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APPLIED SCIENCE AND TECHNOLOGY RESEARCH IN EGYPT
DEVELOPMENT OF EGYPTIAN SCIENTIFIC AND TECHNICAL INFORMATION SERVICES

FINAL REPORT

September 1978 - April 1982

AID PASA NF/EGY-0016-7-77
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Division of International Programs
Directorate for Scientific, Technological and International Affairs

NATIONAL SCIENCE FOUNDATION
Washington, D.C.

This is the final report on Part A, "Scientific and Technical Information Services," under PASA No. NF/EGY-0016-7-77. A separate report has been prepared for Part B, "Instrumentation Technology." Both reports have been prepared for the U.S. Agency for International Development by the staff of the Division of International Programs, Directorate for Scientific, Technological and International Affairs, National Science Foundation.

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ACKNOWLEDGEMENTS

Many persons in Egypt and the United States participated in Phase I of the project to develop Egyptian scientific and technical information services that are national in scope. Some of this participation pre-dates the formalization of the project under the U.S. Agency for International Development (USAID) and Egyptian Academy of Scientific Research and Technology (ASRT) Project Grant Agreement (1977). So numerous are the individuals who have been involved over the years since 1974, when it all actually began, that it would be impossible to acknowledge the individual contributions without slighting some individuals in the process. Similarly, it is impossible within the scope of this report to acknowledge the contributions of all involved institutions, both U.S. and Egyptian. However, the key roles played by USAID, the Egyptian ASRT, and the contractors (The Georgia Institute of Technology and The Catholic University of America) should be noted.

All individuals and institutions, in one way or another, through their cooperation, interest, time, expertise, advice, counsel, guidance or encouragement have contributed to the realization of Phase I. Without this kind of involvement Phase I of the Egyptian STI Project would never have become a reality. NSF extends its grateful appreciation to all who participated.

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FINAL REPORT
ON
DEVELOPMENT OF EGYPTIAN SCIENTIFIC AND TECHNICAL INFORMATION SERVICES
PHASE I

I. INTRODUCTION

The final report under PASA NF/EGY-0016-7-77 basically summarizes project results and their evaluation, and highlights the project activities during seven previous reporting periods, including the final months of Phase I. A fiscal summary of project expenditures, a listing of travel undertaken during the final period, and some general comments and observations on project management and results are also presented. A bibliography of technical reports is appended.

II. BACKGROUND

In March 1977, AID and the Egyptian Academy of Scientific Research and Technology (ASRT) signed Project Grant Agreement No. 263-0016 which, among other things, set forth in general terms the scope of Phase I of a program for improvement of scientific and technical information services in Egypt. Under PASA NF/EGY-0016-7-77 (September 25, 1978), the National Science Foundation undertook the general management support for the Scientific and Technical Information (STI) Project and the provision of appropriate technical services and assistance. A technical services contract procurement effort took place between October 1978 and November 1979. Two-year contracts were in effect from November 1979 to October 1981, and were extended to January 1982. Prior to AID assistance, the conceptualization and initial development of the project had its origin in the work of the U.S.-Egypt Joint Working Group on Technology, Research and Development (February 1975 - March 1977).

The primary objective of the Phase I, two-year effort, was to establish the basis for longer term development of a nationwide system of scientific and technical information services. Four concurrent activities were undertaken: (1) design study for a nationwide system of STI services; (2) a pilot experiment with a computer-accessed information service; (3) a Stage I planning study to identify the documentary literature for subsequent Stage II acquisition and delivery; and (4) a short-term, non-degree training program in the United States for Egyptian information specialists.

III. PROJECT ORGANIZATION AND MANAGEMENT

On the Egyptian side, the responsibility for project organization and management rested with the Egyptian Academy for Scientific Research and Technology (ASRT), with the focal point being the National Information and Documentation Center (NIDOC) within ASRT reporting directly to the President of ASRT. A Steering Committee, comprised of 8-10 representatives of the Egyptian scientific, academic, public and private sectors, provided policy guidance and review throughout the course of Phase I. The Committee, originally chaired by the Director of NIDOC, was eventually headed by the President of ASRT. A Project Manager, with appropriate technical competence and experience, was responsible for overseeing the daily execution of assigned project tasks (mainly data collection and analysis).

On the U.S. side, under NSF general management, the necessary technical assistance and guidance to the Egyptians for implementation of project tasks was provided basically through two U.S. contractors: (1) The Georgia Institute of Technology (Dr. Vladimir Slamecka, Project Director) for the major design study project with its sub-project efforts on studying requirements for supplying current literature and an experiment with a database searching service; and (2) The Catholic University of America (Dr. Bahaa El-Hadidy, Project Director) for the conduct of a training program in the United States for Egyptian information specialists. Georgia Tech subcontracted to King Research, Inc. for assistance needed in the requirements study on supplying current literature and to the Price Gilbert Memorial Library at Georgia Tech for the database searching service experiment. For addressing a number of tasks involved in the systems analysis and design of a national scientific and technical information system Georgia Tech assembled a group of four to six senior experts in information sciences and technology under consulting arrangements from various parts of the United States.

The division of responsibility between the U.S. and Egyptian sides, and the actual nature of participation and interaction, was premised on the U.S. side providing advice of a methodological nature and technical assistance and guidance for implementation of project tasks, and the Egyptian side actually performing the analysis and design tasks under the "know-how" guidance of the U.S. contractor's technical expertise.

Before and after the signing of the U.S. - AID major Project Grant Agreement on Science and Technology, representatives of the ASRT and NSF developed jointly a project design, project management plan and the RFP specifications for contract technical assistance and expertise. NSF conducted the competitive contract procurement effort, with Egyptian ASRT officials participating in the evaluation of the technical offers and selection of the contractors.

IV. PROJECT RESULTS AND EVALUATION

Design Study

The outputs of the Phase I design effort are a series of technical reports corresponding to the major tasks addressed in the systems analysis and design study.

Four major technical reports essentially address the design and its implementation:

- o National System/Services Plan (The Design)
- o Implementation Plan (Schedule and Costs)
- o Manpower Development Plan
- o Proposed National Information Policy Draft Statement

Two study reports served as major input to the design activity and provided a basis for the design:

- o Assessment of Information Needs and Uses
- o Survey of S&T Information Resources

Several reports cover the design subprojects on the database search service experiment and the requirements for supplying current literature. A complete bibliographic listing of all major technical reports may be found in the Appendix.

In summary, the design study proposes establishment of a public utility for the management and use of S&T information. The relationship and functions of three autonomous groups comprising the national STI system (users, information services, and document repositories) are defined and explained. Technically, the national STI system is an undirected ("ring") network. With suitable telecommunications available it would allow the eligible user to communicate directly with any of its information services and document repositories. The method of governance of the system is influenced strongly by the system's structure and constituency. A "Council on Information Services and Resources", seen as a policy, planning, coordinating, and funding agent, not involved in the operation of information resources or services, is proposed and functionally defined. Its "Board" would be representative of the three major autonomous groups comprising the system. The budget level for such a system is estimated, in terms of 1981 dollars, to be equivalent to U.S. \$1.3 million, or about 2.5 percent of the Egyptian R&D budget.

Evaluation of the Design Study

For the Egyptian ASRT to accept the design study and its recommendations as feasible for implementation in Phase II of the Egyptian STI Project, it became necessary to provide an appropriate means for evaluating the proposed design. Based on an evaluation plan developed by NSF, an Evaluation Team, consisting of four Egyptian members and three international experts, reviewed the proposed Design and Implementation Plan, as well as other associated technical reports. The team, under the chairship of Dr. F. Karl Willenbrock, Professor of Engineering at Southern Methodist University, met in Cairo in March 1982. Their findings and recommendations, in general, indicated that:

- (1) Egypt could increase its rate of national development with the proposed national STI system;
- (2) The proposed design, implementation, and manpower development plans are sound and are compatible with the Egyptian environment;
- (3) The results of the initial phase of the project should be accepted by the Egyptian Government and USAID;
- (4) The detailed design and implementation phase of three-year duration should begin as soon as possible;
- (5) A systematic effort should be made to identify the most important user communities and have them participate actively in the detailed design and implementation phase (Phase II); and
- (6) A responsive project leadership and an effective decision-making mechanism should be developed.

The Evaluation Team also presented major specific findings and recommendations which, at a more detailed level, expand on and support the aforementioned general findings and recommendations. The Report of the Evaluation Team is listed in the bibliography in the Appendix.

Subprojects: Supplying Current Literature and Database Search Service Experiment

Supplying Current Literature

This subproject, subcontracted by Georgia Tech to King Research, Inc., Rockville, MD, contributed to the survey design for the assessment of Egyptian resource institutions (information centers and libraries, etc.) and the nature, scope and size of their collections. The most significant output of this effort, however, consists of lists of primary and secondary documentary sources. King Research, Inc. prepared two types of lists:

- (1) A selected list of journals and books in engineering, agriculture and public health; and
- (2) A selected list of reference books, abstracts and indexes in agriculture, engineering, medical and public health, and science and technology.

These lists are especially significant for a developing country in determining what information collections, at a minimum, will serve its needs. They are, to our knowledge, the first such systematic lists produced for a specific developing country's purpose.

Database Search Service Experiment

The object of the project was to experiment with and demonstrate the features and benefits of online access to or search of large-size computerized bibliographic databases (Dialog, Orbit, BRS, etc.). The only workable telecommunications link directly between Egypt and the United States for communication of search requests was Telex. The actual online searching was done by the staff of Price Gilbert Memorial Library at Georgia Tech. Documents, if requested as the result of a search, were sent to Egypt by available courier service. A specific training session in search request formulation and online searching techniques was provided at Georgia Tech and some of the database services for two key Egyptian information specialists. Training in Egypt was provided by a one-week workshop in Cairo in which 45 trainees, instead of the 35 planned for, participated.

Because of distance, language and other prohibitions, the project was laden with difficulties from its beginning. However, in spite of the difficulties, the experiment did provide valuable learning experience for all parties, but most of all it succeeded in evoking an enthusiasm and understanding among Egyptian information specialists, scientists and researchers of the value of having improved access to information via online databases. Egyptian popular response to use of the experimental services caused submission of requests several times in excess of the originally planned 150 subject-interest-profiles and 10-15 retrospective searches. It became necessary to provide additional funds to accommodate the over-demand for the service.

The final report, describing the experiment in detail, and an evaluation report by an outside expert are listed in the bibliography in the Appendix.

Training of Egyptian Information Specialists

Under the NSF Contract with The Catholic University's School of Library and Information Sciences, tailor-made, individual programs of training in library and information science skills were provided to selected Egyptian information specialists. Each program gave the trainee three different learning exposures: (1) course work, (2) on-the-job (in service) practice in an appropriate information center, service or activity in the public or private sector, and (3) attendance and participation in professional meetings, conferences, workshops or seminars occurring during the trainee's term of training.

A total of 15 Egyptian information workers from NIDOC, Cairo University, and other institutions received 105 months of non-degree training under the project. The scope of training tracks or skill areas was expanded from the original 5 to 14, and the number of trainees was increased from 12 to 15. The trainees came to Catholic University in four groups at four different and sometimes overlapping times. Except for the first group, the training period was limited to six months. Each trainee's progress was subjected to continuous evaluation by a specifically assigned advisor and the effectiveness of the training program overall was evaluated by an outside information science education expert. Feedback of such evaluation resulted in appropriate adjustments to individual training programs.

A formative evaluation, conducted by the outside expert, revealed that the entire program had exceeded the trainee's expectations, that the various elements in the program had a synergistic effect, and that the less formal elements in the program were as valuable as the formal elements. A summative evaluation, which included interviewing the trainees and their supervisors in Egypt after the training period, indicated that on-the-job the trainees had significantly improved their professional capabilities and attitudes, had new perspectives, and were performing their work with creativity and confidence. Several trainees were given increased responsibilities.

V. SUMMARY HIGHLIGHTS OF PROJECT ACTIVITIES

Highlights of project activities and progress were presented every six months in semiannual reporting to USAID by NSF. These highlights are summarized below for each of the reporting periods, thus presenting a chronology of significant project accomplishments. If details are desired, the reader is referred to AID for copies of these semiannual administrative reports.

1. October 1978 - March 1979

Project activity was concerned mainly with the planning and design of the Project, development of RFPs, and the competitive procurement of the necessary technical services.

2. April - September 1979

Selection of Georgia Institute of Technology as Contractor for the Design Study and Catholic University for the Training Program was made and final contract negotiations were begun. Preparations were also begun on the Egyptian side for initiation of both projects. A preliminary draft of a Phase II Plan for the S&T Information Project was developed jointly by NSF and ASRT.

3. October 1979 - March 1980

Two-year cost reimbursement contracts were awarded to the Georgia Institute of Technology (Prof. V. Slamecka) for the Design Study Project on October 15, and to Catholic University for the Training Project on November 12.

The period reflected intensive activity in project organization and initiation. The analysis phase of the design effort was begun by the visit to Egypt in January of a U.S. Design Study Team.

The Egyptian participation in project efforts was organized initially around a Steering Committee composed of four Task Groups and subsequently an Egyptian Project Manager. Several surveys of Egyptian information requirement and resources were gotten underway.

The first group of five trainees, all from NIDOC, began their specially designed programs in five different information-handling areas at Catholic University. Two trainees were sent to Georgia Tech and other institutions for training in online searching of computerized bibliographic databases.

The ASRT requested AID to provide a modest minicomputing facility for the project in Cairo and the contractor in Atlanta to serve as a word processor in drafting project reports, a communications processor for written messages (draft reports, etc.) between Cairo and Atlanta, and a data processor for handling small databases and training information specialists in the use of computer-based equipment for storage and retrieval of information.

4. April - September 1980

Egyptian project organization was reinforced by the appointment of a part-time Project Manager, however, the function, role and responsibility of the Steering Committee continued to require clarification and reorientation.

Data for the several surveys as collected but its preparation for computer input and analysis at the Cairo University Computer Center was beset by technical difficulties. A survey of major Egyptian library collections was designed and ready for implementation.

Two Egyptian information specialists received training in online database searching at Georgia Tech and subsequently assisted in the organization of a three week seminar in Cairo on the subject. The seminar was enthusiastically over-subscribed.

A bibliographic-search/document-delivery service was designed and initial operation implemented.

A stand-alone minicomputing facility for operation by the ASRT in Cairo was delivered to and checked out by Georgia Tech, whose contract was amended for this purpose.

Preliminary draft reports on a number of tasks were prepared and the schedule for interim reports was revised signifying an average slippage of 4.3 months from the original schedule.

The first group of five Egyptian trainees at Catholic University completed their programs successfully and returned to Cairo in August.

A second group of three trainees arrived at the same time. Experience with the first group and manpower training indications from the Design Study Project suggested certain modifications: increase in type and number of specialty areas, decrease in training time from nine to six months, and increase in the maintenance allowance of trainees.

5. October 1980 - March 1981

Egyptian project organization and management was reinforced as the Steering Committee was reorganized in March 1981 into an Executive Committee, under the chairmanship of the President of ASRT, to be concerned with major issues of policy and strategy. The Executive Committee endorsed a series of actions aimed at securing the completion of all surveys, proper analysis of survey data and the completion of all reports dependent on survey data by end of Summer 1981.

The survey of Egyptian Library collections was completed in December 1980.

The experiment with a Database Search Service took on greater momentum than anticipated with the total number of requests rising to 350 by mid-March 1981.

Similar minicomputing capabilities (PDP-11/03, 64K byte minicomputer, 5-megabyte hard disk, printer, modem, and software) were acquired and installed at the ASRT and Georgia Tech to assist the project in certain database applications, word processing and communications.

The third group of four trainees arrived at Catholic University in January 1981, and the second group of three trainees returned to Cairo at the end of February. The training program was modified to increase the total number of trainees and types of training tracks.

In December 1980, NSF organized a meeting at Catholic University to review both the Design Study and Training Projects. Consensus indicated that progress was adjudged to be satisfactory.

A draft plan for evaluating the overall STI Project in Phase I, submitted by NSF to ASRT and AID, was suspended pending ASRT determination of its preferences for evaluation.

6. April - September 1981

Drafts of two major technical documents were completed by Georgia Tech and delivered to the ASRT in September: "The Egyptian National System for Scientific and Technical Information: A Design Proposal" and "The National STI System of Egypt: Implementation."

ASRT issued a decree establishing the Egyptian project management structure for Phase II, consisting of a Board of Directors (policy), a Project Manager (day-to-day direction), and a technical implementation team (staff). This management structure is directly under the President of ASRT.

An amendent to the Georgia Tech contract provided additional funds to eliminate a backlog of 300 search requests in the Database Search Services experiment.

The minicomputing facilities at ASRT and Georgia Tech continued to experience telecommunications difficulties in using these facilities for transmission of data and other communications purposes between Egypt and the United States.

PASA NF/EGY-0016-7-77 was amended to extend it from October 31, 1981 to January 31, 1982, to provide additional funds for continuing the database search service and to provide sufficient time for completion of all technical project reports. Similarly, the Georgia Tech contract (NSF/INT-7924187) was extended.

The fourth and final group of trainees under the Catholic University training project contract (NSF/INT-7927016) arrived on May 1. The contract was amended to provide additional funds to accommodate 15 instead of the originally planned 12 trainees. All training activity proceeded on schedule.

Discussions continued between NSF, AID and ASRT on the nature of the evaluation to be made of the System Design and Implementation Plan being developed under Phase I.

7. October 1981 - April 1982

The final period of Phase I was marked by intensive activity and interaction between all Egyptian and U.S. participants. Efforts were directed mainly at completing all technical reports and planning and organizing for an external evaluation of the System Design and Implementation Plan. NSF prepared and presented to AID and ASRT a proposed evaluation plan which served as the basis for the external evaluation.

An evaluation Team of four Egyptian and three international experts met in Cairo in March to review the major technical reports, especially the proposed system design and implementation plan, and were unanimous in their findings that the proposed design and implementation plan were feasible for Egypt.

The PASA was extended until April 30, 1982 to accommodate the aforementioned evaluation.

The last group of trainees returned to Egypt in October. In November, the Training Project Director from Catholic University visited Cairo to survey interview the 15 trainees and their supervisors to determine the extent of transfer or use of the skills acquired to their present job situation. Findings indicated on the whole a favorable transfer and use of acquired skills, and in most instances former trainees were assuming active roles in the development/implementation aspect of the proposed national system.

Twenty-two final technical reports were delivered (the last being submitted in October 1982), and included five major reports on a system design, an implementation plan, a national policy for STI, a manpower development plan, and the experience of the training project.

VI. TRAVEL DURING FINAL PERIOD (OCTOBER 1981 - APRIL 1982)

To Egypt

October 1981

- Ms. Shams Mohamed Ali, Cairo University (trainee)
- Ms. Laila Hosein Kamil, Cairo University (trainee)
- Mrs. Yosriya Mohamed Zayed, Cairo University (trainee)
- Mr. Wahid El-Demerdash, ASRT (trainee)

November 1981

- Dr. V. Slamecka, Project Director, Georgia Institute of Technology
- Dr. B. El-Hadidy, Project Director, Catholic University

March 1982

- Dr. V. Slamecka, Project Director, Georgia Institute of Technology
- Dr. B. El-Hadidy, Project Director, Catholic University
- Dr. Jacques Michel, Evaluation Team (international expert from France)
- Dr. A. Neelameghan, Evaluation Team (international expert from India and the Philippines)
- Dr. F. Karl Willenbrock, Chairman, Evaluation Team (international expert from the United States)

VII. FISCAL SUMMARY

An accounting is given here only for U.S. Dollars expended under the PASA. Records of expenditures in Egyptian Pounds for international travel and per diem while in Egypt are maintained by the U.S. AID Mission in Cairo. as were the funds themselves. Each traveler was required to make full accounting to the Mission before departure from Cairo. Because it was not the practice to provide NSF with copies of the final approved vouchers or actual billings for airline tickets, NSF could not maintain accurate records on the use of these funds. What records were kept show that of the LE 112,000 allocated under the PASA for the STI Project, approximately LE 92,000 were utilized.

U.S. Dollar fiscal data provided below is based on Program records and may differ slightly from the official fiscal accounting records of NSF and AID when all commitments and obligations have been finally liquidated:

Total Funds Available (U.S. Dollars Only)	\$947,000
(1) Contract Awards	
(a) Georgia Tech (INT79-24187)	529,662
(b) Catholic U (INT79-2707)	370,768
(c) Evaluation Task Order (NS. -82-SP-0648)	<u>4,800</u>
	905,230
(2) Travel	23,201
(3) Administrative	3,304
Obligated/Expended	<u>\$931,735</u>
Balance	\$15,265

VIII. GENERAL COMMENTS ON PROJECT MANAGEMENT AND RESULTS

The results achieved by the project accord well with the objectives contained in the original plan and in the PASA. In some instances it is remarkable that certain objectives were achieved in view of difficulties both of a management and cultural nature. Where an objective or task turned out to be unrealistic or unachievable, appropriate mid-course modifications or adjustments were made that were within the original plan intention.

The basic difficulty throughout Phase I may be attributed to communications of several types. Some are cultural in origin and nature (as may be expected in a project of this kind), but for the most part they have had to do with the inconvenience and ineffectuality imposed by distance, or the lack of continuous on-site (in Cairo) availability of NSF project management and U.S. contractor technical expertise. At a distance, NSF could not be expected to provide overall project management assistance in a timely and effective manner. Similarly, and probably more importantly, neither could the U.S. contractor provide all the technical guidance and expertise that such a project by its very nature required on a daily basis. In effect, there does not appear to be reasonable substitute for daily face-to-face communications of management guidance and technical expertise in situations of this type.

APPENDIX

LIST OF TECHNICAL REPORTS DEVELOPMENT OF EGYPTIAN SCIENTIFIC AND TECHNICAL INFORMATION SERVICE

This bibliography lists 22 technical reports produced in Phase I of the Egyptian STI Project under USAID PASA NF/EGY-0016-7-77 and NSF Contracts INT-7924187, INT-7927016, and Purchase Order NSF-82-SP-0648.

Copies have been deposited with the National Technical Information Service (NTIS), U.S. Department of Commerce (5285 Port Royal Road, Springfield, VA 22161) and are available to the general public from NTIS in microform or hard copy at prices that are in effect at the time of purchase.

Copies are also available to AID, its bilateral program, and the development community by submitting requests to Development Information and Utilization Service, Bureau for Science and Technology, U.S. Agency for International Development, Washington, D.C. 20523, (Tel: 703/235-9037).

Design Study

1. Slamecka, V. THE NATIONAL EGYPTIAN SYSTEM FOR SCIENTIFIC AND TECHNICAL INFORMATION: DESIGN STUDY, November 1981. 131 p.
2. - -. THE NATIONAL STI SYSTEM OF EGYPT: IMPLEMENTATION, November 1981. 71 p.
3. - -. MANPOWER DEVELOPMENT FOR EGYPT STI SERVICES, January 1982. 52 p.
4. - -. A SURVEY OF SCIENTIFIC AND TECHNOLOGICAL INFORMATION RESOURCES IN SELECTED EGYPTIAN ORGANIZATIONS, September 1981. 52 p.
5. Adams, S., Madkour, M. A. K., Slamecka, V. A PROPOSED NATIONAL INFORMATION POLICY OF EGYPT, September 1981. 29 p.
6. Sarasohn, H. M. INFORMATION NEEDS AND USES IN EGYPT, August 1981. 70 p.
7. McCarn, D. B. CITATION PATTERNS OF SELECTED EGYPTIAN JOURNALS, May 1980. 24 p.

Reports 1-7 were prepared by project staff or consultants of the school of Information and Computer Sciences, Georgia Institute of Technology, Atlanta, GA, in cooperation with the National Information and Documentation Centre, Academy of Scientific Research and Technology, Cairo, Egypt, under NSF Contract INT-7924187 and USAID PASA NF/EGY-0016-7-77. The views and opinions expressed therein are those of the authors and do not necessarily imply official concurrence of the sponsoring agencies.

Supplying Current Literature

8. McDonald, D., Palmour, V., Wiederkehr, R., Yates, M. THE EGYPTIAN NATIONAL SYSTEM FOR SCIENTIFIC AND TECHNICAL INFORMATION: ALTERNATIVES FOR LIBRARY COLLECTION DEVELOPMENT, November 1981 (Rev. March 1982). 44 p.
- * 9. King Research, Inc., AGRICULTURE: A PRELIMINARY CORE LIST OF JOURNALS AND BOOKS. 1980.
- * 10. - - -. ENGINEERING: A PRELIMINARY CORE LIST OF JOURNALS AND BOOKS. 1980.
- * 11. - - -. PUBLIC HEALTH: A PRELIMINARY CORE LIST OF JOURNALS AND BOOKS.
12. - - -. A SELECTED LIST OF AGRICULTURAL JOURNALS PREPARED FOR THE ARAB REPUBLIC OF EGYPT. 1980. 13 p.
13. - - -. A SELECTED LIST OF AGRICULTURAL REFERENCE BOOKS, ABSTRACTS, AND INDEXES PREPARED FOR THE ARAB REPUBLIC OF EGYPT. 1980. 56 p.
14. - - -. A SELECTED LIST OF ENGINEERING REFERENCE BOOKS, ABSTRACTS, AND INDEXES PREPARED FOR THE ARAB REPUBLIC OF EGYPT. 1980. 67 p.
15. - - -. A SELECTED LIST OF MEDICAL JOURNALS PREPARED FOR THE ARAB REPUBLIC OF EGYPT. 1980 42 p.
16. - - -. A SELECTED LIST OF MEDICAL AND PUBLIC HEALTH REFERENCE BOOKS, ABSTRACTS, AND INDEXES PREPARED FOR THE ARAB REPUBLIC OF EGYPT. 1980. 125 p.
17. - - -. A SELECTED LIST OF SCIENCE AND TECHNOLOGY REFERENCE BOOKS, ABSTRACTS, AND INDEXES PREPARED FOR THE ARAB REPUBLIC OF EGYPT. 1980. 107 p.
18. - - -. A SELECTED LIST OF SCIENCE AND TECHNOLOGY JOURNALS PREPARED FOR THE ARAB REPUBLIC OF EGYPT. 1980. 107 p.

Reports 8-18 were prepared by staff of King Research, Inc., under a subcontract arrangement with the Georgia Institute of Technology (NSF Contract INT-7924187). The views and opinions expressed therein are those of the authors and do not necessarily imply official concurrence of the sponsoring agencies.

* These are draft reports and the final reports are # 12 & # 14 & # 16

Database Search Service Experiment

19. Dodd, J. B., COMPUTER-ACCESSED INFORMATION SERVICES. (Final Report on Georgia Tech Project No. A 51-064; NSF Contract INT-7924178, Project 3), October 1982. 18 p.
20. El-Hadidy, B. EVALUATION OF THE COMPUTER-ACCESSED INFORMATION SERVICES IN EGYPT, (Georgia Tech Project No. A51-604; NSF Contract INT-7924178, Project 3), January 1982. 53 p.

Reports 16 and 17 were prepared under consulting subcontracts with the Georgia Institute of Technology under NSF Contract INT-7924178. The views and opinions expressed therein are those of the authors and do not necessarily imply official concurrence of the sponsoring agencies.

Training of Egyptian Information Specialists

21. El-Hadidy, B., TRAINING OF EGYPTIAN INFORMATION SPECIALISTS: A MULTI-FACETED SYSTEM APPROACH. (Final Report), School of Library and Information Science, The Catholic University of America, Washington, D.C. January 1982. 222 p.

Report No.18 was prepared by the Project Director under NSF Contract INT-7927016. The views and opinions expressed therein are those of the author and do not necessarily imply official concurrence of the sponsoring agencies.

Design Study Evaluation

22. Willenbrock, F. Karl, et al. THE NATIONAL STI SYSTEM OF EGYPT: REPORT OF AN EVALUATION TEAM. (NSF-82-SP-0648; USAID PASA NF/EGY-0016-7-77), March 31, 1982. 43 p.

Report No.19 was prepared by a special group, headed by the principal author, under NSF Purchase Order NSF-82-SP-0648. The views and opinions expressed therein are those of the authors and do not necessarily imply official concurrence of the sponsoring agencies.