

(BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS)

PD-AAU-090 PART 1
46609

A. MISSION OR AID UNIT
(Mission or AID/W Office)

USAID/EGYPT
(ES # 86-7)

B. WAS EVALUATION SCHEDULED IN
CURRENT FY ANNUAL EVALUATION PLAN?

yes slipped ad hoc

C. EVALUATION TYPE

Interim Final ex post other

D. ACTIVITY OR ACTIVITIES EVALUATED (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report)

Project #	Project/Program Title (or title & date of evaluation report)	First PROPS or equivalent (FY)	Most recent PACD (mo/yr)	Planned LOP Cost ('000)	Amount Obligated to Date ('000)
163-0105	Mineral, Petroleum and Groundwater Assessment Program	9/80	9/87	\$37,200	\$29,700

E. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

Action(s) Required

1. Explore with the Ministry of Petroleum and Mineral Wealth the possibility of designing a GOE liaison officer with full-time monitoring responsibilities for the MPGAP Project.
2. Arrange for additional technical assistance to EGSM in the preparation of mineral information packages.
3. Continue and augment current training and technical assistance to strengthen management of computer facilities at MPGAP agencies.
4. Extend the PACD through 1989 to complete three important activities to be addressed in a separate Action Memo for the Director.

Name of officer
responsible for
Action

Date Action
to be
Completed

S. Arif, &
L. Evrin,
HRDC/S&T,
EGSMA & EGPC

12/86

S. Arif, HRDC/S&T
& EGSM

12/86

S. Arif,
HRDC/S&T,
Bendix Field
Engineering
Cooperation,
& MPGAP Agencies

NA

S. Arif
HRDC/S&T

10/86

EGPC : Egyptian General Petroleum Corporation
EGSMA: Egyptian Geological Survey and Mining Authority
MPGAP: Mineral, Petroleum and Groundwater
Assessment Program

(Attachments, if necessary)

MISSION OR AID/W OFFICE REVIEW OF EVALUATION

EVALUATION SUMMARY AND ACTION DECISIONS:

no — day — year —

Project/Program
Officer

Representative of
Borrower/Grantee

Evaluation
Officer

Mission or AID/W Office
Director

F. DATE OF MISSION OR AID/W OFFICE REVIEW OF EVALUATION

no 2 day 17 year 86

G. APPROVALS OF EVALUATION SUMMARY AND ACTION DECISIONS:

Signature Typed Name Date	Project/Program Officer	Representative of Borrower/Grantee	Evaluation Officer	Mission or AID/W Office Director
S. Arif, HRDC/S&T			S. Conly, DPPE/PE	
L. Ervin, HRDC/S&T			T. Ware, DPPE/PE	
B. Wilder, AD/HRDC				
G. Laudato, AD/DPPE				

Approved: Frank B. Kimball
Frank B. Kimball, Director

11 SEP 1986
Date

ATTACHMENTS

INTERIM EVALUATION OF THE MINERAL, PETROLEUM AND GROUNDWATER ASSESSMENT PROJECT, MARCH 1986

COMMENTS BY MISSION, AID/W OFFICE AND BORROWER/GUARANTEE

This evaluation has been a difficult one for USAID/Egypt. USAID has invested significant staff time to assist the evaluation team in producing a document of acceptable quality. The Mission, however, does not agree with Key evaluation recommendations. In particular, significant differences remain between USAID's and the evaluation team's perception of the importance of project management issues and how these should best be addressed.

Project Overview: With the benefit of hindsight, the Mission place too much emphasis on assembling an evaluation team with the specialized, scientific expertise. The team lacked adequate project evaluation experience and understanding of the institutional development aspects of the project. Consequently, the overview of the project provided by the final report is weak in its identification of overall achievements and implementation problems cutting across individual implementing agencies.

Project Extension: The evaluation concludes that, owing to start-up and procurement delays, project activities will not be completed within the current PACD, September 1987. The report recommends a two year PACD extension, but does not adequately justify this recommendation.

In USAID's opinion, the most compelling reason to extend the overall MPGAP project is the enhanced oil recovery project in the Bakr-Amer oilfields. The evaluation gave short shrift to this activity, which is still underway, but which has enormous technological significance for the exploitation of hitherto commercially unviable oilfields. This oil recovery project, which is of great potential importance to the Egyptian economy, could not be completed within the current PACD. Nor could the second aeromagnetic survey, which is anticipated, like the first, to stimulate considerable interest among potential investors. Finally, the establishment of the inter-agency information and data bases, an important element for achievement of overall project purpose, will not be completed by September 1987. Extension of the PACD appears justified to complete these three important project activities.

A request for a PACD extension will be prepared in the near future. The request will be in the form of an Action Memorandum for the Director presenting a justification for completing each of these distinct activities.

MISSION COMMENTS ON FULL REPORT

Overall Project Management: The evaluation team is correct in its finding that the originally anticipated management framework for the project was never realized. However, USAID believes that the report overstates the impact of the lack of overall GOE project coordination on project implementation. Moreover, recommendations based on this finding reflect a poor understanding of the original Project Paper. USAID disagrees with the team's recommendation to revive the management framework proposed in the Project Paper or to develop an alternative mechanism for a more active GOE role in project management.

The Project Paper clearly recognized that the Mineral, Petroleum and Groundwater Assessment Program would be implemented by four separate agencies. The role laid out for the Academy of Scientific Research and Technology (ASRT) was that of a policy-making and coordinating agency, rather than an implementing agency. The proposed management framework was developed primarily to facilitate exchanges of information between academic and investment-oriented interests. With the benefit of hindsight, the proposal to form a Coordinating Committee with ASRT in the leadership and executive role was unrealistic, in that it ignored the political sensitivities and rivalries among the various GOE agencies engaged in natural resource exploration. In retrospect it is not surprising that the Coordination Committee system was never effectively implemented.

From USAID's perspective, the absence of an effective Committee system has placed the onus of project implementation on the individual agencies, expedited the implementation process and contributed to the institutional growth of the implementing agencies. Moreover, to some extent events have overtaken the Project Paper. The coordination issue has been addressed by GOE organizational changes that have brought the petroleum and mineral agencies (the largest funding recipients) together under one Ministry, that of Petroleum and Mineral Wealth. This has facilitated inter-agency coordination and made the concept of a Coordination Committee obsolete. Finally, ASRT is about to undergo a change in leadership; given the limited number of remaining project activities, it may actually slow the pace of project implementation to promote a more active role for ASRT at this time.

Recruitment of a Coordinator: USAID rejects the evaluation team's recommendation that a new U.S. Coordinator be recruited immediately. The Mission does not believe that the previous Coordinator fulfilled a critical coordinating and administrative function, or that recruitment of a new Coordinator is an appropriate solution to the perceived management/coordination issues on the GOE side. The TA contractor, Bendix, provides a more logical and expedient mechanism to provide assistance in data management to the four agencies. Procurement activities are now virtually completed, and assistance required in this area is minimal. It is not clear what useful role here would be for a U.S. PSC at this time, and the acceptability of such a contractor to the GOE is highly questionable.

USAID Project Management: The progress of the project to date is largely due to conscientious and effective USAID project management. The evaluation report does not give adequate credit where it is due. Moreover, AID regulations make the involvement of the Project Officer in the details of project implementation inevitable, particularly where numerous procurement actions are involved. At the same time, USAID agrees that the lack of a single GOE agency or individual with responsibility for the project has increased the burden on USAID project management. For reasons elaborated above, USAID does not believe it useful to attempt to revive the management framework proposed in the Project Paper. However, USAID will explore with the Ministry of Petroleum and Mineral Wealth the possibility of designating a GOE liaison officer to assume more responsibility for the day to day monitoring of the project. USAID does not, however, believe this to be critical to completion of remaining project activities.

Mineral Packages: The most valuable contribution of this evaluation is that it highlights the inadequacy of the current approach to preparation of the mineral information packages. The report notes that, to date, neither the Bendix in-country team nor the head office personnel backstopping the project have been able to provide the necessary assistance to tailor these packages to the needs of potential investors. However, the report suggests that Bendix secure the additional assistance. USAID accepts the recommendation that additional assistance is necessary, but does not believe Bendix is the appropriate agency to provide this assistance, particularly given their loss of credibility with the GOE in this area.

Strengthening Data Management Capabilities: The primary thrust of this project is the development of the MPGAP agencies' ability to establish, maintain and utilize natural resource data bases. The evaluation draws particular attention to the need for further assistance and training for all the MPGAP agencies in managing computer facilities. USAID will continue and intensify training and technical assistance activities in this area during the remainder of the project.

EGPC Digitization Activities: The evaluation team reviewed the original EGPC proposals for the organization of petroleum data through digitization of seismic and electrical well logs. Based on this review, the team recommended that, since this information was of limited interest to potential investors, digitizing activities should be discontinued or significantly reduced in scale. However, the evaluation team did not examine the technical review of the original EGPC proposal conducted by three external consultants. This review recommended that the EGPC proposals should only be implemented as part of a data base management system. The evaluation report also makes no mention of the work of the Egyptian geophysicist, contracted by USAID, to assist EGPC in implementing the review team's recommendation. As a result of this assistance, EGPC made a decision to reduce activities to digitize electrical logs, and not to carry out the digitization of seismic records. This evaluation recommendation has, therefore, been superseded by events.

The Mineral, Petroleum and Groundwater Assessment Program (MPGAP) aims to gather basic geotechnical information and to develop improved means of disseminating this information to potential investors. It is implemented by four Government of Egypt (GOE) natural resource agencies. This mid term evaluation was conducted to assess performance and to identify and address implementation problems. The major findings and conclusions are:

- o The overall project concept is valid. Information generated by the project is already attracting the attention of potential investors; three oil companies have purchased sections of the aeromagnetic/radiometric survey.
- o The GOE has not played an active role in overall project coordination. This vacuum has to some extent been filled by USAID. USAID involvement in the details of implementation has inhibited institution-building objectives.
- o At the operational level, project management at individual MPGAP agencies ranges from good to excellent. The project has stimulated increased interagency cooperation, but information sharing can be further improved.
- o Delays in equipment procurement have set the project significantly behind schedule. The original implementation plan was unrealistic. The agencies require more time to complete project information generation objectives.
- o The technical assistance contractor has made an important contribution in the areas of training, equipment procurement and data processing capability. The in-country team does not, however, have adequate management and marketing experience. Cross-cultural orientation of contractor personnel and GOE trainees has been inadequate.
- o As the MPGAP agencies work towards establishing computerized data management systems, they need more specialized assistance in this area.
- o The quality of information generated to date is mixed. The aeromagnetic/radiometric survey is excellent. Landsat imagery has not, however, lived up to expectations, largely owing to equipment procurement delays. Mineral information packages do not adequately cater to investors.
- o Information dissemination is also uneven. International market analyses and expanded information distribution would enhance mineral sector efforts. The petroleum sector should adopt a more aggressive marketing strategy.
- o The evaluation recommended extension of the project to permit completion of ongoing activities. GOE project management should be energized, and USAID's role in implementation diminished. A new Project Coordinator should be recruited, and specialized assistance in minerals marketing provided.

I. EVALUATION COSTS

1. Evaluation Team

<u>Name</u>	<u>Affiliation</u>	<u>Contract Number OR TDY Person Days</u>	<u>Contract Cost OR TDY Cost (US\$)</u>	<u>Source of Funds</u>
Mr. Daniel Creedon	Consultant	263-0105-S-00-6038-00	\$15,665	Project
Mr. Owen Kingman	Consultant	263-0105-S-00-6041-00	\$10,000	Project
Dr. Rafik Salem	Consultant	263-0105-S-00-6042-00	\$ 9,123	Project
Dr. Victor Myers	Consultant	263-0105-S-00-6040-00	\$13,107	Project
Dr. M. El Sharkawi	Consultant	263-0105-S-00-6039-00	LE 3,327	Project

2. Mission Professional Staff Person Days
(estimate) 15

3. Borrower/Grantee Professional Staff Person Days (est) 10

A.I.D. EVALUATION SUMMARY PART II

J. SUMMARY OF EVALUATION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS (Try not to exceed the 3 pages provided)

Address the following items:

- o Name of mission or office
- o Purpose of activity (ies) evaluated
- o Purpose of the Evaluation and Methodology Used
- o Findings and Conclusions
- o Recommendations
- o Lessons learned

USAID/EGYPT

Mineral, Petroleum and Groundwater Assessment Program
(Project No. 263-0105)

Project Description: The Mineral, Petroleum and Groundwater Assessment Program (MPGAP) aims to gather basic geotechnical information and to develop improved means of disseminating this information to potential investors, in order to increase foreign and domestic investment in the development of Egypt's natural resources. The project is implemented by four agencies: the Egyptian General Petroleum Corporation (EGPC), the Egyptian Geological Survey and Mining Authority (EGSMA), the Desert Research Institute (DRI) and the Remote Sensing Center (RSC).

Evaluation Purpose and Methodology: This interim evaluation was intended as a management tool, to assess performance, identify problems and recommend actions to help ensure project success. The evaluation was conducted by five external consultants, including experts in mineral and petroleum geology and remote sensing. The team examined four areas, namely (i) overall project management (ii) contractor performance (iii) information generation and (iv) publication and dissemination of information. The evaluation report was based on a review of project documents, technical reports and interviews of MPGAP agency personnel.

Findings and Conclusions:

(i) Overall Project Management: The framework originally envisioned for overall direction of the project has not been realized. The Coordination Committee chaired by the Academy of Scientific Research and Technology (ASRT) has not functioned effectively. This has led to a vacuum in overall GOE project coordination that has slowed project progress. The evaluation team considered it of paramount importance to reestablish top-level GOE management of the project.

At the operational level, management of project activities at individual MPGAP agencies ranges from good to excellent. Project staff are competent, knowledgeable, and enthusiastic. The project has stimulated increased cooperation, but there is room for further improvement in information sharing and interagency cooperation. A strong GOE management presence would assist in achieving these objectives.

The GOE management vacuum has to some extent been filled by USAID, which has been too involved in the details of project implementation. This may have inhibited project institution building objectives. The evaluation team felt it was highly desirable to fill the vacancy for a U.S. project coordinator with an individual experienced in management development and information systems. This would relieve USAID of some administrative tasks as well as provide for advisory services to GOE project management, assuming a GOE management role is revived.

Date this summary prepared: July 13, 1986

VI

SUMMARY

- 2 -

Delays in procurement of project equipment have set the project behind schedule. The original implementation plan and schedules were unrealistic, and have been revised to reflect procurement delays. Revised schedules appear to be realistic.

(ii) Contractor Performance. The project contracting approach is very different in the petroleum sector on the one hand and the mineral, groundwater and remote sensing (MGRS) sector on the other. In the petroleum sector, the GOE agencies do not implement projects, but rather plan and manage studies performed on a turn-key basis by U.S. contractors. In the MGRS sector, the agencies implement project activities with assistance from a long-term technical assistance contractor, Bendix Field Engineering Corporation.

The team judged the Bendix in-country contract team to be performing a complex task in a creditable manner. Bendix has helped to strengthen institutional capabilities through training and data processing activities, and provided valuable assistance in equipment procurement. However, the team perceived some problems. While the in-country contract team is technically competent, stronger management experience might better serve project objectives. Moreover, inadequate marketing background has limited the contractor's capability to assist EGSM in developing mineral information packages. Finally, inadequate "cross-cultural" orientation of consultants, trainers and trainees has led to misunderstandings and dissatisfaction with contractor performance and personnel. These problems need to be addressed.

Few difficulties have been encountered to date with contractors in the petroleum sector. Interagency cooperation on the completed aeromagnetic/radiometric survey has been very good. The team did not examine the final report, but the various MPGAP agencies involved in the project judged performance by the contractor, Aeroservice, to be excellent. It is too early to assess contractor performance on other, more recently initiated contracts in the petroleum sector.

(iii) Information Generation. All four agencies face common problems in establishing computerized data bases and data management capabilities. To a large extent, the project has now moved beyond the data collection phase to the conversion of data to information. This is critical to the project purpose, which involves the formation, maintenance and computerization of natural resource data bases. All the agencies need more assistance and training in establishing and managing computer facilities than is currently provided. The team felt that a U.S. Coordinator with a strong management information background could contribute to development of data management capabilities.

EGPC faces a major, long-term task in developing, coding and computerizing data collected over several decades. The task is ongoing and is well-managed. However, the team suggested that the effort underway to digitize logs be discontinued or reduced, since it was unlikely to generate new data or create interest among investors. DRI and RSC activities have been delayed by procurement problems, but DRI has subsequently made good progress. A large volume of data has been collected but has yet to be processed. In the team's assessment, all four agencies require additional time to complete project activities.

VII

(iv) Publication and Dissemination of Information: The adequacy of publications is mixed. The Aeroservice report is excellent, as is evidenced by the sale of parts of the survey to three oil companies. Presentation of mineral packages, however, needs improvement to cater better to the needs of potential investors. No DRI reports have been completed to date under the project, but the team reviewed DRI reports currently under preparation and concluded that DRI has a good reviewing and publication process. RSC, however, has not provided the quality and quantity of Landsat imagery and products originally anticipated, for reasons largely beyond its control.

Dissemination of information is also uneven. The evaluation team judged the EGSCMA marketing approach to be extensive and ambitious, but felt it could improve on these efforts by expanding distribution of information and undertaking analyses of the local and world markets for mineral commodities. EGPC dissemination efforts for the Aeroservice report represent an overly passive approach. The team recommended that EGPC not only maintain the information in "open file" status, but adopt a more aggressive marketing strategy.

Key Recommendations: The basic concept of the project remains valid. The project is improving GOE abilities to acquire, organize and disseminate natural resource information. Information generated by the project is likely to attract investors, as is demonstrated by the purchase of project data by three oil companies. Project activities are unlikely, however, to be completed within the current time frame, owing to the complexity of project activities and procurement delays. The evaluation team recommended the project be extended through 1989.

The team recommended that USAID attempt to energize the management structure originally anticipated. In the event that a central role for ASRT is no longer feasible, USAID and the parent Ministries of the MPGAP agencies should work out a new mechanism for effective GOE project coordination and management. The team also recommended recruiting a new U.S. Coordinator with strong management development and information systems expertise. USAID project management should shift back from project implementation to a monitoring, facilitating and consulting role. (Note: USAID does not accept certain of these recommendations.)

The team also recommended that USAID provide technical assistance to EGSCMA in analysis of the international mineral market and in development of information packages designed to meet the needs of potential investors.

Lessons Learned:

- o Project implementation plans should be more realistic, and allow sufficient time for equipment procurement. Project designs should also incorporate adequate technical assistance in complex, specialized tasks such as procurement and data systems development.
- o In the absence of strong host-country project management, USAID became overly involved in the details of project implementation. This may have facilitated the rate of implementation, but in the team's perception, inhibited long-term institution-building objectives.
- o Improved orientation of contractor personnel and host-country trainees to both cultural sensitivities and bureaucratic procedures can avoid misunderstandings that can jeopardize project effectiveness.

VIII

XD - AAU - 090 - A

46610

INTERIM EVALUATION
OF THE
MINERALS, PETROLEUM
AND
GROUND WATER ASSESSMENT PROJECT

Mr. Daniel Creedon (Team Leader)
Mr. Owen Kingman
Dr. Rafik Salem
Dr. Victor Myers
Dr. M. El Sharkawi

March 1986

1+

TABLE OF CONTENTS

	<u>PAGE</u>
I. EXECUTIVE SUMMARY.....	2
II. CHAPTER I - Overview.....	7
III. CHAPTER II - Petroleum Sector.....	18
IV. CHAPTER III - Mineral Sector.....	25
V. CHAPTER IV - Remote Sensing Center.....	33
VI. CHAPTER V - Desert Research Institute.....	37
VII. ANNEX I - Lessons Learned.....	42
VIII. ANNEX II - Evaluation Methodology.....	44
IX. ANNEX III - Bendix.....	46
X. ANNEX IV - Contacts and Interviews.....	50
XI. ANNEX V - Documents Reviewed/Reference Documents..	53
XII. ANNEX VI - Areas Covered by Aeromagnetic/ Aeroradiometric Study - Phase I.....	57
XIII. ANNEX VII - Scope of Work.....	58
XIV. ANNEX VIII - Logical Framework Comments.....	63

+

1'

Project Goal and Purpose

This is an interim evaluation of the Mineral, Petroleum and Ground Water Assessment Program (MPGAP) Project 263-0105. MPGAP was approved in 1980 and initiated in July 1982. The original PACD, based on the 1980 date, was 31 March 1985. The current PACD is 30 September 1987.

The stated project goal is to attract investors to further develop the mineral and petroleum resources of Egypt.

The purpose of the MPGAP Program as given in the project paper is to:

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

The views expressed in this report are those of the Evaluation Team

EXECUTIVE SUMMARY

USAID/Cairo initiated an interim evaluation of the Mineral, Petroleum and Ground Water Assessment Program, (MPGAP) Project 263-0105 in February 1986.

The MPGAP project had its origin in a request for assistance in the assessment of Egypt's natural resources from President Sadat to President Carter. This project provides an assessment of geographic areas, currently of little interest to oil and mineral investors but where potential petroleum and mineral resources are thought to occur. The mineral data collected will be converted into marketing packages. These packages will be given to potential investors. Petroleum data, sufficient to attract the attention of investors will be made public. Once oil companies are interested they may purchase more complete information. The project was planned for the 1980-85 period. A two year delay was experienced after the project paper was signed, 1980-1982. A second PACD was established for September 1987.

There are four Government of Egypt (GOE) organizations participating in the project:

1. The Egyptian General Petroleum Corporation (EGPC)
2. The Egyptian Geological Survey and Mining Authority (EGSMA)
3. The Desert Research Institute (DRI)
4. The Remote Sensing Center (RSC).

Sufficient information was available in the petroleum and mineral sectors and from the two supporting agencies, DRI and RSC, for the team to conduct the evaluation and make a strong recommendation to continue the project.

The project paper calls for a management system involving several organizations and positions. These include: (1) the Academy of Scientific Research and Technology, (ASRT), (2) a Coordinating Committee chaired by the President of ASRT, (3) the directors of MPGAP agencies acting as the membership. (4) a GOE project coordinator who was to be an employee of ASRT. (5) a U.S. AID project officer who was backed up by a U.S.G. project coordinator. (6) Designated project managers identified for each of the MPGAP agencies. (7) In addition, three agencies, EGSMA, DRI, and RSC are to be supported by a Mineral, Ground Water, Remote Sensing (MGRS) contractor.

The ASRT did not assume an aggressive role in coordinating the project. The evaluation team understood ASRT's position to be that without control of the funds being provided through ASRT to the four MPGAP agencies, it is difficult that ASRT provide effective coordination. In the absence of an effective GOE sponsorship, the Coordination Committee has not properly functioned. Failure of this committee to function as stated in the project paper has slowed down progress in this project.

In the absence of regular meetings of a GOE coordinating committee for the MPGAP project, AID has continued to maintain contact with the four agencies and was involved in details of project implementation. This may have inhibited some of the institutional building objectives inherent in the project.

The original U. S. project coordinator who left a few months ago, performed important technical functions even though, on his departure, AID and the agencies elected not to replace him.

The project has progressed to a point where a coordinator with new skills would be very useful. The major problem facing the MPGAP agencies and in particular the MGRS group is the information and minerals marketing area. Neither AID, the MGRS group, or the contractor supporting them, Bendix, have the needed skills to analyze the international minerals' market and develop appropriate information packages. A new U. S. Project coordinator could assist in facilitating these tasks and also support a proposed MPGAP technical committee. He could relieve the AID project officer of many of the administrative chores and allow him to perform his appropriate monitoring functions.

In 1983 an MGRS contractor, Bendix, was selected. The resident project director has excellent technical expertise and a competency in geology and remote sensing. This background has been valuable in establishing credibility and communications with the MGRS agencies. It was also the background desired by these agencies. Yet this position, in the evaluation team's view, requires an individual with extensive managerial experience as well as technical knowledge. The absence of such experience appears to have resulted in the inability of Bendix to achieve the "peer relationship" called for in the project paper. Lack of strong management skills and marketing expertise and limited capability to assist EGSMA in establishing a marketing format for the information packages, has caused some loss of confidence in Bendix's ability. Bendix, AID and EGSMA should develop a course of action to correct these deficiencies.

The evaluation team encountered a number of cases where cultural ignorance has interfered with trainees' trainers, consultants and contractor performance. It is impossible to evaluate in concrete terms the frustration, the cost of lost time, misunderstandings, dissatisfaction and loss of motivation. Yet when this occurs there is a "cost" and for the individual involved, a "high cost". Recommendations concerning this issue are discussed in the overview section of this report.

Little difficulty has been encountered with EGPC or the contractor providing them with technical services. The Aeromagnetic and Aeroradiometric Survey has been completed. Esso Oil Company, Gulf of Suez Petroleum Company

and Marathon Oil Company have purchased parts of the survey. This is a strong indication that petroleum investors are interested in the data generated by this part of the project.

EGSMA is just beginning to develop mineral information packages with Bendix's assistance. This effort needs help. EGSMA does not have the marketing experience held by EGPC, nor is EGPC's experience in marketing petroleum applicable to the minerals' industry. Bendix personnel in Egypt, or the personnel backstopping them in Colorado, do not have the technical marketing and information expertise necessary to assist EGSMA. EGSMA needs help in market analysis. This would, when combined with the minerals' survey data under the guidance of an individual who understands the format, style and information requirements of the industry, allow EGSMA to produce quality investor information packages. Bendix, the MGRS contractor, does not have the needed expertise in its Cairo office. Bendix should be able to secure quality consultants to assist EGSMA. To date neither AID, EGSMA or Bendix seem to have fully realized the specialized nature of the information-marketing-investment process.

RSC and DRI encountered procurement problems that delayed their work. These problems have been resolved and the needed equipment has arrived. However, DRI and RSC will need additional time to complete their project tasks.

All four agencies face common problems in establishing computerized data bases and employing microcomputers in support of client and management needs. The project has reached the stage where data and the conversion of data to information is the preoccupation of each agency. This preoccupation coincides with the main thrust of the project which includes the formation, maintenance and computerization of the data bases.

It is the team's view that planning should begin at once to recruit the aforementioned U. S. Coordinator. This individual should have a Management Information Systems' (MIS) background. In addition, all agencies will need more assistance and training in computer usage and integration than is currently being provided.

In summary, this project when carried through to conclusion should assist the economic growth of Egypt. It should be continued. We found no major deficiencies other than the loss of overall GOE executive management responsibility for the project. The agencies involved differ in their size, function and ability to perform. More attention to the institution building aspect of the project would particularly benefit EGSMA, DRI and RSC. The project did not meet its original or will it achieve the revised PACD. This was not considered to be serious issue given the complexity of a project that includes 4 independent agencies. The purchase of project generated data from EGPC by three oil companies is a positive indication of the value of the MPGAP concept. We were impressed with the level of effort and enthusiasm shown by

EGPC, EGSMA, DRI and RSC. The evaluation calls for some mid course adjustments. When they are made, we expect the achievement of project goals and high quality performance from all concerned.

Training has been one of the more effective accomplishments of the project. With the assistance of the MGRS Contractor (Bendix) over fifty (50) Egyptians have been trained in the U. S. and Egypt.

The principal recommendations of the evaluation team are:

1. Continue the project
2. Establish a new PACD, September 1989 is suggested.
3. Establish Egyptian management control over the project along the lines called for in the project paper. If, however, this approach is not acceptable to ASRT or not considered feasible, then senior AID officers should consider meeting with the parent ministries of the MPGAP agencies and working out a meaningful GOE management role.
4. AID quickly fills the vacant U. S. Coordinator position with a person who has a strong management, development and Management Information Systems background.
5. The AID MPGAP project officer's role shift back to a monitoring, facilitating, and consulting role.
6. Provide EGSMA with quality consulting assistance in:
 1. analyzing the international minerals market
 2. developing minerals information packages designed to meet the needs of potential investors. Bendix should be able to secure such assistance.

Additional recommendations specific to each MPGAP agency will be found in the technical chapters of this report.

R E P O R T

OVERVIEW

It is the opinion of the evaluation team that the project purpose remains valid. The basic concept of the project is to generate and disseminate information for potential investors in the petroleum and mineral sectors in geographic areas where investment interest has been low or nonexistent. The generation and dissemination of such information will lead to increased interest by investors and will ultimately benefit Egypt.

At this point, enough data has been generated, in one area, in the oil sector to attract the attention of investors. It is too early to predict the results in the mineral sector. Information is still being generated to outline the investment potential of various mineral deposits. This information will be very important to the development of this sector, and will aid in making developmental and economic decisions.

A very positive step toward improving the investment climate was taken by the adoption of the new mineral agreement.

The project initially encountered a two year delay, 1980-82. A new PACD was established for September, 1987. It will not be possible to complete the project by that date. Additional delays were caused by procedural issues and procurement lag time. Therefore, a second revision is recommended, to extend the PACD to September 1989. This should allow enough time to meet the development and investment objectives of the project.

A. OVERALL PROJECT MANAGEMENT

There is currently no GOE executive level management, as called for in the project paper. AID is handling its monitoring duties effectively, and is also handling some of the implementation functions which are beyond the scope of AID's responsibilities. Individual agency level management is quite good, but needs more guidance and support in the areas of interagency coordination and cooperation.

The management system specified by the project is outlined below:

1. A GOE MPGAP Coordinating Committee chaired by the President of ASRT.
2. The committee membership consisting of the four directors of the agencies served by the MPGAP project, EGPC, EGSMA, DRI and RSC.
3. GOE MPGAP project coordinator as an employee of ASRT. He was assigned eight functions.

4. Each of the agencies served by the MPGAP project was to appoint from within the agency a project manager. The project manager within each agency was to supervise the planning schedules and implementations of the project.
5. A USAID project officer and a USG project coordinator were to be appointed. The USAID project officer was assigned monitoring, coordination and guidance tasks. He was an ex officio member of the Coordination Committee. The U. S. project coordinator was to coordinate specification and contracts with MGRS and airborne survey contracts.
6. U. S. Contractor was to have the prime responsibilities for performing technical assistance for mineral, ground water and remote sensing components of the project. This role is presently being conducted by MGRS Contractor Bendix.

MANAGEMENT EXECUTIVE LEVEL

The evaluation team found that the overall executive management role of GOE delegated to ASRT has not been achieved. The reasons for this are:

1. Shortly after the project implementation began there was a change in the leadership of ASRT. This caused a discontinuity in executive level management of the project.
2. ASRT felt that without control of fund distribution, ASRT coordinating role would not be effective. In turn, AID had to maintain separate contacts with each of the four MPGAP agencies in order to initiate project implementation and maintain momentum. This burdens AID with a role that goes beyond normal monitoring. To relieve AID of this burden and to comply with the project paper, we feel it is of paramount importance to reestablish senior GOE coordination of the project. This coordination function could be satisfied either by the ASRT or other ministries that are served by the MPGAP project. This action will improve interagency coordination, planning, communication and follow-up which is needed for the project to reach its goals.

OPERATIONAL LEVEL

The evaluation team found management at the individual agencies to be good to excellent.

The evaluation team was impressed with the project managers at each agency. They are all capable and knowledgeable about their agency's project tasks. Without exception, they are enthusiastic about the project. They

recognize that in completing project objectives, they will further the development of their individual agencies both materially and professionally. In working toward completion of the project's goals, these managers have been meeting on a periodic basis. Such cooperation leads to improved interagency relations. After talking with many Egyptian officials, the team believes that as a result of the project, the interaction among the agencies involved in the MPGAP project is likely higher than that of other comparable Egyptian agencies. Though this cooperation is notable, there is still a lack of an effective information flow and good interagency cooperation. There is a tendency, or perhaps a management norm, that conflicts with the progress in this area. This tendency is to hold on to information. In some way, information is equated with power or influence, a commodity to be used for gain. Interdependence in operations and in management is not acknowledged among the agencies as a managerial good. The natural tendency seems to be for autonomy or independence of operations. This is one of the reasons the evaluation team feels it is necessary to establish a strong central Egyptian coordination presence in the project. It would be useful if the value and utility of some forms of interdependence in operations and management were explored through training or an organizational development program at the management level. Perhaps the proposed Bendix management training program should cover this topic.

The evaluation team has reviewed implementation schedules and plans and found them to be realistic. However, in most cases, the original plans and schedules had to be revised because of delays resulting from problems related to procurement of equipment. As by way of example only and not as a complete account, some of these problems are listed below:

1. Delays resulting from some agencies resisting AID's procurement practices.
2. Delays resulting from selection and/or ability of the firm Wimvex, selected as a procurement agent.

A case in point, after working with EGSMMA, DRI found it necessary to expedite the submitting of the order for its own drilling rig. The drilling rig arrived in February, 1986, thence DRI's schedule for drilling was delayed by one year.

The evaluation team did not have the time or the resources to fully dig into the details and problems associated with procurement. It is clear that procurement issues significantly affected the project time schedule.

The Internal Committees within each agency were designed to supervise plans, schedules and implementations of the various projects. They appear to have been meeting on a sporadic basis, and as the need arose, rather than on a fixed time table. Only EGPC/GPC established a steering committee for regular

supervision and follow up. It is recommended that these intra-agency committees set up a fixed time table for meetings to continue the task of supervision and follow up of plan and schedule implementation.

In connection with the above, the evaluation team feels that a "Technical Committee" consisting of the MPGAP project managers and technicians be established and meet on a regular basis. The evaluation team's logic in this is that the greater number of communication channels, the higher the probability for interagency cooperation and effective exchange of information.

With the exception of DRI, the grounds, offices and laboratories were in good shape, being clean and presentable. The project's equipment was protected from environmental hazards. The paradox here is that DRI's staff consists of a group of impressive, well trained and capable scientists, who are enthusiastic about their work. Yet their working environments do not reflect or enhance this image or perhaps the reputation of the institution. DRI should be encouraged to alleviate such problems, particularly to protect equipment from dust, etc. and keep it well maintained.

AID MONITORING LEVEL

Senior AID management is interested in the project status, whether it should be continued and in the effectiveness of the project officer in monitoring the project.

The project is fortunate in having the same AID project officer from the design stage to the present. He has provided continuity and, as an Egyptian National, has an understanding of Egyptian institutions and their management that no American could duplicate. It is a complex project to monitor and support, but he has handled his responsibility well. During the course of implementation, he kept the communication channels open between AID and the individual MPGAP agencies. Although we have recommended a further extension in the PACD, significant portions of the project are on schedule. The project officer has demonstrated a skill in communications, a knowledge of project details and of the dynamics of the interpersonal relations among key players in the project that is amazing. He has the cooperation of the executives and managers of the various agencies.

When the GOE Coordinating Committee slowed down its function, the GOE coordination role in the project was no longer sustained. This failure to maintain an overall Egyptian coordination function in the project caused AID to become involved in functions beyond the usual AID monitoring functions.

The evaluation team believes that AID should act quickly on four management areas.

1. Reestablish the GOE coordination functions. ASRT is now willing to reactivate the Coordinating Committee to take its necessary role as a GOE coordinating body. It is also possible that this may not be the case. In that event, we suggest that Senior AID Management meet with the Minister of Petroleum and Mineral Wealth who is responsible for the two main agencies in the MPGAP project namely EGPC and EGSMA. The objective would be to design an individual or identify a body that would be responsible for the Egyptian overview and management of MPGAP project affairs for the remainder of the project time. This action is critical to the latter phases of the project where coordination and dissemination of information is vital if the full potential of the project is to be achieved.
2. To fill the position of the project coordinator now vacant after the departure of Dr. Snow. After reviewing the remaining tasks in the project, the evaluation team feels that AID should fill this position with a person who has the following background. A strong management and development background and a knowledge of Management Information Systems (MIS). The team also believes that this person should be an American. It is a desirable development objective to introduce U. S. management technology into the Egyptian system. The person filling this position should also act as a managerial support person to the individual and/or organization that assumes the GOE project management function. These two actions should shift a number of management functions back to the Egyptians and be consistent with the administrative development or institution building objectives of the project.
3. Technical committees within the different agencies should be activated and meet on a regular basis. This would help implementation, cooperation and provide a channel for the flow of information.
4. The project officer should maintain his activities to monitoring progress of the project.

B. ROLE OF U.S. CONTRACTORS

1. Bendix Field Engineering

The head of the Bendix office in Cairo and Resident Project Director is Dr. Lepley. He is a competent scientist and an expert in geology and remote sensing. This is the background that GOE desired over other Bendix candidates with stronger management backgrounds. Bendix, under the

specifications of the contract, provides technical assistance to three autonomous agencies EGSMA, DRI and RSC, as well as answering to the USAID/Cairo offices, a difficult proposition at best. In spite of the variety and complexity of its tasks, Bendix is doing a creditable job. They have successfully trained thirty-seven individuals in the U. S. and many more in Egypt. MGRS data processing is improving because of Bendix efforts. Much of the needed equipment has been procured through Bendix. The contractor has helped to improve MGRS institutions capacities. Naturally, due to the variety of duties required, some problems have arisen.

The problems were compounded due to interference by some agencies as well as by AID. In the case of the DRI drilling rig, the AID project coordinator became deeply involved in the rig specifications and training of individuals. The rig delivery was delayed by almost one year. Both DRI and AID are to share the blame for this delay and the consequent delay in implementing DRI drilling plans and schedules. Similar examples can be found of RSC responsibility for delays. If AID and the agencies are not satisfied with Bendix operations, they should terminate the contract. In any case, Bendix personnel should be given the opportunity and freedom to do their job and then be judged.

The team also discovered a number of instances where consultants, contractor personnel and trainers and trainees, while technically competent, were frustrated in completing their tasks by cross-cultural problems. It is impossible to calculate the lost time in dollar terms caused by misunderstandings, dissatisfaction and ill-will which built up. But it is doubtless a very high cost. It is recommended that Bendix, in Egypt and perhaps in the U. S., develop and conduct three (3) to four (4) day cross-cultural orientations as programs or workshops. This program should be flexible enough to handle a single individual or a group. Once developed, all personnel who have not had extensive exposure to the culture of the U. S. or Egypt should be required to attend this program.

At the present time the major project focus in EGSMA is on preparing mineral information package and on understanding the international mineral commodity market. Since the Bendix resident editor in Cairo is not an expert in these areas, the evaluation team recommends that Bendix with EGSMA alleviate these deficiencies by engaging consultants as follows:

1. An information specialist with background in developing investment packages.
2. Consultants capable of determining the economics of mineral production in Egypt.

3. Mineral commodities market and marketing experts.

This would help in developing a realistic and attractive marketing concept for minerals and producing realistic investment information packages.

2. AEROSERVICE

Aeroservice was commissioned to conduct an aeromagnetic/radiometric survey over a large part of the Eastern Desert. The survey serves, not only EGPC and EGSMA, but also the Nuclear Materials Corporation. Interagency cooperation between EGPC and EGSMA on the project has been very good. Parts of the study have already been purchased by Esso Oil Company, Marathon Oil Company and the Gulf of Suez Petroleum Company. Further interest on the part of potential investors is anticipated.

The evaluation team has seen rolls and rolls of maps, graphs and text properly residing in the library of EGSMA. This enormous volume of information is the body of the completed Aeroservice report, fulfilling the original contract. The evaluation team has not examined the content of this report nor interviewed Aeroservice personnel. However, through discussions with individuals in EGPC, GPC, EGSMA, DRI and the Gulf of Suez Petroleum Company, the team was convinced that the management, communication, coordination and effectiveness of the contractor were all excellent. The date of delivery was met and fulfilled the needs of the agencies who requested the survey. Because of Aeroservice's excellent performance in the original contract, the evaluation team feels that the awarding of a second contract to Aeroservice is well founded and justified.

c. Improved Petroleum Recovery. A Dallas firm, Improved Petroleum Recovery, has been awarded a contract to study the problems of enhanced oil recovery from the Bakr-Amer Oil field. Work has just begun on this project.

d. Other American contractors have not started to work on projects such as Aeromagnetic survey of North Sinai, the seismic study of the Assiut Qena area.

C. INFORMATION GENERATED BY MPGAP AGENCIES

a. EGPC

One report has been completed. That is the aeromagnetic/radiometric survey conducted by Aeroservice. Other reports in varying stages of contracting or implementation include an additional aeromagnetic survey of North Sinai and the Delta, the seismic study in the Assiut Qena area of the

Nile Valley and the enhanced oil recovery survey for the Bakr and Amer Oil fields. EGPC faces a major and long term task in developing, coding, and computerizing data collected over several decades. There is a vast collection of rock samples, seismic magnetic tapes, sepias or films of seismic sections, map frames, electric and composite logs, and information on exploration agreements. At this time, the task is being organized and implemented. The job is being well managed. It is important that EGPC continue to support this work and that AID monitor and assist if necessary.

Although a great deal has been accomplished, the evaluation team feels that EGPC will need more time to properly complete all the projects assigned to them.

b. EGSMA

EGSMA participated in the planning of the aeromagnetic and radiometric survey, and now has possession of the data. This was a well executed project.

Comprehensive packages called "Mineral Packages" are being prepared, none have been completed. These relate to a wide range of mineral commodities potentially available in Egypt. Examination of those packages near or essentially at completion, reveals a need to improve their quality. Better writing and map preparation is needed. These packages also need to include the economic aspects of the commodities. The evaluation committee feels such efforts will be amply repaid in increased investor-use and interest. The list of packages, in stages either well advanced or simply being considered, includes gold, limestone, clays, glass-sands, gypsum, and metallic sulphides.

Interest in the potassium project is dwindling because investigation indicates the potassium content is largely due to the non-commercial mineral, polyhalite.

Good progress is being made toward completion of the six (6) planned 1:1,000,000 scale maps of Egypt. One is completed and the others are in various stages toward completion. The cartographic department deserves much credit for this progress, but is limited in productivity by shortages of trained personnel and equipment.

The geological museum is functioning in temporary quarters. Much credit for its useful status is due to the current curator.

Geophysical and geochemical exploration efforts are being carried on, utilizing, in part, results from the aeromagnetic-aeroradiometric survey. Progress is hampered by lack of suitable geochemical field kits and the current inability of central analytical laboratories to furnish accurate analyses promptly. Additional changes in the minerals agreement appear necessary to attract the active interest of responsible mining companies.

Actions recommended for EGSMA involve utilization of more economic data in the mineral packages, conducting market surveys, improving the quality of the packages and open-filing appropriate portions of the aeromagnetic-aeroradiometric survey.

c. DRI

This institute has completed approximately two thirds of the work entrusted to them. In spite of delays beyond their control, the Desert Institute has almost completed the work on the Bahariyra Oasis and the South Eastern Desert. They also began work on the third and last area assigned by the MPGAP project, the Ras Gharib area. A large volume of data has been collected. However, reports have not been completed pending processing of data. DRI is in the early stages of establishing a computer data base handling capability. A climate controlled room is being prepared for 10 microcomputers. A qualified computer specialist needs to be hired to assist in organizing data handling methods and to train DRI personnel in computer usage.

d. RSC

The Remote Sensing Center (RSC) has the responsibility, as a supporting agency, of providing geometrically and radiometrically corrected imagery to the other MPGAP agencies in the form of an Atlas. The processed imagery was intended for use by other MPGAP agencies in their field investigations. The imagery processing equipment, MDAS, was to be provided to RSC early in the MPGAP project but was delayed in the requisition process for two years and is only now, in April, 1986, finally operable. As a result, no imagery products have been provided to MPGAP agencies under this project.

When it became apparent that the MDAS equipment would be delayed, Bendix arranged for temporary installation of Digital Equipment Corporation equipment for processing imagery from Landsat digital tapes. The original intent of this stopgap measure was for RSC to pre-process the data tapes and clean them up electronically so they would be ready for processing into imagery by MDAS. The only available data tapes in RSC at that time were not of recent acquisition; therefore it was decided to obtain data tapes which were more current. This decision was supported by AID and appears to have been a prudent measure since land use changes occur rather rapidly in some areas of Egypt.

The new data tapes of Landsat imagery have been received in Egypt but, as of early April, were being held up in customs. With MDAS now in operation, early release of the tapes will permit production of the Atlas sheets at a fairly rapid pace. The Atlas is expected to be finished within about 18 months. In the meantime, RSC has agreed to release one or two copies of Atlas sheets for priority areas if needed by MPGAP agencies.

C. PUBLICATION AND DISSEMINATION OF INFORMATION

a. EGSMA

The evaluation team found that EGSMA's marketing plan consists of :

(A) Generation and distribution of mineral information packages.
 (B) Advertising in major international news media (such as Wall Street Journal). (C) Attending conferences. Establishing booths in such conferences. (D) Above all publicizing the recently adopted mineral agreement (modeled after the successful oil agreement). The evaluation team finds this approach to be extensive and ambitious. However, we have noticed that this approach does not cater fully to the needs of the investors in the mineral industry. The style and arrangement of information in the packages is not conducive to a quick review. Investor's questions are not fully answered. Some augmentation of this approach is needed. (See EGSMA in appendix).

b. The recent EGSMA policy direction in mineral investment can be strengthened by active marketing of the information and development of marketing awareness and policy for Egyptian mineral commodities. This is to be accomplished through the improvement of the mineral packages, wider distributions of information, local market analysis versus world-wide market needs and the competitiveness of such commodities. A strategy should be established for pricing of the Egyptian mineral commodities to be competitive on a world-wide scale.

c. The adequacy of publications is mixed. For example the Aeromagnetic survey is excellent, while the mineral packages need improvement to suit the needs and answer the questions of the investors. The dissemination tools are also mixed. While EGSMA is offering its publications freely to be purchased, EGPC has the aeromagnetic survey on "open file status". The establishment of a computerized data base is critical to the generation of information for investment purposes and will increase the capability of attracting the attention and interest of investors. The information channels can be reinforced by establishing a similar computer data base in all the other MPGAP agencies. This will, above all, strengthen the interagency communications, cooperation and flow of data and information.

d. The petroleum and mineral clientele will undoubtedly use the information generated by the project, as they have already purchased parts of the completed aeromagnetic survey of the Eastern Desert.

EGPC: Has made portions of the Aeroservice report available to investors. This generated enough interest on the part of Esso Oil Company, Gulf of Suez Petroleum Company and Marathon Oil Company to purchase other portions of the report. The results of the survey are held in "an open file status". This is a passive rather than an active dissemination mode. The team recommends that EGPC pursue a more active role, i.e. summarize the information and send it to potential investors.

Data from other project contracts hasn't reached the point where it can be used for publication.

DRI: Has not yet completed any of the report required under the project. Reports were in the preparation stage for South Eastern, Eastern Desert, El Bahariya Oasis and Western Desert. Based on a review of previously published reports and a review of preliminary reports, a conclusion was reached that DRI has a good authorizing-reviewing-publication process.

DRI is a support agency under this project. Its reports and publications will go to EGSMa and EGPC. DRI's communication and coordination with EGPC, RSC and EGSMa could be improved.

RSC: Has not provided Landsat imagery and products to other MPGAP agencies as set forth in the project paper in the quantity and condition expected. In fact, some MPGAP agencies have acquired Landsat imagery from sources outside Egypt. The Multispectral Data Analysis System (MDAS) that was necessary to produce the Atlas arrived too late to help MPGAP activities. It is now possible to provide individual Atlas sheets on selected priority areas to agencies.

RSC, like DRI, is a supporting agency under this project. It could improve its communication and service to the other MPGAP agencies.

Chapter II
PETROLEUM SECTOR
EGPC

Petroleum Sector

A. Findings

1. The petroleum sector is represented by the Egyptian General Petroleum Corporation (EGPC) and its subsidiary, The General Petroleum Company (GPC). The petroleum sector has been very effective in generating data and attracting investors for the petroleum industry in Egypt. Yet, because of the prevailing norms in the petroleum industry world-wide, which is to explore near proven production, the exploration activities in Egypt have been localized in a limited number of areas. For this reason, many other areas of possibly good potential for commercial accumulations of hydrocarbons, but with sparse data, have received very little or no attention by investors.

The goal and purpose of the petroleum sector and in compliance with those of the AID project in general, are to generate, organize and disseminate data and information for those areas and ultimately attract investors.

To that aim, EGPC and GPC have awarded several contracts for studies in such areas.

2. Contracts and Studies:

a. Aeromagnetic and Aeroradiometric Survey (\$7.2 MM)

The contract has been awarded to an American firm, Aeroservice (A subsidiary of Western Geophysical). The study was selected jointly by the EGPC and GPC, and the Egyptian Geological Survey and Mining Authority (EGSMA). The study serves the following industries and the respective objectives associated with each industry. The study has been well conducted and the objectives have been met. These industries are:

The Petroleum Industry by defining potential geologic basins and by correlary the hydrocarbon potential. Geological basins have been defined by the study and confirmed previous information gathered from gravity studies.

The Mineral Industry by defining magnetic anomalies associated with mineral accumulations. Such anomalies were outlined and are now under evaluation.

The Nuclear Energy Industry by defining radioactive anomalies. Several areas in the Eastern Desert of Egypt have been surveyed, and the completed reports delivered by Aeroservice (Areas 1A & 1B, II & III). Area IV has also been completed as an afterthought to utilize the unused mileage in the contract. Area IV in the Western Desert on the Egyptian-Sudanese border was selected to evaluate the ground water potential. The study delineated a possible deep sedimentary basin hitherto undefined by any previous studies. This newly defined basin, not only would be beneficial for the objective of ground water potentialities but opens up the possibility of additional and previously unknown potential for hydrocarbon explorations.

2. Two additional areas in North Sinai and the Nile Delta have been approved and work there should start soon. There has been an increased interest in this study among the oil companies due to the latest discovery of oil in an offshore well (Mango), north of El Arish. Some company officials expressed the need to extend this study further to the north of its present boundaries.
3. The management and communications in this study have been good among all involved. As an example of such communication and cooperation, when EGSMA was short of funds to contribute to the study and EGPC had ample funds in the AID program, the latter covered the shortage to insure the completeness of the study, and paid from its allocated funds that part that EGSMA was needing.
4. The dissemination of data and information in this study has been curtailed to prevent leakage to potential buyers. On the one hand, only EGPC and EGSMA have copies of the completed work. On the other hand, Esso Oil Company, Gulf of Suez Petroleum Company and Marathon Oil Company purchased parts of the study, while the Nuclear Materials Corporation received informally a copy of the radiometric results as a user organization. Such a dissemination policy presented itself to the evaluating team as a paradox. First, distribution is curtailed to enhance sales. Secondly, there is a strong need to distribute the data and information, to comply with one of the main objectives of the MPGAP project and to attract investment. Oil companies, in the majority of cases are independent in their approach, and would do their own interpretation from raw data such as those on the magnetic tapes. I propose that the real sale value of the Aeromagnetic study is in the magnetic tapes themselves or copies of them, while the interpretation results, or excerpts of them, can be distributed to all interested, including universities and research institutes. However, discussions with Mr. Hussein Kamel of GPC in the final meeting revealed the fact that the results of this study are on open file status in EGPC, which is a very welcomed situation. I still contend that this is a passive dissemination mode and does not satisfy the prerequisite of the AID MPGAP project of "Dissemination of Data". A more active mode of dissemination would be the distribution of a good summary of the study to the institutions that can make use of them as well as to potential investors.
5. It is too early to determine the effects of this study on investment. Thus, in spite of the fact that the study has generated useful data and possible good information, Aeromagnetic surveys have not been seriously used as an exploration tool by oil companies. In this concern, there is no statistical history of utilizing this tool as an exploration method or its rate of success. It will be a few years before such statistics are gathered.

b. Seismic study, Assiut-Qena Nile Valley (\$?)

This study is worthwhile, and should be implemented, provided that bidding and proper tender conditions are satisfied.

c. Enhanced Oil Recovery Study (0.41 Million)

Study of Amer-Bakr Oil fields for enhanced recovery has been awarded to a Dallas Firm. (Improved Petroleum Recovery) The fields are owned and operated by G.P.C., and were discovered in the early 1960's. Because of the complexity of conditions in these oil fields, only 31 million barrels of oil have been recovered out of an estimated one billion barrels of potential recoverable reserves. Data have been collected and sent to Dallas, Texas for analysis in November 1985. One geologist, (5 years experience) is now in training in Dallas for 2 months. He will be joined shortly by two engineers.

II. Data and Data Center:

1. Digitizing total log inventory in EGPC

a. Digitizing of approximately 30 million feet of logs is intended to be contracted out to a commercial firm. It is intended that digitizing will commence in September, 1986. It is felt by the evaluators that digitizing logs will not generate any new data and will not be of interest to investors. The evaluating committee is unaware of any major oil company, or organization involved in the oil business that has chosen this method of storing its electric logs. Even the Petroleum Information Company in the United States still uses the film or reduced size film for its product.

In the final discussion meeting, Mr. Hussein Kamel argued for the benefits of this project. The evaluating team received a written answer from Mr. Ezz Osman that this project will help in:

1. regional reservoir studies, and
2. evaluation of hydrocarbon potential in Egypt.

To achieve these functions, a specially designed data bases package... are needed ..."

The counter argument for the above is:

1. The electric logs in their present form have been and are used for the same purpose, and are probably the best format for the job.
2. Reduced film size of the electric logs can be used for the same purpose.
3. Microfiche or microfilm of the electric logs can be used for the same purpose.

4. There is no evaluating body of trained earth scientists in EGPC to carry on such studies. EGPC contracts out all of its studies because of such shortage of trained earth scientists.

Even during the course of conversation; Mr. Hussein Kamel modified the project from being for the totality of the log inventory to some key number of logs to be determined later. The evaluating team still stands by its findings that this project does not generate new data and it is very doubtful that it could attract investment. It may help in dissemination of data, by facilitating handling and storage, but so will other approaches such as the microfilm or microfiche or reduced size film of the electric logs.

b. Digitizing Old Analog Seismic Records to Magnetic Tapes

The digitizing of old analog seismic records, as with digitizing of logs, will not generate any new data, nor will it be the type of information to create interest among investors. In the opinion of the evaluators, this will only display old, and in many cases, questionable data in a new manipulated form.

In the final discussion of the draft of this report with the various agencies, an interesting point was brought by Mr. Salah Hafez, Vice Chairman of EGPC, that even though no new data is generated by this project, modern processing approaches to the digitized information will improve the quality of the newly displayed seismic lines. Although the evaluating team agrees to such an enlightened point, the team still feels that this is only a new way to display old data and not generate new ones. Again, as in the digitizing of logs (the preceding project), there is no evaluating body of trained earth scientists to utilize such new displays for evaluation studies. The ultimate fate of the digitized logs and seismic lines is storage until an investor, who is already interested, will take a look at some of them, then decide to generate modern data. These old analog seismic lines are of historical value and it would be much more beneficial to EGPC and the Petroleum Sector that new concessionaires would shoot new lines using the latest and most modern techniques instead of rehashing old data displayed in a new way. If such new concessionaires find it beneficial for them to digitize such analogue seismic data, they will do it themselves in addition to the lines they shot according to the latest techniques and in compliance with their commitment to EGPC.

C. Data Bank Center

A management decision was made that information on the large backlog of data be placed in a computer data base. The purpose is to make the data available for management decisions and for use by investors. Data to be included in the data base include: rock samples, seismic magnetic tapes, sepias or film of seismic sections, map frames, electric and composite logs, and information on exploration agreements. Excluded, for the time being, is computerization of the library.

EGPC has appropriately recognized the urgency for undertaking a large data handling program. In doing so they have employed a competent manager, Dr. Ezz Osman, and an adequate support staff. There is a shortage of office equipment for the staff but it is expected that this will soon be alleviated.

Initially the data are to be hand coded by 22 geologists, and later will be entered into a computer format. The hand coding will require 18 months to complete. Total involvement of time will be 396 man months of professional time. Despite the initial committee reaction that this seems to be an excessive use of professional time for the task, EGPC feels that this best fits the organizational structure and training program of the agency.

A temporary basement for storage of tapes and other historical information is being prepared in another building. Initial design of a new building for storage and work space is approved, the budget is approved and work on the structure is expected to start soon. Dr. Osman expects construction to take 12-14 months.

EGPC recently upgraded their computer mainframe to an IBM 4361 which should be adequate to take care of data base storage and acquisition, along with other uses, for some time to come. An alternative to consider is installation of a minicomputer or super microcomputer, dedicated to the data storage and handling task, and installed in the new quarters being provided for the data handling group. Justification to be considered for separate but compatible computer capacity is that a mainframe, with a variety of uses and numerous users, inevitably leads to frequent computer access problems.

Any computer equipment, separate from the mainframe, should have compatibility with the mainframe and with any microcomputers that might be acquired by EGPC and those belonging to EGSMA, DRI and RSC. Also, overall compatibility of data handling equipment within the EGSMA group must be kept in mind for a possible future computer network and geographic information system serving all of these agencies.

Dr. Osman states that one additional year after the present contract will be required to complete the work.

III. Drilling Simulator for Training on Drilling

The simulator has been placed in GPC's training center in Ras Gharib and is being utilized. Due to time constraints, the evaluating committee did not have the opportunity to make the trip to examine the simulator.

B. Conclusions

1. The studies conducted so far or underway are valid and useful, and meet the objectives of the project.
2. The Management of the projects has been effective, delivery dates of reports have been met and projects are on track.

3. The dissemination of data is very limited and must be improved through more active distribution means and tools.
4. Progress in Data Bank Center has been very slow.
5. The project's digitizing log inventory (IIa) and digitizing Analog seismic records (IIb) are of doubtful utility.
6. There is no group of trained earth scientists in EGPC to carry out evaluation studies.
7. EGPC is willing to share data freely, but adopts a passive mode.

C. Recommendations

1. The evaluating team recommends that the Aeromagnetic surveys for North Sinai and the Nile Delta be completed. EGPC should encourage oil companies working there to fund part of the project to cover any additional unbudgeted cost arising if they need to enlarge the area of study after the discovery of oil in the "Mango Prospect" north of the town of El Arish.
2. EGPC should give organizational support and increased funding in Data Base Center.
3. EGPC and GPC should emphasize training individuals to carry on geological/evaluation studies. The training should be both in Egypt and the U.S.A., particularly on:
 - exploration geology and geophysics.
 - production geology and enhanced recovery.
 - basin analysis and tectonics and sedimentation.
 - interpretation of Landsat imagery.
 - middle management and economics.
 - Data base center operation and management.
4. That EGPC cancels the project of digitizing the log inventory, or reduce it considerably in size.
5. That EGPC cancels the project for digitizing old Analog seismic records or reduce it considerably in size.
6. That PACD should be extended to September 1989 to allow all the projects that are now on track to be completed.

Chapter III
MINERAL SECTOR
EGSMA

EGSMA

A. Findings, Observations and Conclusions:

The Egyptian Geological Survey and Mining Authority (EGSMA) is involved in several projects which are in various stages of completion as listed below. Overall, the program appears to be progressing satisfactorily.

1. Training

EGSMA, with contracting assistance from Bendix field engineering, has sent 37 Egyptians to the U. S. for training. Most of these tours were for training in specific disciplines including sedimentology, quaternary geology, museum curator, x-ray diffraction analysis, industrial minerals, columbium-tantalum-tungsten deposits, gold extraction metallurgy, gold exploration and evaluation, evaporite minerals, librarian, information specialists, metamorphic igneous and structural geology, geophysical data and geophysical applications of Landsat data. Six specialists, aside from those assigned to the Bendix office, have visited Egypt and rendered training or counselling in aerial geophysics, industrial minerals, gold exploration (2), financial analysis and computer usage. In addition, four tours of a more general nature were undertaken. Finally, EGSMA has participated in general meetings at the Sonesta Hotel, arranged by Bendix, that were of training benefit. The training program appears to be essentially on schedule and to be very effective. Occurrence of failures or significant problems have been satisfactorily few. Most of those have arisen from inadequate cross-cultural orientation of what Egyptians should expect in the U. S. and vice versa.

2. Aeromagnetic and aeroradiometric surveys:

This is a joint project with the Egyptian General Petroleum Corporation (EGPC) and at its inception, the Nuclear Materials Corporation (NMC) was indirectly involved in designing the aeroradiometric part of the study. The selected areas IA, IB, II and III have been completed. The discussion of Area IV may be found under the EGPC text. Reports have been delivered to EGSMA and EGPC.

The joint management of this project was effective in that the program was efficiently planned and was completed under budget (Area IV was added to the project after the other areas were essentially completed, and was used to absorb the remaining funds). EGSMA did not have to fund its proposed share of costs. The dissemination of data has been less efficient; only EGPC and EGSMA have copies of the report which is being kept for possible sale to oil companies. It is to EGSMA's and Egypt's interest to make public at least the studies on the areas covered by the basement rocks (Precambrian rocks), specifically the southern portion of Areas IB, all of Areas II and III.

3. Publication and Documentation Center:

A showcase library has been created at EGSMA. It is clean, well organized and was completed in a record time of 10 months, by virtue of encouragement of the Chairman Ahmed Abdel Halim Hassan. EGSMA is to be congratulated for this project. Organizing the library helped the progress of other projects. The voluminous aeromagnetic and aeroradiometric report is housed in a room attached to the library and looked after by the consulting librarian Dr. El Arini.

4. Preparation of the Mineral Packages:

Comprehensive reports, called mineral packages, relative to various specific mineral commodities have been or are being prepared. Preparation involves library search and compilation of unpublished and published reports, documented by occasional field checks and chemical analyses. The distribution of the mineral packages is still essentially untested except for some limited distribution in the local market. Improvement in the quality of the packages in preparation will ensure broader use and demand, and greater effectiveness.

a. Near completion:

1. Gold Package:

This report summarizes the gold mining exploration and exploitation activities from 1902 to 1958 and includes a list of 90 gold occurrences in Egypt, of which 10 were surveyed in detail. These are Atud, Hutit, Um El Eiga, Urga El Rayan, El Sid, Anbat, Um Teneidba, Wadi Alaqi, Um Rus, Sukkari and Baramya. Each location received a chapter reporting the geological setting, gold mineralization, estimated ore reserves, grade and recommendations. The Appendix includes a voluminous list of the unpublished reports housed at the EGSMA library. The report, not yet bound, could be considerably shortened. The U. S. consultant, L. James, submitted "Exploration Guides to Egyptian Gold Deposits". The ideas expressed in this report differ from earlier ideas which draw attention principally to the classical gold-quartz veins and the wall rock alteration. In this report, attention is directed toward other types of gold occurrences that may warrant investigation. The collection in this report of good data and newly presented ideas will make the package useful.

2. Limestone Package:

This report (76 pages) lists the limestone occurrences in Egypt, their extent, tonnage and chemical analyses and includes a section on dolomite. It is a multi-purpose package, too general and not directed to specific uses. The report will be of some value to foreign organizations wishing an overall review of limestone occurrences. However, the maps are inadequately edited; "Locality numbers" (in Plate I for instance) are absent or difficult to find. Road symbols on the map inadequately resemble the

symbols in the legend. The purpose of identifying the "dolomite trenches" is uncertain. EGSMA's cartographic department, given time, could greatly improve the quality of all the maps in this report. Greater attention should be devoted to economic aspects to make this report of use to potential investors.

b. In Preparation:

1. Clay Commodity Package

This package reports the geological setting, geographic distribution, chemical and physical characteristics, reserves and economic importance of the claybeds listed according to age from the carboniferous to the pliocene. Clays in West Central Sinai, Gulf of Suez, Southwestern Desert and in the Nile Valley at Aswan have been surveyed. If completed with suitable reference to potentially economical deposits, the package will be helpful to investors.

2. White Sand Package:

The chemical and physical properties of the white "glass" sands in three localities in the Gulf of Suez region is the theme of this package. These areas are Abu El Darag, Bir El Fanm and Abu Zenima. The package should bring to notice other promising areas.

3. Gypsum Package and Polysulphide Packages:

Work on these packages has not advanced to a stage sufficient to warrant evaluation.

4. The Potassium Project:

Preparation of the report on potassium is underway. Following much investigation, it is found that the potential for commercial exploitation of potassium is questionable, because the potassium mineral present is the noncommercial polyhalite.

5. Regional Geological Maps and Reports:

The following progress has been made toward preparing six regional geologic sheets of Egypt at a scale of 1:1,000,000 to cover the six quadrangles indicated in Figure 1 of the grant.

Quadrangle NH35:	Twelve maps at a scale of 1:250,000 - completed Six maps at a scale of 1:250,000 - in progress Three maps at a scale of 1:100,000 - completed
Quadrangle NH36:	Six maps at a scale of 1:100,000 - completed One map at a scale of 1:250,000 - completed
Quadrangle NG35:	1:1,000,000 map compiled and in print 1:250,000 scale maps - completed 1:1000,000 scale maps - completed
Quadrangle NG36:	Ten maps at scale 1:1000,000 (in cartographic processing)
Quadrangle NF35:	Thirty-two maps at a scale of 1:1000,000 - completed
Quadrangle NF36:	Fifteen maps at a scale of 1:1000,000 - in progress Four maps at a scale of 1:250,000 - in cartographic processing

Numerous 1:500,000 scale maps have been produced to serve mineral prospecting purposes. Emphasis is directed toward two gold prospects, Talaat Gadallan and Dungash, to be included in the Gold Mineral Package. Delays in producing the maps arise largely from personnel and equipment constraints in the Cartography Department.

6. Central Analytical Laboratories:

Through the grant, the Central Analytical Laboratories (CAL) received two furnaces for gold assaying, one housed in Mersa Alam Laboratory in the eastern desert and the other at CAL in Dokki. Additional equipment, valued at \$0.5 M, is on order with delivery expected in 1986. This equipment will enable CAL to conduct analyses using x-ray fluorescence, x-ray diffraction and emission spectrography. This equipment will allow considerable improvement in the quality of analyses. The gold analyses presented in the present "Gold Package" draft are of a semi-quantitative nature and should be checked. CAL has benefitted from training of three persons; two additional persons will be trained in 1986.

7. The Geological Museum:

A temporary museum started functioning in 1986, after its transfer from Cairo in 1981. The space is limited; there is one Exhibition Hall, well illuminated, with show-cases for valuable mineral samples, vertebrate and invertebrate specimens, with a library attached to the Exhibition Hall. The laboratories and administration offices are in a newly installed prefabricated building. The curator, Mrs. F. El Bedewy, is a dynamic person who had done an excellent job in displaying the material. One geologist completed training and two others are to be trained in 1986. The laboratories need additional equipment including a microcomputer, video educational films, rock saws and polishing equipment and a xerox machine.

8. Geophysical Exploration:

Geophysicists and geologists who hope to benefit from the new Aerservice data are concerned about means of storing the data. Reinterpretation of the aeromagnetic and aeroradiometric data has started, comparing known geological data with geophysical data and conducting ground checks. An area with a copper show has been chosen as an area in which to train personnel. A centralized workshop may serve both EGSMA and DRI.

9. Geochemical Exploration:

Geochemical exploration is being carried out concurrently with the geophysical exploration in the Qena-Safaga District, aided by data from the Aerservice survey. It is planned to prepare a geochemical map of Sinai by the end of 1986. The gold occurrence at Talaat Gadallah and Dungash is under

evaluation to be included in the Gold Package. The group needs geochemical field kits as well as more prompt returns from the Central Analytical Laboratories.

10. Management:

The overall management of EGSMA has experienced a positive change in recent months under the guidance of Chairman A. Halim Hasan. Progress has been made through changes such as the completion of the library, improvements in the minerals agreement form, and the active role of the project manager, Dr. Atef Dardir and the project coordinator, Mr. M. El Hinnawi. Many problems have been solved but some remain. For example, EGSMA and USAID have applied several times for the allocation of operational funds and incentives but have not received them.

Through AID, EGSMA procured 16 jeeps, 8 trucks, 4 water tanks and 2 vans. EGSMA faces troubles in spare parts, tires, getting some trucks out of customs, and with the insurance. Maintenance costs are a strain on the budget.

EGSMA management has made progress toward developing a minerals agreement form more acceptable to investors. This is evinced by the willingness of an exploration company, "Minex", to agree to conduct exploration on gold deposits in Egypt. We understand from the Chairman, A. Halim Hasan, that for several years prior to the current agreement, companies interested in the mining sector would visit but find the position of Egypt vis-a-vis mineral agreements to be unclear.

The current agreement calls for a royalty to the GOE with exploration and exploitation costs (the latter with appropriate interest costs) to be gradually recovered out of a remaining portion of the gold produced. These payments are to commence immediately upon the start of production.

In the AID project grant document, Annex 1 lists certain "important assumptions" which, if true, would permit or enable the achievement of associated goals. Under the heading of "Minerals Project" the only "important assumption" listed states that "information on potential mineral deposits is readily accessible to investors". This being the only assumption, the sector goal has been, and remains largely, unattainable. There must also be an assumption that suitable forms of agreement, attractive both to Egypt and to the potential investors, can be readily negotiated. For Egypt's mineral industry to grow and prosper, it must be demonstrable that investors may truly have an attractive opportunity. In addition to the opportunity to explore for and develop an ore-body, they must be able to anticipate a reasonable profit.

The reported interest of Freeport, a large responsible company, in exploring for sulfur in Egypt, is encouraging. However, it must be recognized that the requirements for an acceptable sulfur agreement are much closer to those of oil agreements than to those for metallic minerals. Greater departures from the oil agreement format will be necessary to continue to

attract the interest of large responsible mining companies. If, in the future, investor interest does not meet expectations, EGSMA should consider changes such as allowing recovery of exploration costs and substantial portions of exploitation costs before either EGSMA (GOE) or the investor is entitled to royalties.

Studies of the economics of the other mineral commodities as suggested elsewhere in this report, should be utilized in negotiating new types of agreements. These studies should be carried on more or less continually in, or under the supervision of EGSMA. EGSMA should be encouraged to continue to refine its proposed mineral agreements.

B. Data Bank Center

The accumulation of old records to be computerized is considerable. A competently trained individual, Mr. Inab El Sady is in charge of the effort. His staff includes one clerk, and two trained technicians to work with computerizing the library.

Some newly renovated space has been provided for this group. Equipment includes four microcomputers, two of which are equipped with 20 megabyte hard disks. Availability of software is a problem. A digitizing table has been purchased.

Very little software has been acquired for the project. There are a number of good commercial data base software packages available, such as Data Base III, but purchase of software should be made only after experience with software packages or on the recommendation of someone experienced with software packages. In that regard, Bendix should provide knowledge necessary for making software decisions or a consultant should be provided to make software recommendations.

It appears that the staff size, the space provided, and the support given the data handling group is extremely short of that required to complete the task in a reasonable period of time. More personnel, more equipment, and more space, perhaps four or five times that already provided, will be needed.

A quality training program in data handling procedures and in computer technology will be a continuing need for the group.

The practice by Mr. Inab El Sady of spending one day per week assisting DRI with data handling and computer problems is commendable. However, partly in view of personnel shortages that the evaluators perceive as occurring in the EGSMA data section, it is recommended elsewhere that DRI should employ a full time data handling and computer expert, which will relieve Mr. El Sady of this responsibility.

C. Conclusions

5. The data handling task is being addressed and is well underway, but must be expanded to complete in a reasonable time.

D. Recommendations:

1. AID and EGSMA press toward solutions of the problem of acquiring the operational funds to which they appear entitled.

2. EGSMA devote additional effort to the mineral packages, including efforts to analyze the economic aspects of producing various commodities.

3. EGSMA release aeromagnetic data covering exposed basement rocks on an open-file basis.

4. EGSMA/Bendix establish a quality training program to train the data handling groups as it expands.

5. EGSMA increase the resources allocated to data handling so the backlog can be handled in a reasonable time.

Chapter IV
REMOTE SENSING CENTER

REMOTE SENSING CENTER

Natural resource investigations of mineral, petroleum and ground water sites are a primary objective of the MPGAP project. The Remote Sensing Center (RSC) has the responsibility, as a supporting agency, of providing geometrically and radiometrically corrected imagery to the other MPGAP agencies in the form of an Atlas. The imagery in the form of Atlas sheets is to be available for use as base maps for resource surveys. Also, as output, the RSC is to have remote sensing expertise available to the MPGAP agencies, and provide three training workshops for personnel in MPGAP agencies.

The input to this project by USAID and GOE includes upgrade of hardware and software for the Multispectral Data Analysis System (MDAS), training of RSC personnel, and upgrading of the RSC library. The providing of consultants from the U. S. for training and for upgrading of equipment is also one of the important inputs.

A. Findings

All five members of the evaluation team visited RSC during the course of the evaluation. Following are the findings.

1. After unavoidable delays, the hardware and software upgrade of the MDAS system is now nearly complete. Production of the Atlas from Landsat imagery will start in about one month. Although no geometrically and radiometrically corrected imagery has as yet been produced by the RSC installation, ten images of equal quality but of older dates were produced by RSC trainees while on assignment at the Environmental Research Institute of Michigan (ERIM) and have been supplied to MPGAP agencies. If images of other areas are needed by MPGAP agencies before production of the Atlas is complete, they should contact Dr. M. Abdel Hady of RSC for individual copies of Atlas sheets. One thousand copies of the Atlas will be produced and distributed free of cost to GOE agencies.

2. The equipment, laboratory and office environment, and management of RSC are of the highest caliber. High morale prevails among the staff, and enthusiasm exists for applications projects.

3. The project coordinator Anmed Ayoub is highly capable of supervising the RSC sector of the MPGAP project. Dr. Adel Yenia, geologist, who is in charge of the Atlas production, previously supervised completion of an Atlas for Qatar. He is considered to be a highly competent geologist and experienced in Atlas production.

4. The acquisition of library materials is in progress. Library acquisitions have been ordered, although not all received. No formal library presently exists in RSC, although Dr. Abdel Hady reports that a room has been assigned to RSC by the Academy of Science and Technology for use as a library. The library will be provided with shelves, a librarian has already been trained, and the facility will be functioning within a few months.

The RSC library, when completed, can be made more useful if books and periodicals are classified and cross-referenced in a computerized system, providing rapid retrieval of library sources. Other agencies could then query the library computerized entries in literature searches. Included in the computerized RSC library of information should be a listing of all available satellite imagery located in RSC.

5. The question has arisen, during the evaluation, of RSC response to requests from other agencies for Landsat products. Although there were disputes among several agencies concerning availability of Landsat products, the evaluation committee wishes to emphasize that the free flow of imagery and technical advice from RSC is an asset to be shared and valued by all four agencies and needs to be addressed.

6. RSC makes excellent use of consultants from the U. S. The ERIM consultants, in particular, have been expertly utilized to upgrade technical expertise, as well as equipment.

7. The evaluation team was provided examples of professional papers written by RSC scientists. Although the papers were not produced as part of the MPGAP project, they do exhibit an expertise within the organization for a good authoring-reviewing-publication process.

B. Training

Eighteen man-months of training have been completed in the U. S. and Egypt in the areas of library science, data processing, computer science and photographic processing. ERIM specialists in computer science and photo science were present at RSC to upgrade expertise of RSC personnel. The evaluation team visited with these ERIM specialists and determined that the RSC scientists and procedures used are now of high caliber.

The training provided by the USAID project can be considered to be necessary and was satisfactory. The type of training provided is effective.

Training is to be provided by RSC to personnel in GOE agencies in basics of remote sensing and an advanced course will be given in photogeology, and natural resource areas. There is very little equipment available for short courses such as light tables, stereoscopes, drawing equipment, magnifying glasses, etc.

Of importance is the need for additional modules consisting of special training exercises developed for hands-on laboratory sessions. Some of these modules which contain lesson materials and imagery can be obtained from the U. S. Geological Survey or from other Remote Sensing Centers. The lesson materials can then be adapted for use by substituting Egypt imagery and problems.

C. Data Storage, Retrieval, and Dissemination

RSC has the most modern technological equipment and expertise available for integration of scientific resource data with remotely-sensed data. They have excellent computer capability and peripherals which will enable them to later participate with other agencies in a geographic information system.

Most present data are being placed in computer compatible formats. Older maps, produced for geologic, hydrologic, and agricultural reports have not been digitized.

D. Conclusions

1. RSC is well equipped, well staffed and well managed. The unusually clean and well maintained environment is impressive.

2. After unavoidable delays, RSC is near completion of upgrading MDAS hardware and software.

3. Eighteen man-months of training have been completed.

4. Some imagery has been distributed to MPGAP agencies.

5. Updating of the RSC library is partially completed.

6. Presentation of three workshops to GOE agencies is planned.

7. Eighteen months will be required to complete the Atlas.

E. Recommendations

1. RSC should consider ways of improving response to requests from other organizations and, in every possible way, enhance cooperative relations with other agencies. This can be done through workshops, cooperating with MPGAP agencies on resource projects, and participating in frequent technical and managerial meetings with MPGAP agencies.

2. The Center should provide individual Atlas sheets of selected priority areas, if requested by MPGAP agencies, to facilitate resource investigations.

3. Hands-on training equipment and training materials should be upgraded.

Chapter V

DESERT RESEARCH INSTITUTE

DRI

The MPGAP project has as one of its primary objectives the investigations of mineral, petroleum and ground water sites. The Desert Research Institute (DRI), as a supporting agency, has the responsibility of assessing the ground water potential in areas of interest to two of the MPGAP agencies, the Egyptian Geological Survey and Mining Authority (EGSMA), and the Egyptian General Petroleum Corporation (EGPC).

A. Findings

Projects in Process

Three areas were selected for detailed study of ground water resources, two in the Eastern desert and one in the Western desert. Projects in progress include the following:

1. South Eastern-Eastern Desert--Work has been completed in an expanded area to serve the mining industry. The resulting report is the first covering ground water potential for the area and has brought to light unique data and information. The final report is in preparation.

2. El Bahariya Oasis-Western Desert--to serve the iron ore mining in the district and the community. Detailed field work has been completed. Extensive drilling data and numerous water and drilling core samples were analyzed. A final report should soon be ready for distribution.

3. Ras Gnarib Area--to serve the needs of the petroleum industry. Field exploration is underway. Some delays were experienced because of a delay in receiving necessary equipment.

A delay by EGSMA in completing initial drilling operations prompted DRI to submit its request for the drilling rig. Acquisition of the drilling rig, however, consumed 20 months, putting DRI that much behind schedule. The utility of the drilling rig would be enhanced by providing additional sizes of drill bits, and an adequate inventory of spare parts. Also, maximum efficiency of drilling operations would be achieved by having a qualified and permanent driller to work and maintain the rig. It is noted that DRI has hired a drilling crew which is presently being trained by Mr. Jack McCaslin of Bendix.

Management and Operations:

The management of the organization. The quality of data gathered such as Dr. Misack, permitting them to p

DRI has active t
Shazly, Dr. S. Solim

U. N., adds fine expertise to the staff. These individuals are enthusiastic about the MPGAP project and appear to work well as a coordinated group.

DRI does a professional job of writing, editing, and publishing their results. There were no final reports available from the MPGAP project, however, based on review of preliminary reports and review of previously published papers not related to this project, a conclusion is reached that the organization has a good authoring-reviewing-publication process.

DRI feels that factors pertinent to ground water investigations legitimately extend beyond the strict geographical limits of possible ground water occurrence. Drainage basins reach beyond such limits. Therefore, they seek freedom to broaden their investigations. This will necessitate that they gather much more information from many sources other than the data they generate themselves.

It appears that EGSMA independently conducts their own ground water investigations.

The issue of poor communication among MPGAP agencies is one that the evaluators experienced on a number of occasions. This is manifested in infrequent meetings among MPGAP coordinators, and in misunderstandings that seemed to persist over long periods of time when a simple telephone call would resolve a problem.

The DRI library is extensive and has in it numerous acquisitions of lasting value. However, a random check of library books revealed that few of them were published within the last fifteen years. The acquisition of books and periodicals in the MPGAP project will help. However, it is assumed that these are limited to the discipline of ground water and related subjects. The eventual computerization of the library holdings will greatly enhance its value.

With all of the enthusiasm, high morale, pride and excitement in field and laboratory work, the evaluation committee experienced a paradox. This refers to the general working environment of many of the laboratories which oftentimes had accumulations of dust and were not as clean as one would expect from the high caliber of professional personnel.

Training:

DRI has trained 24 individuals in eight different areas related to ground water. Outlines and descriptions of training activities were examined and were found to be adequate.

In 1984, eighteen trainees completed a three month training course entitled "Water Resources Data System". The activities in the course included lectures, visits to other government institutions, several days spent at Cairo University and visits to observe field activities. Since completion of the course, individuals have been rotated among jobs for varied experience. This

combination of training activities and job rotation is evidence of a well-planned program.

Professionals who have received special training seem to stay with the organization, making training especially meaningful. In addition, seminars are held for all of the DRI staff for continued upgrade of personnel.

Training for data handling and microcomputer operation is barely underway. EGSMA data handling expert, Mr. Inab El Sady, is assisting with this need one day per week, but a much greater effort will be required.

In general, selection of trainees, and effective use of them after training, have been satisfactory. DRI, it seems, takes care in hiring competent professionals.

There is evidence from Remote Sensing Center publications that Dr. M. El Shazley has cooperated with RSC in the use of Landsat imagery for ground water exploration. It is not known whether other DRI personnel have been so involved. In any event, it would appear to strengthen the activities of DRI if a number of professionals were to receive training in remote sensing interpretation for ground water exploration.

Data Storage, Retrieval and Dissemination:

DRI is presently gathering field and laboratory data using traditional methods of recording in field notebooks, with pen recorders, and on log sheets. Much of this effort could be automated by providing automatic data platforms for satellite transmission in the field, and by recording with microcomputers in the laboratory. In this way, graphs of data and presentations for other agency users could be done rapidly and attractively by computer.

One microcomputer was operating in the office of Dr. Ibrahim Hemeida and some software was observed. In some cases documentation for the software was missing, making it impossible to use. A digitizing table has been received but is not yet assembled. Digitizing operations are scheduled for the future.

DRI is only in the very early stages of developing a data handling system. This effort needs to be greatly accelerated if significant progress is made during the life of the MPGAP project toward the objective of improving the storage, retrieval and dissemination of project data. The achievement of establishing a high caliber data handling section in all of DRI will only come about when the organization employs a highly qualified data handling and computer specialist to devote full time to this effort. And even then, he must be provided with adequate staff, hardware and organizational support. In the meantime, the efforts and enthusiasm of Dr. El Ramly and Dr. Hemeida are achieving some progress.

A climate-controlled room is being prepared for housing the data handling section. This indicates a dedication by the DRI administration toward having

good data handling capability.

The DRI library will be computerized as a part of the data handling effort.

B. Conclusions:

1. For reasons beyond its control, DRI has been delayed in completing the objectives of their MPCAP project. However, all facets of the project are now on track and scheduled for completion.

2. Training in DRI is effective and leads to a high degree of professionalism.

3. Professionals in the organization are well trained and seem to provide good leadership.

4. A start is being made toward establishing a data handling section for all of DRI.

C. Recommendations:

1. That DRI improve communications with other agencies.

2. That DRI be very active in requesting data pertaining to ground water in desert areas from all other organizations engaged in such activity, and to integrate such data in its system.

3. That DRI complete purchase of a variety of drill bit sizes and all necessary parts not provided by the current MPCAP project, and be certain that a competent and permanent driller is employed to insure continued utility of the rig.

4. That DRI improve the working environment.

5. That the organization obtain training for individuals in remote sensing technology.

6. That DRI employ a highly qualified data handling and computer specialist to be in charge of data handling effort for the entire organization.

7. That DRI require Bendix to provide proper computer software documentation.

8. That DRI be granted a one year extension for completion of the projected work.

ANNEX I
LESSONS LEARNED

LESSONS LEARNED

1. Overall management must be given very careful consideration from the very beginning of a project. There are lessons to be learned from the MPGAP project about the kind of management structure that will and will not work.
2. Allowance should be made in project planning for realistic length of time for procuring equipment. This seems to be an eternal problem in AID projects.
3. Procurement must be left in the hands of experts.
4. In matters of high technology, such as data handling and computers, high expertise needs to be provided from the beginning of the activity. This refers particularly to DRI, and to a lesser extent to EGSMA.
5. Institution-building is slowed when a USAID Mission assumes the project management role.
6. The orientation of contractor, consultants and trainees to the culture and bureaucratic requirements of the host country and AID should not be neglected.

ANNEX II
EVALUATION METHODOLOGY

Evaluation Team and Methodology

The evaluation was conducted by:

Mr. Daniel Creedon - Team Leader
Dr. Rafik Salem - Petroleum Geologist
Dr. M. El Sharkawai - Geologist
Dr. Victor Myers - Remote Sensing Specialist/Hydrologist
Mr. Owen Kingman - Senior Geologist

The team reviewed the appropriate literature, reports, agencies, implementation plans and other documents. The primary means of collecting information was through interviewing agencies personnel, AID officials, contractors to the extent they were available and consultants. Individual evaluators concentrated on the agency that corresponded to their discipline and expertise. However, to insure understanding of the overall status of the project each evaluator spent some time in each of the participating agencies.

The members met at the end of each work day to review results, exchange information, identify successes and issues. A plan for the next day's activities was also made. At the end of four days each evaluator summarized his notes and provided copies to his fellow teammates. The team met twice to formulate major conclusions and recommendations.

The team, after reviewing the projects's design and the history of the design phase, concentrated on project implementation. In doing this, implementation was divided into three phases: (1) a procurement phase; (2) a data generation - data collection phase; and (3) an information - marketing phase. This provided the basis for an evaluation strategy - and a framework for formulating conclusions and recommendations.

ANNEX III

BENDIX

This contractor plays a key role in the process of administering project resources. Bendix is involved in fostering an accelerated pace of data collection and dissemination, providing training, organizing and planning semi-annual MPGAP meetings, monitoring project progress in EGSM, RSC and DRI, producing a monthly newsletter, liaison with AID and others and assisting in marketing and procurement. This considerable load falls upon a resident project director, a resident editor and an administrative staff of 6 in Egypt and a U. S. liaison officer and secretary in the U. S.

Working under difficult conditions, attempting to serve several "autonomous" agencies, and engaging in complex tasks, Bendix has done a creditable job. Bendix' principal strength is in its capabilities relating to arrangements for, and execution of, training assignments. The U. S. Liaison Office, aided by the Cairo office, has demonstrated an ability to procure highly competent personnel for a wide range of disciplines. Bendix' Cairo Project Director brings to the project additional, valuable remote sensing expertise. Bendix has the capability to undertake procurement of almost any magnitude, at a reasonable cost, if assigned to do so.

Bendix' weaknesses lie in the absence, in Cairo, of experienced management, marketing personnel and to a lesser extent, editing experience. These weaknesses have been aggravated to a degree by the absence of an active project coordinator and coordinating committee.

A. Findings and Conclusions:

1. Procurement

Bendix has been effective in procuring numerous items. Unfortunately, Bendix has been inappropriately blamed for delays, etc. beyond their control, as well as for failures to procure spare parts in cases where they have had little or no involvement in the procurement. They have assisted in writing specifications for some items including the new drill for DRI the total cost of which was around \$400,000. In an effort to economize, procurement procedures for the drill were mishandled by not having one party responsible for the entire procedure. Procurement problems would be minimized by avoiding the false economies of short-cutting procurements.

2. Publications:

Bendix has accelerated data collection and dissemination by means of expediting or conducting training programs, direct involvement in the remote sensing area, and in editing and preparation for publication of various documents such as the "Mineral Packages". Although Bendix must share with the agency involved, responsibility for submarginal quality in these reports, it must be kept in mind that Bendix' role is to advise and to assist but not to manage such activities. Management responsibility properly resides within the various Egyptian agencies.

3. Training

Bendix has scheduled and managed two semi-annual meetings at the Sonesta Hotel. The proceedings of one have been published and reflect a helpful exchange of ideas and information. Two additional meetings are in the planning stages.

Bendix' role in training relates to upgrading "The Human and Physical Resources of the MGRS Institutions". Toward this end the contractor has been effective in arranging training both in the U. S. and in Egypt. Fifty-two Egyptian trainees have been, or are being trained in the U. S. and in Egypt. Twelve specialists have worked in Egypt and more are planned. Overall, the training has been better than satisfactory. The quality of trainers and trainees has been good. There has been some scepticism voiced, in Bendix and elsewhere, whether or not returning trainees have had appropriate opportunities to utilize their training but no specifics are at hand. Questions of this nature would be minimized by including in the training work statement, explicit reference to the trainer's work assignments on his/her return.

The details of individual training requirements are provided in training work statements prepared in Egypt and expedited in the U. S. Most of the few training-related problems that have arisen apparently have resulted from failures of the trainee or the trainer to be adequately oriented relative to what is expected, or to be aware of what to expect, owing in part to cultural differences between the two. Greater emphasis needs to be placed on apprising the trainees and trainers of expectations and what should be anticipated. In addition, more formal cultural orientation would be beneficial.

4. Marketing

Bendix has concentrated its marketing efforts on dissemination of publications at hand or forthcoming. This is a pertinent effort but two additional substantive actions are necessary; large-scale market surveys, and improved quality of the mineral packages.

Full scale market surveys, involving assessments of supply and demand factors under various local pricing conditions, should be undertaken. When completed, individual surveys relating to specific commodities, outlining their uses and potential markets, should be made available along with the commodity packages.

AID has instructed the evaluation team "to assess whether the petroleum and minerals clientele are likely to use the information generated by the project for investment decisions". The answer depends upon the character of the reports and how they are distributed. The first report, relative to limestone, leaves much to be desired (comments relative to this report are included in the appendix relating to EGSMA).

5. Management:

According to Bendix' contract, the "Resident project director shall have a peer relationship with the directors of the agency institutions". Failure to enjoy this relationship is commented on in the "Overall Management" section of this report. The proper relationship has been difficult or impossible to achieve because of limited staff, volume of work, absence of a project coordinator, and failure to install a resident director with management experience as opposed to highly trained scientists.

B. Recommendations

1. AID and EGSMA see that Bendix suitable market surveys are conducted and the data included with the "Mineral Packages".

2. AID/Bendix assure continuity of effort in drafting of specifications for procurement in the procurement itself.

3. Individual agencies or Bendix provide more thorough cultural orientation for consultants, contractors and trainees.

ANNEX IV
CONTACTS AND INTERVIEWS

MPGAP PROJECT CONTACTS

USAID

Mr. Arthur Handley, Deputy Mission Director
 Dr. Sherif K. Arif, Project Officer
 Mr. Lawrence Ervin, S&T Office Director
 Ms. Shanty Conly, Program Evaluation Officer

Remote Sensing Center (RSC)

Dr. Mohamed Abdel Hadi, Director
 Eng. Ahmed Ayoub, Project Manager
 Dr. E. M. El Shazly, Head Geology Program
 Mr. Ayoub Onsi, Civil Engineer
 Dr. Adel Yehia, Cartographer
 Dr. Khodair, Head Photolab

Desert Research Institute (DRI)

Dr. Mohamed El Shazly, Project Manager
 Dr. Rafaat Misak, Geologist
 Dr. Ismail M. El Ramly, Senior Water Resources Consultant DRI, FAO/UNEP
 Mr. Jack McCaslen, Drilling Expert
 Dr. Sami Soliman, Geophysicist, Project Coordinator
 Dr. Ibrahim Hemeida, Project Coordinator
 Professor Abdusnata, Consultant

Bendix

Dr. Larry Lepley, Project Director
 Mr. Randy Chew, Resident Editor
 Dr. John A. Burger, U. S. Liaison Officer
 Mr. Jack McCaslin, Drilling Supervisor

Environmental Research Institute of Michigan (ERIM)

Mr. Barry McCrea, Computer Specialist
 Mr. Jim Balcerski, Photoscience Specialist

EGPC and GPC

Mr. Mohamed Salah El Din Hafez, Vice Chairman
 Mr. Hussein Kamen, Chairman GPC
 Dr. Adel Naknla, Geophysical Operation Manager, Dir. of Exploration GPC
 Mr. Adel Emam, Project Coordinator
 Mr. Ezz Osman, Data Handling Center
 Mr. Alaa Abd El Azeem, Data Handling
 Eng. Hamdi DeWake, Operation General Manager

Consultants

Dr. M. K. El Ayouti, Former V. Chairman EGPC
Mr. G. Hautar, Former V. President EGPC

Private Companies

Mr. Shawki Abdine, Expl. Manager Member of the Board - Gulf of Suez
Petroleum Company (GUPCO)
Mr. Wafik Mishrif, Chief Geophysicist, GUPCO

ASRT

Dr. Mohamed Kamel, President
Dr. A. S. El Nockrashy, Director Foreign Programs

EGSMA

Dr. Amed Abdel Halim, Chairman
Dr. Atef Dardir, Project Manager
Mr. M. El Hinnawi, Project Supervisor
Mr. B. El Naasan
Mr. A. El Tahlaw
Dr. A. Kamel
Mr. H. El Shazly, Computer Operator
Mr. Ihab El Sady, Computer Operations
Mrs. F. El Bedewy, Curator of the Geological Museum
Mr. M. H. Francis, Chief Geologist for Regional Geological maps
Dr. A. Gad, Director of the Central Analytical Laboratories
Mr. B. El Hakim, Planning for Geophysical Exploration
Mr. M. Abdel Tawab, Director of Geochemical Exploration

ANNEX V

DOCUMENTS REVIEWED

REFERENCE DOCUMENTS

USAID BACKGROUND

USAID, Project Paper, Mineral, Petroleum and Ground Water Assessment Grant, Egypt, Project No. 263-0105 July, 1980

USAID, Project Grant Agreement for Mineral, Petroleum and Ground Water Assessment, AID Project No. 263-0105

USAID, First Amendment to Project Grant Agreement for Mineral, Petroleum and Ground Water Assessment, Dec. 28, 1981, AID Project No. 263-0105

USAID, Second Amendment to the Grant Agreement, March 13, 1985

USAID, Statement of Work for Evaluation Team, D. Creedon, D. Kingman, R. Salem, V. Myers, and M. El Snarkawi

USAID, Bendix Contract

USAID, Improved Petroleum Recovery Contract, November 7, 1985, Aeroservice contract 263-0105-C-83-01

USAID, Egypt, Project 263-0105, MPGAP Grant, Mineral Development Policies, Contracts and Legislation in Egypt, Walde

McCavley, John F. and Andrew Stancioff, Review of Status of Mineral, Petroleum and Ground Water Assessment Program, 1980, Cairo, Egypt.

D. T. Snow, March 22, 1985, Endorsement of Edward Gribbi Reports

D. T. Snow, October 14, 1984 MPGAP Plan of Implementation (1983-1984)

D. T. Snow, October 14, 1985 MPGAP Plan of Implementation (1984-1985)

D. T. Snow, MPGAP Philosophy

Edward Gribbi, April, 1985, Evaluation and Review "Proposal to drill a test well through USAID Fund in the Gulf of Suez" EGPC - July 1984

_____, Attachment 2a, Evaluation and Review "Seismic Survey at Assyut-Qena Areas, Nile Basin, upper Egypt, EGPC, January 24, 1985

_____, Attachments 2c and 2e, Digitizing log and seismic data

_____, Attachment 2d, Syntheticsonic log study

_____, Attachment 3, Specifications for Seismic Survey

_____, Attachment 4, List of Sources.

W. J. Hinze, March 1, 1985 Justification of the proposal of high sensitivity Aeromagnetic Survey of the Nile Delta, Northern and Western Sinai and adjacent marine regions.

EGPC, July 1984, proposal to drill a test well through USAID fund

EGPC, January 1985, Memo #3 Analog digital conversion of seismic field recorded data and field tapes copying project (by Abdul Wahab Youssef)

EGPC, Request for Technical Proposal Seismic Survey of Assyut-Qena Area, Nile Basin, Upper Egypt

Training Documents

Bendix Training Schedule - Cairo
 Bendix Training Schedule - Colorado
 DRI - Training Documents, Outline of Topics
 RSC - Training Documents, Outlines
 RSC - Remote Sensing Workshop Schedule
 Bendix - Polymetallics Sulfides Training
 Bendix - Field Mapping in Complex Sedimentary Terranes
 Bendix - Training in Well Logging and IP-Resistivity Surface Survey
 Bendix - Field Identification of Minerals and Rocks

Egypt Geological Survey and Mining Authority Activities

The Limestone Package, Open File Report
 The Gold Package, Open File Report
 The Clay Package, Open File Report
 The White Sand Package, Open File Report
 The Gypsum Package, Open File Report

Case Histories in the Negotiation and Implementation of Mining Joint Ventures: Zambia, Ghana and Sierra Leone by UNCTC (United Nations Centre on Transnational Corporations. U. N. Economic Commission for Africa) July 84.

Greenwich Resources Corp. Data (Excerpts).

Interpretation Reports (Executive Summaries) Airborne Gamma Ray Spectrometer and Magnetometer Survey of Eastern Desert of Egypt

Area 1B
 Area 1A

"Model Agreement for Gold"

Concession Agreement between the A. Repub. of E. and the EGSMA and (BLANK) for the Exploration and Exploitation of Gold and Associated Minerals in (BLANK)

Seminars

Bendix, Proceedings of the Second Seminar of Minerals, Petroleum, and Ground Water Assessment Program, Potential Mineral Resources of Egypt, Nov. 5-6, 1984, Cairo, Egypt.

Bendix Activities

Bendix, Minerals, Petroleum and Ground Water Assessment Program (MPGAP) Philosophy, Annual Report, May 1985.

Bendix, MPGAP Plan of Implementation, October 1984 to October 1985.

Bendix, MPGAP Plan of Implementation, October 1983 to October 1984.

Lepley, Lawrence, Progress, Problems, Solutions and Recommendations, MGRS, February, 1986.

Remote Sensing Center Activities

Remote Sensing Center, Ten publications which are not from the MPGAP project but which do demonstrate the quality of RSC publications. Of the 10, 8 are concerned with Geology, one with Ground Water, and one with Agriculture.

Yehia, Adel, Landsat Atlas for Qatar.

Desert Research Activities

Misak, Raafat, MPGAP Progress Report, Eastern Desert, February 1986. Desert Research Institute.

El Ramly, Ismail Mahmoud, Programme for Evaluation of Ground Water Resources in the Bahariya Oasis Depression for Future Development, July, 1984, Desert Research Institute.

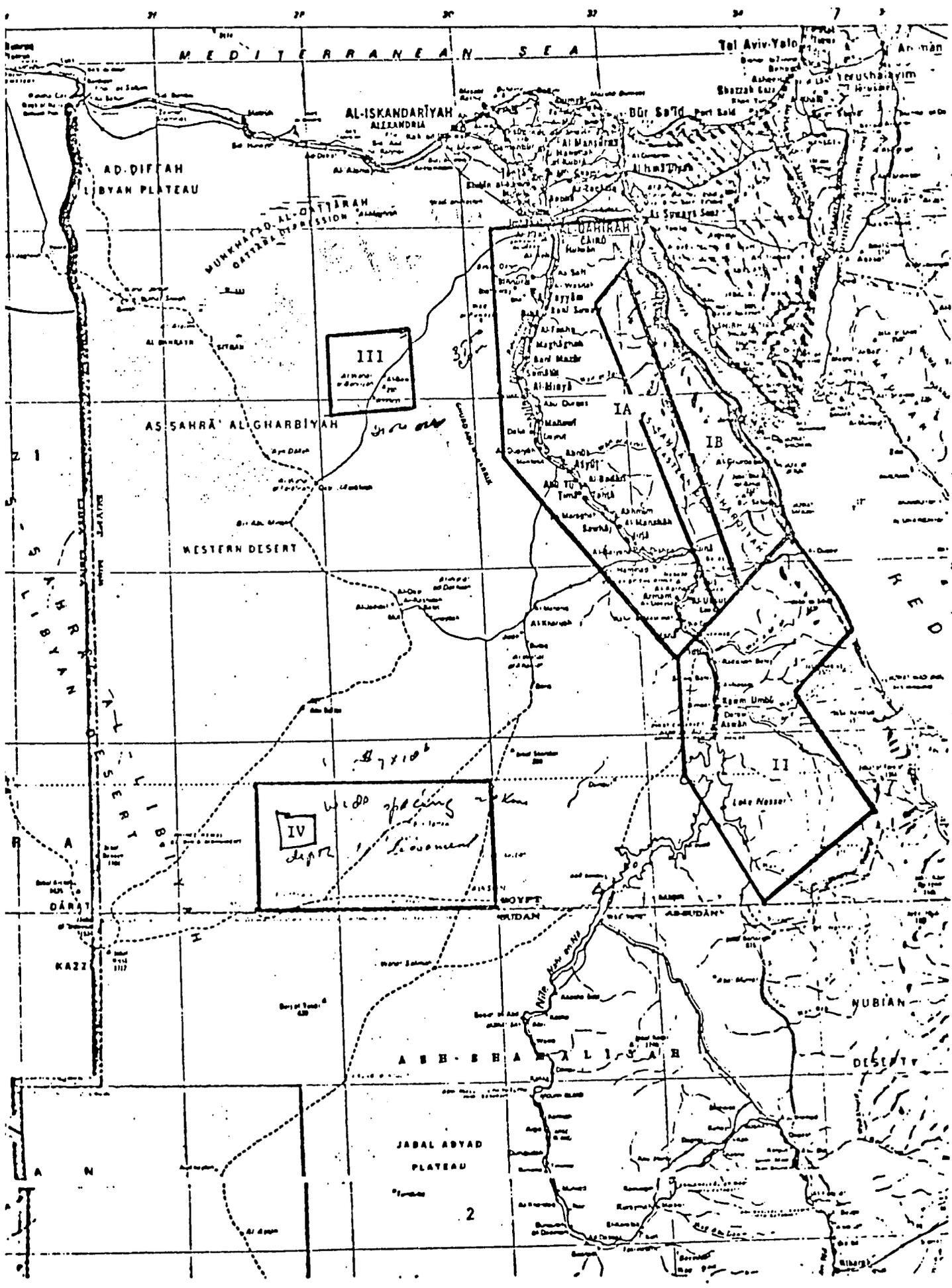
Desert Research Institute, Activities of the Desert Research Institute.

Desert Research Institute, The Desert Institute Bulletin, ARE, Vol. 32, 1-2, 1982, Cairo, Egypt.

Desert Research Institute Letter from Solenia (MPGAP administrative assistant to Dr. El Shazly re computer costs.

McCaslin, Jack, Memorandum Related to Drilling Rig Procurement Problems.

ANNEX VI
AREAS COVERED BY AEROMAGNETIC/AERORADIOMETRIC
STUDY - PHASE I



ANNEX VII
SCOPE OF WORK

SCOPE OF WORK

Within the above general overviews, the evaluation team will give specific attention to the four overlapping topics:

- A) Overall project management
- B) Role of contractors
- C) Information generated by the MPGAP agencies
- D) Publication and dissemination of information

The evaluation will survey all of these topics during the first half of the field work to assess their contribution to the overall project purpose. The evaluation team will then focus in greater depth on those topical elements considered most important to enhancing and improving achievement of the project purposes. In the latter exercises, the reason for screening and focusing in greater or lesser depth will be indicated. At a minimum, brief assessments should be prepared for the remaining topics not identified for the more detailed examination.

A) Overall Project Management: MPGAP is a multifaceted project involving four institutions belonging to three ministries. The project is coordinated by the Academy of Scientific Research and Technology (ASRT) or the Ministry of Higher Education and Scientific Research. The evaluation team is to review the overall management structure at three different levels.

- 1) Executive level: As explained in the Project Grant Agreement, a MPGAP coordinating committee was to be formed including the ASRT president as Chairman, the directors of the four institutes as members, the USAID project officer, the U. S. project coordinator and the MRGS contractor as ex officio members. As currently formed, the MPGAP coordinating committee consists of the ASRT president as chairman, the ASRT project coordinator and the four project managers as members. The committee meets at the invitation of the ASRT President whenever the need arises.

The evaluation committee will assess the structure and organization of overall project management. How are decisions made at this level? By whom? Who participates in decisions and in the performance of day-to-day management? What are the strengths and deficiencies of the management approach adopted by ASRT? Who assumes the coordinating role between the different components and elements of this project? How effective is this role? How well informed are the committee and the ASRT president on the performance and progress of this project? Is this committee structure still relevant? Is there a better approach to manage the project?

- 2) Operational level: Each of the MPGAP agencies established an internal project committee chaired by the project manager or by the project director. The committees have responsibility for overseeing implementation activities. In addition, EGPC has a committee for each of the studies to be performed by the U. S. contractors.

The evaluation team is to assess the role of these committees and their relationship to the executive management. What are the strengths and deficiencies in this system and what effect has it had on implementing the activities? Is there a better approach, for example, can the technical management level be restructured to play a more effective role in project implementation? Should it be?

- 3) Project Monitoring level: Project monitoring is conducted by the USAID/S&T office. The evaluation team is to assess:
- a) clarity and consistency of policy directions and guidance
 - b) effectiveness in maintaining open channels of communication between USAID/Cairo contractors and MPGAP agencies
 - c) effectiveness of project monitoring
- B) Role of U. S. contractors: Bendix Field Engineering contract: The evaluation team will assess the following:
- 1) effectiveness in meeting and understanding the requirements of the contract and supporting documentation;
 - 2) effectiveness of BFEC professional personnel selected for the MGRS;
 - 3) effectiveness of the Resident Project Director and Resident editor stationed in Egypt;
 - 4) effectiveness of the use of short term BFEC consultants;
 - 5) effectiveness and relevance of the training format (mix of academic/practical experience/English evaluation);
 - 6) adequacy of instructional materials used;
 - 7) effectiveness of participant selection;
 - 8) awareness of the training needs of selected participants;
 - 9) adequacy of participant logistical support in Egypt and the U. S.;
 - 10) understanding of the management system of the three MGRS agencies;
 - 11) perception of BFEC as a competent management and technical support institution by the MGRS agencies;
 - 12) adaptability to changing MGRS requirements.

The evaluation will also assess the Aeroservice contract, emphasizing the exact outputs delivered and the adequacy and quality of their deliverables in forms of maps and reports.

C). Information generated by the MPGAP agencies: Each of the MPGAP agencies are requested to provide information in the form of maps and reports which will attract potential investors. The information generated by each agency differs in quality and quantity. The evaluation team is to assess:

- 1) progress in the implementation plan of each of the MPGAP institutions as well as in their technical reports to determine whether or not a PACD extension is necessary
- 2) the extent to which the information generated is still relevant to the project purpose and goal
- 3) qualitative and quantitative results that could attract investment. Specific examples should be cited
- 4) the impact of training on performance, timeliness of training and level of application of principles learned during training
- 5) the positive/negative response by MPGAP agencies to technical recommendations made by short-term/long-term consultants
- 6) general institutional support of personnel and resources
- 7) effectiveness of collaboration between MPGAP agencies to produce and generate relevant information on mineral and petroleum resources
- 8) the effect technical assistance had had on upgrading and strengthening the institutional capacity of the MPGAP institutions

D) Publication and Dissemination of Information: Dissemination of information is an important project output. The Project Grant Agreement calls for the release and dissemination of information through agency reports, semi annual MPGAP meetings, newsletters, and the informal and formal exchange of reports. The evaluation team is to assess:

- 1) the marketing plan provided by EGSMA for attracting investment in mineral resources
- 2) whether or not the project assumptions regarding the petroleum and minerals project justified in the light of supply/demand situation?
- 3) how should the recent EGSMA policy directions in mineral investment be strengthened and specific plans developed towards the achievement of attracting mineral investment?
- 4) the adequacy of publication and information dissemination tools. Are they likely to stimulate end user interests? How can these information channels be reinforced?

- 5) whether the petroleum and minerals clientele are likely to use the information generated by the project for investment decisions?

V. Methodology and Procedures:

The present scope of services does not mandata a specific methodology the evaluation team should adopt to achieve these tasks. However, the team should incorporate the following specific approaches:

1. Interviews: The MPGAP project directors, chairmen of the board, project managers of the four host organizations shall be interviewed to assess their participation, contribution and judgement on project progress. Interviews of a sample of information users are also required to determine whether the information provided by this project has contributed to investment awareness and opportunities.
2. Visits to MPGAP agencies: the four MPGAP agencies shall be visited in order to assess their management and technical capabilities and contribution to the project.
3. Reports, Documents and Correspondences of MPGAP institutions and contractors shall be reviewed to ascertain their quality, substance and relevance to the project.

It is anticipated that this evaluation will require up to 4 weeks: three weeks will be devoted to field work and one week for drafting the final report and debriefing USAID and the MPGAP institutions. An evaluation specialist will be required to arrive, 3 days in advance for preparatory work, and will remain a fourth week to see the report through its final drafting.

The evaluation team will be expected to visit and meet with MPGAP agencies at their own localities. Upon arrival, the evaluation team will have access to the following reports prior to starting their visits and interviews:

- 1) Project Paper
- 2) Project Grant Agreement
- 3) Review of current MPGAP status by McCauley and Stancioff
- 4) Implementation plan for each of the four MPGAP agencies
- 5) Financial status of the project
- 6) Contractor reports

The team will have access to all relevant development materials from USAID files, the contractors and the MPGAP agencies.

VI. Composition of the Evaluation Team:

The evaluation team will be composed of U. S. and Egyptian personnel. It will be composed of four members (it is possible that the Egyptian evaluators will work part time, but will provide a full time equivalent level of effort). The composition of the U. S. team will be from AID/W, and from outside for the technical portion of the evaluation.

ANNEX VIII
LOGICAL FRAMEWORK COMMENTS

1. The Logical Framework's Mineral Project assumption column lists only one assumption. "1. Information on potential mineral deposits is readily accessible to investors". There is a need for a second assumption dealing with the negotiation of suitable agreements attractive to both Egypt and to potential investors. Knowledge of mineral deposit, without suitable economic incentives for exploitation, is not sufficient to attract investors.
2. The Logical Framework should be updated to reflect a new PACD of September 1989.