

APPLIED SCIENCE AND TECHNOLOGY RESEARCH IN EGYPT

SEMIANNUAL REPORT

January - June 1981

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Commission on International Relations

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NATIONAL ACADEMY OF SCIENCES

WASHINGTON, D.C.

This is the seventh semiannual report of Contract AID/NE-C-1474, Applied Science and Technology Research in Egypt, covering the period January - June 1981. The report has been prepared by the staff of the Board on Science and Technology for International Development, Commission on International Relations of the National Research Council for the U.S. Agency for International Development.

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## I. EXECUTIVE SUMMARY

The January-June reporting period was characterized by intensive program administration and planning activities, as NAS, AID, and Egyptian parties continued negotiations for a Phase II contract; Phase I was extended through July 31 in order to resolve satisfactorily all pending contract issues.

In early April 1981 the seventh semi-annual meeting of the Joint Consultative Committee (JCC) for the Applied Science and Technology Research Program convened at the National Academy of Sciences in Washington, D.C. In addition to reviewing program accomplishments, the JCC held a discussion seminar on the new program component for Phase II, entitled "National Policy Measures for Science and Technology." A summary report of the seventh JCC meeting is found in Annex A of this report.

Activities during the January-June 1981 reporting period also encompassed the following:

- Visits to Egypt by U.S. advisory panels for the research and development (R&D) projects on phosphate ore beneficiation and on corrosion causes and control
- Visit to Egypt by the U.S. advisory panel for the demonstration project to develop biogas technology
- Training in the U.S. for Egyptian researchers from the corrosion R&D project, the Red Sea Fisheries R&D project, and the More and Better Food demonstration project. In addition to the new S&T policy planning activity, all existing R&D and demonstration projects will continue during Phase II and new R&D projects on industrial applications of bentonite ores and Egyptian production of pharmaceutical products will be initiated.

## II. INTRODUCTION

The Applied Science and Technology Research Program represents a cooperative effort by Egypt and the United States to utilize more effectively Egypt's scientific and technological resources in addressing national economic and social development problems. The program, funded by the U.S. Agency for International Development (AID), grew out of a May 1975 workshop on science and technology policy, research management, and planning in Egypt, conducted by the Egyptian Academy of Scientific Research and Technology (ASRT), the U.S. National Academy of Sciences-National Research Council (NAS-NRC), and the U.S. National Science Foundation (NSF). Based on workshop recommendations for a concerted effort to strengthen the institutional and management capabilities of Egypt's scientific community, a formal agreement was signed in March 1977 between the ASRT and AID for a five-year joint program in applied scientific and technical research. For purposes of program funding and administration the effort is divided into two periods, Phase I which began in October 1978 and has been extended to July 31, 1981, and Phase II which is scheduled for the period August 1981 through September 1983.

This is the seventh semi-annual report of the Applied Science and Technology Research Program and was prepared by the staff of the Board on Science and Technology for International Development (BOSTID) of the NAS-NRC under its contract AID/NE-C-1474. It covers the period January 1-June 30, 1981, and describes the activities for which the NAS/NRC is contractually responsible under the program elements of:

- Policy planning and management
- Demonstration project support

- Research and Development project support
- Planning for Phase II

A separate report by the NSF covers activities under the program elements for which it is responsible:

- Scientific and technical information systems
- Procurement, repair, and maintenance of scientific equipment
- Planning for Phase II

### III PROGRAM HIGHLIGHTS

#### POLICY PLANNING AND MANAGEMENT

##### Joint Consultative Committee (JCC)

The seventh semi-annual meeting of the JCC (JCC-VII) convened at the National Academy of Sciences in Washington, D.C., April 1-2, 1981. Dr. Ibrahim Badran, ASRT president and chairman of the meeting, urged that, in addition to reviewing the accomplishments of Phase I and their implications for Phase II, the JCC give their deliberations a new dimension by concentrating on policy issues to strengthen Egypt's science and technology infrastructure and its role in national development. In this spirit a major portion of the meeting was devoted to a discussion in the form of a seminar on "National Policy Measures for Science and Technology," a new program activity planned for Phase II. JCC member Dr. Ibrahim Helmy Abdel Rahman and Dr. Princeton Lyman from the U.S. Department of State led the discussion which explored such issues as technology choice, manpower utilization, and research/industry linkages. The new National Policy Measures project will undertake sectoral studies in areas important to the Egyptian economy. The first studies are expected to be on construction, pharmaceuticals, and the food industry. The new project will also include seminars and workshops in Egypt bringing together leaders in the scientific community with those responsible for political and economic planning.

The meeting agenda also included presentation of status reports and Phase II plans for: (a) Egypt's scientific and technical information system, (b) instrumentation procurement, maintenance, and repair, and (c) demonstration and R&D projects. The eighth JCC meeting is scheduled for November 14-16, 1981 in Cairo, Egypt.

A summary of the seventh meeting with list of participants may be found in Annex A.

#### NAS/NRC Resident Program Director in Cairo

During this reporting period Dr. Weldes continued to manage NAS/NRC inputs to the program and to work with the NRC/Cairo, the ASRT, and the USAID Mission in Cairo in managing project activities. Dr. Weldes participated in the preparations and activities of the seventh meeting of the JCC. While in Washington he worked with the BOSTID Egypt staff on Phase II financial and project planning. After more than two years of leadership to the program during its critical Phase I period, Dr. Weldes is leaving his post in Cairo effective July 1, 1981. In Phase II the NAS/NRC will appoint a new Resident Director for NAS Program to direct the NAS/NRC office in Cairo, to collaborate upon request in an advisory capacity to the ASRT, and to work with project leaders on the R&D and Demonstration projects.

#### NATIONAL POLICY MEASURES FOR SCIENCE AND TECHNOLOGY

This is a new activity for Phase II and is designed to support the work of the ASRT Committee for Science and Technology Policy. This committee has been a working group of the ASRT for over five years. Under the new project, funding of studies and seminars on science policy and study visits to science policy-making bodies outside Egypt will be undertaken. The first activity will be an international seminar "Towards a Technology Policy for Egypt" to take place November 10-12, 1981, at the ASRT in Cairo.

Dr. James Hillier, member of the U.S. panel of the JCC, traveled to Cairo June 19-26 for discussions on project implementation and planning for the November seminar. He met with Dr. Ibrahim Badran, Dr. Ibrahim

Helmy Abdel Rahman, Dr. Moustafa Hafez, Dr. M.B. Fayez, Dr. A.S. El Nockrashy, Dr. Yousef Morsey Hussein, and NAS representative Dr. Helmut Weldes.

#### RESEARCH AND DEVELOPMENT (R&D) PROJECTS

Detailed reports for the following R&D projects are available in the BOSTID office, Joseph Henry Building, Room 219, 2100 Pennsylvania Avenue, N.W. Washington, D.C., and at the NAS/NRC office in the National Research Centre, Dokki, Cairo, Egypt.

##### Evaluation of Egyptian phosphate fertilizer production

Research teams from the Ore Benefication and Processing Laboratory of the NRC/Cairo and from the phosphate fertilizer production department of the Societe Financiere et Industrielle d'Egypte at Kafr el-Aziyat are collaborating on this applied R&D project on domestic phosphate ore benefication for production of phosphoric acid and phosphate fertilizer. Three major phosphate deposits are being studied in the Western Desert (Abou Tartour), the Nile Valley (Sebia), and the Red Sea. Project leaders have completed benefication studies of phosphate samples from Abou Tartour. During this reporting period study of sedimentary ore from Sebia East determined calcination to be the optimum method for minimizing carbon content, and a series of calcination tests were undertaken. In the Red Sea area the NRC/Cairo research team has begun on-site inspections and discussion of process problems with technical managers from the MISR Phosphate Company, developers of the Red Sea deposits. They identified several potential problems in production, and the results of sample evaluations and laboratory tests using R&D facilities at the NRC/Cairo will be communicated to the MISR Phosphate Co.

In January the U.S. advisory panel for the phosphate project, James R. Lehr (Senior Scientist, National Fertilizer Development Center,

TVA) and Owen Livingston (Director of Chemical Engineering, International Fertilizer Development Center, Muscle Shoals, Alabama) went to Egypt to review project activities, discuss work plans for Phase II, review equipment status and needs, and assess the relevance of the program to the needs of Egypt's phosphate industry.

#### Improving Processes for Wool Scouring and Wool Wax Recovery

The NRC/Cairo Division of Textile Industries Research and the Miss Beida Dyers Company are working together to adapt existing wool scouring and wax recovery technologies to enhance the quality and quantity of both the wool yarn and the wool wax and its by-products. Additionally, they are conducting market studies to ascertain potential demand for the products of the improved scouring/recovery techniques. Pilot plant testing of these new techniques is awaiting delivery and installation of a continuous centrifuge and auxiliary equipment which is on order.

Equipment delays have resulted, in part, from a change in R&D plans. Originally the work at NRC/Cairo (laboratory scale) was to be scaled-up to a pilot plant size using a larger centrifuge and ancillary recovery equipment. As a result of the 1980 U.S. visit by Drs. Kantoush and Bendak, information was obtained which led the NRC and Miss Beida Dyers to bring the process directly to production scale recovery of wool wax and other by-products. The recovery process used embodies a simple and effective equipment design based upon a special continuous centrifuge manufactured by the Alpha Laval Corporation (Sweden and USA). The NRC project leaders and Miss Beida Dyers Company have agreed to share the cost approximately equally for a recovery line (pumps, centrifuge, recovery tanks and auxiliary equipment). This equipment is now on order but delivery dates require 6 to 8 months due to production scheduling at the Alpha Laval Company.

## Corrosion Causes and Control in Petroleum Refining

Research teams from the NRC/Cairo corrosion laboratory and the Suez Oil Processing Co. have undertaken this project, which addresses the problem of costly economic losses in Egyptian industry due to metal corrosion. Monitoring corrosion problems at the Suez Oil Co. continues along with laboratory work on pitting corrosion, galvanic corrosion, and corrosion inhibitors in the newly-expanded and upgraded NRC/Cairo corrosion laboratory. Activities during this reporting period included a six-weeks training course in the United States for two senior scientists from the NRC/Cairo. Drs. Talaat M.H. Saber and Abdel Ghany El Hosary received on-the-job training on the new Electron Spectroscopy for Chemical Analysis (ESCA) equipment which was procured for the NRC/Cairo corrosion Laboratory. Two weeks were spent at the Perkin Elmer Physical Electronics Division in Minnesota, manufacturers of the ESCA equipment, followed by additional training at the Department of Chemical Engineering and Materials Science at the University of Minnesota and at the Battelle Pacific Northwest Laboratories in Richland, Washington, for hands-on experience in applying the latest surface science tools to materials corrosion problems.

In April two U.S. advisors for the project, Drs. Earl Snavelly (Mobil Research and Development Corporation, Dallas, Texas) and Joerg Gutzeit (Amoco Research Center, Naperville, Illinois), met in Cairo with the Egyptian research team to review the status of the corrosion studies and to analyze the results of the project as the program enters Phase II. A copy of their trip report with recommendations for Phase II is on file in the BOSTID Washington office.

## Development of Red Sea Fisheries

The Institute of Oceanography and Fisheries, an affiliate of the ASRT,

designed this project to assess the fisheries resources in the Foul Bay area of the Red Sea and to determine the economic potential for the exploitation of deepwater shrimp, reef fishes, spiny lobster and deep-water fish schools. In January Dr. A.R. Bayoumi, Director of the Institute, met with project advisors in the U.S. after presenting a paper at the International Workshop on Cooperation in Marine Technology, Science, and Fisheries in La Jolla, California. (Dr. Bayoumi's trip to the U.S. was funded by the U.S. National Academy of Science's Ocean Policy Committee). Project activities and training needs were reviewed in discussions with Alonzo T. Pruter and Benjamin Jones in Seattle, Washington, and with Harvey Bullis in Miami, Florida.

Technical training in fisheries techniques began in February when Mr. Sherif Ramadan from the Institute of Oceanography and Fisheries came to the U.S. for a two-month study and observation program on spiny lobster fishing in Florida, the Gulf of Mexico, and the Caribbean. In addition to participating in commercial fishing activities, Mr. Ramadan visited NOAA National Marine Fisheries installations in Florida, North Carolina, and New Jersey; the Florida Department of Natural Resources marine laboratories in St. Petersburg and Marathon; the Virgin Islands Department of Conservation and Cultural Affairs fishery laboratories in St. Petersburg and Marathon; the Virgin Islands Department of Conservation and Cultural Affairs fishery laboratories in Charlotte Amalie; the U.S. Environmental Protection Agency laboratory in Gulf Breeze, Florida; Duke University Marine Laboratory, Beaufort, North Carolina; and the Smithsonian Institution's Museum of Natural History in Washington, D.C.

#### DEMONSTRATION PROJECTS

Detailed progress reports for the following demonstration projects are

available in the BOSTID office, Joseph Henry Building, Room 219, 2100 Pennsylvania Avenue, N.W., Washington, D.C., and at the NAS/NRC office in the National Research Center, Dokki, Cairo, Egypt.

#### More and Better Food

This project is a multidisciplinary, multi-institutional endeavor involving R&D activities in farm systems, nutrition, and food technology subsectors. Scientists and technicians are working closely with local villagers and industry to transfer new technologies to on-site operations in two demonstration villages and in factories.

During this reporting period two Egyptian food technologists participated in a training/observation visit to the U.S. Dr. Sayed Salem, Professor of Food Technology at the NRC/Cairo, and Ms. Zerab Hasem Ahmed, quality control director for an Egyptian food processing company, attended a 4-day seminar on food process control at the University of Wisconsin followed by visits to food technology departments at the University of California/Davis, University of Washington, Seattle, and Michigan State University. In addition, visits were made to food processing plants in California, Washington, New York, and New Jersey.

Upon his completion of a United Nations University fellowship at the Instituto de Nutricion de Centro America y Panama in Guatemala City, Dr. El-Sayed Mohamed Hegazi, Professor of Food Sciences at the NRC/Cairo, attended the annual meeting of the Institute of Food Technologists, June 7-10, in Atlanta, Georgia, while en route to Cairo.

#### Development of Biogas Technology for Rural Areas of Egypt

A multidisciplinary team representing microbiology, biochemistry, hygiene, agriculture, engineering, and environmental and social sciences is investigating the feasibility of converting agricultural, human, and

animal wastes into methane for small-scale energy use in Egyptian villages. A prototype biogas digester constructed at the NRC/Cairo is being tested for operation under conditions duplicating those of an Egyptian village.

The U.S. advisory panel (Dr. Philip Goodrich, University of Minnesota; Dr. Harold Capener, Cornell University; Dr. T.B.S. Prakasam, Metropolitan Sanitary District of Greater Chicago) met with the Egyptian project team in Egypt in February. Project progress was reviewed in the laboratory, at the demonstration village, and at the demonstration digester site. The panel's report identifying constraints to progress and including recommendations for Phase II is available from the NAS/NRC Washington and Cairo offices.

#### New Crops for Arid and Semi-arid Zones of Egypt

This project, a multi-institutional endeavor, was created to study the introduction of new food and cash crops that will enable Egypt to expand its agricultural productivity from land unsuitable for conventional farming. Research teams from Al-Azhar University, Ain Shams University, and the NRC/Cairo are investigating unconventional crops such as jojoba, guayule, winged bean, milkweed, and others for drought resistance and salt tolerance.

In January and February Dr. Adel El-Beltagy, a member of the Executive Council for the project, came to the U.S to consult with U.S. project advisors and to visit U.S. universities located in areas climatologically and ecologically similar to Egypt in order to investigate new techniques for growing salt- and drought-tolerant plants. He also surveyed training opportunities for Egyptian researchers at Utah State University, University of California, Davis, University of California

Riverside, University of Arizona, Texas Technical University, and Texas A&M University.

A number of U.S institutions have provided seeds for this project. In June 140 pounds of Jojoba seeds specially selected for Egyptian growing conditions were donated by the University of California/Riverside and shipped to Egypt for the project teams.

ANNEX "A"

SEVENTH MEETING OF THE  
JOINT CONSULTATIVE COMMITTEE  
APPLIED SCIENCE AND TECHNOLOGY RESEARCH PROGRAM

Washington, D.C., U.S.A.  
April 1-2, 1981

Participating Groups:

Academy of Scientific Research and Technology (ASRT)  
Arab Republic of Egypt

U.S. National Science Foundation (NSF)

Board on Science and Technology for International Development  
Commission on International Relations  
National Research Council (NRC)

Report prepared by:

Academy of Scientific Research and Technology  
Cairo, Arab Republic of Egypt

Board on Science and Technology for International Development  
Commission on International Relations  
National Research Council  
Washington, D.C., U.S.A.

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## I. SUMMARY OF RECOMMENDATIONS AND CONCLUSIONS

### INTRODUCTION

The seventh meeting of the Joint Consultative Committee (JCC) for the Applied Science and Technology Research Program convened April 1-2, 1981 at the NAS/NRC headquarters in Washington, D.C. This program is sponsored by the Egyptian Academy of Scientific Research and Technology (ASRT) and the National Research Council (NRC) and funded by the U.S. Agency for International Development (AID).

Dr. Ibrahim Badran, chairman of the JCC, asked committee members to review lessons learned from Phase I activities and their implications for Phase II. He challenged JCC members to look beyond the remaining two and one-half years (March 1981 - September 1983) of the program and work toward the following goals:

- Greater integration of sound and appropriate R&D management practices into projects and programs within Egyptian scientific and technological institutions
- Institutionalization of those benefits demonstrated to be of the greatest use from the Applied Science and Technology Research Program
- Definition of linkages and plans of coordination among the originators and end-users of science and technology (S&T), especially in the agricultural, health, and industrial sectors.

The meeting agenda included presentation of status reports and Phase II plans for: (a) Egypt's S&T information system, (b) instrumentation technology, and (c) demonstration and R&D projects. JCC members also held a discussion seminar on "National Policy Measures for Science and Technology," a new activity included in the Phase II work program. The seminar was led by Dr. Ibrahim Helmy Abdel Rahman, a JCC member with wide experience in Egyptian policy planning, and Dr. Princeton Lyman, a foreign service officer of the U.S. Department of State and former AID mission director in Ethiopia who studied Egyptian S&T policy planning when on special assignment in Egypt early in 1980.

#### NATIONAL POLICY MEASURES FOR SCIENCE AND TECHNOLOGY

Egypt's experience in conceiving and implementing S&T programs for development indicates that institutional performance can be significantly enhanced if certain policy measures are applied. These measures should be based upon carefully prepared studies and widely reviewed to ascertain their usefulness before being presented to the Egyptian scientific community for discussion and action. Such a procedure would ensure more effective implementation of policy measures within Egypt's national institutions.

The JCC suggested that the methodological development of the new National Policy Measures project take place gradually and during the first year of implementation it include the following activities:

- Analytical and evaluative studies in three sectors important to the Egyptian economy, such as construction, pharmaceuticals, and the food industry

- A comparative study of decision making on technology choices in Egyptian public and private industries, whether indigenous or foreign; the factors influencing those choices; and the policy implications a pattern of choices may have for future industrial development
- A small working seminar to analyze the experience gained from the three analytical-evaluative studies and the comparative study. One function of the working seminar should be to make recommendations to the JCC on the specific topics, methods, and actions that could be followed for the remainder of Phase II.

Overall policy guidance for the National Policy Measures project rests with the ASRT's Committee on Technology Policies. Both the analytical-evaluative studies and comparative study will involve commissioning papers with well defined terms of reference to provide data for in-depth policy analyses, strategies, and selection of alternatives upon which decision makers may act. It is expected that each commissioned paper would be provided a modest budget from project funds. Collaboration from American and other foreign consultants will be included, especially in the planning stage. The working seminar should be considered part of the methodological approach prior to publication of the studies so that analysis, critique, and review of the policy options suggested in each commissioned paper may be incorporated into the final product. JCC members are encouraged to participate in the working seminar and, if possible, in other stages of the program.

Of the total \$250,000 expected to be available for this National Policy Measures project, \$100,000 shall be allocated as the first year

budget. At its eighth meeting (Fall 1981), the JCC will receive a progress report on the project; a more comprehensive report on study results and methodologies with recommendations for activities during the remainder of Phase II will be presented during the ninth JCC meeting (Spring 1982).

#### SCIENTIFIC AND TECHNICAL INFORMATION SERVICES

The status of this project was presented to the JCC along with a preliminary outline of the design to be implemented in Phase II. The design encompasses four major activities:

- Establishment of an executive infrastructure for the management of national information affairs in Egypt
- Development of a number of model information services in key sectoral areas
- Initiation of a massive education and training effort of both information users and professionals.

The information services presentation emphasized that Phase I was an essential learning experience from which arose a better understanding of the environmental, administrative, legislative, and social constraints that must be considered in the design and implementation phases. As a consequence, the ASRT has decided to create an autonomous organizational entity that will provide central technical support for establishing and operating model sectoral information services.

Subsequent discussions by the JCC emphasized the importance of careful selection of the initial sectors for implementing such model services. While it is understood that these services are intended to be largely self-supporting at the end of Phase II, the Committee stressed that USAID/Cairo should strive to coordinate all information-related components of AID-supported projects in Egypt with this national effort.

The presentation and committee discussions reflected an optimistic outlook for the project's future due to both the cumulative experience, including training, provided through Phase I, and the interest expressed in the project at the highest decision-making levels in Egypt. The Committee specifically expressed satisfaction with notable achievements in training at Catholic University. Phase II should build upon the foundations laid in Phase I.

#### INSTRUMENTATION TECHNOLOGY

A report on the progress of the Instrumentation Technology Project during Phase I and on the status of planning for Phase II was delivered. In Phase II, training and procurement activities will be separated and contracted with different U.S. institutions.

The training component will take on a new focus, with emphasis on developing an Egyptian facility to train local instructors and to enable Egypt to become more self-reliant in preparing instrumentation specialists.

In procurement, the JCC recommended that there be:

- Continued efforts to minimize procurement times
- Actions taken to enable Egypt to develop its own procurement capability
- A detailed analysis of budgeted and actual costs of instrument procurement so that an explicit understanding of the current financial situation can be made available to the JCC.

Finally, the JCC strongly recommended that a site officer continue to be assigned in Cairo for the Instrumentation Technology Project.

#### DEMONSTRATION PROJECTS

##### More and Better Food

Recognizing the progress made in the More and Better Food project, the JCC requested that:

- A model be developed reflecting the socioeconomic conditions for each participating village and that the integrated development plan during Phase II emphasize literacy, family planning, health, local agro-industrial development, and rural institutions and services
- Although staff limitations will necessarily restrict the number and kinds of activities undertaken in the villages, each experimental component, nevertheless, should be monitored, costs evaluated, and implementation plans completed with project staff participating in each step.

### Biogas Technology for Rural Villages

Recognizing this project's achievements during Phase I, the JCC endorsed the project implementation plan for Phase II and recommended that it be activated immediately following signing of the Phase II contract by AID.

### New Crops for Arid Zones

The JCC acknowledged that the limited availability of seed for experimental plots is a major constraint to project activities and urged that this matter be given priority attention.

The JCC also recommended that a qualified staff person from one of the participating Egyptian groups be assigned to each experimental location.

## RESEARCH AND DEVELOPMENT PROJECTS

### Ongoing Projects

The JCC recommended that the Phosphate Ore, Corrosion, and Wool Scouring projects continue according to their respective project implementation plans submitted at the JCC VII meeting.

A technical progress report for the Red Sea Fisheries project, including a market study requested at the last meeting, has been completed. JCC members allotted an additional period of time, not to exceed its autumn 1981 meeting, for activities under Red Sea Fisheries to demonstrate notable progress. If such progress is not evident, the project will be dropped and the available funds will be allocated to support other R&D or demonstration activities.

#### New Schemes for Land Use

The project "A New Scheme for Better Land Use to Increase Food and Feed Production in Egypt" was approved at the November 1980 JCC meeting as one of three priority proposals for R&D project funding during Phase II. To initiate activities, the ASRT began a pilot implementation experiment after an Academy-sponsored agricultural symposium concluded that the project was of utmost relevance to Egyptian efforts for improving food security. The goal of the pilot experiment is to demonstrate the feasibility of introducing early maturing varieties to increase the land use factor significantly from the present 1.9 crops/year to 3.0 crops/year.

The USAID Mission, in a letter to the ASRT president, stated that the proposed project for better land use appears to have great merit and recommended that it be submitted for consideration under the "Title III" funding plan (an agreement for agricultural R&D administered through the Ministry of Agriculture). Because the Title III Program funding has not yet begun, and in light of the ASRT's initiation of a pilot experiment on new methods for better land use, the JCC endorsed the project once again, and asked AID to reconsider the request for funding within Phase II of the Applied Science and Technology Research Program.

#### DATE AND LOCATION OF THE NEXT MEETING

The JCC members scheduled their next meeting for Cairo, Egypt, November 14-16, 1981.

III. AGENDA

SEVENTH MEETING, JOINT CONSULTATIVE COMMITTEE

Applied Science and Technology Research Program

Egyptian Academy of Scientific Research and Technology  
National Research Centre  
U.S. National Academy of Sciences/National Research Council  
U.S. National Science Foundation

Washington, D.C. April 1-2, 1981

Wednesday - Board Room, NAS Building  
April 1 2101 Constitution Avenue

10:00 a.m.	Welcome	H. Guyford Stever, Chairman, U.S. Panel, JCC
	Response and Remarks on Meeting Goals	I. Badran, President, Academy of Scientific Research & Technology
	Role of the NRC in Phase II: The New 5-Year Plan for NRC	M. Kamel, Director, National Research Centre
	Remarks on NSF Programs	R. Doyon, Division of Interna- tional Programs, National Science Foundation
	Remarks from AID Representative	Barry Heyman, Division Chief, Science & Technology Division, AID, Near East Bureau
12:15 p.m.	Luncheon honoring Dr. Ibrahim Badran, the Egyptian Panel of the JCC, and its advisors - Rotunda, Main Building, NAS	
2:00 p.m.	<u>Discussion Seminar</u>  "Toward a Politive Role for Egypt's S&T Community in the Country's Development"	Princeton Lyman, I. H. Abdel Rahman, and JCC Members

Thursday - Conference Room 200A  
April 2 Joseph Henry Building  
2100 Pennsylvania Avenue

9:30 a.m. Science and Technology M. Madkour  
Information Systems: V. Slamecka  
Status and Phase II Plans

10:30 a.m. Instrumentation Technology:  
Status and Phase II Plans M. Shaltoot

11:00 a.m. Demonstration and R&D Projects A. S. El Nockrashy

12:00 noon Business Lunch and Meeting of  
Drafting Committees:

Science & Technology Information Systems

Principals: Drs. Al-Kholy and White  
Aided by: Drs. Madkour, Slamecka, Hadiy and  
Messrs Pronko and Davenport

Instrumentation Technology

Principals: Drs. Kamel and Hillier  
Aided by: Drs. Shaltoot, Huston, Falk, Metz, and Edwards

Demonstration and R&D Projects

Principals: Drs. Al-Gabaly and Carter  
Aided by: Drs. El Nockrashy and Weldes

National Policy Measures

Principals: Drs. Ismail and Bugliarello  
Aided by: Dr. Fadl and Mr. Nasmith

1:30 p.m. Approval of Meeting Conclusions  
and Recommendations

3:00 p.m. Adjourn

IV. PARTICIPANTS AND OBSERVERS

Seventh Meeting, Joint Consultative Committee

Applied Science and Technology Program

EGYPTIAN JCC MEMBERS

Dr. Ibrahim Badran  
President, Academy of Scientific Research and Technology

Dr. Hassan Ismail  
Counselor, Academy of Scientific Research and Technology

Dr. Ibrahim Helmy Abdel Rahman  
Counselor, Ministry of Agriculture

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Dr. Barry Heyman  
Division Chief, Human Resources Science and Technology Division, NE/TECH

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Dr. Bahaa El Hadidy  
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Dr. Vladimir Slamecka  
School of International and Computer Science

UNIVERSITY OF WISCONSIN

Dr. Norman Huston  
Director, Instrumentation Systems Center

Mr. Edward Falk  
Instrumentation Systems Center

ANNEX B  
TRAVEL TO THE UNITED STATES  
January-June 1981

NAME	DATE	PURPOSE	PLACE
1. Zeinab Hashem Almed	January 8- February 4	Study/observation, food technology component of More & Better Food Project	NAS, Washington, D.C. Wisconsin Better Process Control School, Univ. of Wisconsin Brande Cheese Co., Brownsville, Wis. University of California/Davis Factory of Innovative Foods and Ed Hirschberg Freeze Drying Co., So. San Francisco, Calif. Foremost-Gentry Factory, Gilroy, Calif. Central Valley Water Project, Los Banos, Calif. Compack Foods Co., King City, Calif. California Polytechnic State University, San Luis Obispo, Calif. Carnation Research Center, Van Nuys, Calif. Hunt-Wesson Research Center, Fullerton, Calif. Institute for Food Science & Technology, Univ. of Washington, Seattle, Wash. Michigan State Univ., East Lansing, Mich. Gerber Products Co., Fremont, Michigan Continental Baking Co., Rye, N.Y. General Foods Co., Tarrytown, N.J. Nutrition Foundation, New York, N.Y.
2. El Sayed Abdel Bar Salem			
3. A.R. Bayoumi*	January 15 - February 1	Consultation, Red Sea Fisheries Project	Ben Jones, National Marine Fisheries Service, Seattle, Washington Harvey Bullis, Consultant, Princeton, Florida
4. Adel El-Beltagy	January 22-February 13	Fact-finding, New Crops for Arid Lands Project	NAS, Washington, D.C. USDA Beltsville Agricultural Research Center, Beltsville, Md. Univ. of Wisconsin, Madison, Wis.

\* Airfare provided by another source.

NAME	DATE	PURPOSE	PLACE
			University of California/Davis University of California/Riverside University of Arizona, Tucson, Ariz.. International Center for Arid & Semi- Arid Land Studies, Lubbock, Texas Texas Tech University, Lubbock, Texas Texas A&M University, College Station, Texas
5. Abdel Chany el Hosary	February 12-March 29	Training, Corrosion Control project	NAS, Washington, D.C. Perkin-Elmer, Physical Electronics Division, Eden Prairie, Minnesota University of Minnesota, Dept. of Chemical Engineering and Materials Science Minneapolis, Minnesota Battelle Northwest Laboratory, Richland, Washington
6. Talaat M.H.Saber			
7. Sherif Ramadan	February 22-April 24	Training, Red Sea Fisheries project	NAS, Washington, D.C. National Marine Fisheries Service, Miami, Florida Florida Dept. of Natural Resources, St. Petersburg, Florida Florida Dept. of Natural Resources, Marathon, Florida Virgin Islands Dept. of Conservation and Cultural Affairs, Division of Fish and Wildlife, Charlotte Amalie, V.I. Southeast Fisheries Center, Panama City, Florida U.S. Environment Protection Agency, Gulf Breeze, Florida National Marine Fisheries Service, Gulf Breeze, Florida National Marine Fisheries Service, Beaufort, North Carolina Duke University Marine Laboratory, Beaufort, North Carolina Museum of Natural History, Smithsonian Institution, Washington, D.C. National Marine Fisheries Service, Highlands, New Jersey

<u>NAME</u>	<u>DATE</u>	<u>PURPOSE</u>	<u>PLACE</u>
8. Ibrahim Badran	March 29 - April 4	Seventh Meeting, Joint Consultative Committee (.JCC)	NAS, Washington, D.C.
9. Hassan Isamil			
10. Ibrahim Abdel Rahman			
11. Mostafa Al-Gabaly			
12. Osama Al-Kholy			
13. Mohamed Kamel			
14. A.S. El-Nockrashy	March 20 - April 12	Seventh Meeting, JCC, program management	NAS, Washington, D.C. Food Protein R&D Center, Texas A&M Univ., College Station, Texas USDA Southern Regional Research Laboratory, New Orleans, Louisiana
15. Mohamed Fadl			
16. Helmut Weldes	March 12 - April 13	Seventh Meeting JCC, program management	NAS, Washington, D.C.
17. El Sayed M. Hegazi*	June 7-10	Institute of Food Technologists Annual Meeting	World Congress Center. Atlanta, Georgia

\* Airfare provided by another source.

ANNEX C  
TRAVEL TO EGYPT  
January-June 1981

NAME	DATES	PURPOSE
1. Philip R. Goodrich	February 6-12	Biogas Demonstration Project
2. T.B.S. Prakasam	February 6-12	" " "
3. Harold Capener	February 6-12	" " "
4. Jay Davenport	January 15-February 1	Program Management
5. Owen Livingston	January 22-30	Phosphate R&D Project
6. James Lehr	January 22-30	" " "
7. Earl Snively	April 16-23	Corrosion R&D Project
8. Joerg Gutzeit	April 16-23	" " "
9. Jay Davenport	June 12 - July 4	Program Management
10. James Hillier	June 18 - 26	National Policy Measures for Science and Technology

ANNEX D  
TRAVEL WITHIN THE U.S.  
BY NAS/NRC PANELISTS AND STAFF

<u>NAME</u>	<u>DATES</u>	<u>PURPOSE</u>	<u>PLACE</u>
1. George Bugliarello	March 17	JCC-VII briefing*	Washington, D.C.
	April 1-2	JCC-VII meeting	Washington, D.C.
2. James Hillier	March 17	JCC-VII briefing	Washington, D.C.
	April 1-2	JCC-VII meeting	Washington, D.C.
3. Gilbert White	April 1-2	JCC-VII meeting	Washington, D.C.

JCC members Mary Carter and Guyford Stever reside in Washington; thus no travel costs were incurred.