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APPLIED SCIENCE AND TECHNOLOGY RESEARCH IN EGYPT  
SEMIANNUAL REPORT  
January - July 1978

Contract No. AID/NE-C-1474  
Project No. 263-0016

Board on Science and Technology  
for Interantional Development  
Commission on International Relations  
National Academy of Sciences-National Research Council

NATIONAL ACADEMY OF SCIENCES  
Washington, D.C.

This is the first semiannual report of Contract AID/NE-C-1474, Applied Science and Technology Research in Egypt, covering the period July 1978 - December 1978. The report has been prepared by the staff of the National Academy of Sciences-National Research Council for the Agency for International Development.

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I

**EXECUTIVE SUMMARY**

This is the first semiannual report of Contract AID/NE-C-1474, Applied Science and Technology Research in Egypt, and covers the period from the signing of that contract in late December 1977 through June 30, 1978.

Major activities of the reporting period include:

- Selection by the National Academy of Sciences/National Research Council of the five United States panel members for the Joint Consultative Committee. Through Phase I of the program (ending October 1, 1980) the U.S. panel is to be chaired by Dr. H. Guyford Stever, a member of both the National Academy of Sciences and the National Academy of Engineering. Dr. Stever served as Science Advisor to President Ford and was Director, National Science Foundation.

- First meeting in Cairo (May 6-9, 1978) of the Joint Consultative Committee, adoption of the criteria for the selection of Research and Development and Demonstration subprojects, and implementation of "More and Better Food" as the first demonstration subproject.

- Wide announcement by the NAS/NRC of two senior advisory positions in Cairo, screening of candidates, and initial interviews in Washington prior to selection of the incumbents.

- Agreement by the JCC on activities to be developed by the staff representatives of NAS/NRC and ASRT prior to the second JCC meeting.

## II

### INTRODUCTION

The Applied Science and Technology Program is an activity of the Egyptian Academy of Scientific Research and Technology (ASRT) with the assistance of the U.S. Agency for International Development (AID) designed to strengthen the management of research and development resources in science and technology directed toward Egyptian national development goals. The program grew out of a Workshop on Science and Technology Policy, Research Management, and Planning sponsored by the ASRT, the U.S. National Science Foundation, and the U.S. National Academy of Sciences held in Cairo, Egypt, in May, 1975. After a period of planning by scientific, technical and economic assistance representatives of the two governments, a joint program agreement for applied scientific and technical research was signed in March 1977. The immediate objective, designated as Phase I, is a two-year science and technology management improvement program, terminating on October 1, 1980. An additional three years (Phase II) is contemplated if progress in the early years (1978-80) warrants that extension. The program consists of six components:

1. Strengthening policy planning and management of research and development (R&D) in Egypt.
2. Joint U.S.-Egyptian cooperation in the support of up to six specific research and development projects, which must be related to the priority areas of Egyptian social and economic development.

3. Joint U.S.-Egyptian cooperation in at least two demonstration projects. Demonstration projects are multi-disciplinary in nature and involve field trials under experimentally controlled conditions.
4. Provision of scientific equipment, including training in equipment maintenance and repair.
5. Strengthening the Egyptian scientific and technical information base and its utilization throughout that country.
6. Planning for years 3-5 (Phase II).

In December 1977, the U.S. National Academy of Sciences/National Research Council (NAS/NRC) was selected by the AID as the principal American contractor for components 1, 2, 3, and 6. The NSF will work with the ASRT and other Egyptian groups in the scientific and technical information and the scientific equipment areas (components 4 and 5). The National Research Centre (NRC), an autonomous unit of the ASRT, also plays a key operational role in the program.

Management of the Applied Science and Technology Program is the responsibility of the Joint Consultative Committee (JCC), composed of Egyptian and U.S. representatives. The JCC acts in an advisory rather

than operational capacity and is charged with providing policy oversight, setting goals, judging progress, and reviewing periodically the results of the various elements of the program. The JCC will meet at approximately six-month intervals in Cairo or the United States.

This is the first semi-annual report of the Applied Science and Technology Program and was prepared by the staff of the Board on Science and Technology for International Development (BOSTID), NAS/NRC, under its contract AID/NE-C-1474. It covers the period December 16, 1977 - June 30, 1978, and addresses those activities for which the NAS/NRC is contractually responsible under the program components of:

- a. Policy Planning and Management.
- b. Research Project Support.
- c. Demonstration Project Support.
- d. Planning for Phase II.

Activities under the program components of (a) science and technical information systems and (b) equipment procurement, including equipment maintenance and repair, are reported by NSF in a separate report governed by the terms of its participating agency agreement with AID.

### III

#### PROGRAM HIGHLIGHTS

##### A. Policy Planning and Management

###### 1. Joint Consultative Committee

One of the principal mechanisms to strengthen planning and management of research and development (R&D) in Egypt is the Joint Consultative Committee (JCC). The Committee is charged with policy oversight, setting of program goals, and periodic evaluation of progress for Applied Science and Technology Program. Because the JCC is a "Board of Directors" whose role is advisory to the ASRT, the members have been chosen on the basis of individual achievement and experience. Initially, there were to be three persons selected from each country. In order to increase the range of R&D experience on the Committee and provide better continuity with the program, the JCC at its first meeting recommended that five persons be selected from each country and that the ASRT President serve as its permanent chairman.

Membership of the JCC as of July 1978 was as follows:

###### From Egypt:

Dr. A. M. Abou El-Azm (Chairman)  
President, Academy of Scientific Research and Technology (ASRT)

Dr. Mohammad H. El-Nashar  
President, Assiut University

Dr. Mostafa M. Hafez  
Counsellor, Academy of Scientific Research and Technology

Dr. Hassan Hamdi  
Vice President, Cairo University

Dr. Mahmoud Riad  
Secretary General, Arab Telecommunications Union

Dr. Yussuf Wally  
Assistant to the Minister of Agriculture

From the U.S.A.:

Dr. H. Guyford Stever (Chairman, U.S. Panel)  
International Consultant  
Member, National Academy of Sciences and National Academy of Engineering

Dr. George Bugliarello  
President, New York Polytechnic Institute

Dr. Mary E. Carter  
Director, Southern Regional Laboratory, U.S. Department of Agriculture

Dr. James Hillier  
Consultant  
Vice-President (retired), RCA Corporation  
Member, National Academy of Engineering

Dr. Gilbert White  
Institute of Behavioral Science  
University of Colorado  
Member, National Academy of Sciences

The first meeting of the Joint Consultative Committee was held in Cairo, Egypt, at the headquarters of the ASRT, May 6-9, 1978. This meeting provided an opportunity for the JCC members to review the goals of the program as set forth in the joint agreement for the Applied Science and Technology Program. Formal agreements reached during the sessions in Cairo were as follows:

(a) Criteria for selection of specific Research and Development (R&D) and Demonstration subprojects are:

- Each proposed activity must be relevant to critical national development priorities.
- The design of subprojects must be geared to the solution of critical development problems.
- Each activity must involve a substantial interdisciplinary effort, and the mobilization of a variety of scientific specialties and institutions (multidisciplinary participation, and cooperation between different research institutions).

- Each activity must provide an explicit framework within which management experience and technical training can take place, and through which the ASRT can develop recognition of its role as coordinator and stimulator among research and user communities.
- User participation must be provided for, so that practical use applications are built into all projects.
- Appropriateness of technology must be considered; that is, labor-intensive techniques, adaptation of processes or products to local materials, applicability of processes to existing skills, etc.

(b) There is a need for a core capability in the following areas (both for the ASRT and NRC): Management and scientific planning, marketing and allied specialties, technology assessment, maintenance and repair of equipment, and scientific and technical information.

(c) The "More and Better Food" subproject is selected to be implemented and meets the criteria listed under (a) above.

(d) The following Demonstration subproject and R&D subprojects also meet the criteria:

- Replacement of work animals with mechanical power in Egyptian agriculture
- Consequences of the loss of Nile-silt as a result of the High Dam on the properties and microbiology of soil
- Changes in composition of Nile water as a result of storage
- Red Sea fisheries
- Evaluation of Egyptian phosphate ores

(e) Suitable advisory mechanisms will be developed for each project selected. Appropriate staff will be provided to implement each advisory function.

A summary report of the first JCC meeting is attached to this document (Annex A).

## 2. Resident Advisors

To assist the JCC in providing continuity in program planning and in management oversight as envisioned under the NAS/NRC contract for the Applied Science and Technology Program, provision has been made for two senior advisors to be stationed in Cairo, one at the ASRT and the second at the National Research Centre (NRC/Cairo). Each position is designed to fulfill several needs, such as program coordination with NAS/NRC headquarters in the U.S.A., linkage with the AID Mission in Cairo, source of information on U.S. scientists and institutions who can be asked to work on technical problems, source of information on U.S. training opportunities, and staff assistance to the ASRT president and the NRC/Cairo director. To illustrate more formally the scope of the function of resident advisor, a position description for the NRC/Cairo advisor is included as Annex B.

### B. Research and Development (R&D) Projects

A second aspect of the Applied Science and Technology Program is the joint selection of applied R&D projects administered by ASRT. Selection of up to five joint projects provides an opportunity for collaborative effort in those projects by Egyptian and U.S. teams of scientists and engineers. Furthermore, equipment, incentive and training funds are made available so the projects may proceed more rapidly during Phase I than might have otherwise been possible.

The projects of the ASRT for inclusion were:

1. Changes in Composition of Nile Water as a Result of Storage
2. Effects of Loss of Silt on Fertility and on Mechanical Properties of the Soil in the Nile Valley
3. Evaluation of Egyptian Phosphates for Wet Process Phosphoric Acid and Phosphate Fertilizer Production
4. Red Sea Fisheries Development.

Each of the four projects was determined to meet the basic criteria for inclusion in the Applied Science and Technology Program but none was selected for immediate implementation. The JCC recommended that a joint panel meet to assess the technical design of the two Nile water studies (Numbers 1 and 2 above) and report their findings at the second JCC meeting. The Committee asked that the Red Sea Fisheries project be focused more directly on one geographical area so that its development could be better accomplished with the limited resources of funds and available time. Finally, the phosphate project is to be developed in more detail after a visit to the U.S.A. by one or more persons designated by the President, ASRT.

C. Demonstration Projects

1. More and Better Food

A third aspect of the joint program is the support of "demonstration" projects. These are activities which deal with problems of high priority in the Egyptian national development plan (i.e., food and agriculture, nutrition and health, housing, etc.) and normally require a multidisciplinary effort over long periods of time in order to provide viable options for their solution.

The first demonstration project chosen is entitled More and Better Food and has been assigned to the National Research Centre as the agency for its implementation. The project will involve work by a joint team from the NRC Division of Agricultural and Biological Research, Animal Resources Research, and Food Industries and Nutrition Research. The NRC/Cairo team will also enlist cooperation from the Ministries of Agriculture, Health, Planning, Education, Social Affairs, the Governates and from the Organizations for Industrialization and for Reconstruction and Development of the Villages. Working together all

are expected to mobilize research, development and extension capabilities to improve the nutritional status of one or more pilot villages by improving food production in the locality chosen, assembling and evaluating knowledge of the nutritional deficiencies, forming a plan of action to make needed changes, and conducting an education program in the villages to assist in making the needed changes in agricultural practices and food habits.

In April 1978, the NAS/NRC selected an ad hoc panel of three U.S. scientists to work with the NRC/Cairo group in planning and implementing the More and Better Food demonstration program. They are:

1. Dr. Donald Plucknett (Chairman), Department of Agronomy, College of Tropical Agriculture, University of Hawaii, Honolulu, Hawaii.  
(Note: As of September 1978, Deputy Director, Board on International Foreign Agricultural Development, Department of State, Washington, D.C.)
2. Dr. Harold Calbert, Department of Food Science, University of Wisconsin, Madison, Wisconsin.
3. Dr. Kristen McNutt; Nutrition Consultant, Senate Committee on Agriculture, Nutrition and Forestry U.S. Congress. (Note: As of September 1978, Executive Officer, National Nutrition Consortium, Washington, D.C.)

As presented by NRC/Cairo in its project design, the More and Better Food program consists of parallel activities to (a) improve farm production methods and output for a sample village, (b) assess the nutritional status of the most vulnerable group (primary school children and nursing mothers) of the sample village, (c) determine a plan to solve the nutritional deficiencies through the use of local resources and methods, and (d) assist Egyptian food industries in solving production and product quality control problems.

2. Replacement of Work Animals with Mechanical Power in Egyptian Agriculture

A decision on a second demonstration project concerned with agricultural mechanization was deferred. The Ministry of Agriculture and representatives

of the AID Mission in Cairo had already begun discussion of criteria for a comprehensive study of agricultural mechanization needs in Egypt. A joint Egyptian-U.S. team had been agreed upon, the study was scheduled to begin in June 1978, and preliminary recommendations were to be available by September 1978. The JCC, therefore, agreed to postpone further discussion on the topic until the previously planned study was available.

IV

PROPOSED CALENDAR: July - December 1978

July 1978

1. Dr. A. M. Abou El-Azm  
President, ASRT  
Visit to U.S.A. for program management purposes for 1 week in conjunction with previously planned travel to Canada for the International Union of Pure and Applied Chemistry.
2. Dr. M. Kamel  
Director, NRC/Cairo  
Visit to U.S.A., 2 weeks, program management purposes including review of senior advisor candidates, instrumentation maintenance and repair contract (NBF) and R&D management education.
3. Dr. A. S. El-Nockrashy  
ASRT  
Visit to U.S.A.; 6 weeks; program management purposes with NAS/NRC, NSF, and AID; orientation visits and research related discussions at Wisconsin, USDA (New Orleans), Texas A&M, and Denver Research Institute.

August

1. Jay Davenport  
Program management visit to Egypt, 2 weeks.
2. NRC Senior Advisor Candidate  
Program orientation visit to Egypt, 7-10 days.
3. ASRT Senior Advisor Candidate  
Program orientation visit to Egypt, 7-10 days.

September

1. Dr. Osman Galal  
NRC/Cairo  
Visit to U.S.A., 2 weeks, on More and Better Food. Principal focus: human nutrition. Visits planned to UCLA, Oklahoma, North Dakota, New York, Boston, and Washington, D.C.
2. Dr. A. A. Abdel Azim  
Central Metalurgical Research  
and Development Institute  
NRC/Cairo  
Visit to R&D Laboratories in U.S.A. for research management and planning, 3 weeks. (Note: Canadian visits financed by the Canadian International Development Agency.)



## ANNEX A

### SUMMARY REPORT FIRST MEETING JOINT CONSULTATIVE COMMITTEE

#### APPLIED SCIENCE AND TECHNOLOGY PROGRAM

U.S. National Academy of Sciences- Academy of Scientific Research  
National Research Council and Technology, Arab Republic of  
(NAS/NRC) Egypt (ASRT)

Cairo, Arab Republic of Egypt  
May 6-9, 1978

#### I. Background

The Applied Science and Technology Program managed by the Academy of Scientific Research and Technology, Arab Republic of Egypt (ARST), is designed to improve the institutional capability of the Egyptian scientific and technical community in developing and managing research programs dealing with priority development problems. It is the product of joint planning by scientific, technical and economic assistance representatives of the two governments during the period from May 1975 until late March 1977 when a formal agreement was signed.

In late December 1977, the U.S. National Academy of Sciences/ National Research Council (NAS/NRC) was selected by the U.S. Agency for International Development (AID) as the principal American contractor for the areas of policy planning, management, research project support, demonstration project support and long-range (Phase II) planning for years 3-5. The U.S. National Science Foundation is the second principal cooperating agency and is responsible for provision of scientific equipment including training, maintenance and repair, and for the program area dealing with scientific and technical information systems. The National Research Centre (NRC), an autonomous unit of ASRT, also plays a key operational role in the program.

Day-to-day management of the Applied Science and Technology Program is the responsibility of Egyptian and U.S. representatives designated by the four principal cooperating parties. To provide for policy oversight, to set goals, to judge progress and to review periodically the results of the various elements of the program, a Joint Consultative Committee (JCC) is provided for in the agreement. The JCC is advisory to the ASRT; its influence depends upon the experience of the members and their powers of persuasion. In effect the JCC is a "Board of Directors" with advisory authority rather than direct operational responsibility. The agreement calls for meetings of the JCC at approximately six-month intervals in Cairo or the U.S.A.

Membership of the JCC as of May 1978 is as follows:

1. Dr. A. M. Abou El-Azm, President, ASRT. (Chairman)
2. Dr. H. Guyford Stever, former Science Advisor to President Ford and former Director, U.S. National Science Foundation. (Chairman, U.S. Panel)
3. Dr. George Bugliarello, President, New York Polytechnic Institute. (U.S. Panelist)
4. Dr. Moustafa Hafez, Science Advisor to ASRT and Chairman, Environmental Research Council. (Egyptian Panelist)
5. Dr. James Hillier, Executive Vice President and Chief Scientist (retired), RCA Corporation. (U.S. Panelist)
6. Dr. Mahmoud Riad, former Minister of Communications; Secretary General, Arab Telecommunications Union and Chairman, ASRT Electronics and Applied Research Council. (Egyptian Panelist)

## II. Events of the First Meeting

With the appointment of the Egyptian and U.S. members of the Joint Consultative Committee, a date in early May 1978 was agreed to for the first meeting and Cairo selected as the meeting site. ASRT and NAS/NRC staff prepared the agenda (Annex I) and invited the participants (Annex II).

Of necessity, the first meeting required several orientation sessions for the two groups of panelists. In particular, the goals of the U.S. panel were to understand (a) the roles of the ASRT and the NRC in Egyptian science and technology, (b) the aspirations of the Egyptians for the Applied Science and Technology Program, (c) the human and material resources of the Egyptian scientific community, (d) some points of strength and excellence in the Egyptian scientific community, (e) some areas in which Egyptian scientific leaders desire U.S. collaboration, and (f) how the two principal organizational entities (ASRT and NAS/NRC) may best work together to achieve the jointly agreed upon program goals.

Notable activities during the four-day meetings included:

- A presentation by Dr. Abou El-Azm of the role of the Academy of Scientific Research and Technology, its structure, method of operation through its councils and principal committees, and its emphasis upon programs having direct application to Egyptian economic development problems. This presentation was followed by questions and discussion to help the U.S. panelists understand the context of Egyptian research and development activities.

- A presentation by Dr. M. Kamel on the historical development of R&D at the National Research Centre. Stress was placed on new efforts to plan R&D and to contract for programs that have priority interest.

- Discussion and approval of criteria for projects under the Applied Science and Technology Program.

- Discussion of the elements to be included in the NRC demonstration project "More and Better Food."

- Presentation and discussion of four proposed ASRT research and development projects (Red Sea Fisheries Development, Evaluation of Phosphate Ceres for Fertilizer Production, Consequence of Loss of Nile-Silt on Downstream Soil and Changes in Nile Water Composition as a Result of Storage at the High Dam).

- Presentation and discussion of a proposed ASRT demonstration project to study the consequences of the mechanization of Egyptian agriculture.

- Visits to NRC laboratories engaged in research on Egyptian plants having potential pharmaceutical applications and on solar energy applications in water heating, cooling and power generation.

- A visit to Alexandria University to assist in the conceptualization of a computer facility for engineering education and research.

- Discussion of R&D management training courses within ASRT and NRC.

- Presentation of the goals of the NSF projects (instrumentation and science information systems) under the Applied Science and Technology Program.

### III. Conclusions and Follow-Up

#### A. Formal Agreements

In order to fulfill "conditions precedent" in the contractual agreement for the Applied Science and Technology Program between the ASRT, acting for the Government of Egypt, and the AID, acting for the Government of the United States, the JCC formally agreed that:

1. Criteria for selection of specific Research & Development and Demonstration sub-projects are as follows:

- They must be relevant to critical national development priorities.
- The design must be geared to the solution of critical development problems.
- They must involve a substantial interdisciplinary effort, and the mobilization of a variety of scientific specialties and institutions (multidisciplinary participation,

and cooperation between different research institutions).

- They must provide an explicit framework within which management and technical training and experience can take place, and through which the Academy can develop recognition of its role as coordinator and stimulator among research and user communities.
- User participation must be provided for so that practical use applications are built into objectives.
- Appropriateness of technology must be considered; e.g., labor-intensive, adaptation to local materials, applicability to existing skills.

2. There is a need for a core capability in the following areas (both for the ASRT and NRC): management and scientific planning, marketing and allied specialties, technology assessment, maintenance and repair of equipment and scientific and technical information.

3. The "More and Better Food" sub-project is selected to be implemented and meets the criteria listed under I, above.

4. The following Demonstration sub-project and R&D sub-projects also meet the criteria:

- Replacement of work animals with mechanical power in Egyptian agriculture
- The consequence of the loss of Nile-silt as a result of the High Dam on the properties and microbiology of soil
- The changes in composition of Nile water as a result of storage
- Red Sea fisheries
- Evaluation of Egyptian phosphate ores.

5. Suitable advisory mechanism will be developed for each project selected. Appropriate staff will be provided to implement this advisory function.

#### B. Follow-Up Activities

1. The most immediate follow-up activity will be undertaken in Washington to make arrangements for the visits of Drs. Abou El-Azm, Kamel and El-Nockrashy:

- Dr. Abou El-Azm will be traveling to Toronto, Canada, (July 9-14, 1978) as the Egyptian Representative for a meeting of the International Union of Pure and Applied Chemistry (IUPAC). His schedule also includes Washington (July 5-7) and New York (July 8).

- Dr. Kamel will attend the meeting in Toronto, visit IDRC in Ottawa (July 15-18), the University of Wisconsin (July 19-20) and Denver Research Institute (July 21-22). Prior to the IUPAC meeting he will visit Washington (July 2-8) and, if possible, the Research Triangle Institute (July 3) in North Carolina.
- Dr. El Nockrashy's visit is one of R&D management orientation and special training. He is scheduled to accompany Dr. Kamel on his U.S. visits, make additional visits relating to responsibilities in nonconventional protein R&D, and spend time with NSF and NAS/NRC relating to program management. He will return to Egypt in mid-August.

2. Alexandria University is planning a large computer facility in its Faculty of Engineering for use as a research tool and in teaching. Under JCC guidance, a visiting team of computer specialists from the U.S.A. is to be assembled to help Alexandria better assess present needs for teaching, research and extension application. Particular attention will be given to manpower training needed to teach computer science and its applications in the University. The team will also survey the current situation in Egypt regarding numbers and kinds of computers, computer use and demand, and manpower in an effort to make recommendations regarding future growth patterns.

The U.S. team will be formed after consultation with NSF to utilize the Foundation's long experience in assisting colleges and universities examine their computer science teaching and research needs. The team will be representative of the experience with large computer facilities as well as the trend toward smaller, less expensive and more specialized machines.

The computer science study team is proposed to visit Egypt for two weeks in early September.

3. A proposed schedule for the second meeting of the JCC is as follows:

- Sunday, October 29, 1978: Arrival of the Egyptian panel in Washington
- Monday, October 30, 1978: Meeting of the JCC at the National Academy of Science
- Tuesday, October 31 to  
Friday, November 3, 1978: Visits of Egyptian panelists (to be arranged)
- Saturday, November 4, 1978: Final Session JCC
- Sunday, November 5, 1978: Return to Cairo

4. Other activities (looking toward Phase II):

- The ASRT will make a presentation at the second JCC meeting for the establishment of an engine testing laboratory at the Petroleum Research Institute as an ASRT research and development sub-project.
- Dr. Riad will make a presentation in October concerning a survey of electromagnetic propagation in Egypt and the preparation of a map, also as an ASRT R&D sub-project.
- Planning for Phase II will be discussed as an agenda item; a background presentation for the JCC will be developed by the Egyptian and U.S. staff.

AGENDA: First Meeting

Joint Consultative Committee

APPLIED SCIENCE AND TECHNOLOGY PROGRAM

U.S. National Academy of Sciences-  
National Research Council  
(NAS/NRC)

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

Cairo, Arab Republic of Egypt  
May 6-9, 1978

Saturday, May 6, 1978

Session I

9:00 - 9:30 a.m.

- a. Welcome by Dr. A.M. Abou El-Azm,  
President, Academy of Scientific  
Research and Technology (ASRT).
- b. Response by Dr. H. Guyford Stever,  
Chairman, U.S. Panel.
- c. Remarks by Mr. Donald S. Brown,  
Director, U.S. AID Mission in Cairo.

9:30 - 9:45 a.m.

Coffee

9:45 - 12:00

- a. Goals of the Applied Science and  
Technology Program, Dr. Abou El-Azm.
- b. International Programs of the  
National Academy of Sciences/  
National Research Council (NAS/NRC),  
Dr. Victor Rabinowitch.
- c. International Programs, U.S. National  
Science Foundation, Mr. Eugene Pronko.
- d. The U.S. AID Program in Egypt, Mr.  
Donald S. Brown.

2:00 p.m.

Lunch (Hotel Meridian)

Session II

6:00 p.m. - 8:00 p.m.

- a. Work of the National Research Centre  
(NRC), Dr. M. Kamel Mahmoud.

Saturday, May 6, 1978, continued

- b. Contracting System of NRC, Dr. F. Ramadan.
- c. Programming at NRC, Dr. A.M. Shams El-Din.
- d. More and Better Food Project, Dr. Osman Galal.
- e. Instrumentation, Eng. M. Ali-Alaily.

Sunday, May 7, 1978

9:30 - 10:00 a.m.

- a. General Orientation, National Research Centre, Dokki, Dr. M. Kamel Mahmoud.

10:00 - 11:00 a.m.

- b. Opening Session: Conference on the Development of the Western Desert.

11:00 - 12:30 p.m.

- c. Visit to NRC laboratories (pharmaceuticals from natural products and and solar energy R&D).

1:00 - 3:00 p.m.

- d. Cairo University  
Cairo-MIT Project - Dr. Shahbander  
Systems and Biomedical Engineering-  
Eng. A. Rashwan  
Ultrasonics in Medicine - Dr. Galal Said

Monday, May 8, 1978

Day

- a. Dr. James Hillier accompanied by Dr. T. Al-Tablawy. Travel to Alexandria to visit Alexandria University, Faculty of Engineering, Centre for Postgraduate Studies and the Phillips Co.
- b. Drs. Stever, Bugliarello and Rabinowitch to visit the Petroleum Research Institute - Dr. Bahraz Mahmoud, Director.
- c. Science Program and Policy Planning, Dr. W. Shendi, President, Arab Development Bank, Cairo.

Evening

Reception - Mr. Donald S. Brown, AID Mission Director

Tuesday, May 9, 1978

9:30 - 12:30 p.m.

- a. Criteria for Selection of R&D Projects and Demonstration Projects, Dr. S. El-Nockrashy.
- b. Discussion of R&D Projects
  - Red Sea Fisheries Development
  - Phosphate Ores for Fertilizer Production
  - Consequences of Loss of Silt Resulting from High Dam
  - Changes in Composition of Nile Water as a Result of Storage.
- c. Proposed ASRT Demonstration Project, Replacement of Work Animals with Mechanical Power in Egyptian Agriculture.

12:30 - 3:00 p.m.

Work of the Joint Consultative Committee

- Second meeting -- October 30 - November 3, 1978, in Washington, D.C., U.S.A.
- Increase members to five from U.S.A., five from Egypt and President, ASRT.
- Computer Science Education Group.
- Management Training Seminars.
- Phase II planning.

LIST OF PARTICIPANTS

FIRST MEETING  
JOINT CONSULTATIVE COMMITTEE

Applied Science and Technology Program

Cairo, Arab Republic of Egypt  
May 6-9, 1978

I. Joint Consultative Committee Members

- Dr. A. M. Abou El-Azm (Chairman) President, ASRT
- Dr. H. Guyford Stever (Chairman, U.S. Panel) Formerly  
Director National Science Foundation and Science  
Advisor to the President
- Dr. George Bugliarello, President, New York  
Polytechnic Institute
- Dr. Moustafa Hafez, Science Advisor to ASRT
- Dr. James Hillier, Ex-Vice President and Chief  
Scientist (ret), RCA Corporation
- Dr. Mahmoud Riad, Former Minister of Communications

II. Non Members, ARE

- Dr. M. Kamel, Director, National Research Centre
- Dr. G. Abdel Samie, Vice President, ASRT
- Dr. M. B. Fayez, Vice President, ASRT
- Dr. A. Abdel-Latif, Sec. Gen., ASRT
- Dr. A. Azzam, Scientific & Cultural Counsellor, USA
- Dr. F. Ramadan, Sec. Gen., NRC
- Dr. A. M. Gad, Head, National Information & Documentation Centre
- Dr. A. M. Shams El-Din, Director of Programming, NRC
- Eng. M. Alalaily, Head, Scientific Instrumentation Centre
- Dr. A. S. El-Nockrashy, Head R & D Office, ASRT
- Dr. H. K. Imbaby, Instrumentation & Training, NRC

Dr. M. H. Fadl, Program Manager, ASRT  
Dr. O. Galal, Head, Nutrition R & D, NRC  
Dr. Hatem M. Ali, Program Manager, NRC  
Dr. D. E. Hassanin, Program Manager, NRC  
Dr. A. Al-Naggar, Program Manager, AERE  
Dr. T. Al-Tablawy, Program Manager, NRC

III. Non Members, USA

Mr. Donald S. Brown, Director, U.S. AID Mission, Cairo  
Dr. Stanley Applegate, Asst. Director, U.S. AID Mission,  
Cairo  
Dr. Victor Rabinowitch, Director, Board on Science &  
Technology for International Development, National  
Academy of Sciences, Washington  
Mr. James B. Riley, Head, Science & Technology, USAID, Cairo  
Mr. Eugene Pronko, Senior Program Director, Division of  
of International Programs, NSF, Washington  
Mr. Jay Davenport, Professional Associate, Board on Science  
and Technology for International Development, National  
Academy of Sciences, Washington.

## ANNEX B

### Position Description

#### Senior Advisor for NAS/NRC\* Activities with the Egyptian National Research Centre

I. Function. The Senior Advisor is responsible to the Director of the Board on Science and Technology for International Development (BOSTID) for management of program activities in Egypt with the National Research Centre. The locale of the program is Cairo (Dokki), Egypt; the Senior Advisor must exert a high degree of initiative and responsibility in working with the Director of the Centre and his division heads in planning and implementing joint projects involving R & D management training, technical evaluation of ongoing R & D efforts, and selection of new projects closely identified with social and technical development priorities. The Senior Advisor will also serve as a member, ex officio, of the Joint Consultative Committee (JCC) which is the on-going advisory group responsible to both the NAS-NRC and the Egyptian Academy of Scientific Research and Technology (ASRT) for the program.

II. Responsibilities and authority. The Senior Advisor will work in Cairo at the Centre with the director and senior staff in:

1. Planning research and development sub-projects and demonstration sub-projects for which the Centre is responsible.

2. Evaluation of ongoing R & D projects of the Centre.

3. Planning seminars, short courses and other activities for senior staff on R & D management.

4. Providing guidance in the identification of, and liaison with, appropriate U.S. institutions and agencies in utilizing the technical assistance available under the program.

5. Providing information on contract administration and management as practised in the U.S.A. and giving guidance, when appropriate, to the Egyptians as the Centre adapts its R & D practices to new opportunities.

6. Serving as a member ex officio of the U.S.-Egyptian Joint Consultative Committee.

7. Provide information on programs and activities undertaken (see next page) by other agencies and groups dealing with science and technology in Egyptian development. These include U.N. agencies, non-U.S. government groups and organizations, U.S. government agencies, U.S. universities, foundations and private non-governmental groups.

\*NAS/NRC = U.S. National Academy of Sciences/National Research Council

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8. Keeping abreast of current scientific, economic, social and political developments relating to Egyptian technical-economic development. Furnishing the information in timely and coherent fashion to the U.S. panel of the JCC, the Chairman and Staff Director of BOSTID and other groups within the NAS-NRC complex as may be appropriate or requested.

9. Preparing periodic and special reports and correspondence as required by the BOSTID Director.

### III. Relationships

A. With the Board on Science and Technology for International Development - Reports to the Director.

B. With the National Research Centre - Serves as an Advisor to the Director and to other senior staff as may be determined by the Director.

C. With the U.S. AID Mission to Egypt - Serves as a contact person for information concerning NAS-NRC joint programs with the National Research Centre.

D. With the Senior Advisor to the Academy of Scientific Research and Technology (ASRT) - The Senior Advisor to the ASRT is the representative for the NAS-NRC in Cairo. The Senior Advisor to the National Research Centre administratively coordinates his activities through the Staff Director, BOSTID, in Washington, U.S.A.

E. Maintains such other relationships with the NAS-NRC complex, officials of Egyptian ministries and organizations, U.S. AID officials and other organizations both in the USA and in Egypt as are necessary for the accomplishment of the program.

### IV. Skills needed

1. Experience in applied research management either in industry or government.

2. Knowledge or background on scientific matters, both natural and social sciences, especially as they relate to economic and social development.

3. Experience in working with foreign nationals preferably from service overseas in a country of the "third world."

4. Experience in program planning and management at the level of director or equivalent, preferably with service overseas in a developing country situation.

V. Education and experience requirements

1. Ph.D. in engineering, physical or biological sciences, or in combination with economics.

2. Research management at senior level in industry, government or private R & D institution for at least 10 years. Some of the experience should be in a developing country institution.

Applied Science & Technology  
Research in Egypt

Contract AID/NE-C-1474

Expenditures, December 16, 1977 - June 30, 1978

Personal Services					\$12,267
Fringe Benefits					4,654
Travel					
domestic		\$2,009			
international		1,765			3,774
Communications & Shipping					576
Materials & Services					216
Indirect Costs					<u>8,810</u>
					\$30,297