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**USAID MOROCCO PROJECT NO. 608-0176
TECHNICAL ASSISTANCE TO ONAREP**

USAID Contract N° . 608-0176-C-00-5003-00

Williams Brothers Project N° . 585500

W O R K P L A N

FISCAL YEAR 1985

28 March 1985



Williams Brothers
Engineering Company

24 Avenue de France
Agdal - Rabat, Morocco

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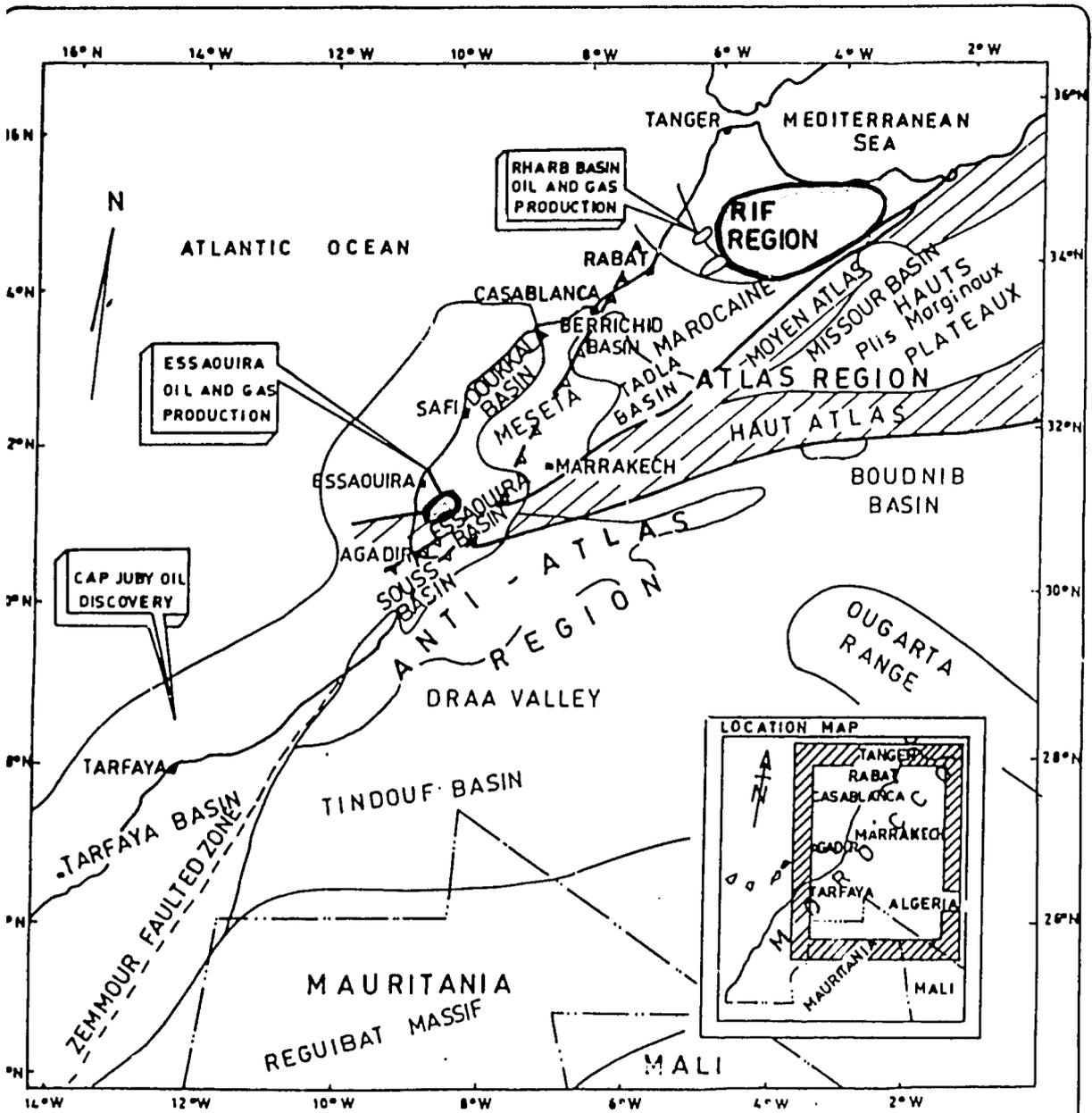
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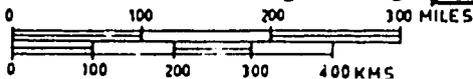
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LEGENDE

- | | | | |
|--|-----------------------------|------------------------|--|
| | MESOZOIC SEDIMENTARY BASINS | Geology and Geophysics | |
| | ATLAS UPLIFT ZONES | Reservoir Engineering | |
| | INTERNATIONAL BOUNDARY | | |



O N A R E P
NORTHERN MOROCCO
REGIONAL STRUCTURAL ELEMENTS
AREAS OF ACTIVITY FOR WILLIAMS
BROTHERS RESIDENT ADVISORS
28 March 1985

INTRODUCTION

Williams Brothers' work plan for the provision of technical assistance to ONAREP in fiscal year 1985 under USAID Contract No 608-0176-C-00-5003-00 is presented in this report with tasks scheduled by month and with some recognition of tasks planned for implementation in subsequent fiscal years.

The work plan provides :

- A framework for effective management of Williams Brothers' technical assistance, facilitating management by exception
- Benchmarks for evaluation of Williams Brothers' performance.

The work plan incorporates the technical assistance activities already initiated by Williams Brothers with ONAREP, and it provides for the orderly extension of the assistance activity through September 1985.

The plan constitutes a logical use of the resources being made available under the USAID contract with Williams Brothers to meet the needs of ONAREP for technical assistance, as the needs and priorities are perceived at this time. Inevitably, there will be proposals for amendments to the work plan as ONAREP's business activity evolves, with ensuing shifts in the perceived needs for technical assistance.

The training components in the work plan as presented reflect the initial draft plan for career development prepared during the visit 21 January - 7 February of Mr. T. B. See, Human Resources Short-term Advisor. Refinement of the career development plan by ONAREP management in the coming months will no doubt result in some amendment of Williams Brothers' work plan.

Williams Brothers will respond flexibly to requests for changes in the work plan, and review with ONAREP and USAID the shifts in use of resources which will be needed to accommodate the proposed changes. We only caution that the efficient organization and delivery of the different forms of technical assistance require at the least the time spans indicated in the Project Schedule Summaries displayed in Section 1.5.

SECTION 1

PROJECT OBJECTIVES, ORGANIZATION AND SCHEDULE FOR DELIVERY OF WILLIAMS BROTHERS' TECHNICAL ASSISTANCE TO ONAREP

1.1 PROJECT OBJECTIVES

The objective of the USAID Contract N° 608-0176-C-00-5003-00 with Williams Brothers Engineering Company is to help Morocco's National Petroleum Company (Office National de Recherches et d'Exploitations Pétrolières - ONAREP) build its internal capability :

- a) To adopt cost-effective private sector management principles and techniques
- b) To strengthen its ties to private sector partners, and
- c) To explore for, develop, and produce petroleum products.

The contract objectives are well attuned to ONAREP's own business objectives.

The ONAREP management is ready and willing to adopt the management principles and techniques practiced in the United States' oil industry.

Joint ventures with foreign oil companies represent the Kingdom's only feasible route to achieve a pace of exploration for hydrocarbons in Morocco commensurate on the one hand with the country's geologic prospects and, on the other, with the pressing need to find and exploit hydrocarbons to reduce the costly economic burden of oil imports.

Nevertheless, there is no assurance that the country will be adequately explored through the efforts of foreign entrepreneurs, and Morocco must develop the capability to sustain some significant level of hydrocarbon exploration, and hopefully of production, through the indefinite future.

1.2 MODE OF DELIVERY AND LEVEL OF EFFORT OF WILLIAMS BROTHERS' TECHNICAL ASSISTANCE TO ONAREP

The mode of delivery of Williams Brothers' technical assistance to ONAREP under the USAID Contract is indicated in Table 1-1 together with the level of effort expressed in person-months.

The contract was executed on 12 November 1984 and will terminate 12 February 1988, extending from fiscal year 1985 into fiscal year 1988.

Williams Brothers' designated Chief of Party began mobilization of the project on 12 November 1984 ; his residence in Rabat began 12 December 1984 and will extend through 12 December 1987.

Four other resident advisors arrived in Rabat during December 1984. Residence of the Regional Geologist and Geophysicist will continue into December 1987. Residence of the Joint Venture Promotion Specialist and Reservoir Engineer will continue into December 1986. The sixth resident advisor, a Surface Facilities Engineer, is scheduled to arrive in Rabat in April 1985, following the completion of the process design and specifications for the Meskala gas development project now in progress in Tulsa.

The contract provides for a total 177 months of Resident Advisor's services ; 56 months will be provided in fiscal year 1985.

The contract provides for a total of 15 months services by short-term advisors ; 5 months will be provided in fiscal year 1985 and

a cumulative total of 8 months in calendar year 1985.

The human Resources Advisor spent three weeks in Rabat January/February 1985 ; he will complete his assignment with a further three weeks in June 1985.

A Surface Facilities Advisor spent two weeks in Morocco, beginning 25 February 1985. An Internal Audit System Advisor is proposed for June / July 1985, a Joint Venture Promotion Advisor for two weeks in September, and a Drilling Inventory Control System Advisor for September-December 1985.

The scheduling of resident and short-term advisor activity is discussed in Sections 2 through 5 of this report, and is summarized in Section 1.5 Project Schedule Summaries.

In terms of number of advisors on the job, project activity will peak in September 1985.

Formal training activity in the USAID contract with Williams Brothers comprises support of participation of ONAREP personnel in conferences, seminars and internships in the United States, technical seminars in Rabat, and English language classes subcontracted to the American Language Center, Rabat.

The regular courses in English language training consist of 18 months of normal classes or 9 months of accelerated classes, for each of 27 persons. The intensive courses in English will be full-time for a period not exceeding three months.

Six persons were enrolled in regular English courses in January 1985, 11 will be enrolled in March 1985 and ten in September, for a total of 27 persons. For intensive English courses, the plan envisages the enrolment of eight persons in March 1985 and a further six persons in September 1985, a total of 14 persons.

The English language training, notably the intensive English,

MODE OF DELIVERY AND LEVEL OF EFFORT OF
WILLIAMS BROTHERS' TECHNICAL ASSISTANCE TO ONAREP
FISCAL YEAR 1985 AND CONTRACT TOTAL

<u>MODE</u>	<u>FISCAL YEAR 1985</u>	<u>CONTRACT TOTAL</u>
	<u>PERSON MONTHS</u>	
Project Sponsor, Tulsa	<u>2</u>	<u>6</u>
Resident Advisors :		
Senior Petroleum Management and Financial Advisor (Chief of Party)	11	39
Joint Venture Promotion Specialist	10	24
Regional Geologist	9	36
Geophysicist	9	36
Reservoir Engineer	9	24
Surface Facilities Engineer	<u>8</u>	<u>18</u>
Total Resident Advisors	<u>58</u>	<u>177</u>
Short term Advisors		
Human Resources	1-1/2	1 1/2
Internal Audit	2	2
Drilling Inventory Control System	1	4
Joint Venture Promotion	1/2	1
Drilling Progress Reporting System, Computerized	-	2
Other, to be determined	<u>-</u>	<u>4-1/2</u>
Total Short-term Advisors	<u>5</u>	<u>15</u>
Conferences, Seminars in U.S.	1	5
" " " Paris	<u>1/3</u>	<u>1</u>
Total Conferences	<u>1-1/3</u>	<u>6</u>
Internships in U.S. (8 participants)	<u>3</u>	<u>24</u>
	<u>NUMBER</u>	
Technical Seminars, Rabat	1	6
English Language Training, ALC		
Regular Courses	17	27
Intensive	14	14
Academic Tests	4	8

is scheduled to be committed in the first fiscal year of the project, to prepare the candidates designated for participation in training programs in the United States. The latter programs are mainly scheduled for fiscal year 1986.

The contract provides 6 person-months of participation in US-based conferences and seminars, twelve persons for an average of two weeks each. Of the six months total, one month will be used in fiscal year 1985.

USAID approval was obtained for participation of an ONAREP geophysicist in a Vibroseis Course given in Paris 13-15 February 1985 by IHRDC, an American company. It is anticipated that a modest amount of participation in other short courses in Europe will be proposed in substitution for some of the United States-based courses.

The contract provides for the placement of eight ONAREP employees in internships with oil companies and oil service companies in the United States, in fiscal years 1985 and 1986, following participation in short courses funded under another contract. As the latter is not now expected to generate eight candidates, the internships will be scheduled independently in the period Summer 1985-Fall 1987.

The contract provides for six in-country technical seminars of two weeks duration, one in the Spring, one in the Fall of each year of the contract, alternating between management and technical topics, and each having 20 to 40 participants.

A two-week geophysics seminar is scheduled for 1-12 April with 24 participants attending morning sessions and computer workshops. A two-week geology seminar is planned for the Fall of 1985. If the geophysics seminar proves to pose an excessive demand on ONAREP's personnel and time, the geology seminar can be scheduled in 3 to 4 segments of 2 to 3 days at one month

intervals.

In addition to the two-week geophysics seminar, the work plan for fiscal year 1985 envisages two one-week seminar workshops :

1. Management by objectives and performance appraisal, June 1985.
2. Objectives, strategy and tactics of potential joint venture partners, September 1985.

The scheduling of the training programs is discussed in Sections 6 and 7 of this report, and is summarized in Section 1.5 Project Schedule Summaries.

1.3 KEY PERSONNEL AND PROJECT ORGANIZATION

Mr. John C. Duffy, Senior Vice-President, is Williams Brothers' Project Sponsor (Director) of the project to provide Technical Assistance to ONAREP under USAID Contract N° 608-0176-C-00-5003-00. Located in the Tulsa headquarters, Mr. Duffy organizes project support services and personnel requirements, counsels and supports the Project Manager (Chief of Party), reports to Williams Brothers' management on project status and progress, and assumes responsibility for timely and effective completion of the project in accordance with project objectives. Coordination of the Tulsa support services is effected by Mr. M.A. Hill, Contract Administrator/Training Coordinator, who is also responsible for preparation of the cost budget and liaison with U.S.-based short-term advisors and sub-contractors. Forty percent of Mr. Hill's time is committed to the project.

The Williams Brothers Chief of Party, Mr. George A. Currie, is assigned complete authority for the technical and administrative supervision of the project. He is directly responsible for communication with the managements of USAID/Rabat and ONAREP,

with whom he reviews the scope of work and progress for the total project and for each task, the qualifications of additional Williams Brothers personnel (short-term advisors) to be committed to specific tasks, the need, if any, for subcontractors and consultants, and the proposed schedules for implementation of the tasks.

The Williams Brothers' Chief of Party secures the commitment of required additional personnel (short-term advisors) through the offices of the Project Sponsor and directly from subcontractors and consultants, if required, and he assigns specific duties to the project staff. All personnel assigned by Williams Brothers work under the general supervision of the Chief of Party, as do personnel of any subcontractor or consultant retained by Williams Brothers. The Chief of Party keeps the Project Sponsor informed on progress of each specific task assignment and makes scheduled reports on its status. Mr. Currie is assisted by Mr. A.K. Khatib as deputy Chief of Party.

The key resident advisors and their designated ONAREP counterparts are :

<u>Resident Advisor</u>	<u>ONAREP Counterpart</u>
G.A. Currie Petroleum Management/Financial Advisor	M. Debbagh Chief, Division Etudes et Planification
D.A. Sullivan Joint Ventures Promotion Specialist	M. Mouhsine Directeur-Adjoint, Direction des Participations Pétrolières
J.H. Kenny Regional geologist	M. Rouwane, Chief, Division Secteur Nord M. Hçaine, Geologist
P.R. Letourneau Geophysicist	M. Nahim, Geophysicist
A.K. Khatib Reservoir Engineer	M. Harraj Chief, Département Production
W.M. James and others Surface Facilities Engineers	M. Oudghiri Chief, Département Déve- loppement et Exploitation

The placement of the advisors in the ONAREP organization is discussed in Sections 2,3, and 4 of this report.

The reporting relationships of the Williams Brothers team are shown in the project organization chart, Figure 1-1. There will be a two-way flow of communication, technical and administrative directions coming down from the different managements concerned with the project, while technical and organization advice and recommendations flow from the team members to management.

1.4 DUTIES OF TECHNICAL ADVISORS

Each Resident Technical Advisor, working in close concert with his ONAREP division chief :

- * Identifies opportunities for the use of modern analytical and management techniques, and for reduction of operating and capital costs ; he promotes the exploitation of the identified opportunities.
- * Helps set objectives for individual staff members and the division as a whole, aimed at achieving high standards of technical and organization performance.
- * Gives on-the-job training and instruction of staff members to upgrade their skills and enhance the capability of the division.
- * Participates in his division's budgeting of financial and human resources, and in the preparation of long-term plans.
- * Cultivates good working relationships with other divisions, and helps insure effective coordination and communication, both vertical and lateral in the ONAREP organization.

Each of the advisors has participated in formulation of the project work plan, which incorporates schedules for implementation of specific professional tasks, formal training programs,

and on-the-job training and development of ONAREP personnel.

The individual advisors meet as a group with the Chief of Party once a week, to review progress and to coordinate their efforts.

In the light of experience during the course of the project, they will recommend appropriate amendments to the work plan. When required, individual advisors will join with the Chief of Party to present their professional opinions to ONAREP and USAID managements. The Chief of Party will be responsible for Williams Brothers' official advice and recommendations.

The first 3 months of project activity in Rabat have confirmed a problem anticipated in Williams Brothers' proposal for the USAID Technical Assistance Project, wherein it was noted that even modest performance of all the tasks and duties falling to the Chief of Party would require 85 person-months of work, assuming 36 months in the planning advisory role, which is the Chief of Party's prime responsibility. It was expected that a disproportionate amount of the Chief of Party's time in the early stages of the project would be required for activities outside the planning role, e.g., establishing the project office ; defining, organizing and scheduling the activities of the other advisors, both resident and short-term ; initiating arrangements for technical seminars and other forms of training activity. But most of these are on-going activities which will always require a significant proportion of the Chief of Party's time.

To achieve a better balance between the conflicting demands on his time, the Chief of Party has delegated the following tasks, as shown :

<u>Task</u>	<u>Responsibility</u>
1. Geophysics seminar : Content, sub-contractors, timing, physical arrangements, budget.	P.R. Letourneau
2. Geology seminar : Content, sub-contractors, timing, physical arrangements, budget.	J.H. Kenny
3. Training coordination and planning : . Participation in U.S.-based conferences, short-term courses, internships and in American Language Center English classes.	D.A. Sullivan with advice, recommenda- tions of training needs and opportunities from other members of the team.
4. Acquisition of computers, word processors, Xerox copier.	A.K. Khatib
5. All budget and financial control matters.	A.K. Khatib
6. Establishment of a technical library in Williams Brothers' project office, available to ONAREP personnel.	P.R. Letourneau

The Chief of Party will continue to identify additional tasks which can be delegated, while retaining overall responsibility for the project. The objective is to free up 70 per cent of the Chief of Party's time for direct assistance to his counterpart, the Chief of the Division of Studies and Planning.

Some parts of the tasks which have been delegated by the Chief of Party to the other resident advisors are purely administrative, and it is not cost-effective to have them performed by the advisors. However, henceforth the administrative tasks will be performed by Williams Brothers Rabat office manager who is now supported by a typist/secretary recruited on 1st March.

1.5 PROJECT SCHEDULE SUMMARIES

1. Project Mobilization
2. Financial Management Advisory Activities
3. Exploration Design and Analysis Advisory Activities
4. Production Technology Advisory Activities
5. Short-term Advisors
6. Participant Training in Morocco
7. Participant Training in the United States
8. Commodity Acquisition

1.6 PROJECT TEAM PERFORMANCE AND EVALUATION

Progress towards achievement of the objectives prescribed in the work plan will be reviewed in quaterly meetings with the managements of ONAREP and USAID. Performance on specific major tasks will be reviewed in ad hoc meetings.

Preparation of reports for the review meetings and the weekly staff meetings of the Williams Brothers team will involve the technical advisors in self-evaluation of their performance. Review of the reports will enable managements of ONAREP, USAID, and Williams Brothers, Tulsa, to evaluate the performance of the technical advisors and facilitate their own contribution to improvement of the team's performance.

SECTION 2

FINANCIAL AND MANAGEMENT ADVISORY ACTIVITIES

2.1 LOCATION OF PLANNING ADVISOR IN ONAREP

The counterpart of Mr. Currie, Senior Petroleum Management and Financial Advisor, is Mr. Debbagh, Chief, Division of Studies and Planning. Mr. Debbagh reports directly to Mr. Douieb, Director-General of ONAREP.

Mr. Debbagh is supported by Mr. Isfahoun, the head of the Special Studies section, and by two economists and one statistician.

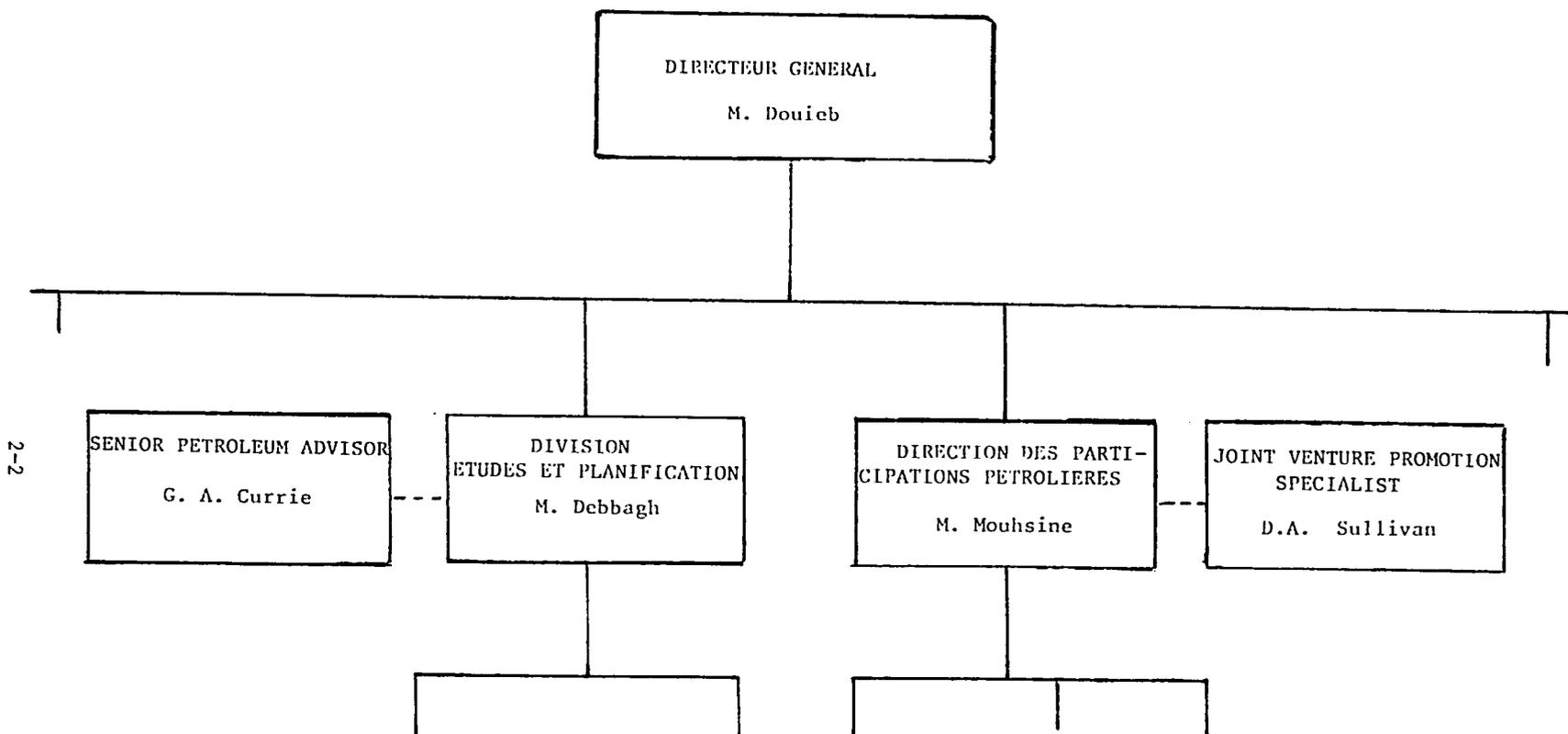
The reporting relationships are indicated in Figure 2-1.

2.2 LOCATION OF JOINT-VENTURE PROMOTION SPECIALIST IN ONAREP

The counterpart of Mr. Sullivan, Joint Venture Promotion Specialist, is Mr. Mouhsine, Directeur-Adjoint, Direction des Participations Pétrolières. Mr. Mouhsine reports directly to Mr. Douieb, Director-General of ONAREP.

The reporting relationships are indicated in Figure 2-1.

Mr. Mouhsine's division is the spear-head of ONAREP's efforts to insure the expeditious exploration and development of Morocco's potential resources of hydrocarbons. This can be achieved only through the effective exploitation of foreign sources of technology and finance. Accordingly, ONAREP's prime business objective is the maximization of the use of joint venture concessionnaires. Mr. Sullivan's principal task in support of the joint venture promotion activity is the preparation of technical promotion reports, which synthesize all the available geological data for specific areas and provide enough interpretation and prediction of hydrocarbon



2-2

Figure 2-1
 LOCATION IN ONAREP ORGANIZATION
 PLANNING ADVISOR AND JOINT VENTURE PROMOTION SPECIALIST

resource prospectivity to arouse the interest of potential partners.

Mr. Sullivan is assisted by Mr. Taib, a trainee in this activity. The basic data for the reports are provided by the Exploration Directorate and Documentation Division. In a sense, most of the activity of the Exploration Directorate is geared to the creation of data for incorporation in technical promotion reports.

Typically, it takes 4-5 man months to prepare a technical promotion report of acceptable quality. But there is now a dearth of reports to support current promotion activity and a danger that efforts to close the gap, restricted to the services of Mr. Sullivan and Mr. Taib, will result in the generation of reports of inferior quality. Use of such reports in the promotion activity could be counterproductive.

One way out of the dilemma would be the mobilization of the resources of the Exploration Directorate on a "crash" basis to produce a stock of technical promotion reports. If ONAREP re-orientes its efforts to speed up the production of technical promotion reports, the work plans presented in this report for Messrs. Sullivan, Kenny and Letourneau will probably be amended.

In Section 6 of this report, additional technical assistance by Williams Brothers is proposed in the form of a joint venture promotion seminar or workshop in September 1985. It would be designed to improve ONAREP personnel's understanding of the motivations of potential joint venture partners and to assist in the formulation of promotion policy strategy and tactics.

2.3 CONTRACT GOALS OF FINANCIAL AND MANAGEMENT ACTIVITIES

Activities (goals) specified in the USAID contract and Williams Brothers' deliverables are projected as follows:

<u>ACTIVITY</u>	<u>DELIVERABLE</u>
1. Institute a monitoring program to quantify performance in the field on a cost-per-unit of production basis;	1. (Will be addressed in work plan for fiscal year 1986);
2. Establish an internal audit capability responsive to Ministry of Energy and Mines (MEM) and Ministry of Finance (MOF) needs;	2. System designed by Short-term Advisor, June - July 1985
3. Institute techniques of economic analysis which will help to espouse development projects with high rates of return and market-clearing price structures;	3. Basic mode of planning and analysis activity; style, as much as technique, will be developed continuously 1985-1987. (Cannot be effectively practiced until more commercial fields are discovered).
4. Maximize ONAREP's use of joint venture concessionaires;	4. Two or three technical promotion reports in FY 1985 in support of this prime ONAREP objective;
5. Examine the cost/benefits of moving to contract drilling based on competitive bids on cost and time per meter drilled;	5. (Will be addressed in work plan for FY 1987) ;
6. Review procedures that will increase an exchange of management information within ONAREP.	6. Personnel Performance Management System initiated by Short-term Advisor January 21-February 8, 1985 will be extended to cover all ONAREP professional personnel by January 1986. Recommendation to Director-General, ONAREP for enlarged role of Planning and Studies Division, March 1985.

2.4 SENIOR PETROLEUM MANAGEMENT AND FINANCIAL ADVISOR (CHIEF OF PARTY)

The USAID Technical Assistance contract with Williams Brothers provides for the Chief of Party (COP) to directly advise the Chief of ONAREP's Studies and Planning Division and to be available to advise the Director General of ONAREP. In addition to the specific activities numbered 1, 2, 3, 5 and 6 in Section 2.3, the COP will be concerned with the following tasks:

1. Advice on long-range strategic corporate development
2. General issues of ONAREP management
3. Guidance or management of the Division and of its two internal sections (the Planning Section and the Studies Section)
4. Project investment analysis
5. Liaison with the Ministry of Energy and Mines (MEM), the Ministry of Plan, and Ministry of Finance
6. Assistance to the Director-General in presenting corporate strategies to MEM and to ONAREP's Board of Directors
7. Participation in appropriate internal management committees of ONAREP
8. Development and dissemination to ONAREP staff of annual corporate operating plans and budgets.
9. Assist ONAREP's Chief of Studies in direction of special studies conducted by the staff of the Studies and Planning Division and by outside consultants
10. Participation as lead contractor representative in quarterly Project Steering Committee meetings chaired by ONAREP and USAID
11. Assistance to ONAREP in improving its financial management procedures and practices, budgeting, internal auditing and control, and automated financial record-keeping.

The tasks to be addressed in fiscal year 1985 are identified in Project Schedule Summary N° 2, Section 1.5. They comprise activities numbered 2, 3, 6 in Section 2.3 and tasks numbered 1, 2, 3, 4, 9, 10 above. Additionally, the COP will manage the delivery of Williams Brothers' technical assistance to ONAREP through resident and short-term advisors, training courses and internships; he will write the quarterly reports; and he will prepare the work plan for fiscal year 1986.

2.5 JOINT VENTURE PROMOTION SPECIALIST

The USAID Technical Assistance contract with Williams Brothers provides for the Joint Venture Promotion Specialist to help ONAREP's top management levels, as well as its Promotion Division, attract oil companies (both independents and majors), drilling companies and financial institutions to participate in oil and gas exploration and development in Morocco.

The tasks to be addressed in fiscal year 1985 are identified in Project Schedule Summary No 2, Section 1.5. They comprise :

- o General support of ONAREP's efforts to maximize use of Joint Venture concessionnaires
- o Training of Mr. Taib in joint venture support activity
- o Preparation of technical promotion reports for Pre-Rif, Guercif and Missour areas
- o Preparation of terms of reference for promotion activity by Petroconsultants S.A.
- o Coordination of the delivery of Williams Brother's total

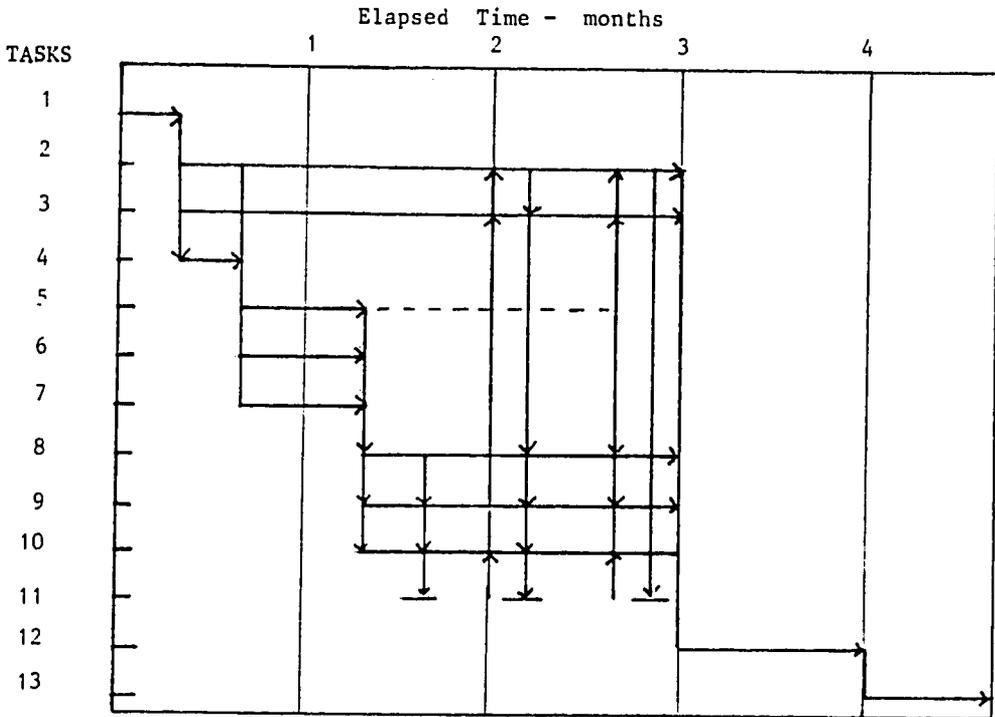
training activity : English language , conferences and seminars in the United States , internships with U.S. oil companies.

As a member of the preceding technical assistance team funded by USAID, the Joint Venture Promotion Specialist served as host to visiting representatives of foreign oil companies, a very important promotional activity. The pressure of demand for production of the promotion reports will preclude the advisor from serving as host in fiscal year 1985. Accordingly, he has written a procedure guide for ONAREP personnel who will now undertake this task.

The many steps required for the preparation of each technical promotion report are indicated in Figure 2-2.

FIGURE 2-2

SCHEDULE FOR THE PREPARATION OF EACH TECHNICAL PROMOTION REPORT



TASKS

1. Assembly of available data (10 days)
2. Investigation, inventory, assessment of trapping conditions (11 weeks)
3. Identification of key factors controlling hydrocarbon accumulations (11 weeks)
4. Identification of reconnaissance-level structures (10 days)
5. Identification of additional seismic and geological data which must be acquired during report preparation (4-10 weeks)
6. Construction of basin-wide structure maps (4 weeks)
7. Construction of basin-wide stratigraphic maps (4 weeks)
8. Update structure maps using additional data from N° 5 (7 weeks)
9. Update stratigraphic maps using additional data from N° 5 (7 weeks)
10. Identification of drillable prospects (7 weeks)
11. Prepare input to Risk analysis Evaluations (3 weeks)
12. Writing of the technical promotion report (4 weeks)
13. Printing the report (2 weeks)

SECTION 3

EXPLORATION DESIGN AND ANALYSIS ACTIVITIES

3.1 LOCATION OF REGIONAL GEOLOGIST AND GEOPHYSICIST IN ONAREP

Mr. Kenny, Regional Geologist and Mr. Letourneau, Geophysicist, have been assigned to the Division Secteur Nord in the Exploration Directorate.

Their counterpart is Mr. Rouwane, Chief of the division, who reports to Mr. El Morabet, who in turn reports to Mr. Alem, Director of Exploration.

The reporting relationships are indicated in Figure 3-1, page 3-2.

Two Moroccan nationals, Mr. Hçaine, Geologist, and Mr. Nahim, Geophysicist, are working with and being trained one-on-one by Mr. Kenny and Mr. Letourneau. Mr. Hçaine has three years' experience since graduation, Mr. Nahim has less than two years' experience.

Additionally, Mr. Rouwane has a team of three explorationists from Rompetrol (Rumania) working in the Secteur Nord independently of the Williams Brothers team.

3-2

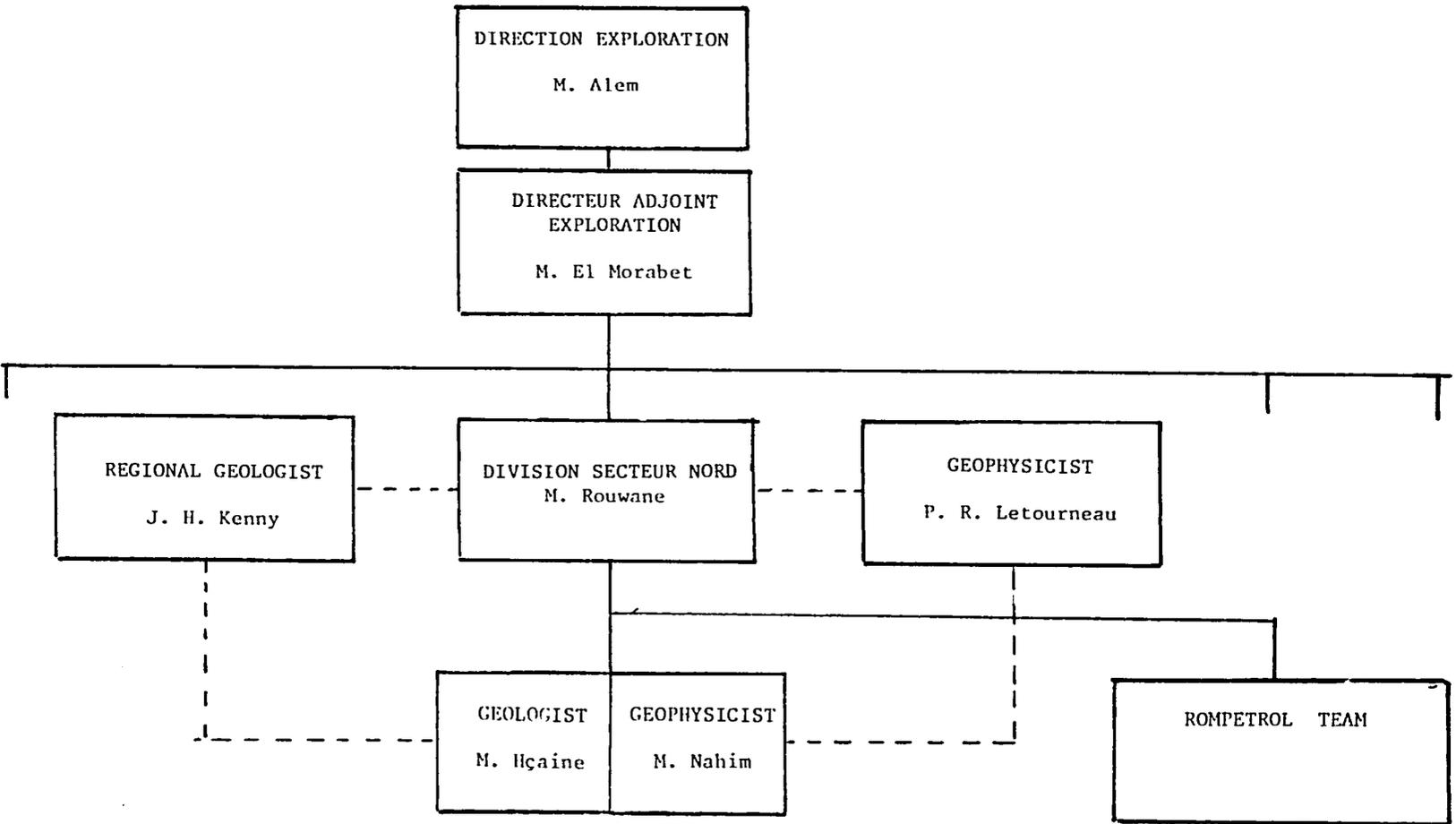


Figure 3-1

LOCATION OF REGIONAL GEOLOGIST AND GEOPHYSICIST IN ONAREP ORGANIZATION

3.2 CONTRACT GOALS OF EXPLORATION DESIGN AND ANALYSIS ACTIVITIES

Williams Brothers planned deliverables to meet the contract goals specified in the USAID Technical Assistance contract are as follows:

<u>ACTIVITY</u>	<u>DELIVERABLE</u>
1. Integrate standard risk analysis techniques into ONAREP's exploration and appraisal proposals	1. Analysis incorporated in proposals wherever appropriate
2. Develop autonomous exploration teams responsible for assessing the hydrocarbon potential of a given region	2. Two explorationists trained by December 1987 on ONAREP's schedule; at least six will be trained if ONAREP adopts Williams Brothers' recommendation
3. Arrange for on-the job training to ONAREP geologists/geophysicists in the accumulation and interpretation of petroleum exploration data	3. Training began 10 January 1985 and will continue through December 1987
4. Investigate alternatives to "in-house" drilling so that the "drilling contractor" will have time and quality incentives vis-à-vis its clients, ONAREP. (This may involve ONAREP divesting itself of its drilling operations or relinquishing direct responsibility); and	4. (Activity/deliverable reported in Section 4.2)
5. Establish a computerized drilling progress reporting system based upon data delivered from the drilling sites.	5. (Activity/deliverable reported in Section 4.2)

3.3 REGIONAL GEOLOGIST WORK PLAN

The USAID Technical Assistance contract provides for Mr. Kenny, the regional geologist, to assist his counterpart to direct the compilation and analysis of existing geological maps and seismic profiles, magnetic and gravity data, geochemical surveys, core analysis and well logging where drilling has occurred. Rather than assisting his counterpart to direct the work, Mr. Kenny is doing the work himself in Secteur Nord together with Mr. Hçaine, the only geologist in the division other than a Rumanian in the Rompetrol team which is working independently of the Williams Brothers' team.

The detailed schedule for the tasks being undertaken by Mr. Kenny in FY 1985 is given in Project Schedule Summary N° 3, Section N°3, Section 1.5. The tasks comprise :

1. Assignment as a member of Secteur Nord Exploration Team to develop and implement a work program that will be used for oil exploration in the Pre-Rif region of the Northern Sector . Essentially the work program will require the compilation and evaluation of all existing geologic data pertinent to oil exploration as the basis for a detailed work plan in 1985.
2. Training of Mr. Hçaine and other ONAREP geologists, including recommendations for career development and participation in training courses, seminars, conferences.
3. Assessment of data quality and determination of methods to improve future data acquisition and processing.
4. Organization of a technical seminar to be held in Rabat.
5. Hydrocarbons prospect appraisal of AKNOUL permit area.
6. Hydrocarbons prospect appraisal of SAISS permit area (Saiss Basin).

Item 4, Geology technical seminar, has not yet received USAID approval. It is included here to indicate work activity ; it has not been included in the project cost estimates for FY 1985 given in Section 9. The planning and organization of the seminar began late December 1984 with 1-14 May as the objective period for presentation of the seminar. It is now envisaged that seminars will be given in 3-4 sessions of 2-3 days in the last quarter of 1985.

3.4 GEOPHYSICIST WORK PLAN

The USAID Technical Assistance Contract calls for Mr. Letourneau, the geophysicist, to provide advice on the full range of state-of-the-art techniques in aerial, seismic, magnetic and gravity surveys and their interpretation through advanced techniques, including computer enhancement. In addition to providing advice, Mr. Letourneau is actually assembling available data, designing the programs to acquire additional data, and making the interpretations. He is doing the work in Secteur Nord together with Mr. Nahim, the only other geophysicist in the division other than two Rumanians in the Rompetrol team which is working independently of the Williams Brothers team. The detailed schedule for the tasks being undertaken by Mr. Letourneau in fiscal year 1985 is given in Project Schedule Summary N° 3, Section 1.5. The tasks comprise :

1. Assignment as member of Secteur Nord Exploration Team.
2. Training of Mr. Nahim and other ONAREP geophysicists, including recommendations for career development and participation in training courses, seminars, conferences.
3. Assessment of data quality and determination of methods to improve future data acquisition and processing.
4. Organization of a technical seminar to be given in Rabat by IHRDC, Boston, a sub-contractor.

5. Hydrocarbon prospect appraisal of AKNOUL permit area.
6. Hydrocarbon prospect appraisal of Saiss Basin and other non-permitted areas of the Pre-Rif.
7. Organization of a technical library for WBEC and ONAREP staff.

SECTION 4

RESERVOIR AND PRODUCTION ENGINEERING ACTIVITIES

4.1 LOCATION OF RESERVOIR ENGINEER IN ONAREP

The designated counterpart of Mr. Khatib, Reservoir Engineer, is Mr. Ali Harraj, Head of the Département Production.

Mr. Harraj reports to Mr. Bennis, Chief, Division Développement et Production, who in turn reports to Mr. Kenzaoui, Directeur-Adjoint Production.

The reporting relationships are shown in Figure 4-1.

Mr. Harraj is supported by two engineers, Messrs. Chhaibi and Ouardi.

Mr. Khatib interacts significantly with Messrs. Bennis and Kenzaoui, and also with Mr. Oudghiri, pending the arrival of the Surface Facilities Engineer in April.

4.2 LOCATION OF SURFACE FACILITIES ENGINEER IN ONAREP

The designated counterpart of the Surface Facilities Engineer is Mr. Oudghiri, Head of the Département Développement et Exploitation.

Mr. Oudghiri reports to Mr. Bennis, Chief, Division Développement Production, who in turn reports to Mr. Kenzaoui, Directeur-Adjoint Production. Mr. Oudghiri is supported by two engineers, Messrs. Sellami and Sarf. The reporting relationships are shown in Figure 4-1.

The WBEC/USAID contract calls for a Surface Facilities Engineer to be resident in Morocco for 18 months.

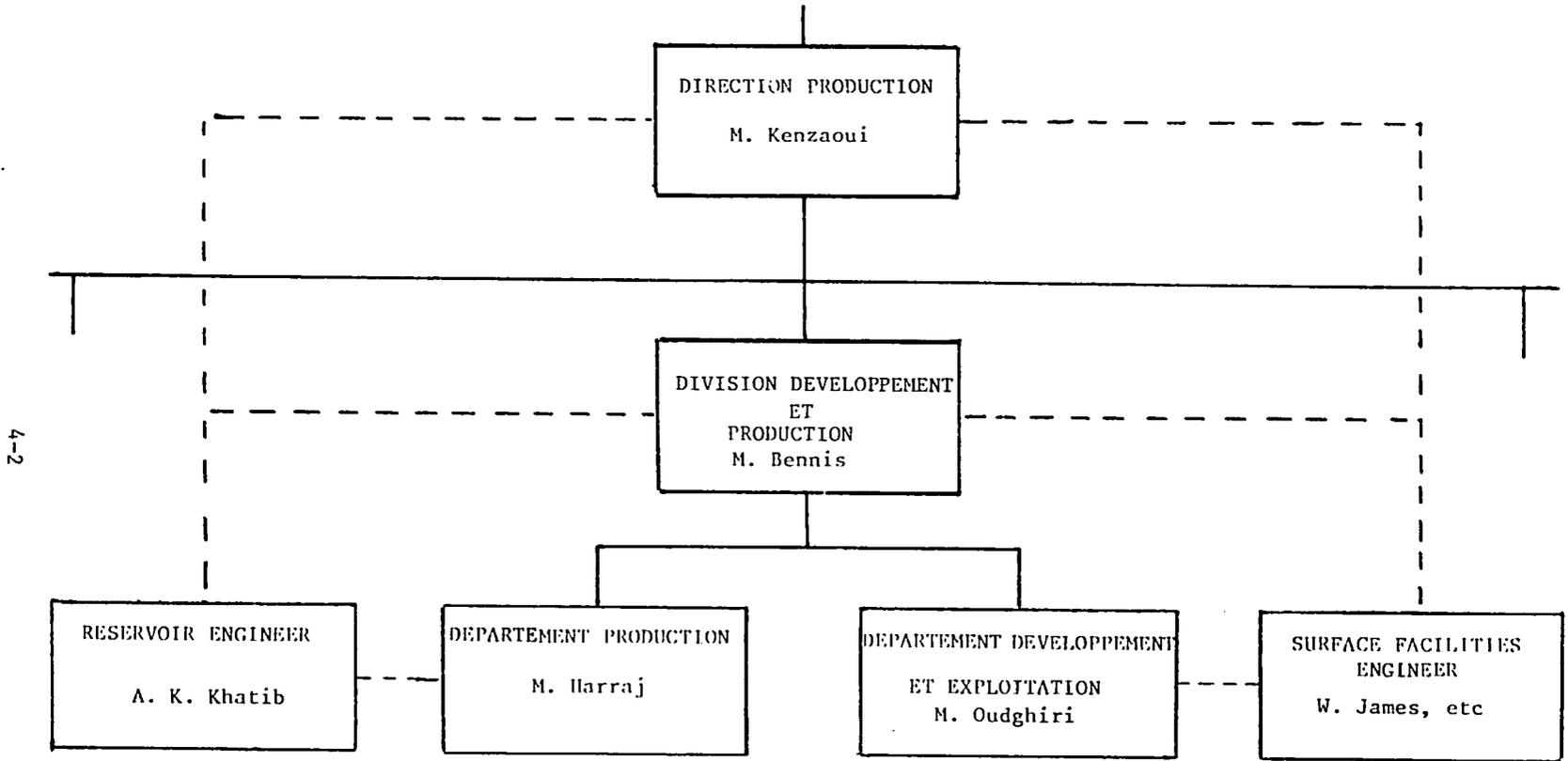


Figure 4-1
 LOCATION OF RESERVOIR ENGINEER AND SURFACE FACILITIES ENGINEER
 IN ONAREP ORGANIZATION

Given the schedule for the Meskala gas development, we now propose to provide this technical assistance to ONAREP in three phases, as explained in Section 4.5.

4.3 CONTRACT GOALS OF RESERVOIR AND PRODUCTION ENGINEERING ACTIVITIES

Williams Brothers' planned deliverables to meet the contract goals specified in the USAID Technical Assistance contract are as follows :

ACTIVITY

- | | |
|---|--|
| 1. Initiate within ONAREP its own dedicated, computerized petroleum reservoir estimating service ; | 1. Installed and fully operational reservoir engineering software on microcomputer (IBM-XT) by 30 Sept.1985, with at least three ONAREP engineers trained in use of programs ; |
| 2. Conduct full-time, on-the-job training to monitor the design, installation, commissioning , operation, maintenance and repair of petroleum transmission facilities (from well-head to separator plant through pipelines to industrial consumers) ; | 2. ONAREP personnel fully trained by September 1986 ; |
| 3. Propose computerized support for the 24-month program of resident advice in reservoir engineering ; | 3. Well-test analysis programs installed in Jan. 1985. Fuller suite of programs for reservoir & production engineering installed by June 1985 |
| 4. Investigate alternatives to "in-house" drilling so that the drilling contractor will have time and quality incentives vis-à-vis its client, ONAREP ; | 4. Study and recommendation in FY 1986 ; |
| 5. Establish a computerized drilling progress reporting system based upon data delivered from the drilling sites. | 5. System designed and put in place through the services of a Short-term Advisor by March 1986. |

4.4 RESERVOIR ENGINEER WORK PLAN

The detailed schedule for the tasks being undertaken by Mr. Khatib in fiscal year 1985 is given in Project Schedule Summary No 4, Section 1.5. The tasks in summary are to :

1. Review and conduct reservoir studies, and estimate reservoir size.
2. Train counterpart, Mr. Harraj, and other ONAREP personnel in reservoir engineering practices.
3. Serve as deputy to the Chief of Party in managing the delivery of Williams Brothers' technical assistance to ONAREP ; specific responsibility for costs and budgets, and acquisition of office machines.
4. Foster the concept of multi-disciplinary teams for study of an area or a field, to include geologists, geophysicists, petroleum engineers, economic analysts and planners.
5. Install reservoir engineering software on IBM-XT computer and train three engineers in its use.
6. Estimate proven reserves of gas and condensate in the Essaouira basin.
7. Prepare guidelines for performance of well tests in a cost-effective manner.
8. Review well logging programs with a view to reducing costs.
9. Participate in career development planning for all professional personnel in the Direction Production ; identify candidates for English language training and for participation in US-based conferences/seminars and internships.

4.5 SURFACE FACILITIES ENGINEER WORK PLAN

In January, ONAREP requested the early arrival of Mr. T.E. Connor, Williams Brothers designated Surface Facilities Engineer, to assist in the conceptual design and cost estimate of the Meskala gas development project. This will include condensate separation facilities and pipelines for Meskala and neighboring fields, and the integration of these with the existing separation plant at Toukimt and the pipeline (8" x 130 km) to Youssoufia.

As it was not possible to arrange for the arrival of Mr. Connor in advance of the contracted date of 14 April 1985, Williams Brothers offered the services of Mr. W. M. James to undertake the conceptual design and cost estimate of the Meskala facilities. Mr. James spent the two weeks of 25 February-9 March in Rabat inspecting the existing facilities and collecting the data needed for the conceptual design and cost estimate. Mr. James in his report dated 8 March 1985 has estimated the task can be completed by late April, utilizing two months of his time and two months of professional engineering support services.

The second phase of the Meskala project is the preparation and issuance of a request for proposal, evaluation of the bids received and award of the contract.

The third phase of the project will comprise detailed engineering design, procurement of equipment, construction, and start-up of operations.

Mr. James has estimated the second phase will require an elapsed time of 4 months, and the third phase 12 months, but the two phases together must be accomplished in 14 months if ONAREP is to meet the objective date of

1 July 1986 for commencement of delivery of gas to the customer, Office Chérifien de Phosphate (OCP).

Williams Brothers now proposes that a specialist in preparation of requests for proposal be assigned to Rabat for the period April to August 1985, and a specialist in construction, start-up and operations be assigned to Rabat from October 1985 to July 1986.

The two Surface Facilities advisors in succession will :

1. Train counterpart, Mr. Oudghiri and other ONAREP engineers in surface facilities engineering.
2. Participate in discussions with potential consumers to determine their demands and the facilities required to serve them.
3. Assist in the preparation of a request for proposals for detailed engineering design, equipment procurement and construction of the Meskala area facilities.
4. Advise counterpart in managing the engineering design of Meskala area facilities.
5. Advise counterpart in procurement of equipment, construction and start-up of Meskala area facilities.

4.6 DRILLING ENGINEER WORK PLAN

In addition to the computerized drilling progress reporting system listed in the contract goals, Williams Brothers will supply the services of a Short-term Advisor in the period September-December 1985 to help establish a computerized physical inventory/accounting system for drilling and completion equipment and perishable supplies at ONAREP's Base and drilling sites.

SECTION 5

SHORT-TERM ADVISORS

Williams Brothers' work plan for fiscal year 1985 includes the services of five short-term advisors:

1. Mr. T. B. See, Human Resources Advisor, to advise on the design and implementation of a Career Development System/Performance Management System for ONAREP's professional personnel. Mr. See visited Rabat for three weeks in January/February 1985 and a return visit of three weeks is proposed for June 1985.
2. Mr. W. James, Surface Facilities Advisor, to advise on the conceptual design and cost estimates of gas/condensate separation facilities and pipeline for the proposed development of Meskala and neighboring gas fields.
3. An Internal Audit System Advisor (to be named) is proposed for service in Rabat June / July 1985 (two months) to advise on the design and implementation of an Internal Audit System.
4. A Drilling Inventory System Advisor (to be named) is proposed for service in Rabat September/December 1985 (four months) to establish a computerized inventory accounting system for drilling and completion equipment and perishable supplies at ONAREP's Base and drilling sites.
5. Mr. R. J. MacLachlan, a Joint Venture Promotion Advisor, is proposed to conduct a technical seminar/workshop for two weeks in September 1985 on the motivation of potential joint venture partners, and joint venture promotion policies, strategies and tactics.

The schedules for implementation of the above tasks are given in Section 1.5, Project Schedule Summary N° 5 for the first four advisors and in Summary N° 6 for Joint Venture Promotion technical seminar/workshop.

SECTION 6

PARTICIPANTS TRAINING IN MOROCCO

The schedules for implementation of training programs in Morocco under the USAID Technical Assistance contract with Williams Brothers are presented in Project Schedule Summary N° 6, Section 1.5.

The programs comprise:

1. Regular English Language Classes at American Language Center (ALC), Rabat.

Seven participants registered in January 1985, ten to be registered in March, and final ten in June 1985 - a total of twenty-seven.

2. Intensive English Language Classes at ALC, Rabat.

Eight participants to be registered in March 1985, six in September, a total of fourteen.

3. Academic Tests at ALC, Rabat.

Four candidates to be tested in 1985 (dependent on nomination by ONAREP).

4. Geophysics Seminar.

Twenty-four participants have been nominated by ONAREP in February 1985, for a two-week seminar 1-12 April. Courses will be given by subcontractor IHRDC at the Rabat Hilton in the mornings, with optional workshops in the afternoons. A detailed schedule for preparation of this seminar is given in Project Schedule Summary No 3, Section 1.5.

5. Management by objectives and performance appraisal.

Mr. T. B. See will conduct workshops for supervisors in the week 10-14 June 1985.

6. Joint Venture Promotion Seminar/Workshop.

A Joint Venture Promotion Seminar/Workshop is proposed to be held in Rabat for one week in September 1985. To be conducted by R. H. MacLachlan, Short-term Advisor, this seminar is intended to improve ONAREP personnel's understanding of the motivations of potential joint venture partners and to assist in the formulation of promotion policy strategy and tactics.

7. Geology Seminar.

Planning of a two-week (May 1-14) geology seminar began on 28 December 1984. A series of 3 to 4 seminars each of 2-3 days duration is now envisaged instead for the period October-December 1985.

SECTION 7

PARTICIPANT TRAINING IN THE UNITED STATES

The USAID Technical Assistance contract with Williams Brothers provides for participation of ONAREP personnel in two forms of training in the United States:

1. Conferences, seminars, typically of two weeks' duration. Authorization is for 6 person-months in aggregate, equal to 12 participants at two weeks each.
2. Internships of up to three months with U.S. oil companies. Eight participants to be scheduled for 1985, 1986.

The Williams Brothers' work plan provides for two participants in U.S. based two-week conferences in September 1985. All other U.S. conference participation will occur in fiscal years 1986, 1987.

Occasionally, participation in seminars in Europe may be proposed in substitution for seminars in the United States. The substitution would be justified on the grounds that the seminar provides unique opportunity for training of designated ONAREP professionals and it is of such short duration that travel to the United States would be disproportionately costly. USAID has approved participation in one such seminar of three days' duration given by the American company IHRDC in Paris, 13-15 February 1985, on the subject of Vibroseis design and control.

The internships in the United States are intended to be offered to the best performers in short-term training courses which are funded by a separate USAID contract. It appears there will be few, if any, candidates from the short-term training courses to fill eight internships. Accordingly, candidates for internships are being identified independently of short-term training course participation.

Mr. Ali Harraj, Head, Departement Production, is proposed for internship July-September 1985 at Williams Brothers, Elk Hills, California for training in well completion, testing and work areas. His nomination is pending ONAREP's management approval.

Other ONAREP personnel will be nominated for interships in the fiscal years 1986 and 1987.

A hands-on training exercise, not funded by USAID, is being undertaken by Mr. Khalid Oudghiri with WBEC in Tulsa, in the preliminary design of the Meskala gas production facilities.

SECTION 8

COMMODITY PROCUREMENT

The schedule for acquisition of commodities by Williams Brothers under the USAID Technical Assistance contract is given in Project Schedule Summary No 8, in Section 1.5.

The commodities being acquired comprise :

- Equipment for the project office
- Consumable office supplies
- Furniture and appliances for advisors' residences.

The equipment for the project office comprises a Xerox photocopier, an IBM word processor, and lighting fixtures, curtains and book-cases, supplementing the set of office furniture and three typewriters taken over from preceding USAID technical assistance contractor. Additionally, one IBM word processor is being acquired for the direct use of ONAREP.

The photocopier and word processor are being acquired through local suppliers, but free of import duties, as required by US-Moroccan Bilateral Assistance Agreement. The acquisition procedure, effected through ONAREP, is proving to be extremely protracted and time-consuming. Begun early in January, the acquisition is still being processed at mid-March, and its completion cannot be predicted. Meantime, efficient operation of the project office is impeded by lack of equipment, especially of a photocopier.

Acquisition of telephone and telex service does not involve capital expenditure, but they are included in Project Schedule Summary No 8 to indicate the length of time the project office has had to operate without these basic services. Applications

for both were made on 13 December 1984. On 16 January ONAREP was asked to intervene with the P.T.T. on Williams Brothers' behalf. On 13 February the telephone apparatus was installed, and connected to the exchange on 19 February. The telex machine was installed on 28 February.

No problems are anticipated in acquisition of furniture and appliances for the residences of the six advisors. Five sets of kitchen appliances, utensils, dishes and flatware were provided by USAID, one and a half sets of household furniture, and miscellaneous articles. The Regional Contracting Officer approved the acquisition of a relatively complete set of slightly used furniture already installed in the villa being leased by one of the advisors. The remaining furniture requirements are being purchased locally.

The basic computersoftware for reservoir engineering calculations was acquired in the United States and was brought to Rabat by the Reservoir Engineering Advisor. Garrett Computing Inc., Dallas, supplier of many standard programs used in petroleum engineering calculations, will send a representative to Rabat for one week in May to demonstrate the programs. It is proposed that the cost of the visit be reimbursed from the budget for software.

Programs for analyzing well tests (pressure buildup and drawdown) were acquired from Wireline Testing Service, Oklahoma City in December 1984. They were installed in January 1985 and have been used since then.

SECTION 9
PROJECT COST SUMMARY

The current estimate of the total cost of the Williams Brothers project under USAID Contract N°. 608-0176-C-00-5003-00 remains as specified in the contract. Line-item details are given in:

Table 9-1 Project Cost Summary, Fiscal Year 1985
by Fiscal Month*

Table 9-2 Project Cost Summary, Fiscal Years 1985-88
by Fiscal Year

The total cost estimate for FY 85 is \$1,315,700 down from the contract estimate of \$1,480,000. The reasons for the reduction are:

- Delay in team mobilization because of the stop work order
- Reduction of about \$50,000 in estimated cost of Commodities (furniture and office equipment)
- Reduction in Rental Costs/Allowances.

In the total cost estimate for the duration of the project (39 months) the main increase, compared with the contract estimate, is in Travel & Related Costs, offset by reductions in the cost of Commodities and Rental Costs/Allowances. These are explained under the appropriate line items.

The following narrative is presented as a supplement to the Tables so that the line items of the project cost, and their component parts, may be fully identified. All project costs are presented in accordance with the fourteen cost categories itemized for billing purposes by USAID.

*WBEC divides a quarter into three billing periods of 4, 4 and 5 weeks.

1. English Language

Six ONAREP employees commenced English Language training in February 1985. 11 more employees are expected to start in April 1985 and the final ten employees to commence in October 1985. The initial month of training for each group includes registration fees and text-book charges. The total duration of training is expected to be 27 months.

Intensive English Language training will start in April 1985 for eight ONAREP employees with the balance of six employees entering intensive training in October 1985. The ALC rates for intensive English training increased by 10% (in terms of Dirhams) in January 1985.

2. In-Country Technical Seminars

The first seminar, "Interpretation of Seismic Data" is scheduled for April 1985 in Rabat, at a total cost of \$20,000. This amount includes \$15,000 for the presentation, and \$5,000 for air-fare, expenses and miscellaneous items. The second seminar is projected to be held in October 1985.

3. U.S. Conferences/Workshops

Two ONAREP employees are scheduled to attend conferences or courses in the United States in September 1985. The total cost includes registration fees, lodging, meals, and U.S. domestic air-travel. Airline tickets to the U.S. to be provided by ONAREP.

One ONAREP employee attended a 3-day vibroseis course (geophysics) in Paris in February 1985, at a cost of about \$1,200 to the Project. Airline ticket was provided by ONAREP.

4. U.S. Internships

Of the total 24 participant-months called for in the contract, three are assumed to occur in FY 85, nine in FY 86 and 12 in FY 87.

A two to three-month internship for Mr. A. Harraj, Head of Department Production, probably at Elk Hills Fields (California) is being considered for FY 85.

The cost of participant-month is averaged at \$ 6,750.

5. Commodities

Commodity procurement includes house furniture for six WBEC expatriate employees, originally estimated at a total of \$90,000. Recent developments have resulted in WBEC employees taking possession of used furniture from the preceding contractor, the total value of which is \$28,000. Therefore, the total cost projected for the acquisition of supplemental furniture items is estimated at \$62,000, plus a \$6,000 contingency for the procurement of household appliances.

Included within this cost category is the procurement of computer hardware, word-processing equipment and a photo-copier for the WBEC Rabat office. A total sum of \$65,000 was originally set aside for these items. However, it is now anticipated that a total of \$32,000 will be adequate to cover these costs, together with \$30,000 for the consumable office supplies. Of the latter, \$ 8,000 are assumed to be spent in FY 85. The total of this line item is therefore reduced by \$ 25,000 (from \$ 155,000 to \$ 130,000).

6. Financial/Management Advice

Salaries of Mr. G. A. Currie/Mr. D. A. Sullivan calculated by fiscal month at established rates.

7. Exploration/Design Analysis

Salaries of Mr. J. H. Kenny/Mr. P. R. LeTourneau calculated by fiscal month at established rates.

8. Reservoir and Production Engineering

Salaries of Mr. A. K. Khatib/Mr. T. E. Connor calculated by fiscal month at established rates.

9. Reservoir Computer Software

This category includes the cost of purchasing some software, an estimate of software lease royalties and user fees, and training.

10. Travel and Related Costs

Travel costs for fiscal year 1985 include the initial, one-way tickets issued to WBEC expatriate personnel on the commencement of assignments, shipment and storage of expatriate personal effects, travel to Rabat by short-term advisors, the Project Sponsor and the Contract Administrator, and business trips to the U.S. by the Chief of Party. The COP is in Morocco on single status. WBEC procedures allow a total of four trips a year for employee or spouse. These costs are subsumed in the provision for business trips by the COP.

The cost estimate for this item has been increased by \$37,000 to a new estimate of \$185,000 to allow for the following:

- Higher actual fares from the U.S., especially California, than assumed in the contract
- More business trips for the Surface Facilities Engineer, as part of his work will be done in Tulsa.
- To allow for visits of children (under 23 years) of Resident Advisors once a year.

11. Rental Costs and Allowances

Included in this category are initial accommodation expenses of WBEC expatriate personnel, incidental expense payments in accordance with WBEC policy, monthly accommodation and utility charges (calculated at the maximum allowable combined cost of \$1,000 per employee) and orientation, the latter including costs of supplemental French language courses required by WBEC personnel.

Per diem payments have been budgeted for all WBEC short-term advisors visiting Morocco in the current fiscal year.

12. Home Office Management, Rabat Office Costs, Short-Term Advisors

The salaries of Tulsa-based WBEC employees have been calculated from base rates contained in the negotiated WBEC cost proposal, and prorated from the total number of contractually agreed man-hours, over the duration of the project. Communications costs have been calculated by spreading the total allowed cost throughout the course of the project.

The procurement of Defense Base Act Insurance, Medical Evacuation Insurance and Participant Insurance has been included in this cost category. WBEC intends to utilize consultants at appropriate times throughout the course of the project and a sum of \$9,000 has been allocated for this purpose in the current fiscal year.

The wages paid to local personnel (office administrator, secretaries, driver) have been calculated to include one extra month of payment for each year of service.

No overhead percentage has been applied to local staff payments.

Rabat office operating costs are included in this cost category with a front-end loading to allow for procurement of office furniture and establishment charges.

13. Employee Benefits, Overhead and G & A

Fringe Benefits and Payroll Costs are included in WBEC audited Overhead Rates.

Overhead has been applied at 112.4% on all Tulsa-based man-hour costs, and at 94.9% on all WBEC expatriate (Field Office) man-hour costs.

General and Administrative Costs are applied at 13.6% for all cost categories, with the exception of line items 1 and 5.

14. Fee

A fee percentage of 6.94% has been applied to all cost categories, this percentage being obtained by dividing the contractually Fixed Fee of \$260,000 by the total estimated cost.

PROJECT COST SUMMARY, FY 85
BY FISCAL MONTH

TABLE 9.1

LINE ITEM	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
1. English Language*	-	-	160	180	180	10,100	10,000	10,000	190	190	400	17,000
2. Technical Seminars	-	-	-	-	-	20,000	-	-	-	-	-	20,000
3. U.S. Conference/Workshops	-	-	-	1,200	-	-	-	-	-	-	5,400	6,600
4. U.S. Industry Internships	-	-	-	-	4,000	2,750	-	6,750	6,750	6,750	-	27,000
5. Commodities*	-	-	-	13,000	40,000	40,000	5,000	2,000	2,000	2,000	2,000	106,000
6. Financial/Management Advice	1,340	10,020	9,790	9,790	12,240	9,800	9,800	12,240	9,800	12,240	12,240	109,300
7. Exploration/Design Analysis	-	5,560	8,900	8,900	11,120	8,900	8,900	11,120	8,900	11,120	11,120	94,500
8. Reservoir/Production Engineering	1,370	3,310	4,100	5,470	6,840	8,800	9,910	12,400	9,910	12,400	12,400	86,900
9. Reservoir Computer Studies*	-	-	-	6,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	20,000
10. Travel and Related Costs	-	7,940	6,870	23,800	3,600	5,200	6,350	2,630	5,030	2,130	1,450	65,000
11. Rental Costs & Allowances	5,500	11,750	12,420	7,890	5,820	11,620	6,300	8,630	6,520	8,630	6,520	91,600
12. Host Office Mgmt., Rabat Office, Short-Term Advisors	1,700	8,670	22,810	10,810	7,020	6,400	6,400	11,940	6,410	11,020	16,020	109,200
13. Overhead and G & A												
a) Field O/H 94.9%	2,570	17,930	21,630	22,920	28,660	26,100	27,150	33,930	27,150	33,930	33,930	275,900
b) Tulsa O/H 112.4%	1,570	3,890	7,700	5,460	3,890	3,200	3,210	8,390	3,210	8,390	3,890	52,800
c) G & A Base (sum of above except 1. and 5.)	14,040	69,070	94,230	102,740	84,690	104,270	82,520	109,530	85,180	108,110	104,470	958,300
d) G & A 13.6%	1,910	9,390	12,820	13,970	11,510	14,180	11,220	14,900	11,450	14,700	14,210	130,100
e) Total O/H and G & A (a+b+d)	6,050	31,210	42,150	42,350	44,060	43,480	41,380	57,220	41,810	57,020	52,030	459,000
f) Non-G & A Base (1+5)	-	-	160	13,180	40,180	50,100	15,000	12,000	2,390	2,390	2,400	138,000
Total Estimated Cost (c+d+f)	15,950	78,460	107,410	129,890	136,380	168,550	108,740	136,430	99,020	125,200	111,070	1,227,100
14. Fixed Fee	1,110	5,450	7,150	8,950	9,460	11,680	7,400	9,450	6,870	8,620	8,700	85,200
GRAND TOTAL	17,060	83,910	114,560	138,840	145,840	180,230	116,140	145,880	105,890	133,820	129,770	1,312,300

* No G & A applied

PROJECT COST SUMMARY 1985-1988

BY FISCAL YEAR

	<u>FY 85</u>	<u>FY 86</u>	<u>FY 87</u>	<u>FY 88</u>	<u>Project Total</u>	<u>Contract Total</u>
1. English Language*	32,000	30,800	-	-	62,800	60,000
2. Technical Seminars	20,000	50,000	74,400	-	144,400	144,400
3. U.S. Conferences/Workshops	6,600	13,200	13,200	-	33,000	32,800
4. U.S. Industry Internships	27,000	54,000	81,000	-	162,000	162,400
5. Commodities*	106,000	14,000	10,000	-	130,000	155,000
6. Financial/Management Advice	109,300	127,300	83,900	19,500	340,000	340,000
7. Exploration/Design Analysis	94,500	115,600	115,600	19,300	345,000	345,000
8. Reservoir/Production Engineering	86,900	128,900	15,400	-	231,200	231,240
9. Reservoir Computer Studies	20,000	15,000	5,000	-	40,000	40,000
10. Travel & Related Costs	65,000	50,000	50,000	20,000	185,000	147,300
11. Rental Costs & Allowances	91,600	78,500	59,200	19,300	248,600	271,300
12. Home Office Mgt., Rabat Office, Short-Term Advisors	109,200	121,600	102,300	17,500	350,600	350,640
13. Overhead and G & A						
a) Field O/H 94.9%	275,900	352,900	204,000	36,700	869,500	
b) Tulsa O/H 112.4%	52,800	68,100	47,600	7,200	175,500	
c) G & A Base (sum of above except 1. and 5.)	958,800	1,174,900	851,600	139,500	3,124,800	
d) G & A 13.6%	130,300	159,800	115,800	19,000	424,900	
e) Total Overhead and G & A (a+b+d)	459,000	580,800	367,400	62,900	1,470,100	1,462,870
f) Non-G & A Base (1+5)	138,000	44,800	10,000	-	192,800	
Total Estimated Cost (c+d+f)	1,227,100	1,379,500	977,400	158,500	3,742,500	
14. Fixed Fee	85,200	95,800	67,800	11,200	260,000	260,000
GRAND TOTAL	1,312,300	1,475,300	1,045,200	169,700	4,002,500	4,002,950

* No G & A applied