Improve the capabilities of the GOE and the private sector to analyze and evaluate renewable energy technologies and to design, install, operate, and maintain these technologies; and (3) Perform a series of field tests using commercially available technologies to demonstrate these technologies in the Egyptian context.

IMPLEMENTATION PROGRESS

The Project started in 1982, but early implementation progress was slow. AID did not award the technical assistance (TA) contract until mid 1984, partially because the GOE and USAID disagreed on the contracting mode. We allowed one prime contract and two subcontracts to lapse because of poor performance. The GOE shifted the Project from one GOE agency to another three times. The present implementing agency, the New and Renewable Energy Authority (NREA), was established only in 1986. Despite these initial difficulties, some progress was made. The TA contractor and its subcontractors completed numerous studies. The contractors collected three years of wind resource data for eight sites; sites on the Red Sea look very promising.

An external Project evaluation in mid 1987 recommended against starting new Project activities until certain management changes were implemented, the new TA contractor was hired, and the Project was redesigned.

USAID did not award contracts for the first two field tests until mid 1987. We awarded a contract for the next two field tests in mid 1988. Wincon completed most construction for the wind field test at Ras Ghareb in mid 1988. Solarex completed construction of the PV ice-making field test in August 1989 and should complete acceptance test procedures in FY 1990. E.A. Mueller completed design & training for the industrial process heat (IPH) field test at the poultry plant in Heliopolis and started construction in August 1989. When NREA completes the final design for the IPH field test at the textile plant in

Helwan, E.A. Mueller will procure the needed equipment and materials. A local contractor hired by NREA will install the system.

Project progress improved in March 1987 when the TA contractor hired a new Resident Project Manager, who stayed on the Project when a new TA contract was awarded in April 1989 to IDEA, an 8a firm. In 1988 NREA made considerable management improvements and appointed a new, well-qualified Project Coordinator. In early 1989, AID decided that instead of starting new field tests, NREA should shift the focus to economic and marketing issues restricting the spread of renewable technologies, smaller and more practical demonstrations of renewables, and the establishment of the Renewable Energy Information System (REIS).

PERFORMANCE INDICATORS

Project Targets

To
Date

- Data analyzed & disseminated	Major progress
- Information system operating	Design completed 9/89
- Complete 11 field tests	4 under contract
- Train 40-100 policy/decision makers	52
- Train 40-100 engineers/technicians	500
- 6 new initiatives studied 1-2 implemented	55 studied, 4 selected for implementation.

SCIENCE AND TECHNOLOGY FOR DEVELOPMENT
PROJECT 263-0140

PROJECT PURPOSE AND DESCRIPTION

The Project purpose is to enable the Egyptian S&T community to solve national development problems and constraints through applied research and technology in the fields of health, productivity, and science and technology. The Project seeks to: maximize the contribution of science and technology to Egyptian socioeconomic development; generate and extend interdisciplinary and interinstitutional cooperation and develop, introduce and transfer technologies to meet important and well-defined end-user needs. The Project serves as an umbrella cover five individual projects: (1) S&T Cooperation; (2) Schistosomiasis Research; (3) Energy Conservation and Efficiency; (4) Energy Manpower Development; and (5) Land Use Planning.

IMPLEMENTATION PROGRESS

The umbrella Project provided funds for designing the five components as well as financing pre-project activities identified during the design. The Project Paper designs of four of the five components were approved and negotiated as separate Project Agreements. USAID did not approve the Project Paper design for the fifth component, Land Use Planning.

<u>Proj. No.</u>	<u>Name</u>	<u>Pro Ag</u> <u>date</u>	<u>LOP</u> <u>funding</u> <u>\$ millions</u>	<u>Obligated</u> <u>through</u> <u>FY 89</u>
263-0140.1	S&T Cooperation	8/31/87	36.0	8.04
263-0140.2	Schistosomiasis Research	9/27/88	39.65	18.0
263-0140.3	Energy Conservation and Efficiency	9/27/88	49.5	21.0
263-0140.4	Energy Manpower	9/27/88	8.6	5.0
	TOTAL		<u>133.75</u>	<u>55.04</u>

By using funds from the umbrella Project to initiate implementation of component activities, we avoided the normal hiatus of about one year between signing a Project Agreement

and starting actual implementation after Agreement Condition Precedents are met and key contracts are competed and awarded. We used umbrella Project funds on the S&T Cooperation Project to hire an interim management technical assistance contractor and to support the Egyptian National Scientific and Technical Information Network (ENSTINET). The Schistosomiasis Project also used umbrella Project funds to hire an interim management technical assistance contractor as well as to contract with Lowell University to establish a biological materials facility.

SCIENCE AND TECHNOLOGY COOPERATION
PROJECT 263-0140.1

PROJECT PURPOSE AND DESCRIPTION

The primary purpose is to redirect Egyptian science and technology (S&T) expertise toward solving priority development problems having the greatest effect on end-users. A secondary purpose of the STC Project is to build Egyptian capacities in selected technologies.

The Project will fund about forty grants for research in predefined, high priority problem categories. Egyptian universities research centers, and private and public sector firms are eligible to compete for research grants. The Project, which supports research, development and engineering activities, is divided into three major components. The National Research Program focuses on solving limited, but well defined national development problems. The Local Research Program addresses local/rural development problems identified by, and associated with, specific governorates or regions. The Advanced Technology Program builds on advanced applications in biotechnology and computer-based technology.

IMPLEMENTATION PROGRESS

The Project Steering Committee (SC) met five times and selected problem areas and research topics for each component. Research projects under NRP and LRP were advertized in the Egyptian press in November 1989. Technical panels reviewed 26 proposals and competitively selected nine for STC research grants totalling about \$1.1M to be made in early FY 1989.

National Research Program: STC will award two Industrial Minerals and Chemicals grants: 1) local manufacture of water treatment chemicals used in Egyptian industry, and 2) the modification of production technology of phosphoric acid using floatation concentrate phosphate rock.

Local Research Program: STC will award one Water & Wastewater grant for benefication of potable water treatment technologies in Zagazig, Damietta, Minya. Under the Small Scale Industry, forty pre-feasibility studies were prepared on labor intensive, small scale agriculture/industrial projects for young graduates.

Advanced Technology Program: STC will award three grants in Micro-electronics: 1) development in Oriental Weavers (private sector) of jacquard looms with a device to translate designs stored on magnetic discs to mechanical actions that control looms movement, 2) design and application of a computerized production management system in Edfina, and 3) the design and application of computer-based technology for textile spinning, weaving and finishing. STC also will award two Biotechnology grants: 1) tissue culture macromolecular requirements, and 2) enzyme production for clinical diagnosis and industrial applications.

USAID signed a Management/Technical Assistance contract with IDEA in February 1989. IDEA team arrived in April 1989 and is currently providing technical assistance for establishing a management information system and a technical liaison office. STC advertised and distributed a prequalification questionnaire for a Procurement Service Agent which will be hired in early FY 1990 to procure commodities from the U.S. for research grantees. STC also provided funds to the Egyptian National Scientific and Technical Information Network (ENSTINET) to continue its information services and establish new information centers at Alexandria, Tanta, and Suez Canal Universities.

PERFORMANCE INDICATORS

<u>Project Targets</u>	<u>To Date</u>
- 10-14 Research projects funded under NRP	2
- 12-19 Research projects funded under LRP	2
- 13-19 Research projects funded under ATP	3
- 2-4 Liaison agents established in governorates	2
- 4-6 Information centers established in governorates	3

SCHISTOSOMIASIS RESEARCH
PROJECT 263-0140.2

PROJECT PURPOSE AND DESCRIPTION

The primary purpose is to control schistosomiasis by developing tools, methods and information through directed research. The secondary purpose is to improve the biomedical research capability of existing medical research institutions to conduct practical, control oriented research.

The Project funds a grant program for research in predefined high priority categories. The grants are open to Egypt n universities, research centers, and U.S. private and public sector groups. Egyptian and U.S. investigators collaborate actively in joint research projects. A Young Scientist Award program will further develop Egypt's scientific capacity by creating a new generation of scientists in schistosomiasis control research.

The grant program funds research in six interrelated research areas to develop new, or adapt existing, technologies for schistosomiasis control. The six interrelated areas are: vaccine development; improved diagnostic methods; better chemotherapeutic regimens; epidemiology of schistosomiasis; socio-economic factors that affect the disease; and, operations research to develop systems for delivering appropriate interventions.

IMPLEMENTATION PROGRESS

The Project got off to a solid start in FY 1989. Lowell University started work in January on the biological material facility under a contract funded from the umbrella project. Lowell signed a subcontract with the Theodore Bilharz Research Institute (TBRI), trained four TBRI staff, and shipped equipment that will arrive in early FY 1990. AID signed a two-year agreement in April with the Cairo-based U.S. Naval Medical Research Unit - 3 (NAMRU-3) which now is collaborating with Egyptian Principle Investigators on vaccine development and immunodiagnosics research. In August, AID awarded a long term management and technical assistance contract for \$5.0M to Medical Sciences Cooperation International (MSCI), which helped design and initiate implementation on an interim, buy-in contract.

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A joint Egyptian-American Peer Review Panel reviewed and approved eight research proposals on vaccine development and immunodiagnosics prepared by Egyptian Principle Investigators in collaboration with NAMRU-3. The research grants will be awarded in early FY 1990. The Panel also approved three schistosomiasis research grants under the Young Scientist Award Program.

PERFORMANCE INDICATORS

<u>Project targets</u>	<u>To Date</u>
- 65 Research projects for six components	8
- 10 Young scientist grants awarded	3
- 75 Participants trained in the U.S.	NA

ENERGY CONSERVATION AND EFFICIENCY
PROJECT (263-0140.3)

PROJECT PURPOSE AND DESCRIPTION

The Project's two purposes are: 1) to promote and accelerate the adoption of improved commercial technologies, processes, and practices in order to save energy and increase energy efficiency; and 2) to improve Egyptian institutional capabilities, particularly in the private sector, for promoting and implementing energy-saving and productivity-enhancing investments.

The Project will fund about 60 applications of energy-efficient technologies and practices in both the private and public sector. The Ministry of Industry, Tabbin Institute for Metallurgical Studies (TIMS) is implementing the public sector applications, while the Cairo University, Development Research and Technological Planning Center (DRTPC) is handling the private sector, with promotional assistance from the Federation of Egyptian Industries (FEI). The long term contractor will assist each component with management, technical assistance, project promotion and information dissemination.

TIMS, DRTPC, and FEI will improve their ability to promote, identify, engineer, install, operate and maintain energy-efficient technologies. About 1250 plant and other personnel will be trained (in Egypt and the U.S.); of these, 300 will receive training directly related to technology applications. In addition, DRTPC and TIMS will improve their long term training capability.

IMPLEMENTATION PROGRESS

Under a one-year, interim, buy-in contract, Hagler-Bailly is assisting DRTPC and TIMS to establish Project procedures and undertake feasibility studies of technological applications identified during the design stage. DRTPC and TIMS have identified and now are preparing prefeasibility studies for 10 technology applications. Five are in the private sector: power factor improvement in Seven-up Beverage Co., Giza Cables, and Arab Contractors Medical Center; energy management system at the Ramsis Hilton, and combustion control at Asfour Glass Company. Five others are in the public sector: steam/heat selection in Kafr El Zayat Pesticides Co.; combustion

efficiency in Egyptian Copper Works and Delta Steel; power factor in National metals; and boiler improvement in El Nasr Coke company. DRTPC and FEI are embarking on large promotional campaign to attract private sector companies to participate in the Project. So far 80 private companies have expressed interest; DRTPC is screening these companies for energy consumption. AID is currently evaluating technical proposals for a long-term technical assistance contractor and expects the award in early FY 1990.

PERFORMANCE INDICATORS

<u>Project Targets</u>	<u>T0 Date</u>
- 60 Technology applications	1
- 40 Feasibility & prefeasibility studies prepared	2
- 10 Commodity groups ordered	1
- 1250 Participants trained in Egypt	10
- 45 Participants trained in the U.S.	2

ENERGY MANPOWER DEVELOPMENT
PROJECT (263-0140.4)

PROJECT PURPOSE AND DESCRIPTION

The purpose is to improve the technical and managerial capabilities of the petroleum and electricity sectors. The Project consists of systematic manpower planning, defining the most effective training programs available, training, building institutional capacity, and demonstrating the effectiveness of manpower planning and development systems in pilot companies.

The Project's two interrelated components will start in parallel. The first component, capacity building, will address an immediate need to improve technical and management skills in the petroleum and electricity industries based on manpower development plans. The output will be better trained professionals who will improve job performance and increase production. The component consists of three elements: 1) a focused technical and management training program; 2) training of trainers; and 3) improving training facilities.

The second component will introduce manpower planning and development systems at the three implementing agencies; the Egyptian General Petroleum Corporation (EGPC), the Egyptian Electricity Authority (EEA), and the Electricity Distribution Authority (EDA). The component will adapt, design, and use human resource and career development systems for manpower planning. Services will include assistance in: preparing methods for and conducting annual training needs assessments; refining and updating training plans; designing and installing a manpower development and training database. Manpower development systems will be applied and tested, on a pilot basis, in the General Petroleum Company, the Cairo Petroleum Refinery, and Alexandria Zone of EEA.

IMPLEMENTATION PROGRESS

Under an interim, buy-in contract, the International Institute for Education (IIE) is assisting EEA, EDA and EGPC by preparing manpower development master plans and training courses to be offered in Egypt. EEA/EDA and EGPC held two seminars to introduce the project and explain modern manpower development concepts for executives in the electricity and petroleum sectors. IIE arranged U.S. training for four Egyptian trainers

-and conducted a two-week July training course in Cairo on "International Petroleum Pricing and Agreements". An RFP was prepared for a long term TA contractor and will be released in early FY 1990.

PERFORMANCE INDICATORS

Project Targets

To Date

- 60 Courses developed & taught in Egypt	1
- 1540 Participants trained in Egypt	20
- 110 Participants trained in U.S.	NA
- 50 Trainers trained in U.S.	4
- 3 Manpower master plan prepared	3

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ANNEX II
OFFICE OF SCIENCE AND TECHNOLOGY
CONTRACTS

Project and Contractor	Services	Sign Date End Date	Contract Dollars	Amount Egypt Pounds	FY 1989 Award	Contract Type	Direct or HCC	GOE Agency	Project Manager
MINERAL, PETROLEUM AND GROUNDWATER ASSESSMENT PROGRAM (0105)									
Geosource	Seismic Survey of Western Desert	7/8/86 3/31/90	\$1,782,463	LE 676,500		TR & UC	HCC	EGPC	Cameron Astill
Improved Petroleum Recovery (IPR)	North Bakr Field Gas Injection	3/23/88 9/14/90	\$4,602,000	LE 380,000		FP & CR	HCC	EGPC GPC	Hamed El Rikabi
Scientific Software Intercomp. (SSI)	Assessment of Petroleum Resources	7/5/88 7/9/90	\$2,049,560	LE1,045,970		FP	HCC	EGPC	Philip Halsted
Scientific Software Intercomp. (SSI)	Feasibility Study of Assran Oil Field	9/22/89 4/13/90	\$80,000	--	\$80,000	FP	HCC	EGPC	D. J. Gruae
Aeroservice	Aeromagnetic Survey in Nile Delta and Sinai	2/25/86 6/15/89	\$304,800	--		FP	HCC	EGPC	Haynie Stringer
Integrated Technologies (IT)	Development of Well Log Data Base	12/24/86 2/29/90	\$1,460,995	LE 247,961	\$169,897	UF & FP	HCC	EGPC DRI	Lawrence Darmon
Bechtel	Management Information System	7/26/89 6/30/90	\$1,199,998	--	\$1,199,998	CR & FF (Buy-in)	Direct	EGPC	Richard Buta
Daylon L. Walton	Quality Assurance for Enhanced Oil Recovery	9/27/88 9/15/90	\$98,000	--		CR	Direct	EGPC	Daylon Walton
George E. Failing Company	Spare Parts for DRI	9/7/89 2/15/90	\$50,000	--	\$50,000	CR & FP	Direct	DRI	George Failing
Project Total			\$11,627,816	LE2,350,431	\$1,499,895				

LEGEND: Contract Type: TR=Time Rate, UF=Unit Price, CR=Cost Reimbursable, IOC=Indefinite Quantity Contract
Direct: Direct contract signed by AID and Contractor
HCC: Host Country contract signed by GOE and Contractor

Project and Contractor	Services	Sign Date End Date	Contract Dollars	Amount Egypt pounds	FY 1989 Awards	Contract Type	Direct or HCC	GOE Agency	Project Manager
ENERGY POLICY PLANNING PROJECT (0123.1)									
Meta Systems Inc.	Prime Technical and Management Support	12/12/86 6/30/90	\$5,191,467	--	\$3,145,000	CR & FF	HCC	OEP	Franklin Ahimaz
Arthur D. Little	Industrial energy audits	1/6/88 4/9/88	\$163,479	--		CR & FF (IQC)	Direct	OEP	D. Klein-schmidt
RCG, Hagler, Bailly Inc.	Industrial energy audits	2/1/88 9/30/88	\$270,521	--		CR & FF (Buy-in)	Direct	OEP	Alain Streicker
RCG, Hagler, Bailly Inc.	Industrial energy audits	5/2/89 7/30/89	\$209,089	--	\$209,089	CR & FF (Buy-in)	Direct	OEP	Alain Streicker
Foster Wheeler USA Corp.	Industrial energy audits	2/1/88 10/1/88	\$389,925	--		CR & FF (IQC)	Direct	OEP	Carl Kastner
Foster Wheeler USA Corp.	Industrial energy audits	9/28/89 12/11/89	\$491,051	--	\$491,051	CR & FF (IQC)	Direct	OEP	Carl Kastner
Oak Ridge National Lab.	Project Evaluation	3/89 8/89	\$50,000	--	\$50,000	CR (Buy-in)	Direct	OEP	Thomas Wilbanks
Project Total			\$6,765,532	0	\$3,895,140				
RENEWABLE ENERGY FIELD TESTING PROJECT (0123.2)									
International Development & Energy Associates (IDEA)	Technical Assistance	4/20/89 8/28/90	\$1,985,000	--	\$1,985,000	CR & FF (8a)	Direct	NREA	Gilbert Richard
Wincon Energy Systems Inc.	Ras Ghareb Wind Farm	6/30/87 8/28/90	\$1,447,200	--		FP	Direct	NREA	Peter Munser
Solarex Corporation	Photovoltaic/diesel ice making plant	6/8/87 8/28/90	\$1,137,000	--		FP	Direct	NREA	Paul Garvison
EA-Mueller Associates	Industrial processes heat at poultry and textile companies	7/3/88 8/28/90	\$1,482,700	--	\$101,020	FP	Direct	NREA	Michael Panich
Burns and Roe Company	Wind power plant pre-feasibility study	9/22/89 1/11/90	\$198,095	--	\$198,095	CR & FF	Direct	NREA/ EEA	Budh Deora
Oak Ridge National Lab.	Project Technical Review	3/89 8/89	\$30,000	--	\$30,000	CR (Buy-in)	Direct	NREA	Daniel Waddle
Project Total			\$6,279,995	0	\$2,314,115				

LEGEND: Contract Type: TR=Time Rate, UP=Unit Price, CR=Cost Reimbursable, IQC=Indefinite Quantity Contract
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02.

Project and Contractor	Services	Sign Date End Date	Contract Dollars	Amount Egypt Pounds	FY 1989 Awards	Contract Type	Direct or HCC	GOE Agency	Project Manager
SCIENCE AND TECHNOLOGY COOPERATION (0140.1)									
International Develop- ment & Energy Associates (IDEA)	Technical Assistance	2/15/89 3/30/91	\$968,508	--	\$968,508	CR & FF	Direct	ASRT	Vincent Luwenberg
Project Total			\$968,508	0	\$968,508				
SHCISTOSOMIASIS RESEARCH PROJECT (0140.2)									
Lowell University	Schisto Biological Material Supply	12/19/88 12/19/90	\$830,000	--	\$830,000	CR	Direct	MOH	Stephan Joseph
Medical Services (MSCI)	Project Management and Technical Assistance	8/1/89 8/15/91	\$5,225,406	--	\$5,225,406	CR & FF	Direct	MOH	Alan Fenwick
Medical Services (MSCI)	Project Design	8/5/87 3 months	\$469,335	--		CR & FF (Buy-in)	Direct	MOH	Alan Fenwick
Naval Medical Research Unit 3 (NAMRU-3)	Technical & Management Services	4/3/89 3/27/91	\$2,000,000	--	\$2,000,000	FASA	Direct	MOH	David Dean
Project Total			\$8,524,741	0	\$8,055,406				
ENERGY CONSERVATION AND EFFICIENCY PROJECT (0140.3)									
RCG, Hagler, Bailly Inc.	Interim Management and Technical Assistance	2/10/89 2/1/90	\$891,670	--	\$891,670	CR & FF	Direct	DRTPC TIMS	Edwardo Mal
Project Total			\$891,670	0	\$891,670				
ENERGY MANPOWER DEVELOPMENT (0140.4)									
Institute of Internat- ional Education (IIE)	Interim Technical Services	5/9/89 3/3/90	\$916,508	--	\$916,508	CR & FF	Direct	EEA/ EDA/ EGPC	David Berkovitz
Project Total			\$916,508	0	\$916,508				
GRAND TOTAL OFFICE OF SCIENCE & TECHNOLOGY			\$35,974,770	LE2,350,431	\$18,541,242				

LEGEND: Contract Type: TR=Time Rate, UP=Unit Price, FP=Fixed Price, CR=Cost Reimbursable, IQC=Indefinite Quantity Contract
 * Direct: Direct contract signed by AID and Contractor
 HCC: Host Country contract signed by GOE and Contractor