

Minerals, Petroleum and Ground Water  
Assessment Project  
c/o Egyptian Geological Survey  
And Mining Authority  
3 Salah, Salem, Albassya  
Cairo, Egypt

Sept. 23, 1983

To: Project Officer, MPGAP  
From: Project Coordinator

re:Contract No.  
NEB-0105-S-00-3035-00, ID2

Subject: Second Bi-Monthly Report

Field Trip, July 27-August 5

The reporting period began with a 10-day field trip with geologists of GPC and EGSM, starting at Cairo, to Suez, Ras Gharib, Hurghada, Safaga and Marsa Alam, all on the west shore of the Gulf of Suez and Red Sea. The many side-trips to visit mineral deposits served the vital function of corroborating the nature and circumstances of these resources, without which exploitation cannot be planned. Knowledge of the setting of those deposits forms the basis of my belief in their marketability. Confidence in the worth of a deposit permits me to list it as an asset to be documented and advertised.

The deposits visited included: Limestone and Dolomite mines at Gebel Ataqa near Suez; Glass sand at Abu Dharag; Gypsum at Wadi Gharamul, Gebel Zeit, Gemmsa, Wadi Isel, Wadi Umm Gheig, Marsa Alam, Abu Ghousun and several other localities. At Wadi Isel, a large bedded deposit of celestite ore was examined. Phosphate mines at Umm Huetat and Hamrawein were inspected, with a tour of some underground mining operations at the latter. At Wadi Igla, a tin placer was inspected, and another at Wadi Abu Dabbab was seen, together with an important Tantalum-Niobium deposit. Surface workings at the gold mines Umm Rus, Atud and Sukari were inspected, whereas underground inspection was limited by lack of lighting.

Port facilities and prospective loading sites were inspected and photographed at each opportunity.

High-quality gravel deposits for concrete or asphaltic aggregate purposes were identified at several places along the south coast. This was an unexpected bonus of the trip, as it is possible that a study of this resource could result in a significant export business. The Gemmsa sulphur mine area was toured.

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Potential drill-sites for potash exploration were visited and discussed with GPC, on whose petroleum concession they partly lie. A meeting concerning EGSMAs drilling was held with GPC Director Mahmoud Wasfi at Ras El Behar NE5 on July 29. Mr. Wasfi stated the GPC position on drilling conditions and rights, and Mr. Abdullah Wassef expressed the independent position of EGSMAs.

We were privileged to be guests of GPC at Ras Gharib, and gained perspective on their field operations there, including the extensive oil field, new production drilling, gas collection and sulfur extraction plant. We also were shown the stratigraphic succession from Cambrian to Pleistocene, as exposed at Wadi Gharamul. A wadi-mouth clay deposit and extruded brick plant were inspected near Ras Gharib.

A program for exploration of a large quarry site at Gemmsa peninsula was tentatively planned. Likewise, plans were made for diamond-drill explorations of Umm Rus and Atud mines, and for exploring and testing gravel deposits all along the south coast.

The most important accomplishment was the translation of a great deal of geology described in publications, to the more substantial perceptions from field relations. Another accomplishment was the establishment of mutual respect and trust among geologists who will be working together in the coming years.

The following section of this report summarizes in some detail the minerals, mines, reserves and grades of ores reported, and some vital conditions of exploitation. It is the wish of the Director, Dr. Bihay Issawi, that this summary be given wide distribution. There has already been a press interview of Drs. Issawi and Snow reporting a range of resources to the New York Commerce Journal. The Egyptian press has quoted Dr. Bihay frequently concerning the gold mines.

### Training Coordination

The period August 6-18 was devoted almost exclusively to conferences with numerous people in EGSMA, DRI, RSC and Bendix Corp relative to the scheduling of 1) experts to Egypt from US, and 2) professionals to US for training. Dr. John Burger came to Egypt in July for that express purpose, and although the plan was completed here, the drafted diagram was only recently received from him in final form. It will be included in the year's implementation plan, to be submitted October 15. The first of the trainees, four experienced EGSMA geologists, have departed for a semester at the University of Colorado and at the University of Arizona. In December, several others will be detached to attend US Universities during the spring semester. In addition to trainees from EGSMA, DRI & RSC, four trainees from EGPC have been designated, and a place of training sought.

### Commodities Procurement

We have held lists of desired commodities for several months, pending decisions about specifications and the means of handling the IFB. Because in all cases the potential users drafted their requirements directly from a single catalogue, the specifications were too tight, restricting bids to single manufacturers, usually not American. Since neither the user nor the P.C. have had direct experience with the desired equipment, it has required many conferences to determine the performance needs in a general enough way for a tender. In geophysics, Drs. William Kamel, Fouad Kamel and their assistants have been consulted extensively. Dr. Abdel M. Gad, head of the EGSMA analytical laboratories, has been consulted on several occasions relative to X-Ray equipment, in addition to two days of meetings with National Research Center staff, who have been especially helpful in their demonstrations of X-Ray fluorescence equipment. I recommend its acquisition.

There have been some additions to EGSMA's list of desired commodities. They have been worked over in the same manner as the originals, for acquisition if it proves possible within the budget. Equipment provided a year ago under the CIP for measurement of paleo-magnetic properties of rocks has been idle for fear of damage due to voltage fluctuations. Giza Engineering Co. listed several items they would require before they would enter into a maintenance contract. Mr. James B. Riley approved their acquisition by the MPGAP, in order to ensure the prior AID investment. I have approved the line conditioner (item #10), but because I lack confidence in Giza, I do not approve of the diagnostic tools they listed. I think EGSMA should see how the equipment performs with the line conditioner installed, handling repairs on an hourly service basis rather than contract.

A 12-channel portable seismograph has been added to the commodities, and I approve of it as a very desirable tool in mineral prospecting and engineering. EGSMA has a newly-repatriated engineering geologist who should form a technical nucleus for that much-needed speciality, utilizing resistivity and seismic tools for soils and rock exploration. They will also need professional-level experts on the staff, if full use is to be made of the new tools.

At this writing, the only EGSMA equipment not fully specified is a mini-computer system. As soon as it can be finalized, in about a week, the list will be processed at AID for inclusion in the IFB. It has been decided that AID/Washington is to advertise and distribute the IFB, and AID/Cairo will help EGSMA with evaluation and bid selection and procurement. No one wants to afford a procurement contractor.

I recommend that the procurement of a drilling-rig for DRI not be hurried, but rather, scheduled separately from the equipment of other agencies. At this time, DRI agrees to the expenditure of a significant part of the budget on repair-shop facilities, probably truck-mounted so that it can remain with, and be devoted to maintenance of the rig. A budget for skilled mechanical help and training on the rig are also acceptable requisites to rig acquisition. Specifications writing has been held up, even after several conferences, because neither the user, nor the P. C. have enough knowledge of drilling equipment (U.S. or otherwise), to reach an ideal compromise between large-sized rigs capable of drilling holes of sufficient depth and size under all anticipated conditions (wadi gravels, sedimentary formations and hard crystalline rocks, for exploration and well-drilling), and small-sized rigs of low cost and ease of maintenance. American rigs are a problem because mechanics do not have experience with them, and the difficulties increase rapidly with rig size. The EGSMA Drilling Dept. staff has generously offered to help with rigs, shop and training, essential steps in the orderly development of such drilling capabilities as are desired by the DRI.

I recommend that Dr. Leply devote several days in conference with drill-rig specialists in US, during his November trip, to reach a better draft of specifications than is possible here in Cairo. The project can proceed in orderly fashion from then.

On September 11, we received a list of commodities GPC needs for their training facility at Ras Gharib. Many of the items listed in 1980 have been acquired, whereas the current list includes sophisticated video teaching aids. A field trip is scheduled for October 7 to visit the training center.

## Contractor's Performance

MGAP Director Dr. Larry Leply arrived July 25 to begin a 3-year contract, and has devoted most of the time since then to setting up business for Bendix Field Engineering Corp., including bank accounts, courier services, telex and expediting services. Since the management of funds for student and TDY expert travel, per diem and expenses falls on Bendix both in Cairo and in U.S., establishment of accounts and communications is essential. It might be argued that if office space at EGSMA were available, much of the arrangement work could have been done by an Egyptian administrator, whereas when such a person is finally engaged, he will inherit an operating structure. Vendors of supplies and services have been located less efficiently than would have been possible by a locally-hired administrator. When permanent telephone and telex installations are in our as-yet-unavailable office spaces, operation will be smoother.

Dr. Leply has collaborated with Dr. Abdel Hady and his assistant, Mr. Ayoub in formulating the Remote Sensing Centers' plan of operations. Modifications to the specifications of software have been agreed to and forwarded to ERIM for incorporation into the acquisition program. These changes are to facilitate image processing specifically for geological exploration not formerly available. It will be possible to do color-ratio composites, principal component transformations and canonical transformations.

During a recent field trip to the Sinai, Dr. Leply has examined field conditions under which remote sensing will be done, and has had a glimpse of Egyptian geology. In the setting of a public-sector mining company, Sinai Manganese Co., he has seen the need for introducing modern methods of mining, materials handling and engineering. AID-hired specialists automatically play a consulting role in this environment where AID funding is vital.

The Resident Director has worked closely with the P.C. in planning the programs of studies of Egyptian trainees and senior specialists scheduled for travel to U.S., also with some of the TDY experts work plans.

Resident Editor Larry Stout arrived September 1, and was immediately assigned the task of working with two of the EGSMA documentation staff to get manuscripts ready for Annual No. 13 of the Egyptian Geological Survey. At this writing, three papers are essentially completed, and a fourth is in progress. Problems of figure drafting and text composing are being solved. The newly-requisitioned type composition machine will not be available for Annual 13, so some hazard of malfunction is implied by use of the existing IBM machine, for which no repairs are possible. Mr. Stout has begun to compose a newsletter. Publications will be his charge as well as editing. Further work is indicated for him in the collection and reproduction of Mineral Information Packages, for sale to prospective investors. Mr. Stout has already embarked on a program of training for the EGSMA editorial staff, and establishment of editorial procedures and standards.

## Logistical Matters

P.C. and contractor, Bendix, have been hampered by lack of rudimentary office supports. At this time, our offices at EGSMA have not been made ready for use, though some progress has been made during the last two weeks. The windows and dividing walls of aluminum have been installed, and wall primer applied preparatory to papering and carpeting. The office furniture has arrived, as well as typewriters, but air-conditioners may await the next hot season.

P.C. is hiring a secretary on October 1, which will begin to alleviate a backlog of letters, memos and reports. A driver will also be engaged by P.C. shortly, to serve needs of all the MPGAP staff, since more than one would be superfluous. Until now, P.C. and contractor have done most of their own secretarial/administration work, and when an administrative assistant is hired by Bendix, further time will be freed for professional endeavors.

The EGSMA has provided much logistical support during the interim, for which I wish to express my thanks. Drs. Mohammed Hinawi, Bihay Issawi and their assistants have solved innumerable problems for us. Use of GOE vehicle and driver has been of great help to the P.C.

## Concession and Joint-Venture Contract Forms

As a result of conferences with Dr. Abdel 'Tawab, EGSMA Exploration Director, and Dr. Mahmoud A. Zaatout, former Director of the Geological Survey and active negotiator of the AGRICO contract, and upon encouragement by the latter, P.C. has drafted revised guidelines for future contracts between investors and EGSMA. Whereas these are expected to serve mainly as subject of future GOE discussions, they reflect not only the P.C.'s thoughts on means of stimulating business, but apparently they mirror some elements of the AGRICO Contract, which is expected to be a more liberal document than former model contracts. Administration by committee formed in EGSMA according to Ministerial Decree No 43 will facilitate major changes favorable to mining-sector investments.

At the close of this reporting period, P.C. has scheduled a brief field trip to the Sinai Manganese Company deposits of glass sand, kaolin, manganese and gypsum. Additional field trips to the Eastern Desert, to the coast west of Alexandria, the eastern and northern Sinai are planned for the coming months.

Numerous conferences with EGSMA department heads have been devoted to planning exploration for potash, gypsum, gravel and gold, and some of the field work getting underway by EGSMA parties will be attended by P.C.

One senior EGSMa geologist, Dr. Abdel Tawab, has been scheduled for a senior-scientist visit to U.S. Following a GOE-financed trip to Indianapolis for the Geological Society of America Annual Meeting, he will tour several gold and copper mines in Western US, and confer with potential investors at Denver and San Francisco. He will also visit the USGS Exploration Dept. and Remote Sensing Center at Denver.

### Petroleum Sector

Until this time, the MPGAP activities have been dominated by the aeromagnetic-radiometric survey, delegated to GPC for administration. It is reportedly proceeding well, and ahead of schedule. The Area II flights will be completed by February, 1984.

The overall program adopted by EGPC has been sequential: The results of aeromag interpretation by basement configuration are anticipated about January 1, 1985, whereupon seismic refraction profiling of the newly-discovered basin in the E.D. may be contracted. A possible stratigraphic test well is to follow, hopefully during 1986. New AID policies for the obligation/deobligation of funds have (in September) put pressure on EGPC and AID to program other activities during 1984-1985.

Projects intended for immediate initiation include:

1. Data Organization, utilizing modern information systems and equipment to store well data, seismic, aeromagnetic and gravity data. AID is to search for a TDY expert to help formulate the system and training needs including librarianship.
2. Seismic Data Storage facilities are to be upgraded, either at Shara Tayaran or Maadi, according to EGPC's plans.
3. Enhanced Oil Recovery, a survey of potential pressurization and stimulation projects at all reservoirs and spent fields is to be undertaken by GPC.
4. Commodities for Training Center at Ras Gharib are to be specified and a bid tendered. A field trip to the center is scheduled for October 7-8.

The P.C. recommends that in addition, one or more research projects be undertaken and supervised under contract to EGPC.

Mutual interests in EGSMa's potash exploration program at Ras El Behar, within GPC's concession, have been subject of several conferences, namely, with geologists Mahmoud Farid and Mohammed Negm, and Director of Exploration, Dr. Hussein Kamel. EGSMa Project leader Abdallah Wassef has likewise consulted with several EGPC and GPC staff members concerning EGSMa's drilling plans and problems related to water and solubility of evaporites. The cooperation given is much appreciated.

## Desert Research Institute

Several conferences have been held with Director M. M. El Shazley for purposes of equipment procurement and for program planning. No field work has been undertaken yet, pending receipt of institute funding, especially incentive pay, and also pending receipt of AID-financed field vehicles. These are expected to arrive in Alexandria October 17-21.

Field parties to be dispatched to the Eastern Desert, starting about October, will be headed by Prof. El Shazley, Prof. Himeda, Dr. Said Atwa, and Dr. Misak. All the above are hydrogeologists, water chemists or geologists. The work will start from nearly the zero-level of knowledge, because the geomorphology and subsurface geology of the wadis has hardly been studied. A few placer explorations and well sitings by EGSMA will be examined. There will be developed a rational approach to exploration, involving geomorphology, provenance of wadi-filling materials, and bedrock geology, followed by geophysical work (probably by Spring, 1984), and then by some test-drilling.

It is anticipated that drilling this season will be done by EGSMA under contract to DRI. One conference was held between the heads of those agencies August 15, at which preliminary negotiations were started, and a field trip arranged. Drs. El Shazley, Issawi and Snow will meet to inspect possible groundwater resource areas in the Zaafarana area, October 5-6.

The specific study areas have not yet been targeted by DRI, but they will be selected in collaboration with EGSMA to satisfy future mining needs. Tentatively, P.C. envisions search areas near 1) the Ras Gharib oil field area, perhaps contiguous with the glass sand area of Zaafarana, 2) the Zeit Bay-Gemmsa area, which is going to be a prominent oil field as well as the prime target of potash and gypsum exploration, 3) the Marsa Alam area where gold, tin and tantalum-niobium deposits are found and processed, and 4) the Abu Ghusun area, near gold, ilmenite, gypsum and other deposits.

P.C. has recognized circumstances at the seaward extremity of certain E.D. wadis where ground water is probably welling up to the shore and discharging to the sea. Marine springs of this sort are a speciality of Dr. Larry Lepley: he recommends a thermal infra-red scanning project for some near-future date, to locate those springs as an aid to on-shore explorations. A proposal will be drafted by Lepley for execution by the RSC in support of program goals at a later date.

I recommend that project funds be held, pending development of well-justified mineral-petroleum and ground water development needs and proposals. These will become evident as the field research unfolds, but the funds cannot be prematurely committed. Because such resource-oriented needs will arise, I urge that objectives not legitimately directed to MPGAP aims be funded elsewhere. Placers and water-bearing alluvium in the Western Desert are included in that category of inapplicability.

Lastly, DRI logistics will be eased greatly by the cooperative attitude of EGSM, who have indicated tentative agreeability to the use of camp facilities, at such as Hurghada and Marsa Alam, for DRI field party accommodations. The drilling and repair facilities at Marsa Alam are particularly valuable to the DRI project. DRI is hiring an experienced driller in October. If a suitable arrangement can be made, he will work with EGSM drillers, to gain experience preparatory to DRI drill-rig acquisition, and to assist in the contract work on behalf of DRI.