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INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

EGYPT: PROJECT 263-0105
MINERAL, PETROLEUM AND GROUNDWATER
ASSESSMENT
GRANT

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AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET	1. TRANSACTION CODE <input type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete <input checked="" type="checkbox"/> A	Amendment Number _____	DOCUMENT CODE 3
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2. COUNTRY/ENTITY ARAB REPUBLIC OF EGYPT	3. PROJECT NUMBER 263-0105
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4. BUREAU/OFFICE NE/TECH/HRST	5. PROJECT TITLE (maximum 40 characters) MINERAL, PETROLEUM & GROUNDWATER ASSESSMENT
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6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 03 31 85	7. ESTIMATED DATE OF OBLIGATION <i>(Under 'B' below, enter 1, 2, 3, or 4)</i> A. Initial FY <u>80</u> B. Quarter <u>4</u> C. Final FY <u>82</u>
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8. COSTS (\$000 OR EQUIVALENT \$) =						
A. FUNDING SOURCE	FIRST FY 80			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	17 800	2 900	20 700	34 300	2 900	37 200
(Grant)	(17 800)	(2 900)	(20 700)	(34 300)	(2 900)	(37 200)
(Loan)	()	()	()	()	()	()
Other U.S. 1.						
Other U.S. 2.						
Host Country				2 400	26 000	28 400
Other Donor(s)						
TOTALS	17 800	2 900	20 700	36 700	28 900	65 600

9. SCHEDULE OF AID FUNDING (\$000)									
APPRO. RELATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) SA	800	876				37 200		37 200	
(2)									
(3)									
(4)									
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each) 833 872 874 876 878	11. SECONDARY PURPOSE CODE 840
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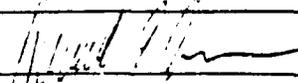
12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each) A. Code RGEN TGN	B. Amount
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13. PROJECT PURPOSE (maximum 400 characters)

The purpose of the project is to: a) improve the organization of current data on existing and potential mineral and petroleum resources and groundwater necessary for their development; b) compile reports on newly-surveyed areas of potential mineral, petroleum and related groundwater resources; c) develop and institutional capacity to acquire, organize, analyze, store, retrieve and disseminate data on potentially commercial mineral and petroleum resources.

14. SCHEDULED EVALUATIONS Interim MM YY MM YY Final MM YY 03 83 03 85	15. SOURCE ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input type="checkbox"/> 941 <input checked="" type="checkbox"/> Local <input type="checkbox"/> Other Specified
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16. AMENDMENTS NATURE OF CHANGE PROPOSED (This is page 1 of 1 page PP Amendments)

17. APPROVED BY	Signature  Title D.S. BROWN DIRECTOR	18. DATE DOCUMENT RECEIVED IN AID W, OR FOR AID W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY 7 2 85
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INSTRUCTIONS

The approved Project Data Sheet summarizes basic data on the project and must provide reliable data for entry into the Country Program Data Bank (CPDB). As a general rule blocks 1 thru 16 are to be completed by the originating office or bureau. It is the responsibility of the reviewing bureau to assume that whenever the original Project Data Sheet is revised, the Project Data Sheet conforms to the revision.

Block 1 - Enter the appropriate letter code in the box, if a change, indicate the Amendment Number.

Block 2 - Enter the name of the Country, Regional or other Entity.

Block 3 - Enter the Project Number assigned by the field mission or an AID/W bureau.

Block 4 - Enter the sponsoring Bureau/Office Symbol and Code. *(See Handbook 3, Appendix 5A, Table 1, Page 1 for guidance.)*

Block 5 - Enter the Project Title *(stay within brackets: limit to 40 characters).*

Block 6 - Enter the Estimated Project Assistance Completion Date. *(See AIDTO Circular A-24 dated 1/26/78, paragraph C, Page 2.)*

Block 7A. - Enter the FY for the first obligation of AID funds for the project.

Block 7B. - Enter the quarter of FY for the first AID funds obligation.

Block 7C. - Enter the FY for the last AID funds obligations.

Block 8 - Enter the amounts from the 'Summary Cost Estimates' and 'Financial Table' of the Project Data Sheet.

NOTE: The L/C column must show the estimated U.S. dollars to be used for the financing of local costs by AID on the lines corresponding to AID.

Block 9 - Enter the amounts and details from the Project Data Sheet section reflecting the estimated rate of use of AID funds.

Block 9A. - Use the Alpha Code. *(See Handbook 3, Appendix 5A, Table 2, Page 2 for guidance.)*

Blocks 9B., C1. & C2. - See Handbook 3, Appendix 5B for guidance. The total of columns 1 and 2 of F must equal the AID appropriated funds total of 8G.

Blocks 10 and 11 - See Handbook 3, Appendix 5B for guidance.

Block 12 - Enter the codes and amounts attributable to each concern for Life of Project. *(See Handbook 3, Appendix 5B, Attachment C for coding.)*

Block 13 - Enter the Project Purpose as it appears in the approved PID Facesheet, or as modified during the project development and reflected in the Project Data Sheet.

Block 14 - Enter the evaluation(s) scheduled in this section.

Block 15 - Enter the information related to the procurement taken from the appropriate section of the Project Data Sheet.

Block 16 - This block is to be used with requests for the amendment of a project.

Block 17 - This block is to be signed and dated by the Authorizing Official of the originating office. The Project Data Sheet will not be reviewed if this Data Sheet is not signed and dated. Do not initial.

Block 18 - This date is to be provided by the office or bureau responsible for the processing of the document covered by this Data Sheet.

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D C. 20523

PROJECT AUTHORIZATION

Name of Country: Arab Republic of Egypt Name of Project: Mineral, Petroleum and Groundwater Assessment Program

Number of Project: 263-0105

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended (the "Act"), I hereby authorize the Mineral, Petroleum and Groundwater Assessment Program (the "Project") for the Arab Republic of Egypt ("Cooperating Country") involving planned obligations not to exceed Thirty-Seven Million Two Hundred Thousand United States Dollars (\$37,200,000) in grant funds over a three-year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing the foreign-exchange and local-currency costs of goods and services required for the Project.
2. The Project will assist the Cooperating Country to (a) improve the organization of current data on mineral and petroleum resources as well as on groundwater necessary for the development of such resources; (b) compile reports on newly-surveyed areas of potential mineral, petroleum and related groundwater resources; and (c) develop the Cooperating Country's capacity to acquire, organize, analyze, store, retrieve and disseminate data on potentially commercial mineral and petroleum resources
3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and delegations of authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the Project shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Project shall, except as A.I.D. may otherwise agree in writing, be financed on flag vessels of the United States.

b. Conditions Precedent to Disbursement

(1) Initial Disbursement

Prior to any disbursement or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) A statement of the names and titles, with specimen signatures, of the person or persons who will act as the representatives of the Cooperating Country;

(b) Such other documentation as A.I.D. may require.

(2) Additional Disbursements

(a) Aerial Photography

Prior to any disbursement or to issuance by A.I.D. of documentation pursuant to which disbursement will be made for the subgrant to the Academy of Scientific Research and Technology for aerial photography services of 2500 square kilometers in the Western Desert, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

i. Evidence that the Remote Sensing Center can perform the aerial photography services based on the technical specifications as requested by the Egyptian Geological Survey and Mining Authority and as approved by A.I.D.

ii. Evidence that the cost of the aerial photography services is reasonable.

(b) Atlas Preparation

Prior to any disbursement or to issuance by A.I.D. of documentation pursuant to which disbursement will be made for the subgrant to the ASRT for the preparation of an atlas of landsat imagery of Egypt, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

i. Evidence that the atlas of landsat imagery will meet the technical specifications as defined by the Project manager or a U.S. remote sensing specialist approved by A.I.D.;

ii. Evidence that the cost of the atlas preparation is reasonable.

(c) Egyptian General Petroleum Corporation (EGPC)
Subcontracts

Prior to any disbursement or to issuance by A.I.D. of documentation pursuant to which disbursement will be made for any of the seven subcontracts to EGPC, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

i. Evidence that the services for such EGPC subcontract will meet all technical specifications as approved by A.I.D.

(d) EGPC Subcontract for the Seismic Survey in the
Western Desert

Prior to any disbursement or to issuance by A.I.D. of documentation pursuant to which disbursement will be made for the subcontract to EGPC for the seismic study in the Western Desert, the Cooperating Country shall, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

i. Evidence that the EGPC World Bank study has endorsed further reflective or refractive seismic studies of the Western Desert to produce information for investors.

ii. Evidence that the services for the regional seismic survey meet all technical specifications as approved by A.I.D.

c. Covenants

1. The Cooperating Country shall covenant that it will provide on a timely basis all necessary local logistic support as may be required to ensure effective utilization of goods and services financed under the Grant.

2. The Cooperating Country shall covenant that all information from the Project in the form of reports, maps, pamphlets and brochures will be delivered and disseminated for public use according to schedule and that the Cooperating Country will inform A.I.D. in advance of any restrictions regarding dissemination of this information.

4. Based upon the justification set forth in the Project Paper, I hereby determine, in accordance with Section 612(b) of the Act, that the expenditure of the United States Dollars for the procurement of goods and services in Egypt is required to fulfill the purposes of this Project; the purposes of this Project cannot be met effectively through the expenditure of U.S.-owned local currencies for such procurement; and the administrative official approving local cost

vouchers may use this determination as the basis for the certification required by Section 612(b) of the Act.

Alexander Shal
ACTING Administrator

9/19/80
Date

Clearances:

A-AA/NE:ADwhite A Date 9-17-80
AA/PPC:AShakov CP Date 9/19/80
GC:NHolmes RCL for Date 9-18-80

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13. Technical Report: Minerals*
14. Technical Report: Petroleum*
15. Technical Report: Groundwater*
16. Technical Report: Remote Sensing*

* Unattached.

LIST OF ABBREVIATIONS

AID	Agency for International Development
ARE	Arab Republic of Egypt
ASC	Airborne Survey Contractor
ASRT	Academy of Scientific Research and Technology
CBD	Commerce Business Daily
Cont.	Contractor
DRI	Desert Research Institute
ED	Eastern Desert
EGPC	Egyptian General Petroleum Corporation
EGSMA	Egyptian Geological Survey and Mining Authority
EMDS	Egyptian Mineral Data System
ESTIS	Egyptian Science and Technology Information System
GOE	Government of Egypt
GPC	General Petroleum Corporation
GS	Gulf of Suez
M-DAS	Multispectral Data Analysis System
MGRS	Mineral, Groundwater, Remote Sensing
MPGAP	Minerals, Petroleum, and Groundwater Assessment Program
NMC	Nuclear Materials Corporation
PASA	Participating Agency Service Agreement
PIC	Petroleum Information Corporation
PIO/C	Project Implementation Order for Commodities
PIO/P	Project Implementation Order for Participants
PIO/T	Project Implementation Order for Technical Assistance
PM	Program Manager
PP	Project Paper
PRO AG	Project Agreement
PSC	Personal Services Contract
RFP	Request for Proposals
RSC	Remote Sensing Center
SubC.	Subcontractor

LIST OF ABBREVIATIONS (Cont)

TDY	Temporary Duty
USAID	AID Mission in Cairo
USG	United States Government
USGS	United States Geological Survey
WD	Western Desert

I. SUMMARY AND RECOMMENDATIONS

A. Executive Summary

Problem

In an effort to attract additional sources of domestic and foreign investment to help develop the economy, the GOE has requested assistance in identifying and assessing the mineral and petroleum resources of the country. GOE geologic agencies are capable of gathering data useful in making decisions about exploiting these resources. However, comprehensive data in the form of maps and reports are unavailable to these interested in investing.

Strategy

The overall purpose of this program is to produce comprehensive information of commercial relevance about petroleum and mineral resources to attract investors. In order to accomplish this, the country's natural resource agencies will be assisted in gathering and organizing basic geotechnical information, and in devising means of disseminating this information to potential users through: a) improving the organization of current data on existing and potential mineral and petroleum resources and groundwater necessary for their development; b) compiling reports on newly-surveyed areas of potential mineral, petroleum and related groundwater resources; and c) developing GOE institutional capacity to acquire and disseminate data on potentially commercial natural resource deposits.

AID's contribution will be in the form of commodities, technical assistance and training. The commodities are necessary to upgrade the GOE agencies' analytic capabilities and to assist in acquiring additional geologic data. The technical assistance will help in training GOE specialists in the latest techniques of collecting and analyzing these data. Technical assistance in the form of contracts is required for those studies that the GOE agencies cannot perform. These contributions to the Egyptian effort will lead to the publication of an increased number of reports on ongoing and past geologic studies which will be of interest to potential investors.

Relationship to Country Development Strategy Statement (CDSS)

USAID's development strategy for Egypt during the next five years is targeted at improving economic development through certain sectors, utilizing the concerns of equity, productivity and stability as programmatic guides. The goal of this program is to foster increased industrial development through greater exploitation of Egypt's natural resources. The program will 1) increase the number of experts in petroleum and mineral raw materials and water resources through training of GOE personnel; 2) enhance domestic economy by increasing the role of the private sector in development processes; and 3) improve productivity through updated commodities that the involved institutions will receive.

Recommendations

USAID/Cairo recommends that AID/W approve a grant to the Government of Egypt (GOE) in the amount of \$37.2 million. USAID also recommends that \$20.7 million of this sum be obligated in FY 80. An additional sum of about \$16.5 million will be authorized for the Western Desert seismic survey in FY 82, if it is determined during the prior period that this is necessary. Further, it recommends that a determination be made pursuant to Section 612(b) of the Foreign Assistance Act to permit dollar financing of some local currency costs.

These costs represent about 8% of the AID contribution to the Grant. Egyptian sources will fund approximately 45% of the total project costs, which we consider the most it is reasonable to expect in such a case. Most of this will be in kind. However, some pound outlays are expected to cover in-country contract costs.

B. General Description of the Program

The goal of the MPGAP is to increase foreign and domestic investment in developing Egypt's natural resources. The MPGAP purpose is to gather basic geotechnical information that will attract capital, and to devise means of disseminating this information to potential users through:

- a) Improving the organization of current data on existing and potential mineral and petroleum resources and groundwater necessary for their development
- b) Compiling reports on newly-surveyed areas of potential mineral, petroleum and related groundwater resources
- c) Developing GOE institutional capacity to acquire, organize, analyze, store, retrieve and disseminate data on potentially commercial mineral and petroleum resources.

In order to achieve this purpose, a four-year program has been designed to produce the following kinds of outputs: Information in forms of maps and reports which will attract investors; upgraded support services; and trained personnel of the institutions who will produce needed geologic data. The institutions that will produce the geotechnical information will have the responsibility of studying various aspects of the geology of Egypt. They are: the Egyptian General Petroleum Corporation (EGPC), belonging to the Ministry of Petroleum; the Egyptian Geological Survey and Mining Authority (EGSMA), affiliated with the Ministry of Industry and Mineral Wealth; the Desert Research Institute (DRI), a research division of the Agricultural Research Center of the Ministry of Agriculture; the Remote Sensing Center (RSC), an institute of the Academy of Scientific Research and Technology (ASRT) affiliated with the Ministry of Education, Culture and Scientific Research.

This program consists, therefore, of activities addressed to specific problem areas related to Egypt's capability in natural resource assessment. The projects are complete and self-sufficient, but have been chosen in the context of an overall program designed to encourage investment in developing these resources.

The general administration of the program will be through a MPGAP Coordinating Committee consisting of the President of ASRT as chairman, with the membership of EGSMA's chairman, EGPC's deputy chairman, and DRI's and RSC's directors. This committee will provide overall guidance to the project and will play a key role in coordinating the activities of these four institutions. Program implementation will be carried out by the four institutions with direct assistance of a USAID-direct hire contractor who will provide the inputs to the minerals, groundwater and remote sensing center sector (MGRS) and an airborne survey contractor (ASC). As many as eight EGPC host country contractors will implement the individual sub-projects of the petroleum project.

During the life of the program, activities will be continuously reviewed by the MPGAP Coordinating Committee and be communicated in the form of reports,

maps, pamphlets and brochures to GOE and U.S. institutions and potential investors through the U.S.-Egypt Joint Business Council (JBC) and the Investment Authority of Egypt (IAE). Semi-annual meetings on the findings of the various agencies will be open to the interested public.

At the end of the program, the agencies will have substantially increased the number of reports and maps that will interest the foreign and private/public sector investors. This information will assist potential investors in making basic decisions about the development of Egypt's mineral and petroleum resources. It is also expected that the capability of the GOE institutions will be upgraded to allow continual production of geologic data of commercial relevance to investors.

C. Issues

Several important issues have arisen during the process of formulating this program:

1. Without any special pay incentive in this program, will the personnel whose capabilities have been upgraded remain on the job long enough to achieve the program's purpose? This very low salary of personnel (\$52/month for a young geologist, \$200/month for a senior professional) has already been countervailed to some extent by these institutions because they allow their personnel to rotate temporarily to high paying jobs overseas in order not to lose them. In fact the real turnover (resignation) is very low. While it must be recognized that low salaries are a national problem outside the scope of the MPGAP, this project will indirectly address this issue by providing non-monetary incentives and privileges such as: a) exposing the professionals, especially the younger ones, to advanced research techniques and use of modern equipment; b) maximizing on-the-job training in Egypt for all specialists with limited, short-term training in the U.S. for the young scientist and study tour for the senior ones; and, c) opportunity to interact with the U.S. senior scientists; and publish their reports in reputable international journals; d) foster professional exposure through publications and seminars in Egypt. These opportunities, created by MPGAP, will increase the academic and professional prestige of the personnel in these organizations and as a result will provide added encouragement in many of them to stay in these institutions at least during the life of the program.
2. The fact that this program will be implemented by four GOE institutions belonging to four different GOE ministries raises the following administrative issues: does the USAID design of the MPGAP represent a significant change in these institutions' operations; are the institutions capable of managing their part; and is the overall program administration feasible?

- a) USAID assistance: It must be clearly stated that the activities described in the MPGAP are part of ongoing projects that the four GOE institutions have either started to implement or were planning to do with or without outside assistance. Therefore, the USAID involvement was not to start a new natural resources assessment program, but to reorient these ongoing activities toward providing basic geotechnical information aimed at attracting potential investors. Our technical assistance program in the form of U.S. short-term personnel, commodities and training is to accelerate the production of information, to organize new and old information, and to disseminate this information to the public. With the exception of EGPC activities, the MPGAP was specifically designed to be carried out by the personnel of the involved institutions, with a minimum presence of U.S. personnel in Egypt.
- b) Institutional capability: The four agencies involved in the MPGAP are reasonably well-organized and productive; and have demonstrated capabilities in terms of personnel and facilities, of carrying out their own natural resources program. However, certain gaps were identified in management for carrying out a coordinated program. The four institutions have recognized these gaps, are prepared to remove these deficiencies, and will coordinate the work with each other and with the public. We have evidence that these institutions can carry out natural resource programs. EGSMA, for example, has been involved for the last three years in a mineral assessment activity financed by USAID in collaboration with the U.S. Geological Survey (USGS). U.S.G.S. reports provide a positive evaluation of this institution for carrying out their part of an enlarged program such as MPGAP. EGPC has conducted studies using international firms and has demonstrated a high level of performance in conjunction with World Bank projects and other international organizations. The DRI and RSC have the personnel and the facilities to provide support for the minerals and petroleum activities in this program and are willing to cooperate.
- c) Administration of the Program: We considered several alternatives for administering this program. Rather than managing the activity of four institutions independently, we have adopted an administrative arrangement that was discussed and accepted by these institutions. ASRT was made the coordinating institution which will supervise the work of the implementing institutions. The four institutions were grouped into two sectors: one for the minerals to be carried out by EGSMA and to be supported by RSC and DRI (called the "MGRS" for Mineral, Groundwater, and Remote Sensing Sector); the other for petroleum to be carried out by EGPC and coordinated with RSC and DRI. Since EGSMA, DRI and RSC will conduct their own activities under the MPGAP, we have provided a common U.S. contractor for assisting EGSMA, DRI, and RSC in the administrative and technical tasks of their sub-projects and another AID direct contractor for the performance of airborne surveys (AS). We are confident that EGPC does not need to have a U.S. contractor to assist its activities except at the scope of work stage, since the work is specialized in nature, and will be performed by the ultimate contractor. The US contractor will also review the results of projects.

3. The following tasks require the services of highly specialized technicians who were unavailable before or during the design of this program to:

- a) Assist EGPC in drafting the technical specifications and RFP's for the 7 complex and specialized petroleum studies which are stated in the input section on page 21.
- b) Assist USAID in drafting for EGSMA the technical specifications of airborne services which consist of aerial photography of 2,500km² in the Western Desert (WD); radiometric and magnetic survey of the central and southern part of the Eastern Desert (ED); and assist USAID in drafting the RFP's for the above surveys.
- c) Provide technical specifications for all the commodities to be produced for the MPGAP.

We have requested the services of a personal services contractor who will perform the above tasks by providing four petroleum specialist (8 pm's) for tasks (a) concurrently with an airborne specialist (2 pm's) for task (b), and two instrumentation specialist (2 pm's) for task (c) to come to Egypt to assist the different institutions in performing their respective tasks. They will then return to the U.S. to release bids for the activities in (a) and (b) above and finalize the list of commodities which will be provided to USAID for issuing the PIO/C's. It is estimated that this work could be performed in the first six months following the signature of the Project Agreement (ProAg).

II. DETAILED PROJECT DESCRIPTION

A. Introduction and Background

Introduction

This program comes at a time when the government of Egypt is committed to find new sources of investment that would increase foreign exchange earnings and would reduce in time the rather large balance of trade deficit of about \$4.0 billion in 1979. Exploitation of new petroleum and mineral resources could provide a fairly quick and potentially large source of foreign exchange.

Previous concessions granted in the petroleum sector with foreign and joint venture companies were particularly successful, and today Egypt is self sufficient in oil with a production of 600,000 barrels per day, much of which is exported. These exports bring a new annual revenue of about \$1.6 billion. Egypt may, however, become a net importer of oil in the near future, if new reserves are not soon discovered to compensate for the increasing domestic demand for oil.

Mineral resources have not, as yet, been exploited sufficiently to affect the economy of the country. Mineral production in 1978, for instance, amounted to only \$42 million, much of which was used domestically. Mineral deposits of various types have been found in the Eastern Desert and studied in considerable detail by EGSMA. Many of these deposits, such as gold, phosphate, silver and tantalum, which are found primarily in the Eastern Desert,

are considered to have economic potential. However, the evaluation of these reserves and their economic viability have not been assessed to a degree that will attract foreign investment.

Problem Identification

Although the GOE has been anxious to improve the investment climate through its "open door policy", the results to date have been mixed. One key factor that has retarded the flow of investment in Egypt's natural resources, as expressed by the petroleum and mining companies operating in Egypt, is the lack of basic geotechnical information on specific investment opportunities; the information existing in the different GOE institutions is either incomplete or inaccessible. Even though the basic minimum of technical information is available, there is no mechanism through which the investment community can be made aware of its existence. The following summarizes the major problems encountered by investors and public users in the four organizations (EGSMA, EGPC, RSC, and DRI) which are responsible for the execution of the MPGAP:

- the existing geologic data gathered by these institutions are not organized sufficiently to be of use to the general public;
- regional geologic maps at a scale of 1:1,000,000 or larger and are not available to serve as a basis for a mineral assessment;
- ground truth search by geochemical and geophysical methods has not been adequately performed (mainly because the equipment used is obsolete and the personnel not trained to advanced techniques in exploration and prospecting);
- airborne magnetic and radiometric surveys do not exist for much of the Eastern Desert (where most of Egypt's minerals exist, and new deposits may be found);
- information on economic viability for workable deposits (such as gold, kaolin and phosphate) is unavailable;
- the structural geology of the WD is not regionally known;
- oil exploration in the Gulf of Suez (GS) is impeded by the absence of good geophysical data;
- estimates of potential and existing oil reserves have not been made;
- hydrography maps and determinations of groundwater occurrences in areas of minerals and petroleum resources are not available (this is a major impediment to mining as water is essential for infrastructure development); and
- base maps (topographic) or substitute Landsat images at a scale of 1:250,000 for a large part of the country have not been prepared.

Pre-MPGAP Activities

Preliminary steps were undertaken by USAID toward assisting three of the participating agencies (EGSMA, EGPC and RSC) in addressing some of the above deficiencies. These steps were in form of activities funded under the Technical Transfer and Manpower Development III Project (263-0026) and consist of:

1. A three phase cooperative project between the U.S. Geological Survey (USGS) and EGSMA in compilation of data on Egypt's mineral resources which resulted in:
 - a) A map and tabulation of all known deposits of some 29 mineral commodities;
 - b) Establishing cartographic and map-making capabilities, as well as advising and contracting for publications of multicolored maps. This resulted in the publication of two maps of the Qena and Aswan quadrangles in the ED at a scale of 1:500,000 on controlled landsat photos furnished by the USGS and the preparation of two other quadrangle in the ED at a scale of 1:500,000 and the geologic map of Egypt at a scale of 1:2,000,000;
 - c) Providing USGS short-term specialists in geophysics, geology, remote sensing and mineral assessment; and
 - d) Upgrading the laboratories with equipment and training of personnel in the U.S. on data compilation, geophysical exploration, remote sensing and instrumentation analysis.

The current Phase III of this activity is scheduled to terminate in June 1981.

2. EGPC contracted (through AID funding) with Petroleum Information Corporation (PIC) to investigate the feasibility of a scope of work for designing a management information system that will organize on a semi-automated form data in EGPC files. This activity has ended and EGPC is following PIC recommendations.
3. Training in the U.S. for more than 60 EGPC and Egyptian personnel in different fields of petroleum specialization.
4. U.S. training of approximately 10 EGC personnel in remote sensing methods and application in Eros Data Center in Sioux Falls, as well as provision of short-term specialist in photogeology.

Background of MPGAP

A comprehensive assessment of Egypt's natural resources was requested in a letter from President Sadat to President Carter in early 1979. Following President Sadat's request in March 1979, a team from the U.S. Geological Survey (USGS) came to Cairo under USAID auspices for a period of one month to prepare a proposal for the MPGAP. The USGS team worked closely with four institutions: EGSMA, EGPC, DRI and RSC, all appointed by the GOE to be the government resource agencies responsible for carrying out an assessment program. The U.S.-GOE team proposed a six-year program to be undertaken in three successive phases and suggested that this program be defined under three sub-projects: a Mineral Resources Project, a Petroleum Resources Project and a Water Resources Project, all to be treated equally.

Subsequent discussions of the content of this proposal with the GOE and AID/Washington resulted in the decision to orient this program towards providing information for potential natural resource investors and therefore to consider the MPGAP as two sub-projects only, Petroleum and Minerals, with the Groundwater sector treated as a by-product to evaluate groundwater resources in areas that have potential for mineral and petroleum development. The RSC was to provide landsat images, develop a landsat atlas of Egypt and provide training required to the other MPGAP agencies to assist in the interpretation of landsat images.

As a result of this decision, a five-man team assisted USAID for a period of two months in providing technical reports for this project paper. This team worked closely with the GOE-MPGAP Coordinating Committee appointed by GOE Ministerial decree and formed by Dr. Hassan Ismail, President of the Academy of Scientific Research and Technology (ASRT) as Chairman; and the membership of Dr. Gamal Abdel Samih, Vice President of ASRT; Dr. Moustafa El-Ayouty, Deputy Chairman of EGPC; Dr. Galal Moustafa, Chairman of the Board of EGSMA; Dr. Abdou Shatta, Director of the DRI; and Dr. Mohammed Abdel Hady, Director of the RSC.

The methods involved in data gathering and presenting data to the public are similar. Each agency does geology, mineralogy, depth to water, structure, etc. The EGSMA concentrates on gathering mineral data, analyzing rocks in laboratories and presenting the data. EGPC gathers petroleum related geologic data on large areas mostly in subsurface, DRI concentrates on the occurrences of water in local areas and producing hydrographic maps. RSC analyzes landsat imagery for the surficial geology. Each agency prepares reports on their work and releases these reports for public view. Basic differences in the needs and tasks of these agencies required distinct approaches be designed in the program (see Table II.1). A general description of each of the four agencies is given in their respective technical reports found in Annexes 13 (EGSMA), 14 (EGPC), 15 (DRI), and 16 (RSC).

Also, the Egyptian mining companies and foreign petroleum companies operating in Egypt were consulted concerning the design of this program. All have assured USAID that the outputs proposed in MPGAP are essential to encourage investment and exploitation of natural resource in Egypt.

TABLE II.1

Geologic Responsibilities of GOE MPGAP Agencies

	EGSMA	EGPC	DRI	RSC
<u>Function</u>	Service organization responsible for mapping and investigating the geology of Egypt; identifying, assessing and leasing metallic and non-metallic minerals.	A policy planning and investment oriented organization for all petroleum activities in Egypt. Among its functions: to conduct sub-surface geologic studies and research connected with petroleum matters, to grant oil concessions, and supervise oil exploration of oil companies.	A research institute responsible for determining groundwater resources in Egypt through sub-surface studies, field investigations and lab analysis.	Research and training institute responsible for supplying Landsat imagery with basic geologic interpretation. Perform RS services under contract for GOE ministries and industries.
<u>Size of the Organization</u>	Staff of about 2700 employees including about 400 professionals.	Staff of about 700 employees including about 400 professionals.	Staff of about 64 personnel with 31 holding Ph.D.s and M.Sc.s	Staff of about 55 professionals, most of them on part-time secondment from GOE universities and research institutions.
<u>Production History</u>	Estimated \$48 million per year (1978), exploitation of minerals are carried out by 12 public sector mining companies not affiliated with EGSMA. No foreign investors have been granted concessions for developing any of the existing minerals.	Estimated .6 mil. b1/day oil exploration and exploitation are presently undertaken by GPC, (100%-owned EGPC company), affiliated joint venture companies and 20 international concessionaries.	None	None

TABLE II.1 (Cont)

	EGSMA	EGPC	DRI	RSC
<u>Geologic Information Availability</u>	In annual reports and maps - available in the library - insufficient data to lease deposits available to public..	Available for existing oil fields except for estimates of reserves in existing fields and potential oil and gas reserves. Data is incomplete in areas in which new reserves might be found (e.g. W.D.).	Data on regional hydro-logic basin available in reports in library.	Available in reports at Center.

B. Program Goal and Purpose

The Program goal is to attract investors to further develop the mineral and petroleum resources of Egypt. This goal reflects GOE expectations about the benefits of the "Open Door" policy and the practical economic impact of the joint ventures with foreign capital. Economic opportunities exist for raising the level of investment, assuming of course, that the business climate will not change adversely through legislation or other acts. Given a broader commitment to the rate of economic development, it is believed that the GOE will continue to maintain the MPGAP agencies at the upgraded level created by the MPGAP. The information produced by the MPGAP should result in new investment in the natural resources and this in turn should either earn or save foreign exchange for Egypt.

The MPGAP is designed to help the resource agencies gather basic geotechnical information that will attract capital, and to devise means of disseminating this information to potential users. Therefore, the purpose of this program is to:

1. Improve the organization of current data on existing and potential mineral and petroleum resources and groundwater necessary for their development.
2. Compile reports on known or newly-surveyed areas of potential mineral, petroleum and related groundwater resources.
3. Develop GOE institutional capacity to acquire, organize, analyze, store, retrieve and disseminate data on potentially commercial mineral and petroleum resources.

These purposes reinforce the need for the MPCAP to produce solid information with direct commercial relevance, as opposed to basic primary scientific data in geology. The program will rely heavily on the four resource institutions where information either exists, or is generally within the capacity of these institutions to acquire. In order to help them accomplish their tasks, the program will provide equipment and technical assistance to assist in preparing the basic minimum resource assessments required to interest commercial developers. It must be recognized that the bulk of detailed geologic assessment and geologic exploration will be left to the private and public sector exploitation companies. This program does not seek to alter the public/private balance of geologic assessment. Geologic assessment activities of the agencies should be adequately executed to ensure that information is not a constraint to mineral and petroleum exploitation in Egypt. Therefore, the assessment will not extend into the level of analysis normally carried out by and at the financial risk to the commercial developer.

By the end of the program in 1985, we expect that the MPGAP activities will have helped bring about significant improvements in the organization of data on existing and potential natural resources. These improvements will be reflected in: investors bidding on developing mineral concessions; increased EGPC exploration agreements; and investor-oriented information being easily accessible, disseminated, and used. The status at the end of this program will be: a) improved organization of data on existing and potential natural

resources in the four institutions; b) significant use of the MPGAP information in the investment sector; and c) the ability of these institutions to continuously acquire, organize, analyze, process and disseminate data on natural resources.

C. Outputs

Kinds of Outputs

In order to achieve the purpose of this program, outputs of the MPGAP will include:

- a) Information in forms of maps and reports which will attract investors.
- b) Upgraded support services.
- c) Trained personnel.

Location of Outputs

The outputs and magnitude of outputs are found in Table II.2. Annex 2 covers a detailed description, justification and expected achievements of these outputs as produced by each of the four institutions. A summary is given in the next section. A map on page 17 shows the geographical locations to be studied in the MPGAP.

1. Petroleum

From the map it can be shown that the petroleum sector has given attention to two main locations: the Western Desert (WD) above latitude 28°N and the Gulf of Suez (GS) namely:

- a) Previous oil exploration in the WD has been disappointing and has resulted in the withdrawal of many petroleum concessionaries. Yet this is an area that is geologically similar to major oil fields in Libya. Since all of these companies were only performing their studies in their own concession area without giving much attention to the regional aspect of the WD, EGPC decided to systematically investigate this area by performing three studies (financed under this grant); namely the source rock evaluation of samples selected from 25 wells in the WD; a geochemical study (sedimentary/lithologic) of rocks to search for coral reefs in which oil occurs; and a refractive seismic survey (depending on the finds of the magnetic and gravity studies which will be underway for the next 26 months by Robertson Research Int. through a World Bank loan to EGPC).
- b) Oil has been found off-shore of the GS. However, further off-shore explorations are handicapped by the inability to gather regional seismic data because of the presence of a thick salt/anhydrite belt above the Pre-Miocene sandstones (which are the most important petroleum reservoirs in the GS). This prevents the seismic energy from being accurately recorded.

Table II. 2

Program Outputs and Magnitude of Outputs

INSTITUTIONS/ OUTPUTS	A - EGSA	B - EPC	C - EDC	D - EDC
Information in form of maps and reports	Upgrading EGSA documentation center.	Feasibility study for an organization of exploration and production data library at EPC.	Organization of EDC library into a semi-automated files cataloging, microfilming, annotated bibliography.	Upgrading the library by acquisition of books, reports and references.
	Three regional geologic maps of central and southern part of Egypt at a scale of 1:1,000,000. 20 reports and maps at a scale of 1:250,000 and 1:1,000,000 parts of same location as above.	Basement map and 5 sedimentary thickness maps of the northern Western Desert.	9 surface hydrography maps and reports on: 7 areas in Eastern Desert where minerals are known. 2 areas in northern part of Western Desert with mineral resources.	10 Landsat images in locations of central and southern part of Egypt.
	Reprocessing data and acquisition of new data from geophysical and geochemical prospecting. This includes: 4 maps and 4 reports on airborne magnetic and radiometry survey in the southern part and central part of the Eastern Desert 4 reports on geochemical and geophysical prospecting in soils, rocks and samples of the above regions.	Basin analysis and evaluation for petroleum basins of above location and the Gulf of Suez. It consists of: 2 approaches source rock evaluation and crude oil correlation of 25 wells in Western Desert and Gulf of Suez 2 reports on radiometric/petrographic study of Gulf Miocene sandstone and Western Desert reefs. 1 report on experimental seismic study in the Gulf of Suez.	Basin analysis and evaluation of groundwater potential of above areas. This includes 9 reports on: delineation of main groundwater basin and aquifer in each basin, determination of age, origin, water quality. 9 hydrogeochemistry maps at a scale of 1:250,000	
	Economic studies of prospective ore deposits. 3 reports in a feasibility study of: Gold in Baranya in E. Desert Kaolin in Matruh (W. Desert) Phosphate deposits near Bahi Oms. 10 reports on evaluation of: sulfide deposits at Farafra (E. Desert), iron deposit in Western Desert, etc.	2 reports on estimation of existing and potential oil and gas reserves in areas of W. Desert and Gulf. Method proposed: Geologic engineering information gathered in above areas; suitable resources appraisal techniques for each petroleum potential.	9 reports on estimation of groundwater potential in above areas. Method proposed: Suitable resources appraisal techniques to each groundwater basin. Mathematical method to determine the amount of exploitable groundwater.	
	Reports published and available at EGSA office of scientific publications.	Reports available at the exploration division in EPC.	Reports available at EDC library.	Reports available at the center.
2. Support Services Activities.	Upgrading the analytical laboratories through training and equipment. Upgrading the geologic museum through training. Upgrading the cartographic and publication center. Assisting in the Commodity Mineral Program.	1 report on a feasibility study of an EPC seismic data storage center. 2 reports on a feasibility study of tertiary oil recovery in selected EDC oil fields at Ur Yusr and Yarin (Eastern Desert) Supply training aids to EDC.	Upgrading the laboratory facilities in water quality studies. Upgrading field equipment.	Upgrading the M-DAS computer in order to permit completion of the titles of Landsat maps of Egypt.
3. Training.	In-country training: 150/170 pm for geologists, geochemists, cartographers, mineral data, U.S. training: 85 pm for geologists, curator, regional surveying, economic geologists and geophysicists.	In-country training and in U.S. for geophysicists, petroleum engineers as part of contract services. U.S. training: 6 librarians 144 pm	In-country training: courses to EDC, EGSA, MLP personnel (120) Training in maintenance, repair and operation of electric, electronic and geophysical equipment (20). U.S.: library science 6 pm hydrogeology 6 pm	In-country: remote sensing method and application for institutions and mining use. (20). Photogeology (60 m). Maintenance and repair of 15 equipment for EDC personnel (50)

Because oil reserves in the GS are unknown to the GOE, two additional studies will be undertaken: estimation of potential and existing oil reserves in the GS and the recovery of more oil from mature oil fields using enhanced recovery techniques.

All of the above studies are complex, costly and so specialized that only few international firms can perform the work. It is intended, therefore, to contract these studies with U.S. firms under competitive bidding procedures.

2. Minerals

There are three areas that will be studied by the mineral sector:

- a) The Southern part of Egypt: This is believed to have iron ore deposits and phosphate reserves and deposits of gold, lead and marble. EGSMA intends to do regional mapping in these areas as well as undertake geochemical and geophysical prospecting.
- b) The Central part of the Western Desert: In spite of the fact that much geologic work has been done here, some areas lack detailed geologic descriptions. The occurrence of phosphates and other minerals makes this area attractive for mineral prospecting.
- c) The Central part of the Eastern Desert: Most of Egypt's ore minerals are found here. Radiometric and magnetic studies will be needed to obtain structural information and to locate buried deposits of sulfides and radioactive materials (uranium and thorium) which would indicate the presence of phosphate reserves.

EGSMA will send approximately 20 field parties a year in these locations to complete its mineral assessment program.

3. Related Groundwater

The locations that will be studied by DRI cover seven specific areas in the ED and two in the WD. These locations, shown on the map (figure 1), were chosen for their relation to the mineral and petroleum occurrences. DRI will send two field parties a year, one in the ED and the other in the WD, to gather hydrogeologic information on these locations.

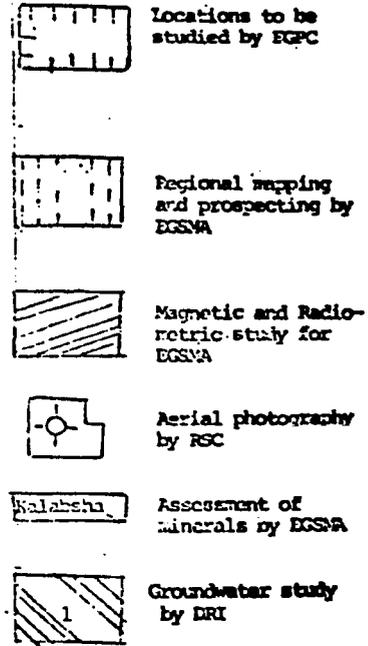
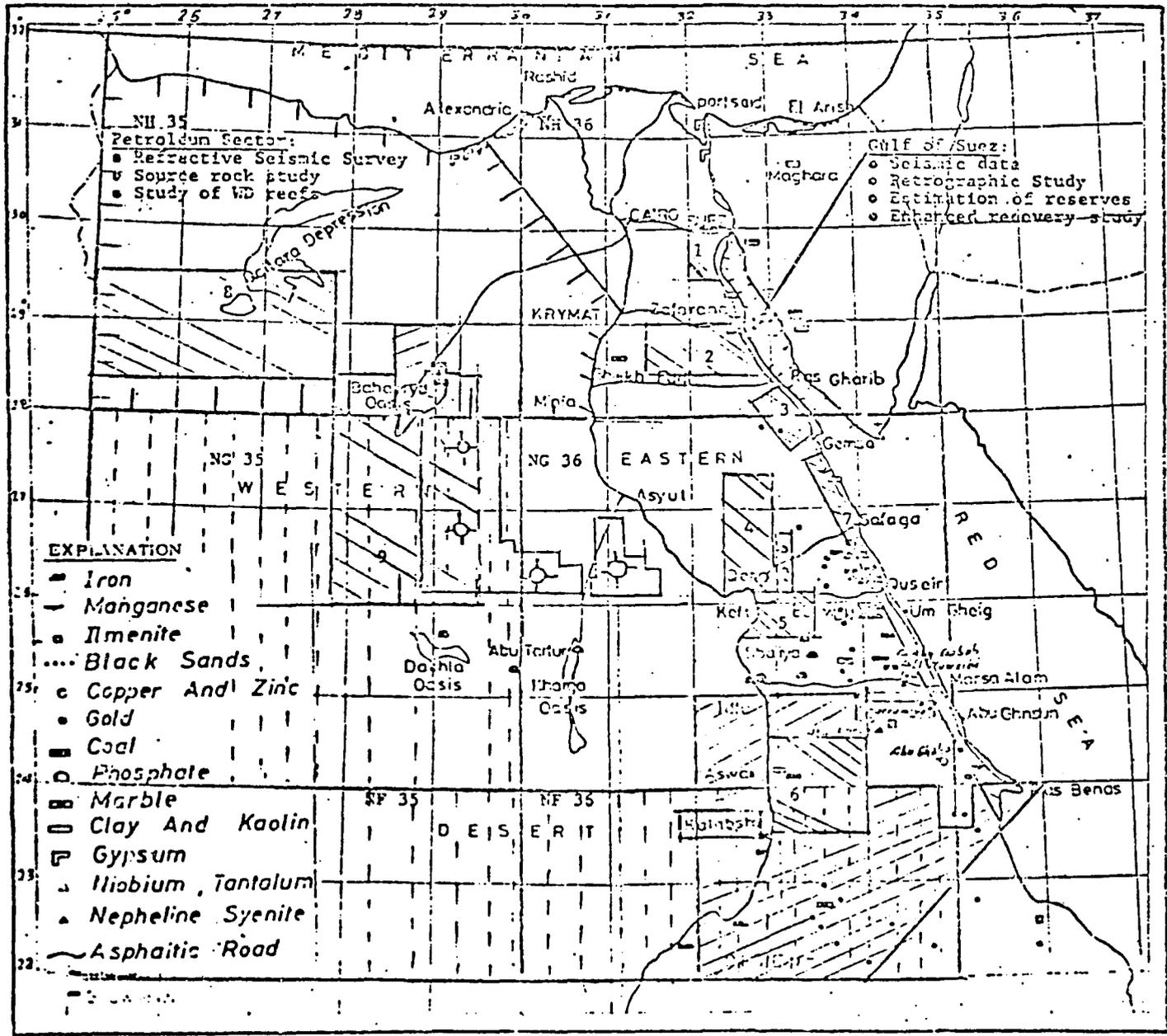
Summary of Outputs

Outputs are summarized below and details can be found in Annex 2 and the Logical Framework.

Geotechnical information in the form of maps and reports:

The collection, organization and analysis of existing data in the four institutions through: upgrading the documentation at EGSMA; financing a feasibility study on management information system at EGPC; organizing the library at DRI;

Index map showing locations of principal mineral, petroleum and groundwater to be studied in the MPGAP



1. Atara
2. Wadi Araba
3. Ras Gharib
4. Wadi Ouena
5. Wadi Iaquta
6. Wadi Canal
7. Red Sea coast
8. South Quattara Sava
9. Farafra El Bahriya

FIGURE 1

and, acquiring books and periodicals for RSC.

- Production of: regional maps of southern and central Western parts of Egypt by EGSMa; hydrography maps of 9 locations in the ED and WD by DRI; topography maps in a small region of the WD by RSC; and, basement map of the WD by EGPC.
- Reports on geochemical and geophysical exploration of areas regionally mapped and untested areas such as:
- Radiometric and magnetic studies of the southern parts of ED; possible electromagnetic study of a small area of 1,200km² in the WD as well as ground truth exploration in the ED and WD.
- Financing three EGPC studies to assess the petroleum potential for each basin or province in the WD and GS. These projects are: experimental seismic survey in GS, source rock and thermal evaluation in the WD and sedimentary petrographic investigations of rock samples of WD and GS.
- Reports on basin analysis and evaluation of groundwater occurrences in the areas already selected for potential minerals and potential oil reserves.
- Reports on economic viability of certain minerals such as gold, kaolin and phosphates; estimation of existing and potential oil reserves in the WD and GS; and the appraisal of groundwater potential in areas of minerals and petroleum resources.

2. Support services development in each agency to upgrade their activities and increase their efficiency in the production of information in natural resources:

- Upgrading analytical lab, of EGSMa and DRI mineral commodity program and the cartographic department.
- Financing two feasibility studies in the establishment of a seismic data storage center; and the tertiary oil recovery in selected EGPC oil fields for EGPC.
- Production of landsat imagery Atlas of Egypt by RSC.

3. Training is considered an important and necessary activity in upgrading the level of skills needed to handle instrumentation, data analysis and field procedures. It is estimated that approximately 350-370 pm of in country training will be offered to EGSMa personnel in the field of geology, geochemistry, geophysics, mineral data acquisition and evaluation, data acquisition, library science and editing. Similarly 120 persons from DRI, EGSMa, GOE ministries will attend courses at DRI on groundwater hydraulics and on the use and maintenance of geophysical equipment. Training will also be given to six DRI technicians in water quality determinations as well as in the most modern procedures for analyzing the water sample. RSC personnel will be trained in data processing, photographic laboratory techniques, and will offer with the assistance of U.S. short-term personnel a three-month

training course on photogeology to DRI, EGSMA and mining companies personnel.

U.S. training will be limited to selected areas of study not available in Egypt such as: 80 pm for EGSMA personnel in mapping, economic geology, geophysics, paleontology and curatorship; 144 pm in library science for six EGPC personnel, six pm in library science; and 8 pm in hydrology for DRI personnel.

D. Inputs

AID Inputs

AID funding consists of a grant of \$37.2 million during the life of the project. It will be used to provide the inputs of U.S. technical assistance, financial services, U.S. training, commodities, and evaluation of the project. The estimated (rounded) cost of these items is: technical assistance (\$4.2 million), financial services (\$19.6 million), office equipment and furniture (\$0.3 million), U.S. training (\$0.87 million), commodities (\$3.3 million), and evaluation (\$0.13 million). Contingencies and inflation are estimated at \$8.8 million. Of the \$19.6 million estimated for financial services, only \$7.4 million will be obligated in FY 80; the remaining amount of \$12.2 million (or \$16.5 million including inflation and contingency) will only be obligated in FY 82 when USAID, after consultation with EGPC, decides the extent of funding needed for the survey of the WD and after the completion of a World Bank study in this area.

1. Inputs to minerals, groundwater and remote sensing section:

The mineral, groundwater and remote sensing activities are grouped under a section called the Minerals, Groundwater and Remote Sensing Section (MGRS). The technical assistance offered by USG personnel will be advisory and coordinative in nature, and will be directed toward moving the deficiencies in the operations cited in the output section.

In each of the MGRS institutions, there will be (a) consultation, training by U.S. short-term personnel; (b) participant training (on-the-job, observational, academic) of Egyptian personnel both in-country and in the U.S.; and (c) purchasing of scientific equipment, supplies and commodities for training, and exploration. The mixture of these three elements will differ for each of the three MGRS institutions because each is independent of the others in terms of personnel and scheduling requirements.

A list of U.S. TDY personnel and of U.S. training for each of the three institutions is attached in Annex 3. An illustrative list of all commodities to be purchased for the MGRS institutions is attached in Annex 4. These commodities were proposed jointly by each of the participating institutions the U.S. technical consultants and reviewed by USAID. Equipment that will be purchased for EGSMA and DRI includes vehicles, trucks, geochemical and geophysical instruments, and ore dressing equipment (for EGSMA); and drilling equipment (for DRI). The purchase of the RSC equipment will depend on a pre-project visit of two remote sensing instrumentation specialists to assess the hardware and software needs of the Multispectral Data System (M-DAS) in order to improve its capability of producing landsat imagery for the atlas of Egypt.

It is anticipated that a sub-grant in Egyptian pounds will be awarded

to ASRT to provide an atlas of landsat imagery of Egypt. This sub-grant will enable ASRT to pay all costs of these services including salaries. Should ASRT's cost prove unreasonable, USAID may solicit proposals from U.S. firms capable of producing these services.

The rounded cost of the services to be provided for each of the three institutions was estimated as follows: \$8.4 million for EGsMA, \$2.3 million for DRI and \$2.1 million for RSC.

2. Inputs to EGPC: the EGPC sub-projects are so highly specialized that they can be performed only by a very few specialized firms. EGPC does not have either the equipment, personnel or technical expertise to carry these sub-projects. The assistance program to EGPC will, therefore, be handled by individual contractors.

The sub-projects to be contracted include:

- Experimental seismic survey of the Gulf of Suez
- Source rock/oil migration of the Western Desert
- Sedimentary/lithologic study of the Western Desert and the Gulf of Suez
- Feasibility study of the EGPC data library
- Feasibility study of the establishment of seismic data storage systems
- R&D and feasibility study of tertiary-enhanced oil recovery
- Estimation of existing reserves and potential oil and gas reserves
- Regional seismic survey of the Western Desert pending on the World Bank study of the Western Desert.

In each of the eight sub-projects, technical assistance and training will be part of the contractual obligations of the U.S. contractors. In addition, some training aids will be provided to EGPC (see Annex 4), and U.S. training in library sciences will be given to six EGPC personnel.

III. PROJECT ANALYSIS

A. Relation to Country Objectives

Congressional Directives

The MPGAP strongly reflects the spirit of Section 106(a)(3) of the Foreign Assistance Act as amended in which the Congress of the United States declares that:

"There is potential for at least a moderate increase by 1990 in the production of energy for commercial use in the developing countries which are not members of the Organization of Petroleum Exporting Countries. In addition, there is a compelling need for vigorous efforts to improve the available

data on the location, scale, and commercial exploitability of potential oil, natural gas, and coal reserves in developing countries, especially those which are not members of the Organization of Petroleum Exporting Countries. The Congress further declares that there are many benefits to be gained by the developing countries and by the United States and other developed countries through expanded efforts to expedite the location, exploration, and development of potential sources of energy in developing countries."

USAID Objectives: CDSS Strategy

USAID's development strategy during the next five years for Egypt will be aimed at improving the economic situation through sectoral development, utilizing the concerns of equity, productivity and stability as programmatic guides. Total exports of goods and services are projected to increase at an annual growth rate of 7% for this period from three major sources: exports of goods, non-factor services and Egyptian worker remittances.

An annual growth rate of 9% in the export of goods is estimated for 1980, most of which is dependent upon the export of petroleum. With total imports of goods and services projected to increase from about \$7.8 billion in 1979 to about \$10 billion in 1984, the GOE is seeking to finance a larger proportion of imports through industrial product exports. Due to the deterioration in relations between Egypt and other Arab countries, it is unlikely that worker remittances will increase. In spite of the fact that exports of non-factor services (Suez Canal payments, tourism, etc) should increase during the next decade, increased revenues from petroleum and mineral exploitation will comprise the primary contribution to the GOE's realization of this goal. New discoveries of petroleum through the MPGAP would help meet increased domestic demand and improve the foreign exchange position because of world market prices of petroleum.

AID's activities in Egypt, MPGAP in particular, are designed to enhance the role of the private sector in the expansion of industrial productivity and its contribution to the development process. In order to encourage the private sector to operate in Egypt, a favorable investment environment is necessary. The MPGAP seeks to further strengthen such an environment through improving the GOE's capability to provide organized information on existing petroleum and mineral resources as well as potential reserves. Improved industrial productivity through joint ventures as well as direct foreign or domestic investment should be accompanied by improved efficiency in related public enterprises. Training, technical assistance and equipment inputs to EGSA, EGPC, DEI and the RSC, though aimed at attracting investment capital, will concomitantly serve to improve efficiency.

The MPGAP potentially will benefit Egypt as a whole as far as its balance of payments situation is concerned. Given the government's long tradition of concerns for equity, development of Egypt's natural resources will undoubtedly be translated into improvements in the quality of life for the entire population. However, most direct benefits will accrue to those people receiving training and for whom jobs will be created as a result of new petroleum and mining activities under MPGAP. The beneficiary question is treated more fully under the Social Analysis Section.

Relation to GOE Objectives

A major GOE objective, as stated in its recent five year plan, is to increase foreign exchange earnings through further development of Egypt's natural resources. The GOE wants to create new investment opportunities in commercially viable natural resources.

Oil is already a major source of foreign exchange earnings. However, the lack of knowledge of Egypt's oil and gas reserves as well as the need to find additional supplies to keep Egypt an oil exporting country is a major governmental concern.

Mineral resources are presently underexploited, (and somewhat unknown to the Foreign investor). The GOE plans to create a source of revenue through the commercial development of these resources by the Egyptian mining companies and/or foreign investors.

Starting in October 1980, EGSMA will be implementing its five-year plan, as approved by the Ministry of Industry and Mineral Wealth, to provide a comprehensive assessment of Egypt's mineral resources. Part of the activities described in the five year plan will be funded under this grant.

EGPC wants to identify the geology and geologic structure of oil reproducing areas in order to provide the petroleum companies with the geotechnical information needed to encourage leasing areas for oil exploration. EGPC has started to gather this information by contracting with Robertson Research Int. through a World Bank loan to correlate and interpret existing data in the WD. (Details of these studies will be given in the next section). Similarly, EGPC seeks to locate and estimate the petroleum reserves of the country, and identify geologically favorable petroleum areas in the Gulf of Suez. (Unfortunately these reserves were never properly estimated.) Financial services will be given to EGPC under this grant to support EGPC objectives.

The NPGAP will use results of three projects funded by the Special Foreign Currency Program: the Remote Sensing Project (NSF/OIP-71-01756) on the application of remote sensing to regional and national R&D projects in Egypt, and the South Carolina Project (NSF/INT-78-01469), which investigates the evolution and disruption of a major craton (both administered by the National Science Foundation); and a project aimed at studying desert erosion and sand movement in Egypt (SMI/FC-802-15700, administered by the Smithsonian Institute). None of these programs is involved in or aimed at natural resource assessment but each could contribute useful geologic data to the program. Additional projects which could have an impact on the NPGAP include:

1. EGSMA

- a) The Bureau of Research for Geology and Mining (BRGM) of France has developed a \$120,000 preliminary program with EGSMA to determine their contribution to cooperation in the study of the geology of Egypt. The first phase includes:

- Library organization. This consists of: collecting and analyzing geologic data; producing a bibliography of the geology of Egypt; and storing the data in a computer to make it available to users.
- Economic studies, including feasibility studies of selected ore deposits.
- Geochemical prospecting, including training geochemists in geochemical prospecting.

The preliminary program will last two years (1980-1982) with the idea of extending the program at the end of that time. The potential exists for some duplication of studies between this program and the MPGAP in geochemical prospecting and in feasibility study designs for ore deposits. When the MPGAP program is started, details of work being carried out on the preliminary French program and any extensions of the work will be examined to avoid duplication.

- b) The USGS has had a program with EGSM, sponsored by AID, which was scheduled to end by June 30, 1980, but has been granted an extension of one year. The last stage, Phase III, of this program consists of one resident cartographer training EGSM personnel in the preparation of 1:2,000,000 geologic map of Egypt and 2 maps of two quadrangles in the ED at a scale of 1:250,000. Under this phase, seven GOR geologists have been trained in the U.S. Four U.S. TDYers have trained EGSM personnel in mineral prospecting and geochemical laboratory supplies and equipment. Phase III is to be operative until the initiation of MPGAP.

2. EGPC

Work Bank Loan: EGPC has contracted Robertson Research International Ltd. to do an evaluation of the petroleum potential of the Western Desert and the Nile Delta Basin. This study, which will cost \$1.7 million, includes:

- Construction of composite standard sections and the standardization of stratigraphic nomenclature.
- An interpretation of gravity, magnetic and selected seismic data over the northern part of the Western Desert and parts of the Eastern Desert.
- Maps depicting the results of source rock, structural and facies studies.
- Identification and definition of prospective oil and gas reservoirs.
- Recommendations for additional geophysical and geological studies.

These studies will take sixteen months to complete. It will be important, before the MPGAP seismic study of the Western Desert is agreed to, to review the results of this project to ensure that there will be no duplication of effort.

B. Technical Feasibility

The activities described in the MPGAP are realistic and technically feasible. Our assessment relies on the judgement made by the USGS team, the PP consulting team, the discussion on the design of this program with the foreign petroleum companies operating in Egypt and the Egyptian mining companies. All have assured us that the activities to be undertaken in the MPGAP are within the technical capabilities of the respective institutions. Furthermore, the fact that the BRGM and the World Bank have embarked on similar activities as those of the MPGAP reinforces our belief that the GOE has well-qualified and well-trained personnel on the staff of its resource agencies who are technically competent to carry out the MPGAP.

The EGPC is a well-run, well-managed organization which is performing its assigned tasks in a creditable manner. It is felt that the results of this program not only will give the organization a boost in its effort to discover petroleum resources, but the training that each contractor is to give to EGPC personnel will enable the company to operate in an even more efficient manner.

The EGSMA has developed in its future plans a broad program that will more than fulfill the geologic mapping needs of Egypt. The organization is handicapped by old equipment both in the field and in their laboratories, a problem slowly being alleviated by donations from USAID. The results of the MPGAP should go a long way toward modernizing the agency. Along with equipment goes the need to train personnel in the latest techniques in data gathering, for although the EGSMA personnel are academically proficient, many new technologies have been developed which should be transferred

DRI has qualified people who seem to be obtaining recognition through their publications. Of interest is that middle management personnel appear to have stayed with the institute; this fact has given continuity to the organization. The training that will be offered in the MPGAP program, and the equipment that will be procured, will upgrade this agency to continuously produce hydrographic information on locations of natural resources.

The RSC, being a relatively new agency, has a quantity of up-to-date equipment, much of it very advanced. The people who work for the center are apparently satisfied to remain, as publications are numerous and the imagery that has been released is of excellent quality. They seem to take a certain pride in the organization. The commodities that will be offered in the MPGAP will be mostly in the form of software programs for the computer and some hardware. Training RSC personnel in its use will be important. In addition, training in photogeology to be given by TDY personnel will be of benefit not only to RSC personnel but also to the other MPGAP personnel as well.

The one activity where the technical feasibility is not certain is the seismic survey of the Gulf of Suez. In fact, the study is to determine if there is a technically feasible method to obtain useful seismic data in this area given the geologic structures. The contractor will first review all the current literature related to this problem and then recommend a phased course of action. The contract itself will be of a level of effort nature since it is not known if a solution can be found.

C. Environmental Analysis

The MPGAP per se will have no significant detrimental environmental impact as actual mining and exploration activities will not be undertaken by the program. However, if the program efforts are successful, mining and petroleum exploration will follow. When this happens, environmental assessments will be required of contractors for each component of their projects and included in their scopes of work so that the GOE will be aware of potential environmental hazards. The technical advisor working with EGSM on leasing contracts will build in environmental assessment considerations. Such information will be necessary so that informed decisions can be made and precautions taken concerning future mining and petroleum operations.

Among the possible environmental problems which could result from follow-on exploration and mining and should be treated by contractors are:

1. Land degradation during mining operations and the construction of new settlements for those working in the mines.
2. Contamination of potable water supplies.
3. Noise and atmospheric pollution which would affect miners' settlements and any neighboring populated areas.
4. Diversion or other alteration of water supplies.
5. Threats to preservation of archaeological discoveries.

Under the MPGAP, where it is necessary to drill holes in the course of doing surveys or studies, they will be capped to ensure safety from pollutants while, at the same time, remaining accessible for measurement at a later time. Noise pollution from any drilling activities will be at a minimum, though areas where such work will take place are largely uninhabited. GOE is urged to conduct a complete environmental study for each community developed as a result of mining ventures. The full Environmental Impact Identification and Evaluation Form is attached in Annex 7.

D. Social Soundness Analysis

The nature of the MPGAP does not lend itself to a traditional social soundness analysis. As the program will be supplying commodities, technical assistance and training consistent with Egyptian development goals and plans to the four involved entities, the following may be concluded regarding the social implications and the societal effect:

1. The program is compatible with the social and cultural environment of Egypt.

2. The program is designed to attract mineral and petroleum investors to Egypt, thereby increasing the GNP and easing the present balance of payment deficit. Ensuring utilization of findings is an integral aspect of the projects.
3. Benefits should be widespread, as one intent is to increase the GNP which should have a lasting positive impact on the economy through contributing to the improvement of welfare of all Egyptians.
4. The proposed training will produce better qualified personnel in the resource agencies. Well-managed resource organizations designed to carry out the search for and development of natural resource deposits will greatly improve the chances of attracting outside capital.
5. The program will help narrow the functional gap between research and the requirements of potential investors. In addressing user needs and information dissemination, the MPGAP targets an area affecting the interests of all prospective participants in scientific and technological research. Efforts may be more meaningful and useful in a modernizing context.
6. Assuming that the program is successful in attracting additional investment, the potential for employing several hundred miners in each operation exists. If adequate water supplies are located, permanent settlements may be established to accommodate families. The areas identified as possessing the most potential for petroleum and mining are as yet largely uninhabited. Establishment of settlements would require infrastructure including water, electricity, health services, sanitary facilities and schools. If soils and water in mining areas are of acceptable quality, farming activities can develop and a new source of employment and income be made available.

The potential spread effect of the project of touching users is incalculable. Within the technological community, it can be confidently assumed that the MPGAP could stimulate additional interest and communication among knowledgeable scientists, technologists and investors in other countries.

E. Statement on Women

Perhaps, more than other institutions in the Middle East, the scientific establishment in Egypt provides an avenue for utilization of the skills of trained women. On the whole, women are able to attain professional status with fewer obstacles related primarily to their sex.

The principal organizations with whom the program deals have women in both executive and professional capacities. Women will be included in the training program and benefit from all aspects discussed in the social soundness analysis.

F. Economic Analysis

It is impossible to adequately quantify the direct and indirect benefits of this program. However, we can look at the program as an investment; estimate the income stream that would be necessary to produce a reasonable economic rate of return; and, assess whether or not it is realistic to assume such an outcome.

The program is designed basically to produce information. If we could place a value on this information, we would be able to quantify the direct benefits. However, there is no reasonable way to do this since the information will not be marketed in any real fashion. An alternative would be to measure the benefits that will accrue directly to those individuals and institutions producing the information. The individuals involved will have their technical skills and professional qualifications upgraded as a result of this program. Thus, one would expect that they would be able to command a higher salary for their services. The difference between the old and new real salaries would be a measure of the benefits of the program. Unfortunately, there is no reasonable way to estimate what this change might be. Similarly, institutional capacities to produce more information of higher quality as a result of this program would make one expect that the real value of their services will increase. However, the same problem remains in not having a good way to estimate this increase in value.

Indirect benefits accruing from the use of information produced by this program are potentially much more significant than the direct benefits. While it also is not possible to quantify the indirect benefits, it is important to be aware of them. Better information on the nature and location of potentially exploitable mineral and petroleum resources will reduce the risk and development costs to investors; and increase the concession return to Egypt. Further, there will be attendant benefits from any investments that occur in terms of jobs created, foreign exchange earned and/or saved, and, the increased supply of petroleum and/or mineral products. These indirect benefits are potentially very large.

The question still remains whether or not it is reasonable to invest \$49.8 million (i.e. \$65.6 million less inflation - 1980 prices) in the production of information on mineral and petroleum resources. If in fact we treat the program as an investment over five years and require it to have a 15% economic rate of return (EROR-assumed to equal the opportunity cost of capital), then over a 20-year time horizon after the project is completed, the net cash flow would be only \$14 million annually. Thus, if this program is at all successful in increasing investment in petroleum and/or mineral resources, those investments combined would need to produce a net additional return of only \$1 million annually, over their own internal net return requirements for a 15% EROR, in order to provide a fair return for the investment in this program. Given the nature of investments in petroleum and minerals, and the value these resources in general can command, this appears to be a fairly reasonable assumption.

G. Funding and Financial Plan

The total cost of the program is estimated at about \$65.7 million. AID will provide a grant of approximately \$37.2 million. The GOE contribution in kind from the four different institutions is the equivalent of about \$28.4 million. The AID input will be obligated as follows: \$20.7 million in FY 80 and \$16.5 million in FY 82.* Expenditures in rounded figures for FY 81 are \$6.3 million; for FY 82, \$11.8 million; for FY 83, \$9.6 million; for FY 84, \$8.4 million; and for FY 85, \$1.0 million. These are in accord with the proposed budget shown in Block 8 of the attached face-sheet, subject to the availability of funds and pending an EGPC decision to undertake the regional seismic survey of the Western Desert. Approximately 8.7% of the grant is directed toward commodities and 52.6% into U.S. contractual services.

Contractual services for EGPC studies and EGSMA airborne survey (AS) are usually negotiated on a fixed-price basis and include all items such as salaries, transportation and accommodation, processing and interpretation of data, field work, training, report preparation and all other direct or indirect costs. Costs are usually estimated on the final product. It is, therefore, difficult to offer an estimate of the level of effort required and it will be the responsibility of EGPC for its sub-projects and of USAID for the AS to contract those studies with the reserved funds. The cost of each EGPC contract was estimated by EGPC in collaboration with the U.S. technical consultant, and were based on similar studies which EGPC subcontracted internationally. The cost for the AS was estimated using a recent USGS report on airborne survey for Egypt and an estimate given by the U.S. consultant in the PP team. These costs are best estimates using 1980 figures and could vary considerably, but it is expected that they are in order of magnitude. The costs for the MPGAP commodities are also realistic 1980 figures. The list attached as Annex 4 is illustrative and when actual specifications are drawn up costs and items may change.

The following four tables, AID Obligations by Fiscal Year, Summary Cost Estimate and Financial Plan, Projection of Expenditure by Fiscal Year and Input Source, and Costing of Project Inputs/Outputs, offer line item explanations of the funding allocation.

1980 figures are given constant costs. Contingencies have been figured at 5% per annum; the L.E. inflation rates at 20% for the first two years and 15% thereafter. The dollar inflation rates are 10% for the first two years and 7.5% thereafter.

*This is funding for the regional seismic survey of EGPC, which will be defined after results of the World Bank Study.

TABLE III-1.

AID OBLIGATIONS BY FISCAL YEAR (\$000)

Mineral, Petroleum and Groundwater Assessment Program
Project 263-0105

	FY80			FY82			TOTAL OBLIGATION		
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL
. TECHNICAL ASSISTANCE	2780	1437	4217				2780	1437	4217
. CONTRACTUAL SERVICES	7391		7391	12200*		12200*	19591		19591
. OFFICE EQUIPMENT	4	308	312				4	308	312
. U.S. TRAINING	829	44	873				829	44	873
. COMMODITIES	3251		3251				3251		3251
. EVALUATION	70	61					70	61	131
SUBTOTAL	<u>14325</u>	<u>1850</u>	<u>16175</u>	<u>12200*</u>		<u>12200*</u>	<u>26525</u>	<u>1850</u>	<u>28375</u>
. CONTINGENCIES 5%	716	93	809	610		610	1326	93	1419
. INFLATION	2687	992	3679	3716		3716	6403	992	7395
TOTAL AID OBLIGATION	<u>17728</u>	<u>2935</u>	<u>20663</u>	<u>16526*</u>		<u>16526*</u>	<u>34254</u>	<u>2935</u>	<u>37189</u>

* Depends on the results of the World Bank study in the Western Desert

TABLE III-2.

SUMMARY COST ESTIMATE AND FINANCIAL PLAN

(\$000)

Title: Mineral, Petroleum and Groundwater Assessment Program

Project No.: 263-0105

<u>SOURCE</u>	FX	<u>AID</u> LC	TOTAL	FX	<u>GOE</u> LC	TOTAL	<u>COMBINED</u>		
							FX	LC	TOTAL
<u>USES</u>									
1. Technical assistance	2780	1437	4217		5526	5526	2780	6963	9743
2. Contractual services	19591*		19591	1950	1300	3250	21541*	1300	22841
3. Office and equipment	4	308	312		6403	6403	4	6711	6715
4. U.S. training	829	44	873		2983	2983	829	3027	3856
5. Commodities	3251		3251				3251		3251
6. Evaluation	70	61	131				70	61	131
7. SUBTOTAL	<u>26525</u>	<u>1850</u>	<u>28375</u>	<u>1950</u>	<u>16212</u>	<u>18162</u>	<u>28475</u>	<u>18062</u>	<u>46537</u>
Contingencies 5%	1326	93	1419	97	810	907	1423	903	2326
Inflation	6403	992	7395	305	9031	9336	6708	10023	16731
Total uses	<u>34254</u>	<u>2935</u>	<u>37189</u>	<u>2352</u>	<u>26053</u>	<u>28405</u>	<u>36606</u>	<u>28988</u>	<u>65594</u>

* The sum of \$12.2 million is allotted for the Western Desert seismic survey. Final decision will await the results of the World Bank project.

TABLE III-3.
PROJECTION OF EXPENDITURES BY FISCAL YEAR AND INPUT SOURCE (\$000)

Title: Mineral, Petroleum and Groundwater Assessment Program

Project No.: 263-0105

	FY81			FY82			FY83			FY84			FY85			TOTAL PROJECT		
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL
A. AID INPUTS																		
1. Tech. Asst. & Trg.	534	262	796	649	427	1076	726	374	1100	539	230	769	332	144	476	2780	1437	4217
2. Contractual services	1088		1088	7953*		7953	5750*		5750	4800*		4800				19591*		19591
3. Office and equipt.	1	99	100	1	57	58	1	57	58	1	57	58		38	38	4	308	312
4. U.S. Training	212	2	214	336	14	350	13400	14	148	92	9	101	55	5	60	829	44	873
5. Commodities	3251		3251													3251		3251
6. Evaluations							35	31	66				35	30	65	70	61	131
7. Subtotal A	5086	363	5449	8939	198	9437	6646	476	7030	5432	296	5728	422	217	639	26525	1850	28375
8. Contingencies 5%	255	18	272	447	25	472	332	24	356	271	15	286	21	11	32	1326*	93	1419
9. TOTAL	5341	381	5722	9836	523	9909	6978	500	7386	5703	311	6014	443	228	671	27851	1943	29794
10. Inflation	534	76	610	1689	198	1887	1884	294	2178	2110	233	2343	186	151	377	6403	992	7395
11. TOTAL AID	5875	457	6332	11075	721	11796	8862	794	9564	7813	544	8357	629	419	1048	34254*	2935	37189*
B. GOE INPUTS																		
1. Technical Asst.		1445	1445		1282	1282		1022	1022		1022	1022		755	755		5526	5526
2. Contractual services	900	300	1200	925	300	1225	125	300	425		300	300		100	100	1950	1300	3250
3. Office and Equipt.		1012	1012		1493	1493		1493	1493		1493	1493		912	912		6403	6403
4. Training		511	511		697	697		697	697		647	647		431	431		2983	2983
5. Subtotal	900	3268	4168	925	3772	4697	125	3512	3637		3462	3462		2198	2198	1950	16212	18162
6. Contingencies 5%	45	163	208	46	189	235	6	175	181		173	173		110	110	97	810	907
7. Inflation	95	686	781	175	1505	1680	35	2175	2215		2726	2726		1939	1939	305	9031	9336
8. TOTAL GOE	1040	4117	5157	1146	5466	6612	166	5862	6028		6361	6361		4247	4247	2352	26053	28405
C. TOTAL AID + GOE																		
	6915	4574	11489	12221	6187	18408	9028	6656	15592	7813	6905	14718	620	4666	5295	36606	28988	65594

*The sum of \$12.2 million is allotted for the Western Desert seismic study. Final action must await the results of the World Bank study.

TABLE III-4.
COSTING OF PROJECT INPUTS/OUTPUTS
(\$000)

Title: Mineral, Petroleum and Groundwater Assessment Program

Project No.: 263-0105

OUTPUTS**	EGSMA			EGPC			DRI			RSC			TOTAL		
	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL	FX	LC	TOTAL
AID CONTRIBUTION															
1. Technical Assistance	1269	631	1900	3385	91	476	544	250	794	582	465	1047	2780	1437	4217
2. Contractual Services	2000		2000	17591*		17591*							19591*		19591*
3. Office Equipment	1	81	82	1	77	78	1	76	77	1	74	75	4	308	312
4. U.S. Training	378	36	414	386		386	65	8	73				829	44	873
5. Commodities	1902		1902	175		175	780		780	394		394	3251		3251
6. Evaluation	18	16	34	18	16	34	17	15	42	17	14	31	70	61	131
7. Subtotal	5568	764	6332	19556	184	18740	1407	349	1756	994	553	1547	26525	1850	28375
8. Contingencies 5%	278	38	316	928	9	937	70	18	88	50	28	78	1326	93	1419
9. Inflation	1066	434	1500	4869	90	4959	257	195	452	211	273	484	6403	992	7395
10. TOTAL AID	<u>6912</u>	<u>1236</u>	<u>8148</u>	<u>24353*</u>	<u>283</u>	<u>24636*</u>	<u>1734</u>	<u>562</u>	<u>2296</u>	<u>1255</u>	<u>854</u>	<u>2109</u>	<u>34254*</u>	<u>2935</u>	<u>37189*</u>
GOE CONTRIBUTION															
1. Technical Assistance		1525	1525		1500	1500		499	499		2002	2002		5526	5526
2. Contractual Services				1950	1300	3250							1950	1300	3250
3. Office and Equipment		2600	2600		800	800		2002	2002		1001	1001		6403	6403
4. Training		2002	2002		180	180		499	499		302	302		2983	2983
5. Subtotal		6127	6127	1950	3780	5730		3000	3000		3305	3305	1950	16212	18162
6. Contingencies 5%		306	306	97	189	286		150	150		165	165	97	810	907
7. Inflation		3412	3412	305	1930	2236		1754	1754		1934	1934	305	9031	9336
8. TOTAL GOE		<u>9845</u>	<u>9845</u>	<u>2352</u>	<u>5899</u>	<u>8252</u>		<u>4904</u>	<u>4904</u>		<u>5404</u>	<u>5404</u>	<u>2352</u>	<u>2605</u>	<u>28405</u>
TOTAL PROJECT	<u>6912</u>	<u>11081</u>	<u>17993</u>	<u>26705</u>	<u>6182</u>	<u>32888</u>	<u>1734</u>	<u>5466</u>	<u>7200</u>	<u>1255</u>	<u>6258</u>	<u>7513</u>	<u>36606</u>	<u>28988</u>	<u>65594</u>

*Depends on the financing of the seismic survey of the MD for a sum of \$12.2 million, to be obligated in FY82 subject to the availability of funds, and scope of project developed after the World Bank Study results.

**Each institution will produce outputs as described in Part II.

IV. IMPLEMENTATION PLANNING

A. Administrative Arrangement and Feasibility

MPGAP Management Organization

Figure IV-1 on the following page illustrates the organization of the MPGAP management system; from the flow of money by a grant from AID to the Government of Egypt through the parent ministries of the MPGAP agencies. Each agency will be autonomous, and each will be represented by its chairman (or his designee), who will be a full member of the GOE-MPGAP Coordinating Committee chaired by the President of ASRT and assisted by his vice President. Each agency chairman will nominate a project manager (EGPC will nominate two) who will be responsible for ensuring that the conditions of the program agreed upon by their agency are followed.

Under the USAID project officer there will be a USG project manager. Attached to his office will be: 1) a contractor who will be responsible for coordinating specifications for equipment and contracts with the Minerals, Groundwater and Remote Sensing sector (MGRS); 2) an airborne survey contractor (ASC) to perform the magnetic, and radiometric studies for EGSM.

In the petroleum sector, the EGPC will handle the subcontracting of the eight different studies, with coordination from the two EGPC project managers.

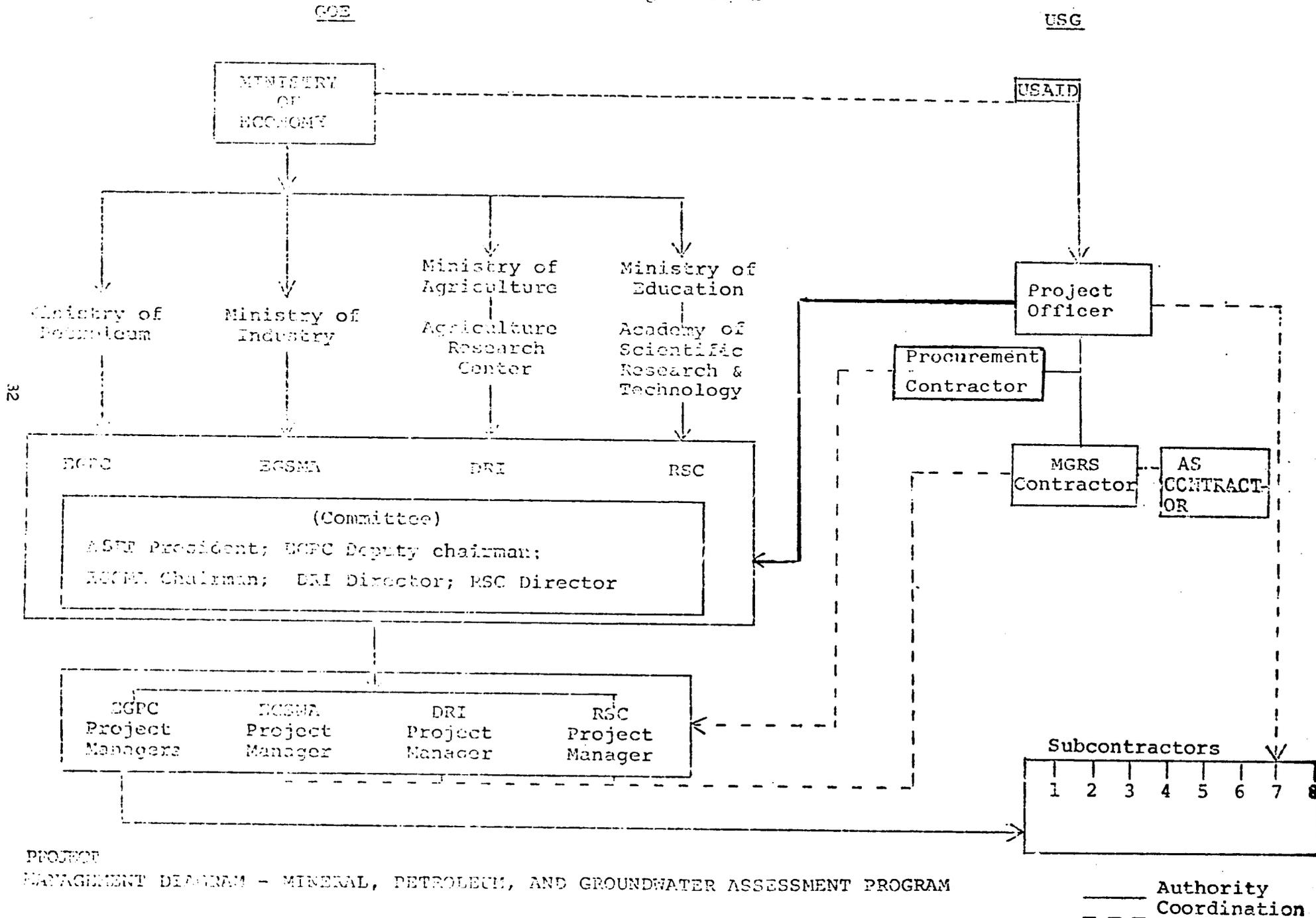
This administration is feasible given the complexity of the program, the flexibility in program implementation, the diversity of the information produced, and the autonomous status of the four institutions. The administration of MPGAP was discussed earlier in the issue section of this paper.

U.S. Management

The management of the program, from the standpoint of the U.S., will be by contractors, as listed below:

- a) Contracting institutions to work closely with the program managers of EGPC to prepare and follow through RFPs on the eight EGPC subprojects.
- b) A contracting institution for the MGRS who will have the prime responsibility for performing the technical assistance services for mineral, groundwater and remote sensing components of the project.
- c) A contractor for the airborne survey who will have the responsibility for performing the magnetic, electromagnetic and radiometric surveys of the MPGAP.
- d) Up to eight subcontractors for EGPC.
- e) A contractor to act as a purchasing agent for the MPGAP commodities.

Figure IV-1



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PROJECT MANAGEMENT DIAGRAM - MINERAL, PETROLEUM, AND GROUNDWATER ASSESSMENT PROGRAM

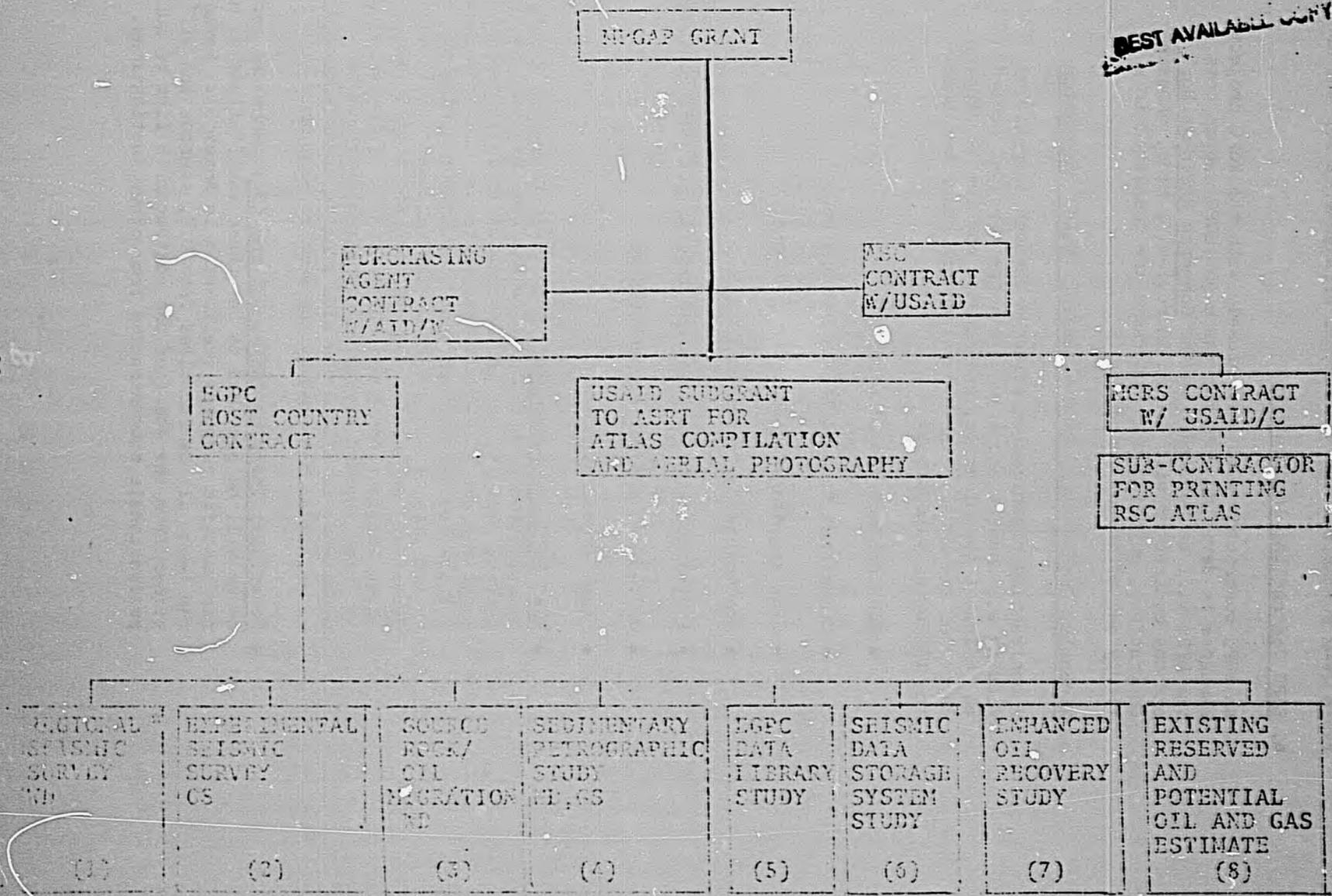
Authority
Coordination

Figure IV-2

MOGAP CONTRACTUAL ARRANGEMENTS

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*Pending results of the World Bank Study.

Table IV-2 summarizes the contractual arrangements for the MPGAP.

a. EGPC Contracting Institution

An EGPC contractor will work closely with the EGPC project managers in devising RFPs for the eight EGPC subprojects. The RFPs will be published in the Commerce Business Daily and the contractor will assist in reviewing bids, choosing contractors, ensuring that contracts are completed in a timely and efficient manner.

b. Minerals, Groundwater, Remote Sensing (MGRS) Contractor

A contracting organization selected through competitive bidding will manage and provide all the services needed to implement the minerals, groundwater and remote sensing sector of the MPGAP. These services are described under the following categories:

- MGRS project coordinator
- Consultant team to EGSMA, DRI and RSC
- U.S. training for Egyptian personnel
- Subcontracting services
- Instrumentation services and training on MGRS equipment
- U.S.-based project support inputs
- Other services.
- MGRS Project Coordinator: the MGRS contractor, after formal consultation with USAID/Cairo and the institutions, will select, recruit, assign and provide logistic support in Egypt for one full-qualified person who will service as a full-time resident project coordinator during the entire life of the project. The incumbent will coordinate, direct and administer the U.S. support activities to the three institutions EGSMA, DRI and RSC. This person will be equipped through extensive and directly relevant experience to afford the wide ranging assistance and coordination demanded by the support program.
- Consultant Teams to EGSMA, DRI and RSC: technical assistance teams will be provided to the three institutions as needed for specific purposes (delineated in Annex 3). Members of the team will be recruited from U.S. sources and will be either from the staff of the contractor's firm or qualified professionals subcontracted from other institutions.

- U.S. Training for Egyptian Personnel: in addition to providing opportunities for the in-country training and the experience derived from working with consultant teams in formulating and executing the project, U.S. training for selected personnel as delineated in Annex 3 will be provided by the contractor.
- Subcontracting Services: it is anticipated that the MGRS contractor will subcontract the publication of an atlas of the landsat imagery of Egypt which will be prepared by the RSC under a sub-contract from USAID.
- Instrumentation Services and Training on MGRS Equipment: the contractor will use his staff or contract qualified instrumentation specialists from Egypt and the U.S. for services and training on instrumentation
- U.S.-Based Project Support Inputs: funds will be provided to the MGRS contractor to appoint a full-time MGRS project manager based in the U.S., a full-time administrative assistant and secretarial services to schedule and supervise all foreign personnel and subcontractors assigned to the MGRS in Egypt.
- Other Services: the contractor will be provided with necessary funds to:
 - Subcontract U.S. or Egyptian firms for the printing of geologic and hydrogeologic maps.
 - Reproduce final reports.
 - Hire Egyptian consultants on a part-time basis, if needed, for project implementation and after USAID approval.
 - Acquire for EGEMA, DRI and RSC books, periodicals, articles and references in direct relevance to the components of the program.
 - Organize, participate in and provide logistic support to the MPGAP semi-annual meeting.
 - Provide opportunities for high-level management officials of the four institutions and their project managers to make orientation and observation visits to appropriate U.S. scientific and technical organizations of direct relevance to the MPGAP.

- Invite, after consultation with and approval of USAID/Cairo, and at the request of MPGAP agency heads, a limited number of U.S. scientists to visit the institutions, participate in the semi-annual meeting and advise on particular issues of program implementation.
- Pay in local currency for training fees for approximately twenty Egyptian personnel to attend a three-month course on basic remote sensing methods and applications at the RSC.

c) Airborne Survey Contractor (ASC)

A. U.S. and/or Egyptian firm selected through competitive bidding will perform the magnetic and radiometric surveys of the southern and central parts of the ED. The successful contractor will be expected to:

- Gather the appropriate data by flying over these areas.
- Process and interpret data.
- Submit the appropriate maps and reports pertinent to the investigation.
- Train EGSMa personnel on the interpretation of the airborne surveys.

The technical specifications for these surveys will be developed by the IQC in collaboration with EGSMa.

d) Subcontractors for EGPC

With the exception of the library science training in the U.S., all eight subprojects will be executed by U.S. firms which will collect data in Egypt and perform technical work, process and interpret data in the U.S. and provide EGPC with the end product in the form of reports and/or maps. There will be an AID-sponsored U.S. resident coordinator for the EGPC subcontractors. EGPC will be the host country contractor for all subprojects and has nominated individual supervisors for each of the eight studies to be performed.

e) Purchasing Agent

A purchasing agent will receive the commodity list from AID/W and be responsible for purchasing commodities during the first year of project implementation. He will perform the tasks listed in Annex 5.

GOE Administration

1. MPGAP Coordinating Committee

To provide for joint planning of program policy and to set goals and periodically review the results obtained, a MPGAP Coordinating Committee, consisting of the President of the ASRT as chairman and the directors of the four participating institutions as members, has already been established. It will be enlarged to include the USAID project officer, the MPGAP program manager and the MGRS project coordinator as ex officio members. The activities of this committee will be as follows:

- To initially review the policies by which the program is to function and outline procedures to follow in conducting periodic reviews.
- To meet on a bi-monthly basis to coordinate the program, review the executive summary presented by each of the members, manage and resolve problems that may delay project implementation.
- To serve as an infrastructure advisory and information group with the GOE in program-related functions of the grant agreement.
- To organize and chair the MPGAP semi-annual meetings, take a leading role in reviewing the accomplishments of the preceding period, make plans for the upcoming six month period and determine the extent to which operations are consistent with the program goal.
- To function as a sounding board in relation to the development of the natural resources of Egypt, establish liaison with the different GOE committees, institutions and companies which have complementary activities.
- To provide links with U.S. and Egyptian scientific institutions, organizations and individuals indirectly or directly related to the MPGAP.

2. GOE Institutional Organization

Each of the members of the MPGAP Coordinating Committee will nominate a project manager to be responsible for the day-to-day management of the program. Figure IV-3 summarizes the administrative organization of each of the four institutions.

- a) EGSMA: under the EGSMA project manager there will be a full-time administrative assistant and five officers who will implement the different activities involved. The five officers will meet periodically with the PM and MGRS project coordinator and will present bi-monthly reports to the EGSMA PM summarizing the on-site activities, objectives and achievements.

- b) EGPC: Each of the eight project supervisors will be the technical counterpart for the subcontract for which he is responsible. He will provide background and technical information, assist in administrative support, evaluate and assess the reports. The eight supervisors will be under the authority of the two EGPC project managers. The project manager for geologic exploration will have the overall responsibility for the first six projects; the project manager for engineering and exploration will coordinate the remaining projects on the estimation of oil reserves and the tertiary oil recovery feasibility study. The MPGAP program manager or USAID project officer is expected to coordinate with the EGPC project managers and ensure close working relationships between EGPC and the U.S. contractual firms.
- c) DRI: under the DRI PM, there will be two assistants, one to provide logistic support and the other to be responsible for all technical DRI activities. The technical division assistant will coordinate all the field trips for the Eastern and Western Deserts, ensure that samples are analyzed and review the project reports drafted by the field team chiefs.
- d) RSC: RSC's organization consists of an RSC PM and three supervisors for computer data processing, landsat imagery and training.

MPGAP should have a GOE project coordinator as an employee of ASRT, to:

- a) Provide conduit for guidance and program oversight from the USAID project officer and feedback link to USAID;
- b) Act as a liaison between MPCAP coordinating committee and USAID project officer;
- c) Coordinate overall disparate aspects of GOE units involved and contractors assisting in these activities;
- d) Assist in evaluating and ranking proposals for MGRS and EGPC contractors;
- e) Keep the MPGAP coordinating committee informed of program progress;
- f) Participate in MPGAP evaluations;
- g) Chair biannual meetings of MPGAP;
- h) Work closely with sub-project managers of each of the MPGAP agencies providing technical assistance, logistical support and coordination of effort on a day-to-day basis.

USAID Responsibility

A USAID project officer will be drawn from the staff of the Office of Science and Technology (S&T) in the Division of Human, Social and Technological Development (HSTD). His or her responsibilities are enumerated below.

The USAID Project Officer will:

- Represent USAID in the MPGAP Coordinating Committee as an ex officio member and attend the MPGAP annual meeting or any other formal or informal meeting related to MPGAP.
- Routinely monitor the project with the advice and assistance of the MPGAP program manager.
- Ensure that identification, selection and negotiations of U.S. contractors and the flow of AID funds are in accordance with AID procedures.
- Provide guidance and assistance required to accomplish specific implementation tasks.
- Participate in the evaluation sessions and in making decisions as to whether the program should continue or whether it has reached the specific purpose set forth in the project agreement.

USAID's two other responsibilities will be:

- Identification of the training program and travel arrangements for the six technical data librarians for EGPC.
- Review and signature of the PIO/Ps and IAP-66 visas. Forms will be completed by the MGRS and EGPC host country contractors.

Figure IV-4 shows the MPGAP Administrative Plan.

B. Publication and Dissemination of Information

Agency Reports

The ever-increasing volume of published and unpublished reports in the MPGAP agencies and the need for up-to-date information by scientists and investors alike have created a demand for geologic information that is not being met at the present time. A key component of the MPGAP is, therefore, to develop a system for the timely release of these data to the user public, for it is one of the primary purposes of this program that the data that are gathered as a result of the MPGAP, and those which are the files of the various agencies, become available for the decision-making process of investment.

1. EGSMA

EGSMA has already entered into an agreement with the Bureau of Research for Geology and Mining to reorganize its library. They have also started compiling data for the EMDs and will con-

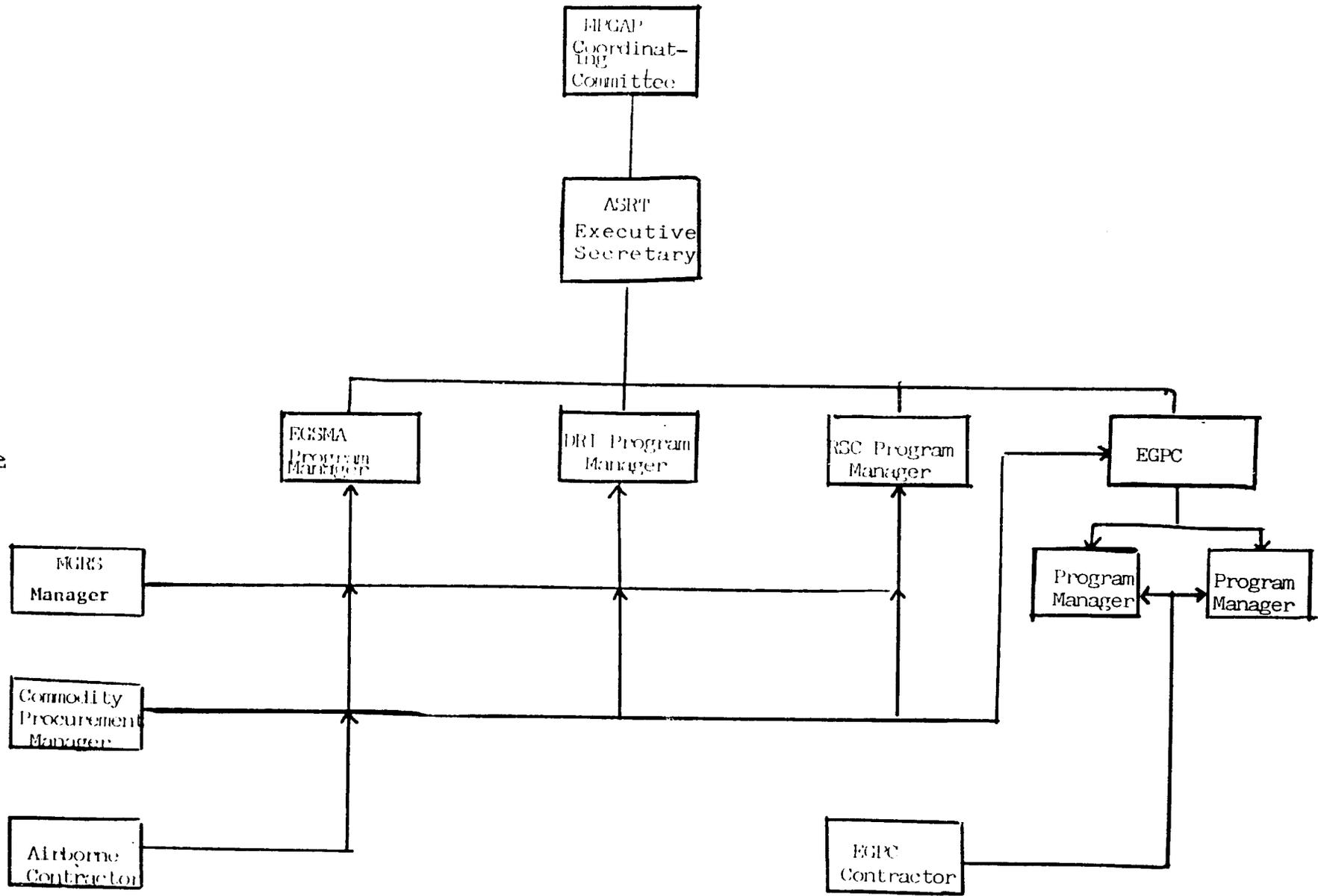


FIGURE IV-4. MFGAP Administrative Plan

tinue to do so during the life of this project. All reports that are completed will be available for the EDS system. It is also anticipated that there will be increased reports preparation. To help achieve their goals, a U.S. editorial specialist will work at EGSMA for 24 p.m.'s, on editing the existing unpublished reports and assisting the principal investigators in compiling their reports for publication. The U.S. editor will be attached to the Office of Scientific Reports, which will be created under the EGSMA chairman to deal principally with matters related to reports preparation and publication and their distribution to the user public. It will be necessary for each principal investigator of the different components to write a preliminary report after each field season to be released as an informal report at the earliest possible time, and a final report at the end of each activity. The U.S. contractor will have a role in ensuring that the reports and maps are produced as quickly as possible and they follow a predetermined schedule agreed upon with EGSMA project manager. It is also EGSMA's intention to make available, either through their library or sold at printing cost price, the reports and geologic maps of Egypt at 1:1,000,000.

2. EGPC

EGPC has already taken steps to create its own infrastructure for providing data and information. They have started reorganizing their present data and have followed the recommendations of PIC. They plan to establish a computer data base system upon completion of the feasibility study. The reports required under the MPGAP will be produced by the U.S. contractors in their contractual obligations. As it was mentioned earlier, for each of these activities there will be an EGPC project officer to provide advice, technical expertise and review of the reports in order to assess quality and relation to the scope of work of the contract. (The final reports on these studies will be available on request at EGPC from the exploration division and will be included as background documents for all tenders for petroleum concessions in the WD and in the GS.)

3. DRI

DRI has established the development of its library research facilities as a priority in the MPGAP. They have scheduled a full year to reorganize, collect and index reports, and obtain additional reports and maps from other GOS agencies. Reports of the nine areas will be drafted by the two field teams who will produce their progress reports between field seasons. It will be the responsibility of the DRI project manager to ensure that all reports are written on a predetermined schedule in conjunction with the MGRS contractor. Hydrographic maps will be drawn at DRI and distributed to the user public and to the various libraries of the MPGAP agencies.

4. RSC

The RSC's report responsibilities are those connected with the photo interpretation courses and the interpretation of landsat imagery that will be carried on with personnel of EGSMA and DRI. These

will be distributed to the various MPGAP agencies as well as be available in the library of RSC. The imagery produced by the RSC for use by the MPGAP agencies will be available at nominal cost and the atlas of Egypt will be distributed to GOE agencies, universities, etc., free of charge. Additional copies will be available at reasonable prices.

Other Arrangements

Since each MPGAP agency has the responsibility of information dissemination, any request for geologic data will be made through the particular MPGAP agency or the GOE MPGAP committee. Besides the regular reports issued by each agency, arrangements will be made to distribute geologic information through:

1. Semi-Annual MPGAP Meetings

Twice a year there will be 2-3 days general MPGAP meetings organized under the auspices of the MPGAP-GOE coordinating committee. These meetings will include the project manager; principal investigators of EGPC, EGSM, DRI and RSC; the U.S. contractors; selected personnel from the oil and mining companies; representatives from the GOE ministries, universities, investment authority and potential investors; and representatives from the U.S.-Egypt Joint Business Council. The purpose of these meetings is to enable each project manager to brief the audience on the accomplishments of each sector, review and discuss the results obtained, exchange ideas and interpretations and determine the extent to which the MPGAP components and operations are consistent with its goals. International speakers may be invited to address the audience and participate in the sessions of these meetings. An assessment of the results obtained will be issued in the form of recommendations. Also an open file containing the progress reports, available maps and draft final report will be distributed to all participants for their information. It will be the responsibility of the MGRS contractor to assist the GOE MPGAP coordinating committee in preparing the agenda, organizing the sessions of the meetings, inviting the speakers, and publishing the recommendations as well as distributing the open file reports. All costs will be assumed by MPGAP.

2. Other Channels for the Dissemination of Information:

- Bulletins and pamphlets describing the various aspects of the geology of Egypt.
- Informal and formal field conferences arranged between DRI, EGSM and RSC.
- Library exchange of reports among the MPGAP agencies.
- Formal and informal exchange of reports among the MPGAP personnel.
- Progress reports exchange among all agencies and to interested personnel.

- Preliminary exchange of evaluation of mineral and water resource areas between each agency and the public
- A Geologic Newsletter, published quarterly, denoting what is being done in geology in Egypt
- Activation of monthly meetings of the Geological Society of Cairo, to which all MPGAP agency personnel, all public and private mining personnel, the Egyptian Investment Authority, university personnel and the interested public in general will be invited. Speakers will be engaged and general discussions encouraged.

A method of display of geologic information is to plot all data as soon as they are received as overlays on landsat imagery. The RSC has offered to supervise the production of the data and to produce annotated landsat images. MPGAP personnel will contribute information on geology. This has distinct advantages as specialists and those who have detailed knowledge of a given area or geologic commodity (such as the distribution of gold or phosphates) will contribute in the interpretation of the data from landsat. These people will be working closely with the RSC to produce the interpreted landsat images. A scale of 1:500,000 has been suggested, as this will complement the landsat atlas. Finally, the information that will be produced as a result of the MPGAP is neither sensitive nor classified and will provide no reason for the GOE to withhold it from private foreign and domestic investors.

The four participating institutions share the common view that it is in their best interests that data of commercial relevance in the areas studied in the MPGAP should be made available in order to attract more foreign capital to Egypt.

C. Implementation Plan

The Ministry of Economy will be the official signatory of the agreement, which will also be signed by the Ministers of Education, Industry, Petroleum and Agriculture. The MPGAP Coordinating Committee, however, has been given the full responsibility of leading this program.

The MPGAP will be undertaken through a continuing project programmed in accordance with the implementation plan found in Annex 6 for each of the four institutions in order to achieve the total objectives as rapidly as possible. (See Implementation Highlights below)

The prime responsibility for implementing MPGAP will rest with each of the four institutions and they will be assisted by contractors. The MGRS contractor will establish an office near the EGSM and the DRI. The Mission Director has determined that the MGRS and the AS contracts should be direct AID as opposed to host country, for the following reasons:

- DRI and EGSM have both requested AID to negotiate contracts on their behalf since they have not previously entered into any contractual agreement with a U.S. institution. In

IMPLEMENTATION HIGHLIGHTS

No.	ACTION	RESPONSIBILITY	DATE
1.	Project Paper approved by USAID	USAID	7/80
2.	Project Paper approved by AID/W	AID/W	8/80
3.	Congressional Notification forwarded	AID/W	8/80
4.	Pro Ag Signed	GOE/USAID	9/80
5.	Commodity Contractor(CC) (8-A) hired to determine commodities, through PIO/C		
6.	CP Met	USAID GOE	11/80 11/80
7.	PIO/T's prepared for MGRS, EGPC Contractors	USAID	12/80
8.	RFPs released CBD, for MGRS and EGPC Contractors	USAID	12/80
9.	Commodity Contractor to Egypt	CC	12/80
10.	Commodity Contractor returns and begins ordering equipment	CC	1/81
11.	RFPs for MGRS and EGPC Contractors returned for evaluation	AID/W/USAID	1/80
12.	MGRS and EGPC Contractors selected	AID/W/USAID	2/81
13.	Sub grant for Atlas and Aerial photography signed with ERSC	USAID	2/81
14.	PIO/T for Commodities issued	USAID	3/81
15.	MGRS-EGPC Contract Negotiations and Clearances	AID	3/81
16.	MGRS and EGPC Contractors Cleared and to Egypt	Contractor/AID	5/81
17.	PIO/T for Aerial Contract prepared	USAID/MGRS	6/81
18.	RFP's for Aerial Survey(AS) and EGPC released	USAID/MGRS/EGPC Contractor	6/81
19.	RFPs for MGRS and EGPC evaluated	USAID/MGRS EGPC cont.	7/81
20.	EGPC successful subcontractors notified	Cont./EGPC	8/81
21.	EGPC Subcontractors to Egypt for negotiation	EGPC	8/81
22.	E.G.P.C. Subcontracts signed	EGPC	9/81
23.	A.S. contractor selected and negotiations start	MGRS/USAID	9/81
24.	First equipment begins to arrive	CC	9/81
25.	EGPC following studies start:		
	- Source rock/oil migration		
	- Sedimentary/Petrography study		
	- Enhanced recovery study		
	- Oil and gas reserves estimates	EGPC	
	- Feasibility study of EGPC data center	Subcontr.	1/81
	- Feasibility study on Seismic data storage center		

26.	RSC atlas finished, to U.S. for publishing	MGRS Subc.	10/80
27.	EGSMA geochemist trainee to U.S.	MGRS Cont.	10/81
28.	EGPC librarian to U.S.	USAID	10/81
29.	DRI hydrologist TDY arrives in Cairo and training course begins	MGRS Cont.	10/81
30.	DRI library TDY arrives in Cairo	MGRS Cont.	10/81
31.	AS contract negotiation ends	USAID	10/81
32.	EGSMA editor arrives in Cairo	MGRS Cont.	10/81
33.	TDY expert in sedimentary rocks to Cairo	MGRS Cont.	10/81
34.	TDY expert in basement rocks to Cairo	MGRS Cont.	10/81
35.	EGPC training equipment begins to arrive in Cairo	Pur. Agent	10/81
36.	DRI equipment begins to arrive in Cairo	Pur. Agent	10/81
37.	EGSMA equipment begins to arrive in Cairo	Pur. Agent	10/81
38.	DRI geophysicist TDY arrives in Cairo	MGRS Cont.	11/81
39.	EGPC study on Seismic Survey in GS starts	EGPC SubC.	11/81
40.	RSC M-DAS equipment begins to arrive in Cairo	CC	11/81
41.	TDY photolab specialist arrives in Cairo	MGRS Cont.	11/81
42.	EGSMA trainees to U.S. paleontologist, regional-mapper, basement rock specialist, economic geologist, curator	MGRS Cont.	11/81
43.	First semi-annual MPGAP meeting	GOE/MGRS	12/81
44.	EGSMA airborne survey begins	ASC	1/82
45.	RSC aerial photography of parts of the WD starts	ASRT/RSC	1/82
46.	RSC photogeologists TDY to Cairo	ASRT/RSC	1/82
47.	IQC to Cairo to prepare RFP for the WD	IQC/EGPC	1/82
48.	IQC returns to U.S. and RFP released	IQC	2/82
49.	RSC Atlas published and returned to Cairo	MGRS Subc.	3/82
50.	EGPC study on data center ends	EGPC Subc.	4/82
51.	EGSMA basement rock trainee to U.S.	MGRS Cont.	4/82
52.	DRI library trainee to U.S.	MGRS Cont.	5/82
53.	EGSMA specialist on mineral leasing TDY to Cairo	MGRS Cont.	5/82
54.	Second semi-annual MPGAP meeting	GOE/MGRS	6/82
55.	EGPC contractor for Seismic Survey in WD selected	EGPC/AID/ contractor	6/82
56.	EGSMA training starts, TDYs arrive: analytical chemist, spectrographer, maintenance engineer, thermal analyst, X-ray mineralogist, ore mineralogist, physical and mechanical properties of rocks specialist	MGRS Cont.	7/82
57.	IQC to Cairo to prepare RFP for WD	IQC	7/82
58.	EGSMA basement rock trained to U.S.	MGRS Cont.	9/82
59.	EGSMA economic geologist to U.S.	MGRS Cont.	9/82
60.	EGPC following studies end: - Source rock/oil migration - Sedimentary/petrography study - Enhanced oil recovery - Feasibility for Seismic Data Storage	EGSC/SubC.	9/82
61.	EGSMA trainees to U.S.: regional geologist, geochemist	MGRS Cont.	11/82
62.	DRI water quality specialist TDY to Cairo and training course begins	MGRS Cont.	11/82

63.	EGPC contract of Seismic Survey of WD signed	EGPC/SubC.	11/82
64.	Third Semi-Annual MPGAP meeting	GOE/MGRS	12/82
65.	AS Final Report	ASC	12/82
66.	EGPC study on Seismic Survey in GS ends	EGPC SubC	1/83
67.	DRI TDYs to Cairo:hydrologist and geophysicist	MGRS Cont.	2/83
68.	First MPGAP evaluation	USAID	3/83
69.	Fourth semi-annual MPGAP meeting	GOE/MGRS	6/83
70.	EGPC study on oil and gas reserves ends	EGPC SubC.	10/83
71.	Fifth semi-Annual MPGAP meeting	GOE/MGRS	12/83
72.	EGSMA physical properties measurement TDY, expert on data systems TDY and AS interpretation TDY	MGRS Cont.	1/84
73.	EGSMA heap leaching TDY and alumina study TDY	MGRS Cont.	2/84
74.	Sixth semi-annual MPGAP meeting	GOE/MGRS	6/84
75.	DRI library TDY to Cairo	MGRS Cont.	8/84
	- hydrologist training in U.S.	MGRS Cont.	9/84
	- training course in hydrology in Cairo	MGRS Cont.	9/84
76.	EGSMA basement rock trainee to U.S., economic geologist trainee to U.S.	MGRS Cont.	10/84
77.	DRI groundwater hydrologist trainee to U.S.	MGRS Cont.	10/84
78.	EGSMA regional mapping, geophysicist and geochemist to U.S. for training	MGRS Cont.	11/84
79.	EGSMA AS analysis specialist to Cairo	MGRS Cont.	12/84
80.	Seventh semi-annual MPGAP meeting	GOE/MGRS	12/84
81.	EGSMA economic geologist to U.S. for training	MGRS SubC	12/84
82.	EGPC seismic survey study in WD ends	EGPC SubC	3/85
83.	Second and Final MPGAP evaluation	USAID/AID	3/85

addition, neither has the required personnel to negotiate or to manage a host country contract with U.S. firms.

- The fact that these three institutions belong to different GOE ministries will make host country negotiations technically impracticable and time-consuming, and will result in severe delay in project implementation.

Opportunities may arise in which the airborne survey can be partly provided by Egyptian firms or institutions or by such entities assisted by U.S. consultants, institutions or individuals. The decision for the most appropriate service arrangement will be made by selecting a U.S. and/or Egyptian contractor, on competitive bidding. It will be the responsibility of the USAID to solicit proposals for the different U.S. and/or Egyptian firms based on the scope of work already available to AID.

The MGRS and ASC qualification analysis selection will be handled by NE/TECH, DS/ST and the final selection of a contractor made after review of proposals by a representative of the GOE MPGAP committee and USAID/C. Contracts will be negotiated and signed by USAID/Cairo.

Topographic mapping requirements for the purpose of this project have been reviewed and not considered necessary at this time. An additional project for topographic mapping of all of Egypt is being considered at this time. If the need arises for topography mapping to expedite project purposes or to fit into the general assessment nature of the problem, a request for additional funding through an amendment of this project paper will be submitted.

D. Evaluation Plan

Two bi-annual evaluations of approximately four weeks each are proposed for this program. Each activity and its components under the MPGAP will be evaluated separately. In addition to participation by members of the GOE project coordinating committee, USAID and AID/W, one expert each in the fields of minerals, petroleum, remote sensing and groundwater will be required. Provisions has been made under this program to finance the outside experts for these two evaluations. These evaluations are to take place concurrently with program implementation and will not cause any delay or hiatus in the MPGAP.

The scope of work for the evaluation team should include, but not be limited to, the following:

- Review and evaluation of all reports by contractors for their technical content and their completeness.
- Assessment of contractor and sub-contractor performance (quantity and quality of inputs) through on-site visits, discussions with contract staff and with USAID and Egyptians involved in project implementation. This will include an assessment of the impact that the technical assistance provided under the MPGAP has had on upgrading and strengthening the institutional capacity of the four participating Egyptian agencies.

- Evaluation of all training activities; quantity of persons trained and in what areas as compared to original plan; relevance of training to project purpose (including an examination of course content, level of instruction, feedback on training courses from participants); level of application of principles learned during training to achievement of project purpose; timeliness of training; evidence of forward planning in training program.
- Evaluation of appropriateness of equipment delivered, quantitative and qualitative, related to effectiveness in specific projects. The team should examine the degree of competence achieved in equipment utilization, level of maintenance and repair capability and degree of usage of equipment.
- Assessment of the level of information available and extent of its diffusion. Determination of the number of new investments attributable to the availability of information generated under this project.

E. Covenants and Conditions Precedent

Covenants

The Grant Project Agreement will contain all applicable standard covenants prescribed in AID Handbook 3.

Special Covenants

1. The Grantee shall covenant that it will provide on a timely basis all necessary local logistic support as may be required to ensure effective utilization of services and goods financed under the Grant.
- 2.*The Grantee shall ensure that contractors and their employees and such other personnel as are required to perform the services financed under the Grant are furnished in a timely manner with the approvals, authorizations, permits, passes, licenses or other documents necessary to allow such contractors, employees and other personnel to undertake their field work as outlined in the MPGAP proposal. This includes flying of non-Egyptian owned aircraft over the cited areas by U.S. contractors to perform aerial photography, radiometric, magnetic and electromagnetic surveys. The Grantee agrees to appoint individuals who shall be responsible for making the arrangements contemplated by this Section and to notify the names and titles of such individuals and any changes thereof to AID.
3. The Cooperating Country shall covenant that all information from MPGAP in the form of reports, maps, pamphlets and brochures will

* This special covenant is not included in the Draft Project Authorization.

be delivered and disseminated for public use according to schedule and that the Grantee will inform AID in advance of any restrictions regarding dissemination of this information.

Conditions Precedent

1. Initial Disbursement

Prior to any disbursement or to the issuance by AID of documentation pursuant to which disbursement will be made, the Cooperating Country shall except as AID may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID:

- a) A Statement of the names and titles with specimen signatures of the person or persons who will act as the representatives of the Grantee;
- b) Such other documentation as AID may require.

2. Additional Disbursement Costs

2.1 Aerial photography

Prior to disbursement under the grant, or to issuance by AID of documentation pursuant to which disbursement will be made for the subgrant to the ASRT for aerial photography services of 2500 km² in the WD, the grantee will, except as the parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

- a) Evidence that the RSC can perform the aerial photograph services based on the technical specifications as requested by EGSM and as approved by USAID.
- b) Evidence that the cost of the aerial photograph services is reasonable.

2.2 Atlas Preparation

Prior to disbursement under the grant, or to issuance by AID of documentation pursuant to which disbursement will be made for the subgrant to the ASRT for the preparation of an Atlas of Landsat imagery of Egypt, the grantee will, except as the parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

- a) Evidence that the Atlas of Landsat imagery will meet the technical specifications as defined by the MPGAP PM and/or a U.S. Remote Sensing specialist as approved by USAID.
- b) Evidence that the costs of the Atlas preparation are reasonable.

2.3 EGPC Subcontracts

Prior to disbursement under the grant, or to issuance by AID of documentation pursuant to which disbursement will be made for each

of the seven subcontracts to EGPC, the grantee will, except as the parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

- a) Evidence that the services for each of the seven EGPC subcontractors (Source Rock Oil Migration, Sedimentary/Petrographic Studies, Feasibility Study of the Seismic Data Storage Center, Enhanced Recovery Studies of GPC Oil Fields, Estimation of Existing and Potential Oil and Gas Reserves, Experimental Seismic Survey of the Gulf of Suez and feasibility Study of EGPC data library), will meet all technical specifications as approved by USAID.

2.4 EGPC Subcontract for the Seismic Survey in the WD

Prior to disbursement under the grant, or to issuance by AID of documentation pursuant to which disbursement will be made for the subcontract to EGPC for the seismic study in the WD, the grantee will, except as the parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

- a) Evidence that the EGPC World Bank study has endorsed further reflective and/or refractive seismic studies of the Western Desert to produce information for investors.
- b) Evidence that the services for the Regional Seismic Survey meet all technical specifications as approved by USAID.

ANNEX 1

PROJECT DESIGN SUMMARY

LOGICAL FRAMEWORK

MFGAP Program Goal

Annex 1

PROJECT DESIGN NUMBER
LOGICAL FRAMEWORK

Project Title & Number: Mineral, Petroleum and Groundwater Assessment
Program 263-0105

Unit Price 81 85
Total Cost 37.2 million
Date Prepared 5-20-80

PROGRAM GOAL	CONTRIBUTORY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program Goal: The broader objective to which this project contributes is:</p> <p><u>Program Goal</u></p> <p>Increased development of Egypt's natural resources.</p>	<p>Measures of Goal Achievement (A 2):</p> <p>Investments, commitments and negotiations involving \$600 million for public and private development of Egyptian natural resources by 1985.</p>	<p>(A 3)</p> <p>GOE Investment Budget EGTC Reports EGSMA Reports Company Reports</p>	<p>(A 4)</p> <p>Assumptions for achieving goal targets (A 4):</p> <ol style="list-style-type: none"> 1. Economic opportunities exist for this level of potential investment. 2. Investment climate is not adversely changed. 3. GOE infrastructure investments are sufficient to attract this level of potential investment. 4. GOE continues to support MFGAP agencies at a monetary level to allow them to maintain operations at the level to which they are upgraded under this project.

MPGAP PROGRAM PURPOSE

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purposes: (B-1) Program Purpose:</p> <ol style="list-style-type: none"> To improve the organization of current data on potential mineral and petroleum resources and groundwater necessary for their development. To compile reports on newly surveyed areas of potential mineral, petroleum, and related groundwater resources. To improve GOE institutional capacity to acquire, organize, analyze, store, retrieve and disseminate data on potentially commercial minerals and petroleum resources. 	<p>Conditions that will indicate purpose has been achieved: End-of-Project Status. (B-2)</p> <ol style="list-style-type: none"> The improved organization of data on existing and potential natural resources in the four institutions. Significant use of the MPGAP information in the investment sector Ability of these four institutions to acquire, organize, analyze, process and disseminate data on natural resources. 	<p>(B-3)</p> <ol style="list-style-type: none"> Economic performance (investors bidding on developing mineral concessions, EGPC negotiating better exploration agreements) Information utilization (reports are available, data is easily accessible, and disseminated, information is investment oriented, significant use of this information in the investment sector. 	<p>Assumptions for achieving purpose: (B-4)</p> <ol style="list-style-type: none"> The Bulk of detailed geological exploration and assessment will be left to the Public/private sector exploration companies. This program does not aim to alter the proved public-private balance of geological assessment. It will not extend into the level of analysis normally carried out by the commercial developer. Clear distinction between information with direct commercial relevance and basic primary scientific data. Much of the information either exist or is within the capacity of GOE to acquire. That present Egyptian Institution need only equipment and technical know how to prepare basic mineral assessments.

Project Title and Number: Mineral, Petroleum and Groundwater Assessment
263-0105

From FY 81 to FY 85

Total U.S. Funding 37.2 million

Date Prepared: 5-20-80

MPGAP Program Outputs

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs: (C-1)</p> <p><u>Program outputs</u></p> <p>1. Information in forms of maps and reports</p> <p>- Support Services activities</p> <p>- Training</p>	<p>Magnitude of Outputs: (C-2)</p> <p>1. Described in output section of log frame of minerals, petroleum, groundwater and remote sensing.</p> <p>Same as above</p> <p>Same as above</p>	<p>(C-3)</p> <p>1. Contractors reports</p> <p>2. Project evaluation</p>	<p>Assumptions for achieving outputs: (C-4)</p> <p>Described in individual log frame for the four organizations.</p>

Project Title and Number: Mineral, Petroleum and Groundwater Assessment
 263-0105
 MPGAP Program Inputs

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Inputs: (D-1)</p> <p><u>Program Inputs</u></p> <p><u>AID Inputs:</u></p> <ol style="list-style-type: none"> 1. Technical assistance (\$4.2 million) 2. Financial Services (\$ 19.6 million) 3. U.S. training (\$0.87 million) 4. Commodities (\$3.3 million) <p><u>GOE inputs (in kind)</u></p> <ol style="list-style-type: none"> 1. Technical Assistance (\$5.5 million) 2. Financial Assistance (\$3.25 million) 3. U.S. training (\$3 million) 	<p>Implementation Target (Type and Quantity) (D-2)</p> <p>Described in individual log frame of the four institutions</p>	<p>(D-3)</p> <p>Same as D2</p>	<p>Assumptions for providing inputs (D-4)</p> <p>Same as D2</p>

MINERALS PROJECT

PROJECT 263-0105
 LOGICAL FRAMEWORK

Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program 263-0105

Line of Credit: 81 to 85
 Total U.S. Funding: 37.2 million
 Date Prepared: 5-20-80

ALTERNATIVE SUMMARY	CONCEPTUALLY VERIFIABLE GOALS (A.3)	MEASURABLE INDICATORS (A.4)	IMPORTANT ASSUMPTIONS (A.5)
<p>Program or Sector Goal: The level of performance to which this project contributes (A.1)</p> <p><u>Sector Goal</u></p> <p>Increased foreign and domestic investment in mineral extraction industries.</p>	<p>3 new mining/mineral extraction companies operating by 1985 with a total investment of \$30 million.</p> <p>5 mining/mineral extraction companies negotiating by 1985 with CCE on possible new investments valued at \$100 million.</p>	<p>MDI/GOFI reports/interviews.</p> <p>Company records/interviews.</p>	<p>1. Information on potential mineral deposits is readily accessible to investors.</p>

Mineral, Petroleum and Groundwater Assessment
Program 263-0105

81 85
37.2 million
5-20-80

Project Purpose

EGSMA producing, on a continuing basis, comprehensive information about mineral resources and potential mineral investment opportunities.

1. Improved organization of data on existing and potential mineral resources.
2. EGSMA able to continually acquire, organize, analyze, process and disseminate data on mineral resources.
3. EGSMA reports on mineral deposits with investors bidding on developing concessions.

(keyed to B-2)

1. Consultant's reports
Project evaluation
Interviews with users.
2. Consultant's reports
Project evaluation
GSE work plans and
publication schedules.
3. EGSMA reports
Company interviews
Project evaluation

1. Personnel trained under the projects will remain within the institution long enough to share and impart knowledge gained to others not directly benefitted.
2. Investor will have easy access to EGSMA reports and publications.

MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & No. 8047 Mineral, Petroleum and Groundwater Assessment Program 263-0105

U. S. F. No. 85
From FY 85
Total U.S. Funding 37.2 million
Date Prepared 5-20-80

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs (C-1)</p> <p>1. Regional Geologic maps and reports.</p>	<p>Magnitude of Outputs (C-2)</p> <p>1. Maps and reports</p> <p>i. 10 basement rock maps and reports at 1:100,000</p> <p>ii. Sedimentary rock 10 maps and reports at 1:250,000</p> <p>iii. 3 geologic maps at 1:1,000,000 compiled from i, and ii above covering all unmapped parts of Egypt.</p> <p>iv. Maps at 1:50,000 or higher of known mineral deposits.</p> <p>(i - iii responsibility of Dept of Regional Geology; iv responsibility of Dept of Exploration and Evaluation)</p>	<p>(C-3)</p> <p>Project Implementation reports,</p> <p>EGSMA Reports/Maps PIC/P's</p> <p>Project Evaluation</p>	<p>Assumptions for achieving outputs (C-4)</p> <p>EGSMA capable of maintaining equipment provided by the Program.</p> <p>EGSMA trainees available on a timely basis, with sufficient English language capability, to gain from on-the-job training.</p> <p>Supportive DRI, RSC services provided on timely basis</p>

MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title: Mineral, Petroleum and Groundwater Assessment Program 263-0105

Line of Project: BI
 Start FY: 85
 Total U.S. Funding: 37.2 million
 Date Prepared: 5-20-80

PROJECT SUMMARY	OBJECTIVELY MEASURABLE INDICATORS	BASIS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs (C-1)</p> <p>2. Mineral Assessment and Exploration. Reports and maps.</p>	<p>Magnitude of Outputs (C-2)</p> <p>2. Reports and maps</p> <ul style="list-style-type: none"> i. 16 geochemical prospecting reports for 4 years. ii. 3 detailed economic studies of ore deposits. iii. 10 detailed ore deposit evaluation reports and maps for mineral leasing purposes. iv. 1 report and heap leaching map. v. 1 report for computerization of mineral data. vi. 62 contoured sheets, 62 sheets of raw data and 4 maps and 4 reports on radio-metric magnetic data. vii. Report on physical properties laboratory 		<p>Assumptions for a baseline analysis (C-4)</p> <p>9. EGSMA capable of maintaining equipment provided by project.</p>

MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Year of Project: 85
 Total US Funding: 37.2 million
 Date Prepared: 5-20-85

Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program

NARRATIVE SUMMARY Project Category (C-1)	OBJECTIVELY MEASURABLE RESULTS Magnitude of Outputs (C-2)	MEANS OF VERIFICATION C-3	IMPORTANT ASSUMPTIONS Assumptions for each activity (C-4)
3. Analytical laboratories Upgraded.	3. i. Sample treatment capacity double to 100,000 samples a year.		
4. Geological Museum Upgraded	4. Sample displays better organized and paleontologist's information more accurate.		
5. Documentation Center Upgraded	5. i. Cartography-operating new equipment efficiently and doubling production. ii. Publications tripled with editing/printing capacity expanded and quality improved.		
6. Mining Authority/Mining & Quarrying Dept. ability upgraded	1 Set new leasing regulations.		

MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program 263-0105

L. No. P-81- 85
Fees FY 37.2 million
Total U.S. Funded 5-20-80
Date Prepared

DESCRIPTIVE SUMMARY	OBSERVABLE VERIFIABLE MEASUREMENTS	MEANS OF VERIFICATION	EFFORTS ASSOCIATED
Project Outputs: (C-1)	Regulate of Curricula (C-2)	(C-1)	As appropriate for each output: (C-4)
7. Trained EGSM. Personnel	<p>A. In the U.S.</p> <ul style="list-style-type: none"> i. 8 geologist 4 mos each 32 pm. ii. 1 Paleontologist 4 pm. iii. 1 Curator, 2 months iv. 4 geochemists/geologists 4 pm total 16 pm v. 3 trainees 1/yr for 4 pm, in small scale mapping mineral district 12 pm vi. 4 Economic geologists 1/yr 4pm, 16pm vii. 2 geophysicists; 4 mos. 8 pm total, inter- pretation of geo- physical results. <p>Sub total trained in U.S. 23 for 90 pm.</p> <p>B. In Egypt</p> <ul style="list-style-type: none"> i. 12 EGSM geochemists 12 mos training each 144 pm ii. 24/32 geologists engaged in regional mapping 3 mos Total 76/96pm 		

MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Year of P-84 85
 From FY 377.2 million
 Total U.S. Funding
 Date Prepared 5-20-80

Project Title & Number Mineral, Petroleum and Groundwater Assessment Program 263-0105

PAGE 3

NARRATIVE SUMMARY	OBJECTIVE/MEASURABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs (C-1)</p>	<p>Magnitude of Outputs (C-2)</p> <p>iii. 21 GSE geologists engaged in mineral evaluation/exploration 6 mos, Total 126 pm</p> <p>iv. 4 Mineral data collection - 1 mos 4 pm</p> <p>Sub total trained in Egypt. 61/69 350/370 pm</p> <p>Total trained - 85/93 440/460 pm</p>	<p>(C-3)</p>	<p>Assumptions for achieving outputs (C-4)</p>

MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program 263-0105

List of Projects:
Fiscal FY 81 - \$1.85 million
Total U.S. Funding 37.2 million
Date Prepared 5-20-80

RELATIVE SIGNIFICANCE	FUNCTIONAL PERFORMANCE OBJECTIVES	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Input: (C-1)</p> <p>A. U.S.</p> <p>1. Technical assistance (\$1.9 million)</p>	<p>Performance Target (Type and Quantity): (C-1)</p> <p>(related output - keyed to C-2)</p> <p>1 resident coordinator 52mm</p> <p>1 assistant resident coordinator 24 mm</p> <p>20 short term - 71 pm</p> <p><u>These include:</u></p> <p>2 structural/economic geologists for 3 mos. ea (1. i and ii; and 7B.ii)</p> <p>2 economic/geologist in metallic and non-metallic ores 4 pm for 2 trips (2.ii and 7B.iii)</p> <p>2 economic and/or mining geologist in evaluation of ore deposits 6 mos ea., 12 pm (1.iv, 2.iii and B.iii)</p> <p>Specialist for heap leaching of gold, 2 trips, 1 mo. ea. (2.iv)</p> <p>2 geologist/geochemists with field lab experience for 6 mos., 12 pm (2.i and 7B.i)</p>	<p>Project Implementation</p>	<p>Assumptions for providing input (C-1)</p>

MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORKD.D. NUMBER
SUPPLEMENTProject Title & Number: Mineral, Petroleum and Groundwater Assessment Program 263-0105
 Date of Report: 81 to FY 85
 From FY 81 to FY 85
 Total U.S. Funds: 37.2 million
 Date Prepared: 5-20-80

PAGE 4

NARRATIVE SUMMARY	CONCEPTUAL FRAMEWORK CATEGORIES	MEANS OF IMPLEMENTATION	IMPORTANT ASSUMPTIONS
Project Inputs (D-1)	Implementation Target Type and Quantity (D-2) 1 geologist to interpret airborne radiometric/magnetic data, 2-5 mos period, 12 pm (2.vi) 1 Data systems specialist 2 trips, 1 mo. ea. (2.v and 7.B.iv) 1 Geophysicist 3 pm (2.vii) 2 analytical specialist 2 pm ea. (3) 1 Paleontologist 2 trips 1 mo. ea. (4) 2 Cartography specialist 1 mo ea., (5.i) 1 Editorial specialist 24 pm (5.ii) 2 Mineral leasing specialist 3 pm ea. (5)		Assumptions for providing inputs (D-4)

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MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program 263-0105

Life of Project: From FY 81 to FY 85
Total U.S. Funding: 37.2 million
Date Prepared: 5-20-80 PAGE 4

NARRATIVE SUMMARY	CHARACTERISTICS, RESEARCH, AND ACTIVITIES	MEANS OF VERIFICATION	BUDGETARY ASSUMPTIONS
Project Inputs: (B-1)	See Description Target of the Survey (B-2)		Assumptions for providing inputs (D-4)
A. U. S. - Continued 2. Commodities and Equipment (\$1.9 million)	34 vehicles Min. Lab. Equip. Pub. Equip. Geo. Lab Equip. Ore Dress. Equip. Other		
3. Financial Services (\$2.0 million)	Electromagnetic, radiometric and magnetic studies		

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MINERALS PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program 263-0105

Life of Project: From FY 81 to FY 85
Total U.S. Funding: 37.2 million
Data Program: 5-20-80 PAGE 4

NARRATIVE SUMMARY	CONCEPTS AND FIELD RELATIONS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Inputs (D-1)</p> <p>B. EGMA</p> <p>1. Personnel (\$1.52 million)</p> <p>2. Budget (\$9.8 million)</p>	<p>Implementation Type, Type and Quantity (D-2)</p> <p>(related output keyed to C-2)</p> <p>a. Field parties per year</p> <p>3 basement rock (1.i)</p> <p>5 sedimentary rock (1.ii)</p> <p>4 geochemical prospecting (2.i)</p> <p>2 economic studies (2.ii)</p> <p>5 ore deposit eval. (1.v and 2.iii)</p> <p>b. Field support personnel</p> <p>c. Office support personnel</p> <p>d. 84/92 trainees - 440/360 pm</p> <p>(Overall budget)</p>		<p>Assumptions for providing inputs (D-4)</p>

PETROLEUM PROJECT

PROJECT DESIGN STUDY
LOGICAL FRAMEWORK

81 85
37.2 million
5-20-80

Project Title & Number: Mineral, Petroleum and Groundwater Assessment

Program 263-0105

NARRATIVE SUB-PROJECT	CONTRIBUTION TO NATIONAL GOALS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The Logical Framework to which the project contributes (A.1)</p> <p><u>Sector Goal</u></p> <p>Increased foreign and domestic investment in petroleum extraction industry</p>	<p>5 new concessional block agreements signed by 1985 requiring investment of \$100 million for exploration and development</p>	<p>ECPC Reports Company Records Project Evaluation</p>	<p>1. Access to information not restricted for foreign and domestic petroleum investors.</p> <p>2. Sufficient data available to potential investors to encourage bidding.</p> <p>3. GGE provides required infrastructure for related petroleum assessment.</p> <p>4. Economic and administrative impediments to investment do not pose insurmountable barrier to further petroleum investment.</p>

Mineral, Petroleum and Groundwater Assessment
Program 263-0105

81 85
37,2 million
5-20-80

Project Purpose

EGPC producing on a continuing basis, comprehensive information about petroleum resources and potential petroleum investment opportunities.

EGPC organization able to continually acquire, organize, process and disseminate data on petroleum resources and potential petroleum deposits.

Consultant's and contractor's reports. EGPC records.

EGPC continually provided data developed through exploration activities of GPC and other petroleum companies.

Project Title and Number: Mineral, Petroleum and Groundwater Assessment
263-0105
 Petroleum Project

From FY 81 to FY 85
 Total U.S. Funding 37.2 million
 Date Prepared: 5-20-80

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs: (C-1) 1. Geological and geophysical studies.</p> <p>2. Feasibility study for an organization of EGPC data library.</p>	<p>Magnitude of Outputs: (C-2) 1 report, 1 Basement map and 5 sedimentary thickness maps of the Northern Western part of the WD.</p> <p>2 reports on source rock/oil migration study of Western Desert and Gulf of Suez.</p> <p>2 reports on sedimentary/petrographic study, Western Desert and Miocene Sands, Gulf of Suez.</p> <p>1 report on Gulf of Suez, Experimental Seismic Program.</p> <p>1 feasibility study</p>	<p>(C-3) Contractor reports. Project evaluation.</p> <ul style="list-style-type: none"> . Cataloging system upgraded. . Microfilm system upgraded. . Annotated bibliography prepared. . Systems linked for quicker recall of information. 	<p>Assumptions for achieving output (C-4) Private oil companies cooperate fully with study teams and provide requested data.</p> <p>That refractive seismic study is necessary after the completion of the World Bank study of the WD.</p> <p>EGPC to follow on the recommendations of the feasibility study by establishing a data information system.</p>

Project Title and Number: Mineral, Petroleum and Groundwater Assessment
265-0105

From FY 81 to FY 85
 Total U.S. Funding 37.2 million
 Date Prepared: 5-20-80

Petroleum Project

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs: (C-1) 3. Feasibility study of an EGPC Seismic Data Center</p> <p>4. Enhanced Recovery studies of selected GPC oil fields.</p> <p>5. Report on existing and potential gas reserves.</p>	<p>Magnitude of Outputs: (C-2) 1 Feasibility Study</p> <p>2 Final Report on Enhanced Recovery Techniques</p> <p>1 Report on Egyptian Oil and Gas Reserves.</p> <p>1 Report on potential Oil and Gas Reserves</p>	<p>(C-3) Contractors report</p> <p>EGPC establishing a long and short range policy for oil use and production.</p>	<p>Assumptions for achieving output (C-4) EGPC having funds and location to establish a Seismic data storage system international standards.</p> <p>EGPC possessing the personnel to plan and formulating policies for energy use.</p>

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PETROLEUM PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project
From FY 81 to FY 85
Total U.S. Funding 37.2 million
Date Prepared: 5-20-80

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Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program 263-0105

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DESCRIPTIVE SUMMARY	CATEGORICALLY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Type: (D-1)</p> <p>A. U.S.</p> <p>1. Contract Services - (\$17.6 million)</p>	<p>Implementation Target (Type and Quantity): (D-2)</p> <p>A. U.S. \$\$</p> <p>Regional Seismic Survey; 28 months Cost: 16.5 million</p> <p>Source Rock Study/ Oil Migration; 12 months Cost: .25 million</p> <p>Sedimentary/Petrographic Study W. Desert and Gulf of Suez 12 months Cost: .2 million</p> <p>Gulf of Suez Experimental Seismic Program 12 months Cost: 2 million</p> <p>EGPC Data Organization Program; 9 months Cost: .18 million</p> <p>EGPC Seismic Data Storage Center; 12 months Cost: .15 million</p> <p>Enhanced Recovery Techniques; 12 months Cost: .3 million</p>	<p>(D-3)</p> <p>U. S. Controller's Report Contracts PIO/P's EGPC records Project Evaluation</p>	<p>Assumptions for providing inputs (D-4)</p> <p>Source/Origin waivers given to procure services of best qualified contractor.</p>

PETROLEUM PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Study From FY 81 to FY 85
Total U.S. Funding 37.2 million
Date Prepared 5-20-80

DIE NUMBER OF
APPROVALS:

Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program 263-0105

PAGE 4

NARRATIVE SUMMARY	SPECIFIC PERFORMANCE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Type: (D-1)	Implementation Stage (Phase and Duration): (D-1)	(D-1)	Assumptions for providing inputs: (D-1)
A. U.S. (Continued)	Est. of Existent and Potential Gas and Oil Reserves Report; 23 months Cost: 2 million		EGPC and petroleum company providing data and personnel to assist in the study.
2. Commodities (\$175,000)	Training Aids for GFC Training Center		
3. Training (\$386,000)	6 librarians for 24 months each Cost: .38 million		
B. EGPC			Covenants
1. Funding for financial services and support costs of contracts. (\$8.2 million)	1. Local cost support for each contract in A.1 above.	EGPC budget to allocate funds.	
2. Funding for library equipment needed to upgrade services.	2. Library equipment valued at \$175,000 (provisional)		

Mineral, Groundwater, Remote Sensing Project (MGRS)

GROUNDEWATER PROJECT

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

01 37.2 million
5-20-80

Project Title & Number: Mineral, Petroleum and Groundwater Assessment Program-263-0105

PAGE 1

NARRATIVE DESCRIPTION	INDICATORS OF ACHIEVEMENT (A.C.)	MEANS OF VERIFICATION (M.V.)	ASSUMPTIONS
<p>Program or Sector Goal: The transfer of information on water resources.</p> <p><u>Sector Goal</u></p> <p>Increased information available to EGSA and EGPC in water resources.</p>	<ol style="list-style-type: none"> 1. All relevant groundwater reports sent to EGSA and EGPC. 2. Increased requests for reports by potential foreign and domestic investors in extraction industries. 	<ol style="list-style-type: none"> 1. DRI records. 	<ol style="list-style-type: none"> 1. Library systems reorganized in a fashion suitable to investor needs.

Mineral, Petroleum and Groundwater Assessment Program 263-0105

81 85
37.2 million
5-20-80

Project Purpose

On a continuing basis DRI able to:

- a. perform more groundwater assessments in regions of potentially commercial mineral and petroleum deposits;
- b. publish more detailed assessment reports; and
- c. organize and disseminate information to users.

- a. 2 new field survey teams organized, equipped and conducting assessments in regions of potential mineral or petroleum extraction operations.
- b. DRI groundwater reports containing higher quality and more data.
- c. DRI library systems improved, and greater distribution or demand DRI reports.
- d. Ability to assess the groundwater potential of much of Egypt.

- a. Site visits/DRI operations reports.
- b. Project evaluation; questionnaire to users.
- c. DRI/Library records; Project evaluation.
- d. Test drilling.
- e. Aquifer tests.

- 1. DRI willing to develop groundwater information for EGSM on a priority basis.
- 2. DRI trained staff will remain for a sufficient time to impart knowledge gained on-the-job to new or unexposed employees.
- 3.

Project Title and Number Mineral, Petroleum and Groundwater Assessment
263-0105

From FY 81 to FY 85

Total U.S. Funding 37.2 million

Date Prepared: 5-20-80

Groundwater Project Outputs

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs: (C-1)</p> <p>1. Library system upgraded</p> <p>2. Hydrography maps of 7 areas in ED, 2 areas in WD.</p> <p>3. Basin Analysis and evaluation of groundwater potential in areas defined in 2 above.</p> <p>4. Estimation of groundwater potential in above areas.</p> <p>5. Upgrading the laboratory facilities in water quantity studies.</p> <p>6. Training courses</p> <p>7. Trainees trained.</p>	<p>Magnitude of Outputs: (C-2)</p> <p>Provisions for:</p> <ul style="list-style-type: none"> - cataloguing - microfilms - updated bibliography <p>9 maps and reports.</p> <p>a. 9 reports on delineation of main groundwater basin and aquifer in each basin.</p> <p>b. 9 hydrogeochemistry maps at a scale of 1:250,000</p> <p>9 reports.</p> <p>Sample treatment capacity increases.</p> <p>2 courses: one on groundwater or hydraulic (two to three week - twice a year) one on operation and maintenance of geophysical equipment and interpretation of data produced.</p> <p>4 trainers - 2 for each course.</p>	<p>(C-3)</p> <p>Project implementation reports and evaluation.</p>	<p>Assumptions for achieving output (C-4) Translation service available for course material conjunction or level of English Comprehension sufficient.</p> <p>DRI trained employees remain on the job for a sufficient time to pass on new techniques to other employees.</p>

GROUNDWATER PROJECT

PROJECT DESIGN SUMMARY - LOGICAL FRAMEWORK

Project Title and Number: Mineral, Petroleum and Groundwater Assessment
 Program 263-0105

Life of Project:

From FY 81 to FY 85

Total U.S. Funding 37, 2 million

Date Prepared 5-20-80

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Inputs: (D-1)	Implementation Target (Type and Quantity) (D-2)	(D-3)	Assumptions for providing inputs: (D-4)
A. US Input			
1. Technical Assistance (\$794,000)	a. Groundwater hydrologist (4 mm) b. Geophysical specialist (3 mm) c. Library specialist (2 mm) d. Water quality specialist (3 mm)	Specialist's reports	DRI has personnel to work and be trained by U.S. specialists
2. Commodities (\$780,000)	a. Geophysical equipment b. Chemical equipment c. Hydrological equipment d. Drilling equipment e. 10 cars and caravans	Commodities contractor report	DRI has the personnel to use, handle, and properly maintained equipment
3. Training (\$73,000)	1. Groundwater hydrologist (8 mm) 2. Library training (6 mm)	Evaluation reports by contractors	
B. GOE inputs			
1. Technical Assistance (\$499,000)	1. Personnel		
2. DRI contribution (\$4.9 million)	2. Field parties DRI budget		

Remote Sensing Center Project
RSC

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

NOV 81 85
Total US Funding 37.2 million
Cost Proposed 5-20-80

Project Title & Major Objectives: Mineral, Petroleum and Groundwater Assessment Program 263-0105

NOV 81 85
Total US Funding 37.2 million
Cost Proposed 5-20-80

MPGAP WE SUBSECTOR	CONSEQUENTLY VISIBLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes (A.1)</p> <p>Sector Goal: RSC act as a service agency to the MPGAP by supplying landsat data, and training in its use; and coordinating the interpretation of the imagery among MPGAP agencies and others.</p>	<p>Structure of Goal Achievement (A.2)</p> <p>MPGAP agencies are able to obtain landsat imagery; landsat Atlas is produced; training in photogeology and interpretation of landsat imagery is successful.</p>	<p>(A.3)</p> <p>MPGAP agencies use landsat images in their reports;</p> <ul style="list-style-type: none"> - Reports of MPGAP agencies - Contractors' reports 	<p>Assumptions for achieving goal targets (A.4)</p> <p>MPGAP agencies utilize landsat imagery obtained from RSC.</p>

Remote Sensing Center Project

Mineral, Petroleum and Groundwater Assessment Program 263-0105

81 85
37, 2 million
5-20-80

To supply landsat images and training in their use to MPGAP agencies, and to aid in interpretation of the geology on landsat imagery.

MPGAP agencies receive training from RSC that will allow them to benefit in their field work.

MPGAP agencies use landsat in their reports.

MPGAP agencies will work together.

Project Title and Number Mineral, Petroleum and Groundwater Assessment
Program 63-0105Total U.S. Funding 37,2 millionDate Prepared: 5-20-80

Remote Sensing Center Project

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Outputs: (C-1)</p> <ol style="list-style-type: none"> 1. Training GOE-MPGAP personnel in photogeology, based on both airphotos and landsat imagery. 2. Atlas of landsat imagery of Egypt. Coordinate interpretation of landsat imagery among MPGAP agencies. 3. Aerial photography for 2500 km² in Bahreyya Oasis 	<p>Magnitude of Outputs: (C-2)</p> <p>20 personnel trained</p> <p>1 Atlas</p> <p>Topographic maps</p>	<p>(C-3)</p> <p>Reports of MPGAP agencies use landsat.</p> <p>Report, and maps.</p>	<p>Assumptions for achieving output: (C-4).</p> <p>RSC has the personnel qualified to perform these services</p>

PROJECT DESIGN SUMMARY - LOGICAL FRAMEWORK

Project Title and Number: Mineral, Petroleum and Groundwater Assessment
Program 265 0105

DATE OF PROJECT:

From FY 81 to FY 85Total U.S. Funding 37.2 millionDate Prepared 5-20-80

Remote Sensing Center Project

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Inputs: (D-1)</p> <p>A. U.S. inputs</p> <p>1. Technical Assistance (\$1,047 million)</p> <p>2. Commodities (\$394,000)</p> <p>B. RSC inputs</p> <p>1. Technical Assistance (\$2.0 million)</p> <p>2. Total RSC contribution (\$5.4 million)</p>	<p>Implementation Target (Type and Quantity) (D-2)</p> <p>a. 3 TDY photogeologists to help training (12 pm)</p> <p>b. TDY instrumentation specialist on hardware and software (2 pm)</p> <p>c. TDY M. Das specialists to come on pre-project activity to examine and recommend system (1 pm)</p> <p>a. Training equipment for RS class</p> <p>b. Supplies for Landsat imagery</p> <p>c. Software for M. DAS</p> <p>d. Hardware for M. DAS</p> <p>a. Personnel</p> <p>b. Computer processing</p> <p>RSC budget</p>	<p>(D-3)</p> <p>Reports from TDY personnel</p> <p>Procurement of M. DAS hardware and software pending on reports from TDY M. DAS specialists</p>	<p>Assumptions for providing inputs: (D-4)</p> <p>RSC having sufficient personnel to be trained</p> <p>RSC to use these commodities for project purpose.</p>

ANNEX 2

**BACKGROUND, JUSTIFICATION AND ACHIEVEMENT
OF MPGAP OUTPUTS**

I. EGSMA

A. Information in form of maps and reports

1. Data organization and analysis

The first key element in making a national assessment is the analysis, storage and distribution of geologic information from all available sources. The organization and analysis of these data reveal significant geologic associations that will serve to guide the exploration, identification and appraisal of potential natural resources. The data organization is also fundamental for guiding future exploration and estimating probable availability of future supplies of raw materials.

2. Regional mapping

The most important requirement for resource assessment is regional geologic maps showing the distribution and structural relation of rock units, evidence of the presence of mineralized material and other data. Generally, regional mapping is developed from regional surveys and small-scale maps (e.g., 1:2,000,000 to 1:100,000) to successively smaller surveys and larger-scale maps (1:50,000 to 1:5,000) as the requirements for detailed geologic information increase.

EGSMA has mapped large parts of Egypt, but some areas remain unmapped, while others are not mapped in sufficient detail to serve as a basis for the mineral assessment. Moreover, many of these maps need to be reexamined to standardize interpretation and the field localities subjected to continuing study to obtain supplemental data. In this context, EGSMA has designed and initiated a program for preparation and publication of regional geologic maps of Egypt. By dividing the country into six quadrangles (see Figure 1), six regional geologic sheets, each at a scale of 1:1,000,000, will be prepared and eventually will be integrated into a single map of the entire country. However, in order to prepare each of the six sheets, geologic maps at the scale of 1:250,000 for sedimentary rock areas (Eastern and Western Deserts) and 1:100,000 for basement rock areas (Red Sea Hills) will be compiled and published. These 1:250,000 and 1:100,000 scale maps will then be reduced to form each of the six sheets.

The first sheet, already published, includes the central portion of the Eastern and Western Deserts (24° - 28°N latitude, 30° - 36°E longitude, annotated as NG-36). This quadrangle was chosen because it represents the most promising area of mineral ore deposits.

Under the MPGAP, EGSMA will collect geologic data, compile and publish three sheets at a scale of 1:1,000,000. Reports

and maps at a scale of 1:250,000, 1:100,000 and less will also be provided for each of these three sheets. The following areas will be mapped:

The central western part of the country (24° - 28°N latitude, 30° - 25°E longitude, annotated as NG-35) is presently being investigated by EGSMA. The importance of this area lies in the presence of large phosphate reserves at Abou Tartur and newly-found phosphate reserves in the southwestern part of the country, considered an extension of the Abou Tartur phosphate ores. Although much is known geologically of this region, some areas in this quadrangle lack detailed geologic data. Aerial photography in the northeast of about 2,500 km² will be needed for the production of 1:100,000 topographic maps to complete the compilation of the 1:250,000 geological maps of this area. Until this photography is available, landsat imagery can be used as a base.

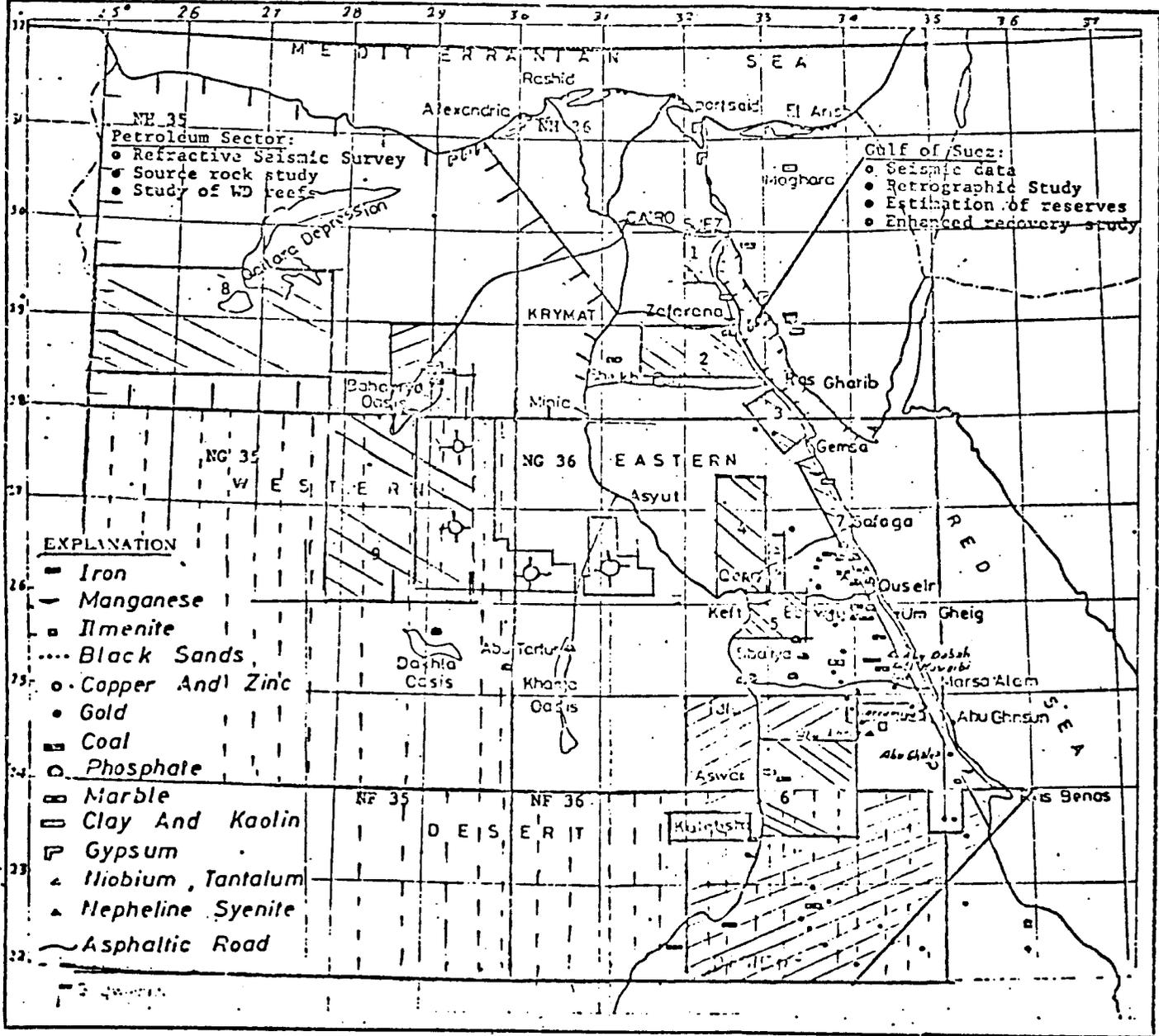
It is anticipated that the RSC will perform the aerial photography under a subgrant from this fund.

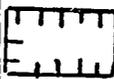
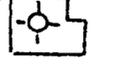
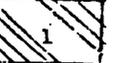
The southwestern part of the country (24° - 22°N latitude, 30° - 25°W longitude, annotated as NF-35) is the largest area in Egypt with no detailed geologic map. The most recent study was done by the Continental Oil Company (Conoco) who possessed the petroleum concession of the area. They produced a geologic map at the scale of 1:500,000 based on landsat imagery analysis and spot field checks. Recently, the Ministry of Petroleum, based on the Conoco report, reaffirmed that a large, fresh groundwater reservoir was found in this area. The reserves, estimated at about 1 billion cubic meters of water, are, however, at a depth of 150 meters. If adequate soils could be found and the energy needs to raise the water almost 500 feet could be economically justified, there is enough water available for irrigating 24,000 km² of arid land. The source of groundwater reserves remains yet unknown. It is doubtful that the reservoir is being recharged at the present time. Also, a Smithsonian-funded expedition of the University of Ain Shams claims the presence of large iron ore deposits in this area; in addition, there are newly discovered phosphate deposits in the northwestern part of this area. This region will be systematically studied in the MPGAP.

It is even possible that the topography mapping of this and other areas may be incorporated into this project at a later date. Topographic mapping of the entire country is under consideration by the GOE.

The southeastern part of the country (24° - 22°N latitude, 30° - 36°E longitude, annotated as NF-36) is presently being studied by EGSMA because of the presence of iron ore, gold and marble deposits in the metamorphic rocks of the Eastern Desert.

Index map showing locations of principal mineral, petroleum and groundwater to be studied in the MGA:



-  Locations to be studied by EGPC
-  Regional mapping and prospecting by EGSA
-  Magnetic and Radiometric study for EGSA
-  Aerial photography by RSC
-  Assessment of minerals by EGSA
-  Groundwater study by DRI

1. Atara
2. Wadi Araba
3. Ras Gharib
4. Wadi Qaena
5. Wadi Iaquita
6. Wadi Ganai
7. Red Sea coast
8. South Quattara Sewa
9. Farafra El Bahriyya

FIGURE 1

Under their five-year plan, EGSMA plans to complete the remaining two quadrangles of the northern part of the country, namely NH-35 (28° - 32°N latitude, 30° - 25°E longitude) and NH-36, (28° - 32°N latitude, 30° - 36°E longitude). The importance of the former lies in the potential presence of gypsum and other building materials, while the latter area includes the mineralized areas of the Sinai. The GOE has allocated a sum of LE 2.5 million (\$3.5 million) to EGSMA to undertake geologic and mineralogic studies of the Sinai, especially in the metamorphic rocks of the southern part, which is the area of greatest mineral potential. In addition, USAID is presently financing a \$5 million, two-year Sinai Planning studies Project (Project 263-0113) with Dames and Moore, Ministry of Development and New Communities. They will, among other tasks, identify and evaluate the groundwater and mineral occurrences in the Sinai.

Under another AID-sponsored project, Kaiser Company is examining the manganese mining operations and the coal deposits. Work in the Sinai under the MPGAP program will therefore be limited to training and technical assistance for analyzing the landsat data and preparing reports on this area. This will be a combined DRI, EGSMA and RSC project.

3. Geophysical and Geochemical Exploration

In conjunction with field parties responsible for regional mapping, geophysical and geochemical prospecting teams will field check all areas which will be regionally mapped under this program. The objective is: 1) to obtain geophysical data, magnetic and radiometric data from which maps can be made; 2) to obtain structural information; 3) to locate deposits of magnetic minerals (in particular iron, which occurs in the form of magnetite); and 4) to differentiate among rock types by variation in radiation for detection of traces of uranium and thorium which indicate the presence of phosphate.

a. Aerial Photography

One small area is to be flown by the RSC. This consists of about 2,500 km² in the vicinity of Baharia Oasis. Photos at a scale of 1:40,000 are to be produced to aid in the geologic mapping for iron ore in the area.

b. Aeromagnetic maps

The area in which aeromagnetic maps are requested is a part of the Eastern desert. For convenience's sake the area is broken down into 2 parts: the southern part, south of latitude 25°N, east of the Nile and extending to the Red Sea, south to the Sudanese border; and the northern part, which extends from latitude 25°N covering the metamorphic and igneous rocks of the Red Sea hills and the western border of the Red Sea.

Area 1: There are about 88,000 square kilometers in this area that have not been previously flown. This area is of interest to the minerals sector of this project in that it covers an area of metamorphic and igneous rocks which have the potential for containing minerals. This area is difficult of access and the aerial survey would be one ideal way to find anomalies which would indicate potential ore deposits. These anomalies would be ground checked in the later phases of the project. A few areas within area 1 have already been covered by aeromagnetic surveys, so these need not be redone.

Area 2 is by far the most interesting from the standpoint of the MPGAP. Here, EGSM and DRI have an interest. In the minerals sector not only does this area cover the most active gold mining area, the most promising phosphate deposits and other known mineral occurrences, it also holds the potential for containing buried copper, and lead-zinc and other sulfide deposits in the zone of contact between the sediments on the east side of Wadi Qena and the metamorphic and igneous rocks in the Red Sea Hills. As far as the groundwater assessment is concerned, potential water resources close enough to the surface for agricultural as well as milling and mining use can probably be found, and these supplies are undoubtedly being recharged along fractures and through the Nubian sandstone to allow continuous pumping. Within this area are four of the seven areas that are scheduled for study by the DRI.

c. Airborne Gamma-ray Spectrometry

At the same time as the aeromagnetic survey is being flown, a radiation survey of the areas that hasn't already been studied should be made. Inasmuch as no additional aircraft flying would be needed, the cost of the survey would be negligible. Some aerial magnetic surveys may have been done over this area, and these need not be reflown.

4. Economic Viability and Estimation of Potential Reserves

Although some detailed geologic information is necessary for mineral and petroleum resource evaluation, additional information is needed on the economic analysis of the deposits. This includes unit market price of the material, grade of material, costs of transportation, costs of milling, etc. These factors are constantly changing. The recent increases in the price of gold, from \$35 an ounce to more than \$500 an ounce, for instance, have changed many former "occurrences" into workable deposits. Although the basic information on the economics of an ore deposit rests with the geologic description, the question of whether it is mineable remains with the operator. The knowledge of an occurrence of a mineral that is in demand is often enough for a mining company to spend "risk capital" even though the geologic evidence of the existence of a deposit is not conclusive. Therefore, it is not necessary for a government agency to block out reserves to make them attractive for mining

companies. Similarly, petroleum companies need not know that oil is present before they spend money for a lease. All they would like to know is if the geologic conditions are favorable for the occurrence of oil.

In Egypt there are many occurrences of minerals that have been examined by EGSMA which would be attractive to a mining company if the geologic conditions were known.

Three ore deposits have been singled out which could have immediate results in attractive risk capital. These include gold at the Baramya Mine, in the Eastern Desert; kaolin at Kalabasha, southwestern Egypt; and phosphate near Wadi Qena (Eastern Desert).

The Baramya Mine has been studied by the EGSMA. They have concluded that there are as much as 30 million tons of baring gold ore in a deposit that averages about an ounce of gold per ton of rock. At \$500/ounce (1980) this deposit is worth about \$1.5 billion. Gold was selling for \$35/ounce when the mine was abandoned.

The Kalabasha kaolin deposit, which was discovered in 1963, contains a high amount of alumina which is useful in the production of aluminum. The unit price of kaolin is low, and its location is far from good transportation. If, however, the deposit contains a vast tonnage of high grade material, it would be useful to exploit the deposit to fulfil Egypt's need for aluminum ore to supply its smelter.

The phosphate deposit near Wadi Qena has large known reserves of phosphates suitable for producing metallic phosphorus as well as phosphoric acid and uranium, which is contained as an impurity in the ore. Reserves are estimated at approximately 200 million tons, with a phosphorus pentoxide content of 21 percent. Transportation and water are available near these deposits.

Although low in cost, the use of this material for fertilizer makes it an important commodity. The extraction of the uranium would make this deposit additionally attractive. These deposits, with a little more analysis, are ready for development. EGSMA will carry out detailed work in new areas, which will be identified as a result of resource data and regional mapping. Known deposits currently being considered for special studies and evaluation include: 1) the massive sulfide deposits at Um Samyuki, which contain zinc, copper, lead, iron and abundant talc; 2) iron ores in the Western Desert; and 3) uranium ores in the Eastern and Western Deserts.

B. Support Services Activities

1. Upgrading the analytical laboratories

EGSMA usually sends approximately 30 parties into the field during a field season (October to May) for which the analytical laboratories, situated at the National Research Center in Western Cairo, process about 100,000 samples per year. It is the responsibility of these labs to analyze the rocks sampled during the field season. Most of the samples to be tested will be gathered for geochemical analysis; some for mineralogical determination. The technical capability of laboratory personnel is of a high caliber but much of the equipment is either outdated or inoperable. Some of the present laboratory equipment and supplies need to be replaced. Acquisition of these replacements will result in a more effective operation. Training in-country and abroad would be provided to upgrade the laboratory facilities.

2. Mineral commodity program

EGSMA has in its files and publications information on many mineral commodities such as gold, tin, tantalum and silver, that presently command premium prices. EGSMA has agreed to release this information for public inspection, which can be done under the present Mining and Quarries Regulation, by compiling reports with a summary of existing data on grade and reserves, production, past prospecting activities, geologic, geochemical, ore dressing and mining studies. Such information will be used for obtaining bids from interested foreign/domestic companies. A specialist in mineral leasing will be contracted for a short term to advise on techniques of contracting mineral leases to determine the best value of these minerals for attracting foreign capital.

3. Cartography and Publication center

Since the principal objective of the program is to publish and disseminate geologic information in the form of maps and reports, a cartographic and photographic office that was successfully established during the current USGS-EGSMA technical assistance needs additional support. This capability will be augmented to ensure that an increase of cartographic load can be handled effectively. Assistance will be given by acquiring additional equipment and assigning short-term photo lab and type composer specialists at EGSMA.

4. Geological museum

EGSMA operates the geologic museum in the center of the city. It has an annual budget for wages and regular operation. Much of the work performed at the museum is in aid of other EGSMA, EGPC and DRI activities. One of its most important efforts is to try to determine the Micene stratigraphy in the

Gulf of Suez and Western Desert. For this reason participant training will be given as required in special fields such as palynology and sedimentology.

C. Training

To strengthen EGSMA's capacity for preparing a national mineral resource assessment, U.S. technical cooperation will be directed toward removing the deficiencies in EGSMA's operations, cited in the previous components of the program. A detailed training program (attached in Annex 3) was prepared by EGSMA and recommended by the U.S. technical experts. A total of 350 to 370 pm of training is desired by EGSMA personnel to upgrade their skills in all fields of geology, library science, geophysics, geochemistry, cartography and editing in order that they will be able to meet, on a continuing basis, the country's needs for mineral information. There will also be short-term selected U.S. specialists for guidance, consultation and demonstration study. Participating study and training in the U.S. for a total of 85 pm will be limited to selected disciplines not available in Egypt.

II. EGPC

A. Information in the form of maps and reports

1. Data Organization and Analysis

EGPC, under an AID-funded host country contract with the Petroleum Information Corporation (PIC), investigated the feasibility of a scope of work for designing a management information system that will organize, in semi-automated form, the data in its files. Through a feasibility study, which would be funded under the MPGAP, EGPC is now seeking to obtain recommendations on a useful system for classifying, entering, editing, selecting, retrieving and maintaining petroleum exploration and exploitation data at EGPC. It is EGPC's intention to follow these recommendations and establish their own computerized management information system. Arrangements will be made to enter certain selected data from available petroleum records into the ESTIS.

2. Basement Tectonic and Sedimentary thickness maps

While the EGSMA regional mapping program covers the central and western part of the country, the northern part of the country (NH-35 and NH-36), with the exception of Sinai, was selected by EGPC to receive special attention in the petroleum sector. Previous exploration work in the Western desert consisted of widespread gravity and magnetic surveys, scattered holes for structural data, and some conventional reflectional-seismic surveys. Results concerning the evaluation of the Paleozoic basin and the deeper structures, especially the Paleozoic uplift,

have been inconclusive and resulted in the withdrawal of foreign concessionaries from the central northern part of the Western Desert. Consequently, EGPC has decided to systematically study the northern part of the country, with emphasis on the Western Desert. This will be done by applying and testing new techniques and concepts with the ultimate aim of producing reliable seismic data for the basement map of the Western Desert and sedimentary thickness maps for each basin.

Apart from the traditional method of reflection seismic surveys that has been performed by EGPC to identify geologic study structural information, a more advanced method of refraction seismic survey will be performed if justified by the World Bank study of the WD. This survey will determine: a) the major subsurface geologic features, with special emphasis on the existence and shape of the Paleozoic uplift and Paleozoic basin; b) the depth and dip of the refractions from all competent beds, especially those in the basement; c) the effective refraction velocity for identification of gross lithology and correlation of reflection of seismic records; and d) the displacement of basement formations by faults.

Concurrent with the refractive seismic surveys, which will cover 5,500 km of the Western Desert, EGPC will contract a U.S. firm with its own funds to reprocess and reinterpret the available gravity and magnetic data for the northern part of the Western Desert. Reliable tectonic maps of the basement will be constructed by the combined interpretation of the magnetic data, gravity data and reprocessed regional seismic sections. The results of this interpretation will then be integrated with deep-well information and results of the refraction survey to construct sedimentary thickness maps for each basin.

It is expected that the combined interpretation of magnetic, gravity and seismic survey, as well as the construction of basement tectonics and sedimentary thickness maps, will be undertaken by Robertson Research Int. using the World Bank Loan to EGPC. The results will be analyzed before the final MPGAP plans are formulated.

3. Geophysical and geochemical exploration

Three specific projects were selected by EGPC to study and assess the petroleum potential for each basin or province in the Western Desert and the Gulf of Suez. These projects are: a) experimental seismic survey in the Gulf of Suez; b) source-rock evaluation and thermal maturation of the Western Desert by geochemical methods; c) sedimentary lithography study by microscopic investigation of rock samples of the Western Desert and the Gulf of Suez.

a. Experimental seismic survey in the Gulf of Suez has been requested. Oil has been found in the Gulf of Suez but further

exploration offshore is handicapped by the inability to systematically gather accurate regional seismic data. An analysis of the methods of seismic research will first be needed, for the presence of a thick salt/anhydrite bed above the Pre-Miocene sandstone (which are some of the most important petroleum reservoirs in the Gulf of Suez) prevents ordinary seismic energy from being accurately recorded. A method of either gravity or seismic surveying will be utilized to obtain good geophysical data that can be used in exploration below the present salt/anhydrite section. Success of this study would facilitate exploration for additional reserves in the Gulf of Suez.

b. Source-rock evaluation of some 2,500 samples selected from the 25 wells in the Western Desert from depths ranging from 7,000 feet to 10,000 feet will be chemically analyzed in an attempt to determine: a) the hydrocarbon-source quality (richness); b) source type (gas versus oil); c) the degree of further maturation; and d) the identification of specific organic facies that are of interest in exploration.

c. A sedimentary-petrographic study of 1400 samples of sedimentary rocks of the Western Desert and the marine rocks in the Gulf of Suez will be made. A search for the presence of coral-reefs which would indicate a potential exploration target in the Western Desert will be made, as these are targets similar to those in Libya. Examination of marine rocks of the Gulf of Suez would aid in predicting the distribution of sand lenses in which oil occurs.

In view of the high degree of specialization required in these three projects and the lack of appropriate technology available at EGPC, firms will be requested to bid on each of the three projects separately for the processing, compilation, analysis and interpretation of the data. The EGPC, in turn, will provide technical advice and the necessary background information and data as well as share the cost of geochemical analysis of the 700 samples selected for the source-rock analysis project. Training of EGPC personnel will be included.

4. Estimation of existing and potential petroleum reserves

Proven oil reserves in Egypt are estimated at 2.2 to 2.3 billion barrels. Gas reserves total about 85 trillion cubic feet or about 1.5 million barrels of oil equivalent. However, independent and up-to-date reserve estimates of oil, associated gas and free gas are important to better define petroleum resources and estimate potential hydrocarbon resources of Egypt.

The estimates of undiscovered oil and gas resources in the Western Desert and the Nile Delta will be made by 1) utilizing the geologic and engineering information gathered in the previous three components of this project; and 2) applying suitable resource appraisal techniques to each potential petroleum province or basin. Each method requires a certain amount of information

and has limitations that must be considered in choosing the method or methods to be used in making the estimate of petroleum potential. A U.S. firm will undertake the data collection, computer calculations, and interpretation and offer training to EGPC personnel for these estimates.

B. Support Services activities

1. Feasibility for seismic data storage center

Under the contractual obligations with EGPC, all concessionary companies should submit copies of the magnetic tapes containing the seismic data they have taken. EGPC does not have adequate storage facilities, and as a result many of the seismic magnetic tapes are stored outside Egypt, at an estimated cost of \$40,000/year. EGPC would like to explore the possibility of establishing a wholly-owned seismic data storage center in Cairo that would permit all seismic data to be under the physical control of EGPC, with rapid access to required data. Investors would then have easy access to these tapes from Cairo.

2. Enhanced recovery studies of selected GPC oil fields

Many of the GPC oil fields have produced for several years and are now mature. In order to properly assess the reserves of these fields, modern enhanced recovery techniques from mature oil fields that will allow additional production must be considered. Additional information on enhanced recovery, and particularly tertiary oil recovery (a process by which oil can be recovered by the injection of immiscible surfactant or detergent to demobilize the trapped oil), would encourage investors to make joint ventures with EGPC for additional production from mature fields. This activity would consist of a research and development project in surface chemistry of surfactants followed by a feasibility study and field application in two EGPC fields at Um Yusr and Karim. A research proposal by GPC is attached in the EGPC technical report. A U.S. contractor would be expected to develop this proposal and provide technical assistance and training to GPC scientists.

C. Training

Unlike EGSMAs, the activities described in the petroleum sector are so specialized that they could not be carried out by GOE personnel. In fact, all the activities described in the previous components will be contracted on a competitive basis to specialized U.S. firms. Training of Egyptian personnel will be part of the contractual obligation of the U.S. contractors. Technical training for a data librarian (144 pm) will also be arranged in the U.S. In-country training will be carried out by GPC personnel at Ras Ghareb training center at the Gulf of Suez.

The objective is to develop this center for the instruction of personnel in the EGPC and provide training to GPC personnel and, in particular, to oil well drillers and oil field technicians. Training of these technicians is of a continuing nature, for as soon as the training is complete some usually leave to take jobs elsewhere. Thus GPC and foreign oil companies have difficulties in finding qualified technical workers for the petroleum sector. Project funds will be used to purchase training equipment for the center which reopened April 1, 1980. It is expected that as many as 120 trainees per year will attend courses in order

to become qualified to work in the petroleum sector. The program was developed by GPC training center and will be undertaken by GPC trainers. Funds have also been requested to support an intensive English language course, probably at the American University in Cairo.

III. DRI

A. Information in form of Maps and Reports

1. Data Organization and Analysis

Little attempt has been made to compile a comprehensive bibliography on groundwater investigations. A limited number of groundwater studies exist and need organization into a semi-automated form. In addition, there are few data available on groundwater investigations in the mineral and petroleum areas outside the Western Desert. Existing data will be supplemented with data from EGPC, EGSM and the Remote Sensing Center. The library system at DRI will also be upgraded by introducing proper cataloging, microfilm and annotated bibliographies.

2. Surface Hydrologic Maps

As a preliminary step to initiating a groundwater investigation in support of mineral resources, DRI has conducted a reconnaissance study in the Eastern Desert region. This study included the survey of all water points, such as wells and springs. Based on these findings DRI selected nine areas for intensive investigation under this program.

Eastern Desert:

- The Atara region in the Gulf of Suez is an area which lacks water to develop the mining of carbonate rocks.
- Wadi Araba is an area in which petroleum fields and coal deposits are located.

- Ras Gharib on the Red sea contains a hydrogeological basin where if water supplies are developed they may be used for urban development and infrastructure development of the EGPC installations at Ras Gharib.
- Wadi Qena, north of Luxor, where the alluvial fill and underlying sandstone in the valley contain water within 4-5 meters of the surface. This area has large known reserves of phosphate suitable for producing metallic phosphorus, phosphoric acid and uranium.
- Wadi Laquita, near to Wadi Qena, is a region rich in phosphates.
- The Red Sea Coast suffers from inadequate water resources development of its manganese and phosphate deposits.

Western Desert:

- Behreyya and Farafra Oasis contain substantial reserves of iron ore. The Egyptian Iron and Steel Company is presently developing the mining of these deposits. Development of water supplies here is important.
- Sewa Oasis is located in the southwestern part of the Qattara Depression and is a region rich in salt and potassium deposits.

The hydrologic study, conducted in close cooperation with the petroleum and mineral projects, will review the available data and reports from previous studies as well as data from EGSM and EGPC. Hydrologic maps will be constructed at a scale of 1:250,000 for the above area and from available base maps, reports and publications.

3. Estimation of groundwater potential

Estimates of groundwater potential in the seven areas in the Eastern Desert and two in the Western Desert will be made by:

- a. Reviewing carefully the geologic, chemical, and engineering information and maps gathered and prepared in the previous three components of this project and the petroleum project.
- b. Applying suitable resource appraisal techniques to each groundwater basin.
- c. Mathematical models to determine the amount of exploitable groundwater for periods of 25 and 50 years.

4. Basin Analysis and Evaluation of Groundwater Potential

This phase would be based largely on information available from the groundwater investigation by DRI, EGSM and other organizations such as the Ministry of Land Reclamation, the Regional Mapping Department and the Basic Analysis sections of EGPC. In addition to these activities, the following studies would be conducted on each of the seven areas selected by DRI in the Eastern Desert and in two in the Western Desert:

- a. Delineation of main groundwater basin.
- b. Delineation of aquifers (both in clastic and carbonate rocks) in each basin.
- c. Determination of aquifer perimeters (petrophysical properties, storage transmissivity and piezoconductivity).
- d. Determination of water quality and its chemical regime.
- e. Determination of availability and origin of water.
- f. Preparation of piezometry and hydrogeochemistry maps.

B. Support services:

- 1) The water quality and geochemical laboratories at DRI will be upgraded and improved by the acquisition of commodities.
- 2) Field equipment will be supplied under this program.

C. Training

Most of the DRI training program will be carried out in Egypt. It will consist of:

1. Short-term training course in groundwater hydrology, which will be offered for DRI personnel and personnel in the irrigation department (Ministry of Irrigation) and department of desert reclamation (Ministry of Development and Housing). Curricula for this course will be developed with the assistance of U.S. specialists in hydrology and will be oriented toward problem solving. It is also expected that as a result of these courses, DRI will develop its own training manuals in Arabic. About 120 persons from the GOE institutions will be attending these courses.
2. On-the-job training for DRI personnel will take place in the operation, maintenance and interpretation of the most recent seismic, electric resistivity and other geophysical equipment. A U.S. short-term TDY geophysicist will assist in training the 80 geophysicists for a period of two months in two consecutive

years. U.S. assistance on water quality determinations will also be provided for five DRI personnel, as well as training in the most modern procedures for analyzing water samples. Training in the U.S. will be limited to library science for DRI personnel (6 pm) and four hydrogeologists (8 pm) to attend short courses and on-the-job training in groundwater resources.

IV. RSC

A. Information in the forms of maps and reports

1. Data Organization and Analysis

The RSC has a small collection of books, reports and maps published by the Center. In order to sponsor successful training courses in the application of remote sensing, RSC will need to upgrade its library facilities through acquisition of international journals, books and reports which are related to remote sensing research, methods and applications.

2. Landsat Imagery and Aerial Photography

a) The remote Sensing Center will contribute to the mapping program undertaken by EGSMA and DRI by providing enhanced black and white and color imagery with basic geologic interpretation of the area of regional mapping with help from both EGSMA and DRI personnel. These images will be used in extrapolating information from known areas to others in which little field work has been done. They will also be useful to the field geologists in analyzing the structure of potential mineral areas. The Remote Sensing Center is equipped with a pressurized Beechcraft aircraft capable of taking high and low level aerial photography to yield orthographic photos as a base for field and topographic mapping. The RSC will provide the aerial photography of the area of 2,500 km² in the central part of the Western Desert.

b) The RSC M-DAS is in need of upgrading in order to produce more efficiently the enhanced color images for the landsat atlas. A team from the Environmental Research Institute of Michigan has been requested to come to Egypt for two weeks before the project starts to determine what parts of the equipment need to be upgraded. The RSC has suggested that both software and hardware should be procured. The estimates given in the finance section are strictly from an illustrative list and represent the most extreme needs. The RSC will pay half the costs of the hardware requested.

B. Support Services Activities

1. Atlas of landsat maps of Egypt

Landsat data are an additional tool which serve to provide reconnaissance information in an area prior to ground mapping and also serve as a base for geologic mapping. Through use of landsat, EGSMA geologists, for instance, would have a tool for determining the best access to areas, key location for the examination of stratigraphic sequences, clues to regional stratigraphic and structural relationships and broad structural and litologic features discernible on small-scale presentation. The Remote Sensing Center has the capability and the expertise to produce landsat maps of Egypt. These could be produced on order from MPGAP agencies at scales to 1:250,000. In addition, RSC would produce an Atlas of landsat maps of Egypt that would be, using project funds, printed in the U.S. and distributed in Egypt and to all international agencies. RSC has already done excellent work on the landsat imagery atlas of the Sinai, which is about to be published. One of the first tasks of the RSC would be to start working on the landsat images of Egypt and make them available to MPGAP. The use of landsat data as a reconnaissance tool prior to detailed ground mapping presupposes a photogeological capability of the field geologists. Although EGSMA geologists are well versed in the use of airphotos, few have had direct exposure to landsat. It is therefore planned that field geologists from EGSMA, DRI, RSC and the national mining companies, especially those working in the Sinai, would be trained at the RSC by TDY assistance in all aspects of photogeology, especially satellite image interpretation.

C. Training

All RSC training will be carried out in Egypt. Training activities are as follows:

a) Training of RSC personnel to upgrade their capabilities in data processing (9 pm).

b) Upgrading and training of RSC personnel in photographic laboratory techniques.

c) Regular training workshops conducted for the benefit of personnel of other GOE institutions and mining companies in order to acquaint them with remote sensing technology and applications, including:

Photogeology course: the first course to be offered will be in photogeology and will be given by experts from the U.S. at the RSC. The experts, each a photogeology specialist, will be sent for a period of about 4 months - one month arranging materials and three months teaching. About 20 students will be trained in this three-month period. They will come from the RSC, the EGSMA and the DRI. The course will include discus-

sions of the principles of remote sensing, interpretive techniques (especially analogue with some digital), image interpretation for geology and hydrology, field identification, etc. As many of the students will have a knowledge of photogeology already, the course need not be one of an elementary nature.

Equipment for this training will be supplied under the commodity section of this program. Tuition will be paid for each non-RSC student to include payment for supplies, field work, M-DAS time, etc.

Additional workshops with TDY experts, who will be sent on a one-to-two week basis, will be given as needed.

ANNEX 3

INPUTS: TECHNICAL ASSISTANCE AND TRAINING

EGSMA		TECHNICAL ASSISTANCE - INPUTS		
Activity	Req'd Time Mos.	Man/ Mos.	Reason	
1. <u>Regional Mapping and Geological Prospecting</u>				
a. Structural and economic geologist with more than 15 years experience in igneous and metamorphic rocks and metallic ore deposits	3	3	To share with 9-12 Egyptian geologists in solving structural and stratigraphical problems in the field of basement rocks. The expert is again to assist during the final phase of the program	
b. Structural and economic geologist with more than 15 years experience in sedimentary rocks and non-metallic mineral deposits.	3	3	To share with 15-20 Egyptian geologists in solving structural and stratigraphical problems in the field of sedimentary rocks. The expert is to assist again during the final phase of the program.	
2. <u>Geological Museum</u>				
Palynologist with a good background especially in Upper Paleozoic Lower Mesozoic rocks.	1	2	To guide 2 Egyptian palynologists in the identification of samples and to identify the most immediate reference and technique they should follow.	
3. <u>Mineral Assessment and Exploration</u>				
a. Two geologists/geochemists with more than 15 years experience in field methods of prospecting for all types of metallic ores in Precambrian basement rocks in arid regions.	6	12	To improve the capacity of about 12 GSE geologists and geochemists in prospecting methods by organizing and carrying out regional geological, geochemical and panning prospecting programs in areas covered by Precambrian basement rocks in the southern Eastern Desert (S. of latitude 24°30') and southern Sinai.	

TECHNICAL ASSISTANCE - INPUTS (Continued)

Activity	Req'd Time Mos.	Man/ Mos.	Reason
3. b. Two senior economic and/or mining geologists with more than 15 years experience in various metallic ore deposits in Precambrian basement rocks.	6	12	To train and improve the capacity of 6 GSE geologists and mining engineers in detailed prospecting-exploration work in the field necessary to prove geochemical anomalies outlined in the previous phase.
c. Ore economic geologist with more than 15 years experience in evaluating ore deposits in basement rocks.	4	8	To evaluate in the field with 15 GSE counterparts the mineral and potential mineral deposits of the Eastern Desert and southern Sinai, such as gold deposits, etc. Returns at year 3.
d. Specialist in heap leaching of low grade gold ore	1	2	A feasibility study including necessary metallurgical research. One man for two months.
e. Specialist in recovery of alumina from Kalabsha Koalin.	1	2	A feasibility study - one man for two one month periods.
f. One specialist in computerized mineral data systems CRIB-GIPSY	1	2	To advise on the mineral data collection system underway at GSE designed for eventual computer tie ins with U.S. programs CRIB-GIPSY. To give training to 2 GSE employees. Two one month periods.
<u>Geophysics-Mineral Assessment and Exploration</u>			
a. Geophysicist to interpret airborne radiometric, magnetic, and electromagnetic data in terms of mineral deposits.	6	12	The radiometric, magnetic, and electromagnetic data from airborne survey are used to identify areas for various types of mineral deposits and needed interpretation to designate specific areas.

TECHNICAL ASSISTANCE - INPUTS (Continued)

Activity	Req'd Time Mos.	Man/ Mos.	Reason
4. b. Geophysicist to organize a physical properties laboratory	3	3	Laboratory measurements are necessary for the interpretation of field data collected with a variety of geophysical instruments. Arrives after equipment is received.
<u>5. Analytical Laboratories</u>			
Two experts with different specialities in instrumental and analytical procedures.	2	4	To advise on methods of instrumental analysis and other analytical procedures for ores and rocks.
<u>6. Cartography</u>			
a. Photo lab and type composer technician.	1	2	To set up equipment and train in its use. Two men - one month each.
b. Editorial Specialist	24	24	To review unpublished reports in terms of preparing them for publication. To aid GSE personnel in the review and report preparation. Priority be given to reports on mineral commodities.
c. Specialist in mineral leasing.	2	2	To advise on techniques of contracting mineral leases to determine the best value for Egypt. To prepare work shop if desirable.
Totals	53	81	

TRAINING OF GSE PERSONNEL

Activity	Req'd Time Mos.	Man/ Mos.	Reason
<u>Training GSE Geologists Abroad</u>			
<u>1. Regional Mapping and Geological Prospecting</u>			
8 trainees - two each year should be assigned to map at 1:250,000 scale with field parties in the U.S., four in igneous and metamorphic rocks and four in sedimentary areas of central and western U.S.	4	32	To give on-the-job training in the mapping methods used in the U.S. in four separate geological environments found in Egypt. The purpose being to have these persons transmit this knowledge to others in GSE.
<u>2. Geological Museum</u>			
a. Training of palynologist.	4	4	To allow a GSE palynologist to work in the U.S. on plant fossils collections and improve their techniques of preparation, identification and age determination.
b. Training one curator.	2	2	To obtain a better knowledge in exhibiting both rock and fossil collections.
<u>3. Mineral Assessment and Exploration</u>			
a. Training of four geochemists or geologists in field geochemical techniques used in the USA, one every year for 4 months.	4	16	To give on-the-job training in the most recent techniques of geochemical prospecting in four separate types of mineral deposits associated with Precambrian basement rocks.

Activity	Req'd Time Mos.	Man/ Nos.	Reason
3. b. Three trainees - one each year should be assigned to field parties doing small scale mapping in mineral districts in basement rocks in arid regions for periods of four months.	4	12	To give on-the-job training in small scale mapping of mineral districts in basement rocks in arid regions.
c. Training of four economic geologists in mapping and study of four different types of ore deposits in basement rocks, one every year for four months.	4	16	To give on-the-job training in detailed prospecting-exploration work both on surface and underground. To learn new approaches to the finding of concealed metallic ore deposits in basement rocks.
4. <u>Geophysics, Mineral Assessment and Exploration</u>			
a. Training of two geophysicists in U. S.	4	8	To give on-the-job training in new methods of interpretation of geophysical data in two separate fields such as: (1) Palaeomagnetism, (2) magnetics, (3) gravity, (4) electromagnetism, (5) resistivity, (6) self-potential, (7) induction, and (8) radioactivity.
5. <u>Administrative</u>			
a. Visits by four senior officials to the U.S. - one each year.	1	4	To review operations of State and Federal Surveys.

Activity	Req'd Time Mos.	Man/ Nos.	Reason
<u>Training of GSE Geologists By Technical Experts in Egypt</u>			
a. 12 GSE geochemists working in field projects will receive training in field and laboratory methods of geochemical prospecting for Cu, Pb, Zn and other metals and the preparation of reports.	12	144	GSE lacks expertise in many phases of geochemical prospecting. This part of the program is designed to provide this capability and produce maps and reports.
b. 24-32 GSE geologists engaged in regional mapping will receive on-the-job training in field mapping and report writing from specialists in basement or sedimentary rocks during the first year of the program.	3	72-96	The GSE has indicated the need for training in structural and economic geology.
c. 21 GSE geologists engaged in the exploration-evaluation detailed study and mapping of mineral deposits will be given on-the-job training in field methods, analysis of data and report writing.	6	126	Increase capability of GSE in economic geology of metal and non metal deposits and increase production of maps and reports.
d. On-the-job training in mineral data collection methods.	1	4	Collection and retrieval of mineral data on a commodity basis for use of field geologists in making commodity studies and metallogenic maps.
e. 62-70 GSE geologists trained in a,b,c,d will transmit this training to other geologists later in the program on a continuing basis	346- 370		Increased overall capability of GSE in assessment work.

DRI

TECHNICAL ASSISTANCE - INPUTS (Continued)

Activity	Req'd Time Mos.	Man/ Mos.	Reason
Library training in U.S.	6	6	To gain academic and operational experience in geology/hydrology library management.
Groundwater hydrologist in U.S.	4	8	To acquire experience in groundwater investigations and learn bore-hole logging methods.
Groundwater hydrologist in Egypt (TDY)	4	4	To organize and teach course in conducting interpretive groundwater studies. To return later to evaluate.
Geophysical specialist in Egypt	3	3	To give field training in the operation, maintenance and interpretation of seismic, electric resistivity and bore-hole geophysical equipment.
Library TDY in Egypt	2	2	To help organize library facilities.
Water quality specialist	3	3	To assist in establishing quality control procedures and work in the water quality laboratory.
<u>EGPC</u>			
Library training in U.S.	6	144	To gain academic training for technical librarians.
<u>RSC</u>			
M-DAS specialist to Egypt	2	4	To evaluate M-DAS equipment; to determine what hardware and software is needed.
Photogeology training course in Egypt	6	24	To assist MPGAP agency personnel in interpreting landsat data.
TDY specialists	4	4	To teach short courses as needed,

ANNEX 4
ILLUSTRATIVE LIST OF MPGAP COMMODITIES

REQUESTED COMMODITIESMINERAL SECTOR

Item	Commodity	Quantity	Unit cost estimate (\$)	Total cost
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List of Vehicles

1	Jeep type cars	20	11,000	220,000
2	Microbuses	2	7,000	14,000
3	Tankers	8	45,000	360,000
	Lorries	4	15,000	60,000

List of Mineralogical Laboratory Equipment

1	Research polarizing and reflecting microscope and 12 spare lamps	1	2,500	2,500
2	Ultraviolet lamp for detection of minerals	5	300	1500
3	Refractometer within a range 1.3 to 2.0 (Abbe)	1	2,500	2,500
4	Refractive index oil ranging from 1.3 to 5.0 (Cargille)	1	135	135
	X-ray diffraction	1	140,000	140,000
6	Rock cutting machine with accessory discs	1	2,500	2,500

List of Equipment for Publications

1	Print-Read microfilm unit - 16 and 35 mm	1	500	500
2	Photocopy unit - ordinary paper/ two side printing	1	8,000	8,000

REQUESTED COMMODITIES - Continued

MINERAL SECTOR

Item	Commodity	Quantity	Unit cost estimate (\$)	Total cost
3	Large format camera including all necessary accessories and spare parts	1	75,000	75,000
4	Addressograph-Multigraph Comp/Set 3500	1	3,000	3,000
5	Reader-printer microfiche unit	1	3,000	3,000
6	Book binding equipment	1	850	850
	IBM typewriter, electric with eraser, Model C82E	1	1,800	1,800
8	Printer for library cards	1	9,770	9,770
<u>Geologic Field and Laboratory Equipment</u>				
1	Ordinary polarizing microscope	10	2,200	22,000
2	Brunton Compass	20	60	1,200
3	Pocket lens	20	50	1,000
4	Geological hammer	50	20	1,000
5	Scintillation count-er	10	2,000	20,000
	Ultraviolet lamp	5	1,000	5,000
7	Proportional divider	5	70	350
8	Pantograph	2	50	100
9	Point counter to fit polarizing microscopes	4	50	200
10	Steroscope (mirror type)	10	460	4,600
11	Grinding powders for thin section making (coarse, medium, fine, extra fine)	10 kg.	10	100
12	Diamond saw blades	10	100	1,000

REQUESTED COMMODITIES - ContinuedMINERAL SECTOR

Item	Commodity	Quantity	Unit cost estimate (\$)	Total cost
13	Heap leaching equipment	1	200,000	200,000
14	Diamond dust paste	10 tubes	130	1,300
15	Butane operated refrigerators	10	600	6,000
16	Zeiss planitope	1	50	50
17	Zoom stereoscope	1	2,000	2,000
<u>List of Ore Dressing Equipment</u>				
1	Lab cone crusher with spare parts and accessories	1	800	800
2	Cell-to-cell flotation machine, 6 cell capacity, 50-100 kg/h, spare parts and accessories	1	5,000	5,000
3	Vertical centrifugal and pump 30 G.P.M. 2 HP, reagent feeders, spare parts and accessories	1	2,000	2,000
4	Hydroclassifier, continuous type, 30" machine, capacity 500 kg/h, spare parts and accessories	1	5,000	5,000
5	Tubular furnace up to 1500 C, inner diameter 10 cm, complete with digital thermocouples	1	1,400	1,400
6	Gyratory screen 18" with desk units	1	1,000	1,000
7	Disc filter 2" diameter capacity 40 kg/h	1	1,000	1,000
8	Flotation machines variable capacity 0.5-2 liters (1 set for each capacity)	1	250	250
9	Drying chamber with fan of size 1.5 x 1.5 x 5 m, up to 200°C with thermostatic control	1	2,000	2,000
10	Sample splitters size 300 x 200 mm and 150 x 80 mm, each 2 sets	2	2,000	4,000

PETROLEUM TRAINING CENTER

Item	Commodity	Quantity	Unit Cost US \$	Total Cost
1	Video Recorder/Video Camera	1	6,000	6000
2	Color Television Set	1	1,000	1000
3	Overhead Projector	3	300	900
4	Slide Sound Projector	2	1,000	2,000
5	Internal and External Screens	1 ea.	250	250
6	Slide Projector	2	2,500	5,000
	Dynamic Microphone	2	200	400
8	Simulator	1	50,000	50,000
9	Projector 8 mm	1	500	500
10	Projector 16 mm	1	2,500	2500
11	Movable screens	3	200	600
12	Film Repair Machine	1	50	50
13	Amplifier	1	3,000	3,000
14	Photocopy Machine	1	2,000	2,000
	Videotapes	200	250	50,000
16	Videocassettes	22	40	880

REQUESTED COMMODITIES

IV-5

REMOTE SENSING SECTOR

Item	Commodity	Quantity	Unit cost Estimate (\$)	Total cos
<u>Training Equipment for Remote Sensing Class</u>				
1	Diazoprinter/developers	4	500	2,000
2	Minor stereoscopes	10	150	1,500
3	Pocket stereoscopes	10	100	1,000
4	Bauch and Lomb light table with binocular microscope	1	1,000	1,000
5	Bauch and Lomb zoom transfer scope	1	20,000	20,000
<u>Supplies for Landsat Imagery</u>				
1	Photographic paper			15,000
2	Chemicals			15,000
3	Drafting supplies			10,000
4	Printing			6,000
5	Field Support			10,000
<u>M-DAS*</u>				
1	Software (including shipment)		125,000	125,000
2	Hardware (including shipment)		150,000	150,000

* These are upper limits. Final allocations will be based on the findings of ERIM, approval of AID and availability of funding.

REQUESTED COMMODITIES

IV-6

GROUNDWATER SECTORGeological Equipment

Item	Commodity	Quantity	Unit cost US \$	Total cost
1	Rock Cutting Machine	1	2,500	2500
2	Magnifier for maps	2	25	50
3	Planimeter	2	125	250
4	Research Polarizing Microscope	1	25,00	2500
5	Automatic Counters	2	200	400
6	Binocular Microscope	2	1,500	3,000
7	Brunton Compass	8	20	160
8	Abney Level	4	100	400
9	Hand Level	4	25	100
10	Auger for shallow depths	2	500	1,000
11	Canada Balsam (natural)	50 kg	20	1,000
12	Bromoform	50 kg	20	1,000
13	Geologic Hammer	10	14	140
14	Chartmeter	4	200	800
15	Equipment for porosity, permeability and density measurements	1	750	750
16	X-Ray	1/	140,000	140,000
17	Stereoscopes (Old Delft)	2	500	1,000
18	Conductivity Meter	10	200	2,000
19	Water Sampler	20	200	4,000
20	Automatic Water Recorder	10	500	5,000
21	Water Level Sounders	20	100	2,000
22	Overhead Projector	2	200	400

REQUESTED COMMODITIES - ContinuedGROUNDWATER SECTORGeophysical Equipment

Item	Commodity	Quantity	Unit cost US \$	Total cost
1	Complete Set of Bore-hole Logger	2	25,000	50,000
	1 - Short and long normal laterology			
	2 - Self potential log			
	3 - Caliper log			
	4 - Gamma log			
	5 - Thermal log			
	6 - Waterflow log			
	7 - Water level indicator up to 2000 ft			
	8 - Fluid Resistivity and photometry			
2	Terrometer resistivity equipment, low frequency 4 c/s square wave	2	5,000	10,000
3	Time domain induced polarization system, transmitter and receiver	1	1,000	1,000
4	Portable engineering seismograph	1	1,500	1,500
5	Worden Gravity meter	2	500	1,000
6	Water temperature and salinity logger	10	200	2,000
7	Neutron moisture logger	2	500	1,000

Geochemical Equipment

1	Photo electric titrator	2	3,200	6,400
2	Photo elec colorimeter	2	4,650	9,300
3	Photo electric nephelometer (turbidimeter)	2	600	1,800
4	Atomic Absorption spectrophotometer	1	8,000	8,000
5	Simple laboratory for determination of rare gases in water especially Ar. & He.	1	25,000	25,000
6	Equipment for radio-isotope analysis for age determination of water	1	10,000	10,000
7	Platinum Crucibles and Dishes	10	750	7,500
8	Flame photometer	1	6,000	6,000
9	Standard analytical balance	2	4,000	8,000

REQUESTED COMMODITIES - ContinuedGROUNDWATER SECTOR

Item	Commodity	Quantity	Unit cost	Total cost
<u>Hydrologic Equipment</u>				
1	Pump unit (complete with generator)	4	2,500	10,000
2	Leveling apparatus	3	500	1,500
3	Theodolite	2	1,000	2,000
<u>Documentation and Training</u>				
1	Slide Projector 35 mm	2	400	500
3	Microfiche reader viewer	2	600	1,200
4	Books (50 copies each of three training manuals)	3	200	600
<u>Drilling Equipment *</u>				
1	Drilling machine 1000 ft (300 m)	2	100,000	200,000
2	Johnson Screen 8"	1	35,000	35,000
3	Casing pipes 8"	1	50,000	50,000
<u>Vehicles: Cars and Caravans</u>				
1	Jeep	4	11,000	44,000
2	Carry-all	2	10,000	20,000
3	Trucks	2	40,000	80,000
4	Caravans	2	8,000	16,000

* USAID approval pending on the technical assessment of the IQC and MPGAP/PM and subject to availability of funds.

ANNEX 5

MPGAP SCOPES OF WORK

MPGAP SCOPES OF WORKTASKS OF EGPC CONTRACTORA. Assistance in Developing Scope of Work for Contracting Services

The contractor will be requested:

* To assist EGPC in drafting the technical specifications and the call for proposals for the eight EGPC subprojects, and in publishing the RFP in the Commerce Business Daily.

* To assist EGPC, under the supervision of the program manager, in evaluating and rating the proposals in accordance with AID rules and regulations as outlined in AID Handbook 11.

* To submit to USAID/program manager the evaluation and recommendations for the eight EGPC subcontracts.

* To review with EGPC the results of the projects.

* To submit vouchers through EGPC to USAID PM for review and forwarding for payment.

TASKS OF THE MGRS CONTRACTOR

A contracting organization, selected through competitive bidding, will manage and provide all services needed to implement the minerals, groundwater and remote sensing sectors of the MPGAP. These services are described under the following categories.

1. MGRS Project Manager.
2. Consultant teams to EGSM, DRI and RSC.
3. U.S. Training for Egyptian personnel.
4. Subcontracting services.

5. Instrumentation services and training on MGRS equipment.
6. U.S.-based project support inputs.
7. Other services.

1. MGRS Project Manager

The MGRS contractor, after formal consultation with USAID and the participating institutions, will select, recruit, assign and provide logistic support in Egypt for one person who will serve as a full-time resident project coordinator during the entire life of the project. The incumbent will coordinate, direct and administer the U.S. support activities to EGSM, DRI, and RSC. This person will be equipped, through extensive, directly relevant experience, to afford the wide-ranging assistance and coordination demanded by the support program. He will have a peer relationship with the directors of these institutions and their program managers. He must be diplomatic in his dealings with these institutions. His qualifications will include commensurate experience in the development and management of the MGRS program, an understanding and acceptance of the Egyptian environment, management methods and personal characteristics enabling him to deal with a variety of problems. Specifically the incumbent is expected:

a) To propose a schedule for the entire services facilities, as described below, with detail management and implementation plan for each of the activities belonging to these institutions. The proposed schedule shall have the specific endorsement of project managers of EGSM, DRI and RSC.

b) To supervise and coordinate the overall contractor assistance for the MGRS in Egypt including the selection of the US specialists for short term assignment in Egypt.

c) To provide orientation and guidance to MGRS agencies in the preparation of reports, maps and to insure that they are produced on schedule.

d) To recommend and guide participant training activities and to coordinate with the project managers of the three institutions and their directors, the implementation of the activities in the PP.

- e) To help organize, supervise and guide EGSMAs Office of Scientific reports and assist in establishing process and mechanism through which reports and maps completed and collected into a file system. To ensure that reports on mineral assessments are widely distributed to investors.
- f) To facilitate scientific and technical communication and formulation between the GOE institutions and U.S. technical and scientific community.
- g) To coordinate the work in Egypt of subcontractors including the airborne surveys and the preparation and publication of landsat imagery and provide all logistic and administrative support.
- h) To establish an office of the contractor in Egypt with the appropriate professional and secretarial personnel to be responsible for travel arrangements and logistic support of TDYers and the Egyptian participants to be trained in the U.S.
- i) To administer the local currency account pertaining to contracts in accordance with USAID rules and regulations and relative Mission orders.
- j) To meet regularly with USAID project officer to strengthen the overall MGRS project implementation.

TASKS OF THE GOE PROJECT MANAGER

The MPGAP will have a GOE Project Manager responsible to ASRT. His/her duties include:

1. Providing guidance and program direction to the MPGAP.
2. Acting as a liason between the MPGAP Coordinating Committee and USAID Project Officer.
3. Certifying work completion and concurring that USAID honor vouchers for payment.
4. Keeping abreast of the activities of MPGAP and keeping MPGAP Coordinating Committee informed of program progress.
5. Participating in evaluation of MPGAP.
6. Chairing the biannual meeting of MPGAP.
7. Assisting in evaluating and ranking proposals for MGRS and EGPC contractors.
8. Working closely with the program managers of each of the MPGAP agencies.

2. Consultant Teams to EGSMA, DRI and RSC

Technical assistance teams will be provided by the MGRS contractor to the three institutions as needed for specific purposes as delineated in Annex 3 which summarizes the US specialists' tasks, justification, and relation to the output of the program. Members of the team will be recruited from US sources and will be either from the staff of the contractors' firm or qualified professionals subcontracted from other institutions. The main task of the US short term personnel is to:

a) Assist in the conceptualization, design and technical implementation of the different activities involved in the MGRS projects. TDYers are expected to advise and follow the work, and review the progress and status reports.

b) Train and/or assist in training of EGSMA, DRI, RSC and other institutions indirectly related to the program in accordance with the training schedule as delineated in Annex 3.

c) Facilitate the development of scientific communication between the different sectors of the same institutions, attend formal and informal meetings between members of these institutions, and discuss topics relevant to the present program.

3. Training

In addition to providing opportunities for the incountry training and the experience derived from working with consultant teams, US training for selected personnel as delineated in Annex 3 will be provided by the contractor. He will be expected to perform the following tasks:

a) To form a training subcommittee consisting of USAID project officer, MGRS resident coordinator and the GOE project managers to develop and define mutually agreed criteria such as selection procedure, relevance to the program, period of training, etc.

b) To insure that the level of English language of GOE trainees is enough to enable the participants to profit from the training, and to comply with USAID English language requests as specified in AID Handbook 10.

c) To identify U.S. institutions or organizations to conduct training and insure that the purpose is achieved through a follow-up of the participants work in Egypt.

d) To provide subsistence cost of the Egyptian trainees while in the US on the basis of actual cost in an amount not to exceed the AID-allowable per diem for participant in training programs.

e) To provide to the three MGRS agencies and to USAID, evaluation of the participants' performance including the result of the individual courses both in Egypt and in the U.S.

f) To recommend possible future training activities in the US or in Egypt of a formal or informal nature.

4. Subcontracting Services

It is anticipated that the ASRT Project Manager will subcontract for the publication of the Atlas of Landsat imagery which will be performed by RSC.

It will also be the responsibility of the contractor to provide funds for the publication of at least 500 copies of this Atlas for distribution to MPGAP agencies. The contractor will help monitor the distribution of these by providing the Atlas free of charge to GOE universities, institutions, ministries, the Investment Authority and U.S. institutions and firms that are interested in the program.

The second printing will be at the expense of the RSC who can sell at cost.

5. Instrumentation Services and training on MGRS equipment

The contractor will use his staff or subcontract qualified instrumentation specialists for services and training on instrumentation. Although it is difficult to provide a complete and detailed work program, there are major categories that can be foreseen. These include:

a. Provision of guidance, advice and working assistance in the unpacking, receiving, inspection, and enplacement of equipment and instruments purchased under the current USAID program. This equipment will be arriving over the first year program period and some is of such complexity as to require training and supervision of use during its

initial operation period. The X-ray diffraction apparatus is an example of such a complicated instrument. Although the supplier will provide set-up and installation service, the presence of a U.S. expert for 2-3 weeks to assist in establishing operation routines is highly desirable. Scheduling of the visits of such experts is dependent upon delivery established by the procurement process and will be arranged with the MGRS resident coordinator. It is expected that each agency will assist in getting the instruments through GOE customs.

b. Provision of instrumentation specialists for the specific purpose of surveying existing equipment at EGSM and DRI, with emphasis on determining the equipment suitable for repair, and then attempting repair. In some instances, it is expected that the equipment can be repaired and calibrated if documentation and spare parts can be located. The contractor's staff will survey the equipment and where possible will make the necessary repairs with the assistance of the technicians of these institutions.

c. Because much of the equipment to be acquired is perhaps more sophisticated than GOE technicians are accustomed to handling, it may be necessary to train GOE personnel in the handling and proper functioning of this equipment. If adequately-trained technicians are not available at EGSM or DRI, the contractor may deem it necessary to subcontract the services of an Egyptian qualified electrical engineer and a mechanical engineer to be on call (perhaps for 3 days a week) to periodically maintain, repair, and train users of these instruments. This effort will not only ensure that the equipment of EGSM and DRI will be in good order, but it will also provide a valuable on-the-job training service for the institutions' maintenance and repair staff.

d. Provision of U.S. TDY experts (6 pm) to train the RSC engineering personnel on the software and hardware of the multispecialist data analysis system (MDAS).

e. Receive certification from Commodity Procurement Agent that all equipment has been received in compliance with specifications and in good condition. He will recommend to the USAID/PR payment for equipment.

6. U.S. based project support inputs

Funds will be provided to the MGRS contractor to appoint,

a) a full time MGRS project manager based in the U.S. who will work in close cooperation with the MGRS manager in Egypt to schedule and supervise all foreign personnel and contractor assigned to the MGRS project in Egypt.

b) a full time administrative assistant to carry out all administrative tasks and act as a clearing house between the US based and Egypt based MGRS contractor, and keep track of its delivery, will order all equipment in the MGRS, will be responsible for all map printing, will expedite printing and delivery of the Atlas.

c) a full time secretary and clerk typist to support secretarial assistance.

Funds for the travel in the US and to and from Egypt will also be provided for the US MGRS project manager.

7. Other services

The contractor will be provided with the necessary funds to:

a) Subcontract US or Egyptian firms for the printing of geologic and hydrogeologic maps.

b) Reproduce final reports in areas studied in this program and have them available on request from the investors, GOE and US institutions.

c) Acquire for EGSMA, DRI and RSC books, periodicals, articles, references in direct relevance to the components of the program, and ensure they are entered in the EMDS.

d) Hire Egyptian consultant on part time basis to assist in specific technical tasks of project implementation and after USAID approval.

e) Organize, participate in and provide logistic support to the MPGAP annual meeting.

f) Provide, after consultation with and approval from USAID/Egypt, opportunity for high level management officials of the four institutions and their project managers to make orientation and observation visits to appropriate U.S. scientific and technical organizations of direct relevance to the MPGAP. Their visit should be educative in nature, and would not exceed a total of 24 pm during the life of the project.

g) Invite, after consultation with and approval of USAID/Cairo, and at the request of MPGAP agency heads, a limited number of US scientists not exceeding 16 pm to visit the four institutions, participate in the annual meeting and advise on particular issues of program implementation.

h) Pay for training fees for about 20 Egyptian personnel to attend a 3-month course on basic remote sensing method and application at the RSC.

8. To assist EGSMA in drafting scope of work for airborne surveys required; and to complete the technical specifications and scope and to contract for these services.

TASKS OF THE AIRBORNE SURVEY CONTRACTOR (ASC)

The ASC is expected to perform the following tasks:

1. To gather magnetic and radiometric data of the southern and central parts of the ED.
2. To process all analog, digital and other data collected in the field.
3. To interpret all the gathered data and produce a final report on the areas surveyed, which includes electromagnetic maps, radiometric and magnetic contour maps and reports, and recommendations for ground follow-up.
4. To provide training to EGSMA geophysicists in field operation and interpretation of airborne survey data.

TASKS OF PURCHASING AGENT FOR COMMODITIES PROCUREMENT

Obtains PIO/Cs from USAID and acts on them by:

- . Soliciting bids complying with AID regulations and take such additional steps to notify prospective suppliers as are consistent with prudent procurement practice.
- . Holding and open bids in accordance with AID requirements.
- . Evaluating bids and, if appropriate, make award of contract.
- . Submitting to USAID PR award information required and a copy of the final contract.
- . Recording and submit to the four institutions and USAID all guarantees, warranties, maintenance manuals, installations instructions, drawings and other pertinent data.
- . Issuing monthly status reports and a final report to the four institutions through USAID, PR covering contracting and shipments.
- . Arranging for shipment from door to door of all goods procured and arrange for installation of the heavy equipment at each of the four institutions.
- . Arranging for full insurance coverage to final destination.
- . Consulting with the MPGAP Agencies and develop specifications for commodities.
- . Provide information for PIO/Cs for USAID/C.

The contractor shall require all vendors to include with their documentation a supplier's inspection certificate, a certification as to (a) the adequacy of their export packing; (b) their compliance with AID marking requirements; and (c) their proper distribution of shipping documents by first class airmail as required by USAID and the participating institutions.

ANNEX 6

IMPLEMENTATION SCHEDULES

EC A ACTIVITY IMPLEMENTATION PLAN

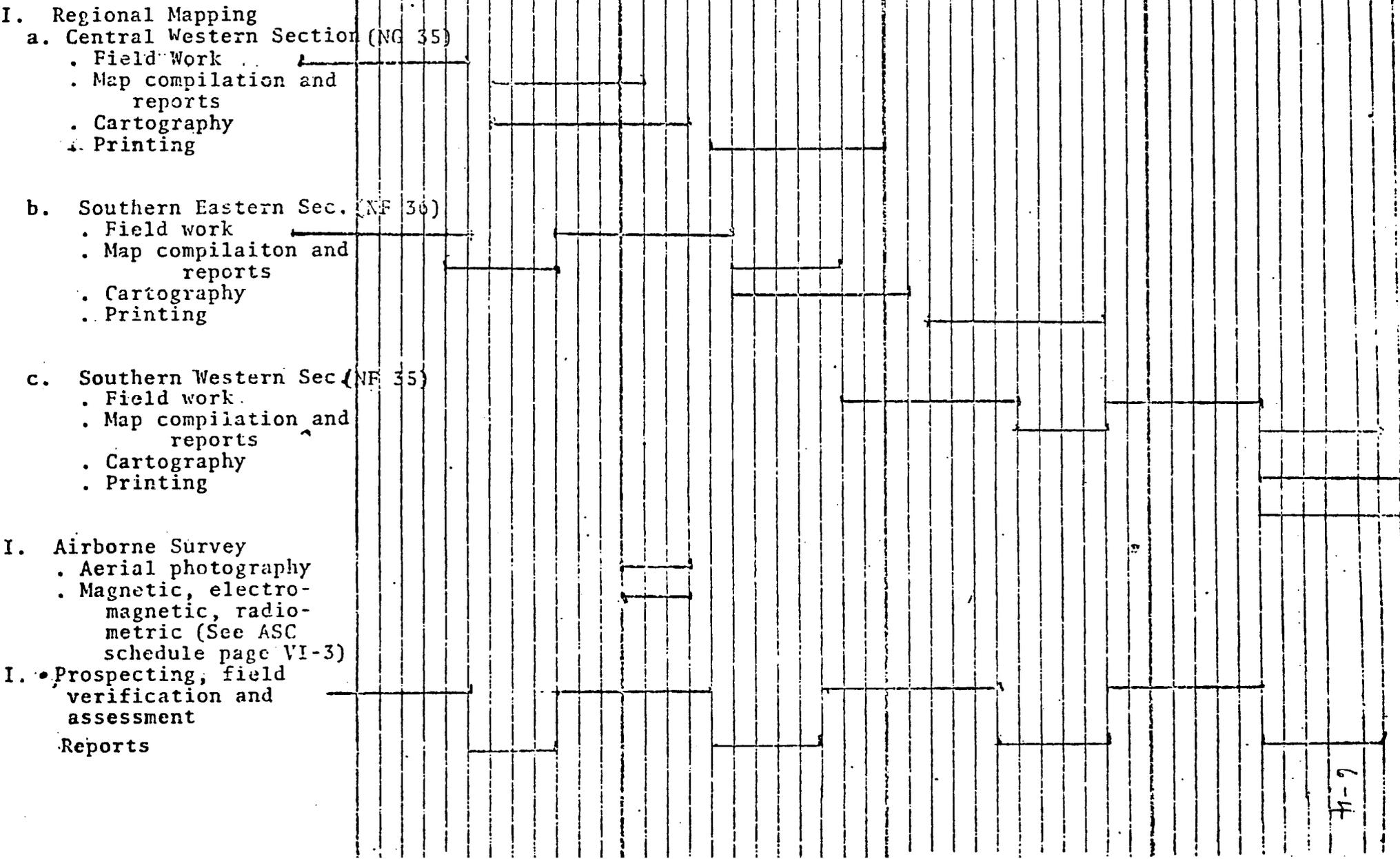
1981

1982

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1984

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47



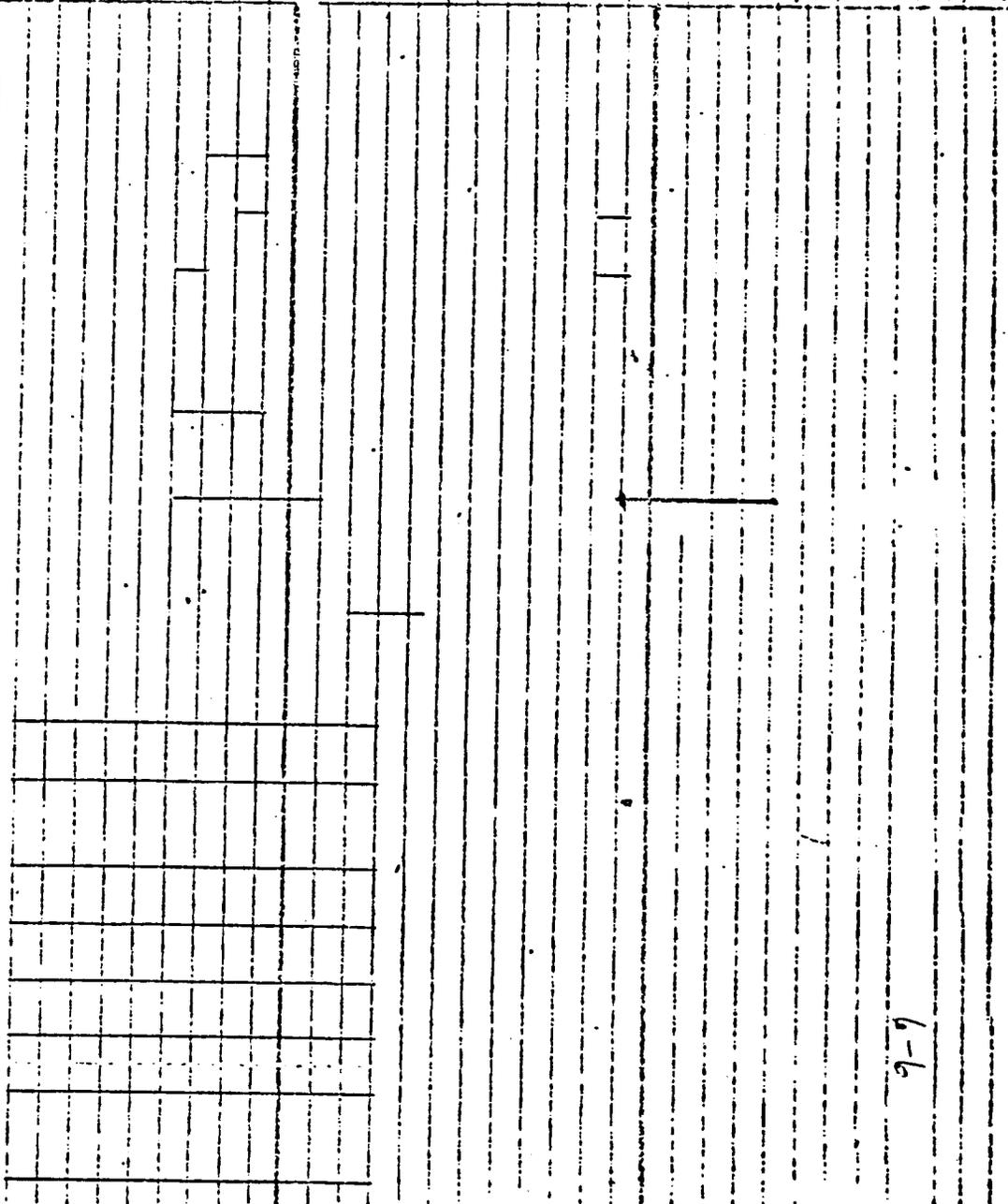
EGSMA TECHNICAL ASSISTANCE AND IN-COUNTRY TRAINING
1982 1983 1984

19

1984

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

- d. Feasibility studies
 - Au heap leaching
- e. Alumina study
- f. Expert on data system
- 5. Geophysical Exploration
 - Expert - Physical properties measurements
 - Expert - Airborne surveys interpretation
- 6. Analytical laboratories
 - Experts
 - Trainees (12) in Egypt
 - Analytical chemist (4)
 - Spectrographer (1)
 - Maintenance Engineer for lab instruments (1)
 - Thermal analysis (1)
 - X-ray mineralogist (1)
 - Mineralogist-petrographer (1)
 - Ore mineralogist (2)
 - Physical and mechanical prop. of rocks (1)
- 7. Specialist in mineral leasing



9-9

EGSMA TRAINING IN U.S.
1981

1982

1983

1984

1985

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

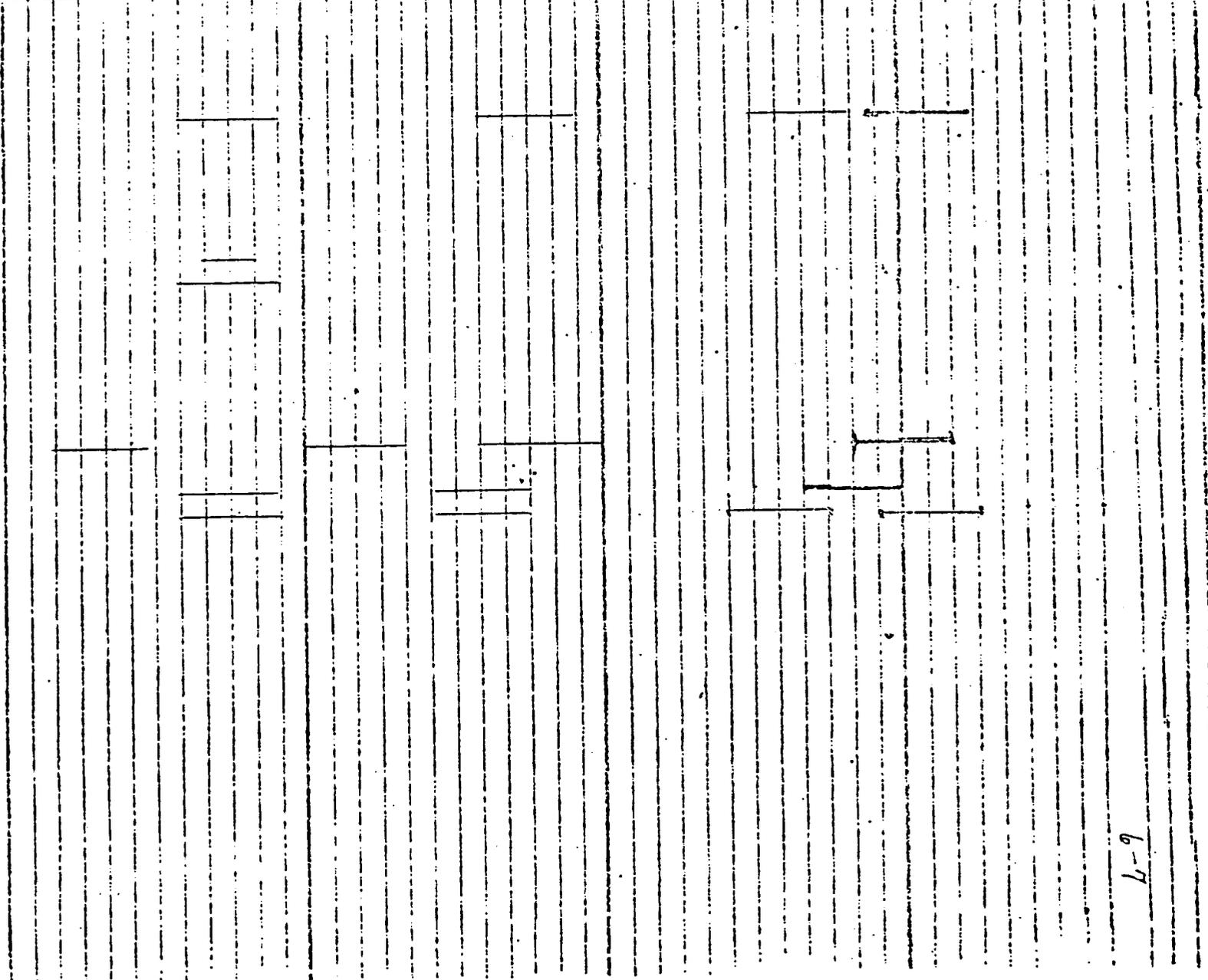
Regional Mapping
and Geological
Prospecting

Geological Museum

Curator
Paleontologist

Mineral Assessment
and Evaluation

Geochemists
Basement Rock
Trainees
Economic Geologists



PETROLEUM SUBPROJECTS

1980

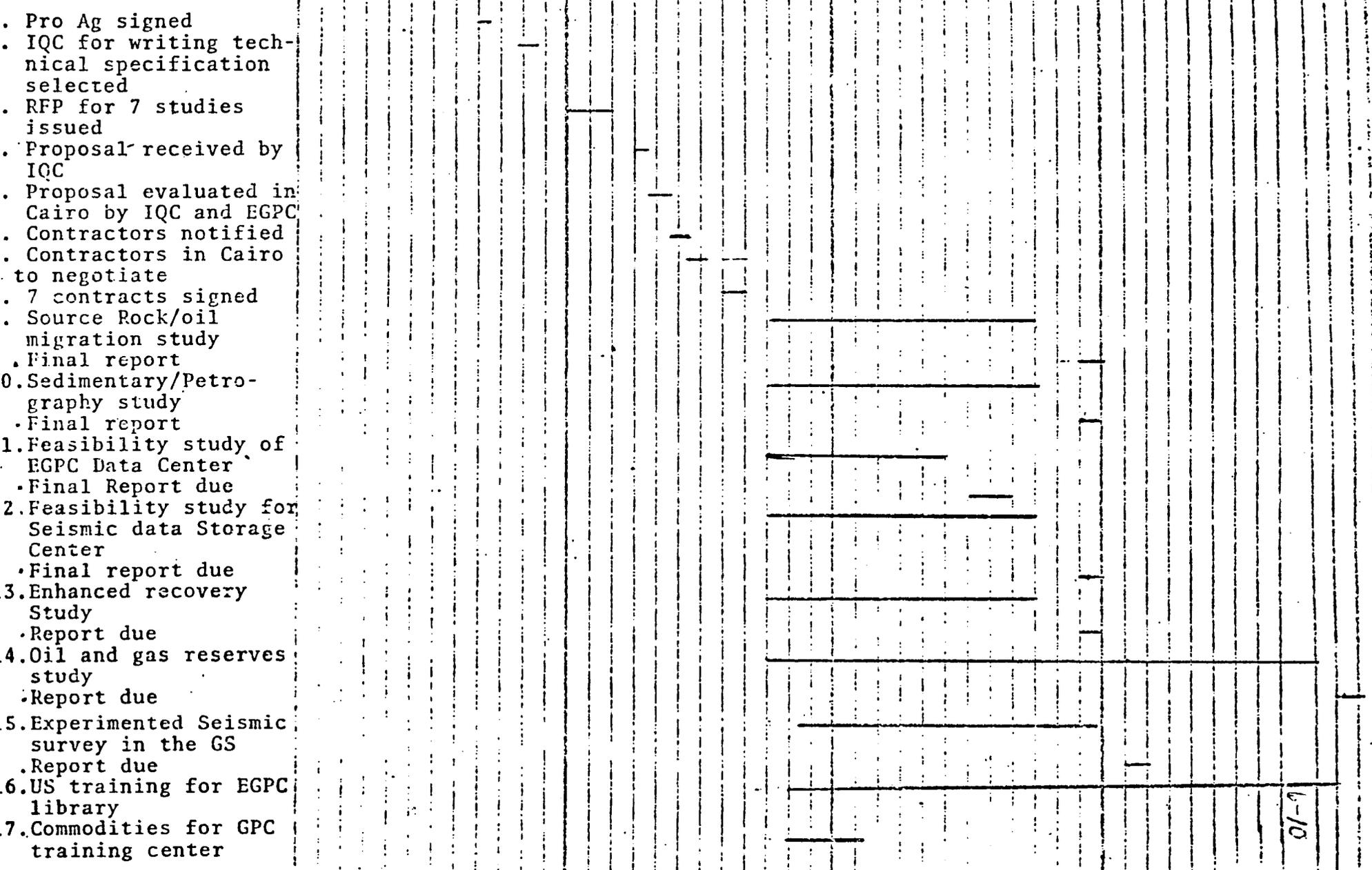
1981

1982

1983

Events

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32



6/10

ANNEX 7
IMPACT IDENTIFICATION AND EVALUATION
FORM

THRESHOLD DECISION MADE ON
INITIAL ENVIRONMENTAL EXAMINATION

Project Location: Egypt

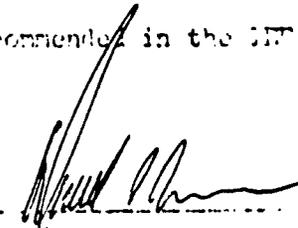
Project Title: Mineral, Petroleum and Groundwater Assessment Program
Project 263-0105

<u>Funding (Fiscal Year and Amount):</u>	FY 80	\$20.7 million
	FY 82	\$16.5 million

IEE Prepared By: C. Withington Date: 6/19/80

Environmental Action Recommended:
(Environmental Assessment, Negative Determination, etc.)

Mission Decision:
(Approval/Disapproval of Environmental Action Recommended in the IEE)

Approved :  _____

Disapproved : _____

Date : 7/17/80 _____

Cleared by:

Environmental Coordinator	<i>P. Shavin</i>	Date	7/1/80
Other Mission Offices	_____	Date	_____

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INITIAL ENVIRONMENT EXAMINATION
NARRATIVE DISCUSSION

1. Project Location: Egypt

2. Project Title: Mineral, Petroleum and Groundwater Assessment
Project 263-0105

3. Funding (Fiscal Year and Amount):

FY 80	\$20.7 million
FY 82	\$16.5 million

4. IEE Prepared By: C. Withington Date: 6/19/80

5. Action Recommended:

6. Discussion of Major Environmental Relationships of Project Relevant to Attached Impact Identification and Evaluation Form:

The purpose of this project is to produce information in the form of reports and maps for use by potential investors. The information as such has no impact on the environment to the extent collecting the information may have a limited highly restricted environmental impact. We will require the contractor(s) and the participating GOE institutions to provide safe-guards to protect the environment in each individual case.

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7-3

IMPACT IDENTIFICATION AND EVALUATION FORMImpact Areas and Sub-areasImpact
Identification and EvaluationA. LAND USE

1. Changing the character of the land through:

a. Increasing the population

N

b. Extracting natural resources

N

c. Land clearing

L

d. Changing soil character

N

2. Altering natural defense

N

3. Foreclosing important uses

N

4. Jeopardizing man or his works

N

5. Other factors

.....

_____B. WATER QUALITY

1. Physical state of water

L

2. Chemical and biological states

N

3. Ecological balance

N

4. Other factors

.....

_____N -- No environmental impactL -- Little environmental impactM -- Moderate environmental impactH -- High environmental impactU -- Unknown environmental impact

Impact Areas and Sub-areasImpact
Identification and EvaluationC. ATMOSPHERIC

1. Air additives	<u>N</u>
2. Air pollution	<u>L</u>
3. Noise pollution	<u>L</u>
4. Other factors	
_____	_____
_____	_____

D. NATURAL RESOURCES

1. Diversion, altered use of water	<u>L</u>
2. Irreversible, inefficient commitments	<u>L</u>
3. Other factors	
_____	<u>N</u>
_____	_____

E. CULTURAL

1. Altering physical symbols	<u>N</u>
2. Dilution of cultural traditions	<u>N</u>
3. Other factors	
_____	<u>N</u>
_____	_____

F. SOCIOECONOMIC

1. Changes in economic/employment patterns	<u>N</u>
2. Changes in population	<u>N</u>
3. Changes in cultural patterns	<u>N</u>
4. Other factors	
_____	<u>N</u>
_____	_____

Impact Areas and Sub-areasImpact
Identification and EvaluationG. HEALTH

1. Changing a natural environment
2. Eliminating an ecosystem element
3. Other factors

NNNH. GENERAL

1. International impacts
2. Controversial impacts
3. Other factors

HNNI. OTHER POSSIBLE IMPACTS
(not listed above)

1. Archeological implications

N

Prepared By:

Charles F. Witzel

Date

June 19 1980

Project Location: Cairo, Egypt

Project Title: Mineral, Petroleum, and Groundwater Assessment, 263-0105

UNITED STATES GOVERNMENT

Memorandum

TO : NE/TECH/HRST, Caroline Coleman
Project Chairperson

DATE: August 4, 1980

FROM : NE/PD/PDS, Stephen F. Lintner *SFL*
Bureau Environmental Coordinator

SUBJECT: EGYPT - Mineral, Petroleum and Groundwater Assessment Project
Paper (263-0105) - Environmental Clearance

I have reviewed the environmental documentation submitted for the subject project and find it fulfills the requirements of 22 CFR 216, "A.I.D. Environmental Procedures".

cc: GC/NE, T. Carter
USAID/Cairo, Mission Environmental Officer
USAID/Cairo, L. M. Hager, Senior Legal Advisor
USAID/Cairo, Janice Weber, Project Manager



5010-108

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

ANNEX 8
MPCAP PROJECT CHECKLIST

5C (2) - PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual funding sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE?
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR
THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

1. FY 79 App. Act Unnumbered; FY 80 App. Act Unnumbered; FAA Sec. 634A; Sec. 653(b); (a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure)?
 - (a) Congress will be notified in accordance with regular agency procedures.
 - (b) The intended obligation is within the level of funds appropriated for Egypt.
2. FAA Sec. 611(a) (1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?
 - (a) Yes
 - (b) Yes
3. FAA Sec. 611(a) (2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?
 - No further legislative action is required
4. FAA Sec. 611(b); FY 79 App. Act Sec. 101; FY 80 App. Act Sec. (501.) If for water or water-related land resource construction, has project met the standards and criteria as per the Principles and Standards for Planning Water and Related Land Resources
 - N.A.

5. FAA Sec. 611(c). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?

N.A.

6. FAA Sec. 209: Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.

No

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

Project is designed to increase Egyptian, U.S. and other foreign investment in Egypt through geologic information, impacting on (a) and (b)

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

Project is designed to attract U.S. and other foreign investment in the petroleum and minerals sectors in Egypt.

9. FAA Sec. 612(b); Sec. 635(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

GOE is contributing salaries and in kind support to the project. In petroleum sector, contributions being made by loan. U.S.-owned local currency is fully programmed and not available for this project.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

All U.S.-owned local currency has been programmed. None is available for this project.

11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?

Yes.

12. FY 79 App. Act, Sec. 608; FY 80 App. Act Sec. (521.) If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?

No.

FUNDING CRITERIA FOR PROJECT

Development Assistance Project Criteria

N.A.

a. FAA Sec. 102(b); 111; 113; 281a.
Extent to which activity will
(a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts

of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

b. FAA Sec. 103, 103A, 104, 105, 106, 107.

Is assistance being made available: (include only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)

(1) [103] for agriculture, rural development or nutrition; if so (a) extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, full account shall be taken of the needs of small farmers, and extensive use of field testing to adapt basic research to local conditions shall be made; (b) extent to which assistance is used in coordination with programs carried out under Sec. 104 to help improve nutrition of the people of developing countries through encouragement of increased production of crops with greater nutritional value, improvement of planning, research, and education with respect to nutrition, particularly with reference to improvement and expanded use of indigenously produced foodstuffs; and the undertaking of pilot or demonstration programs explicitly addressing the problem of malnutrition of poor and vulnerable people; and (c) extent to which activity increases national food security by improving food policies and management and by strengthening national food reserves, with particular concern for the needs of the poor, through measures encouraging domestic production, building national food

reserves, expanding available storage facilities, reducing post harvest food losses, and improving food distribution.

(2) [104] for population planning under sec. 104(b) or health under sec. 104(c); if so, (a.) extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development; and (b.) extent to which assistance provides advanced education and training of people in developing countries in such disciplines as are required for planning and implementation of public and private development activities.

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is: (i) (a) concerned with data collection and analysis, the training of skilled personnel, research on and development of suitable energy sources, and pilot projects to test new methods of energy production; and (b) facilitative of geological and geophysical survey work to locate potential oil, natural gas, and coal reserves and to encourage exploration for potential oil, natural gas, and coal reserves.

- (ii) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;
- (iii) research into, and evaluation of, economic development processes and techniques;
- (iv) reconstruction after natural or manmade disaster;
- (v) for special development problems, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;
- (vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. [107] Is appropriate effort placed on use of appropriate technology? (relatively smaller, cost-saving, labor using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor.)

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least developed" country)?

e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"?

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's

intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental processes essential to self-government.

g. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?

2. Development Assistance Project Criteria (Loans Only)

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest. N.A.

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan? N.A.

3. Project Criteria Solely for Economic Support Fund

a. FAA Sec. 531(a). Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of section 102?

Program is designed to increase economic and political stability.

b. FAA Sec. 531(c). Will assistance under this chapter be used for military, or paramilitary activities? No

5C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed? **Yes, as per standard AID procedures**
2. FAA Sec. 604(a). Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him? **Yes, except for local cost purchases as authorized**
3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will commodities be insured in the United States against marine risk with a company or companies authorized to do marine insurance business in the U.S. **N.A.**
4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? **N.A.**
5. FAA Sec. 603 Compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates. **Yes**
6. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items? **Yes**
7. FAA Sec. 621. If technical assistance is financed, to the fullest extent practicable will such assistance, goods and professional and other services from **Yes**

contract basis? If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974.

If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?

Yes

9. FY 79 App. Act, Sec. 105; FY 80 App.

Act Sec. [505.] Does the contract for procurement contain a provision authorizing the termination of such contract for the convenience of the United States?

Contract will so require

Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

N.A.

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

N.A.

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million?

N.A.

•
C. Other Restriction

1. FAA Sec. 122(b). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

N.A.

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

N.A.

3. FAA Sec. 620(h). Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-bloc countries?

Yes

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, sale, longterm lease, exchange or guaranty of motor vehicles manufactured outside the U.S.?

Financing is not permitted to be so used.

5. Will arrangements preclude use of financing:

a. FAA Sec. 104(f). To pay for performance of abortions as a method of family planning or to, motivate or coerce persons to practice abortions; to pay for performance of involuntary sterilization as a method of family planning, or to coerce or provide financial incentive to any person to undergo sterilization?

Yes

b. FAA Sec. 620(g). To compensate owners for expropriated nationalized property?

Yes

c. FAA Sec. 660. To provide training or advice or provide any financial support for police, prisons, or other law enforcement forces, except for narcotics programs?

Yes

d. FAA Sec. 662. For CIA activities?

Yes

e. FY 79 App. Act, Sec. 104; FY 80 App. Act Sec. [504.] To pay pensions, etc., for military personnel?

Yes

f. FY 79 App. Act, Sec. 106; FY 80 App. Act. Sec. [506.] To pay U.N. assessments?

Yes

- g. FY 79 App. Act, Sec. 107; FY 80 App. Act, Sec. [507.] To carry out provisions of FAA section 209(d)? (Transfer of FAA funds to multilateral organizations for lending.) **Yes**
- h. FY 79 App. Act, Sec. 112; FY 80 App. Act Sec. [511.] To finance the export of nuclear equipment, fuel, or technology or to train foreign nationals in nuclear fields? **Yes**
- i. FY 79 App. Act, Sec. 601; FY 80 App. Act Sec. [515.] To be used for publicity or propaganda purposes within U.S. not authorized by Congress? **Yes**

612(b) RECOMMENDATION TO AUTHORIZE PURCHASE OF EGYPTIAN POUNDS WITH U.S. DOLLARS

Over the life of the Minerals, Petroleum and Groundwater Assessment Program, approximately \$3.0 million will be used to support local currency costs of the project. Dollar funds will be used in association with GOE disbursement of Egyptian pounds for the costs of the travel, per diem, and shipment of household effects of project consultants; related project support costs such as the travel of Egyptian participants, rental of office space, procurement of secretarial services, hiring of Egyptian consultants, awarding a grant to ASRT for the production of an Atlas and undertaking aerial photography, and paying incountry training. The Mission will purchase Egyptian pounds with U.S. dollars provided by the Project. The Egyptian pounds will, in turn, be made available to the various appropriate entities responsible for project implementation for disbursement in accordance with the agreements reached between USAID and the GOE in the Project Agreement.

JUSTIFICATION: Dollar funds used in conjunction with Egyptian pound costs represent an additional real resource to the Egyptian economy and provide means for speedy implementation of studies and offers some incentive for the Egyptian Government to implement new initiatives that it might otherwise not be able to undertake. U.S.-owned local currency is fully programmed and is not available for use in this Project. In any event, the use of existing U.S.-owned local currency would add no additional real resources to the economy. Also, given the need of the GOE to restrict the growth in the money supply to correspond to the real growth in real resource in the economy, the inflationary impact of using U.S.-owned local currency would have to be offset by reduced GOE disbursements of other programs. Maintaining the fiscal balance is also required under the terms of the current IMF Standby Agreement with Egypt--- which the U.S. and other donors have strongly supported.

Consequently, if U.S.-owned local currency were used, it is doubtful that the various Egyptian entities could enter into agreements since they would have to sustain budgetary cutbacks in other areas. Even if the various Egyptian entities were to obtain budgetary funds to provide its full portion of project costs, it is doubtful that it could commit them to this project unless the added fill in of dollar funding for local currency costs were assured. Given the above considerations and the fact the Minerals, Petroleum, and Groundwater Assessment Program supports the U.S. Foreign Policy objective and the Country Development Strategy Statement of Egypt, we have concluded that local currency costs should be funded with dollar-purchased Egyptian pounds.

ANNEX 10
GOE REQUEST

35



MINISTRY OF ECONOMY
AND ECONOMIC COOPERATION

Economic Cooperation

1419 130 78

Mr. D.S. Brown
Director
USAID

ATTENTION TO	HTPLE/ST/DEP/100
DATE	Cable 24/10/1
NO.	20574

Cairo 14 Sept., 1980

Dear Mr. Brown,

As you know, the Government of the Arab Republic of Egypt has been working closely with USAID on the development of a project involving the Academy of Scientific Research and Technology, the Egyptian Geological Survey and Mining Authority, the Egyptian General Petroleum Corporation, the Desert Research Institute and the Remote Sensing Center.

The project which has been developed, the Mineral, Petroleum and Groundwater Assessment Program will work with the above entities to increase knowledge on potentially commercial mineral and petroleum resources.

The government of Egypt hereby requests that AID provide U.S. \$ 37.2 million for the above-mentioned project.

Thank you very much for your cooperation.

Sincerely yours,

ABDEL AZIZ ZAHWY

Under Secretary of State
for Economic Cooperation

ANNEX 11
PROJECT CABLE TRAFFIC

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ACTION AID-33

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INFO NEPD-03 NEOP-01 CHG-01 NETC-04 PPCE-01 PPPB-02 PPEA-01
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UNCLAS SECTION 01 OF 02 CAIRO 15532

AIDAC

E.O. 12065: N/A
SUBJECT: MINERAL, PETROLEUM, GROUNDWATER ASSESSEMENT
PROGRAM (MPGAP): NO. 263-D105 PROJECT PAPER (PP)

1. USAID HAS SUBJECT PP IN FINAL STAGE OF DEVELOPMENT AND PLANS TO FORWARD USAID APPROVED PP TO AID/W BEFORE END OF MONTH. SUBSTANCE OF PROGRAM AS EXTRACTED FROM PP IS AS FOLLOWS:

A. THE OVERALL PURPOSE OF THE PROGRAM IS TO PRODUCE COMPREHENSIVE INFORMATION OF COMMERCIAL RELEVANCE ABOUT PETROLEUM AND MINERAL RESOURCES TO ATTRACT INVESTORS. IN ORDER TO ACCOMPLISH THIS, THE COUNTRY'S NATURAL RESOURCE AGENCIES WILL BE ASSISTED IN GATHERING AND ORGANIZING BASIC GEOTECHNICAL INFORMATION, AND IN DEVISING MEANS OF DISSEMINATING THIS INFORMATION TO POTENTIAL USERS THROUGH: A) IMPROVING THE ORGANIZATION OF CURRENT DATA ON EXISTING AND POTENTIAL MINERAL AND PETROLEUM RESOURCES AND GROUNDWATER NECESSARY FOR THEIR DEVELOPMENT; B) COMPILING REPORTS ON NEWLY-SURVEYED AREAS OF POTENTIAL MINERAL, PETROLEUM AND RELATED GROUNDWATER RESOURCES; AND C) DEVELOPING GOE INSTITUTIONAL CAPACITY TO ACQUIRE AND DISSEMINATE DATA ON POTENTIALLY COMMERCIAL NATURAL RESOURCE DEPOSITS. AID'S CONTRIBUTION WILL BE IN THE FORM OF COMMODITIES, TECHNICAL ASSISTANCE AND TRAINING. THE COMMODITIES ARE NECESSARY TO UPGRADE THE GOE AGENCIES' ANALYTIC CAPABILITIES AND TO ASSIST IN ACQUIRING ADDITIONAL GEOLOGIC DATA. THE TECHNICAL ASSISTANCE WILL HELP IN TRAINING GOE SPECIALISTS ON THE LATEST TECHNIQUES OF COLLECTING AND ANALYZING THESE DATA. TECHNICAL ASSISTANCE IN THE FORM OF CONTRACTS WILL BE REQUIRED FOR THOSE STUDIES THAT THE GOE AGENCIES CANNOT PERFORM. THESE CONTRIBUTIONS TO THE EGYPTIAN EFFORT WILL LEAD TO THE PUBLICATION OF AN INCREASED NUMBER OF REPORTS ON ONGOING AND PAST GEOLOGIC STUDIES WHICH WILL BE OF INTEREST TO POTENTIAL INVESTORS.

B. THE MORE SPECIFIC PURPOSE OF MPGAP IS TO GATHER BASIC GEOTECHNICAL INFORMATION THAT WILL ATTRACT CAPITAL, AND TO DEVISE MEANS OF DISSEMINATING THIS INFORMATION TO POTENTIAL USERS THROUGH:

- 1) IMPROVING THE ORGANIZATION OF CURRENT DATA ON EXISTING AND POTENTIAL MINERAL AND PETROLEUM RESOURCES AND GROUNDWATER NECESSARY FOR THEIR DEVELOPMENT
- 2) COMPILING REPORTS ON NEWLY-SURVEYED AREAS OF POTENTIAL MINERAL, PETROLEUM AND RELATED GROUNDWATER RESOURCES
- 3) DEVELOPING GOE INSTITUTIONAL CAPACITY TO ACQUIRE, ORGANIZE, ANALYZE, STORE, RETRIEVE AND DISSEMINATE DATA ON POTENTIALLY COMMERCIAL MINERAL AND PETROLEUM RESOURCES

IN ORDER TO ACHIEVE THIS PURPOSE, A FOUR-YEAR PROGRAM HAS BEEN DESIGNED TO PRODUCE THE FOLLOWING KINDS OF OUTPUTS: INFORMATION, IN FORM OF MAPS AND REPORTS WHICH WILL ATTRACT INVESTORS; UPGRADED SUPPORT SERVICES FOR PRODUCING THE INFORMATION; AND TRAINED PERSONNEL OF THE INSTITUTIONS WHO WILL PRODUCE THE INFORMATION. THE INSTITUTIONS THAT WILL PRODUCE THE GEOTECHNICAL INFORMATION ALL HAVE THE RESPONSIBILITY OF STUDYING VARIOUS ASPECTS OF THE GEOLOGY OF EGYPT. THEY ARE: THE EGYPTIAN GENERAL PETROLEUM CORPORATION (EGPC); BELONGING TO THE MINISTRY OF PETROLEUM THE EGYPTIAN GEOLOGICAL SURVEY AND MINING AUTHORITY (EGSMA) AFFILIATED WITH THE MINISTRY OF INDUSTRY AND MINERAL WEALTH; THE DESERT RESEARCH INSTITUTE (DRI), A RESEARCH DIVISION OF THE AGRICULTURAL RESEARCH CENTER OF THE MINISTRY OF AGRICULTURE; THE REMOTE SENSING CENTER (RSC), AN INSTITUTE OF THE ACADEMY OF SCIENTIFIC RESEARCH AND TECHNOLOGY (ASRT) AFFILIATED WITH THE MINISTRY OF EDUCATION, CULTURE AND SCIENTIFIC RESEARCH.

THE PROGRAM CONSISTS THEREFORE, OF PROJECTS ADDRESSED TO SPECIFIC PROBLEM AREAS RELATED TO EGYPT'S CAPABILITY IN NATURAL RESOURCE ASSESSMENT. THE PROJECTS ARE COMPLETE AND SELF-SUFFICIENT, BUT HAVE BEEN CHOSEN IN THE CONTEXT OF AN OVERALL PROGRAM DESIGNED TO ENCOURAGE INVESTMENT IN DEVELOPING THESE RESOURCES.

THROUGH A MPGAP COORDINATING COMMITTEE CONSISTING OF THE PRESIDENT OF ASRT AS CHAIRMAN WITH THE MEMBERSHIP OF EGSMA'S CHAIRMAN, EGPC'S DEPUTY CHAIRMAN, AND DRI'S AND RSC'S DIRECTORS. THIS COMMITTEE WILL PROVIDE OVERALL GUIDANCE TO THE PROJECT AND WILL PLAY A KEY ROLE IN COORDINATING THE ACTIVITIES OF THESE FOUR INSTITUTIONS. PROJECT IMPLEMENTATION WILL BE CARRIED OUT BY THE FOUR INSTITUTIONS WITH DIRECT ASSISTANCE OF A USAID-DIRECT

*Transfer to
C. Coleman
NE/T-27*

*Action transferred
on 7/16/80 per B. Porter
P.R.*

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CONTRACTOR WHO WILL PROVIDE THE INPUTS TO THE MINERALS, GROUNDWATER AND REMOTE SENSING SECTOR (HGRS) AND AN AIRBORNE SURVEY CONTRACTOR (ASC). AS MANY AS EIGHT EGPC HOST COUNTRY CONTRACTORS WILL IMPLEMENT THE INDIVIDUAL SUB-PROJECTS OF THE PETROLEUM PROJECT. A MPGAP U.S. PROJECT MANAGER WILL ACT AS AN ADVISOR TO USAID IN ALL ADMINISTRATIVE AND TECHNICAL MATTERS RELATED TO THE MPGAP AND AN INDEFINITE QUANTITY CONTRACT (IQC) CONTRACTOR WILL PERFORM SPECIFIC TASKS IN THE EARLY STAGE OF PROJECT IMPLEMENTATION.

DURING THE LIFE OF THE PROGRAM ACTIVITIES WILL BE CONTINUOUSLY REVIEWED BY THE MPGAP COORDINATING COMMITTEE AND BE COMMUNICATED IN THE FORM OF REPORTS, MAPS, PAMPHLETS AND BROCHURES TO GOE AND U.S. INSTITUTIONS AND POTENTIAL INVESTORS THROUGH THE U.S.-EGYPT JOINT BUSINESS COUNCIL (JCC) AND THE INVESTMENT AUTHORITY OF EGYPT (IAE). SEMI-ANNUAL MEETINGS ON THE FINDINGS OF THE VARIOUS AGENCIES WILL BE OPEN TO THE INTERESTED PUBLIC. AT THE END OF THE PROGRAM THE AGENCIES WILL HAVE SUBSTANTIALLY INCREASED THE NUMBER OF REPORTS AND MAPS THAT WILL INTEREST THE FOREIGN AND PRIVATE/PUBLIC SECTOR INVESTORS. THIS INFORMATION WILL ASSIST POTENTIAL INVESTORS IN MAKING BASIC DECISIONS ABOUT THE DEVELOPMENT OF EGYPT'S MINERAL AND PETROLEUM RESOURCES. IT IS ALSO EXPECTED THAT THE CAPABILITY OF THE GOE INSTITUTIONS WILL BE UPGRADED TO ALLOW CONTINUAL PRODUCTION OF GEOLOGIC DATA OF COMMERCIAL RELEVANCE TO INVESTORS.

2. USAID/CAIRO WILL RECOMMEND THAT AID/W APPROVE A GRANT TO THE GOVERNMENT OF EGYPT (GOE) IN THE AMOUNT OF \$37.2 MILLION. USAID WILL ALSO RECOMMEND THAT \$20.7 MILLION OF THIS SUM BE OBLIGATED IN FY 80. AN ADDITIONAL SUM OF ABOUT \$16.5 MILLION WILL BE REQUESTED TO BE AUTHORIZED FOR THE WESTERN DESERT SEISMIC SURVEY IN FY 82, IF IT IS DETERMINED DURING THE PRIOR PERIOD THAT THIS IS NECESSARY. FURTHER, IT WILL RECOMMEND THAT A DETERMINATION BE MADE PURSUANT TO SECTION 612(B) OF THE FOREIGN ASSISTANCE ACT TO PERMIT DOLLAR FINANCING OF SOME LOCAL CURRENCY COSTS. THESE COSTS REPRESENT ABOUT 8 PERCENT OF THE AID CONTRIBUTION TO THE GRANT. EGYPTIAN SOURCES WILL FUND APPROXIMATELY 45 PERCENT OF THE TOTAL PROJECT COST, WHICH WE CONSIDER THE MOST IT IS REASONABLE TO EXPECT IN SUCH A CASE. MOST OF THIS WILL BE IN KIND. HOWEVER, SOME POUND OUTLAYS ARE EXPECTED TO COVER IN-COUNTRY CONTRACT COSTS.

3. USAID HAS NOT SUBMITTED A PIO FOR THIS PROJECT BASED UPON THE FOLLOWING:

A COMPREHENSIVE ASSESSMENT OF EGYPT'S NATURAL RESOURCES WAS REQUESTED IN A LETTER FROM PRESIDENT SADAT TO PRESIDENT CARTER IN EARLY 1979. PRESIDENT CARTER REPLIED AFFIRMATIVELY. FOLLOWING PRESIDENT CARTER'S REPLY IN

MARCH 1979, A TEAM FROM THE U.S. GEOLOGICAL SURVEY (USGS) CAME TO CAIRO UNDER USAID AUSPICES FOR A PERIOD OF ONE MONTH TO PREPARE A PROPOSAL FOR THE MPGAP. THE USGS TEAM WORKED CLOSELY WITH FOUR INSTITUTIONS: EGSM, EGPC, DRI AND RSC, ALL APPOINTED BY THE GOE TO BE THE GOVERNMENT RESOURCE AGENCIES RESPONSIBLE FOR CARRYING OUT AN ASSESSMENT PROGRAM. THE U.S.-GOE TEAM PROPOSED A SIX-YEAR PROGRAM TO BE UNDERTAKEN IN THREE SUCCESSIVE PHASES AND SUGGESTED THAT THIS PROGRAM BE DEFINED UNDER THREE SUB-PROJECTS: A MINERAL RESOURCES PROJECT, A PETROLEUM RESOURCES PROJECT AND A WATER RESOURCES PROJECT, ALL TO BE TREATED EQUALLY USGS PROJECT REPORT, EGYPT INVESTIGATIONS (IR) EG-1.

SUBSEQUENT DISCUSSIONS OF THE CONTENT OF THIS PROPOSAL WITH THE GOE AND AID/WASHINGTON RESULTED IN THE DECISION TO ORIENT THE PROGRAM TOWARDS PROVIDING INFORMATION FOR POTENTIAL NATURAL RESOURCE INVESTORS AND THEREFORE TO CONSIDER THE MPGAP AS TWO SUB-PROJECTS ONLY, PETROLEUM AND MINERALS, WITH THE GROUNDWATER SECTION TREATED AS A . AS A RESULT OF THIS DECISION, A FIVE-MAN TEAM ASSISTED USAID FOR A PERIOD OF TWO MONTHS AND PRODUCED FOUR TECHNICAL REPORTS FOR USE AS BASE MATERIAL FOR A PP. 4. ON THE BASIS OF THE VARIOUS TECHNICAL MATERIALS WHICH HAVE BEEN PREPARED TO DATE, AND ON THE BASIS OF THE PROJECT DESCRIPTION INCLUDED IN THIS MESSAGE, AID/W IS REQUESTED TO ALLOW THIS TELEGRAM TO SERVE AS A PROXY PIO FOR THIS PROJECT. HOWEVER, SINCE THE PROJECT PAPER ITSELF WILL BE READY FOR SUBMISSION TO AID/W IN THE VERY NEAR FUTURE, YOU MAY WISH TO HOLD OFF HEAC REVIEW AND BASE IT ON THE PROJECT PAPER ITSELF INSTEAD OF ON THIS PROXY PIO. ATHERTON

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APPROVED BY AID/A-AA/NE: ALFRED WHITE

AID/NE/TECH: LEWIS READE (DRAFT)

AID/NE/TECH/HRST: STAM APPLIGATE

AID/NE/EI/E: BERT PORTER (DRAFT)

AID/GC/NE: JOHN MULLEN (DRAFT)

AID/NE/PD: THOMAS STERNER (DRAFT)

AID/NE/DP: PETER SELLAR (DRAFT)

AID/NE/PD/PDS: STEPHEN LINTNER (DR)

AID/OS/ST: CHUCK WITHINGTON (DRAFT)

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E.O. 12065: N/A

TAGS:

SUBJECT: MINERAL, PETROLEUM AND GROUNDWATER ASSESSMENT
(MPGAP) PROJECT NO. 263-0105 PROJECT PAPER REVIEW BY NEAR
EAST ADVISORY COMMITTEE (NEAC)

1. NEAC REVIEWED PP FOR MPGAP AUGUST 1, AND APPROVED PP
SUBJECT TO MISSION CONSIDERATION AND RESPONSE TO THE
FOLLOWING NEAC GUIDANCE.

A. NEAC QUESTIONED COMMODITY PROCUREMENT PROCEDURES WHICH
DID NOT ADDRESS THE ROLE OF THE MISSION CIP OFFICE. NEED
FOR IGC IN SELECTION OF COMMODITY PROCUREMENT AGENCY QUEST-
IONED. NEAC RECOMMENDED PROCUREMENT THROUGH AFRICAN AMER-
ICAN PROCUREMENT COMPANY (AAPC) OR SIMILAR AGENCY WHICH
WILL PROVIDE PERSON TO INTERACT WITH MPGAP AGENCIES IN
FINALIZING COMMODITY SPECIFICATIONS.

B. THE DOLS. 1.7 MILLION LOAN FROM IBRD TO EGPC SHOULD
BE REFLECTED IN THE "OTHER DONOR" AS OPPOSED TO "HOST
COUNTRY" CONTRIBUTION COLUMN ON PP FACESHEET. HOST
COUNTRY FX SHOULD BE REVISED ACCORDINGLY.

C. A STATEMENT SHOULD BE ADDED TO ENVIRONMENTAL ANALYSIS
SECTION OF PP TO URGE GOE TO CONDUCT A COMPLETE ENVIRON-
MENTAL STUDY FOR EACH COMMUNITY DEVELOPED AS A RESULT OF
MINING VENTURES.

D. MPGAP DISSEMINATES INFORMATION ON RESOURCES TO ATTRACT
POTENTIAL INVESTORS. PP INCLUDES LIMITED TRAINING COMPON-
ENT FOR LEASING OF MINERAL RIGHTS OR CONCESSIONS.
HOWEVER, ACTIVITIES IN THIS INVESTMENT SECTOR AS ENVISIONED
IN PP WILL REQUIRE DEVELOPMENT OF A LARGE SCALE MANAGEMENT
AND EVALUATION CAPABILITY WITHIN GOE. SUCH ACTIVITIES ARE
ESPECIALLY NECESSARY IN THE NON-PETROLEUM SECTOR WHICH IS
LESS DEVELOPED IN THIS RESPECT. MISSION SHOULD CONSIDER

EXPANDING TRAINING IN LEASING WITHIN MPGAP PROJECT AND/OR
DEVELOPMENT OF A SEPARATE TRAINING PROJECT TO ADDRESS THIS
PROBLEM. AREAS REQUIRING INSTITUTIONAL DEVELOPMENT AND
TRAINING INCLUDE: ORGANIZATION AND MANAGEMENT OF LEASING
PROGRAMS, ANALYSIS AND REVIEW OF DEVELOPMENT MINING, PRO-
CESSING SUPPORT FACILITIES, PROPOSALS, EVALUATION OF
TECHNOLOGY, RESOURCE EVALUATION TO ASSURE MAXIMIZATION
RESOURCE RECOVERY, ROYALTY ASSESSMENT, RECLAMATION PLANN-
ING, ENVIRONMENTAL ASSESSMENT AND MONITORING. IN ADDITION
IT IS RECOMMENDED THAT A GENERAL REVIEW BE UNDERTAKEN OF
CURRENT LAWS, REGULATIONS AND PROCEDURES REGARDING MINERAL
DEVELOPMENT AND EXPLOITATION TO ASSURE FOR MINIMAL DELAYS
IN LEASING AND DEVELOPMENT FOLLOWING PRODUCTION OF MPGAP
PRODUCTS DUE TO UNNECESSARY ADMINISTRATIVE AND LEGAL
CONFLICTS.

E. ADMINISTRATIVE PLAN IN PP WAS NOT ACCEPTED. REQUESTED
CHANGES INCLUDE: (1) USAID PROGRAM MANAGER SHOULD BE
DELETED FROM THE MANAGEMENT PLAN. NEAC FELT THAT THE
ADDITIONAL LAYER BETWEEN MPGAP AGENCIES WAS UNNECESSARY
AND DID NOT FULLY PLACE RESPONSIBILITY FOR PROJECT ACCOM-
PLISHMENT IN GOE DOMAIN. (2) HOWEVER, MPGAP SHOULD HAVE A
GOE PROJECT COORDINATOR AS AN EMPLOYEE OF ASRT, TO:
(A) PROVIDE CONDUIT FOR GUIDANCE AND PROGRAM OVERSIGHT
FROM THE USAID PROJECT OFFICER AND FEEDBACK LINK TO USAID;
(B) ACT AS A LIAISON BETWEEN MPGAP COORDINATING COMMITTEE
AND USAID PROJECT OFFICER; (C) COORDINATE OVERALL DISPARATE
ASPECTS OF GOE UNITS INVOLVED AND CONTRACTORS ASSISTING IN
THESE ACTIVITIES; (D) ASSIST IN EVALUATING AND RANKING
PROPOSALS FOR MGRS AND EGPC CONTRACTORS; (E) CERTIFY WORK
COMPLETION ON ALL VOUCHERS SUBMITTED TO USAID; (F) KEEP THE
MPGAP COORDINATING COMMITTEE INFORMED OF PROGRAM PROGRESS;
(G) PARTICIPATE IN MPGAP EVALUATIONS; (H) CHAIR BIENNIAL
MEETINGS OF MPGAP; (I) WORK CLOSELY WITH SUB-PROJECT
MANAGERS OF EACH OF THE MPGAP AGENCIES PROVIDING TECHNICAL
ASSISTANCE, LOGISTICAL SUPPORT AND COORDINATION OF EFFORT
ON A DAY-TO-DAY BASIS.

SUFFICIENT FUNDS TO COVER ACTIVITIES OF THE PROGRAM
COORDINATOR AND HIS/HER SUPPORT SHOULD BE BUDGETED FOR
ASRT OPERATIONS.

3. ONE SPECIFIC CONTRACTOR SHOULD ASSIST EGPC IN DEVELOP-
ING TECHNICAL SPECIFICATIONS FOR INDIVIDUAL STUDIES.
DUE TO TIME CONSTRAINTS, IGC WOULD PROBABLY NOT BE ABLE TO
COMPLETE TASKS OUTLINED IN PP. THIS CONTRACTOR WOULD WORK
DIRECTLY WITH PROGRAM MANAGERS OF EGPC.

4. A SECOND CONTRACTOR, MGRS CONTRACTOR, SHOULD BE
DIRECTLY RESPONSIBLE TO PROJECT MANAGERS OF EGMA, DRI AND
RSC. IN ADDITION TO DUTIES OUTLINED IN PP, HE SHOULD:
(A) PROVIDE GUIDANCE IN PROGRAM DIRECTION TO USAID,
EGMA, DRI, AND RSC. (B) ENGAGE IN PROGRAM PLANNING WITH
USAID, EGMA, DRI AND RSC TO ENSURE THAT THE PROPOSED
CONTENT AND LEVEL OF EFFORT OF TECHNICAL ASSISTANCE ARE
ADEQUATE TO ACHIEVE THE OBSERVED PURPOSE (C) ACT AS A
LIAISON TO THE MPGAP COORDINATING COMMITTEE IN PROGRAM-
RELATED FUNCTIONS TO THE GRANT AGREEMENT AND REVIEW PERI-
ODICALLY WITH THEM THE ACCOMPLISHMENTS OF THE MPGAP, BRIEF
ON ISSUES AND PROBLEMS AND ASSIST IN PLANNING ANNUAL MPGAP
MEETINGS (D) KEEP USAID INFORMED OF ANY PROBLEMS THAT MAY
DELAY PROJECT IMPLEMENTATION; PROVIDE SUGGESTIONS FOR
SOLVING THESE PROBLEMS (E) PARTICIPATE IN THE EVALUATIONS
OF THE MPGAP.

5. A THIRD CONTRACTOR, THE AIRBORNE CONTRACTOR, SHOULD BE
DIRECTLY RESPONSIBLE TO EGMA PROJECT MANAGER. THESE
CHANGES ARE DESIGNED TO FACILITATE STRONGER GOE MANAGEMENT
IN MPGAP.

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6. NEAC REQUESTS RESPONSE OF USAID AND GDE TO ABOVE
RECOMMENDATIONS.

7. NE/TECH/HRST AND WJ/ST REQUEST PERMISSION TO MAKE MINOR
TECHNICAL CORRECTIONS IN PP BY CHANGING "PETROGRAPHIC" TO
"LITHOLOGIC", FOR EXAMPLE, WHERE NECESSARY AND PRODUCE
FINAL COPY.

8. FYI, STEPHEN F. LINTNER, NE/PD AND FORMERLY OF USGS,
HAS EXPFRIENCE IN LEASING TRAINING PROGRAMS. HE WILL BE
IN CAIRO MID NOVEMBER FOR TDY AND AVAILABLE FOR DISCUSSIONS.
CHRISTOPHER

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ACTION AID-35

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AIDAC

E.O. 12958: N/A

SUBJECT: NEAC MEETING, MINERAL PETROLEUM GROUNDWATER
ASSESSMENT (MPGAP) PROJECT 263-0105

REF: STATE 221628

1. FOLLOWING IS MISSION RESPONSE TO NEAC GUIDANCE:

A. PER PARA 1A REFTEL, MISSION COLLABORATED WITH CI OFFICE IN DEVELOPMENT OF PP AND WILL CONTINUE TO SEEK THEIR GUIDANCE ON PROCUREMENT ISSUES THROUGHOUT MPGAP. PP SPECIFICALLY STATES NEED FOR ASSISTANCE IN PROCUREMENT BY AAPC OR LIKE AGENCY ON PAGE 42; HOWEVER, SPECIFICATIONS TO THE EXTENT POSSIBLE WILL BE DRAWN UP BY CI IN COOPERATION WITH AID/W. PROVISION OF TECHNICAL SPECIFICATIONS AND IDENTIFICATION OF PROSPECTIVE MANUFACTURERS AND SUPPLIERS OF COMMODITIES WHICH ARE BEYOND CI CAPABILITIES WILL REST WITH THE MORS CONTRACTOR WHO IS ALREADY CHARGED WITH ASSISTING PARTICIPATING AGENCIES WITH EQUIPMENT SELECTION.

B. PER REFTEL PARA 1B, FACE SHEET WILL BE MODIFIED ACCORDINGLY.

C. MISSION CONCURS RECOMMENDATION REFTEL, PARA 1C AND SUCH EA'S HAVE BEEN DISCUSSED WITH GOE PER PAGE 28 IN PP. AID/W MAY INCLUDE DESIRED STATEMENT IN PP ENVIRONMENTAL ANALYSIS.

D. MISSION FULLY ACCEPTS NEED TO ESTABLISH CAPACITY IN GOE FOR LEASING OF MINERAL RIGHTS OR CONCESSIONS PER REFTEL, PARA 1D AS A NECESSARY ADJUNCT TO THE MPGAP. WE WILL SEEK ASSISTANCE IN DESIGN OF SUCH TRAINING IN NOVEMBER FROM STEPHEN LINTNER, PER PARA 3 REFTEL AND FUND CENTRAL TRAINING PROJECTS ALREADY AVAILABLE IN MISSION.

2. USAID ACCEPTS SUGGESTION ELIMINATION OF USAID PROGRAM MANAGER POSITION FROM MPGAP ADMINISTRATIVE PLAN PER PARA 1E REFTEL. GOE PROJECT COORDINATOR FOR COORDINATING COMMITTEE IS PRESIDENT ASRT; HOWEVER, ESTABLISHMENT OF AN EXECUTIVE SECRETARIAT CANNOT CARRY OUT ALL THE FUNCTIONS DESCRIBED THEREIN. ALL PARTICIPATING MINISTRIES HAVE DESIGNATED PERSONS TO FULFILL FUNCTIONS E AND F, WHICH SHOULD NOT LIE WITH COORDINATING COMMITTEE. ALL OTHER FUNCTIONS DO, INDEED, REST WITH THE COORDINATING COMMITTEE AS PRESENTLY CONSTITUTED. HOWEVER, MISSION PROPOSES AN EGYPTIAN EXECUTIVE SECRETARY TO THE COORDINATING COMMITTEE AND BELIEVE ASRT WILL CONCUR. A PASA EMPLOYEE OR PSC WOULD BE RECRUITED TO ADVISE EXECUTIVE SECRETARY.

3. MISSION ACCEPTS SUGGESTIONS PARAS 3, 4 AND 5 REFTEL.

4. USAID APPRECIATES ANY EDITORIAL CORRECTIONS BEING MADE IN AID/W IN ORDER TO EXPEDITE APPROVAL PROCESS.

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AIDAC

E. O. 12065: N/A
SUBJECT: NEAC MEETING, MINERAL, PETROLEUM AND GROUND-
WATER ASSESSMENT (MPGAP) PROJECT 263-0105

REF: CAIRO 18576

1. PLEASE PASS TO L. READE, NE/TECH/HRST.
2. PLEASE CONSIDER THIS CABLE AS AN ADDENDUM TO REFTEL.
3. PER PARA 1A REFTEL, USAID WISHES TO MODIFY CONTENT AND THRUST OF LAST SENTENCE. MGRS CONTRACTOR CANNOT BE REASONABLY RESPONSIBLE FOR EQUIPMENT SELECTION. MGRS CONTRACTOR'S TASK AS DELINEATED IN PP PAGE 41 AND SUBSEQUENTLY IN ANNEX V PAGE 7 RESTRICTS ITS ROLE TO PROVIDE INSTRUMENTATION SERVICES AFTER MPGAP EQUIPMENT IS PURCHASED. IN ADDITION IN PP PAGE 4 PARA 2A, IT WAS MENTIONED THAT PARTICIPATING GOE INSTITUTIONS WILL START RESPECTIVE ACTIVITIES THIS CY. ALSO THESE AGENCIES HAVE REQUESTED THAT EQUIPMENT BE PURCHASED DURING FY 81. THIS CANNOT BE PERFORMED BY MGRS CONTRACTOR WHO WILL NOT BE ON BOARD BEFORE AUG. 81. AND AS A RESULT, EQUIPMENT LIST WOULD NOT BE FINALIZED BEFORE JAN. 82. THIS WOULD CAUSE SEVERE DELAY IN PROJECT IMPLEMENTATION. BASED ON THE FOREGOING, USAID REQUESTS THAT FOR COMMODITIES WHICH ARE BEYOND MISSION CI CAPABILITIES, AN INSTITUTIONAL CONTRACTOR (PREFERABLY IQC) BE RESPONSIBLE FOR EQUIPMENT SELECTION.
ATHERTON

UNCLASSIFIED

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**ACTION
COPY**

Department of State

**INCOMING
TELEGRAM** 11-7

PAGE 01 CAIRO 19983 101937Z
ACTION AID-35

058174 AID9683

ACTION OFFICE NETC-04
INFO AANE-01 NEEI-03 CMGT-02 CTR-02 CH8-01 RELO-01 MAST-01
/015 A3 5

INFO OCT-01 /036 W

-----028114 101945Z /34

R 101405Z SEP 80
FM AMEMBASSY CAIRO
TO SECSTATE WASHDC 0000

UNCLAS CAIRO 19983

AIDAC

E.O. 12065: N/A
SUBJECT: EQUIPMENT CONTRACTOR - MINERALS, PETROLEUM AND
GROUNDWATER ASSESSMENT PROGRAM (263-0105)

REF: STATE 240091

USAID CONCURS WITH REFTEL. ATHERTON

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Department of State

INCOMING 11-8
TELEGRAM
058509 AID0422

PAGE 01 CAIRO 20068 111318Z
ACTION AID-35

ACTION OFFICE NETC-04
INFO NEPD-03 NEDP-01 CH6-01 NEEI-03 PPCE-01 PDPR-01 PPPB-02
PPEA-01 FLD-02 ENGR-02 CH8-01 RELO-01 MAST-01
/024 A3 11

INFO OCT-01 NEA-07 /043 W

-----034310 111329Z /41

O 111321Z SEP 80
FM AMEMBASSY CAIRO
TO SECSTATE WASHDC IMMEDIATE 2524

UNCLAS CAIRO 20068

AIDAC

E. O. 12065: N/A

SUBJECT: PROJECT 263-0105, MINERAL, PETROLEUM AND GROUND-
WATER ASSESSMENT PROGRAM

REF: A) STATE 221629, B) CAIRO 18576

1. 1. FOR C. COLEMAN NE/TECH/HRST.

2. USAID REQUESTS AID/W CONCURRENCE NOT TO MODIFY FACE
SHEET AS SUGGESTED IN PARA 18 REFTEL A FOR FOLLOWING
REASON: GOE CONSIDERS 1.7 MILLION LOAN FROM IBRD AS
EGPC'S OWN FUNDS. EGPC POINTS OUT THAT IBRD LOAN WAS MADE
LAST YEAR AND HAD NO RELATION TO SUBJECT PROJECT AT THAT
TIME. USAID VIEW IS THAT TO PUSH THIS ISSUE IS NOT
WORTH EFFORT. PLEASE ADVISE ASAP AS USAID IS PRESENTLY
DRAFTING PRO AG. ATHERTON

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Department of State

INCOMING
TELEGRAM

PAGE 01 CAIRO 20537 171048Z
ACTION AID-35

062448 AID4601

ACTION OFFICE NEEI-03
INFO NEPD-03 NEDP-01 NETC-04 ENGR-02 CH8-01 RELO-01 MAST-01
3-00 /016 AI

INFO OCT-01 SSO-00 NEA-07 EB-08 /051 W
-----075674 171050Z /10

O 171042Z SEP 80
FM AMEMBASSY CAIRO
TO SECSTATE WASHDC IMMEDIATE 2720

UNCLAS CAIRO 20537

AIDAC

E. O. 12065: N/A
SUBJECT: MINERAL, PETROLEUM, GROUNDWATER ASSESSMENT,
PROJECT 0105: LETTER OF REQUEST

1. FOR GERALD GOWER, EGYPT DESK OFFICER.
2. FOLLOWING IS TEXT OF GOE LETTER OF REQUEST DATED 9/14/80 AND SIGNED BY ABDEL AZIZ ZAHWY, UNDERSECRETARY OF STATE FOR ECONOMIC COOPERATION.

3. QUOTE. DEAR MR. BROWN, AS YOU KNOW, THE GOVERNMENT OF THE ARAB REPUBLIC OF EGYPT HAS BEEN WORKING CLOSELY WITH USAID ON THE DEVELOPMENT OF A PROJECT INVOLVING THE ACADEMY OF SCIENTIFIC RESEARCH AND TECHNOLOGY, THE EGYPTIAN GEOLOGICAL SURVEY AND MINING AUTHORITY, THE EGYPTIAN GENERAL PETROLEUM CORPORATION, THE DESERT RESEARCH INSTITUTE AND THE REMOTE SENSING CENTER.

THE PROJECT WHICH HAS BEEN DEVELOPED, THE MINERAL, PETROLEUM AND GROUNDWATER ASSESSMENT PROGRAM WILL WORK WITH THE ABOVE ENTITIES TO INCREASE KNOWLEDGE ON POTENTIALLY COMMERCIAL MINERAL AND PETROLEUM RESOURCES.

THE GOVERNMENT OF EGYPT HEREBY REQUESTS THAT AID PROVIDE U. S. \$37.2 MILLION FOR THE ABOVE-MENTIONED PROJECT. THANK YOU VERY MUCH FOR YOUR COOPERATION. SINCERELY YOURS, ABDEL AZIZ ZAHWY, UNDER SECRETARY OF STATE FOR ECONOMIC COOPERATION. UNQUOTE. ATHEPTON

UNCLASSIFIED

11-10

*C. Coleman
NE/TREK/ALST
Rm 3312 US*

August 25, 1980

SEE ATTACHED DISTRIBUTION

**We wish to inform you of a proposed action
in the Agency's Program during the Fiscal
Year 1980:**

Guatemala - Development Administration
Improvement

Costa Rica - Agrarian Settlement and Productivity

Africa - Health Constraints to Rural Production

Africa - Refugee Assistance

✓ Egypt - Mineral, Petroleum, and Groundwater — ~~# 418~~
Assessment

Tunisia - Livestock Forage Production — ~~# 419~~

Latin America and Caribbean - Operational
Program Grants

William R. McIntyre
Program Presentation Division
Office of Legislative Affairs

The attached notifications were sent to the Hill on August 25, 1980.
Obligation may be incurred on September 9, 1980.

AGENCY FOR INTERNATIONAL DEVELOPMENT
ADVICE OF PROGRAM CHANGE

11-11

DATE:

Country: Egypt

Project Title: Mineral, Petroleum, and Groundwater Assessment

Project Number: 263-0105

FY 80 CP Reference: None

Appropriation Category: Economic Support Funds

Intended FY 1980 Obligation: \$20,700,000

This is to advise that A.I.D. plans to obligate \$20,700,000 in FY 1980 funds for this project. The project is designed to assist the Government of Egypt in assessing its natural resources and disseminating data to potential investors on potentially commercial mineral, petroleum and related groundwater resources. Assistance will focus on four broad subprojects: minerals, petroleum, groundwater and remote sensing. Life of project funding is projected at \$37,200,000. At the time the FY 1980 Congressional Presentation was prepared, A.I.D. and the Government of Egypt had not formulated the project design.

Attachment: Activity Data Sheet

ACTIVITY DATA SHEET

TITLE Mineral, Petroleum and Groundwater Assessment Program		FUNDS Economic Support Funds	PROPOSED OBLIGATION (in thousands of dollars)		
NUMBER GRANT <input checked="" type="checkbox"/> LOAN <input type="checkbox"/>		PRIOR REFERENCE None	FY 80 20,700	LIFE OF PROJECT 37,200	
NEW <input checked="" type="checkbox"/> CONTINUING <input type="checkbox"/>			INITIAL OBLIGATION FY 80	ESTIMATED FINAL OBLIGATION FY 82	ESTIMATED COMPLETION DATE OF PROJECT FY 89

Purpose: To improve the organization of current data on potential mineral, petroleum, and related groundwater resources necessary for development; compile reports on newly surveyed areas of potential mineral, petroleum and related groundwater resources; and develop the Government of Egypt's institutional capacity to acquire, analyze and disseminate data on potentially commercial mineral and petroleum resources.

Background: Discussions concerning the Mineral, Petroleum and Groundwater Assessment Program were initiated by a letter from President Sadat to President Carter in early 1979 requesting U.S. technical assistance in identifying and assessing the possibilities of developing the mineral, petroleum, and groundwater resources. This request stemmed from the commitment of the Government of Egypt to find new sources of foreign and domestic exchange to strengthen the domestic economy and reduce the balance of payments deficit. The major constraint to the encouragement of exploitation is the lack of comprehensive geologic data available on the details of mineral deposits and petroleum resources. In order to attract investors, there must be information on the local geology. Agencies involved in resources assessment and participating in this project are: Egyptian Geological Survey and Mining Authority(EGSMA), Egyptian General Petroleum Company(EGPC), Desert Research Institute(DRI), and Remote Sensing Center(RSC).

Host Country and Other Donors: The Government of Egypt contribution in kind through the four institutions is the equivalent of approximately \$28.4 million. Other donor inputs include a \$1.7 million loan from IBRD to Egyptian General Petroleum Company to finance a study of the Western Desert, the results of which will serve as the basis for the petroleum sector regional seismic survey.

Beneficiaries: The immediate beneficiaries will be the hundreds of persons employed over the five-year project period carrying out the field and laboratory surveys, data gathering, and map making, and those creating and managing the complex information system on Egyptian geology. Longer range beneficiaries will be the persons employed in extraction, processing, and industrial utilization of mineral resources. Most important, Egyptian society as a whole will benefit from the significant contribution of overall mineral, petroleum, and groundwater reserves to a stronger economy.

FY 80 Program: This project will supply commodities, technical assistance, and training consistent with development goals and plans. Contractor selection processes will commence after signature of the grant agreement. Technical specifications for data collection and in-country training will be finalized, commodities procured, and initial program activities implemented.

Major Outputs:	<u>All Years</u>
Maps and reports	110
Training	296 persons
In-Country	20 persons
In U.S.	
A.I.D. Financed Inputs:	<u>(\$ Thousands)</u>
	<u>FY 80</u>
Technical assistance (including training)	5,100
Contractual services	7,400
Commodities	3,600
Other Costs	4,600
	TOTAL \$20,700

U.S. FINANCING (in thousands of dollars)				PRINCIPAL CONTRACTORS OR AGENCIES
	Obligations	Expenditures	Unobligated	
Through September 30, 1979	-0-			
Estimated Fiscal Year 1979	-0-			
Estimated through September 30, 1979	-0-			
Proposed Fiscal Year 1980	20,700	Future Year Obligations 16,500	Estimated Total Cost 37,200	

To be selected

Clearances:

NE/TECH/HRST, S. Applegate (draft)
NE/EI/E, G. Gower _____ (draft)
NE/TECH, L. Reade _____ (draft)
GC/LPIA, J. Rogan _____
NE/DP, B. Langmaid _____
AA/NE, A. White _____

Drafted by: NE/TECH/HRST, C. Coleman: 8/15/80: ext. 28164

Project 263-0105

ANNEX 12

DRAFT PROJECT DESCRIPTION FOR PROJECT AGREEMENT

The Project will assist the Grantee to (1) improve the organization of current data on existing and potential mineral and petroleum resources and groundwater necessary for their development; (2) to compile reports on newly surveyed areas of potential, mineral, petroleum and related groundwater resources; and (3) to develop Grantee institutional capability to acquire, organize, analyze, store, release and disseminate data on potentially commercially mineral and petroleum resources. Technical and financial assistance, commodity and training will be provided to four Grantee institutions, the Egyptian Geological Survey and Mining Authority (EGSMA), the Egyptian General Petroleum Corporation (EGPC), the Desert Research Institute (DRI), and the Remote Sensing Center (RSC), in order to produce information in forms of maps and reports which will attract investors, upgrade and support services activities in these institutions, and produce qualified trained personnel.