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APPLIED SCIENCE AND TECHNOLOGY PROGRAM IN EGYPT

OVERVIEW AND INPUTS FOR EVALUATION

PROJECT 263-0016

Prepared by

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FORWARD

This report was prepared by the U.S. National Science Foundation to assess development impacts of its program activities, specifically, the Science and Technology Information Component and Instrumentation Technology Component of the Applied Science and Technology Program.

This report, which covers Phase I activities from the program's inception in 1977 through February 1980, addresses project progress in terms of overall program goals and objectives and identifies achievements, unexpected benefits, problems, constraints, and possible solutions to problems.

This document served as an input for the Joint Consultative Committee's "self-evaluation" which took place during the Fifth Meeting in Washington, D.C., February 25 - 27, 1980.

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EVALUATION OF S & T INFORMATION COMPONENT

I. BACKGROUND

For a concise summary of project goals/objectives and of project status, see the Executive Summary Document prepared for the fifth JCC meeting.

II. KEY QUESTIONS

A. Goals/Objectives

How does the S&T Information Component meet the overall goals/objectives of the Applied Science and Technology Program?

---Scientific and technical information increasingly is recognized as an essential factor in addition to human, economic, technical and physical factors in the organic process of development. As such, a country's S&T information resources, and access to and use thereof, are critical to both scientists and policy and decision-makers. The STI component, proposing to develop a national S&T information system which will improve access and use of S&T information resources, is therefore directly relevant to , inherent in, and supportive of the overall goals/objectives of the Applied Science and Technology Program and figures as a major element in the infrastructure not only of Science and Technology but also social and economic development.

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B. Plan

Has a detailed project plan been developed and is it being implemented?

---A Project Management Plan, developed jointly by NSF and ASRT/NIDOC, contained a detailed outline of a general plan for the overall design study, computer-accessed information delivery service experiment, current information resources planning study, and the in-service training project. This detailed outline was refined subsequently into detail specifications in the Requests For Proposals (RFPs) for technical advisory and assistance services. Based on the foregoing, a final detailed work plan and schedule for implementing the projects was developed by the Egyptian STI Steering Committee and the two U.S. contractors (Georgia Tech and Catholic University) in November 1979.

---The work in both the Design Study (including the computer-accessed information experiment and the currrent information resources plannning study) and the In-Service Training Project is proceeding on schedule according to the November 1979 detailed work plan.

C. Accomplishments to Date

1. Are expected achievements being realized qualitatively and/or quantitatively?

---With NSF cooperation with ASRT antedating (April 1976) its formal involvement in the AID/ASRT S&T Program (September 1978), a number of accomplishments resulting from NSF advisory or technical assistance may be cited in three major areas:

* Improved Access to S&T Information

  -- 1 million NTIS R&D reports

  -- 2,500 new reports every two weeks

  -- Special announcement bulletins in food, chemistry, energy, and library and information science

  -- Bibliographic (microfiche) Index to 175,000 reports

  -- 500 NSF-supported technology transfer reports; printed index to 2500 TT reports

* Provision of Microfiche Readers and Telex

  -- User preference evaluation program

  -- Six microfiche readers, including a reader/printer

  -- Telex installed in ASRT introducing potential for access to world's S&T bibliographic databases (over 50 million citations)

* Training of Information Specialists

  -- Orientation training tour of U.S. information centers and facilities

  -- NTIS Information Systems Workshop

  -- Planning for abstracting and indexing workshop

---NSF contract with Georgia Tech providing methodological guidance and technical assistance in the Planning and Design Study for the S&T Information System/Services in Egypt (Oct 1979)

---NSF contract with Catholic University for development and direction of an in-service training program for Egyptian information specialists (November 1979)

---First group of five trainees begin in-service training at Catholic University in January 1980

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---Georgia Tech Design Study Team Consultants launch system analysis phase of Design Study in Cairo in January 1980

--- Design Study and In-Service Training are on schedule

2. Are there foreseen economic, social and environmental benefits?

---Insofar as information, and especially S&T information, is an infrastructure element in the economy and society of the country, there can be no question of information's significance to economic, social and environmental development over the long-term (once an effectively operating system is in place).

D. Project Management

1. Has an appropriate management structure been established and is it functioning? Does the project involve a good base of the S&T community?

---In August 1979 an Egyptian STI Steering Committee (STISC) was established consisting of representatives of NIDOC, research institutions, universities, ministries, the private and information sectors. Chaired by NIDOC, the Committee accomplishes the work of the project through four major task groups (surveys, NIDOC system/national services, information manpower, information policy and plan) and a liaison secretary. NIDOC, as Egyptian focal point (executive agency), and the STISC interact directly with the Georgia Tech contractor in receiving methodological advice and technical assistance in carrying out the various project tasks. Having completed its pre-contract-phase responsibilities for

project design, development of a project management plan and detailed RFP specifications, and contract procurement, NSF has receded to the role of program monitorship and management of the U.S. technical resources involved in assisting Egyptian implementation of the project, and securing appropriate external evaluation of project programs in their achievement of stated goals/objectives. Communications between principals in the management structure continues to be problematic and is discussed in Section II.D.3.

2. Does the project strengthen direct linkages between the management organization and end-users?

---Although most, if not all, members of the Egyptian STISC are active members of the "end-user" community, it is too early in the proejct life cycle to determine how effective this linkage will be. Each of the STISC members, however, is encouraged and expected to play a leadership role in promoting access to and use of the new information resources about to be made available through the national system/services being designed. The Phase II Plan more explicitly recognizes the need for "intensive sensitizing of key user constituencies to information products and services" by making this one of its key objectives. Avhievement of this objective envisions development and operation of various kinds of user training programs.

3. <u>Has the reporting system been operating satisfacorily?</u>

--- U.S. contractor-reporting to NSF is real time and satisfactory in the form of monthly letter reports and site visit reports. NSF reports semiannually to AID on project progress. Copies of such reports are available to the principal parties. To avoid bureaucratically induced reporting delays created by too many channels through which reports may be submitted (e.g., NIDOC-to-ASRT-to-AID Mission-to-AID Washington-to-NSF-to- NSF contractors and vice versa), communication or transmittal of reports/documents takes place directly between NIDOC and the NSF contractors with information copies being sent simultaneously to all other parties. Nevertheless, reports generated in Egypt to be sent to NSF and its contractors and vice versa are still subject to delays in transmittal over great geographic distrances. The Georgia Tech contractor and NIDOC are now experimenting with the possibility of conveying documents and information via computer communications over a digital data communications (voice-grade) line.

E. Problems/Constraints and Solutions

What major problems and constraints have been encountered? Have solutions been found?

1. Problem: Unusually long project start-up time -- 18 months (March 1977 - September 1978) to develop project design, project management plan, and RFP specifications; and 11 months (January 1979 - November 1979) for procurement of technical contract services.

   Solution: This matter is now behind us. Contracts for both the Design Study and Training were awarded in Fall 1979 and are now proceeding on schedule.

2. Problem: Transmittal of communications between Egypt and the United States.

   Solution: A possible solution is discussed in Section II.D.3.

3. Problem: Since its inception, the Egyptian STI Steering Committee (STISC) has assumed an operational role ("building a camel by committee") rather than one that is advisory/supervisory (steering) in nature.

   Solution: The Task Groups under STISC will now be staffed with a more stable core of Egyptian project professionals, thus freeing the STISC members from operational participation and allowing them to exercise their advisory/supervisory role.

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4. Problem: Technical/Operational Management Responsibility.

With four task groups operating under STISC there is a pressing need for providing centralized, daily, technical direction for operational performance aspects of project execution.

Solution: A full-time Egyptian Technical Project Manager is being hired to inegrate and coordinate project task activities.

5. Problem: Need to assure that the new skills and expertise of professionals formally trained under this project will be effectively utilized on the trainees' return to his employing institution in Egypt.

Solution: Problem and possible solution discussed in Section II.E.b of "Evaluation of Instrumentation Technology Component" (page 12).

EVALUATION OF INSTRUMENTATION TECHNOLOGY COMPONENT

I. BACKGROUND

For a concise summary of the Instrumentation Technology (IT) component goals/objectives and of project status see the Excutive Summary Document prepared for the fifth JCC meeting.

II. KEY QUESTIONS

A. Goals/Objectives

How does the IT component meet the overall goals/objectives of the Applied Science & Technology Program?

---The IT component is aimed at developing institutional capability in maintaining and repairing (M&R) scientific instruments for use in ASRT sponsored applied research.

---The IT component is multi-institutional in character with the following organizations actively participating: National Research Centre (NRC); Scientific Instruments Centre (SIC); Universities of Alexandria, Assiut, Cairo, El-Minia, and Tanta; University of Wisconsin Instrumentation Systems Center (UW/ISC); and National Institutes of Health Biomedical Engineering and Instrumentation Branch (NIH/BEIB).

B. Plan

Has a detailed project plan been developed and is it being implemented?

---An NSF project management plan was developed in January, 1978. This plan was revised by NIH/BEIB and UW/ISC in their subcontracts with NSF (effective Dec. 78 and April 79, respectively). These plans are being implemented.

C. Accomplishments to Date

Are expected achievements being realized?

---M&R facilities are operational at all institutions. Scientific instruments are being repaired by returned trainees at the NRC, Assiut, Tanta, & El-Minia Universities. Administrative procedures at the M&R facilities are still being developed. Project execution was on schedule until Oct, 79 when a problem occurred with the second group of trainees. This group of 16 trainees was delayed in order to first satisfy USAID English language proficiency requirements. This has now been completed and departure is scheduled for March. M&R training schedule has thus slipped five months.

---Alexandria University was added to the original four universities in late 79. The first trainee from Alexandria is to travel to NIH/BEIB in March, 80. Planning for the M&R facility at Alexandria has just recently been initiated.

D. Project Management

1. Has an appropriate management structure been established and is it functioning?

---On paper the management structure seems appropriate, but, in fact, has not functioned well. A major problem has been in the Egypt-U.S. communication linkages. This is discussed in section E (Problems/constraints, and solutions).

2. Has the reporting system been operating satisfactorily?

---Subcontractor reporting is accomplished through monthly reports from UW/ISC & NIH/BEIB to NSF, which sends the reports to USAID/Cairo. In addition NSF writes semi-annual reports for USAID. Status reports have been prepared for the JCC meetings.

E. Problems/constraints, and solutions

What major problems/constraints have been encountered and what solutions have been found/proposed?

---There are two major problems in the IT component.

a. The first is the difficulty of Egypt-U.S. communications as well as communication within Egypt. This problem will be greatly alleviated by the establishment of a proposed NSF Egyptian coordinator (Professor Muhammed Shaltoot). He will serve as central focal point for communication/coordination in Egypt for both Egyptian and U.S. participating institutions. In this capacity he will act as clearing house for all NSF-Egypt communications, arrange and assist in logistics

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of NSF & contractors' visits to Egypt, and represent NSF at Program meetings in Egypt. In addition, Professor Shaltoot will also be the IT Egyptian technical project director.

b. The second is the problem of the low salaries paid to Egyptian engineers. An engineer trained at UW/ISC will earn at most $100/month at the NRC. In the private sector in Cairo he could make three times that (and much more if he went to the Gulf). This is a fundamental problem in Egypt, in no way unique to this program. Outside Cairo the problem is less serious because the private sector is not as well developed, yet. The problem of salaries has made Phase I implementation tedious, at best, and poses a serious threat to the success of the IT component. One manifestation of this problem is the reluctance of trainees to return from the U.S. The trainee from Cairo U has, in fact, remained illegally in the U.S. (The U.S. Immigration Service has been notified and will take necessary action.) As a result of his failure to return, Cairo U has not benefited yet from M&R training program.