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**The World Bank**

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**Report No. 8891**

**PROJECT COMPLETION REPORT**

**PHILIPPINES**

**PETROLEUM EXPLORATION PROMOTION PROJECT  
(LOAN 2201-PHL)**

**JUNE 29, 1990**

Industry and Energy Operations Division  
Country Department II  
Asia Regional Office

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## ABBREVIATIONS AND ACRONYMS

<b>ADB</b>	-	<b>Asian Development Bank</b>
<b>BED</b>	-	<b>Bureau of Energy Development</b>
<b>NPC</b>	-	<b>National Power Corporation</b>
<b>OEA</b>	-	<b>Office of Energy Affairs in the Office of the President of the Republic</b>
<b>PNOC</b>	-	<b>Philippine National Oil Company</b>
<b>PNOC-EC</b>	-	<b>PNOC Exploration Corporation</b>
<b>PNOC-EDI</b>	-	<b>PNOC Energy Drilling Inc.</b>
<b>RP</b>	-	<b>Republic of the Philippines</b>
<b>UNDP</b>	-	<b>United National Development Program</b>

Office of Director-General  
Operations Evaluation

June 29, 1990

MEMORANDUM TO THE EXECUTIVE DIRECTORS AND THE PRESIDENT

SUBJECT: Project Completion Report on Philippines  
Petroleum Exploration Promotion Project (Loan 2201-PHL)

Attached, for information, is a copy of a report entitled "Project Completion Report on Philippines Petroleum Exploration Promotion Project (Loan 2201-PHL)" prepared by the Asia Regional Office with Part II of the report contributed by the Borrower. No audit of this project has been made by the Operations Evaluation Department at this time.



Attachment

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\* This part has been prepared by the Borrower and its contents and opinions are not attributable to the Bank.

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PHILIPPINES

PETROLEUM EXPLORATION PROMOTION PROJECT

(Ln. 2201-PH)

PROJECT COMPLETION REPORT

PREFACE

This is the Project Completion Report (PCR) for the Petroleum Exploration Promotion Project - BED component - in the Philippines, for which Loan 2201-PH in the amount of US\$13.5 million was approved on September 30, 1982. The loan was closed on December 31, 1987, one year behind schedule. The loan amount, revised at government's request to \$8.0 million, was fully disbursed and the last disbursement was in June, 1988.

The PCR was jointly prepared by the Industry and Energy Operations Division of the Asia Regional Office (Preface, Evaluation Summary, Parts I and III), and the Borrower (Part II).

Preparation of this PCR was started during Bank's final supervision mission of the project in December, 1987, and is based, inter alia, on the President's Report (no separate Staff Appraisal Report was prepared); the Loan, Guarantee, and Project Agreements; supervision reports; correspondence between the Bank and the Borrowers; and internal Bank memoranda.

PROJECT COMPLETION REPORT

PHILIPPINES

PETROLEUM EXPLORATION PROJECT

(Ln. 2201-PH)

EVALUATION SUMMARY

**Objectives:** The Petroleum Exploration Promotion Projects (Loans 2201 and 2202-PH) were designed with a view to rekindling the interest of oil companies in exploration for oil and gas in the Philippines, and the extension of exploration activities to relatively unexplored offshore areas. Two borrowers were involved, the Republic of the Philippines for offshore areas and some unlicensed onshore areas and the Philippine National Oil Company (PNOC), which had control of most onshore areas. This report deals with the successful exploration promotional effort carried out by the Bureau of Energy Development (BED) in the Ministry of Energy and the successor to BED, the Office of Energy Affairs (OEA) in the Office of the President.

The strategy adopted for the project was to enhance the country's geological data base and to develop new exploration policy concepts through a nationwide basin evaluation exploration program. The results of the basin studies were to be contained in a promotional report which the Government would use in an active promotional campaign to revive international interest in petroleum exploration interest in the country.

**Implementation Experience:** The project implemented consisted of the aeromagnetic survey of the offshore and onshore sedimentary basins over most of the Philippine archipelago except in the Sulu Sea and Palawan with 215,844 line km of data acquired, processed and interpreted; seismic survey over offshore areas not surveyed in the past with 9,104 line km profiled, processed and interpreted; regional basin evaluation studies carried out in 15 offshore and onshore basins, incorporating old and new data and a promotional package developed; and training to upgrade the technical capability of the Filipino staff involved in the project, to be completed through foreign training or short-term local courses in the Philippines.

The project largely depended on foreign contractors and consultants for its technical execution. The need was to define precisely the job content of the contracts to be let and the terms of reference for consultants. Bank professional staff provided useful assistance in this work.

Results: Being an exploration promotion project, no economic or financial analysis of the project was made at appraisal. The project objective was, however, achieved in that five exploration contracts have been concluded and more will follow. Nine out of the 15 basins promoted apparently have been found attractive. The contracts typically provide for oil companies to carry out geophysical work, basically reprocessing of seismic data and interpretation, expending certain stated minimum amounts. Drilling options are thereafter available and after one or two wells are drilled, the next stage would lead to signing of service contracts for production and production sharing. Incentives for participation by Filipino partners with foreign oil companies are built into the service contracts.

Sustainability: This type of project has a ripple effect and how far the ripple will spread is a function of the success of the promotion (which has been achieved) and ultimately of the companies' finding commercial hydrocarbons. The information gathered, however, establishes that there is a high probability of moderate hydrocarbon finds of a commercial nature.

Findings and Lessons Learned: Fluctuations in oil prices during this period had created considerable uncertainty in the international oil industry and so the international promotional campaign was planned with care and deliberately delayed to the middle of 1987. The formulation of the terms for exploration were done taking into account the considered views of the Bank professionals to ensure a wide response. The fact that 43 promotional reports were sold, 14 companies applied for various areas and 5 exploration contracts signed as of 1989, is indicative of a successful, well planned campaign. The association of BED staff in the basin evaluation program carried out by the contractor's and consultants provided a great opportunity for local staff to hone their skills and turn into synergistic explorationists. OEA would, therefore, be well advised to address itself to the important question of the country benefitting technologically by associating both its own trained staff and that of PNOC, with the oil companies through the various stages of exploration, development and production activities. In particular, this is a unique opportunity for PNOC-EC, with its corps of trained geoscientists and drillers, to seek to participate with the oil companies when service contracts are signed and vigorous exploration by the foreign oil companies of offshore resources is pursued. Any risk investment which PNOC-EC has to make until the exploration wells establish commerciality of hydrocarbon finds is not likely to be large and in participating with several oil companies such risks are spread out.

## THE PHILIPPINES

### PETROLEUM EXPLORATION PROMOTION PROJECT (LN 2201-PH)

#### PROJECT COMPLETION REPORT

#### PART I: PROJECT REVIEW FROM BANK'S PERSPECTIVE

##### 1. Project Identity

Name : Petroleum Exploration Project  
Loan No. : 2201-PH  
RVP Unit : Asia Region  
Country : Philippines  
Sector : Energy

##### 2. Project Background

2.01 The Philippine energy situation is characterized by a heavy dependence on imported oil (58% of total and 70% of conventional energy in 1987) and limited activity in exploration and development of indigenous resources. Proven oil reserves amount to only 4 million tons. Potential coal reserves amount to 1,500 million tons, but most of it is low grade and is expensive to mine. Hydro resources are substantial, with a potential of over 10,000 MW, but the sites (except for the few developed) are far from the grids and too costly to develop. Geothermal resources are abundant, a possible 8,000 MW, about 894 MW of which have been tapped and much more to be developed in the near term. With a view to assisting the Philippines to exploit its indigenous potential, the Bank extended four loans in FY82 and FY83, one for coal exploration, one for geothermal exploration and two for petroleum exploration promotion. A second Bank loan for a geothermal power project approved in FY88 includes provisions for appraisal and delineation of several geothermal fields.

2.02 The Petroleum Exploration Promotion Projects (Loans 2201 and 2202-PH) were designed with a view to rekindling the interest of oil companies in exploration for oil and gas in the Philippines, and the extension of exploration activities to relatively unexplored offshore areas. Two borrowers were involved, the Republic of the Philippines for offshore areas and some unlicensed onshore areas and the Philippine National Oil Company (PNOC), which had control of most onshore areas. This report deals with the successful exploration promotional effort carried out by the Bureau of Energy Development (BED) in the Ministry of Energy and the successor to BED, the Office of Energy Affairs (OEA) in the Office of the President.



2.03 The project under review had an overall cost of \$9.5 million, about 41% less than the appraisal estimate of \$16.0 million due to the lower than expected cost of the aeromagnetic and offshore seismic surveys, owing to the recession in the petroleum industry during the period. Disbursement of the Bank loan was consequently lower than envisioned, at \$7.79 million against a loan amount of \$13.5 million. This was foreseen early in the project, and the Government and Bank agreed to cancel \$4.5 million of the loan amount in May 1984 and \$1.0 million in June 1985.

### 3. Project Description and Objectives

3.01 The strategy adopted for the project was to enhance the country's geological data base and to develop new exploration policy concepts through a nationwide basin evaluation exploration program. The results of the basin studies were to be contained in a promotional report which the Government would use in an active promotional campaign to revive international interest in petroleum exploration interest in the country. The project was identified in the course of discussion with the Government in late 1981 and firmly defined by February 1982. The project as appraised consisted of the following:

- Aeromagnetic survey of the offshore and onshore sedimentary basins over most of the Philippine archipelago except in the Sulu Sea and Palawan with 168,000 line km of data to be acquired, processed and interpreted;
- Seismic survey over offshore areas not surveyed in the past with 8,400 line km to be profiled, processed and interpreted;
- Regional basin evaluation studies to be carried out in 15 offshore and onshore basins, incorporating old and new data and a promotional package to be developed; and
- Training to upgrade the technical capability of the Filipino staff involved in the project, to be completed through foreign training or short-term local courses.

### 4. Project Design and Organization

4.01 The project largely depended on foreign contractors and consultants for its technical execution. The need was to define precisely the job content of the contracts to be let and the terms of reference for consultants. BED's own geoscientists, assisted by Bank staff, performed this task effectively. Consultants also assisted in supervising the work of contractors, assistance which proved to be particularly useful. The project was well timed as advantage could be taken of the buyer's market prevailing at the time. The project "quantities" had to be increased slightly in the light of actual conditions during implementation. This was anticipated and not unusual in this kind of work.

## 5. Project Implementation

5.01 Aeromagnetic survey: Questor Surveys, Inc. of Canada was asked on December 3, 1982 to mobilize and the first survey line was flown on January 18, 1983. The acquisition was completed in April 1984, and the final contour and color maps were delivered to BED by end of September 1984. This was six months later than expected due to a 25% increase in coverage (to 215,844 kms) poor weather conditions caused by typhoons and storms, mechanical problems with the survey equipment and aircraft, and the crash of one of the two aircraft in April 1983 (which was replaced by another in June 1983). International Exploration Inc. of the United States (Intex) assisted BED in the planning of the aeromagnetic survey, supervision of data acquisition as well as data analysis, interpretation, and the preparation of reports. Intex prepared the last of the depth-to-magnetic basement maps during January 1985, at which time the project was about seven months behind schedule.

5.02 Offshore seismic survey: Seiscom Delta United International Corp. (SD) of United States commenced acquisition of seismic data on April 25, 1983. By September 14, 1983, 9104.35 line km of seismic profiles had been gathered over 15 offshore areas. Processing of 1,084 kms (a representative sampling of lines in each survey area) was done at Seiscom Delta's center in Australia in October 1983. The bulk of the remaining marine data was processed at PNOC's seismic data processing center, which began operating in May 1984, according to a priority schedule by area and by lines within each area. The offshore seismic coverage was augmented by 4,770 line km of infill seismic data gathered by the Petro-Canada International Assistance Corporation on a grant basis to the BED over selected offshore areas. Although processing was delayed by about six months to await establishment of the PNOC process center, this did not delay the exploration promotion which took place in September 1987.

5.03 Regional basin evaluation: Robertson Research - Flower Doery Buchan of Australia (RR) was selected as the consultant for the basin evaluation studies as well as for the supervision of the offshore seismic program. RR was in position by late-1982 in anticipation of the signing of the contract on May 19 1983 to provide 56 man-months of consultancy services until 1984. However, 21 additional man-months had to be added in 1985, 4 in 1986 and 3.5 in 1987 due to delayed implementation of some components, e.g., aeromagnetic data acquisition and setting up of PNOC seismic processing center. Also, in the course of implementation of the basin evaluation studies, the NW Palawan and Reed bank areas were subsequently included, on relinquishment by service contractors. RR committed three experts on a continuing basis and a number of specialists on short-term assignments; 18 geologists/geophysicists from BED worked closely with the RR personnel in a pool which catered to a synthesis of geology, geophysics, geochemistry, sedimentology, paleontology, micropaleontology, cartography, petrography, biostratigraphy, and seismostratigraphy. The result was a comprehensive geological analysis of 15 onshore and offshore sedimentary basins and sub-basins. The final product is contained in a comprehensive promotional report in 12 volumes of text and atlases.

5.04 Project promotion: This was the most critical phase of the project as the fluctuations in oil prices during this period created considerable uncertainty in the international oil industry. The promotional campaign was

planned with care and was deliberately delayed to the middle of 1987, when the international oil industry recommenced expressing interest in foreign exploration. The formulation of terms for exploration were done, taking into account the views of the Bank to ensure a wide response. First, an introduction to and a preview of the promotional presentation to take place in September 1987 was given in different forums. The promotional presentation was then made at Manila, Houston, Calgary and London. Seventy companies attended the different presentations. As of November 1988, 43 report sets had been subscribed to and 14 companies had applied for/expressed interest in 14 exploration areas. Contracts had been signed or were about to be signed with five of these companies. Five others were under negotiation.

5.05 Training: BED engaged the International Human Resources Development Corporation (IHRDC) to run 10 courses of one-week duration each in Manila for the benefit of BED and PNOC technical staff. There was also a course on "Economic Evaluation of Petroleum Exploration and Development Projects" for senior staff members. The valuable association of BED staff in the basin evaluation program carried out by Robertson Research also provided a great opportunity for the former to hone their skills and turn into synergistic explorationists. Although several of the staff have since left BED, it appears that most of them are within the country working for PNOC or private oil companies.

5.06 The loan closing date was extended by one year to December 31, 1987 primarily to carry the project through its logical cycle up to the presentation to the oil companies.

## 6. Major Results of the Project

6.01 Being an exploration promotion project, no economic or financial analysis of the project was made at appraisal. The project objective, however, has been fully achieved in that five exploration contracts are being concluded and more will follow. Nine out of the 15 basins promoted apparently have been found attractive. The contracts typically provide for oil companies to carry out geophysical work, basically reprocessing of seismic data and interpretation, expending certain stated minimum amounts. Drilling options are thereafter available and after one or two wells are drilled, the next stage would lead to signing of service contracts for production and production sharing. Incentives for participation by Filipino partners with foreign oil companies are built into the service contracts. These incentives allow 7.5% of gross revenue to the oil companies so long as the Filipino participation is at least 30%, with downward adjustments for lower participation. This is a laudable provision and it is to be hoped that the Filipino participation would result in technology transfer from the oil companies.

6.02 This is also a unique opportunity for PNOC-EC, with its corps of trained geoscientists and drillers, to seek to participate with the oil companies when service contracts are signed and vigorous exploration by the foreign oil companies of offshore resources is pursued. Any risk investment which PNOC-EC has to make until the exploration wells establish commerciality of hydrocarbon finds is not likely to be large and in participating with several oil companies such risks are spread out. Further, PNOC-EC should be in a position to offer

services to the oil companies, for example of its seismic processing center, and earn some income. OEA would be well advised to address itself, seeking the guidance of the Energy Coordination Council, to the important opportunity for the country to benefit technologically by associating with the oil companies through the various stages of their exploration, development and production activities.

## 7. Project Sustainability

7.01 This type of project has a ripple effect and how far the ripple will spread is a function of the success of the promotion (which has been achieved) and ultimately of the companies' finding commercial hydrocarbons. Probabilities can be worked out and intelligent guesses made of likely quantities and financial returns but this would be time consuming and still only a "probability". The information gathered has established that there is a high probability of moderate hydrocarbon finds of a commercial nature.

## 8. Bank Performance

8.01 At project origin, the Bank advised BED to consider undertaking an aeromagnetic survey, followed by seismic surveys of the offshore on a selective basis. The project was designed, with BED and the Bank working together towards the objective of developing promotional packages to interest oil companies in exploration. This interaction was maintained throughout the project as the promotional campaign was developed and implemented. Through eight supervision missions, the Bank assisted BED in overseeing the work of contractors and consultants and ensuring that problems were prevented or solved. Bank staff reviewed the draft promotion package and offered useful comments. The Bank also contributed to the formulation of the terms of the contracts to ensure wider industry participation. Apart from the financial assistance of the loan, the Bank made a substantial direct technical assistance. This project demonstrates that, more than through financial assistance, the Bank could play a significant role in opening up a country for exploration (of hydrocarbons in this case), if there is a judicious mix of technical input by Bank staff and inputs from consultants.

## 9. Borrower's Performance

9.01 BED/OEA displayed a strong commitment to the Project. At all stages from conception to completion, the urge to succeed was noticeable. The contractors/consultants and the Borrower's staff maintained cordial relationships and the cooperation was of mutual benefit. BED/OEA has had competent managers who could use to good effect external financial and technical resources when necessary and available.

## 10. Project Relationship

10.01 Relationships among the various project participants - the Bank, BED and contractors/consultants, were extremely amicable, which helped to achieve smooth project implementation.

## 11. Contractors and Consultants' Performance

11.01 In general, all contractors and consultants performed well. In the aeromagnetic survey, Questor's recordings were within the tolerance levels and diurnal variances. Line positions and flight elevations were well controlled. Intex, in controlling the quality of the survey, in interpreting the data and preparing the depth-to-magnetic-basement maps warranted a good rating. Seiscom Delta United recorded offshore seismic data with resolution which was optimal, indicating employment of an airgun source which was well tuned and stable. The data processed by them indicated the use of advanced software with flexibility. Seismograph Service Corporation, which assisted PNOC-EC to set up the seismic processing center and helped in processing an initial 3,000 line km of marine data, got the center going efficiently after a few teething problems and provided quality. The inputs from Robertson Research, assisted by Flower Dorey Buchan, were conducive to good results as evidenced by a thorough basin evaluation and presentation to the industry. The satisfying common denominator in all of the consultants' work was that Filipino staff could participate fully in the activities and benefit by the association.

## 12. Project Documentation and Data

12.01 A staff appraisal report had not been prepared for the project, but the President's report was detailed enough on the technical descriptions. The legal documents were clear. The supervision reports and the progress reports from the Borrower have been exhaustive.

THE PHILIPPINES

PETROLEUM EXPLORATION PROMOTION PROJECT  
(LN 2201-PH)

PROJECT COMPLETION REPORT

PART II: PROJECT REVIEW FROM BORROWER'S PERSPECTIVE

The Office of Energy Affairs in the Office of the President, Republic of the Philippines prepared Part II of the Project Completion Report of this project in June 1988.

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## I. SUMMARY

The Petroleum Exploration Promotion Project was conceived as a financial and technical assistance to support the efforts of the Government of the Philippines in its drive to develop indigenous energy resources and attain self-sufficiency in energy. The strategy adopted was to enhance the country's geological data base and develop new exploration play concepts through a nationwide basin evaluation program. The results of the basin studies shall be contained in a promotional report which the Government will use in an active promotional campaign to revive petroleum exploration interest in the country. The objectives of the Project were: (a) to rekindle petroleum exploration interest in the country and (b) to strengthen the technical capabilities of the implementing agencies. The Project consisted of four components: (a) nationwide aeromagnetic survey, (b) offshore seismic survey (c) regional basin evaluation studies, and (d) training. Complementing the Project was a grant from Petro-Caanda International Assistance Corporation (PCIAC) which acquired and processed additional seismic lines in selected offshore areas. During the implementation of the Project it was agreed that the aeromagnetic survey be expanded to include other onshore areas. The basin evaluation studies also included areas which were recently relinquished by service contractors. Despite the additional coverage to some of the Project components, it became apparent that not all the loan funds of US\$13.5 million would be required. In 1984 and 1985 the Government requested the cancellation of \$4.5 million and \$1.0 million, respectively. Thus, only US\$8.0 million was ultimately committed to finance the whole Project.

The results of the Project are contained in 70 sets of a 12-volume report which consists of a project summary, six volumes of text and appendices, four atlas volumes and one supplement. The report presents the conclusions and significant results of the basin evaluation program. New petroleum play concepts have been developed and old ones expanded upon to provide the explorationist with a wide variety of untested or inadequately tested objectives.

A promotional campaign was carried out in September 1987 in Manila, Houston, Calgary and London where two-day presentations were conducted before representatives of the oil industry. A complete set of the report was also displayed in these places for perusal of the presentation participants. As of June 1988, 36 report sets have been subscribed to and 7 companies have applied for 9 exploration areas.

The Project as a whole succeeded in making a nationwide evaluation of the petroleum potential of the country's sedimentary basin, both onshore and offshore. It also was an effective mechanism of training the Filipino technical staff involved in the Project. Applications for petroleum contracts have started to come in and it is anticipated that drilling activities will increase in the very near future.

## II. HISTORICAL RETROSPECTIVE

### A. Introduction

The Philippines, just like many developing countries, is highly dependent on imported energy. In 1973 the country was importing 92% of its primary energy requirements mainly in the form of oil while the rest were supplied domestically by hydropower, nonconventional energy resources such as bagasse and some coal. The abrupt spiralling of oil prices starting in late-1973 proved to be specially critical to oil-importing countries which exposed them to geopolitical turbulences that occur in the major oil producing region the Middle East.

The Philippine government in reaction to the implications on the security and economic development of the country of such escalation of oil prices embarked on a national policy of self-reliance on energy. An integrated energy policy was formulated to (a) ensure adequate, stable and secure supply of energy, (b) to promote effective management of energy demand and (c) to safeguard environment in the pursuit of these energy activities.

The national energy program required (a) the diversification of the commercial and geographical sources of imported energy for the country (b) accelerated development of indigenous source of energy resulting in the reduction of dependence on oil as primary energy source, (c) promotion of energy demand-management and energy conservation, (d) development of Filipino technical and financial capability in energy technology and (e) preservation and protection of the environment.

By the mid-1970's appropriate legislations have been enacted to encourage the exploration and development of indigenous energy resources such as petroleum, coal and geothermal through the production sharing scheme. Presidential Decree No. 87 enacted in 1972 served as the institutional framework which covers all activities related to the exploration, development and production of

petroleum. This allows the participation of technically and financially qualified foreign companies to participate in upstream petroleum activities while upholding the sovereignty of the state over the energy resources. The result was an upsurge in petroleum drilling activities in the country specifically in the offshore where several major multi-national companies undertook extensive geophysical surveys and geological studies.

In early 1976, the first significant offshore oil discovery was made at the Nido-1 well in NW Palawan from Lower Miocene reefal and in the same type of petroleum play resulted in a few more oil and gas discoveries wells. In 1979, the first commercial oil production in the country went onstream from the Nido Complex under a service contract with Philippines - Cities Service Inc. (PCSI). This was followed in 1981 by the Cadlao Field of Amoco and in 1982 by the Matinloc Complex also of PCSI. The three oilfields are of modest sizes and as of end 1987 have produced a cumulative total of 33.8 million barrels of oil. The oilfields are typical of Tertiary limestone reservoirs in Southeast Asia, very high initial productivity but with corresponding high rate of depletion.

Several other oil and gas discoveries have subsequently been found, mostly in offshore NW Palawan but most prove to be non-commercial or located in very deep water. The relatively active exploration activities in the late 1970's and the very early 1980's which thereafter steadily declined starting in 1983 was influenced primarily by no new significant discoveries that followed after Nido, Cadlao and Matinloc.

Similar activities in the exploration and development of other forms of indigenous energy resources were implemented from the mid-1970's to the early 1980's. By 1987 domestic energy resources were contributing 37% of the country's energy requirements. These came primarily from nonconventional energy resources, hydropower, geothermal, oil and coal.

## B. Project Background

In May 1981, the Philippine Government through the Bureau of Energy Development (BED) of the Ministry of Energy (MOE) developed a proposal to the World Bank for possible financial assistance for a nationwide offshore/onshore seismic survey program. The program will concentrate in areas not covered by Petroleum Service Contracts and will include deep water areas as well. It was hoped that with the generation of seismic data in areas considered to be

"high risks", enough exploration interest will be generated amongst foreign oil exploration companies. In October 1981, World Bank officials (Messrs. McCarthy and Fallen-Bailey) who were in Manila during the 2nd ASeam Council on Petroleum (ASCOPE) Conference and Exhibition met with BED officials and recommended that a regional aeromagnetic survey be conducted first before the seismic survey program is initiated.

During a two-week visit starting in November 5, 1981 a World Bank Mission accompanied by two (2) aeromagnetic consultants discussed BED's project proposal as well as the petroleum and geothermal programs of PNOC. It was agreed that the BED project shall include an aeromagnetic survey over selected land areas and a marine seismic survey over areas with data gaps. For three (3) weeks in February 1982, another World Bank Mission visited the BED and finalized the work program as follows:

1. Aeromagnetic survey totalling 168,000 line-km.
2. Offshore seismic survey comprising 8400 line-km.
3. Nationwide petroleum evaluation of sixteen (16) Philippine sedimentary basins for a 2-year period involving foreign consultants.

Negotiations for the BED and PNOC petroleum projects were held in Washington D. C. from 6-13 July 1982. The BED loan component (Loan 2201-PH) amounted to \$13.5 million while that of PNOC (Loan 2202-PH) was \$24.0 million. The loan agreement was formally signed on 28 October 1982.

### C. Project Objectives and Description

The Philippine Petroleum Exploration Promotion Project was designed to rekindle petroleum exploration interest in the country as well as extend exploration activities to relatively unexplored onshore areas. It also aimed to strengthen the technical capabilities of the two implementing agencies, BED and PNOC.

The BED component of the Project consists of (a) a nationwide aeromagnetic survey of 168,000 line-kms, (b) offshore seismic survey of 8,400 line-kms, (c) regional basin evaluation of about 15 onshore and offshore sedimentary areas and (d) a training program for the Philippine staff involved in the Project. A brief description of these components follows:

- (i) the nationwide aeromagnetic survey component was to be carried out in the onshore and offshore sedimentary basins, excluding the more obvious

economic basement areas, over most of the Philippine archipelago except in the Sulu Sea and Palawan. The initial phase entailed a brief review of available information on Philippine sedimentary basins and the outlining of the areas to be covered by the aeromagnetic survey. The second phase required the determination of the various parameters to be applied in the conduct of the survey while and the third phase included the supervision of the survey as well as the processing and interpretation of the acquired data.

- (ii) The offshore seismic survey component of the Project was designed to gather information over offshore areas with data gaps, i.e., areas with no industry coverage. A similar work methodology as that in the aeromagnetic survey was adopted for this component of the Project.
- (iii) The regional basin evaluation studies were to be carried out in fifteen (15) onshore and offshore basins or sub-basins by incorporating the newly-acquired aeromagnetic and seismic data with previous exploration information. The results of the evaluation will be contained in a promotional package which will be made available to oil exploration companies.
- (iv) The training component was meant to upgrade the technical capability of the Filipino staff involved in the Project. This was to be completed through foreign training or short term courses.

### III. PROJECT IMPLEMENTATION

#### A. Achievement of Project Objectives

The loan agreement was formally signed on October 28, 1982 but preparations for the start of the aeromagnetic and seismic surveys and consulting services had been made earlier to take advantage of the good weather window. Signing of contracts with the various contractors and consultants was slightly delayed pending the approval by various Philippine government agencies but work on the various components of the Project proceeded nevertheless to adhere as much as possible to the timetable initially agreed upon between the BED and the World Bank.

Modifications to the work program with concurrence from the World Bank, had to be made in the course of implementation of the various project components when it was felt that such changes would improve the overall results of the Project.

1. Nationwide Aeromagnetic Survey. The original program was to carry out 168, 522 line-km but in the course of the survey it was agreed to add another 25% coverage. Notice for the contractor, Questor Surveys, Inc. of Canada, to mobilize was issued on 3 December 1982 and after test flights the first survey line was flown on 18 January 1983. Data acquisition was completed, including reflys, on 9 April 1984. Final aeromagnetic survey coverage after measurements from flight paths amounted to 215,844 line-km. The duration of aeromagnetic data acquisition went beyond the timetable due primarily to inclement weather conditions (typhoons and storms), frequent diurnal disturbances, mechanical problems with the survey equipment and aircraft, and the crash of one of the two aircrafts in April 1983. The latter necessitated a replacement aircraft which arrived in Manila from Canada in June 19, 1983 which was immediately refitted and flew its first mission in June 28.

International Exploration, Inc. (INTEX) of Philadelphia, U.S.A. assisted the BED in the planning of the aeromagnetic survey, supervision of data acquisition as well as data analysis, interpretation and the final reports.

The coverage of the aeromagnetic survey is shown in Annex "A".

2. The Offshore Seismic Survey. This project component was advertised in three (3) foreign publications and one local newspaper on August 18, 1982. The winning bidder, Seiscom Delta United (Int'l.) Corp. was chosen with the concurrence of the World Bank based on technical and financial criteria. The contract was signed on 07 July 1983 but Seiscom Delta was given the formal notice to mobilize on April 22 and data acquisition started on April 25 to take advantage of the good weather months. The survey was completed on 14 September or over a period of 4.77 months and 9104.35 line-km of seismic profiles were gathered over 15 offshore areas.

Some programmed lines were cut short or not shot when initial shipboard monitors indicated very shallow basement or thin sedimentary sequences over some areas. Additional profiles were acquired in areas with thick sedimentary fill.

The data gathering phase of the survey was supervised by consultants from Robertson Research (Australia).

Processing of some .000 line-km of seismic field data was done by Seiscom Delta in Melbourne, Australia. The bulk of the data was processed by PNUC using their newly-installed VAX/780. The processed data which was done on an area by area basis was immediately interpreted and incorporated in the basin evaluation studies.

The offshore seismic data coverage was augmented by 4770 line-kms of infill seismic data gathered by Petro-Canada International Assistance Corporation (PCIAC) on a grant basis to the BED over selected offshore areas.

Annex "B" shows the final coverage of the offshore seismic survey.

3. The Regional Basin Evaluation Studies entailed a multi-disciplinary synthesis of all available exploration data, including the newly acquired information under the Project. The result is a comprehensive geological analysis of 15 onshore and offshore sedimentary basins and sub-basins. The petroleum potential for each sedimentary basin was evaluated and the basins were ranked in order of prospectivity. The final product is contained in a comprehensive promotional package or report which will be made available to interested oil exploration companies.

Annex "C" indicates the sedimentary basins and sub-basins covered by the evaluation studies.

The basin evaluation studies required the services of experienced consultants and for these bid invitations were sent out to several consulting firms. The letters of bid invitations were sent out mid-August 1982 and by 1 October six (6) responses were received. Evaluation of the bid tenders was completed on 22 October and Robertson Research (Australia) - Flower Doery

Buchan (Australia) was selected and recommended as the consultant for the basin evaluation studies as well as in the supervision of the offshore seismic survey program.

The contract for consultancy was signed on 19 May 1983 but even previous to this some consultants have already started working on the Project in preparation for the offshore seismic survey. The contract was initially for a period of 56-man-months of consultants for the programmed 2-year duration of the Project (1983-1984) including consultancy time rendered in late 1982. However, delays in the implementation of some of the components of the project, e.g. aeromagnetic data acquisition and setting up of the PNUC Seismic Processing Center, affected the pace of the interpretation of the aeromagnetic and offshore seismic data. In the course of the basin evaluation studies, the NW Palawan and Reed Bank areas were subsequently included in the coverage since these areas were gradually being relinquished as service contracts during the duration of the Project.

The extension of the completion date of the Project was also influenced by the level of world-wide petroleum exploration which in 1985 and 1986 experienced a downturn in drilling activities. A collapse in crude oil prices in early 1986 also greatly affected the timing of the promotion of the project report. In the domestic front, the economic and political situations prevailing in the Philippines in 1984 and 1985 were marked by uncertainties. Prospects for improved stability became discernible thereafter with the change of government after February 1986, coupled with the ratification of a new Philippine Constitution in early February 1987, and the holding of congressional elections in May 1987. There was a marked improvement and stabilization of oil prices towards the end of 1986. The promotion of the Project was finally programmed for the 3rd quarter of 1987.

The several extensions given to the completion of the basin studies offered more time to undertake detailed and exhaustive evaluation of the various basins. The result is a comprehensive promotional report consisting of 12 volumes of text and atlases. The sedimentary basins were



rated in order of petroleum prospectivity. For each basin, petroleum play concepts both old and new, have been developed and amplified and in some cases drilling leads have been identified.

Consultants from Robertson Research (Australia) - Flower Doery Buchan (Australia) supervised the overall basin evaluation studies while specialists or experts, e.g. geochemists, paleontologists, were provided by the consultants in areas which required additional expertise. The basin evaluation studies were supplemented by additional geochemical, sedimentological and biostratigraphic analyses which required these kind of information. Support services were provided by BED paleontologists, geochemists, cartographers and petrographers in implementation of the Project.

4. The Training Component of the Project was implemented through the development of a joint training module for both BED and PNUC staff. It was agreed that short-term courses be held in-house in Manila, not only to save expenses in plane fares and travel allowances but to maximize attendance to the individual training courses as well.

International Human Resources Development Corporation (IHRDC), a Boston-based training company, was awarded the contract as a result of competitive bidding. The training program was implemented during the period July-November 1985.

Ten (10) courses of one-week duration each were agreed upon with IHRDC and were designed for both the junior and more senior staff, taking into consideration factors such as experience of participants as well as relevance of subjects to the objectives of the Project. IHRDC provided the instructors as well as the training manuals and other materials. In some courses like "Seismic Stratigraphy" and "Geochemistry" examples from the Philippine setting were used as case histories. A list of the courses conducted is shown in Annex "D".

All members of the technical staff of BED and PNUC attended at least one course. Most in fact attended 2 or 3 courses. The more senior members including non-technical participants attended the

course on "Economic Evaluation of Petroleum Exploration and Development Projects" and found it most applicable to their profession.

5. Project Promotion. The promotion of the results of the basin evaluation constituted the most critical phase of the Project. A promotional campaign program was developed together with the World Bank and preparations were made for a September 1987 presentation to the oil industry. Prior to this, preliminary presentations have been made before the American International Petroleum Negotiators (AIPN) in Houston last March 12, 1987 and the Circum-Pacific Energy and Mineral Resources Conference held in Singapore in August 1986. A short trip to Brisbane, Australia was also made to attend the Australian Petroleum Exploration Association (APEA) in March 1987 to initiate contacts with oil exploration companies based in that country.

In May-June 1987, a three-man team took special trips to Tokyo, Calgary, Denver, Dallas, Houston and Los Angeles where visits were made to individual oil companies to introduce the Project. Brief presentations were also made before a special gathering of oil explorationists in these cities.

The September 1987 promotional campaign was designed to introduce the results of the Project and make known to the oil industry the availability of the report which details the petroleum potential of the Philippines.

A promotional team consisting of BED officials and consultants gave 2-day presentations in Manila, Houston, Calgary and London. The first day of the presentation highlighted the results of the petroleum basin evaluation studies while the morning of the second day covered the legal and contractual framework of the Philippine petroleum service contract system. The afternoon of the second day was reserved for consultations between BED officials and representatives of oil companies on a personal or private basis.

The members of the promotional team, the presentation agenda, the participants to the presentations and the subscribers to the report

are attached as Annexes "E", "F", "G-1 to G-4" and "H".

There was quite an encouraging response to the promotional campaign as gauged from the number of oil companies that sent representatives to the presentations. Several orders for the purchase of the report also have been placed after each presentation. The one-on-one consultations afforded some of the participants to personally meet the BED officials and clarify certain matters which were relevant to their case. It can be concluded that the promotion as a whole has been very successful in re-kindling petroleum exploration interest in the Philippines based on the number of contract applications which have started to come in starting the first quarter of 1988.

## B. Project Management

The Project was implemented by the Bureau of Energy Development (BED), with the assistance of the consulting firm, Robertson Research (Australia) Pty. Ltd. and Flower Doery Buchan (Australia). The consultants provided guidance to the BED team of geologists and geophysicists with respect to the evaluation of the petroleum geology and hydrocarbon prospects of Philippine sedimentary basins. These included the method of study and approach to basin evaluation, format of presentation of the results, production of an information or promotional package and participation in the presentation of the results during the promotional phase of the Project.

In addition to the basin evaluation studies, the consultants assisted in the development of the offshore seismic survey program and supervised the data acquisition, processing and interpretation of the seismic data. It also provided specialists or experts in several aspects of the study which required the services of experienced micropaleontologists, geochemists, sedimentologists, geophysicists, etc.

The BED technical staff, consisting mostly of young geologists and geophysicists with very little exploration experience, were involved in all the aspects of the Project and this served as an effective on-the-job training for them. Their direct involvement under the supervision of the consultants served one of the major objectives of the Project which is to upgrade the technical capability of the BED staff.

Changes and modifications in the scope of the Project during its execution had to be made and for these the BED together with the consultants and the World Bank communicated freely with each other to come up with a common plan of action. Such changes took into consideration the ultimate objectives of the Project, the costs it would entail and the effect on the promotion schedule. As it turned out, the Project was successfully completed well within the loan funds. In fact US\$5.5 million of the original loan amount of US\$13.5 million was cancelled. Thus, the total loan fund availed for the Project amounted to US\$8.00 million.

#### C. Project Cost and Financing Plan

The BED Loan 2201-PH dated 29 October 1982 amounted to \$13.5 million against which disbursements were made for 100% of Foreign expenditures of contracts awarded for the aeromagnetic survey, offshore seismic survey, specialized services, consultants' services and training. As the Project progressed, \$4.5 million of the loan was cancelled in May 1984 and by another \$1.0 million in June 1985, thus reducing the total loan to a final amount of \$8.0 million. The loan closing date was firmed up as December 31, 1987.

The amendment to the loan was brought about by reductions in the actual costs of the aeromagnetic and seismic surveys which in 1983 saw very favorable or low prices for these types of services. The reductions in cost, however, did not mean a reduction in work coverage. On the contrary, a much wider coverage was achieved even at the reduced costs. Allocation for consultants' services and goods and specialized service for the basin evaluation program and geological reports were increased due to extensions to the Project completion date which required additional man-months of consultancy services.

Annex "I" shows the original 1982 loan proceeds, the various categories to be financed therefrom and the final 1985 amended loan allocation.

#### D. Procurement

##### 1) List of Major Contracts

The services of the various contractors and consultants for the Project were obtained through International Competitive Bidding (ICB) procedures. One exception, however, was the processing of the bulk of the offshore seismic data which was done directly through PNUC-

Exploration Corporation which put up a seismic processing center funded by their own loan from the World Bank. The center was intended to process not only PNUC's onshore seismic data but BED's as well. Subsequently, the same center will process industry data as a commercial venture.

In the case of the category "specialized services for basin evaluation" which actually was geochemical analyses, it was agreed that these will be provided by Robertson Research (Singapore), an affiliate of Robertson Research (International) and which was the most accessible laboratory for the Project.

The major contracts procured for the Project are shown in Annex "J".

ii) Performance of Contractors

a. Aeromagnetic Survey

The contractors, Questor and Intex, have performed in a most professional manner and have efficiently carried out their respective tasks to implement and complete the aeromagnetic survey program. Questor especially exerted all efforts to replace the survey plane that crashed after the start of the survey and proceeded with the acquisition program. Both companies have been very accomodating in training Filipino staff assigned to this component of the Project, both in the field data acquisition and in the processing/interpretation phase conducted in Canada and the U.S.A.

b. Offshore Seismic Survey

1. Data Acquisition

Seiscom Delta carried out the offshore seismic survey, including additional coverage, in less than 5 months which was still within the original 5.5 months programmed for this phase of the project. The contractor proceeded to carry out the work program based on a notice to mobilize even before the contract was formally signed which required some other government agency

approvals. Several BED staff assigned aboard the survey vessel were given on-the-job training on the technology of marine seismic survey procedures.

## 2. Data Processing

Seismic data processing was done by Seiscom Delta on 1000 line-km of data in Melbourne, Australia. Two (2) BED geophysicists were on a 2-week in-house orientation on seismic data processing in Melbourne. These same geophysicists were also involved in the data acquisition phase and their stint in Melbourne gave them a complete exposure as seismology.

The bulk of the data was processed by the newly established PNUC Seismic Processing Center. The accessibility of the Center made it possible to have close interaction between the client (BED) and the processing contractor. As such, modifications or variations in the processing program could be immediately effected to be assured of the highest quality processing product. The nearness of the Center also enable most of the BED geophysicists to be directly involved in the data processing as part of their training program.

## c. Training

The training component of the Project was implemented by IHRDC through the conduct of ten (10) short-term courses in Manila. The training module was developed jointly by BED and PNUC-EC with IHRDC and special emphasis was given to the relevance of the courses vis-a-vis Philippine setting and the qualifications of the instructors which in some courses required experience in the geology of Southeast Asia. IHRDC was most receptive in accomodating the requirements of the training program and in redesigning the curriculum to fit the working backgrounds of the participants. The training materials including manuals, video tapes, slides, etc. were provided by IHRDC. The holding of the training courses in Manila enabled maximum participating of OEA and PNUC-EC employees

and in the process minimized expenses had these courses been held outside the country and which would have entailed foreign travel expenses.

iii) Performance of Consultants

a. Regional Basin Studies

Full-time consultants and part-time experts from Robertson Research (Australia) and Flower Doery Buchan (Australia) supervised the individual basin studies as well as the production of the final reports and the promotional packages. One important requirement of this Project was that the consultants for basin studies should be very experienced and knowledgeable in the geology of Southeast Asia. Another requirement was their ability to coordinate and work with relatively inexperienced BED geoscientists. The close working relationship between consultants/experts and BED staff was an effective means of transferring technology. The actual and direct involvement of Filipinos in all the aspects of the Project under the guidance of the consultants/experts have enabled the former to gain the necessary experience and confidence to continue further basin evaluation studies. As a whole the assistance provided by the consultants/experts was most satisfactory and was carried out under a wholesome atmosphere conducive to a harmonious working relationship.

b. Project Promotion

The promotion of the results of the basin evaluation studies constituted the most important and critical phase of the Project. The timing of presentations to representatives of the oil industry had to take into serious consideration the worldwide oil exploration climate and the prevailing political and economic conditions of the Philippines prevailing at that time. September 1987 was agreed upon with the World Bank as the presentation month with Manila, Houston, Calgary and London as the venues. It was also agreed that Robertson Research

(Australia) and Flower Doery Buchan (Australia) be retained to coordinate the promotional presentations. The various foreign subsidiaries of Robertson Research International were tapped to give assistance in the promotional campaign. The retainment of Robertson Research (Australia) and Flower Doery Buchan as coordinators of the promotion was in part influenced by their previous experience in a similar project in Papua-New Guinea. Their familiarity with the mechanics of project promotion have made it easier to plan and implement the Philippine petroleum exploration project.

#### E. Disbursements

Disbursements were made against 100% of foreign expenditures of contracts awarded for geophysical services, specialized services for basin evaluation (geochemical analyses), training and consultants services for project supervision and promotion. Out of an adjusted loan amount of US\$8.0 million (with a closing date of June 30, 1988) an amount of \$7.679 million has been disbursed as of March 2, 1988 as per advise of the World Bank. The balance of \$321,000 is expected to be more than sufficient to cover additional requests for disbursements, mainly for the promotional expenses which were being processed as of June 1988.

### IV. INSTITUTIONAL PERFORMANCE

#### A. Performance in Complying with Covenants

The implementing agency, Office of Energy Affairs (OEA) and its predecessor Bureau of Energy Development (BED), has complied fully with all the requirements of the loan agreement. The Project was completed at costs below the original loan. The time of project promotion had to be adjusted and extended to take into consideration factors such as world-wide petroleum exploration climate and internal conditions then obtaining in the Philippines. The promotion of the results of the Project in September 1987 was most timely since it coincided with stable oil prices and with the institution of political and economic reforms in the country as a result of the change of government after the February 1986 people power revolution.



## B. Meeting Institutional Goals

One of the mandates of the OEA is to encourage and guide business activities relative to the exploration, development and utilization of fossil fuels and other forms of energy resources. This Project specifically aims to assist the private industry by making available a comprehensive report which will serve as a basis upon which the oil companies could identify areas with potential for commercial hydrocarbon discoveries. The report itself is the latest compilation and synthesis of all available exploration data and the first attempt of a qualitative assessment of the petroleum potential of the whole country. A study of the report will give the oil companies a quick understanding of the petroleum geology of the Philippine as well as identify the more attractive areas in terms of petroleum potential. This saves time and effort and enables an interested party to already apply for a petroleum contract over an area.

## V. FINANCIAL PERFORMANCE

The 1982 Loan Agreement for the Project 2201-PH amounted to \$13.5 million but subsequent cancellations in 1984 and 1985 reduced the loan proceeds to a final amount of \$8.0 million. The reduction in the loan did not mean a decrease in the activities nor the elimination of some of the project components. Rather, the Project was completed even at the reduced cost due to the low price of offshore seismic data acquisition and processing at the time of the survey which resulted in savings under this project category. This also eliminated the need to use up the allocation for the project category "Unallocated".

The unaudited financial status for the Project including loan proceeds and GUP counterpart as of end 1987 is attached as Annexes "k" and "L".

## VI. CONCLUSIONS

The Project can be considered a success if it has met the original objectives which were (a) to rekindle petroleum exploration interest and (b) to strengthen the technical capabilities of the staff of the implementing agency. The first can be measured by the number of oil companies that attended the presentations, the number of subscribers to the promotional report and most important the number of companies that have applied for petroleum contracts in the Philippines.




More than seventy (70) companies, mostly foreign-based, attended the presentations in Manila, Houston, Calgary and London; 34 companies have so far subscribed to the report and 10 companies have indicated interest and/or applied for petroleum contracts as of June 1988. It is expected that additional report subscriptions and contract applications will be received by the OEA for the rest of 1988.

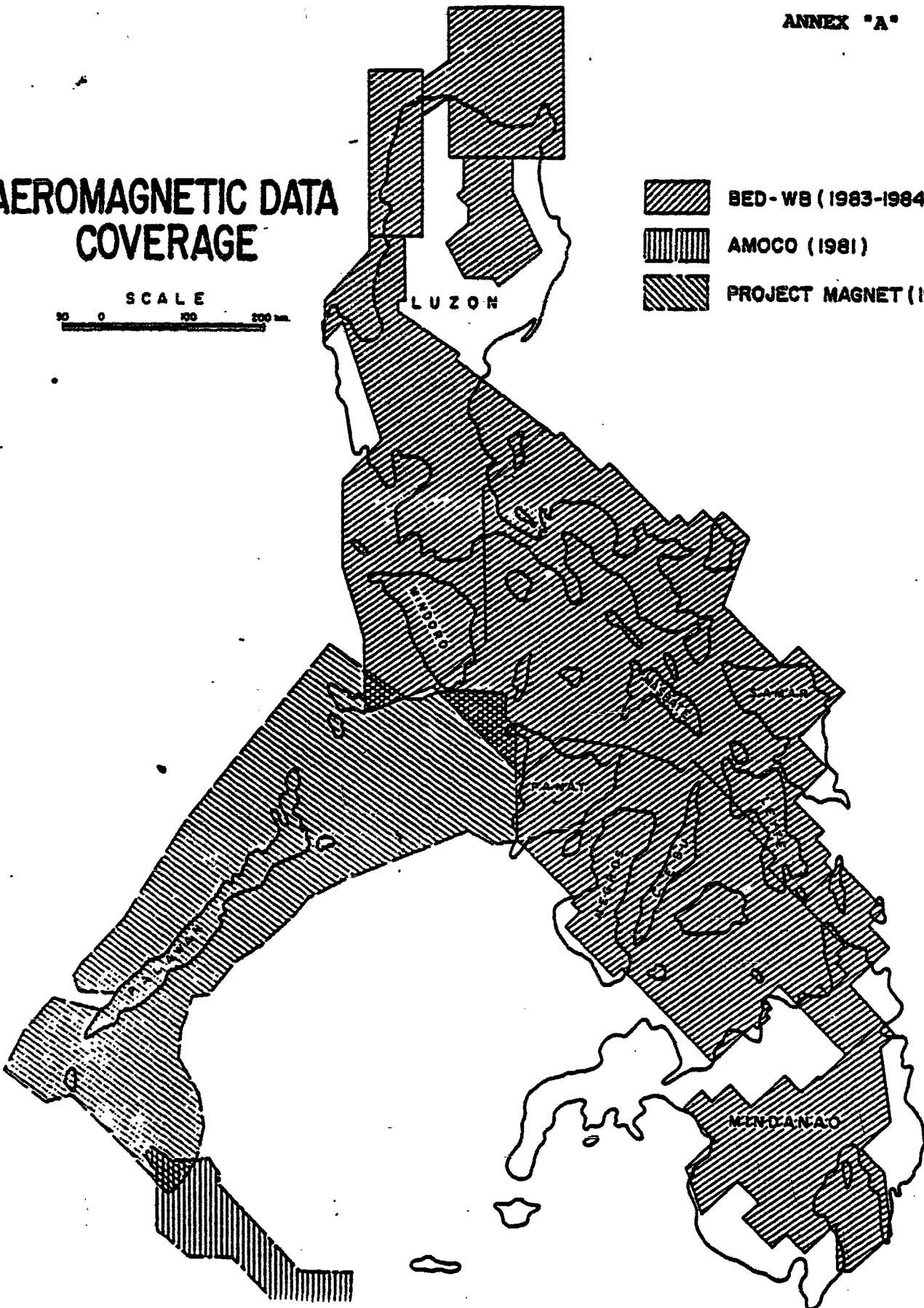
The Project has enabled the technical staff of the OEA to be directly involved in all the components and various aspects of the study under the supervision of the consultants and this served as an effective on-the-job training for them. A 10-course training program of one-week duration each was held locally but conducted by a professional USA-based training firm augmented the training needs of the Filipino staff.

The ultimate test to the success of the Project can only be realized by a significant increase in the number of exploration wells drilled which hopefully will result in major hydrocarbon discoveries in the very near future. Only then can there be an important contribution of the Project into the national goal of self-sufficiency in energy.

# AEROMAGNETIC DATA COVERAGE



-  BED-WB (1983-1984)
-  AMOCO (1981)
-  PROJECT MAGNET (1969)

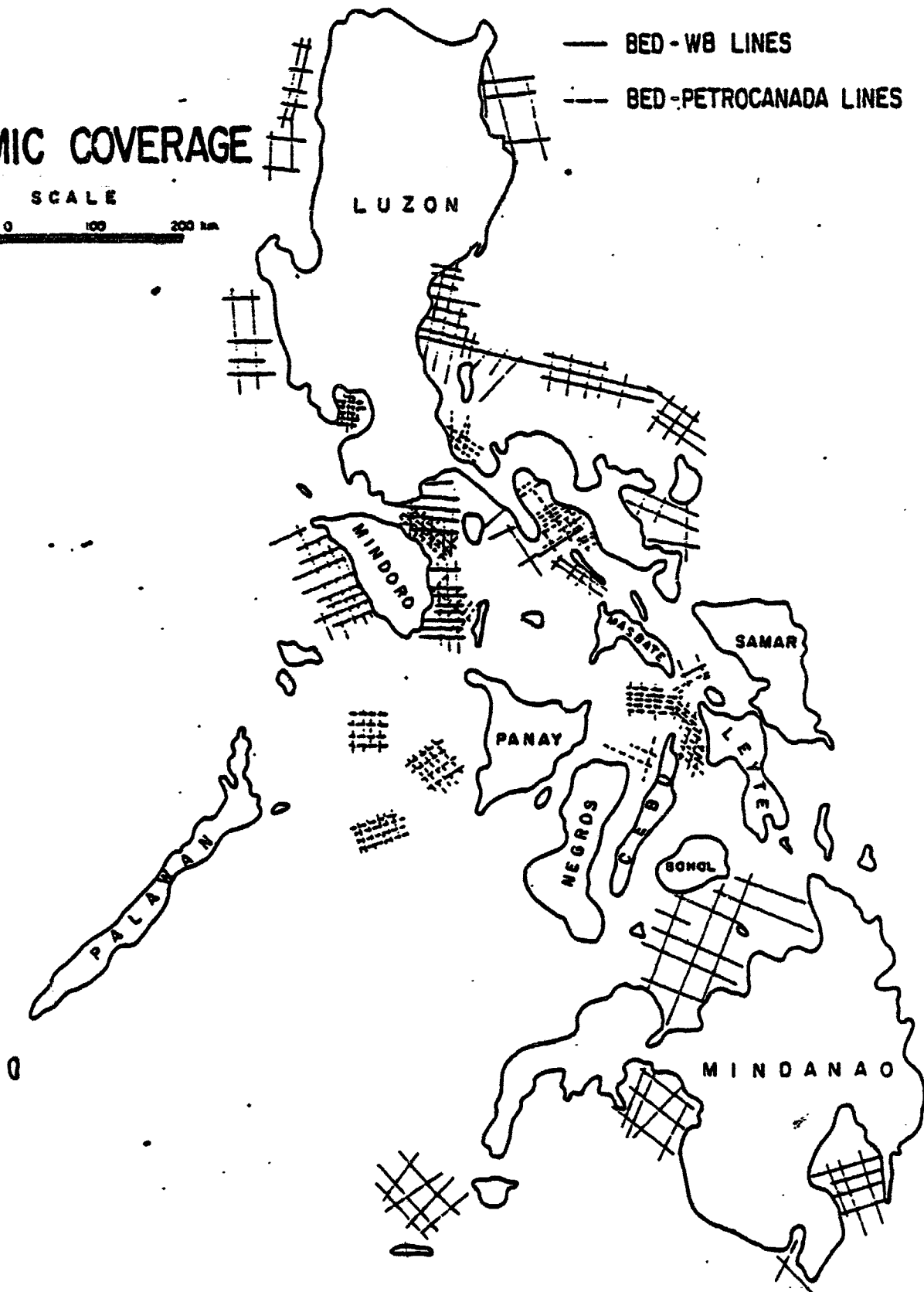


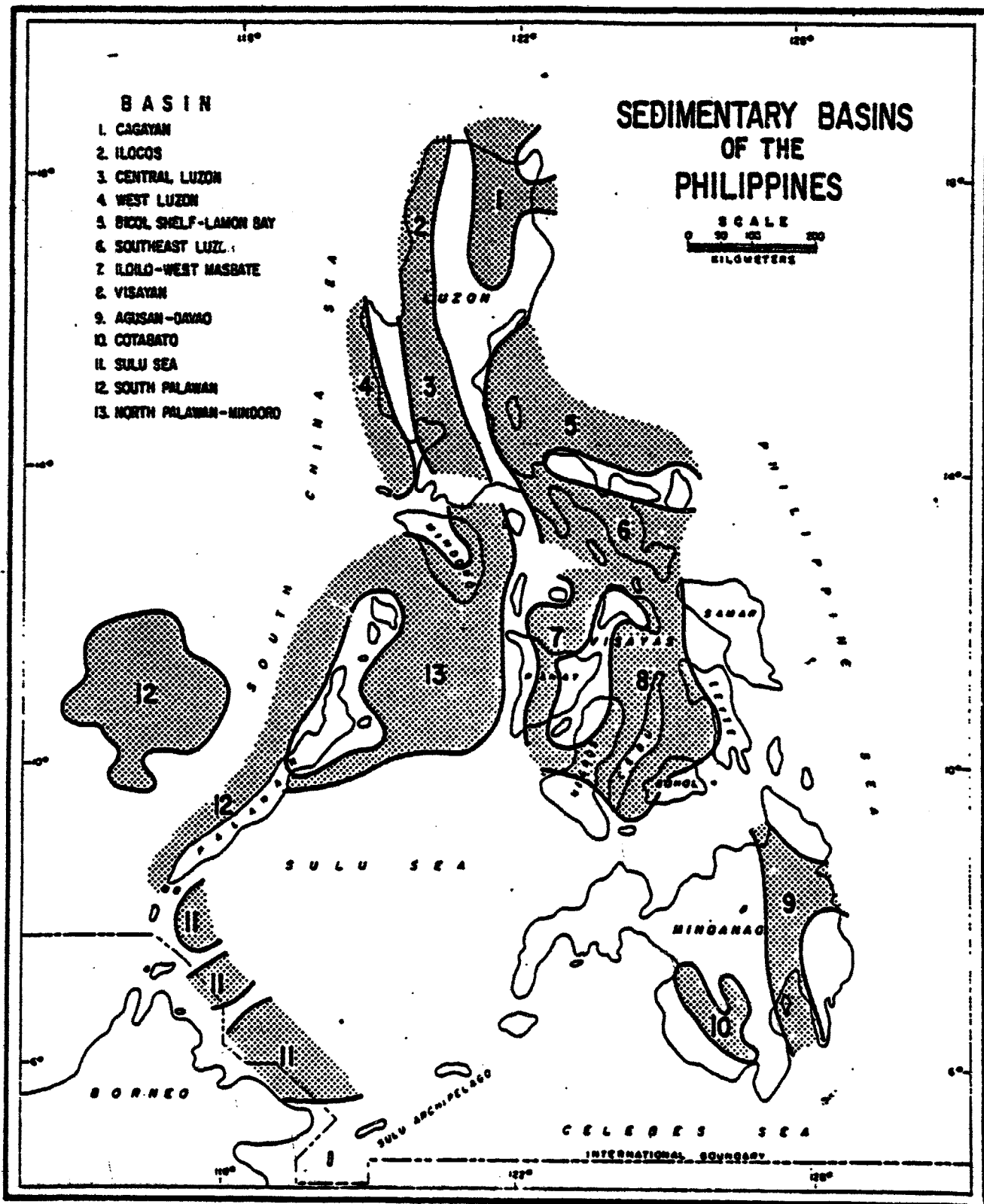
# SEISMIC COVERAGE

SCALE

50 0 100 200 km

- BED - WB LINES
- - - BED - PETROCANADA LINES





## 1985 TRAINING PROGRAM

<u>COURSE TITLE</u>	<u>INSTRUCTOR/S</u>	<u>DATE</u>
1. Seismic Stratigraphy	Dr. R. E. Sheriff/A.R. Brown	July 22-26
2. Advanced Seismic Stratigraphy	Dr. R. E. Sheriff/A.R. Brown	July 22-26
3. Petroleum Generation and Occurrence (Geochemistry II)	Dr. D. W. Waples	July 29 - August 2
4. Geochemistry II	Dr. D. W. Waples	August 5-9
5. Structural Geology	Dr. T. L. Thompson	August 12-16
6. Open-Hole Log Analysis and Formation Evaluation	R. M. Bateman	August 26-30
7. Practical Prospect Generation & Analysis	D. C. Morrill	August 26-30
8. Practical Sub-surface Geological Analysis Using Well Logs	D. C. Morrill	September 2-6
9. Economic Evaluation of Petroleum Exploration and Development Projects	N. W. Miller	September 9-13
10. Carbonate and Sandstone Reservoir Geology	R. Sneider	November 18-22

PROMOTIONAL TEAM

OFFICE OF ENERGY AFFAIRS

W. R. dela Paz	-	Director
A. P. Madrid	-	Chief, Oil and Gas Division
V. C. Laroza	-	Chief, Legal Division
G. N. Tuazon	-	Chief, Compliance Division

ROBERTSON RESEARCH AUSTRALIA

L. G. Flower	-	Senior Geophysicist
R. A. Reyes, Jr.	-	Geochemist/Geologist

PNOC-EC

R. E. del Pilar	-	Exploration Manager
N. L. Caagusan	-	Chief Geologist
L. K. Dizon	-	Senior Geophysicist

PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT  
PROMOTIONAL PRESENTATION  
AGENDA

FIRST DAY PROGRAM

8:30 - 9:00	Opening Ceremonies	
9:00 - 9:10	Introduction	A. P. Madrid
9:10 - 9:30	Coffee Break	
9:30 - 10:20	Regional Geology	
	Geochemistry, Reservoirs	R. A. Reyes, Jr.
10:20 - 11:00	NW Palawan	A. P. Madrid/ L. G. Flower
11:00 - 11:30	SW Palawan/Reed Bank	L. G. Flower
11:30 - 12:00	Cuyo-Mindoro	L. G. Flower
12:00 - 1:30	Lunch	
1:30 - 2:00	SE Luzon	R. A. Reyes, Jr./ L. G. Flower
2:00 - 2:40	Visayas	R. A. Reyes, Jr./ L. G. Flower
2:40 - 3:00	Sandakan/Sulu Sea	R. A. Reyes, Jr./ L. G. Flower
3:00 - 3:20	Agusan Davao/Cotabato	A. P. Madrid/ L. G. Flower
3:20 - 3:40	Other Basins	L. G. Flower
3:40 - 4:00	Wrap-up	A. P. Madrid
4:00 - 4:30	Coffee Break	
4:30 - 6:00	PNOC: Cebu/Mindoro	N. L. Caagusan
6:00 - 8:00	Cocktail Reception	

SECOND DAY PROGRAM

8:30 - 9:30	Legal/Contractual Framework	V. C. Laroza
	a. 1987 Philippine Constitution	
	b. Oil Exploration & Development	
	c. Model Agreement	
9:30 - 10:30	Coffee Break	
10:30 - 11:00	Financial/Accounting	G. N. Tuazon
	a. Contract Requirements	
	b. Audit Accounting	
	c. Accounting for Production Proceeds	
	d. Repatriation of Investment	
11:00 - 11:45	Operating Procedures	V. C. Laroza
	a. Doing Business in the Philippines	
	b. Government Rules & Regulations	
11:45 - 12:00	Wrap-up	W. R. dela Paz
12:00 - 2:00	Lunch	
2:00	Consultation with OEA Officials	



PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT  
HOTEL INTERCONTINENTAL MANILA  
MANILA, PHILIPPINES  
SEPTEMBER 14-15, 1987

PARTICIPANTS

AJMAN (CONSULTANT)  
ALCORN PHILS. INC.  
ANGLO-PHILS. INC.  
BASIC PETROLEUM  
BGR, FEDERAL REP. OF GERMANY  
BHP PETROLEUM  
CHINESE PETROLEUM  
CRA EXPLORATION  
CONSULTANT  
HARTOGEN ENERGY PHILS. LTD.  
INDONESIA PETROLEUM LTD.  
INTERNATIONAL PETROLEUM CORP.

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MARATHON OIL  
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PETROFINA  
PHILODRILL  
ORIENTAL PETROLEUM  
RAN RICKS PHILS.  
SEAFRONT PETROLEUM  
SOS FOR PETROCONSULTANTS S.A.  
UNIOIL EXPLORATION & MIN. DEV. CO.

PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT  
HOTEL INTERCONTINENTAL GALLERIA  
HOUSTON, TEXAS, U.S.A.  
SEPTEMBER 21-22, 1987

PARTICIPANTS

ALCORN INTERNATIONAL	OCCIDENTAL
AMOCO	PECTEN INTERNATIONAL CO.
THE ANSCHUTZ CORP.	PENNZOIL INTERNATIONAL CO.
ASAMERA	PETREL PETROLEUM CO.
CHEVRON OVERSEAS PET. INC.	PETROLEUM EXPLORATION & DEV. CO.
CONOCO INC.	PETROCONSULTANTS INC.
EXXON CO. INTERNATIONAL	PRIMARY FUELS INC.
GULF EXPLORATION	RAN RICKS OF THE PHILS.
JAPAN NATIONAL OIL CORP.	SUN OIL
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MOBIL EXPLORATION	TEXACO OVERSEAS HOLDINGS INC.
NORTHERN MICHIGAN EXPLORATION CO.	SANTOS

PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT  
DELTA BOW VALLEY HOTEL, CALGARY  
ALBERTA, CANADA  
SEPTEMBER 24-25, 1987

**PARTICIPANTS**

ASAMERA INC.  
ARCO INTERNATIONAL  
ARCO OIL AND GAS  
GT. PLAINS RESOURCES  
HOME OIL

PETRO-CANADA  
SCEPTRE  
TEXACO CANADA  
TCPL RESOURCES LTD.  
UNOCAL INTERNATIONAL

PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT  
HYDE PARK HOTEL, LONDON  
SEPTEMBER 29-30, 1987

PARTICIPANTS

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BRIT OIL  
CRESCENT PETROLEUM  
DANSK OLIE OG GAS  
EGLINTON EXPLORATION  
ELF AQUITAINE  
ENTERPRISE OIL

FAR EAST RESOURCES  
PETROLEUM ECONOMIST  
SHELL  
STAT OIL  
TOTAL  
TRAFALGAR HOUSE  
TRICENTROL  
WHITEHALL PETROLEUM  
USO  
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PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT

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LOAN 2201-PH: PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT  
LOAN PROCEEDS (IN U.S. DOLLARS)

CATEGORY	ORIGINAL LOAN (10-28-82)	AMENDED LOAN (5-22-84)	AMENDED LOAN (12-17-85)
1. Aeromagnetic Survey	\$ 3,800,000	\$ 3,187,359	
a. Acquisition			2,554,309
b. Supervision/Interpretation			633,050
2. Offshore Seismic Survey	6,100,000	2,499,598	
a. Acquisition/Processing			1,859,598
b. Processing			640,000
3. Specialized Services	200,000	200,000	200,000
a. Geochemical Analyses			
4. Consultancy Services	1,000,000	1,354,594	
a. Basin Evaluation			1,204,594
b. Promo Package			150,000
5. Training	100,000	100,000	100,000
6. Front-End Fee	199,507	199,507	199,507
7. Unallocated/Contingency Promotional Expenses	2,100,493	1,458,942	208,942 250,000
	<u>\$13,500,000</u>	<u>\$ 9,000,000</u>	<u>\$ 8,000,000</u>

LOAN 2201-PH  
PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT

LIST OF MAJOR CONTRACTS

<u>CATEGORY</u>	<u>CONTRACTOR</u>	<u>DATE CONTRACT SIGNED</u>
1. Aeromagnetic Survey	Questor Surveys, Ltd.	14 January 1983
a. Data Acquisition	Seiscom Delta United (Int'l) Corp., Singapore	07 July 1983
b. Data Processing	Seiscom Delta United PNOC-EC, Philippines	07 July 1983 02 December 1984
3. Specialized Services Basin Evaluation	Robertson Research (Australia)	03 October 1984
4. Consultants Services: Basin Evaluation and Promotion	Robertson Research (Australia) & Flower Doery Buchan (Australia)	19 May 1983
5. Training	International Human Resources Development Corp. (IHRDC) Boston, Mass., U. S. A.	04 October 1985

PHILIPPINE PETROLEUM EXPLORATION PROMOTION PROJECT  
LOAN PROCEEDS  
(IN U.S. DOLLARS)

CATEGORY	ACTUAL OBLIGATIONS					TOTAL
	1983	1984	1985	1986	1987	
1. Aeromagnetic Survey						
a. Acquisition (QUESTOR)	1,547,100	998,209	-	-	-	2,545,309
b. Supervision/Interpretation (INTEX)	325,094	241,891	75,065	-	-	642,050
2. Offshore Seismic Survey						
a. Acquisition & Processing (SEISCOM)	1,761,521	98,077	-	-	-	1,859,598
b. Additional Processing (PNOC)	637,009	2,931	-	-	-	640,000
3. Goods and Specialized Services	-	100,000	100,000	-	-	200,000
4. Consultants Services						
a. Basin Evaluation (ROBERTSON)	429,318	344,540	430,736	146,800	56,980	1,408,374
b. Promotional Package (ROBERTSON)	-	-	150,000	-	-	150,000
c. Promotional Expenses (ROBERTSON)	-	-	-	30,000	121,525	151,525
5. Training (IHRDC)	-	-	75,000	-	-	75,000
6. Front-end Fee	199,507	-	-	-	-	199,507
<b>SUB-TOTAL</b>	<b>4,899,609</b>	<b>1,785,608</b>	<b>830,801</b>	<b>176,800</b>	<b>178,505</b>	<b>7,871,363</b>
7. Unallocated						128,637
<b>TOTAL</b>						<b>8,000,000</b>



WB - Assisted Philippine Petroleum  
Exploration Promotion Project  
GOP Counterpart  
CY 1983 - 1987

	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>TOTAL</u>
<b>A. Personal Services</b>						
100-10 Contractual Serv. Honoraria	P 4,230 105,300	26,503 151,700	131,122 161,650	- -	- 113,000	161,855 531,650
Total Personal Serv.	P 109,530	178,203	292,772	-	113,000	693,505
<b>B. Maintenance and Other Operating Expenses</b>						
200-02 Travelling Exp.	P 672,539	299,521	247,500	45,435	83,470	1,348,465
03 Communication Services	433	6,181	14,217	3,541	2,683	27,055
05 Transportation Services	10,949	14,098	1,515	-	900,000	926,562
06 Other Services	14,103	35,196	92,116	18,466	11,339	171,220
07 Supplies and Materials	286,050	275,589	1,155,255	142,940	1,654	1,861,488
08 Renc	-	-	147	-	-	147
17-100 M & R of Motor Vehicles	2,129	4,300	28	313	112	6,882
17-200 Autoparts	-	-	16,828	13,522	9,649	39,999
17-300 Gasoline and Oil	8,350	20,799	30,616	6,932	4,987	71,684
21 Taxes and Licenses	3,962,100	2,535,952	1,802,956	134,130	101,310	8,536,448
Total MOOL	P4,956,653	3,191,636	3,361,178	365,279	1,115,204	12,989,950
300-33 Equipment Outlay	P1,427,431	-	1,354,730	-	-	2,782,161
TOTAL (CASH)	P6,493,614	3,369,839	5,008,680	365,279	1,228,204	16,465,616
Salaries (in-kind)	P 348,629	949,699	1,146,604	693,292	1,128,904	4,267,128
<b>GRAND TOTAL</b>	<b>P6,842,243</b>	<b>4,319,538</b>	<b>6,155,284</b>	<b>1,058,571</b>	<b>2,357,108</b>	<b>20,732,744</b>

**PART III**

**STATISTICAL INFORMATION**

**1. Related Bank Loans for Development of Energy Resources**

<b>Loan Title &amp; No.</b>	<b>Purpose</b>	<b>Year of Approval</b>	<b>Status</b>	<b>Comments</b>
<b>Coal Exploration/ 2181-PH</b>	<b>Exploring for coal</b>	<b>FY 1982</b>	<b>Completed</b>	<b>Reserves proved, but difficult to develop</b>
<b>Geothermal Exploration/2203-PH</b>	<b>Explore in Negros and Luzon for steam</b>	<b>FY 1982</b>	<b>Completed December 1988</b>	<b>Steam found for development</b>
<b>Petroleum Exploration/2202-PH</b>	<b>Attract oil companies</b>	<b>FY 1983</b>	<b>Completed December 1988</b>	<b>Oil companies attracted</b>
<b>Bacon Manito Geothermal Power Project/2969-PH</b>	<b>Power supply to Luzon &amp; appraisal of geothermal fields</b>	<b>FY 1988</b>	<b>Loan effective from December 1988</b>	<b>Progress just commenced</b>

2. Project Timetable

Item	Date Planned	Date Revised	Date Actual
-Identification & (Executive Project Summary)	Late 1981		Late 1981
-Preparation	Late 1981		Late 1981
-Appraisal	February, 1982		February, 1982
-Loan negotiation	July, 1982		July, 1982
-Board Approval	September, 1982		September 30, 1982
-Loan Signature	October, 1982		October 28, 1982
-Loan Closing	December 31, 1986	December 31, 1987	December 31, 1987
-Completion report	June 30, 1987	December 31, 1988	December 31, 1988**

Note: No precise date can be fixed for 'Identification' & 'Preparation'.  
BED had prepared plans for a nationwide seismic survey in May 1981. After reviewing the BED plan, a Bank mission recommended that aeromagnetic survey be undertaken followed by selected seismic coverage and interpretation. The processing of the BED request for a loan appears to have been done expeditiously through various stages with the loan becoming effective on January 26, 1983. The completion report was delayed with a view to ascertaining the response of the oil companies to the exploration promotion.  
\*\* To be revised as to when it is actually sent.

3. Loan Disbursements

Cumulative Estimated and Actual Disbursements

(US\$ million)

1980 FY	1983	1984	1985	1986	1987	1988
Appraisal Estimate (1)	2.8	10.7	13.5	13.5	13.5	
Revised October 83 estimate (2)		4.7	7.4	7.7	7.7	7.7
Revised May 85 Estimate (3)				7.6	8.0	8.0
Actual	0.2	3.3	6.6	7.3	7.6	7.8
Actual as % of (1)	7	30	49	54	56	58
Date of final Disbursement			June 1988			

Note: By October 1983 most contracts had been awarded and the extent of cost savings was almost known. 44.3 million of the loan amount was cancelled in May 1984 and another \$1.0 million in June 1985.

**4. Project Implementation**

<b>Indicators</b>	<b>Appraisal Estimate</b>	<b>Actual</b>	<b>% Fulfilment</b>
<b>Aeromagnetic -Kilometers</b>	<b>168,000</b>	<b>215,844</b>	<b>128</b>
<b>Offshore seismic -Kilometers</b>	<b>8,400</b>	<b>9,104</b>	<b>108</b>
<b>Basin Evaluation -Number of basins</b>	<b>15</b>	<b>15</b>	<b>100</b>



B: Project Financing

Source	Planned Loan Agreement (\$ million)	Revised 1/2 (\$ million) (Oct'83)	Final 2 (\$ million)	Comments
<b>IBRD</b>				
Aeromagnetic	3.8	3.0	3.2	
Offshore seismic	6.1	2.6	2.5	Lower contract rates
Basin evaluation				
-Support	0.2	0.05	0.5	
-consultants	1.0	1.2	1.3	Longer duration of work & more volume
Training	0.1	0.1	0.1	
Fee	0.2	0.2	0.2	
Unallocated	2.1	0.55	0.0	
	-----	-----	-----	
Republic of	13.3	7.7	7.8	822
Philippines	2.3	1.6	1.7	182
	-----	-----	-----	
<b>TOTAL</b>	<b>16.0</b>	<b>9.3</b>	<b>9.5</b>	<b>1002</b>

Comments: \$5.3 million of the loan amount was cancelled, \$4.5 in May 84 and \$1.0 million in June 1985.

6. Project Results

A. Direct Benefits

Indicators	Appraisal Estimate	Estimated at closing date	Estimated at full development
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-----NOT APPLICABLE-----

Comments: The project has resulted in a number of exploration (survey) contracts being signed with oil companies. If these contracts in turn lead to drilling and production contracts, the benefits to the economy will be considerable. At this time, it is not possible to quantify these.

B: Economic Impact

Economic Rate of Return	Appraisal Estimate	Actual
Underlying assumptions	-----NOT APPLICABLE-----	

Comments: See para 2-3 of Part I.



**C: Financial Impact**

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	Without Project	Future with Project	Actual
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Financial Rate  
of Return

Other Financial  
Indicators

Fiscal Impact

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Comments: See Para 2.03.1 of Part I.

**D: Studies**

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	Purpose as defined at Appraisal	Status	Impact of Study
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Studies

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---No Studies in this Project---

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**7. Status of Covenants**

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<b>Covenant</b>	<b>Subject</b>	<b>Deadline for compliance</b>	<b>Status</b>
<b>Loan Agreement</b>			
<b>Section 3.02(b)</b>	<b>Appointment of consultants for basin evaluation</b>	<b>January 1, 1983</b>	<b>Done in May 1983</b>
<b>Section 3.06(a)</b>	<b>Develop plan for promotion campaign by December 1983 and periodically update it</b>	<b>Complied with</b>	

**8. Use of Bank Resources for Ln 2201**

**As Staff Inputs**

Stage of Project Cycle	Planned		Revised		Final		Comments
	HQ	Field	HQ	Field	HQ	Field	
-----Staff Weeks-----							
Through Appraisal					(Combined)		
					0.7		
Appraisal through Board Approval					26.2		
			NOT AVAILABLE				
Board Approval through Effectiveness					3.6		
Supervision					34.5		
<b>TOTAL</b>					<b>65.0</b>		

**B: Missions**

Stage of Project Cycle	Month/ year	Number of persons	Days in field	Special isation represented 1/	Performance Rating status2/	Types of problems 3/
Through Appraisal						
Appraisal through Board Approval				NOT AVAILABLE		
Board Approval through Effectiveness						
Supervision						
Supervision 1	09/82	2	1.5	a,d	1	
Supervision 2	02/83	3	4	a,b,e	2	F
Supervision 3	10/83	3	4	a,b,c	1	
Supervision 4	03/84	3	3	a,b,c	1	
Supervision 5	11/84	3	3	a,b,c	1	
Supervision 6	05/85	3	6	a,b,c	1	
Supervision 7	05/86	2	3	a,c	1	
Supervision 8	03/87	1	1	b	1	

1/ a- Economist, b- Geophysicist, c- Geologist, d- Financial Analyst  
e- Procurement Specialist

2/ 1- Problem free or minor, 2- Moderate problems

3/ F- Financial: BED had a temporary problem of Govt. budget releases.

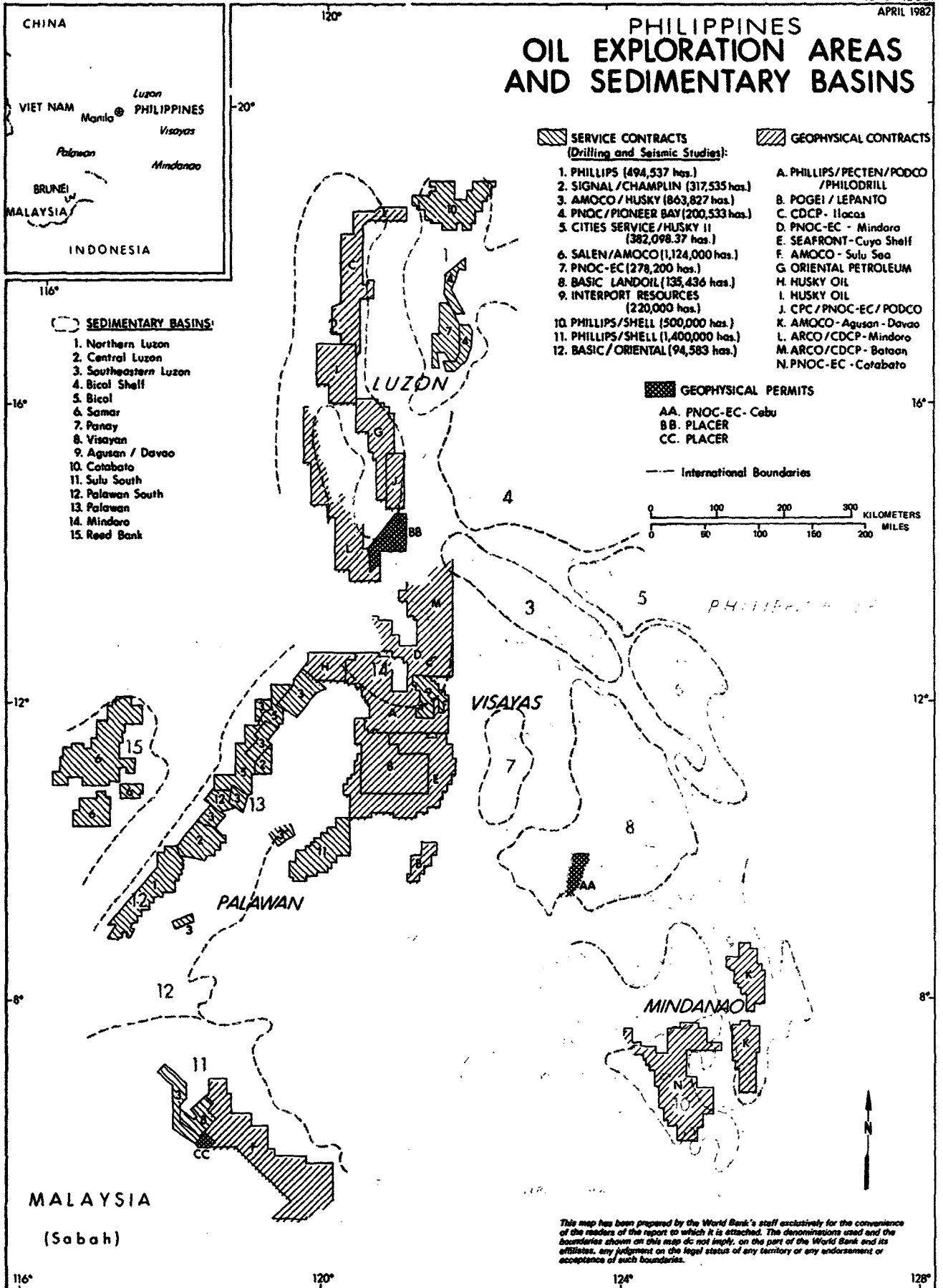
C: Costs (if available from MIS)

Stage of Project Cycle	Total & Cost of Staff Inputs	Average & Cost of HQ Activities per Mission Member	Average & Cost of Field Activity per Mission Member
Through Appraisal			
Appraisal through Board Approval			
Board Approval through effectiveness			
Supervision			

-NOT AVAILABLE-

**MAP SECTION**

# PHILIPPINES OIL EXPLORATION AREAS AND SEDIMENTARY BASINS



*This map has been prepared by the World Bank's staff exclusively for the convenience of the readers of the report to which it is attached. The denominations used and the boundaries shown on this map do not imply, on the part of the World Bank and its affiliates, any judgment on the legal status of any territory or any endorsement or acceptance of such boundaries.*