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SUDAN ENERGY TRAINING PROGRAM

INTERIM EVALUATION REPORT

U.S. Agency for International Development
Washington, D. C.

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TABLE OF CONTENTS

		PAGE
1.	Executive Summary	1
2.	Purpose of Interim Report	3
3.	Methodology	4
4.	Context of Energy Training Program	6
5.	Changes in Energy Training Program	8
6.	Program Achievements	9
7.	Program Weaknesses	10
8.	Conclusions	14

1. Executive Summary

An interim evaluation of the results to date of the 1980-1981 Sudan Energy Training Program (Program) has been made by visiting with relevant Sudanese government officials in Khartoum and Port Sudan, and by meeting with participating U.S. government officials (i.e., Department of State, AID and Department of Energy) in Washington, D.C. and Khartoum. The information and opinions gathered during the interim evaluation are detailed in this report and lead to the conclusions that the Program is benefitting the Sudanese participants. However, the Program is falling short of its expected effectiveness, owing particularly to lax management by the prime contractor, Kramer Associates International (KAI).

A series of remedial steps, many of which have already been requested several times by the Sudanese, can yield important increases in the overall impact of the remainder of the Program in 1981. These steps are discussed in the body of this report and involve elementary preparation and planning measures to guarantee that all future presentations focus upon the information requirements of the Sudanese participants. The recommended actions include these steps.

1. In June 1980, KAI appointed a new Program director, Dr. J. Faris. He has not been to the Sudan, and should make an initial visit immediately. Without first-hand familiarity with the Sudanese environment, it is not possible for Dr. Faris to adequately counsel the course speakers.

2. Greater advance notice to the Sudanese about the Program has already been requested by them and is required. Data needed in advance include full information on course content, timetables and the professional backgrounds of all speakers.

3. Reading materials should be distributed to Program participants well in advance before the start of any course. A lead time of five weeks, between delivery of printed matter to U.S. AID, Washington and course start-up, will allow pouching to Khartoum and sufficient preparation by participants.

4. Summaries of course contents should be distributed as lecture notes to course attendees, after lectures in the Sudan.

5. Course lengths have varied considerably, from a minimum of one week to a maximum of about one month. The Sudanese have been informed by KAI that the intended length of each course is one month and that amount of instruction should be provided. Brief courses preclude case studies or detailed questioning that can be particularly beneficial for the Sudanese.

6. Speakers have been of highly variable professional quality and experience. Instructors with practical work experience in applied aspects of the course subjects are essential.

7. Course presenters must be thoroughly grounded in basic facts about contemporary Sudan. A general understanding of the recent political, economic and social history of the country, as well as its geography, should be mandatory to ensure that the speakers relate to their audience.

8. The syllabus for the courses should be reviewed in advance, edited and approved by KAI. Past practice, according to KAI, has been for KAI to permit speakers to design their presentations with a high degree of independence, resulting in a lack of central control over subject matter and emphasis.

9. Communications between KAI, Department of Energy and U.S. AID personnel concerning Program activities has been spotty and has led to poor coordination of effort. Better communications in this area are needed.

These corrective measures will not only improve the current Program, but will contribute to the skills of those Sudanese energy managers who will take part in the forthcoming U.S. AID-sponsored National Energy Planning exercises and will upgrade this prototype Program for possible later use by other economically-developing countries of Africa.

2. Purpose of Interim Report

An Energy Training Program was requested by the Government of the Sudan and was begun in 1979, with initial course presentations in Khartoum at the beginning of 1980. In April and May 1980, a Baseline Evaluation was made by the author of the Sudanese Government unit for which the Program was initally intended, the Petroleum General Administration (PGA).

Discussions between the Sudanese Ministry of Energy and Mining, and the U.S. (Department of State AID and Department of Energy) resulted in the Program being revised and expanded during 1980. It will now run until late 1981. Also, during 1980, the Ministry of Energy and Mining was enlarging and reorganizing its energy functions, with the formation of two new units, the General Petroleum Corporation (GPC), with operations responsibilities formerly held by the PGA, and National Energy Administration (NEA), with staff functions formerly within PGA.

Under these altered conditions, U.S. AID requested an interim evaluation of the Program to take into account the changing role of the Sudanese Ministry of Energy and Mining and the increasingly complex national energy picture. These changes include the restructuring of the governmental energy administrative offices, the continuing success of private-sector petroleum exploration efforts and the structural economic difficulties of the nation. Thus, the interim report has three goals:

1. Estimate any specific benefits of the Program to the Sudanese.

2. Estimate general benefits of the Program to the Sudanese within the framework of other factors influencing the energy situation in the Sudan.

3. Recommend ways to improve the Program impact to be of additional benefit to the Sudanese, and to assist U.S. AID in deciding whether to offer this prototype to other economically-developing African states.

3. Methodology

After completion of the Phase I (Baseline Evaluation) report in May 1980, contacts were maintained with Washington, D.C. personnel responsible for the Sudanese Energy Training Program. At different times between May 1980 and February 1981, discussions were held in Washington, D.C. with Messrs. John Blumgart and Alan B. Jacobs, U.S. Agency for International Development, and William B. Carter, U.S. Department of Energy. Personnel of the World Bank with

6

an interest in Sudanese energy developments were also met, including Thomas Blinkhorn, IBRD loan officer for Sudan.

Discussions with Messrs. Blumgart and Jacobs led to the scheduling of a 10-day visit to the Sudan to prepare an interim evaluation of the Program. The visit took place February 12-22, 1981. During this period, a one-day trip to Port Sudan was arranged. The balance of the time was spent in Khartoum. Immediately prior to departure, a one-day visit was made to Washington, D. C. for a meeting with Mr. T. Flood of the Department of Energy, who assumed the responsibilities for the Program from recently-retired Dr. L. G. Stewart, formerly Director, DOE Office of Education, Business Labor Affairs. A meeting also was held with Mr. Flood and Dr. J. Faris, Program manager for Kramer Associates International (KAI).

While in Khartoum, discussions and briefings were held with U.S. AID personnel including Dr. James Beebe, AID Prograam manager. Several dozen officials and staff of the Ministry of Energy and Mining were interviewed, including senior management of the National Energy Administration (NEA) and the General Petroleum Corporation (GPC). Recent university graduates who have been recruited to the NEA and GPC were also canvassed to obtain their comments on the usefulness of the Project courses for their work.

During the visit to Port Sudan, discussions took place with resident management of the GPC and with management and staff of the Port Sudan refinery, owned 50 percent by the government of the Sudan. The opportunity was taken to tour the Port Sudan refinery and to visit the port facilities where crude oil discharging and gas oil unloading from tankers was taking place. It was also possible to view the crude

oil tank farms and finished products tank farms. Finally, an inspection was made of the state of port facility improvements being funded by a World Bank loan.

Owing to the increase in the number of energy personnel within the NEA and GPC (in comparison to the PGA in May 1980), there were opportunities to meet new people as well as to renew professional contact with Sudanese Government officials first met in 1980.

4. Context of Energy Training Program

During the ten months since conducting the Phase I Baseline Evaluation, a number of significant changes have taken place in the Sudanese energy sector. Before describing these changes, it should be noted that the fundamental economic difficulties faced by the Sudan have not altered and may indeed have worsened in some sectors, e.g. declining cotton exports.

One major energy change which constitutes a hope for future economic improvement has been the continuing success of petroleum exploration efforts by the Standard Oil Company of California (Chevron). Since the late 1980's, Chevron has invested $210 million and drilled over 20 exploratory wells in the south-central area of the Sudan, finding commercial quantities of crude oil sufficient to generate negotiations between the Sudan government, the World Bank and Chevron over a proposed $300 million investment package to build a 400 km crude-oil pipeline from the Unity field to Kosti, on the White Nile south of Khartoum, where a 10,000 barrels per day topping plant is planned for 1983. The small refinery will be designed to allow the addition of other atmospheric distillation units and thereby at least double its initial capacity in the future.

Total Oil, the French concern, has acquired certain acreage relinquished by Chevron and is also beginning an exploration program, while Chevron continues to expand the scale of its effort, adding a third rig for the 1981 drilling season.

A second significant change has been the realignment and expansion of energy staff within the Ministry of Energy and Mining. This department, headed by Minister Sharif El Touhami, has recently been assigned responsibilities for electricity and ground water, as well as establishing professional groups of petroleum exploration and production staff within the NEA and GPC. For example, the NEA, with staff planning functions, was formed de novo by the temporary assignment of about 9 middle-management professionals from GPC plus the hiring of about 30 junior professionals. Clearly, the new organizations will require some time to mature and contribute to national energy management.

A third energy development since early 1980 has been the expansion of U.S. government interest in providing the Sudan with institution-building support. In addition to expanding the Energy Training Program, U.S. AID has funded a major new project, the National Energy Planning exercise. The objectives of this planning work, to begin in February 1981. are to develop an information base which can be used to address national energy policy issues, to evaluate overall national energy supply and demand strategies, and to strengthen the capability within the Ministry of Energy and Mining to carry out energy assessments and policy analyses.

5. Changes in Energy Training Program

Owing to the evolution of Sudanese energy training requirements, the Program has been modified in three ways. First, the coverage of the Program has been increased to allow for additional topics. As a result, the current series of courses will continue throughout 1981. Second, the type of course being offered has altered to become more specific in its subject matter, reflecting a sharper focus by the Sudanese on issues germane to them, such as the forthcoming National Energy Planning work. The initial aim of the Program had been to teach general management skills, with less emphasis upon scientific and technical topics. Third, the attendance at courses has been broadened to include all segments of the Ministry of Energy and Mining, including units newly acquired by the Ministry such as the Public Electricity and Water Corporation. A few people from other governmental bodies have attended some course sessions, notably from the Bank of Sudan and Ministry for National Planning.

Dr. J. Faris of KAI informed the author and Mr. T. Flood, Department of Energy, that the most recent changes in Program content were made by Dr. L. G. Stewart during the course of a September 1980 visit to Khartoum. The schedule of courses agreed at that time was:

1. Marketing and general procurement problems;
2. Distribution and logistics;
3. Electricity rate structures;
4. Biomass fuel blending;
5. Energy conversation and technology transfer;
6. Management information systems;

7. Energy research program design, development and demonstration;
8. Project cost benefit analysis;
9. Strategic planning and research;

Since this change, a nine-day course was presented on the first two topics in December 1980, and a five-day course on electrical rate structures was presented in January 1981 The course on biomass began February 22 and will take approximately two weeks.

6. Program Achievements

The program has made certain contributions to institution-building at the Ministry of Energy and Mining. A major intangible plus has been the genuinely appreciative way that Ministry officials have reacted to the Program. The lectures has been timely, too, as an adjunct to training new graduates as well as more senior staff who have been part of the recent expansion and realignment of the Ministry.

In the ten months since the Baseline Evaluation, there has been an obvious rise in the activity and in the sophistication of job effort within the Ministry. Although the quantitative changes are most apparent (a near doubling of professional staff), the qualitative improvements are of potentially greatest importance. A new attitude of professionalism seems evident, and the NEA and GPC organizations have made a good start on the process of evolving into a mature civil service group.

The program has some direct contributions to the skills of Sudanese participants, although there could have been additional contributions if better preparation had been made by the speakers and KAI. In bringing together

11

various professionals from different energy disciplines, the Program may be helping to increase awareness of energy issues outside of personal spheres of interest. This increased appreciation of other energy topics may increase organizational bonds within the Ministry and help in the forthcoming National Energy Planning Project.

The electricity rates structures lectures by Dr. C. Cicchetti are good examples of presentations that were directly beneficial, to the commercial-industrial rates managers of the Public Electricity and Water Corporation (PEWC). These lectures were not aimed at most of the audience, but a number who attended made note on their course evaluation questionnaire that the materials was of some interest. Dr. Cicchetti also took time during the day (all lectures have been in the evenings) to meet with PEWC Management and carry on their discussions on topics of special concern. The availability of lectures during office hours was considered to be of real value in this instance.

7. Program Weaknesses

Although the Program has met some of its objectives well, it has been handicapped unnecessarily by a group of problems that stem from poor planning by KAI. Nearly all of the areas for improvement, as noted below, have been raised already, by Sudanese Ministry staff, some as long as May 1980 when the Baseline Evaluation was made.

1. There has been inadequate advance notice to the Sudanese on the schedule for courses. Several weeks lead time is necessary to secure an appropriate meeting room and any audio-visual aides. Lead time is essential to ensure the

course fits the schedule of those who would most benefit from attendance.

2. Full details about the course content should be supplied to the Sudanese, several weeks in advance. Misunderstanding about course contents has occurred. For example, the marketing and distribution course by Dr. L. Williams dealt mostly with petroleum products shipments and sales in a U.S.-type competitive market, whereas the Sudanese participants were expecting comments on world crude oil marketing and distribution, and are dealing with a domestic market for petroleum products that is dominated by physical shortages and government-set prices, without much parallel to the U.S. retailing situation.

3. Speaker qualifications should be made available well in advance. Curricula vitae and cameo biographies will help the Sudanese to tap the specific backgrounds of the course presenters.

4. Course reading material must be available before the course begins to allow proper preparation. The Williams marketing-distribution course reference material was received by U.S. AID. Khartoum after the course was over.

5. Summary notes on course lectures would be a benefit for future reference by attendees. Because English is a second language for most course participants, note-taking abilities of

participants will vary. A printed set of lecture notes will reinforce the learning experience, and allow information to be shared with other offices in Port Sudan, Kosti, Juba and elsewhere.

6. Inadequate attention has been paid to training the Port Sudan GPC staff. One short course was held there in April 1980, on project evaluation by Mr. L. Posgate. A Specific request by GPC management (Mr. Mubarek Omar Adam) to present part of the Williams marketing-distribution course in Port Sudan was turned down.

In addition to these flaws arising from poor planning, there have been a number of other weaknesses that reflect insufficient quality control by KAI.

1. The qualifications of speakers have varied widely. Some speakers have had wide practical experience in their areas of specialization (Cichetti, Vachon), others have had almost none (Posgate) or were overly academic (Williams). Failure by KAI to recruit experienced presenters in every case has discouraged the Sudanese from raising knotty local energy problems for the speakers to tackle.

2. Course lengths have varied from one week (Cicchetti and Giffen) to nine days (Williams) to a planned two weeks (Stewart), on up to one month (Postgate). The KAI plan was presented to the Sudanese states that courses will be four to eight weeks long. A course of only a week or two does not give enough time for detailed problem solving and is too brief to develop strong feedback from the Sudanese or a sensitive appreciation of local energy problems by the course lecturer.

3. Almost without exception, speakers have been uninformed about the Sudan generally and its energy sector in particular. (Professor W. Kretlow and Dr. L. G. Stewart were speakers with a good awareness of the Sudanese scene, and were able to convert that knowledge to good use for the Sudanese attending their course.) The failure of speakers to be even nominally informed about the country is quite apparent to the Sudanese and severely limits the lecturers' ability to deal with local energy topics. KAI must provide basic Sudanese reference materials for review by all speakers.

   For example, Dr. Williams showed slides of modern U.S. filling stations, which the Sudanese felt were wholly irrelevent. One look at a Sudanese gas station would explain why. Williams also used a text he co-authored, on U.S. retail gasoline marketing, which was in large part inapplicable to the Sudanese situation (e.g., section on antifreeze (!); service-station equipment not available in Sudan, literate women as station managers).

4. Course material has not been differentiated for teaching junior staff, as opposed to seminars for senior management. In their questionnaire responses, many Sudanese have criticized elementary material as being unnecessary, and more suitable for undergraduates. Separate sessions for more senior Ministry participants seem advisable. It may be possible to do this on a one-on-one basis during office hours.

5. The design of course content has, according to Dr. Faris of KAI, been left up to the speakers. One result has been a variable quality in course content and emphasis. In the case where two speakers were engaged (Cicchetti, and Giffen), Dr. Cicchetti spoke 90 percent of the time, according to the Sudanese, and Dr. Giffen gave only one lecture. Firmer guidelines from KAI to the speakers would be beneficial, and might help lecturers to build upon the remarks made at earlier sessions by other speakers

8. Conclusions

The Sudanese Ministry of Energy and Mining has a number of pragmatic managers who have been frank and realistic in their assessment of their Ministry's needs, and the contribution that the Energy Training Program has made to meet some of these needs. Given the magnitude of these needs, almost any effort would have some positive results to show for itself, but this particular Program has done more than meet minimum expectations.

Although on balance, the Program to date has been adequate, it definitely has not fulfilled its potential. One of those responsible for the success of the Program has been Dr. L. G. Stewart, but in certain ways, Dr. Stewart contributed to the Program shortcomings noted earlier. As the past Department of Energy supervisor of KAI work on the Program, his enthusiastic commitment to the Program sometimes led to his taking personal responsibility for tasks that were the responsibility of KAI, such as programming and speaker procurement. If Stewart had more closely supervised KAI contractual obligations for the Program, and if he had maintained better communications with U.S. AID, most of the Program deficiencies noted in this report should have been avoided.

The institution of questionnaires to register opinions from course participants has been started by the Sudanese with assistance from Dr. J. Beebe, U.S. AID, Khartoum. These responses may provide prompt and specific ideas for course direction. With improved communication between the reorganized Ministry, U.S. AID, the Department of Energy and KAI, plus better attention to planning and quality control by all involved with this Program, it is probable that the Program can meet certain Sudanese energy training needs more completely, and become a prototype for similar exercises in other economically-developing African countries.

SUDAN PETROLEUM TRAINING PROJECT

PETROLEUM GENERAL ADMINISTRATION

BASELINE EVALUATION (PHASE I)

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Table of Contents

1. Executive Summary 1
2. Purpose 4
3. Method and Timetable of Study 5
4. PGA: A Changing Role 8
5. PGA Weaknesses 14
6. PGA Strengths 19
7. PGA Personnel Training Methods 23
8. External Factors Affecting PGA 25
9. Outlook 27

1. EXECUTIVE SUMMARY

A baseline evaluation of the Sudanese Petroleum General Administration (PGA) was prepared under terms of a contract from the U.S. Agency for International Development (AID). The following major conclusions were drawn in the course of a ten-day visit to the Sudan, to meet PGA employees, AID staff, Sudanese businessmen and public-sector officials.

1. Major organization changes began in 1980 within the PGA parent Ministry of Energy and Mining (Ministry), notably with the appointment of a new Director General at PGA. The Ministry intends to divide the PGA policy-making and regulatory functions from PGA operating responsibilities. The latter role will be taken over by a newly-formed public petroleum corporation. Ultimately, a more fully integrated national oil company may evolve.

2. PGA organization, staff qualifications and activities appear to be on a par with comparable units of the Sudanese public sector. Thus, considerable room for improvement exists, subject to severe constraints imposed by national economic difficulties and trained manpower shortages.

3. Although PGA is functioning under current conditions, it is not ready to manage growth. Petroleum consumption now is held down by capital shortages which result in serious distribution and supply bottlenecks. There could be a period of explosive growth in oil demand in the event of either a major domestic crude oil discovery or the construction of a second oil refinery.

4. PGA staff are realistic in acknowledging constraints to their job performance. Their own work experiences are limited, there is an inadequate data base, and insufficient capital funds. PGA management see there is a continuing role for international consultants to provide selected outside assistance. Continued use of such services is anticipated by PGA.

5. Given the physical, financial and political constraints which influence the quality and quantity of work done by PGA, the employees have been performing their jobs in a manner that may be judged as acceptable under the circumstances. Nevertheless, PGA staff realize that such a level of achievement can be upgraded, and must be raised as the energy sector becomes more significant in determining the future performance of the Sudanese economy.

6. The raw attrition rate of PGA employees lost to better-paying jobs abroad or in the Sudanese private sector is not abnormally high, being about 10 percent per annum. However, it is a serious concern of PGA management because the people who leave tend to be among the best qualified and most talented individuals.

7. Office procedures in PGA are not conducive to good work habits. The library is well-maintained but other clerical and secretarial services are minimal or do not exist. Filing systems and record-keeping procedures can be improved quickly and at a relatively low cost.

8. Junior staff need more vocational guidance, supervision and training by middle management, who are frequently occupied by meetings and do not seem to delegate authority effectively.

9. Middle management usually have served with PGA for at least five years, and many men have had work experience abroad. The career development needs of middle management are considerably more specific than are the training requirements of entry-level junior staff.

10. Routine contact with PGA management, mainly through discussions with the new Director General, should help to focus the petroleum training efforts to provide the practical assistance desired by the Sudan government.

2. PURPOSE

At the request of the U.S. Agency for International Development (AID), an appraisal was made of a Sudanese state entity, the Petroleum General Administration (PGA). It was requested that particular attention be paid to the organization, activities, management methods and decision-making processes of the PGA at this time (April - May 1980) in order to develop a baseline evaluation against which to make future qualitative measurements of the impact of a 1980 petroleum management training program being offered to PGA by AID and the U.S. Department of Energy (DOE).

It is planned that a second-stage review of PGA will take place in early 1981, shortly after completion of the training program. The follow-up evaluation will seek to identify those parts of the petroleum training course which met, surpassed or failed to achieve the training objectives.

3. METHOD AND TIMETABLE OF STUDY

Upon receipt of the assignment from AID, Dr. W. G. Prast met in Washington, D.C. on April 16 and 17, 1980 with Messrs. John Blumgart and Charles Blitzer of AID, other State Department employees with African responsibilities, including Sudan desk officer Mr. John Wooten, and with Mr. William Carter and Dr. Lawrence G. Stewart, DOE personnel involved with the training program.

A meeting was also held on April 17 with Messrs. Paul Taff and Peter Motavalli, of Kramer Associates International (KAI), Washington, D.C. KAI are retained to conduct the training course sessions.

In addition, a meeting took place on April 15 in New York, NY with Mr. Robert Dirge, an International Executive Service Corps (IESC) volunteer who spent two months of 1980, working with units of the PGA in Khartoum. Interviews and telephone discussions also were held with several businessmen who have had relevant work experience in the Sudan. Finally, a telephone conversation with Dr. William Kretlow, a University of Houston finance professor who has had close associations with the PGA, was informative.

Prior to visiting the Sudan, about six man-days were devoted to background reading on Sudanese 19th and 20th century political history, society and economics. This preparation, albeit brief, proved to be extremely helpful in conducting the field work.

The assignment involved spending ten days in the Khartoum area, from April 27 to May 7, 1980. Interviews and discussions were held with approximately 15 members of the PGA including the present and former Director General, as well as with senior members of the Ministry of Energy and Mining, which supervises PGA. One of the KAI course sessions was attended, as well.

AID personnel contacted included Director Gordon K. Pierson, Assistant Director James Holtaway, and Human Resources Development Officer, Dr. James Beebe. Economics Officer Larry Nelson and other U.S. Embassy personnel were also helpful. Conversations with several non-Sudanese businessmen included an interview with Chevron general manager Mr. James Payne.

During the course of the ten days visit, it was also possible to meet privately with some 15 Sudanese nationals, many of whom have prominent posts in private industry and government, outside of the Ministry of Energy and Mining. These discussions were particularly helpful in understanding the national context within which the PGA operates.

Language barriers were not a major problem. About one-third of the PGA staff can speak conversational English, and all of the senior government and industry executives contacted were fluent in English.

Although initial plans had called for travel beyond Khartoum, the internal transportation problems for which the Sudan is justifiably notorious proved too great for visits outside of Khartoum in the time available. All travel to the southern provinces was banned at the time by the central government, owing to severe public health problems. Fortunately, in Khartoum itself, the cholera and meningitis epidemics did not prevent local travel by car. These epidemics did require extra vigilance on personal health care matters, notably caused by a limitation on the availability of fresh foods.

After delaying a planned trip by air to Port Sudan, at the request of the PGA, the journey ultimately was aborted after a ten-hour wait at the airport for the flight. Arrangements for this trip were handled ineffectively by the PGA and with hindsight, might have been made more reliably by private means. However, it was considered appropriate at the time to allow the host Sudanese government unit to deal with internal travel arrangements.

Owing to the erratic nature and frequent failure of the Khartoum electricity and telephone systems, most interviews were arranged by hand-delivered messages and personal contacts. Although these communications procedures were very cumbersome as the unpaved roads cause traffic to move slowly, they allowed an opportunity to observe the daily routine of Khartoum commercial life, such as it is, in considerable detail while travelling across the city or waiting for extended periods in office anterooms.

4. PGA: A CHANGING ROLE

Immediately upon arrival, Dr. James Beebe advised that a major change in PGA management had taken place in the previous two weeks. There is now a newly appointed Director General of PGA, Mr. Mubarek Omer Adam, and a new second-in-command, Mr. Hassan Zubair. The former Director General, Mr. Abdul Fateh Saleh, who had helped establish PGA in 1970, had been ousted from government service. His deputy, Mr. Osman Babiker, had been transferred from his job as chief of PGA Planning Division to a post in another state energy unit, the Petroleum Products Pipeline Public Corporation (PPPPC).

Outside observers were uniformly of the opinion that Mr. Saleh is a strong-willed individual whose ambitions to make PGA into a more dominant component of the Ministry of Energy and Mining (Ministry) were contrary to the wishes of the Minister, Mr. Sharif El Touhami. Consequently, the Minister appointed a new man, from the Ministry staff, who would be more willing to follow Ministry policy.

These personnel changes presage further major structural alterations in the Ministry, which warrant explanation in some detail.

As of May 1980, the Ministry governs Sudanese petroleum activities through four major units. The group of interest for this study, the PGA, has about 80 professional employees and controls the importing and refining of crude oil, the release of refined products to the four marketing companies, the allocation of petroleum products for bulk oil shipments by rail, river and pipeline, and the determination of rail priorities and river barge priorities for shipments. PGA holdings include a 50% share of the 1.2 million mt per annum Port Sudan refinery, which was built in 1965 and a 75% share of one of the four marketing companies, Nile Import and Trading Company, Ltd. (NITOC), acquired in 1976.

The second Ministry unit, PPPPC, operates an eight-inch diameter, 815 km pipeline from Port Sudan to Khartoum. This pipeline was opened in late 1977 and was designed to ship 600,000 mt annually of clean products: motor gasoline, kerosene, avtur for aviation fuel, and gasoil. The line has been plagued by pumping problems and now ships only gasoil, with occasional avtur at an annual rate of 300,000 mt. All other oil shipments to Khartoum go by rail. About 70 percent of national oil demand is in the Khartoum "Three Towns" area.

The third Ministry unit, the Petroleum Production Corporation, overseas activities by the exploration companies. Standard Oil Company of California (Chevron) received concessions covering 520,000 sq km in 1975 and has had a highly

promising drilling program which is the subject of guarded optimism. Other exploration concessions were received in 1979 by other American oil companies but exploration work is only beginning.

The fourth unit of the Ministry oversees the four marketing companies, who are Shell-BP, Mobil, Agip (the Italian state-owned oil company), and NITOC (75% PGA, 25% CFP, the French oil company).

In addition to these four units, there is an energy role played outside of the Ministry by the National Research Council, which considers renewable energy resources and solar applications.

Minister El Touhemi, who is primarily a political administrator rather than a natural resources technical expert, has embarked on sweeping changes in the structure of the state-administered oil sector in order to separate the operating arm from the policy-making and regulatory functions. These changes are expected to be finished by August 1980, according to Mr. Omar El Sheikh, an engineer in the Ministry's Department of Geology, and Mineral Resources. Mr. El Sheikh advises that he will head the newly-formed Public Petroleum Corporation. This appointment was also noted by Chevron personnel.

The new Public Petroleum Corporation will take over all existing PGA operations other than planning, budget preparation, products scheduling and advisory services. It will include crude oil imports, products exports, and the Port Sudan and Juba branches of PGA. Juba buys certain products directly, with overland delivery via Kenya.

The remaining PGA functions, under Mr. Mubarek Omer Adam, will become part of a National Energy Administration with responsibilities for planning, project evaluation, cost accounting, budgetting, petroleum product price determination, financial and technical services.

Although the PPPPC is not to be affected, Mr. El Sheikh advised that he expects in due course that a unified public oil corporation will be formed, to include liaison with any oil production that may be established by Chevron or other private companies.

The transition to this new structure will not be an easy one, as there are limited numbers of experienced people to provide management control and supervision. A greater role for some of the 50 or so professional in the Ministry may arise. It was suggested by several Sudanese that Mr. Yousif Suleiman, Under Secretary in the Ministry and former Director General of the Department of Geology and Mineral Resources will be involved in managing thesechanges of structure.

A thorough understanding of how these structural changes reflect Sudanese government thinking on their petroleum management priorties will assist in making the petroleum training course of specific and practical value to the participating PGA staff. In shaping the course content, recognition needs to be given to the new job responsibilities of several managers, as well as to the various points for improving the course which were made by Mr. Mubarak Omer Adam, in an April 28 meeting with Messrs. Beebe, Carter, Prast, Stewart and PGA staff. As these observations by the PGA Director General lie outside of the scope of this baseline survey, they will not be considered further in this document.

5. PGA WEAKNESSES

Any evaluation of PGA performance needs first to relate the PGA to comparable units of Sudanese government or the private sector. Judged relatively, the quality of PGA published studies seems below those of, say, the Ministry of National Planning or the Sudan Management Development and Productivity Centre of the University of Khartoum. PGA is overstaffed and undermanaged, relative to the best run firms in the private sector. On the other hand, PGA work attitudes are far superior to, say, Sudan Airways and PGA overall, effectiveness seems at least equivalent to the Sudan Railways or River Transport Corporation in coping with supply bottleneck dilemmas.

Although some of the PGA weaknesses may be eased by the new organization plan, most are likely to remain because the key problems relate more to personnel quality and quantity rather than to structure. Identified major weaknesses are noted below.

1. PGA is not equipped to manage further growth in Sudanese oil requirements. Current consumption levels are rationed owing to shipping bottlenecks, notably on the rail and river network. A thriving black market in fuels at two to five times the regulated government price has led to unofficial "reallocations", but cannot add to total available supplies.

If supply bottlenecks were eased, say by further railway capital improvements, or if domestic crude oil production were to become sufficient to allow exports and the purchase of more refined products, or if a second refinery was built the pent-up demand for fuels could cause a demand surge that would swamp PGA planning and scheduling abilities.

2. PGA junior employees appear to get inadequate instructions on how to do their jobs. Job descriptions do not exist in many cases. Working to meet timetables is not always apparent. This situation is not due entirely to the neglect of the middle-level managers of the four main PGA activities (Planning, Technical, Operations and Financial). These managers are frequently called away to other tasks, and are themselves stretched to get their own jobs done. Part of the problem may be due to the PGA being understaffed.

3. Recruiting and training is poor. The inadequacy of on-the-job training is attributable in part to middle management failures, in part to the previous Director General, and in part from there being no personnel department, as conceived in conventional industrialized organizations.

Recruiting to fill staff vacancies is done by a central committee within the Ministry. There is almost no movement of people between Ministries, except by outright resignation.

Recruits are screened by the hiring committee and assigned to PGA units with little or no say on the part of the manager receiving the new employee. Under these conditions, middle managers have a minimal commitment to the training and upgrading of their staff.

4. Records are inadequate, even given the poor data base problems generally encountered in developing countries. The PGA Library is well-stocked with international oil-industry periodicals and maintained by a librarian, but national statistics and economic data which do exist from other government agencies are not in widespread use.

5. Clerical and secretarial services are non-existent. Apparently no one but the Director General has an aide. All typing is done at offices removed from the PGA, not at their offices. The photocopying machine was broken. Most filing cabinets appeared to be in disarray. Working files are said to be maintained by individuals but desks and work areas showed signs of infrequent organization of documents and papers.

6. Working arrangements are crowded. PGA occupies a series of one-story stucco and masonry two and three room buildings, in a rabbit-warren arrangement. There is no conference room, and little privacy for meetings, discussions or private work. Personnel wander in and out of offices, disrupting concentration.

7. Decisions concerning other government agencies involve protracted committee sessions. These delays are not unusual in any country, but PGA seemed unable to do much to apply pressures for resolution of outstanding decisions, as other government groups, e.g. the Railways, have more influence.

8. PGA personnel have had very limited exposure to the complex problems of more advanced oil-consuming economies. This limitiation stems from the few petroleum industry activites in the Sudaan: the Port Sudan refinery would have been scrapped in most other countries, even in north Africa, five years ago or alternatively tripled in size; the 19th century rail network is an anachronism, the small-diameter pipeline is new but has never been operated properly; products storage at Port Sudan is so small that at times the refinery output has been curtailed because heavy fuel oil for export has become backed up; distribution and marketing of refined products is generally on a very small scale.

9. PGA personnel can earn up to five times their Sudanese salary by emigrating to the Arabian Gulf. Attractive job openings also exist with private oil companies in the Sudan. Employees of the PGA know that their market value is greatly enhanced by an earned Master's degree, and therefore higher academic degrees are coveted whereas on-the-job technical training for applied purposes is helpful but of less economic value to the individual.

10. PGA, and Ministry staff generally, are not educated for decision-making about exploration an production issues. More "upstream" knowledge will be essential if Sudanese oil production possibilities come to fruition.

11. PGA is probably too centralized. About 20 percent of the staff are in Port Sudan, and three or four people work in Juba. Regional offices would suffer from the endemic poor communications problems, but regional offices would help in data-gathering and schedule planning. PGA staff are unable to travel often outside Khartoum Province, because of the transportation obstacles. The Director General said regional collection of economic data is under consideration.

12. PGA analytical techiques are often elementary. A pre-feasibility study for a second oil refinery showed only one case, at a 6% DCF, with no sensitivity analysis on alternative assumptions. The presentation of the proposal was not particularly complete, although several outside advisers from the U.S. and Egypt had been involved in earlier drafts.

6. PGA STRENGTHS

The management and staff of PGA exhibited a refreshing realism in their approach to their jobs. This strength in itself is a good sign for future progress. Following are some principal strong points exhibited by PGA.

1. PGA staff recognize political realities. For example, the crude oil buyer makes all purchases from Saudi Arabia, f.o.b., with freight to Port Sudan provided by a Greek tanker company chosen outside of the PGA. Prior to 1978, crude oil was brought from Iraq, c & f, with insurance bought locally as required by Sudanese law. Iraqi crude deliveries were reliable, but the Saudi loans to the Nimeiri government make it desirable to take Saudi crude. Full posted prices are paid.

Finished products imports (e.g., JP-1, regular gasoline) come from Kuwait, and heavy fuel oil exports are arranged each quarter, with international bids sought to determine the market price level but preference given to the four local marketing companies in offtaking the residual fuel oil.

2. PGA staff exhibit good commerical sense. The projects evaluation group was all too well aware of the "paper projects" nature of some of their proposals. The Finance Department manager indicated that the payment terms on the sale of products to the marketing companies (40% in 15 days and the balance in

30 days) were tough and more important were identical to terms charged to state corporations, e.g. Kenana Sugar, Gezira Scheme, by the marketing companies. Tougher terms would be passed on by the marketers and cause complaints by the government-owned customers.

3. PGA staff are pragmatic economists. One PGA function is to calculate gasoline pump prices and advise the Sudanese government when changes are warranted. Final approval of fuels prices lies with the President. An attempt in October 1979 to raise pump prices for regular gasoline to £S 1.25 per Imperial gallon (approximately $1.00 per U.S. gallon) led to riots and a roll-back to £S 1.00 per Imperial gallon. The current Khartoum black market price for 83 RON regular gasoline is £ 1.90 - £ 2.25, and supplies are available for "boxes" (minibus operators) and taxis willing to pay this markup.

4. PGA personnel are candid in recognizing their own limitiations and are ready to call upon international advisors where necessary. Specialist professional support has been employed regularly, including Egyptian refining and distribution staff on one-year assignments. The two-month stay of Robert Dirge, of IESC, was favorably mentioned by several people in the Planning group where he spent his time. Longer-term tours of assistance of several months are considered

much more benefical than a series of short visits of a few days or weeks. It takes several weeks to become an effective contributor.

5. The economic incentives to leave the Sudan have caused the loss of quite a few experienced and well qualified men, although overall PGA staff turnover has not been excessive. The former PGA Director General said 14 people left during the two year period 1978-1979, an annual rate of under 10%, which is not abnormal for any organization staffed mostly by younger graduates. However, the losses have been selective, and have hit the effectiveness of the Planning Department, for example, more than some other PGA departments. Most managers claimed they had not experienced unusual problems owing to resignations, but in an organization with limited trained manpower, any personnel turnover takes a serious toll. (Sudanese regulations require several years of work for the government upon return from advanced study abroad, but this rule is often broken.)

6. PGA staff recognize and value practical experience and ability. The practical contribution of Robert Dirge, for example, was cited as constructive, mature aid. Several Egyptian advisors were also noted favorably because their help could be applied directly to problem-solving.

7. There is an inquisitive nature in many PGA employees that prompts them to seek out new sources of information. The imminent hopes of oil production have caused several men to begin thinking of career opportunities in upstream work.

7. PGA PERSONNEL TRAINING METHODS

The inadequacy of on-the-job training for junior staff within the PGA offices at Khartoum has already been noted. In addition to the current AID/DOE training exercise, the Ministry has utilized various other ways to upgrade PGA and other Ministry staff. These methods vary, and are of some interest.

Perhaps ther most common method has been to send qualified employees to serve outside the Sudan in petroleum and petrochemical plants. Interviewees cited work experience ranging from one month to one year in such oil countries as Egypt, Iran, Kuwait, Roumania, Saudi Arabia, the U.S.A. and the U.S.S.R. All spoke highly of these experiences.

Fewer men have had the opportunity to take advanced degrees abroad. Nearly all of the graduates of the University of Khartoum spoke adequate converstional English, but those who attended the local branch of the University of Cairo had studied exclusively in Arabic, and were less prepared for foreign-language graduate school studies. Chevron is presently making $300,000 available annually to the Ministry for scholarships, educational equipment and related instructional aids.

PGA has benefitted from having resident advisors over extended periods of time, mostly from Egypt. Mr Dirge would be another example. The longer-term continuity allows these advisors to bring their skills to bear more thoroughly in solving specific local problems of concern to the Sudanese petroleum managers.

8. EXTERNAL FACTORS AFFECTING PGA

Because the purpose of the baseline PGA survey is to make later comparisons on any impact that is attributable to the KAI petroleum management training course, certain other external factors which are or may be influencing PGA performance have been identified. All of these other factors are potentially of greater importance than the training course itself, and will be acting concurrently during the training course period in 1980.

One key variable is the government reorganization policy. Ministry actions to place a new Director General at the helm of the PGA, and to divide operating and staff funcions within PGA into new separate state bodies must have an influence upon morale, work standards and work priorities. These changes could help or hinder the training course effectiveness.

Secondly, the ongoing shortages of investment capital for the petroleum sector of the Sudanese economy are not expected to ease. The Sudan has a serious balance of payments problems to be taken tackled with World Bank guidance in the ealy 1980's. A continued capital drought will make tactical money-saving actions more attractive than strategic spending plans to shore up the petroleum refining and distribution sector, however badly it may deserve investments.

A third external factor is the Chevron drilling program. Commerical oil production could ease the balance of payments problem, depending on its magnitude. An average find, say reservoirs capable of producing 100,000 barrels per day, would create problems, too. Internal oil demand potential is already being suppressed. Availability of more oil would put serious strains on the existing organization of the PGA and other state distribution agencies. It could also bring about further moves by the Sudanese government to create a fully integrated state oil company, inside of or independent of the Ministry.

A fourth external factor is the availability of alternative training methods. PGA personnel are continuing to take training abroad. Foreign advisors will continue to be used. Other U.S. influences on training, such as the Chevron scholarships and IESC volunteers, may have an influence. These sources of help to upgrade PGA capabilities will be taken into account in the second-stage evaluation of the KAI petroleum training course.

9. OUTLOOK

Certain influences on PGA performance during 1980 have been identified in this report. The reorganization may be the dominant factor, possibly leading to a greater efficiency of work by the state oil sector within the Ministry because policy-making and operations functions will be split. PGA staff morale following the change of the Director General appears excellent.

The senior management changes will have an eventual impact, but the contributions of Mr. El Sheikh at the Public Petroleum Corporation and Mr. Adam at the PGA may not be quantifiable for some time.

It is likely that the changes in leadership and organization will bring the mission and activities of PGA and its successors under more careful scrutiny by Ministry officials. If so, the Ministry assessment of the performance of PGA and its successors becomes another benchmark evaluation, for future reference and discussion with Sudanese officials.