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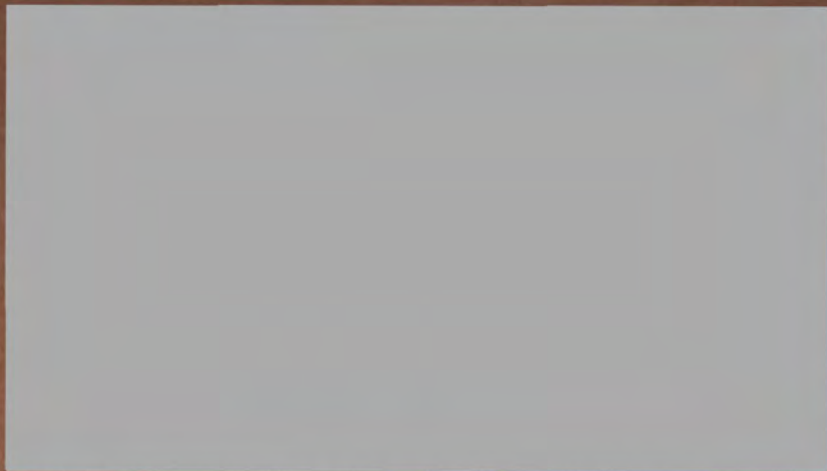
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15B



EGYPT
CREDIT NUMBER 1024-EGT

CAIRO GAS DISTRIBUTION
PROJECT

APPROVED: MAY 20, 1980

SIGNED: JUNE 4, 1980

EFFECTIVE: DECEMBER 4,
1980

Division 1A
EMENA Region



1264595

R1994-192 Other #: 11

81134B

Cairo Gas Distribution Project - Egypt, Arab Republic of - Credit 1024 - P005023 -
Correspondence

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OFFICE MEMORANDUM

~~AJF~~

SAWM

BD

Date: October 14, 1986

To: Mr. Eugene D. McCarthy, Chief, EGYD1

From: ^{B.S.} Brian Shields, Chief, OEDD3

Extension: 32926

Subject: Project Performance Audit Report
 Egypt: Cairo Gas Distribution Project
 (Credit 1024-EGT)

1. I attach, for your review and comments, the draft of a Project Performance Audit Report on the above project.
2. We expect to send the draft report to the Borrower on October 28, 1986. Any comments you may have by that date will be appreciated. If they are such that revision of the draft is required prior to sending it to the Borrower, this will be done. In any event, together with any further comments you may have before November 18, 1986, they will be reflected in the final report, along with any comments received from the Borrower.
3. I would be grateful if you could arrange for us to be provided with the names, titles and addresses of people in the Borrower country to whom the draft report should also be sent for comments.

Attachment

cc: Messrs. Rajagopalan, EMPDR
 Lari, EM1DR
 Pranich, EMPDR
 Favilla, EM1EG ✓
 Reekie, EMPPE
 Churchill, EGYDR
 Abu-Akeel, LEGEM

Shafey (MP/IC)
Heked (Otelm)
Hamed (EGPC)
Essam Abdelaziz (EGPC)
Cairo Gas

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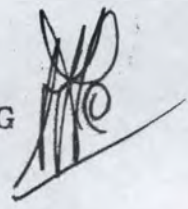
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EMIEG

BB

THE WORLD BANK/INTERNATIONAL FINANCE CORPORATION
OFFICE MEMORANDUM

DATE: October 24, 1986
TO: Mr. Brian Shields, OEDD3
FROM: Alberto J. Favilla, Division Chief, EMIEG
EXTENSION: 32464
SUBJECT: EGYPT: PPAR-Cairo Gas Distribution Project (Cr. 1024-EGT)



1. Reference your memorandum of October 14 on the above. You have already received the Energy Department's comments which should be taken into account before the reports are sent to the Government.

2. The passing references in the PPAR to the ongoing dialogue in energy prices, that intensified in late 1982 and is now progressing positively, tend to give a rather partial and almost prejudiced view of developments. A more balanced and broader perspective is warranted if these references have to be made. To portray the dialogue and the negotiations (between a sovereign Government and the Bank) as being a crude process of rewards-and-punishments (para. 10 and footnote and para. 15), is unfair and unseemly. It contributes nothing to the post-completion evaluation of the project, which is the purpose of the PCR and PPAR, and represents a potential danger of adversely affecting country-Bank relations.

3. The persons who should receive the reports are:

- (i) Dr. Erfan Shafey, First Undersecretary, Ministry of Planning and International Cooperation;
- (ii) Mr. Abdel Latif Waked, First Undersecretary, Ministry of Petroleum and Mineral Resources;
- (iii) Mr. Essam Abdel Aziz, Vice-Chairman: Finance, Egyptian General Petroleum Corporation (EGPC);
- (iv) Mr. Hassab El Naby Assal, Vice-Chairman: Projects and Planning, EGPC;
- (v) Mr Moustapha Hamed, Vice-Chairman: Natural Gas, EGPC;
- (vi) Mr. A.M. Abou El Seoud, Chairman: Petroleum Gas Company.

cc: Messrs. McCarthy (EGY), Reekie (EMPPE).

SAWMoini:rm



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File Title Cairo Gas Distribution Project - Egypt, Arab Republic of - Credit 1024 - P005023 - Correspondence		Barcode No. 1264595		
Document Date 14 October, 1986	Document Type Report			
Correspondents / Participants				
Subject / Title Project Performance Audit Report " Egypt : Cairo Gas Distribution Project (Credit 1024-EGT) "				
Exception(s) Information Restricted Under Separate Disclosure Regimes and Other Investigative Information: Independent Evaluation Group (IEG)				
Additional Comments		<p>The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information. This Policy can be found on the World Bank Access to Information website.</p> <table border="1"> <tr> <td>Withdrawn by Chandra Kumar</td> <td>Date 12-Mar-15</td> </tr> </table>	Withdrawn by Chandra Kumar	Date 12-Mar-15
Withdrawn by Chandra Kumar	Date 12-Mar-15			

OFFICE MEMORANDUM

DATE October 21, 1986

TO Mr. Brian Shields, Chief, OEDD3

FROM E.D. McCarthy, Chief, EGYD1


EXTENSION 7-4081

SUBJECT EGYPT: Cairo Gas Distribution Project (Credit 1024-EGT)
Project Performance Audit Memorandum

Attached are our comments on the draft Project Performance Audit Memorandum for the Cairo Gas Project. We have no major disagreements with the audit memorandum, but we have pointed out several errors and differences of view which we would be pleased to discuss with you or your staff.

Regarding the persons and addresses to whom the draft report should be sent, please contact Mr. S. Moini in the EMENA Program Department, Egypt Division.

cc: Messrs. P. Bourcier (EGYPP); K. Pranich (EMPDR); R. Reekie (EMPPE);
A. Favilla (EMIEG); S. Moini (EMIEG); H. Schober (EGYD1)


HSchober:JP

EGYPT

Cairo Gas Distribution Project

Comments on Project Performance Report

Para. 3

The statement to the effect that a greater use of specialized consultants would have made several conclusions, drawn from the project, self evident is an off-the-cuff comment which is inappropriate in this type of document. If a valid point is to be made, it should state which specialized consultants could have made what conclusion self evident.

Para. 7

We see no way a market survey could have foreseen the flue problem subsequently encountered during burner conversion. The market survey, as the name implies, was focused on determining the expected natural gas consumption (mainly based on existing LPG consumption) and the number of appliances per household.

Para. 14

This paragraph strains very hard to show that there was a project cost overrun when in fact there was an underrun. This erroneous conclusion is arrived at by:

- (a) asserting that when a contingency allowance is included in a cost estimate, it is not part of the estimated project cost. We have never seen an exception to the practice of basing cost overrun/underrun on the total estimated project cost - including contingencies, if any;
- (b) excluding from the project cost the savings realized on the purchase of goods and services as a result of exchange rate fluctuations. Where more than one currency is involved, changes in exchange rates are automatically reflected in the cost to the buyer. This factor would have never surfaced except that Petrogas kept an account of foreign exchange savings and losses; and
- (c) conjecturing that the pipeline construction contractor either absorbed some of the pipe laying costs or the original estimate was much too high. Neither is correct. The contractor did not absorb any costs; he did not work on the pipeline for three years; his men and equipment when not working on the pipeline were employed elsewhere. The pipe laying cost was estimated on the basis of an expatriate contractor using mainly local labor.

Para. 15

We feel a more valid retrospective evaluation of the project could

have been achieved by visiting Egypt and obtaining up-to-date information on operating and fuel costs, gas consumption, current and future plans, etc. This could have either reinforced or invalidated the audit memorandum's conclusions and criticisms regarding justification for the Credit and the economic and financial results from the project. It must be remembered that considerable time has elapsed since the project completion mission to Egypt.

There were no grounds for cancelling or delaying the Credit. The findings of the petroleum pricing study were not yet known, and in general the feeling at the time was that although difficulties could be expected, some energy pricing reforms would eventually emerge.

As pointed out previously and in the PCR, there was a cost underrun not a cost overrun.

OFFICE MEMORANDUM

DATE June 26, 1985

TO Mr. Y. Watanabe, Director, OED

FROM E. D. McCarthy, Chief, EGYD1

EXTENSION 74081

SUBJECT EGYPT: Cairo Gas Project, Loan 1024-EGT
Project Completion Report

B.B.

I am attaching with this memorandum the final version of the Project Completion Report for Egypt's Cairo Gas Project.

The report has been reviewed and cleared as follows:

- (a) cleared by the Assistant Director, Petroleum, of the Energy Department;
- (b) reviewed by the relevant Program Division whose comments have been taken into account;
- (c) reviewed by the responsible Assistant Director of the EMENA Projects Department, whose comments have been taken into account;
- (d) cleared by the Legal Department.

H. Schober/dn

Attachment

cc: Messrs. V. Rajagopalan (PPD); W. Wapenhans; P. Hasan; P. Patel (EMNVP); R. Picciotto, C. Dewey, R. Reekie (EMP); E. Lari, L. Moreau (EM1DR); A. Favilla, S. Moini, J. Wall, Ms. E. Dalton (EM1EG); A. Abu-Akeel (LEG); J. Damski (LOA); C. Ludvik, S. Weissman (EISVP); J. Goldberg, E. Segura (IND); P. Bourcier, R. Saunders, I. Hume, J. Fish, A. Heron, R. Sadove, R. Bates (EGY)

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EGYPT

CAIRO GAS DISTRIBUTION PROJECT

(CREDIT 1024-EGT)

PROJECT COMPLETION REPORT

June 1985

EGYPT

CAIRO GAS DISTRIBUTION PROJECT
(CREDIT NO. 1024-EGT)

PROJECT COMPLETION REPORT

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EGYPT

CAIRO GAS DISTRIBUTION PROJECT

Credit 1024-EGT

Preface

The project provided for the supply of natural gas to 160,000 households in four suburban districts of Cairo in lieu of LPG, the predominant domestic fuel in use. Credit 1024 EGT in the amount of US\$50 million to the Arab Republic of Egypt was onlent in support of the project to the Petroleum Gas Company (Petrogas), a wholly owned subsidiary of Egyptian General Petroleum Corporation (the state oil company). Petrogas was established in 1978 for the implementation and operation of the project. The credit was signed on June 4, 1980 and fully disbursed in March 1983.

The accompanying Project Completion Report (PCR) was prepared by the Energy Department. It is based on reports, documents and data in the project files and the findings of an IDA mission which visited Cairo from September 16 to October 4, 1984. Petrogas did not prepare a final project report, but the company gave its full cooperation in helping the mission acquire the data needed for the PCR.

EGYPT

CAIRO GAS DISTRIBUTION PROJECT (CREDIT NO. 1024-EGT)

Project Completion Report Basic Data Sheet

KEY PROJECT DATA

<u>Item</u>	<u>Appraisal Expectation</u>	<u>Actual or Current Estimate</u>
Total Project Cost (US\$ million)	155.0	151.2
Underrun or Overrun (%)	-	(13.7) ^{1/}
Credit Amount	50.0	50.0
Disbursed to end of March 1983	50.0	50.0
Date Physical Components Completed	Dec. 31, 1983	Dec. 31, 1983
Proportion Completed by Above Date (%)	100	95
Economic Rate of Return (%)	44	14.2
Financial Performance	Good	Not satisfactory
Institutional Performance	Competent	Satisfactory, except in financial and accounting areas

OTHER PROJECT DATA

<u>Item</u>	<u>Original Plan</u>	<u>Actual or Current Estimate</u>
First Mention in Files or Timetable		Nov. 17, 1977
Government's Application		
First presentation to IDA		Jan. 1978
First official letter from Ministry of Economy		Feb. 1, 1979
Minutes of understanding		Oct. 31, 1979
Negotiations	From March 17, to March 24, 1980	From March 24 to Apr. 1, 1980
Board Approval		May 20, 1980
Credit Agreement Date	June 4, 1980	June 4, 1980
Effectiveness Date	Oct. 1980	Dec. 4, 1980
Closing Date	Dec. 31, 1985	Dec. 31, 1985
Borrower	Arab Republic of Egypt	
Executing Agency	Egyptian General Petroleum Corporation (EGPC) & Petroleum Gas Company (Petrogas)	
Fiscal Year of Borrower	July 1 - June 30	

^{1/} Based on fixed assets costs of US\$17.4 million (not included in the SAR estimate) added to the US\$155.0 million. Underrun is 2.5% without including these assets.

Follow-on Projects:

Loan	1928-EGT, Abu Gharadig Western Desert Petroleum Exploration
Amount (US\$ million)	25.0
Loan Agreement Date	Jan. 13, 1981
Loan	2103-EGT, Abu Qir Gas Development
Amount (US\$ million)	90.0
Loan Agreement Date	May 3, 1982

MISSION DATA

<u>Item</u>	<u>Month/ Year</u>	<u>No. of Weeks</u>	<u>No. of Person</u>	<u>Staff Weeks</u>	<u>Date of Report</u>
Identification	April 30/78	2.5	3	7.5	June 12/78
Preparation I	July 24/78	2.0	4	8.0	Aug. 17/78
Preparation II	Feb. 26/78	1.5	3	4.5	not available
Pre-Appraisal I	May 28/78	2.5	3	7.5	Aug. 27/79
			(Project Brief)		
Pre-Appraisal II	July 23/79	1.5	3	4.5	Aug. 10/79
			(Review of Project)		
Appraisal	Oct. 2/79	<u>3.2</u>	7	<u>22.4</u>	April 30/80
Total		13.2		54.4	
Supervision I	Sept. 80	2.5	2	5.0	Dec. 31, 80
II	Sept. 81	2.5	2	5.0	Nov. 6, 81
III	March 82	1.5	1	1.5	April 13, 82
IV	June 82	2.5	3	7.5	July 30, 82
V	Feb. 83	2.5	3	7.5	March 1, 83
VI	Feb. 84	2.5	3	7.5	March 16, 84
Completion	Sept.-Oct. 84	<u>2.5</u>	3	<u>7.5</u>	
Total		16.5		41.5	

COUNTRY EXCHANGE RATES

Name of Currency	Egyptian Pound (LE)
Year:	
Appraisal Year Average (1980)	Exchange Rate US\$1 = LE 0.69
Completion Year Average (1984)	US\$1 = LE 0.69

EGYPT

CAIRO GAS DISTRIBUTION PROJECT

Highlights

1. The credit under review, in the amount of US\$50 million was onlent in support of the project to Petroleum Gas Company (Petrogas) through its sole owner, The Egyptian General Petroleum Corporation (EGPC), a government owned entity. Petrogas was the implementing agency. The project comprised a natural gas distribution system which initially was to supply 160,000 households in four districts of Cairo and two gas turbine driven electricity generating stations in the project area. The distribution network is to be expanded to provide gas for a total of about 630,000 households over the next 20 years. Justification for the project was based on benefits derived from substituting natural gas for LPG, the predominant household fuel in Cairo and for gas oil used in firing the two power stations. These substitutions upgrade the value of natural gas as a replacement for fuel oil to that as a replacement for the more valuable and partly imported LPG and gas oil.

2. Petrogas set an ambitious schedule for implementing the project; it reduced the originally estimated five year implementation period from five to four years. Experienced and competent expatriate consultants assisted in all project facilities required for supplying gas to the initial 160,000 households. The project was essentially completed on schedule with a 14% cost underrun. However, due to unanticipated circumstances over which the contractor had no control, target set for appliance conversions and households using gas could not be met (para. 3.04). Conversion of two power stations using diesel oil was delayed about six months by the Egyptian Electricity Authority (para. 3.09).

3. Institution building objectives were partially met. Intensive training of both contractor and Petrogas personnel along with the back-up assistance of consultants resulted in a well executed project. Performance of the Petrogas implementation team in coping with the ambitious project schedule was particularly outstanding. By completion of the project the Petrogas organization was capable of carrying out its operations and expansion program without outside assistance. The company's one area of weakness is the need for improving its accounting system and introducing an effective management information system (para. 5.02).

4. Earnings from its natural gas operations in the project area are not generating the revenue expected by Petrogas and do not meet the financial performance agreed to by the Association. Shortfalls are made up by contributions from EGPC. The company needs a substantial boost in prices to have these gas operations become self-supporting, however, this is highly unlikely in the near term considering the Government's current policies on price increase (paras 6.06 and 6.07). This exemplifies the reason Bank Group lending operations in the petroleum sector have been suspended since 1982.

5. Some interesting conclusions brought out in the report are:
- (a) a single responsibility turnkey contract appears to be the most cost effective and time saving way to execute a project of this type (para 9.01);
 - (b) consideration should be given to having the executing agency be responsible for all conversion work in a gas distribution project (para 9.03);
 - (c) domestic gas tariffs, and associated reserves targets, should take full account of the constraints imposed by low domestic prices of competing fuels; desirable financial and economic price targets may not be achievable in the absence of price changes for other fuels (para 9.05);
 - (d) domestic gas distribution systems serving low volume customers should also concentrate on connecting up commercial and industrial customers (para 9.06); and
 - (e) along with (d) above, a gas utility has to expand its sales rapidly in the initial years to justify the large front end investment (para. 9.06).

EGYPT

CAIRO GAS DISTRIBUTION PROJECT

PROJECT COMPLETION REPORT

I. Introduction

1.01 Over the past decade Egypt has made impressive gains in crude oil production, first in reaching self-sufficiency and then in increasing export volumes. Its major foreign exchange earnings are now derived from oil exports. However, domestic consumption of petroleum products is growing at a rapid rate, which if not curbed will erode away completely the exportable surplus in the not distant future. To check the burgeoning internal demand, drastic action is needed to promote conservation by rationalizing petroleum prices which are among the lowest in the world and to promote the substitution of natural gas for liquid hydrocarbons.

1.02 The Bank's lending operations in the petroleum sector have been concerned from the outset with this sector problem. Loan 1732-EGT (the first) approved in 1979 for the Gulf of Suez Project provided for the recovery of associated gas and LPG being flared in the Gulf of Suez oil fields and addressed critical sector issues through studies related to pricing, exploration and natural gas utilization. Credit 1024-EGT for the Cairo Gas Project, the project under review in this report, assisted in establishing a natural gas distribution network in four Cairo districts. Two additional loans (1928-EGT and 2103-EGT) for the Western Desert Gas Exploration and the Abu Qir projects respectively were subsequently approved in 1981 and 1982. The objective of both projects was to develop additional natural gas supplies, and to undertake sector studies aimed at developing an appropriate energy policy. Further Bank lending in the petroleum sector has been suspended pending the Government's adoption of a petroleum pricing policy which would begin to correct existing distortions.

1.03 Fuel for domestic use in Egypt has to a large extent depended on imports. Wood, crop residue and animal waste, traditional sources of domestic fuel in rural areas, is available in only limited amounts because of the country's preponderant desert climate. The result has been a heavy reliance on mineral fuels, kerosene and LPG, especially the former in rural areas because of restricted supplies of LPG and the lack of transport and distribution facilities. In urban areas, LPG has all along been the preferred fuel for household use. A large proportion of the domestically consumed kerosene and LPG has had to be imported at a substantial cost in foreign exchange. The use of natural gas as a domestic fuel displaces an equivalent quantity of LPG. At the same time, by substituting for a high price import the domestically consumed gas has a higher value use than when it only replaces fuel oil, its more common role so far in the Egyptian economy. Furthermore, the growing use of natural gas as a domestic fuel could free LPG for use in rural areas and reduce the dependence on imported kerosene. The project under consideration also provided an opportunity to upgrade the value of natural gas by substituting it for gas oil, an expensive petroleum product

partly imported by Egypt, at two turbine powered electricity generating stations.

1.04 The primary responsibility for managing and operating the petroleum sector in Egypt rests with the Egyptian General Petroleum Corporation (EGPC). In carrying out its diverse functions EGPC acts as a holding company in conjunction with various affiliates and partnerships. Petroleum Gas Company (Petrogas) was established as a wholly owned subsidiary of EGPC in September 1978 to act on its behalf in implementing the Cairo Gas Project and subsequently to take on the role of a full fledged utility company.

1.05 This report is based on data, documents and reports available in the files and on the findings of a mission which visited Cairo from September 16 to October 4, 1984. The Borrower did not prepare a completion report for this project but did cooperate fully with the mission by helping it acquire the necessary data for this report.

II. Project Background

2.01 In January 1978 the Bank received a request from the Government of Egypt to participate in financing the Cairo Gas Project, which at the time was based on a survey and feasibility study by consultants appointed by EGPC. The project was designed to supply natural gas to 160,000 households over a five-year period (later reduced to four years) with subsequent investments bringing the total to 640,000 households over twenty years. Principal features of the project were a high pressure gas transmission line skirting the four Cairo districts to be supplied with gas, a medium pressure supply ring and a low pressure distribution network for supplying the customers. Storage tanks were included to meet peak demand.

2.02 A Bank mission which reviewed the consultants' proposed system in August 1978 did not agree with the selection of a low pressure distribution network. This system design is considered outdated, being a carry over from the old city gas systems, and does not take advantage of modern materials and construction practices and the pressure available in the gas transmission pipeline. The mission recommended a medium pressure network (the prevalent choice for such natural gas installations) since this would be substantially less costly, more flexible for future expansion and have sufficient built-in storage capacity to eliminate the need for gas storage tanks. EGPC accepted the Bank's recommendations and appointed new consultants to prepare a new feasibility study based on the medium pressure concept. Petrogas retained the same consultants when it subsequently undertook the necessary preliminary project preparation, design and planning activities, as well as later during the construction and operating stages.

2.03 The project was appraised in October 1979. Negotiations were held in Washington from March 24 to April 1, 1980. The credit was approved by the Board on May 20, 1980 and became effective on December 4, 1980 following approval by the People's Assembly.

2.04 The objective of the project was to reduce the consumption of imported LPG by setting up a natural gas distribution system in Cairo, to reduce the consumption of gas oil, also imported in marginal quantities, by converting two turbine electric power plants in the project area to natural

gas and to improve Petrogas' financial and accounting procedures. The four Cairo districts to be supplied with natural gas, Helwan, Maadi, Nasr City and Heliopolis, were heavy users of LPG and were chosen because of their proximity to the gas transmission line, future growth potential, accessibility and density of potential customers.

2.05 The project was defined to include the following major components:

- (a) a 55 km long 24 inch high pressure transmission pipeline from the tie-in point to the Abu Gharadig pipeline to the project area;
- (b) ancillaries to the transmission line including pressure reducing stations at each district and tie-in provisions for the Nasr City and Heliopolis power stations;
- (c) a gas distribution network totalling about 900 km in length;
- (d) approximately 9,000 service connections with pressure regulators;
- (e) carcassing ^{1/} for about 160,000 dwellings;
- (f) conversion of about 300,000 appliances from LPG to natural gas; and
- (g) technical assistance, training and project connected studies.

III. Project Implementation

Background

3.01 Petrogas, assisted by its expatriate consultants, had full responsibility for implementing the project. A single responsibility contract, after satisfactory prequalification and international competitive bidding, was awarded to a foreign contractor with extensive gas distribution experience for the supply and installation of the project facilities. Construction of the high pressure transmission pipeline was subcontracted to an EGPC subsidiary construction company. Petrogas reduced the implementation period for the project from five to four years; the high pressure pipeline and its adjuncts were scheduled for completion in the first contract year and the entire project in the fourth, during December 1983.

3.02 Awarding a single responsibility contract raised the issue of whether the procurement might have been packaged into smaller contracts covering the various discrete project components as had been proposed during project preparation. The decision to go the single responsibility route was made by the Borrower and supported by the appraisal team for the following reasons:

^{1/} "Carcassing" for a typical household connection refers to the exterior and interior piping, regulator and meter required from the service outlet to the appliances in the premise.

- (a) Coordinating the activities of multiple contractors and maintaining the tight implementation schedule would have been a serious problem for an inexperienced company like Petrogas;
- (b) Safety being of paramount importance in gas distribution projects, it was logical to place responsibility for safety and quality standards with a single highly experienced contractor; and
- (c) A single contract was considered more cost effective than multiple ones because it avoided the duplication of effort in mobilizing a large expatriate work force and construction plant and establishing extensive training facilities for local craftsmen.

Achievement of Project Objectives

3.03 The project targets set in the Staff Appraisal Report (SAR) and the actual accomplishments under the November 22, 1979 contract compare as follows:

	<u>SAR</u>	<u>Actual</u>
No. of customer connections supplied	160,000	158,314
No of appliances converted	300,000	181,068
No. service connection installed	9,000	22,100
Length (km) mains and services installed	900	910
Length (km) transmission pipeline	55	57

The contract was extended to include an additional 20,000 connections by June 1984, and a contract with Natural Gas Project Company^{1/} (NGPC) added another 20,000 connections which were to be completed by end-1984. By June 1984 the actual customer connections had been increased to 190,300 and the number of appliances converted to natural gas to 229,800.

3.04 As illustrated above, the contractor essentially achieved the basic household connections objective within the advanced four year schedule. However, of the 158,314 customers having access to gas at the end of 1983, only 115,000^{2/} were actually using it. This discrepancy was largely due to the contractor's inability to gain access to premises which were either unoccupied or where the occupants were unavailable. In these situations, the contractor was required to make three attempts to gain entry. If unsuccessful, he had fulfilled his contractual obligations, and the required hook-up and conversion work became the responsibility of Petrogas. Other reasons were faulty appliances which were judged to be unsafe to operate and owners who opted not to convert to gas. The difference in appliance conversions was partly due to the large number of unsafe water heater flues

1/ NGPC is a joint venture between Petrogas, the foreign contractor and a local bank. Petrogas holds the majority ownership (65%).

2/ This number increased to 150,800 by June 1984 against SAR projection of 212,000.

which Petrogas has been actively correcting with a new and safe design. Another and major reason for this difference appears to be a shortcoming of the original survey, conducted at the outset of the project, which predicted an appliance density of 1.875 per household whereas the actual density appears to be approaching 1.62 as the water heater flues are corrected. The number of service connections greatly exceeded the forecast because of the change in scope which located two-thirds of the customers in Heliopolis where building density is relatively low and there is a large number of single story buildings.

3.05 Daily gas consumption has not been growing as fast as anticipated. The rate of consumption was originally depressed because of the defective water heater flues, but by the end of FY84 when this problem was largely resolved daily consumption had reached approximately 0.7 cu. m. Petrogas expects consumption of gas to continue to grow to the level anticipated in the SAR (1.0 cm/per household) as customers begin to realize its superiority in convenience and safety over liquid fuels (kerosene and LPG). However, the rate at which this takes place will depend on the availability and relative price of competing fuels (paras. 4.02 and 5.06).

Project Scope

3.06 The number of customers in each of the four Cairo districts as defined in the SAR and the contractor's scope of work was originally based on plans provided by the respective local authorities. However, when the contractor began a detailed survey of the Helwan and Maadi areas, it became apparent that there would be difficulty in identifying the prescribed number of customers in these two districts. As a result, it was decided to reallocate the customers as shown below:

<u>Area</u>	<u>Number of Customers</u>	
	<u>Original Plan</u>	<u>Revised Plan</u>
Nasr City	13,000	24,200
Heliopolis	69,000	107,314
Helwan	40,000	12,500
Maadi	38,000	14,300
	<hr/>	<hr/>
Total	160,000	158,314

Implementation Schedule

3.07 Despite falling far behind schedule in the early stages, the contractor was able to complete the project within the four year contract period.^{1/} This accomplishment took a greater effort than had been expected. A large expatriate work force, peaking at close to 200 workers, had to be mobilized, and over 750 local craftsmen had to be trained in the various required construction skills not locally available. Although the completion

^{1/} Taking into account the elements over which he had no control discussed in paras. 3.04 and 3.05.

date was met, the slow progress in connecting and converting customers during the first two contract years greatly reduced and delayed anticipated gas sales as indicated below.

Annual Addition of Customers Using Gas

<u>FY ending June 30:</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>Total</u>
SAR Forecast (1,000)	4.0	26.5	54.0	68.5	59.0	212.0
Actual (1,000)	-	-	29.6	96.4	24.8	150.8

3.08 The pipeline subcontractor was required to start work on the 24 inch high pressure transmission pipeline in April 1980 and complete the work by the end of 1980. Although more than half the pipeline was finished in 1981, a critical segment between Helwan and Maadi did not get commissioned until June 1983. In retrospect, it was recognized that the subcontractor might not have the construction plant and the managerial and technical capability to complete the pipeline in the specified time frame, but it was not expected that three years would be required to construct a 57 km-long pipeline, even under the most adverse circumstances. The consequences of the delayed pipeline completion, were not serious, however, since it was possible to tie into a small diameter gas pipeline running between Cairo and Suez for supplying Maadi, Nasr City and Heliopolis. Helwan could be supplied directly from the completed portion of the pipeline.

3.09 Delays were also experienced in converting the Nasr City and Heliopolis power plants. The Egyptian Electricity Authority (EEA) had responsibility for making these conversions. In the case of both plants, there was a delay of over six months between the time the gas was available and the February 1, 1982 and March 1, 1984 respective start-up dates of the Nasr City and Heliopolis power plants. These delays were essentially due to inadequate planning, particularly in arranging timely financing, and resulted in the loss of gas sales by Petrogas and in the equivalent consumption of a high value imported petroleum product. Although fully preoccupied in meeting tight project schedule, EGPC and Petrogas can also be faulted to some extent for not intervening more actively for the conversions. The delays illustrate the necessity for defining institutional responsibilities more firmly during project preparation when more than a single implementing agency is involved.

Project Management

3.10 The Natural Gas Division of Petrogas through its general manager was directly responsible for project management. Expatriate consultants, varying in number from about a dozen during the early stages of the project to three at the finish, assisted Petrogas in this task. Local staff, generally recruited from the petroleum sector, were technically competent but had essentially no experience related to a natural gas distribution project. With the help of a training program designed by its consultant, Petrogas was able to develop in a relatively short time an effective project management organization. The timely and successful completion of the project was to a large extent due to the performance of the Petrogas project management team and its support of the contractor's efforts discussed earlier.

Use and Performance of Consultants

3.11 Since the project was the first of its kind in Egypt, Petrogas needed to depend a great deal on assistance from consultants in the preparation and implementation of the project. In addition to helping to carry out the various implementation activities, the consultant introduced appropriate safety standards and practices, provided a wide range of technical services and in general assisted Petrogas to develop into a fully functional and self reliant gas utility. An important element in this achievement was an intensive training program designed and implemented by the consultant. Altogether around 75 Petrogas professional staff received training, mostly abroad but also in Cairo, in the different aspects of the gas industry. Petrogas has a high regard for its consultants, a view shared by IDA staff who have been associated with the project.

3.12 The project provided for consultants to assist Petrogas in establishing a management information system and in improving its financial management and accounting systems. Successive supervision missions pointed out the need for this assistance, but Petrogas has only recently decided to act on this matter. Petrogas plans to appoint the same consultant who performed the financial management and accounting services for EGPC with respect to the financial management and accounting systems and obtain proposals from a number of qualified consultants before making a selection for the management information system assistance.

Project Cost and Financing

3.13 The final project cost compares with the SAR estimate as follows:

(US\$ Million)

<u>SAR Estimate</u>			<u>Final Project Cost</u>		
<u>Foreign</u>	<u>Local</u>	<u>Total</u>	<u>Foreign</u>	<u>Local</u>	<u>Total</u>
103.8	51.2	155.0	83.3	67.9	151.2

As indicated above, actual project costs underran the original estimate by US\$3.8 million or 2.5% of the estimated cost. However, the final project cost shown above includes fixed assets (land, buildings, vehicles, etc.) valued at US\$17.4 million which were transferred to Petrogas by EGPC but were not included in the SAR estimate. Comparing the SAR and final project costs on an equivalent basis, that is, excluding the transferred assets, results in a 13.7% cost underrun.

3.14 Annex 1 compares the appraisal estimate with actual costs. The final cost has been adjusted to account for a US\$10.7 million foreign exchange gain resulting from favorable currency movements. This amount, along with the foreign expenditures contingency of US\$19.5 million are largely responsible for the foreign cost underrun. The final cost would have been higher by about US\$7.0 million if the amount allocated for infill connections (US\$2.0 million) had been spent and the planned 300,000 appliances had been converted (at an additional expenditure of about US\$5.0 million). Actual expenditures for distribution mains and internal and external service installations

substantially exceeded the appraisal estimate. These increased costs were due mainly to an underestimate of the material quantities and labor time required to install these facilities and were amply covered by the contingency fund.

3.15 A comparison of the FY 1980-84 project financing plan given in the Staff Appraisal Report and the actual financing is set out below:

	US\$ Million		
	<u>SAR</u>	<u>Actual</u>	<u>Actual/SAR Difference</u>
IDA Credit	50.0	50.0	-
IBRD (Loan 1732)	2.5	2.5	-
GOE/EGPC	96.6	98.7	2.1
Net Internal Cash Generation	5.9	-	(5.9)
Total	<u>155.0</u>	<u>151.2</u>	<u>(3.8)</u>

Due to the lack of internal cash generation, GOE/EGPC financing was raised to 103% of the amount in the SAR financing plan. The IDA Credit and the portion of Loan 1732-EGT (Gulf of Suez Gas Development Project) allocated to consultant services for this project were fully utilized.

Disbursements

3.16 Annex 2 presents actual disbursements as compared to the original disbursement schedule. No disbursements were made in 1980 as the Credit became effective only on December 4, 1980. Once disbursements began, they followed the projected profile closely except in the last period when they were substantially higher than expected. The Credit was completely disbursed in March 1983, approximately 9 months ahead of the projected date for completing disbursement.

IV. Operating Performance

4.01 The gas transmission and distribution system was first put into operation in 1981. It is planned to expand services to include approximately 630,000 customers over the next 20 years. Petrogas operates the entire system with its own staff and without outside assistance. Bank supervision missions have found Petrogas personnel well trained and competent. No operational problems of any significance have been observed or reported. Petrogas plans to give a contract for maintenance and repair to its joint venture subsidiary, NGPC. Transferring this work to NGPC appears to be an advantageous arrangement in that NGPC, as a result of its ongoing expansion of the distribution system, possesses the skilled manpower and construction equipment and consequently should be able to perform these services more cost effectively than Petrogas.

4.02 Domestic gas sales did not develop as projected at appraisal. By the end of FY84 daily sales had only reached 70% of the projected average 1.0 cu. m. per household (para. 3.05). However, Petrogas expects to reach this average sales target by 1986 based on its previous LPG sales in the areas now

receiving gas and considering that a growing customer acceptance of gas can be expected because of its superior qualities as a domestic fuel. It seems reasonable that average per household consumption can increase to 1.0 cu. m. per day, but as already mentioned, the time taken to do so will depend on the availability and relative price of competing fuels. To increase overall gas sales, Petrogas has decided to establish a department with sole responsibility for expanding gas sales to commercial customers. The key staff which is to be engaged in this endeavor was receiving training in the U.K. at the time of the Bank mission visit to Cairo (September 1984). To increase domestic sales, it would be useful for Petrogas to undertake a customer survey to identify the main competing fuels (i.e., kerosene, LPG or electricity) in connected households and the scope for increasing gas consumption by those households. With this information, the tariff structure should be reexamined with a view to reducing the marginal price for the second increment of consumption, until such time as competing fuel prices can be increased (see para. 506). The following table compares gas sales as projected in the SAR with the latest available actual and revised projected sales. Approximately 10% of the revised project domestic gas sales are assumed to go to commercial customers.

Gas Sales (in Mmscf/Year)

SAR Projection

<u>FY ending June 30:</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>
Domestic	1,214	2,200	3,108	3,739	5,508	7,296	9,257	11,402
Power	4,440	4,440	4,440	4,440	2,220	2,220	2,220	2,220
Total	5,654	6,660	7,548	8,179	7,728	9,516	11,477	13,622

Actual and Revised Projection

<u>FY ending June 30:</u>	<u>Actual</u>			<u>Revised Projection</u>				
	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>
Domestic & Commercial	88	353	885	1,879	4,697	5,895	7,088	8,288
Power	795	3,178	4,017	3,531	3,531	3,531	3,531	3,531
TOTAL	883	3,531	4,902	5,410	8,228	9,426	10,619	11,819

V. Institutional Performance

5.01 Petrogas was originally established as a fully held subsidiary of EGPC for the purpose of implementing and operating the Cairo gas project. Since then, EGPC has also turned over to Petrogas the sale of natural gas to power plants and industry throughout Egypt. In addition to functioning as a natural gas utility, Petrogas has responsibility for distributing and marketing LPG throughout Egypt. The Petrogas Board of Directors comprises nine members including the chairman, who is also chief executive officer of

the company. Four of the Board members are the individuals holding the company positions of Director Finance, Natural Gas Operations, LPG Operations and Technical Affairs respectively; these four members are appointed by Ministerial Decree. The other four members are elected by the company employees and serve four year terms. EGPC is not represented on the Board, a factor which gives the company considerable autonomy in its day-to-day operations. In policy and other substantive matters, however, EGPC exercises complete control through its budgetary powers and through a system of monthly and quarterly reviews of the company's operations and finances.

5.02 Considering its short existence and the employment problems discussed below, Petrogas is a well functioning and managed company. An area needing improvement, however, is its accounting system, as previously noted (para. 3.12). This shortcoming made it difficult and time consuming to evaluate the company's financial performance with respect to its separate operations. Steps to improve this situation were identified and agreed on during project preparation, but planned improvements were not implemented during the project period (para. 6.10(c)). As indicated earlier, Petrogas has now decided to proceed with the necessary improvements and progress in this regard will be followed up by future Bank missions.

5.03 Petrogas currently has about 4400 employees including 1200 engaged in natural gas operations. Considerable credit for the company's good operating performance can be given to its continuing effective training program. Company managers along with the training department review the company's training needs and develop a training program which after review and approval by the Petrogas Board goes into effect for the following fiscal year. Newly recruited technicians undergo a four month training course followed by on-the-job training as assistants in the company's various operations. The program includes career development and special training courses for professional staff. An important element is overseas ^{1/} training for selected staff (15 for 1984). Petrogas has two training centers ^{1/} in the Cairo area, and also utilizes a former Shell Oil training center ^{2/} now operated for the entire petroleum sector.

5.04 Like all public sector companies in Egypt, Petrogas is subject to the salary, benefits and employment policies prescribed by the government. This largely explains the company's reported high labor turn-over of 15%, which essentially represents the proportion of its employees who are successful in finding more attractive positions outside the public sector. The company must also comply with restrictive employment policies, such as not being able to recruit anyone with more than ten years experience and having to fill vacancies through internal promotion. As a result of these restrictions, Petrogas finds it difficult to recruit and retain the high calibre staff it needs for its operation. So far, the company has managed to cope with this difficulty by maintaining an intensive training program and the fact that job opportunities in the Gulf oil states have fallen off as a result of the slack demand for crude oil. Also, the company's skilled manpower problems are partly alleviated by the fact that it is permitted to employ personnel with

1/ Almaza for technicians and Giza for administrative and accounting personnel.

2/ At El Manar in Cairo.

special expertise and experience on a contract basis for a period of up to two years without salary restrictions.

Natural Gas Pricing

5.05 A detailed account of natural gas pricing is given in Annex 5. At project appraisal gas was priced at LE 0.19 per MCF and had not been raised in over a decade. However it was recognized that the level of gas tariffs was constrained by the low domestic prices of competing fuels such as LPG and gas oil. While the general dialogue on the need for higher energy prices across-the-board continued between the Bank and GOE, the pricing objectives of the project were: (a) to break the pattern of unchanged gas prices by increasing the price for gas delivered by the project as far as possible, given the prices of competing fuels; and (b) to establish a system for linking consumer and producer gas prices by defining the financial margins needed by Petrogas to cover its operations and contribute to expansion of the gas distribution system.

5.06 For the two turbine powered electricity generating stations a minimum gas price of LE 0.51 per MCF was derived as a compromise between the thermal equivalent of the local gas oil price (LE 0.84 per MCF) and the LE 0.19 per MCF price to thermal power plants. The actual price to the two power stations has been around LE 0.55 per MCF since these stations went into operation. For the household consumers it was estimated from LPG consumption data that an average price of about LE 3.0 per MCF would generate sufficient revenue for Petrogas to meet the financial objectives prescribed in the Development Credit Agreement (para. 3, Annex 6). However, a price of LE 3.0/MCF is equivalent to more than doubling the price of LPG, the fuel being replaced. At this price, it is doubtful that many of the residents in the area would wish to convert to natural gas. The Bank recommended, and the Government established by a decree dated, March 24, 1981, a graduated tariff structure where the initial block would cost only slightly more than domestically priced LPG. The domestic gas tariff, shown below, was designed to generate an average revenue of LE 3.0/MCF while only moderately affecting the domestic fuel bill of the poor whose consumption level would normally not reach the higher unit price brackets (para. 9.05). This tariff structure was to be in effect for a period of five years.

<u>Quantities</u>	<u>Price/(LE)</u>	
	<u>Per cu m</u>	<u>Per Mcf</u>
0-22.5	0.055	1.56
22.6-37.5	0.145	4.11
37.6-52.5	0.180	5.10
above 52.5	0.330	9.34

With hindsight, it seems apparent that IDA and Petrogas set overly high price objectives for domestic consumers, given the constraint imposed by the low prices of competing fuels. Nearly three-fourths of all consumers in FY84 limited their consumption to less than 22.5 m³/month, to avoid the major increase in price for additional gas. Until a new consumer survey is undertaken, it is not possible to know to what extent these households are augmenting their gas with LPG or electricity and to what extent they are simply using lower total volumes of energy. However, it is probable that

total revenues could be increased by reducing the price of the second block of the tariff in order to stimulate increased gas consumption. Petrogas should review its gas tariff structure (including tariffs to power, commercial and industrial users) based on its initial experience and the different prices now prevailing for competing fuels in each sector.

VI. Financial Performance

Petrogas' Accounting Procedures

6.01 Petrogas' operations comprise the transportation and distribution of both LPG and natural gas and separate budgets are prepared for these activities. Although no separate financial statements are prepared for Petrogas' gas operations, its accounting procedures permit identification of revenues, expenditures and other financial information pertaining to overall natural gas activities. The analysis of Petrogas accounting is a time consuming process, however, especially in respect to isolating relevant project data. The financial information given in this chapter is derived from Petrogas' financial statements and the necessary analysis to isolate relevant data for its natural gas operations in the project areas has been done with the assistance of Petrogas' accounting department.

6.02 During negotiations, Petrogas agreed to revalue its fixed assets related to natural gas according to methods acceptable to IDA and a United Nations index for machinery and equipment exported by developed countries was to be used for this purpose. For SAR financial projections, a revaluation rate of 10% a year was assumed (annual inflation was projected to be about 12% p.a.). Petrogas did not carry out this revaluation exercise. However, the official exchange rate between the LE and US\$ remained stable during the 1980-84 project period and worldwide inflation was below projections. Petrogas' book values of imported fixed assets contracted in British pounds for the project and representing about 55% of total project cost, therefore, reflect replacement costs reasonably well. Local inflation, however, has been over 10-15% p.a. and the official exchange rate between the LE and the US dollar may not be realistic. In this report, the comparison between actual financial results and appraisal projections is on historic cost basis.

Petrogas' Financial Performance

6.03 A summary of Petrogas' recent consolidated (LPG and gas) financial performance is given below:

<u>FY Ending June 30:</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
	<u>(LE Million)</u>		
Revenues, sales	66.3	73.3	86.1
Operating costs	60.7	67.2	80.8
Net Profit	4.3	3.9	5.2
Rate of Return (%)	9.5	6.0	4.0
Operating Ratio (%)	92	92	94

On the whole, Petrogas' financial performance deteriorated during the project period mainly due to the Government's pricing policy (see Annex 5), but operations still showed a net profit in 1984. This net profit, however, consists of losses on Petrogas' natural gas operations compensated by gains on its LPG operations.

6.04 A summary of Petrogas' financial position as of June 30, 1984 is given below:

	<u>LE Million</u>	<u>%</u>
Fixed Assets	185.9	102
Less: Depreciation	<u>38.8</u>	<u>21</u>
Net Fixed Assets	147.1	81
Other assets, net	<u>34.7</u>	<u>19</u>
TOTAL ASSETS	<u>181.8</u>	<u>100</u>
Equity	146.8	81
Long-term Debt	<u>35.0</u>	<u>19</u>
TOTAL LIABILITIES	<u>181.8</u>	<u>100</u>
Current Ratio (times)	1.1	-

During the FYs 80-84 project period, EGPC transferred LE 98.4 million to Petrogas in form of equity contributions. This permitted Petrogas to maintain a low debt/equity ratio despite substantial losses on its operations and investments in its natural gas operations.

Financial Performance of Petrogas' Gas Operations in the Project Areas

6.05 Income Statements and appraisal estimates for Petrogas' natural gas operations in FYs 80-84 are given in Annex 3. A summary is given below:

<u>FY Ending June 30:</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
	<u>(LE Million)</u>				
Revenues: Appraisal	1.3	3.8	6.4	9.7	12.7
Actual	-	-	.6	2.8	4.4
Operating Ratio (%): Appraisal	129	86	82	79	75
Actual	-	-	720	270	240
Rate of Return (%): Appraisal	(2.0)	1.8	2.8	3.6	5.7
Actual	-	-(18.4)	(7.9)	(6.4)	

6.06 Natural gas revenues fall short of appraisal estimates mainly due to: (i) about two years delay in gas deliveries; (ii) lower than expected per household gas consumption; and (iii) lower than projected gas prices.

Furthermore, appraisal estimates of increases in gas consumption, especially for the early part of the project period may be on the high side. A detailed account of natural gas pricing is given in Annex 5. The following table illustrates the case:

<u>FY ending June 30:</u>	<u>1982</u>		<u>1983</u>		<u>1984</u>	
	<u>Appr</u>	<u>Actual</u>	<u>Appr</u>	<u>Actual</u>	<u>Appr</u>	<u>Actual</u>
Domestic Connections (1,000)	84.5	29.6	153.0	126.0	212.0	150.8
Consump. per household (mcf)	14.4	3.0	14.5	2.8	14.7	5.9
Sales: Domestic (MMcf)	1,214	88	2,220	353	3,108	885
Power (MMcf)	4,440	795	4,440	3,178	4,440	4,017
Prices:						
Purchase (LE/Mcf)	.23	.20	.25	.19	.28	.21
Domestic Sales (LE/Mcf)	3.00	1.80	3.00	2.42	3.00	2.24
Power Sales (LE/Mcf)	.62	.55	.68	.54	.75	.57

6.07 As a result, natural gas revenues did not cover operating expenditures and much less so debt service. To achieve the covenanted rate of return of 3% for FYs 84-85, a combination of: (a) increased connection of commercial and household customers; and (b) increased gas tariffs (or restructuring the tariff (para. 4.02)) for households as well as higher rates for power stations would be necessary. To encourage more households to convert to natural gas, LPG prices may have to be increased and/or distribution of LPG may have to be curtailed in areas where natural gas is supplied.

6.08 As of June 30, 1984, Petrogas' financial position as regards to its natural gas operations was sound, mainly due to equity contributions by EGPC. FYs 80-84 balance sheets and corresponding appraisal projections are in Annex 3. A summary as of June 30, 1984, is given below:

	<u>LE Million</u>		<u>%</u>	
	<u>Appraisal</u>	<u>Actual</u>	<u>Appraisal</u>	<u>Actual</u>
Fixed Assets	67.2	112.1	116	93
Less: Depreciation	<u>12.4</u>	<u>14.1</u>	<u>21</u>	<u>12</u>
Net Fixed Assets	54.8	98.0	95	85
Other Assets, net	<u>2.9</u>	<u>16.8</u>	<u>5</u>	<u>15</u>
TOTAL ASSETS	<u>57.7</u>	<u>114.8</u>	<u>100</u>	<u>100</u>
Equity	21.2	79.8	37	70
Long-term Debt	<u>36.5</u>	<u>35.0</u>	<u>63</u>	<u>30</u>
TOTAL - LIABILITIES	<u>57.7</u>	<u>114.8</u>	<u>100</u>	<u>100</u>
Current Ratio (times)	7.24	2.90	-	-

Financing Plan

6.09 Funds flow statements and appraisal estimates for Petrogas' natural gas operations are at Annex 3. A summary is given below:

<u>FYs 80-84</u>	<u>Appraisal</u>	<u>Actual</u>
<u>Sources</u>	<u>(LE Million)</u>	
Internal Cash Generation	18.9	(.8)
Less: Debt Service	<u>9.4</u>	<u>6.7</u>
Net Internal Generation	9.5	(7.5)
Long-term debt	36.5	35.0
EGPC Contributions	24.2	98.4
Use of Reserves	-	<u>2.9</u>
Total Sources	<u>70.2</u>	<u>128.8</u>
<u>Uses</u>		
Capital Investment	67.3	112.0
Increased Working Capital	<u>2.9</u>	<u>16.8</u>
Total Uses	<u>70.2</u>	<u>128.8</u>
Debt Service Coverage (times)	2.0	Neg.

The cash generation of Petrogas FYs 80-84 natural gas operations was negative and GOE made up for the shortfalls through higher than projected capital contributions by EGPC. Capital investments to be financed by GOE (carcassing, appliance conversion and other external and internal services) were not taken into account for SAR financial projections of Petrogas' flow of funds. Petrogas' financial statements for its natural gas operations include these items. Therefore, appraised capital investment (LE 67.3 million) would have to be increased by about LE 41.5 million to a total of about LE 108.8 million, to be comparable with actual capital investment of LE 112.0 million.

Financial Covenants

- 6.10
- (a) Proceeds of the Credit were onlent to Petrogas according to a subsidiary loan agreement accepted by IDA (Project Agreement);
 - (b) EGPC provided Petrogas with all funds and resources required to complete the project (Project Agreement, Section 2.13), to meet its debt service requirements and to provide adequate working capital;
 - (c) Petrogas did not appoint consultants to design and implement a management information system, establish separate accounts for LPG and natural gas, improve its financial management and cost control and review internal audit arrangements for its overall operations (Project Agreement, Section 4.01). However, Petrogas intends to take steps to comply with this covenant, possibly by the end of 1985;
 - (d) Petrogas did not submit audited project and other accounts to IDA during the project period as covenanted (Project Agreement, Section 4.02). However, financial statements (without audit reports) and other information necessary for the separation of Petrogas' natural gas activities were made available to IDA missions;
 - (e) EPGC and Petrogas did not enter into a formal gas sales contract (Project Agreement, Section 4.03), but gas supplies and purchase prices were below appraisal projections (Annex 5, para. 5). Gas sales are also officially incorporated in EPGC's budget;
 - (f) Petrogas did not obtain an increase in gas prices to realize a 3% rate of return in FYs 84-85 (Project Agreement, Section 4.06) or other financial objectives for the project. The graduated price structure agreed to with the Association (Project Agreement, Section 4.04) did not produce the expected average LE 3.0 per Mscf revenue per household and prices were not revised due to Government's policy against price increases;
 - (g) Petrogas did not produce a debt service ratio of 1.5, but, except for the IDA credit, no new debt was incurred (Project Agreement, Section 4.05) as shortfalls were covered by EGPC equity contributions; and
 - (h) Petrogas does not revalue its natural gas related assets (Project Agreement, Section 4.06(v)) as agreed. Until its accounting system is improved (see (c) above), there is little scope for this exercise;

VII. Economic Performance

7.01 The basis for the economic benefit analysis was that natural gas would substitute for fuel oil in the absence of the project and for LPG and gas oil with the project. Accordingly, the economic benefit was measured by

the economic value of LPG and gas oil replaced by the project on the one hand and that of the equivalent of fuel oil on the other.

7.02 The economic rate of return (ERR) was calculated in the SAR on the basis of an average daily household consumptions of 1.0 cu.m increasing at the rate of 1.0% per year. In reevaluating the ERR actual gas consumption volumes were used up to FY84, ^{1/} 0.8 cu.m per day in FY85 and from FY86 on at a constant 1.0 cu.m per day. This approach was based on the premise that by FY86 domestic consumption, determined from LPG sales in the area, would be fully realized and that there would be no yearly increase in average household consumption thereafter. The economic value of the three petroleum products concerned are as follows in LE per ton:

	<u>SAR Value</u>	<u>Actual Values</u>		
		<u>FY82</u>	<u>FY83</u>	<u>FY84</u>
LPG (CIF)	245	210	210	210
Gas Oil (CIF)	224	202	172	165
Fuel Oil (FOB)	105	113	113	123

From 1984 the three product prices have been assumed to adjust in real terms in accordance with World Bank projections of the movement of average OPEC petroleum prices.

7.03 Taking into account the revised gas volumes and product prices the reevaluated ERR is 14.2% compared to 44% in the SAR. (See Annex 5 for the reevaluation calculation). A principal reason for the lower ERR is the change in petroleum prices noted above. For example, comparing FY84 prices with the SAR values LPG and gas oil fell 14% and 26% respectively while fuel oil rose 17%. Each of these price movements reduced the benefit from substituting fuels. Looking at it another way, the difference in benefits from replacing LPG was reduced from LE 140 to LE 87 per ton, a 38% reduction, and for gas oil the difference was an even more drastic drop from LE 119 to LE 42 per ton, a 65% reduction. Using the SAR product prices the ERR would have been 23%. The EER is quite sensitive to the average daily gas consumption period per household. If this consumption level should only average 0.8 cu. m. (instead of 1.0) the EER would only be 9.8%.

7.04 The other factor which greatly reduced the ERR is the lower volume of gas consumption, especially in the early years, as illustrated below:

^{1/} Based on data for full years, the average daily household consumption was: 0.23 cu. m. in FY82 and FY83 and 0.43 cu. m. in FY84. However, the average household consumption reached 7 cu. m. a day during the last month of FY84 (see para. 4.02).

	(MMscf)				
	<u>FY81</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>
SAR	4,900	5,700	6,700	7,500	8,200
Actual	0	880	3,500	4,900	5,400 (Est.)

On the cost side, the reduction in gas consumption did not result in matching savings. Fixed operating costs do not vary with gas consumption, and the non-fuel variable costs are assumed to be a function of customers connected to the system and not with quantity of gas consumed.

7.05 A number of social benefits can be attributed to the project. For one, the project provides a more convenient and safer fuel for Petrogas' existing and future customers. Then, too, new employment was created for well over a thousand people, not counting the large work force recruited during peak construction activities. The skills acquired during the implementation period provided an opportunity for a substantial number of Egyptian workers to find well paying employment abroad, especially in the Persian Gulf area.

VIII. Performance of IDA

8.01 An excellent working relationship was maintained with Petrogas throughout the project cycle. Petrogas confirms that recommendations and suggestions from IDA missions during implementation of the project were helpful.

8.02 Through its participation in the project, the Association was able to make some positive institutional and project related contributions. During the preparation stage, IDA staff brought to the attention of EGPC the shortcomings of the low pressure natural gas distribution system recommended by its consultant. As a result, a much more economical and flexible distribution system was selected for the project. Training and staffing provisions required by the Association played a significant role in the competent performance of Petrogas project management and operating personnel, as well as the successful completion of the project. IDA was successful in having EGPC and Petrogas adopt a graduated natural gas price which fell short of achieving the desired financial goals but which nevertheless on average is twice the amount paid for the equivalent quantity of the highly subsidized LPG which natural gas replaces, and more than 100% higher than average gas prices elsewhere in Egypt. IDA's attempt to support the project's financial performance through a price regime included in the financial covenants, however, was not successful, and judging from the apparent consumer resistance to the present tariff, increasing the prices of gas may not necessarily produce the anticipated revenue increase, unless the prices of competing fuels can also be raised.

8.03 Rationalizing energy prices has been a central issue in the Bank Group's operations in Egypt's petroleum sector. Through the Cairo project, the Association has been able to bring about a small but not unimportant step toward a more realistic pricing policy. The pattern of unchanged gas prices was broken, and the principle of restricting subsidies to low volume consumers was established through the increasing block tariff structure. However, the objectives IDA set for average tariff levels proved to be unrealistic in view of the low prices of competing fuels. This risk was recognized at appraisal,

and was thought to be mitigated somewhat by the low gas price for the initial consumption block. Future tariff changes should take account of the initial experience of consumer resistance to prices as high as those of the second consumption block (over LE4/mcf), and aim to maximize total revenue within the constraints of competing fuel prices, rather than achieve a set level of average revenue.

IX. Conclusion and Lessons Learned

9.01 The project was successfully implemented within a tight time schedule and with a significant cost saving. This accomplishment is due to a large extent to the fact that a competent contractor was given sole responsibility for installing all the project facilities (except the high pressure transmission pipeline) on a turnkey basis. Implementation experience indicates that coordinating the ongoing construction and other project related activities under split responsibility and the duplication of effort in training local craftsmen and mobilizing construction equipment and manpower would have been major negative factors if the project had been divided up into smaller contract packages. As it turned out, the contractor was only able to complete the project on time by mobilizing a large expatriate work force and with an intensive training program to develop a local labor pool and a "crash program" finish during the final contract year. It is doubtful that this feat could have been achieved with multiple contractors responsible for different components of the project.

9.02 In retrospect, it was a mistake to subcontract construction of the high pressure transmission pipeline to the EGPC construction subsidiary. Responsibility for the pipeline should have been retained by the turnkey contractor, who should have been free to arrange construction in any manner he found necessary to meet the completion commitment. Without the availability of an alternative supply, there would have been no gas for converting and supplying the households in the three Cairo districts beyond Helwan until about June 1983 when the Helwan-Maadi section was finally completed. This experience illustrates the importance of selecting a contractor (or subcontractor) with the necessary resources and competence for such a critical part of a project.

9.03 The delays in converting the electric power stations at Nasr City and Heliopolis caused an equivalent delay in realizing the benefits from substituting natural gas for an expensive petroleum product partly imported. A more effective arrangement would have been to include the power station conversion work in the project and make Petrogas responsible for implementation.

9.04 For a newly created organization entering a new field of activity, training and backup support by qualified consultants are of paramount importance. The stress put on this aspect of the project by the Association undoubtedly contributed to Petrogas' present capability to carry on its operations and expansion program without outside assistance.

9.05 The graduated gas tariff enacted in 1981 is a four tier pricing system which sets the prices for the lowest consumption bracket at slightly higher than the equivalent LPG price and for the next three higher brackets at multiple of 2.6, 3.3 and 6.0 times the lowest bracket. The objective was to

make gas affordable to the poor (provided they limited consumption to the minimum price bracket) and having the more affluent customers pay the lion's share through their higher consumption and the increasingly higher rates paid for larger increments of consumption. The graduated rates were based on a thorough survey of LPG consumption patterns in the four Cairo districts and were to produce sufficient revenues to make gas distribution a financially viable enterprise. Experience from the first three years of operation indicates that this aim is not likely to be met without a complete restructuring of both gas prices and those of competing fuels. This suggests two lessons: first, that sector-wide pricing constraints set an important limit to what can be achieved through a project dealing with one-subsector and one price; and, second, that in a distorted price environment such as Egypt's, it is important to closely monitor the initial effects of a new tariff and to adjust its level or structure as necessary to better achieve financial and economic objectives. Rigid covenants tied to specific average prices may be counterproductive in such circumstances.

9.06 The project demonstrates that gas distribution networks aimed at low volume (e.g., no space heating) domestic consumers should also include and promote, to the maximum extent economically and financially justified, sales to industrial and commercial users. This measure will enhance revenues from gas sales because of the higher gas volumes involved and because from a political standpoint, gas prices can be fixed and maintained at a more realistic level than in the case of domestic customers. It is particularly important to build up sales rapidly in the early years because of the heavy front end investment required for a gas distribution system, particularly when installation costs are not borne by the customers.

CAIRO GAS DISTRIBUTION PROJECT

PROJECT COMPLETION REPORT

Comparison of Estimated and Actual Project Costs

	Appraisal Estimates						Actual Costs					
	LE Million			US\$ Million			LE Million			US\$ Million		
	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total	Foreign	Local	Total
High Pressure Transmission Pipeline	9.7	4.7	14.4	14.0	6.8	20.8	9.2	5.0	14.2	13.3	7.2	20.5
Odorizing Unit	0.2	0.1	0.3	0.3	0.1	0.4	0.2	0.1	0.3	0.3	0.1	0.4
Pressure Regulatory Stations	1.0	0.5	1.5	1.4	0.7	2.1	1.4	0.7	2.1	2.0	1.0	3.0
Distribution Network												
Mains	9.9	4.9	14.8	14.4	7.0	21.4	12.3	6.6	18.9	17.9	9.6	27.5
Service Lines	3.1	1.5	4.6	4.4	2.2	6.6	1.9	1.0	2.9	2.7	1.5	4.2
Regulators	2.4	1.2	3.6	3.5	1.7	5.2	2.8	1.4	4.2	4.0	2.0	6.0
Infills	1.0	0.6	1.6	1.4	0.9	2.3	-	-	-	-	-	-
Gas Meters	5.7	2.8	8.5	8.2	4.1	12.3	5.9	3.2	9.1	8.6	4.6	13.2
External Service Line Including Lateral Risers, etc.	8.7	4.2	12.9	12.5	6.1	18.6	12.6	6.8	19.4	18.3	19.9	28.2
Internal Services	8.1	4.0	12.1	11.7	5.7	17.4	12.4	6.7	19.1	18.0	9.7	27.2
Conversion of Appliances	4.7	2.3	7.0	6.8	3.3	10.1	3.2	1.8	5.0	4.7	2.6	7.3
Training	1.0	0.5	1.5	1.4	0.7	2.1	0.7	0.4	1.1	1.0	0.6	1.6
Consultancy	3.0	0.5	3.5	4.3	0.7	5.0	2.2	1.1	3.3	3.2	1.7	4.9
Basic Project Cost	58.5	27.8	86.3	84.3	40.0	124.3	64.8	34.8	99.6	94.0	50.5	144.5
Physical Contingency	5.8	2.8	8.6	8.4	4.0	12.4	-	-	-	-	-	-
Price Contingency	7.7	5.0	12.7	11.1	7.2	18.3	-	-	-	-	-	-
Subtotal	72.0	35.6	107.6	103.8	51.2	155.0	64.8	34.8	99.6	94.0	50.5	144.5
Less Exchange Rate Differences	-	-	-	-	-	-	(7.4)	-	(7.4)	(10.7)	-	(10.7)
Subtotal	72.0	35.6	107.6	103.8	51.2	155.0	57.4	34.8	92.2	83.3	50.5	133.8
Transferred Fixed Assets	-	-	-	-	-	-	-	12.2	12.2	-	17.4	17.4
TOTAL PROJECT COST	72.0	35.6	107.6	103.8	51.2	155.0	57.4	47.0	104.4	83.3	67.9	151.2

EGYPT

CAIRO GAS DISTRIBUTION PROJECT
PROJECT COMPLETION REPORT
Schedule of Disbursements

<u>Fiscal Year and Quarter</u>	<u>Cumulative Disbursement (US\$ thousand)</u>		
	<u>Actual Total</u>	<u>Appraisal Total</u>	<u>Actual Disbursement as % of Appraisal Estimate</u>
<u>1980/81</u>			
Dec. 31, 1980	-	15,000	-
March 31, 1980	15,620	15,620	87%
June 30, 1981	23,273	21,000	111%
<u>1981/82</u>			
Sept. 30, 1981	25,420	24,000	106%
Dec. 31, 1981	27,203	26,700	102%
March 31, 1982	30,291	29,400	103%
June 30, 1982	37,748	32,100	117%
<u>1982/83</u>			
Sept. 30, 1982	43,748	34,800	126%
Dec. 31, 1982	49,700	37,600	133%
March 31, 1983	50,000	40,700	123%
June 30, 1983		43,800	
<u>1983/84</u>			
Sept. 30, 1983		46,900	
Dec. 31, 1983		50,000	
<hr/>			
Credit Closing	12/31/85	12/31/85	

EGYPT
CAIRO GAS DISTRIBUTION PROJECT
PETROGAS, GAS OPERATIONS
INCOME STATEMENT
(In LE Thousand)

FY ended June 30:	1980		1981		1982		1983		1984	
	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual
Gas Dwellings Average Number	4,000	-	30,500	-	84,500	29,500	153,000	125,990	212,000	150,800
Sale of Gas										
Private Users, MMcf	56	-	434	-	1,214	88	2,220	353	3,018	885
Power Stations, MMcf	2,220	-	4,440	-	4,440	795	4,440	3,178	4,400	4,017
Unit Price of Gas										
Private Users, LE/Mcf	3.00	-	3.00	-	3.00	1.80	3.00	2.42	3.00	2.24
Power Stations, LE/Mcf	0.51	-	0.56	-	0.62	0.55	0.68	0.54	0.75	0.57
Unit Cost of Gas LE/Mcf	0.19	-	0.21	-	0.23	0.20	0.25	0.19	0.28	0.21
<u>REVENUES</u>										
Sales of Gas										
Private Users	169	-	1,302	-	3,643	159	6,660	854	9,324	1,878
Power Stations	1,132	-	2,486	-	2,753	435	3,019	1,729	3,330	2,301
Related Services	-	-	-	-	-	42	-	202	-	263
TOTAL RESERVES	1,301	-	3,788	-	6,396	636	9,679	2,785	12,654	4,442
<u>OPERATING EXPENSES</u>										
Gas Purchased	433	-	1,024	-	1,300	178	1,665	670	2,113	1,024
Depreciation Charge	991	-	1,575	-	2,455	2,782	3,535	4,737	3,892	6,542
Gas Fixed Operating Cost	220	-	363	-	532	1,180	586	1,298	644	1,428
Gas Variable Operating Cost	37	-	309	-	940	432	1,874	871	2,856	1,538
TOTAL OPERATING COST	1,680	-	3,271	-	5,228	4,572	7,659	7,576	9,505	10,532
Net Income Before Interest	(379)	-	518	-	1,167	(3,936)	2,020	(4,791)	3,149	(6,090)
Interest	464	-	1,300	-	1,985	1,344	2,653	2,496	3,008	2,890
INCOME AFTER INTEREST AND TAXES	(843)	-	(782)	-	(818)	(5,280)	(633)	(7,287)	141	(8,980)
Operating Ratio (%)	129	-	86	-	82	720	79	270	75	240
Rate of Return (%)	(2.01)	-	1.79	-	2.77	(18.4)	3.56	(7.9)	5.74	(6.4)

EGYPT
 GAS DISTRIBUTION PROJECT
 PETROGAS, Gas Operations
 BALANCE SHEET
 (In LE Thousand)

FY Ended June 30:	1980		1981		1982		1983		1984	
	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual
ASSETS										
Gross Fixed Assets	19,281	-	31,507	-	47,120	42,878	65,359	78,717	67,258	112,051
Less Accumulated Depreciation	991	-	2,566	-	5,022	2,782	8,556	7,519	12,448	14,061
Net Fixed Assets	18,830	-	28,941	-	42,098	40,096	56,803	71,198	54,810	97,990
Accounts Receivable	107	-	311	731	526	4,069	796	5,424	1,040	5,729
Cash	39	-	114	179	192	175	290	1,318	2,302	2,674
Others (incl. Inventories)	-	-	-	35,752	-	20,266	-	20,285	-	17,186
TOTAL ASSETS	18,976	-	29,366	36,662	42,816	64,606	57,889	98,225	58,152	123,579
LIABILITIES AND EQUITY										
Capital	8,522	-	10,571	-	17,181	29,228	24,166	57,074	24,166	98,416
State Bond Reserves	-	-	-	362	-	1,183	-	1,914	-	2,896
TOTAL CAPITAL & RESERVES	8,522	-	10,571	362	17,181	30,411	24,166	58,988	24,166	101,312
Accumulated Losses	(843)	-	(1,625)	-	(2,443)	(5,280)	(3,076)	(12,567)	(2,935)	(21,547)
TOTAL EQUITY	7,679	-	8,946	362	14,738	25,131	21,090	46,421	21,231	79,765
Long-term Debt	11,240	-	20,280	-	27,850	26,416	36,460	35,000	36,460	35,000
Accounts Payable	57	-	139	36,300	228	13,059	339	16,804	461	8,814
TOTAL LIABILITIES & EQUITY	18,976	-	29,365	36,662	42,816	64,606	57,889	98,225	58,152	123,579
Debt/Equity Ratio	0.59	0.00	0.69	0.00	0.65	0.51	0.63	0.43	0.63	0.30
Current Ratio	2.58	0.00	3.05	1.00	3.15	1.87	3.20	1.61	7.24	2.90

EGYPT
CAIRO GAS DISTRIBUTION PROJECT
PETROGAS, GAS OPERATIONS
SOURCES AND APPLICATION OF FUNDS
(In LE Thousand)

	1980		1981		1982		1983		1984		1980-84	
	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual	Appraisal	Actual
<u>SOURCES OF FUNDS</u>												
Net Income before Interest	(379)	-	518	-	1,167	(3,936)	2,020	(4,791)	3,149	(6,090)	6,475	(14,817)
Depreciation	991	-	1,575	-	2,455	2,782	3,534	4,737	3,892	6,542	12,447	14,061
Internal Cash Generation	<u>612</u>	<u>-</u>	<u>2,093</u>	<u>-</u>	<u>3,622</u>	<u>(1,154)</u>	<u>5,554</u>	<u>(54)</u>	<u>7,041</u>	<u>452</u>	<u>18,922</u>	<u>(756)</u>
Increase in Accounts Payable	57	-	83	36,300	89	(23,241)	111	3,745	122	(7,990)	462	8,814
Long-Term Debt	11,240	-	9,040	-	7,570	26,416	8,610	8,584-	-	-	36,460	35,000
EGPC Contribution	8,522	-	2,049	-	6,610	29,288	6,985	27,846	-	-41,342	24,166	98,416
Reserves	<u>-</u>	<u>-</u>	<u>-</u>	<u>362</u>	<u>-</u>	<u>821</u>	<u>-</u>	<u>731</u>	<u>-</u>	<u>982</u>	<u>-</u>	<u>2,896</u>
TOTAL SOURCES	<u>20,431</u>	<u>-</u>	<u>13,265</u>	<u>36,662</u>	<u>17,891</u>	<u>32,070</u>	<u>21,260</u>	<u>40,852</u>	<u>7,163</u>	<u>34,786</u>	<u>80,010</u>	<u>144,370</u>
<u>USES OF FUNDS</u>												
Capital Expenditure	19,821	-	11,686	-	15,614	42,878	18,239	35,839	1,899	33,334	67,259	112,051
Increase in Accounts Receivable	107	-	204	731	214	3,338	270	1,355	244	305	1,039	5,729
Increase in Cash	39	-	75	179	78	(4)	99	1,143	2,011	1,356	2,302	2,674
Interest Long-Term Debt	464	-	1,300	-	1,985	1,344	2,653	2,496	3,008	2,890	9,410	6,730
Increase in Inventory & others	<u>-</u>	<u>-</u>	<u>-</u>	<u>35,752</u>	<u>-</u>	<u>(15,486)</u>	<u>-</u>	<u>19</u>	<u>-</u>	<u>(3,099)</u>	<u>-</u>	<u>17,186</u>
TOTAL APPLICATIONS	<u>20,431</u>	<u>-</u>	<u>13,265</u>	<u>36,662</u>	<u>17,891</u>	<u>32,070</u>	<u>21,260</u>	<u>40,852</u>	<u>7,163</u>	<u>34,786</u>	<u>80,010</u>	<u>144,370</u>
Debt Service Coverage	1.32	-	1.61	-	1.82	Neg.	2.09	Neg.	2.34	0.16	2.01	Neg.

EGYPT

CAIRO GAS DISTRIBUTION PROJECT

Economic Analysis

(In LE Thousand)

(PCR Re evaluation of ERR)

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
Cost of LPG (CIF) LE/ton	0	0	210.0	210.0	210.0	197.4	197.4	206.2	215.4	225.0	235.0	244.6	254.5
Cost of Fuel Oil (FOB) LE/ton	0	0	113.0	113.0	123.0	115.6	115.6	120.8	126.2	131.8	137.7	143.3	149.1
Cost of Gas Oil (CIF) LE/ton	0	0	202.0	172.0	165.0	155.1	155.1	162.0	169.2	176.8	184.7	192.2	200.0
Natural Gas Alternative													
Dwellings using Natural Gas			29,550	125,950	160,800	172,000	212,000	252,000	292,000	332,000	354,000	372,000	391,000
Households Consumption (MMscf)	0	0	88.00	353.00	885.00	1,772.91	2,731.51	3,246.89	3,762.27	4,277.65	4,561.11	4,793.03	5,037.84
Commercial consumption (MMscf)	0	0	0	0	0	105.9	111.2	116.5	122.5	128.9	135.3	136.7	138.1
Power Stations Consumption (MMscf)	0	0	794.52	3,178.08	4,016.74	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47
Total Consumption of Gas (MMscf)	0	0	883	3,531	4,902	5,410	6,374	6,895	7,416	7,938	8,228	8,461	8,707
Consumption of Fuel Oil as Replacement for Gas Consumed (tons)	0	0	23,713.3	94,880.1	131,709.8	145,374.1	171,274.3	185,265.0	199,274.5	213,294.7	221,083.2	227,352.6	233,968.1
Costs Involved in Natural Gas Alternative													
Cost of Gas Purchased			178.3	670.9	1,024.2	1,141.6	1,345.0	1,454.8	1,564.8	1,674.9	1,736.1	1,785.3	1,837.3
Fixed Assets Acquisition	0	5,553.0	42,003.0	35,731.0	34,078.0	9,540.0	2,011.0	1,973.0	2,010.2	1,973.4	1,910.2	1,973.4	1,910.2
Bottles in exchange for carcassing/conversion			(435.0)	(2,175.0)	(2,829.0)	(3,161.0)							
Natural Gas Project Fixed Operating Costs			1,180.0	1,298.0	1,428.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0
Natural Gas Project Variable Operating Costs			432.0	871.0	1,538.0	1,898.9	2,340.5	2,782.1	3,048.5	3,466.1	3,695.8	3,883.7	4,082.0
Cost of Fuel used as replacement for Gas Consumed	0	0	2,679.6	10,721.5	16,200.3	16,808.2	19,802.7	22,375.7	25,141.1	28,110.1	30,436.1	32,569.9	34,878.5
Total Costs Involved in Natural Gas Solution	0	5,553.0	46,037.9	47,117.4	51,439.5	27,407.6	26,679.2	29,765.6	32,944.6	36,404.5	38,958.1	41,392.3	43,887.9
LPG Gas-Oil Alternative (without Project)													
Dwelling using LPG	0	0	29,550.0	125,950.0	150,800.0	172,000.0	212,000.0	252,000.0	292,000.0	332,000.0	354,000.0	372,000.0	391,000.0
Consumption of LPG (tons)	0	0	2,116.4	8,489.7	21,284.3	45,185.3	68,367.3	80,889.6	93,428.8	105,977.6	112,948.7	118,560.1	124,481.3
Gas Oil Consumed by Power Stations (tons)	0	0	20,856.2	83,424.6	105,439.4	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1
Costs Involved in LPG Alternative													
Cost of LPG Purchased	0	0	444.4	1,782.8	4,469.7	8,919.6	13,495.7	16,679.8	20,124.6	23,845.8	26,547.8	28,998.1	31,682.5
LPG Operating Cost	0	0	69.8	314.3	885.2	2,051.6	3,104.2	3,672.8	4,242.1	4,811.9	5,128.4	5,383.2	5,652.1
LPG Fixed Assets (Plant & Equipment)			2,520.0	2,930.0	3,070.0	3,070.0	4,006.0	3,430.0	5,190.0	4,500.0	3,660.0	3,840.0	4,020.0
Cost of Gas Oil Consumed by Power Stations	0	0	4,212.9	14,349.0	17,397.5	14,377.9	14,377.9	15,019.2	15,689.1	16,388.8	17,119.7	17,814.8	18,538.1
Cost of Gas Purchased	0	0	178.3	670.9	1,024.2	1,141.6	1,345.0	1,454.8	1,564.8	1,674.9	1,736.1	1,785.3	1,837.3
Fixed Operating Cost for Gas Consumed	0	0	236.0	259.6	285.6	236.0	236.0	236.0	236.0	236.0	236.0	236.0	236.0
Variable Operating Costs for Gas Consumed	0	0	86.4	174.2	307.6	379.8	468.1	556.4	609.7	693.2	739.2	776.7	816.4
Total Cost, LPG/Gas Oil Solution	0	0	7,747.9	20,480.8	27,439.8	30,176.5	37,032.9	41,049.0	47,656.3	52,150.6	55,167.2	58,834.2	62,782.3
Project Savings	0	(5,553)	(38,290)	(26,637)	(24,000)	2,769	10,354	11,283	14,712	15,746	16,209	17,442	18,894
Rate of Return on Investment	14.22												

E G Y P T
CAIRO GAS DISTRIBUTION PROJECT

Economic Analysis

(In LE Thousand)
(PCR Re-evaluation of ERR)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Cost of LPG (CIF) LE/ton	264.8	275.6	286.8	297.5	308.7	320.3	332.3	344.8	358.7	373.2	388.4	404.1	420.5
Cost of Fuel Oil (FOB) LE/ton	155.1	161.4	168.0	174.3	180.8	187.6	194.6	201.9	210.1	218.6	227.5	236.7	246.3
Cost of Gas Oil (CIF) LE/ton	208.1	216.5	225.3	233.8	242.6	251.6	261.1	270.9	281.8	293.3	305.1	317.5	330.4
Natural Gas Alternative													
Dwellings using Natural Gas	409,000	427,500	446,500	464,500	483,000	501,500	520,000	538,500	557,000	575,500	594,000	612,500	631,000
Households Consumption (MMscf)	5,269.76	5,508.12	5,752.93	5,984.85	6,223.21	6,461.58	6,699.94	6,938.30	7,176.67	7,415.03	7,653.39	7,891.76	8,130.12
Commercial consumption (MMscf)	139.5	140.6	142.1	143.6	145.0	146.6	148.0	149.4	150.8	152.4	154.0	155.5	157.1
Power Stations Consumption (MMscf)	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47	3,531.47
Total Consumption of Gas (MMscf)	8,941	9,180	9,426	9,660	9,900	10,140	10,379	10,619	10,859	11,099	11,339	11,579	11,819
Consumption of Fuel Oil as Replacement for Gas Consumed (tons)	240,237.4	246,671.8	253,290.0	259,562.1	266,004.5	272,452.3	278,894.7	285,337.2	291,779.6	298,227.4	304,675.2	311,120.4	317,568.2
Costs Involved in Natural Gas Alternative													
Cost of Gas Purchased	1,886.5	1,937.0	1,989.0	2,038.2	2,088.8	2,139.5	2,190.1	2,240.6	2,291.2	2,341.9	2,392.5	2,443.1	2,493.7
Fixed Assets Acquisition	1,973.4	2,011.4	1,906.7	2,011.4	1,981.5	1,919.2	2,844.0	1,910.2	2,007.9	1,910.2	2,007.9	1,910.2	1,981.1
Bottles in exchange for carcassing/conversion													
Natural Gas Project Fixed Operating Costs	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0	1,180.0
Natural Gas Project Variable Operating Costs	4,270.0	4,463.1	4,661.5	4,849.4	5,042.5	5,235.7	5,428.8	5,621.9	5,815.1	6,008.2	6,201.4	6,394.5	6,587.6
Cost of Fuel used as replacement for Gas Consumed	37,267.1	39,818.8	42,547.1	45,235.7	48,096.9	51,110.1	54,280.6	57,617.1	61,304.1	65,196.5	69,303.7	73,635.9	78,206.0
Total Costs Involved in Natural Gas Solution	46,576.9	49,410.2	52,284.3	55,314.7	58,389.7	61,584.4	65,923.4	68,569.8	72,598.3	76,636.8	81,085.4	85,563.6	90,448.4
LPG Gas-Oil Alternative (without Project)													
Dwelling using LPG	409,000.0	427,500.0	446,500.0	464,500.0	483,000.0	501,500.0	520,000.0	538,500.0	557,000.0	575,500.0	594,000.0	612,500.0	631,000.0
Consumption of LPG (tons)	130,092.7	135,851.8	141,775.5	147,389.2	153,155.5	158,926.7	164,693.0	170,459.3	176,225.6	181,996.7	187,767.8	193,536.5	199,307.6
Gas Oil Consumed by Power Stations (tons)	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1	92,701.1
Costs Involved in LPG Alternative													
Cost of LPG Purchased	34,455.0	37,441.0	40,660.0	43,855.1	47,279.8	50,901.1	54,726.0	58,766.2	63,214.7	67,928.9	72,921.3	78,205.6	83,799.5
LPG Operating Cost	5,906.9	6,168.4	6,437.3	6,692.2	6,954.0	7,216.1	7,477.9	7,739.7	8,001.5	8,263.6	8,525.6	8,787.5	9,049.6
LPG Fixed Assets (Plant & Equipment)	4,970.0	4,280.0	5,260.0	5,560.0	6,900.0	6,530.0	8,390.0	7,100.0	7,960.0	7,420.0	7,750.0	8,980.0	8,220.0
Cost of Gas Oil Consumed by Power Stations	19,290.7	20,073.9	20,888.9	21,672.2	22,485.0	23,328.1	24,202.9	25,110.6	26,127.5	27,185.7	28,286.7	29,432.3	30,624.3
Cost of Gas Purchased	1,886.5	1,937.0	1,989.0	2,038.2	2,088.8	2,139.5	2,190.1	2,240.6	2,291.2	2,341.9	2,392.5	2,443.1	2,493.7
Fixed Operating Cost for Gas Consumed	236.0	236.0	236.0	236.0	236.0	236.0	236.0	236.0	236.0	236.0	236.0	236.0	236.0
Variable Operating Costs for Gas Consumed	854.0	892.6	932.3	969.9	1,008.5	1,047.1	1,085.8	1,124.4	1,163.0	1,201.6	1,240.3	1,278.9	1,317.5
Total Cost, LPG/Gas Oil Solution	67,599.0	71,028.9	76,403.5	81,023.7	86,952.1	91,397.9	98,308.7	102,317.5	108,994.0	114,577.7	121,352.4	129,363.5	135,740.6
Project Savings	21,022	21,619	24,119	25,709	28,562	29,814	32,385	33,748	36,396	37,941	40,267	43,800	45,292

EGYPT

CAIRO GAS DISTRIBUTION PROJECT

Natural Gas Pricing

1. The selling price of natural gas is set by GOE and the transfer price (the price at which natural gas is supplied by EGPC to Petrogas) is determined at the time of formulation of Petrogas' annual budget. Although no formal GOE approval is required to the transfer prices agreed to by EGPC and Petrogas, as these form the basis of the annual budget of Petrogas which is approved by EGPC and the People's Assembly, these prices cannot ordinarily be changed during the course of the year without the prior approval of GOE. As there are three distinct group of consumers, industrial users, electric power stations and domestic customers three separate selling prices and transfer prices are set for each group of customers.

2. The transfer prices of natural gas is set in such a way as to ensure that the difference between the selling price to the customers and the purchasing price from EGPC covers the cost of marketing plus an adequate margin. The financial viability of Petrogas' natural gas operations is thus sought to be achieved, as is typical of existing arrangements for all EGPC marketing subsidiaries, by adjustment of the transfer price rather than through the more logical and economic alternative of adjustment in the selling prices.

3. To meet the objective that over the longer term the operating revenues from gas sales cover operating expenses and debt service and provide a reasonable contribution to the future expansion of natural gas facilities the Development Credit Agreement and the Project Agreement provided that the selling prices of natural gas in the project area for domestic users and the two power stations would be set from time to time at such levels as would be sufficient to produce revenues to:

- (a) cover until the end of 1983 fiscal year all Petrogas' operating expenses (including administrative expenses and adequate maintenance but excluding depreciation) relating to the natural gas operations and debt service requirement also relating with natural gas operation;
- (b) provide until the end of 1983 fiscal year adequate working capital relating to its natural gas operations; and
- (c) produce the following annual rate of return on the average net value of Petrogas fixed assets in service of natural gas operation: 3% in FY84-85, 4% in FY86-87, 5% in FY88-89, 7% in FY90, and 9% in FY91 onwards.

4. As it was anticipated that an average revenue of LE 3.0/Mcf from domestic consumers and LE 0.51/Mcf from power stations would enable Petrogas to earn revenue sufficient to meet the tests set out above, the Development Credit Agreement and the Project Agreement stipulated that the price of natural gas for these categories of consumers would at no time be less than the aforesaid amounts. Furthermore, for deriving maximum economic advantage of the project it was considered essential that the natural gas for domestic sector was priced higher than its opportunity cost (i.e. fuel oil, f.o.b price) of about LE 2.60 Mcf.

5. Setting the price for domestic users at LE 3.0/Mcf represented a major increase (an effective doubling) above the prevailing price of LPG - the fuel to be replaced - and would have imposed hardship on poorer project area residents. Therefore, the following graduated tariff structure, designed to generate revenues sufficient to meet the tests set out earlier, while affecting only moderately the average domestic fuel bill for the poorer domestic consumers, was introduced for a period of 5 years by a Government decree dated March 24, 1981.

Quantities Per month (cu m)	Price/(LE)	
	Per cu m	Per MCF
0-22.5	0.055	1.56
22.6-37.5	0.145	4.11
37.6-52.5	0.180	5.10
above 52.5	0.330	9.34

The table below sets out the transfer prices and the average revenues realized per Mcf of gas sold to domestic users and power stations in the project area.

	(LE/Mcf)					
	1981-82		1982-83		1983-84	
	Appr.	Actual	Appr.	Actual	Appr.	Actual
Average Purchase Price	0.229	0.202	0.250	0.190	0.280	0.211
Domestic Consumers	3.0	1.80	3.0	2.42	3.0	2.24
Electric Power ^{a/}	0.620	0.548	0.680	0.544	0.750	0.573











^{a/} The project agreement provided that the price of gas sold to Electric Power at no time was to be less than 0.510 LE/Mcf throughout the period.

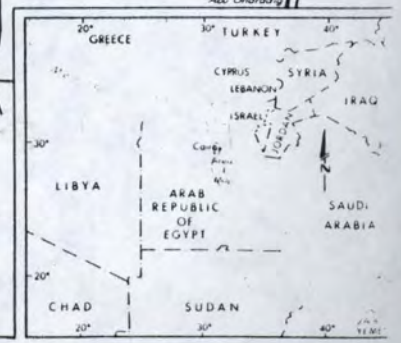
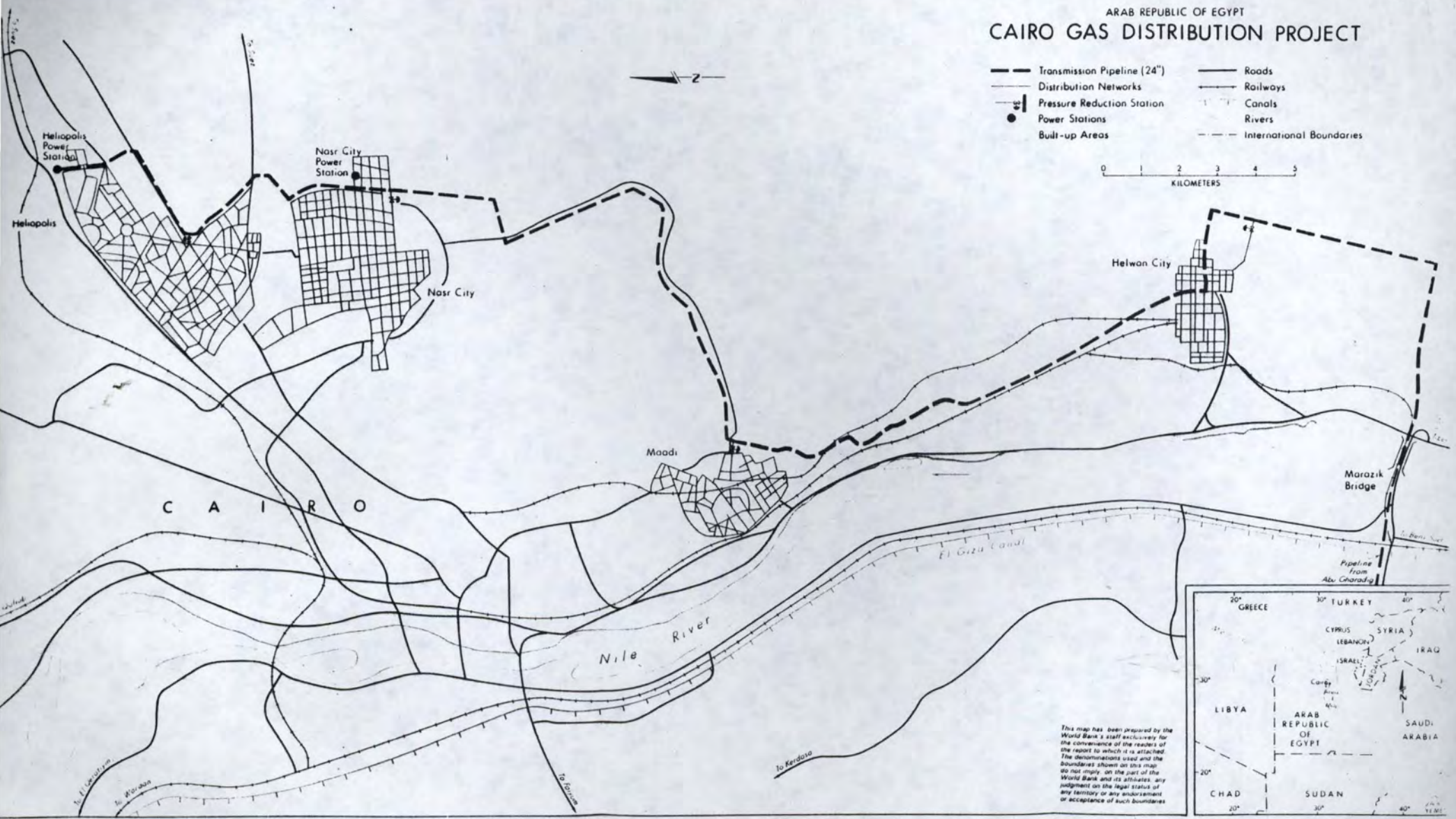
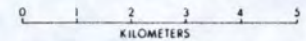
The following features are noteworthy:

- the average price of gas sold to the power stations through this period was higher than was stipulated in the Project Agreement but was less than the price assumed in SAR and in the financial statements;
- the average revenue per Mcf of natural gas sold to domestic customers during this period was considerably less than the covenanted price of LE 3.0/Mcf. It was also less than the border price of natural gas current opportunity cost as a fuel oil replacement [about LE 2.90/Mcf]. But it was almost twice as high as the average revenue [LE 1.212/Mcf] realized by equivalent sale in gross heating value of LPG.

The main factor contributing to low average price per Mcf of gas sold in the domestic sector was the high proportion of customers in the lowest bracket in the graduated tariff structure. In FY1984 over 72% of domestic customers consumed less than 22.5 cu m of natural gas per month and paid at the lowest applicable price of LE 0.055/cu m; 18% of customers paid at a price of LE 0.145 cu m; and about 5% each a price of LE 0.180 cu m and LE 0.300 cu m. The average price of LE 3.0/cu m could be expected to be achieved when more than 55% of the customers in the project area consumed gas in excess of 22.5 cu m per month and paid at rates LE 0.145/cu m and above.

ARAB REPUBLIC OF EGYPT
CAIRO GAS DISTRIBUTION PROJECT

- | | | | |
|---|-----------------------------|---|--------------------------|
|  | Transmission Pipeline (24") |  | Roads |
|  | Distribution Networks |  | Railways |
|  | Pressure Reduction Station |  | Canals |
|  | Power Stations |  | Rivers |
|  | Built-up Areas |  | International Boundaries |



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.

OFFICE MEMORANDUM

DATE May 31, 1985

TO Mr. Eugene D. McCarthy, Chief, EGYD1

FROM *CP* Chauncey E. Dewey, Asst. Director, EMP

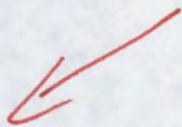
EXTENSION 32713

SUBJECT EGYPT - PCR on Cairo Gas Distribution Project (Credit 1024-EGT)

① ~~Mr. Zivilla~~

② ~~SAWM~~

B. B.



Our comments on the above draft PCR are given in the attachment. Our marked-up copy of the draft report showing some minor suggested changes is also enclosed. Please return it to Mr. Reekie when done with.

Attach.

cc: Messrs. Reekie, Mathai
EMENA, Div. & Chron. Files

IMathai:pw

Cairo Gas Distribution Project -- Credit 1024-EGT

Comments on Draft PCR

Key Project Data - Institutional Performance: Since institutional performance covers the total performance of Petrogas in all areas, change "competent" to "satisfactory except in financial and accounting areas."

Highlights, para. 3, line 1: Change "successfully" to "partially."

PCR, para. 1.02, line 12: Since the objective of the project was not only to build the physical facilities but also to complete further studies to develop an energy policy, change "provisions were included for" to "to complete."

Para. 2.03: The Credit became effective about two months later than expected. Give the reasons for the delay. Was the delay due to the difficulty in complying with any effectiveness condition?

Para. 2.04: The objective of the project should include the institution-building objective as well.

Para. 3.01, line 10: The scheduled project completion date is given as December 1983, but it is given as December 31, 1984 under KEY PROJECT DATA.

Para. 3.03: Wasn't conversion of the two power stations also a project objective? If so, include the conversion as part of the project objectives.

Para. 3.09: The delay in conversion is shown as over six months from the time the gas was available. In order to have a full idea of the delay, give the delay with reference to the original date by which the gas was expected to be available.

Para. 3.16: Give the reasons for completing disbursements nine months ahead of schedule.

Para. 4.02, lines 8 and 9: It is stated that about 70% of the average household SAR consumption forecast will be reached by the end of FY 1984. Since we are near the close of FY 1985, the actual situation at the end of FY 1984 should be given.

Institutional performance -- Paras. 5.01-5.04: A brief mention of the entity's financial performance or cross reference to Section VI, Financial Performance, should be given. Otherwise the impression will be created that the institutional performance has nothing to do with the financial performance, instead of the latter being an integral part of the former.

Para 6.02 -- penultimate sentence: It would not be correct to conclude from the stability of the exchange rate between the LE and the US\$ that the book values of fixed assets acquired under the project reflect replacement costs reasonably well. This conclusion does not take into account the fact that the exchange rate is an artificial and unrealistic one. It also ignores local inflation which at a minimum has been 10-15% p.a.

Para. 6.06: Part of the reason for the shortfall in natural gas revenues compared to the appraisal estimate was that the estimate itself was unrealistic, e.g. wasn't it unreasonable to assume sales to the power station of 2,220 MMcf in FY1980 and 4,440 MMcf in FY 1981 (Annex 3 to PCR) when the Credit Agreement itself was signed only in June 1980 (i.e., at the close of FY 1980)? Even in FY 1983 (presumably one year after the conversion), the sales came to 3,178 MMcf vs. the appraisal estimate of 4,400 MMcf.

Para. 6.10 (d): What is the extent of the default in the submission of audited accounts? Which year's accounts are still due? What was the delay in submission of each year's accounts?

Para. 6.10 (e): Isn't it a contradiction (see paras. 5.05, 5.06, and 6.07) to say that gas prices were adequate?

Also, is it not necessary to have a formal contract?

OFFICE MEMORANDUM

*Return to P. Reekie AR
H10-113 5/22*

R5.393

DATE May 20, 1985

TO Messrs. C. F. Dewey (EMPDR); [redacted] (EMPPE); A. J. Favilla,
S. A. Moini (EMIEG); and A. K. Abu Akeel, (LEGEM).

FROM Eugene D. McCarthy, Chief, EGYD1

EXTENSION 7-4081

SUBJECT EGYPT: PCR on Cairo Gas Distribution Project, Credit 1024-EGT

1. I attach a draft PCR on the above project and would appreciate your comments on the report by COB May 31, 1985.
2. Questions on the financial part of the PCR should be directed to M. Sergio, 74059 and other questions to H. Schober, 75570.

Attachment
MSergo:bwm

*IM- please see if we should
comment JRL*

EGYPT

CAIRO GAS DISTRIBUTION PROJECT

(CREDIT 1024-EGT)

PROJECT COMPLETION REPORT

April 1984

(Revised April 25, 1985)

CLOSING DATE

Ministry of Economy, Foreign trade
and Economic Cooperation

OFFICIAL
DOCUMENTS

Cr. 1024-867⁴

Mr. Koepf
Division Chief
World Bank

Cairo, Dec 31, 1980.

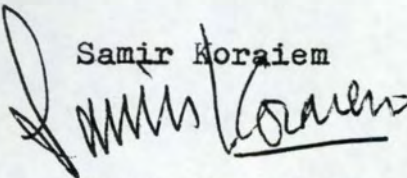
Dear Mr. Koepf,

Reference to Article V of Credit Agreement No. 1024
Cairo Gas Distribution Project dated June 4, 1980.

Please find enclosed herewith specimen signature of
the Chairman the Deputy Chairman Exploration & Production,
the Deputy Chairman Financial & Economic Affairs, Deputy
Chairman Planning & Projects of EGPC and the Chairman of P.G.C .
Every one has the capacity to sign withdrawal alone.

With my best regards.

Y/
Best wishes
for a happy new year

Samir Koraiem

Under Secretary

Specimen Signature

For Withdrawal from Loan No: 1024

Name
Mostafa K. EL-Ayouty

Position
Deputy Chairman
Exploration & Production

Signature

M. K. EL-Ayouty



Specimen Signature

For Withdrawal from Loan No. 1024

Name

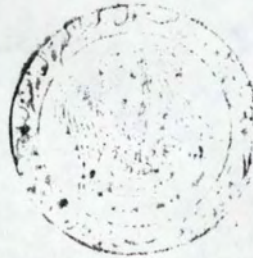
Position

Signature

Eng. Abdel Hamid Abu Bakr

Chairman of Petroleum Gas Company

A. H. Abulak



Specimen Signature

For Withdrawal from Loan No: 1024

Name

Position

Signature

Abdel Hadi M kandil

Chairman Of the Board



Specimen Signature

For Withdrawal from Loan No: 1024

Name

Position

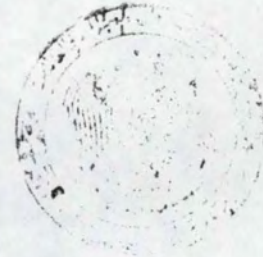
Signature

ACC. Essam Abdel-Aziz

Deputy Chairman

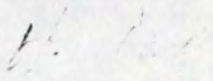
Financial & Economic Affairs

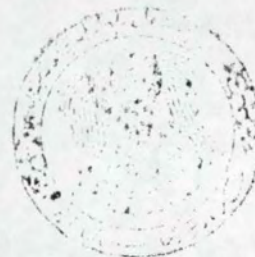
E. Abdel Aziz



Specimen Signature

For Withdrawal from Loan No: 1024

<u>Name</u>	<u>Position</u>	<u>Signature</u>
ENG. Hassab EL-Naby Assal	Deputy Chairman Planing & Projects	



Ministry of Economy Foreign Trade
and Economic Cooperation

OFFICIAL
DOCUMENTS

Cr. 1024-EGT⁴

Mr. Koepf
Division Chief
World Bank

Cairo Nov. 24 1980

Dear Mr. Koepf,

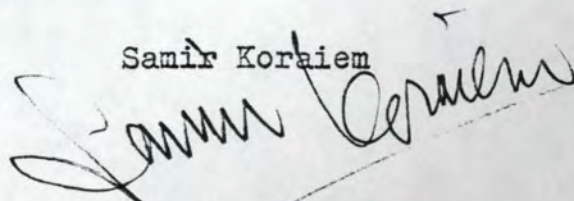
Reference to Article V of Credit Agreement No. 1024 Cairo Gas
Distribution Project dated June 4, 1980 .

Please find enclosed herewith :

- N/A 1- The legal opinionⁿ issued by H.E. Minister of Justiceⁿ ^{on} Nov. 18, 1980
- N/A 2- Presidential Decree No. 375 dated July 4, 1980 approving the said
Development Credit Agreement .
- N/A 3- The Report of the Economic Committees of People's assembly dated
July 12, 1980 signed and stamped as to certify the approval of the
People's Assembly of the said loan .
- N/A 4- The Subsidiary loan Agreement between the Government of A.R.E and
EGPC and PGC dated Oct. 30, 1980 .
- ✓ 5- Specimen signature of the Chairman of Egyptian General Petroleum
corporation to sign withdrawal applications he has the capacity
to sign withdrawal alone .

With my best regards

Samir Koraiem



Undersecretary of State

W/M.

Specimen Signature

For Withdrawal from Loan No: 1732

Credit No 1024 EGT

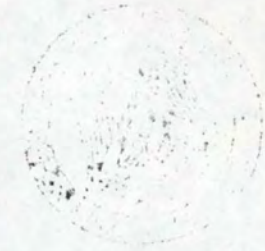
Name

Position

Signature

Chem. Abdel Hadi M Kandil

Chairman of the Board



Confirmed

Samir Koraiem

Undersecretary of State



EFFECTIVENESS
MEMORANDUM



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ENG. AHMED EZZIDDIN HILAL
DEPUTY PRIME MINISTER FOR PETROLEUM AND PRODUCTION
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- 3. ENG. ABDEL HAJI KANDIL
CHAIRMAN
EGYPTIAN GENERAL PETROLEUM CORPORATION
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- 4. ENG. ABDEL HAMID ABU BAKR
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PETROLEUM GAS COMPANY
CAIRO, EGYPT TELEX: 93049 PTGAS UN
- 5. MR. SAMIR KORAIEM
UNDERSECRETARY
MINISTRY OF ECONOMY
CAIRO, EGYPT TELEX: 348 GAFEC UN

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Telex No.

Originator's Ext. **74528**

START HERE TO HIS EXCELLENCY DR. ABDEL RAZZAK ABDEL MEGUID, DEPUTY PRIME
CITY/COUNTRY MINISTER FOR ECONOMIC AND FINANCIAL AFFAIRS, HIS EXCELLENCY
MESSAGE NO ENG. AHMED EZZIDDIN HILAL, DEPUTY PRIME MINISTER FOR PETROLEUM
AND PRODUCTION, ENG. ABDEL HAJI KANDIL, CHAIRMAN, EGYPTIAN
GENERAL PETROLEUM CORPORATION, ENG. ABDEL HAMID ABU BAKR,
CHAIRMAN, PETROLEUM GAS COMPANY AND MR. SAMIR KORAIEM,
UNDERSECRETARY, MINISTRY OF ECONOMY, CAIRO, EGYPT.
PLEASED TO INFORM THAT ASSOCIATION ACCEPTS EVIDENCE SUBMITTED
IN FULFILLMENT OF CONDITIONS PRECEDENT TO EFFECTIVENESS OF
CREDIT AND GUARANTEE AGREEMENTS FOR CAIRO GAS DISTRIBUTION
PROJECT (CR. 1024) DATED JUNE 4, 1980 BETWEEN THE ARAB REPUBLIC
OF EGYPT, THE EGYPTIAN GENERAL PETROLEUM CORPORATION, PETROGAS
AND THE ASSOCIATION RESPECTIVELY. CONSEQUENTLY, THE CREDIT
BECOMES EFFECTIVE TODAY, DECEMBER 4, 1980. REGARDS, ATILA
KARAOSSMANOGLU, DIRECTOR, COUNTRY PROGRAMS 1, EUROPE, MIDDLE EAST
AND NORTH AFRICA REGION, WORLD BANK.

END
OF
TEXT

NOT TO BE TRANSMITTED

SUBJECT

EGYPT: Cairo Gas Distribution

Cld w & cc: Mr. Abu Akeel
cc: Messrs. Rovani, McCarthy,
Nayyar, Picciotto, Kopp,
Hakim

DISPATCH BY

AWitney

A. Karasmanoglu
Attila Karasmanoglu, Director

Country Programs 1, EMENA Region

OFFICE MEMORANDUM

TO: Mr. F. Kaps, EM1

DATE: December 4, 1980

FROM: Claude Duval, LEG

CS

SUBJECT: EGYPT - Credit No. 1024 EGT
Effectiveness

We have reviewed the documentation received for the effectiveness of this Credit and found it in order. I have sent the Subsidiary Loan Agreement for translation so that it may reviewed by Projects and yourself.



Record Removal Notice

File Title Cairo Gas Distribution Project - Egypt, Arab Republic of - Credit 1024 - P005023 - Correspondence		Barcode No. 1264595		
Document Date 11 December, 1980	Document Type Memorandum			
Correspondents / Participants To : Messes. M. Hattori, CTR, A. Karaosmanoglu, EM1, Rovani, EGY and H. E. Kopp, EM1 From : Claude Duval, Legal				
Subject / Title Egypt - Credit 1024 EGT (Cairo Gas Distribution Project) - Effectiveness				
Exception(s) Attorney-Client Privilege				
Additional Comments		The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information. This Policy can be found on the World Bank Access to Information website.		
		<table border="1"><tr><td>Withdrawn by Chandra Kumar</td><td>Date 12-Mar-15</td></tr></table>	Withdrawn by Chandra Kumar	Date 12-Mar-15
Withdrawn by Chandra Kumar	Date 12-Mar-15			

64145 WORLDBANK

348 GAFEC UN

CAIRO 7/12/1980

ATT: MR, KARAOSMANOGLU

DIRECTOR COUNTRY PROGRAMS 1

WORLD BANK

MANY THANKS URTLX DEC 4 ON EFFECTIVENESS CAIRO GAS DISTRIBUTION
AGREEMENT LOOKING FORWARD FOR CONTINUING COOPERATION.

BEST REGARDS

SAMIR KORAIEM

64145 WORLDBANK

348 GAFEC UN

Distribution

Mr. Karaosmanoglu

Mr. Koepp

Mr. C. Duval

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COMMUNICATIONS DIVISION

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Class of Service: **TELEX** Date: **DECEMBER 4, 1980**
Telex No.: _____ Originators Ext: **74528**

Book Book

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BOOK OF FIVE (SEE ATTACHED TEXT)

- 1. HIS EXCELLENCY**
DR. ABDEL RAZZAK ABDEL MEGUID
DEPUTY PRIME MINISTER FOR ECONOMIC AND FINANCIAL AFFAIRS
CAIRO, EGYPT TELEX: 348 GAFEC UN
- 2. HIS EXCELLENCY**
ENG. AHMED EZZIDDIN HILAL
DEPUTY PRIME MINISTER FOR PETROLEUM AND PRODUCTION
CAIRO, EGYPT TELEX: 92049 PETMISR UN
- 3. ENG. ABDEL HAJI KANDIL**
CHAIRMAN
EGYPTIAN GENERAL PETROLEUM CORPORATION
CAIRO, EGYPT TELEX: 92049 PETMISR UN
- 4. ENG. ABDEL HAMID ABU BAKR**
CHAIRMAN
PETROLEUM GAS COMPANY
CAIRO, EGYPT TELEX: 93049 PTGAS UN
- 5. MR. SAMIR KORAIEM**
UNDERSECRETARY
MINISTRY OF ECONOMY
CAIRO, EGYPT TELEX: 348 GAFEC UN

NOT TO BE TRANSMITTED

SUBJECT: EGYPT: Cairo Gas Distribution		DRAFTED BY: AWitney	
CLEARANCES AND COPY DISTRIBUTION: Cld w & cc: Mr. Abu Akeel cc: Messrs. Rovani, McCarthy, Nayyar, Picciotto, <u>Khor</u>, Hakim		AUTHORIZED BY (Name and Signature): Attila Karaosmanoglu, Director DEPARTMENT: Country Programs 1, EMENA Region	
SECTION BELOW FOR USE OF CABLE SECTION CHECKED FOR DISPATCH			

Class of Service **TELEX** Date **DECEMBER 4, 1980**
Telex No. _____ Originator's Ext. **74528**

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HIS EXCELLENCY DR. ABDEL RAZZAK ABDEL MEGUID, DEPUTY PRIME
MINISTER FOR ECONOMIC AND FINANCIAL AFFAIRS, HIS EXCELLENCY
ENG. AHMED EZZIDDIN HILAL, DEPUTY PRIME MINISTER FOR PETROLEUM
AND PRODUCTION, ENG. ABDEL HAJI KANDIL, CHAIRMAN, EGYPTIAN
GENERAL PETROLEUM CORPORATION, ENG. ABDEL HAMID ABU BAKR,
CHAIRMAN, PETROLEUM GAS COMPANY AND MR. SAMIR KORAIEM,
UNDERSECRETARY, MINISTRY OF ECONOMY, CAIRO, EGYPT.
PLEASED TO INFORM THAT ASSOCIATION ACCEPTS EVIDENCE SUBMITTED
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CREDIT AND GUARANTEE AGREEMENTS FOR CAIRO GAS DISTRIBUTION
PROJECT (CR. 1024) DATED JUNE 4, 1980 BETWEEN THE ARAB REPUBLIC
OF EGYPT, THE EGYPTIAN GENERAL PETROLEUM CORPORATION, PETROGAS
AND THE ASSOCIATION RESPECTIVELY. CONSEQUENTLY, THE CREDIT
BECOMES EFFECTIVE TODAY, DECEMBER 4, 1980. REGARDS, ATTILA
KARAOSSMANOGLU, DIRECTOR, COUNTRY PROGRAMS 1, EUROPE, MIDDLE EAST
AND NORTH AFRICA REGION, WORLD BANK.

NOT TO BE TRANSMITTED

SUBJECT:
EGYPT: Cairo Gas Distribution
CLEARANCES AND COPY DISTRIBUTION
Cld w & cc: Mr. Abu Akeel
cc: Messrs. Rovani, McCarthy,
Nayyar, Picciotto, Köpp,
Hakim

DRAFTED BY:
AWitney
AUTHOR: *A. Karaosmanoglu*
Attila Karaosmanoglu, Director
DEPARTMENT:
Country Programs 1, EMENA Region
CHECKED FOR DISPATCH

Class of Service: **TELEX** Date: **OCTOBER 30, 1980**
 Telex No.: _____ Originators Ext: **74528**

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BOOK OF THREE (SEE ATTACHED TEXT)

1. MR. SAMIR KORAIEM

**UNDERSECRETARY
 MINISTRY OF ECONOMY
 CAIRO, EGYPT
 TELEX: 348 GAFEC UN**

2. MR. ABDEL HAJI KANDIL

**CHAIRMAN
 EGYPTIAN GENERAL PETROLEUM CORPORATION
 CAIRO, EGYPT
 TELEX: 92049 PETMISR UN**

3. ENG. ABDEL HAMID ABU BAKR

**CHAIRMAN
 PETROLEUM GAS COMPANY
 CAIRO, EGYPT
 TELEX: 93049 PTGAS UN**

NOT TO BE TRANSMITTED

SUBJECT: EGYPT: Cairo Gas Distribution		DRAFTED BY: FKaps:aw	
CLEARANCES AND COPY DISTRIBUTION: Cld w & cc: Mr. Duval, Ms. Zurayk Attila Karaosmanoglu, Director cc: Mr. Hakim		AUTHORIZED BY: <i>[Signature]</i> (Signature): DEPARTMENT: Country Programs 1, EMENA Region	
SECTION BELOW FOR USE OF CABLE SECTION CHECKED FOR DISPATCH			

Class of Service: **TELEX** Date: **OCTOBER 30, 1980**
Telex No.: _____ Originators Ext: **74528**

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BOOK OF THREE (SEE ATTACHED TEXT)

1. MR. SAMIR KORAIEM
UNDERSECRETARY
MINISTRY OF ECONOMY
CAIRO, EGYPT
TELEX: 348 GAFEC UN

2. MR. ABDEL HAJI KANDIL
CHAIRMAN
EGYPTIAN GENERAL PETROLEUM CORPORATION
CAIRO, EGYPT
TELEX: 92049 PETMISR UN

3. ENG. ABDEL HAMID ABU BAKR
CHAIRMAN
PETROLEUM GAS COMPANY
CAIRO, EGYPT
TELEX: 93049 PTGAS UN

NOT TO BE TRANSMITTED

EGYPT: Cairo Gas Distribution

FKaps:aw

Cld w & cc: Mr. Duval, Ms. Zurayk Attila Karaosmanoglu, Director
cc: Mr. Hakim

Country Programs 1, EMENA Region

Class of Service **TELEX** Date **OCTOBER 30, 1980**
Telex No.: _____ Originators Ext: **74528**

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TEXT

ADDRESSED MR. SAMIR KORAIEM, UNDERSECRETARY, MINISTRY OF
ECONOMY, COPY TO MR. ABDEL HAJI KANDIL, CHAIRMAN, EGYPTIAN
GENERAL PETROLEUM CORPORATION AND ENG. ABDEL HAMID ABU BAKR,
CHAIRMAN, PETROLEUM GAS COMPANY, CAIRO, EGYPT.
RE CAIRO GAS DISTRIBUTION PROJECT, CR. 1024 AND MR. KORAIEM'S
TELEX OF OCTOBER 30, 1980. IDA AGREES TO POSTPONE THE DATE
BY WHICH THE AGREEMENT HAS TO BECOME EFFECTIVE, AND HAS
ESTABLISHED JANUARY 5, 1981 FOR THE PURPOSE OF SECTION 12.04
OF THE GENERAL CONDITIONS. REGARDS, KARASMANOGLU, DIRECTOR,
WORLD BANK.

EGYPT: Cairo Gas Distribution FKaps:aw
Cld w & cc: Mr. Duval, Ms. Zurayk *A. Karaosmanoglu* Attila Karaosmanoglu, Director
cc: Mr. Hakim
Country Programs 1, EMENA Region

OFFICE MEMORANDUM

TO: Mr. Attila Karaosmanoglu, Director, EMI

FROM: Hans-Eberhard ^{KG}Kopp, Division Chief, EMIDA

SUBJECT: EGYPT: Cairo Gas Distribution Project (Cr. 1024-EGT)
Extension of Effectiveness

DATE: October 30, 1980

The Egyptian Government has requested that the period by which the above credit is to be made effective be extended by 2 months from November 4, 1980 to January 5, 1981. Mr. Koraiem has informed us that the agreement has been approved by the People's Assembly and that the subsidiary loan agreement to be entered into between the government and Petrogas, the execution of which is a condition of effectiveness of the credit, is awaiting IDA's approval. We have asked Mr. Abu Akeel, who is presently in Cairo, to review the subsidiary loan agreement and the draft legal opinion, and are confident, as Mr. Koraiem indicated, that the credit can in fact be declared effective before January 5, 1981. We therefore propose to agree to the requested extension. If you agree, please sign the attached telex.

Attachment

Cleared with & cc: Mr. Duval (LEG), Ms. Zurayk (EGY)

cc: Mr. Hakim (CTR)

FKaps:aw

Class of Service: **TELEX** Date: **OCTOBER 30, 1980**

Telex No.: _____ Originators Ext: **74528**

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TEXT

BOOK OF THREE (SEE ATTACHED TEXT)

1. MR. SAMIR KORAIEM

**UNDERSECRETARY
 MINISTRY OF ECONOMY
 CAIRO, EGYPT
 TELEX: 348 GAFEC UN**

2. MR. ABDEL HAJI KANDIL

**CHAIRMAN
 EGYPTIAN GENERAL PETROLEUM CORPORATION
 CAIRO, EGYPT
 TELEX: 92049 PETMISR UN**

3. ENG. ABDEL HAMID ABU BAKR

**CHAIRMAN
 PETROLEUM GAS COMPANY
 CAIRO, EGYPT
 TELEX: 93049 PTGAS UN**

NOT TO BE TRANSMITTED

SUBJECT:
EGYPT: Cairo Gas Distribution

DRAFTED BY:
FKaps:aw

CLEARANCES AND COPY DISTRIBUTION:
**Cld w & cc: Mr. Duval, Ms. Zurayk Attila Karaosmanoglu, Director
 cc: Mr. Hakim**

AUTHORIZED BY: _____ (Signature)

DEPARTMENT:
Country Programs 1, EMENA Region

CHECKED FOR DISPATCH

Class of Service: **TELEX** Date: **OCTOBER 30, 1980**

Telex No.: _____ Originators Ext: **74528**

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ADDRESSED MR. SAMIR KORAIEM, UNDERSECRETARY, MINISTRY OF
 ECONOMY, COPY TO MR. ABDEL HAJI KANDIL, CHAIRMAN, EGYPTIAN
 GENERAL PETROLEUM CORPORATION AND ENG. ABDEL HAMID ABU BAKR,
 CHAIRMAN, PETROLEUM GAS COMPANY, CAIRO, EGYPT.
 RE CAIRO GAS DISTRIBUTION PROJECT, CR. 1024 AND MR. KORAIEM'S
 TELEX OF OCTOBER 30, 1980. IDA AGREES TO POSTPONE THE DATE
 BY WHICH THE AGREEMENT HAS TO BECOME EFFECTIVE, AND HAS
 ESTABLISHED JANUARY 5, 1981 FOR THE PURPOSE OF SECTION 12.04
 OF THE GENERAL CONDITIONS. REGARDS, KARAOSMANOGLU, DIRECTOR,
 WORLD BANK.

NOT TO BE TRANSMITTED

SUBJECT:
EGYPT: Cairo Gas Distribution
 CLEARANCES AND COPY DISTRIBUTION.
 Cld w & cc: Mr. Duval, Ms. Zurayk
 cc: Mr. Hakim

DRAFTED BY:
FKaps:aw
 AUTHORIZED SIGNATURE:
A. Karaosmanoglu
Attila Karaosmanoglu, Director
 DEPARTMENT:
Country Programs 1, EMENA Region

CHECKED FOR DISPATCH

248423 WORLDBANK

348 GAFEC UN

sd

(Telex NO.)

CAIRO 30/10/1980

Distribution:

ATT: MR. KOEPP

Mr. Koeppe

REQUEST EXTENSION OF RATIFICATION PERIOD MENTIONED IN SECTION 5.03 OF THE CREDIT AGREEMENT BY 60 DAYS, WOULD LIKE TO INFORM YOU THAT AGREEMENT APPROVED BY PEOPLE'S ASSEMBLY AND FINAL SUBSIDIARY CREDIT AGREEMENT SIGNED BY E G P C AND PETROGAS AND WILL BE SIGNED BY GOVERNMENT IN THE COURSE OF NEXT FEW DAYS. THE EXTRA PERIOD IS REQUESTED TO FINALIZE THE LEGAL OPINION. HOWEVER WE EXPECT DOCUMENTS TO BE SENT TO YOU FAR A HEAD OF REQUESTED DATE. WE CONTACTED ABUAKEEL TO REVIEW THE SUBSIDIARY AGREEMENT AND GIVE HIS OPSNION AT THE SAME TIME. REGARDS
SAMIR KORAIEM

248423 WORLDBANK.....

(نموذج ١٥/١٥ - ٢٠٠ - ١٠٠ × ٢ - ٤ / ٧٩)

THE EGYPTIAN GENERAL PETROLEUM CORPORATION

Osman Abdel Hafiz Street - NASR CITY

P.O.B. 2130 CAIRO - Tel. 603299

Cable : PETMISR - Telex 92049



مجلس إدارة
القاهرة

الهيئة المصرية العامة للبترول

شارع عثمان عبد الحفيظ - مدينة نصر

ص.ب. : ٢١٣٠ - القاهرة ت : ٦٠٣٨٩٩

تلفزيونياً : بمصر - تيلكس : ٩٢٠٦١

رقم :
بتاريخ : ١٩٨٠/٦/١٥

Date 1st June, 1980

التاريخ

Our Ref.

ملف رقم

Subject

CAIRO GAS DISTRIBUTION
PROJECT

الموضوع

Your Ref.

خطابكم رقم

No. of Encl.

عدد المرفقات

OFFICIAL
DOCUMENTS

EGT- Cairo Gas Distribution

His Excellency,
Ambassador Ashraf Ghorbal
Ambassador of Egypt
WASHINGTON

Dear Sir,

This is to confirm our telex dated today authorising your goodselves to sign the credit and projects agreements relating to Cairo Gas Distribution Project on behalf of both The Egyptian General Petroleum Corporation and Petrogas Co.

Thanking you for your kind cooperation, we remain,

Yours faithfully,

Esam

Eng. M. R. Leithy

Eng. M. R. LEITHY

CHAIRMAN

Book of Three
(see attached text)

June 5, 1980

74787

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TEXT

Book of Three (see attached text)

1. Dr. Ramzi El-Leithy
Chairman
Egyptian General Petroleum Corporation
Cairo, Egypt

TELEX 92049 PETMISR UN

2. Eng. Abdel Hamid Abu Bakr
Chairman
Petroleum Gas Company
Cairo, Egypt

TELEX 93049 PTGAS UN

3. Mr. Samir Koraiem
Undersecretary
Ministry of Economy
Cairo, Egypt

TELEX: 348 GAFEC UN

NOT TO BE TRANSMITTED

SUBJECT:
Egypt: Cairo Gas
CLEARANCES AND COPY DISTRIBUTION

DRAWN BY:
cys
AUTHORIZED (Name and Signature):
Hans-Eberhard Köpp

DEPARTMENT:
EM1

SECTION BELOW FOR USE OF CABLE SECTION
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Class of Service: **Book of Two**
Priority No: **(see attached text)**

Date: **June 5, 1980**
Originator's Ext: **74787**

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ADDRESSED DR. RAMZI EL-LEITHY, CHAIRMAN, EGYPTIAN GENERAL
PETROLEUM CORPORATION AND ENG. ABDEL HAMID ABU BAKR, CHAIRMAN,
PETROLEUM GAS COMPANY, CAIRO, EGYPT AND COPIED MR. SAMIR
KORAIEM, UNDERSECRETARY, MINISTRY OF ECONOMY, CAIRO, EGYPT.
PLEASED TO INFORM YOU DOCUMENTS FOR CAIRO GAS PROJECT,
CR.1024-EGT SIGNED JUNE 4, 1980. DATE OF EFFECTIVENESS IS
NOVEMBER 4, 1980. COPIES OF FINAL DOCUMENTS WILL BE SENT AT
A LATER DATE. BEST REGARDS, HANS-EBERHARD KOEPP.

SUBJECT:
Egypt : Cairo Gas

DELIVERANCES AND COPY DISTRIBUTION

DISPATCHED BY:
CYS

AUTHORITY:
Hans Eberhard Koepf
DEPARTMENT:
EM1

RECEIVED BY (FOR DISC OF CABLE SECTION)
CHECKED BY (FOR DISC OF CABLE SECTION)

Mr. Roger Chaufournier, Vice President, EMENA Region
Through Mr. Attila Karaosmanoglu, Director, EMI *AK*
Hans-Eberhard Köpp, Division Chief, EMIDA

May 30, 1980

EGYPT - Signing of Misr Iran Development Bank Project
(\$30 Million Loan); Textiles II Project
(\$69 Million Loan); Pulp and Paper Project
(\$50 Million Loan); Cairo Gas Distribution
Project (\$50 Million Credit) :
Wednesday, June 4, 1980, Room A-1100, 11:00 a.m.

The following are brief notes on the projects to be signed:

- By this second signing, will almost complete lending program for FY80 (Power Distribution - \$127 million - scheduled for June).

- Program for the year thus far already almost equals FY79 program. 6 projects for \$294 million - (v. FY79 of 6 projects for \$322 million).

- Four projects show Bank's support of Government's interest in private sector and development of its energy resources.

1. MIDB (\$50 Million Loan)

- We welcome today a new institutional borrower: Mr. Fouad Sultan, Vice Chairman and Managing Director, Misr Iran Development Bank, present to sign Project Agreement.

- MIDB's role unique in promoting and financing medium and larger private industrial projects, especially joint-ventures which bring into Egypt appropriate modern technology and efficient managerial know-how.

- Bank loan will cover about 50 percent of MIDB's resource needs for two coming years, contributing to an estimated total capital investment of some \$200 - \$300 million.

- Specific allocation of funds under Bank loan for these priority sectors: construction/contracting, capital goods and export-oriented industries.

- We look forward to long and fruitful relationship.

2. Pulp and Paper Project (\$50 Million Loan)
Textiles II Project (\$69 Million Loan)

- Loans to three companies (National and RAKTA Paper Companies and National Spinning and Weaving) now public sector companies but under the

projects being transferred to joint-venture sector under Law 43. This will allow them greater autonomy in such areas as compensation, pricing, profit retention and can provide models for other industries.

- Good examples of on-going industrial dialogue; both based on studies financed by the Bank and address priority needs identified in the studies and subsequent discussions.

- Studies included under projects provide for next logical steps in the development of the two sectors and will address issues relevant to public sector industries in general.

3. Cairo Gas Distribution Project (\$50 Million Credit)

- Second involvement in the sector (the first was Gulf of Suez Gas in FY79).

- Project would use domestically available source - natural gas, to replace extremely expensive import, LPG.

- Price increases agreed under the project should lead to more rational energy pricing in general.

- Other projects in the sector under consideration, including gas exploration, would assist Egypt in optimizing domestic energy resources and keeping it as a net exporter of petroleum products.

RZ
RZaborski:cys

International Bank for Reconstruction and Development
International Development Association

SecM80-423
IDA/SecM80-222

FROM: Vice President and Secretary

May 29, 1980

SIGNING OF LOANS AND CREDIT: EGYPT

1. Second Textile Project (\$69 m. loan)
2. Pulp and Paper Project (\$50 m. loan)
3. Misr Iran Development Bank Project (\$30 m. loan)
4. Cairo Gas Distribution Project (\$50 m. credit)

1. The following arrangements have been made for signing the above loans and credit to Egypt.

Date and Hour - Wednesday, June 4, 1980 - 11:00 a.m.

Place - Board Room

Signing Officials

- For the Borrower: His Excellency
Ashraf Ghorbal
Ambassador of Egypt
- For MIDB: Mr. Fouad Sultan
Vice Chairman and
Managing Director,
MIDB
- For the Bank and
the Association: Mr. Chauffournier
Vice President
EMENA Region

Seating:

4(R) Mr. Al-Hegelan
3(R) Mr. El-Naggar
2(R) H. E. The Ambassador

1 Mr. Chauffournier

2(L) MIDB
3(L) EMENA Region

2. Mr. Zaborski (EMENA Region) will arrange for the attendance of the signing officials. Messrs. Abu Akeel, Duval and Sakuragi (Legal Department) will supervise the execution of the documents.

Distribution:

Mr. El-Naggar	Mr. Nurick	Mr. Knox
Mr. Al-Hegelan	Mr. Qureshi	Mr. Merriam
President	Mr. Rotberg	Mr. Zaborski
Mr. Cargill	Mr. Bart	Mr. Abu Akeel
Mr. Baum	Mr. Gabriel	Mr. Duval
Mr. Chauffournier	Mr. Hattori	Mr. Sakuragi
	Mr. Karaosmanoglu	

NOTE: ORIGINAL SENT
TO LEGAL

June 2, 1980

CAIRO JUNE 1, 1980

OFFICIAL
DOCUMENTS

CR 1024 EGT⁴
m 1848 EGT⁴

ATT MR KOEPP

REYRTLX MAY 29, PLEASED TO INFORM THAT HE AMBASSADOR ASHRAF
GHORBAL IS DULY AUTHORISED TO SIGN CREDIT LOAN AND PROJECT

AGREEMENTS ON BEHALF OF THE GOVERNMENT, EGPC, PETROGAS,

NATIONAL AND RACTA. REGARDS

SAMIR KORAIEM

To: The President, International Development Association

Recommendation of the Committee under Section 1(d) of Article V of the Articles of Agreement on the proposed Development Credit (Cairo Gas Distribution Project) to the Arab Republic of Egypt

The undersigned Committee constituted under Section 1(d) of Article V of the Articles of Agreement of International Development Association (the Association) hereby submits its recommendation pursuant to said Section in respect of the proposal that the Association grant to the Arab Republic of Egypt a development credit in an amount in various currencies equivalent to US\$50,000,000 for use by the Petroleum Gas Company (Petrogas). The purpose of said credit is to assist Petrogas in financing the installation of: (i) a gas distribution network for domestic gas consumers in the four districts of Cairo of Helwan, Maadi, Nasr City and Heliopolis and (ii) an offtake for the supply of natural gas to power stations to be located at Nasr City and Heliopolis.

1. The Committee has carefully studied the merits of the proposal to grant such a development credit, and of the purposes to which the proceeds of the development credit are to be applied.

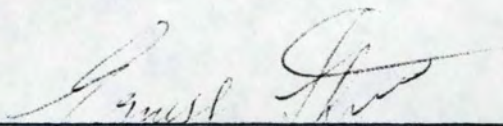
2. The Committee is of the opinion that the project toward the financing of which the proceeds of such development credit are to be applied comes within the purposes of the Association as set forth in Article I of said Articles of Agreement, and that said project is designed to promote the economic development of the Arab Republic of Egypt and is of high developmental priority in the light of the needs of the Arab Republic of Egypt.

(Arab Republic of Egypt)

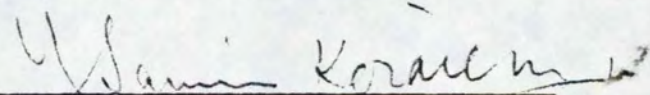
(Cairo Gas Distribution Project)

3. Accordingly, the Committee finds that said project merits financial assistance from the Association, and hereby recommends said project for such assistance.

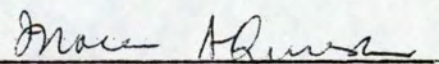
COMMITTEE



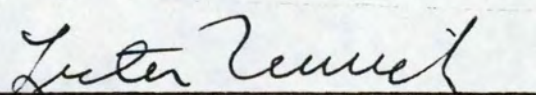
Vice President, Operations



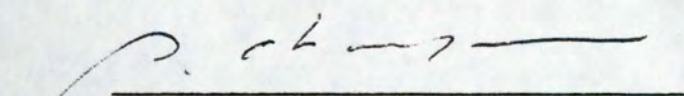
Alternate Governor for the
Arab Republic of Egypt



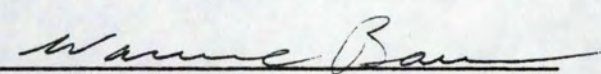
Vice President, Finance



Vice President and General Counsel



Regional Vice President
Europe, Middle East and North Africa



Vice President, Projects Staff

Dated at Washington, D.C. C.D.

May 7, 1980

248423 WORLDBANK

CAIRO APRIL 19, 1980

ATT MR KOEPP

OFFICIAL DOCUMENTS

Mr. Liva
EGT Power (3) 4
W 1842 EGT 4
CR1024 EGT 4
W 1849 EGT 4

RYRTLX APRIL 18 REGARDING MIDB , GAS DISTRIBUTION, PULP AND
PAPER AND POWER III PROJECT AGREEMENTS MR SHAMEL RASHAD THE
COMMERCIAL COUNSELLOR IN WASHINGTON WILL SERVE ON
THE STATUTORY COMMITTEE. REGARDS

SAMIR KORAIEM

COMMUNICATIONS DIVISION

1980 APR 19 AM 10:16

RECEIVED

BOARD MINUTES
AND SUMMARY



Record Removal Notice

File Title Cairo Gas Distribution Project - Egypt, Arab Republic of - Credit 1024 - P005023 - Correspondence		Barcode No. 1264595		
Document Date 27 June, 1980	Document Type Board Record			
Correspondents / Participants				
Subject / Title Summaries of Discussions at the Meeting of the Executive Directors of the Bank and IDA, May 20, 1980 "Credit to Egypt for Gas Distribution Project"				
Exception(s)				
Additional Comments Declassification review of this record may be initiated upon request.		The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information. This Policy can be found on the World Bank Access to Information website.		
		<table border="1"> <tr> <td>Withdrawn by Chandra Kumar</td> <td>Date 12-Mar-15</td> </tr> </table>	Withdrawn by Chandra Kumar	Date 12-Mar-15
Withdrawn by Chandra Kumar	Date 12-Mar-15			

PRESENTATION TO
THE BOARD

CLASS OF SERVICE: **TELEX** Date: **MAY 20, 1980**
TELEX NO. _____ Originator's Loc. **74528**

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BOOK OF THREE (SEE ATTACHED TEXT)

- 1. HIS EXCELLENCY
AHMED EZZIDDIN HILAL
DEPUTY PRIME MINISTER FOR OIL AND PRODUCTION
CAIRO, EGYPT

TELEX: 92049 PETMISR UN

- 2. HIS EXCELLENCY
DR. ABDEL RAZAK ABDEL MEGUID
DEPUTY PRIME MINISTER FOR ECONOMIC AND
FINANCIAL AFFAIRS
CAIRO, EGYPT

TELEX: 93261 IPLAN UN

- 3. MR. SAMIR KORAIEM
UNDERSECRETARY
MINISTRY OF ECONOMY
CAIRO, EGYPT

TELEX: 348 GAFEC UN

NOT TO BE TRANSMITTED

EGYPT: Cairo Gas & Pulp and Paper
FINANCES AND COPY DISTRIBUTION

DRAFTED BY: **FKaps/RWzaborski:aw**
 AUTHORIZED BY (Name and Signature):
Attila Karaosmanoglu, Director
 DEPARTMENT:
Country Programs 1, EMENA Region
 CHECKED FOR DISPATCH

Class of Service: **TELEX** Date: **MAY 20, 1980**
Telex No.: _____ Originator's Ref: **74528**

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HIS EXCELLENCY, AHMED EZZIDDIN HILAL, DEPUTY PRIME MINISTER FOR OIL AND PRODUCTION AND HIS EXCELLENCY, DR. ABDEL RAZAK ABDEL MEGUID, DEPUTY PRIME MINISTER FOR ECONOMIC AND FINANCIAL AFFAIRS, CAIRO, EGYPT. FOR INFORMATION MR. SAMIR KORAIEM, UNDERSECRETARY, MINISTRY OF ECONOMY, CAIRO, EGYPT.

PLEASED TO INFORM YOU THAT BANK'S EXECUTIVE DIRECTORS TODAY APPROVED DOLLARS 50 MILLION IDA CREDIT FOR CAIRO GAS DISTRIBUTION PROJECT AND DOLLARS 50 MILLION BANK LOAN FOR PULP AND PAPER PROJECT.

BEST REGARDS, ATTILA KARASMANOGLU, DIRECTOR, COUNTRY PROGRAMS 1, EUROPE, MIDDLE EAST AND NORTH AFRICA REGION, WORLD BANK.

NOT TO BE TRANSMITTED

RE: EGYPT: Cairo Gas & Pulp and Paper	DRAFTED BY: FKaps/RWzaborski:aw
CLEARANCES AND COPY DISTRIBUTION:	APPROVED BY: <i>A. Karasmanoglu</i> Attila Karasmanoglu, Director
cc: Messrs. McCarthy, Nayyar	DEPARTMENT: Country Programs 1, EMENA Region
cc: Messrs. Iskander, Ichishima	CHECKED FOR DISPATCH

Class of Service: **TELEX** Date: **MAY 20, 1980**
Telex No.: _____ Originator's Telex: **74528**

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BOOK OF THREE (SEE ATTACHED TEXT)

- 1. **DR. RAMZI EL-LEITHY**
CHAIRMAN
EGYPTIAN GENERAL PETROLEUM CORPORATION
CAIRO, EGYPT

TELEX: 92049 PETMISR UN

- 2. **ENG. ABDEL HAMID ABU BAKR**
CHAIRMAN
PETROLEUM GAS COMPANY
CAIRO, EGYPT

TELEX: 93049 PTGAS UN

- 3. **MR. SAMIR KORAIEM**
UNDERSECRETARY
MINISTRY OF ECONOMY
CAIRO, EGYPT

TELEX: 348 GAFEC UN

NOT TO BE TRANSMITTED

SUBJECT: **EGYPT: Cairo Gas**

CLEARANCES AND COPY DISTRIBUTION:

cc: Messrs. McCarthy, Nayyar

PREPARED BY: **FKaps:aw**
 AUTHORIZED BY (Name and Signature):
Attica Karaosmanoglu, Director
 DEPARTMENT:
Country Programs 1, EMENA Region
 CHECKED FOR DISPATCH

WORLD BANK OUTGOING MESSAGE FORM (Telegram, Cable, Telex)
IMPORTANT (PLEASE READ INSTRUCTIONS BELOW BEFORE TYPING FORM.)

Class of Service: **TELEX** Date: **MAY 20, 1980**
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DR. RAMZI EL-LEITHY, CHAIRMAN, EGYPTIAN GENERAL PETROLEUM CORPORATION, ENG. ABDEL HAMID ABU BAKR, CHAIRMAN, PETROLEUM GAS COMPANY AND MR. SAMIR KORAIEM, UNDERSECRETARY, MINISTRY OF ECONOMY, CAIRO, EGYPT.
PLEASED TO INFORM YOU THAT BANK'S EXECUTIVE DIRECTORS TODAY APPROVED DOLLARS 50 MILLION IDA CREDIT FOR CAIRO GAS DISTRIBUTION PROJECT. BEST REGARDS, ATTILA KARASMANOGLU, DIRECTOR, COUNTRY PROGRAMS 1, EUROPE, MIDDLE EAST AND NORTH AFRICA REGION, WORLD BANK.

NOT TO BE TRANSMITTED

SUBJECT: **EGYPT: Cairo Gas**

DRAFTED BY: **FKaps:aw**

CLEARANCES AND COPY DISTRIBUTION:
cc: Messrs. McCarthy, Nayyar

APPROVED BY: *Attila Karasmanoglu*
Attila Karasmanoglu, Director

DEPARTMENT: **Country Programs 1, EMENA Region**
SECTION 2 (FOR USE OF CABLES SECTION)
CHECKED FOR DISPATCH



Record Removal Notice

File Title Cairo Gas Distribution Project - Egypt, Arab Republic of - Credit 1024 - P005023 - Correspondence		Barcode No. 1264595		
Document Date	Document Type Board Record			
Correspondents / Participants				
Subject / Title Board Presentation : Cairo Gas Distribution Project				
Exception(s)				
Additional Comments Declassification review of this record may be initiated upon request.		The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information. This Policy can be found on the World Bank Access to Information website.		
		<table border="1"><tr><td>Withdrawn by Chandra Kumar</td><td>Date 12-Mar-15</td></tr></table>	Withdrawn by Chandra Kumar	Date 12-Mar-15
Withdrawn by Chandra Kumar	Date 12-Mar-15			

SIDE LETTERS

ARAB REPUBLIC OF EGYPT

June 4, 1980

International Development Association
1818 H Street, N.W.
Washington, D.C. 20433
United States of America

OFFICIAL
DOCUMENTS

CR 1024 EGT

Re: Credit No. 1024 EGT
(Cairo Gas Distribution Project)
External Debt

Gentlemen:

In connection with the credit to the Arab Republic of Egypt for a Cairo Gas Distribution Project, in an amount in various currencies equivalent to US\$ 50,000,000, I am writing on behalf of the Arab Republic of Egypt to set forth certain facts relating to the external debt of the Arab Republic of Egypt.

1. You have been furnished with the following:

Form 1 : Description of individual external debt listed in Forms 2 (or A, AA and B).

Form 1A : Schedule of principal and interest payments for individual external public debt described in Form 1.

Form 2 : Individual external public debts: current status and transactions during period as of December 31, 1979.

2. You have also been furnished with Forms 1 and 1A for external public debt contracted during the period January 1, 1980 through March 31, 1980.

No substantial additional external public debt has been contracted since March 31, 1980.

3. Such forms accurately set forth the amounts and principal terms and conditions of all outstanding external public debt of the Arab Republic of Egypt, its political subdivisions and agencies, and of the agencies of its political subdivisions, and debts guaranteed by them up to March 31, 1980.

4. We represent that no mortgages, pledges, charges, privileges, priorities or other liens exist on any governmental assets as security for any external debt. No defaults exist in respect of any external public debt referred to herein or in any of the documents mentioned above.

It is our understanding that, in making the proposed credit, the Association may rely on the statements and facts set forth herein and in the documents mentioned above.

Very truly yours,

ARAB REPUBLIC OF EGYPT

By


Authorized Representative

PETROLEUM GAS COMPANY

June 4, 1980

International Development Association
1818 "H" Street, NW
Washington, DC 20433
United States of America

OFFICIAL
DOCUMENTS

CR 1024 EGT

Re: Credit No. 1024 EGT
(Cairo Gas Distribution Project)
Petrogas Representations

Dear Sirs:

In connection with the Project Agreement of even date herewith for the above-captioned Project among the Association, Petroleum Gas Company (hereinafter called Petrogas) and the Egyptian General Petroleum Corporation, Petrogas hereby undertakes and warrants to you as follows:

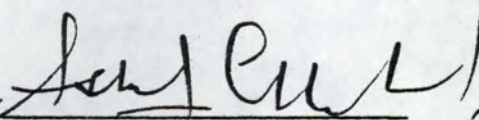
1. Petrogas's balance sheets as of December 31, 1979, copies of which shall be promptly furnished to the Association, shall correctly set forth the financial condition of Petrogas as of such date.
2. Petrogas is not engaged in litigation as plaintiff or defendant, the outcome of which might materially and adversely affect the financial condition of Petrogas or its organization or its ability to carry out the Project.
3. Except as it shall eventually be set forth in the balance sheets referred to above, Petrogas has no outstanding agreements or liabilities (including tax liabilities), contingent or otherwise, which might materially and adversely affect its financial condition.
4. Petrogas is not in violation of, and the execution and delivery of the Project Agreement and the compliance with all its terms does not and will not result in any violation of any existing contractual agreement or of any provision of any law or decree or regulation presently in effect and applicable to Petrogas.
5. Petrogas is a legal entity organized and existing in good standing under the laws of the Arab Republic of Egypt with full authority to carry on its present business, to carry out the Project to be financed under the Development Credit Agreement of even date herewith between the Association and the Arab Republic of Egypt and to execute and deliver the Project Agreement relating to said Project.

6. Petrogas has heretofore disclosed in writing to you all agreements material to the Project Agreement and the Project and all other circumstances which may materially affect the carrying on of Petrogas's business, its legal status, the Project or the compliance by Petrogas with its obligations under the Project Agreement.
7. Petrogas has furnished to the Association true copies in English of the Borrower's Decree No. 118.

It is our understanding that in making the Credit, the Association may rely on the statements and the representations contained or referred to herein.

Very truly yours,

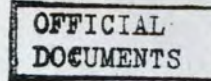
PETROLEUM GAS COMPANY

By 
Authorized Representative

EGYPTIAN GENERAL PETROLEUM CORPORATION

June 4, 1980

International Development Association
1818 "H" Street, NW
Washington, DC 20433
United States of America



CR 1024 EGT

Re: Credit No. 1024 EGT
(Cairo Gas Distribution Project)
EGPC Representations

Dear Sirs:

In connection with the Project Agreement of even date herewith for the above-captioned Project among the Association, Petroleum Gas Company and Egyptian General Petroleum Corporation (hereinafter called EGPC), EGPC hereby undertakes and warrants to you as follows:

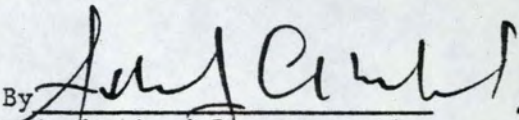
1. EGPC's balance sheets as of December 31, 1978, copies of which have been furnished to the Association, correctly set forth the financial condition of EGPC as of such date and since such date there has been no material adverse change in the financial and operation condition of EGPC.
2. EGPC is not engaged in litigation as plaintiff or defendant, the outcome of which might materially and adversely affect the financial condition of EGPC or its organization or its ability to fulfill its obligations under the Project Agreement.
3. Except as set forth in the balance sheets referred to above, EGPC has no outstanding agreements or liabilities (including tax liabilities), contingent or otherwise, which might materially and adversely affect its financial condition.
4. EGPC is not in violation of, and the execution and delivery of the Project Agreement and the compliance with all its terms does not and will not result in any violation of any existing contractual agreement or of any provision of any law or decree or regulation presently in effect and applicable to EGPC.
5. EGPC is a legal entity organized and existing in good standing under the laws of the Arab Republic of Egypt with full authority to carry on its present business, to execute and deliver the Project Agreement relating to said Project and to fulfill its obligations thereunder.

6. EGPC has heretofore disclosed in writing to you all agreements material to the Project Agreement and all other circumstances which may materially affect the carrying on of EGPC's business, its legal status, or the compliance by EGPC with its obligations under the Project Agreement.
7. EGPC has furnished to the Association true copies in English of the Borrower's Law No. 20 of 1976.

It is our understanding that in making the Credit, the Association may rely on the statements and the representations contained or referred to herein.

Very truly yours,

EGYPTIAN GENERAL PETROLEUM CORPORATION

By 
Authorized Representative

PETROLEUM GAS COMPANY

June 4, 1980

International Development Association
1818 "H" Street, NW
Washington, DC 20433
United States of America

OFFICIAL
DOCUMENTS

CR 1024 EGT¹

Re: Credit No. 1024 EGT
(Cairo Gas Distribution Project)
Petrogas Organizational Structure
and Staffing

Dear Sirs:

With reference to Section 3.01(a) of the Project Agreement of even date herewith between us for the above-captioned Project, we hereby confirm that the organizational structure to be established and maintained pursuant to the provisions of such Section shall consist of a senior management group, a construction management group and a natural gas operations group, all as described in Annexes A, B and C hereto, respectively.

We also hereby confirm to you that we shall employ qualified and experienced personnel in sufficient numbers according to a timetable acceptable to you, all as agreed between us before the date hereof.

It is finally understood that the organizational structure described in the Annexes hereto may be modified only by agreement between us.

Please indicate your agreement with the foregoing by counter-signing this letter as indicated below.

Sincerely yours,

PETROLEUM GAS COMPANY

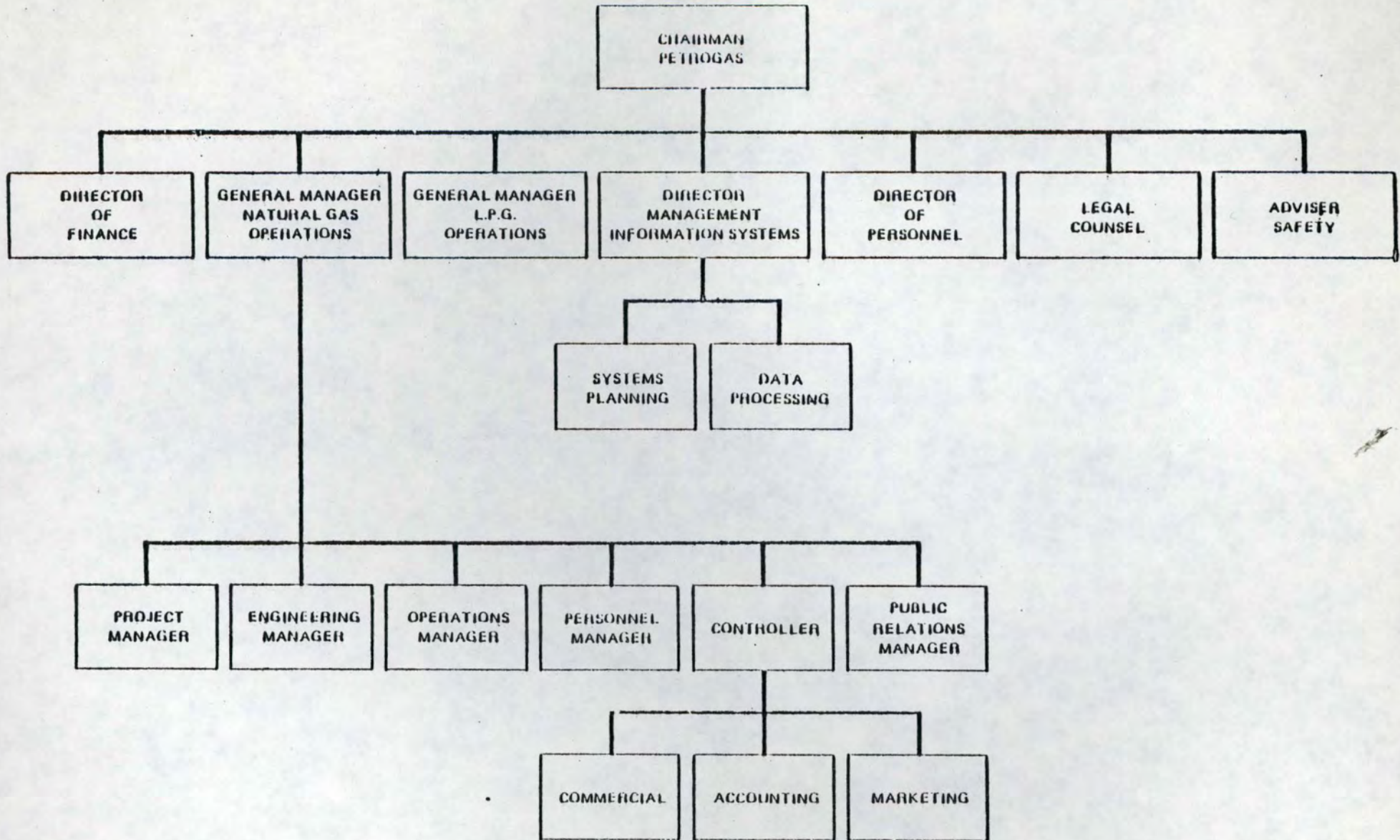
By *[Signature]*
Authorized Representative

CONFIRMED:

INTERNATIONAL DEVELOPMENT ASSOCIATION

By *[Signature]*

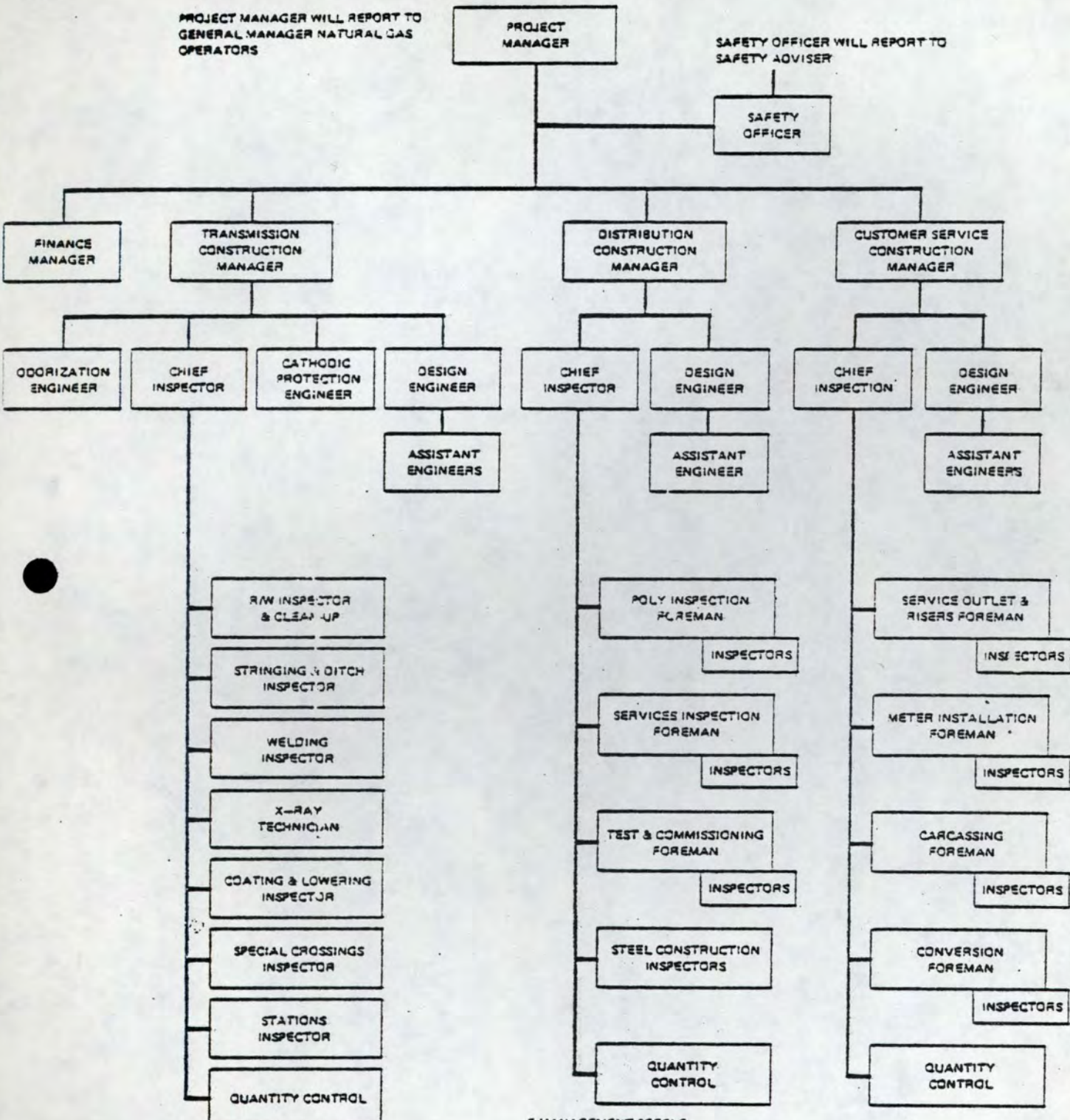
CAIRO
GAS DISTRIBUTION PROJECT
PETROGAS – SENIOR MANAGEMENT GROUP
ORGANIZATION CHART



CAIRO
GAS DISTRIBUTION PROJECT
PETROGAS - CONSTRUCTION MANAGEMENT GROUP
ORGANIZATION CHART

PROJECT MANAGER WILL REPORT TO
GENERAL MANAGER NATURAL GAS
OPERATORS

SAFETY OFFICER WILL REPORT TO
SAFETY ADVISER



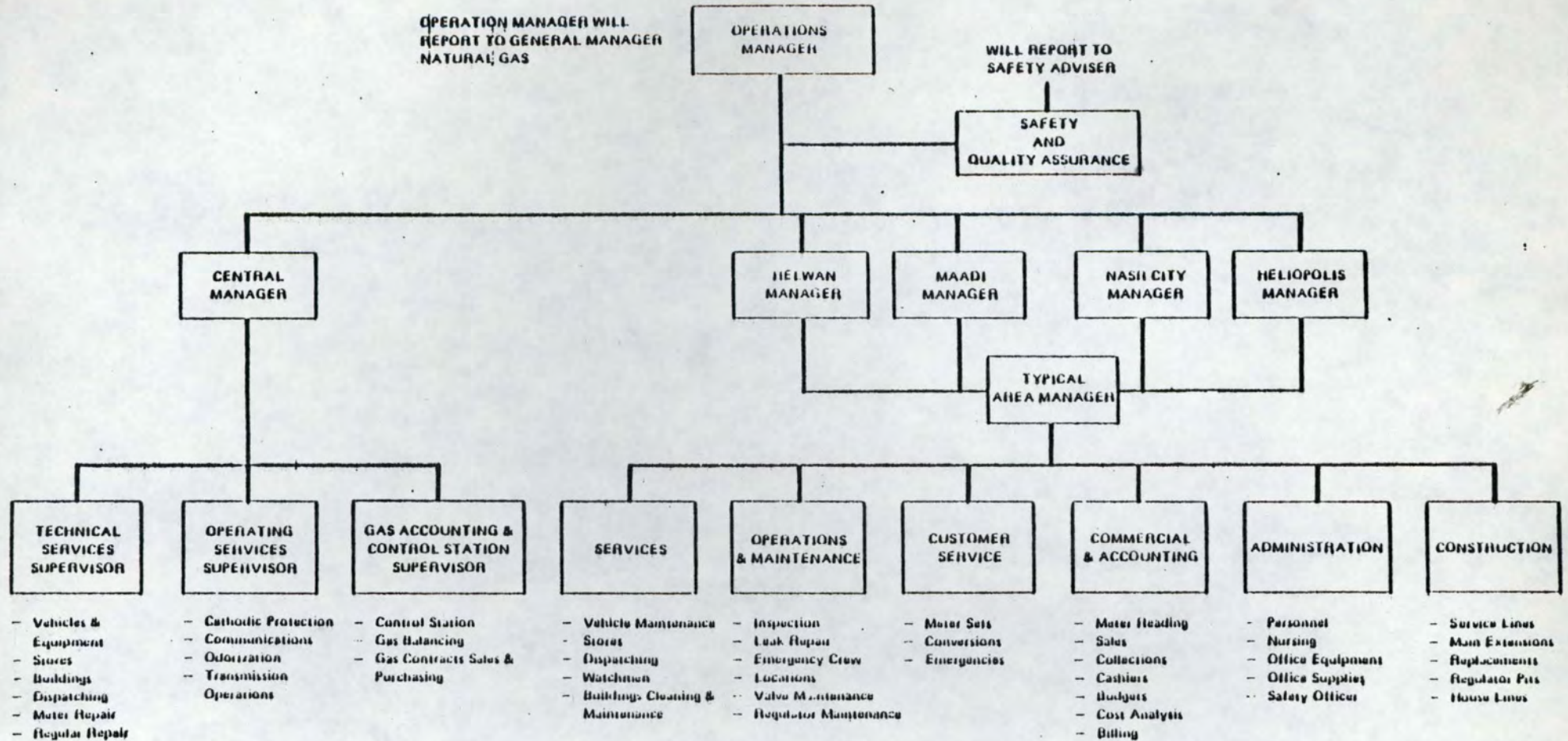
5 MANAGEMENT PEOPLE

DISTRIBUTION
15 FIRST LINE INSPECTORS (POLY)
4 FIRST LINE INSPECTORS (STEEL) AS REQ'D
4 ENGINEERS

TRANSMISSION
10 FIRST LINE INSPECTORS
5 ENGINEERS

CUSTOMER SERVICE
35 FIRST LINE INSPECTORS
4 ENGINEERS

**CAIRO
GAS DISTRIBUTION PROJECT
PETROGAS – NATURAL GAS OPERATIONS GROUP
ORGANIZATION CHART**



PETROLEUM GAS COMPANY

June 4, 1980

International Development Association
1818 "H" Street, NW
Washington, DC 20433
United States of America

OFFICIAL
DOCUMENTS

CR 1024 EGT¹

Re: Loan No. 1024 EGT
(Cairo Gas Distribution Project)
Index to be used for the valuation or
revaluation of Petrogas' fixed assets
in service related to natural gas
operations and the accumulated
depreciation pertaining hereto.

Gentlemen:

For the purpose of making the valuation or revaluation of both the fixed assets in service related to our natural gas operations and the accumulated depreciation pertaining thereto referred to in Section 4.06 of the Project Agreement of even date herewith between us, we hereby confirm to you that we will use the index published by the United Nations for the prices of machinery and equipment exported by developed countries. To that end, we understand that you will provide us with copies of this index as and when it is revised.

Please confirm your agreement with the foregoing by counter-signing this letter as indicated below.

Sincerely yours,

PETROLEUM GAS COMPANY

By *[Signature]*
Authorized Representative

CONFIRMED:

INTERNATIONAL DEVELOPMENT ASSOCIATION

By *[Signature]*

ARAB REPUBLIC OF EGYPT

June 4, 1980

International Development Association
1818 H Street, N.W.
Washington, D.C. 20433
United States of America

Re: Credit No. 1024 EGT
(Cairo Gas Distribution Project)
External Debt

Gentlemen:

In connection with the credit to the Arab Republic of Egypt for a Cairo Gas Distribution Project, in an amount in various currencies equivalent to US\$ 50,000,000, I am writing on behalf of the Arab Republic of Egypt to set forth certain facts relating to the external debt of the Arab Republic of Egypt.

1. You have been furnished with the following:

Form 1 : Description of individual external debt listed in Forms 2 (or A, AA and B).

Form 1A : Schedule of principal and interest payments for individual external public debt described in Form 1.

Form 2 : Individual external public debts: current status and transactions during period as of December 31, 1979.

2. You have also been furnished with Forms 1 and 1A for external public debt contracted during the period January 1, 1980 through March 31, 1980.

No substantial additional external public debt has been contracted since March 31, 1980.

3. Such forms accurately set forth the amounts and principal terms and conditions of all outstanding external public debt of the Arab Republic of Egypt, its political subdivisions and agencies, and of the agencies of its political subdivisions, and debts guaranteed by them up to March 31, 1980.

4. We represent that no mortgages, pledges, charges, privileges, priorities or other liens exist on any governmental assets as security for any external debt. No defaults exist in respect of any external public debt referred to herein or in any of the documents mentioned above.

It is our understanding that, in making the proposed credit, the Association may rely on the statements and facts set forth herein and in the documents mentioned above.

Very truly yours,

ARAB REPUBLIC OF EGYPT

By /s/ Ashraf Ghorbal
Authorized Representative

PETROLEUM GAS COMPANY

June 4, 1980

International Development Association
1818 "H" Street, NW
Washington, DC 20433
United States of America

Re: Credit No. 1024 EGT
(Cairo Gas Distribution Project)
Petrogas Representations

Dear Sirs:

In connection with the Project Agreement of even date herewith for the above-captioned Project among the Association, Petroleum Gas Company (hereinafter called Petrogas) and the Egyptian General Petroleum Corporation, Petrogas hereby undertakes and warrants to you as follows:

1. Petrogas's balance sheets as of December 31, 1979, copies of which shall be promptly furnished to the Association, shall correctly set forth the financial condition of Petrogas as of such date.
2. Petrogas is not engaged in litigation as plaintiff or defendant, the outcome of which might materially and adversely affect the financial condition of Petrogas or its organization or its ability to carry out the Project.
3. Except as it shall eventually be set forth in the balance sheets referred to above, Petrogas has no outstanding agreements or liabilities (including tax liabilities), contingent or otherwise, which might materially and adversely affect its financial condition.
4. Petrogas is not in violation of, and the execution and delivery of the Project Agreement and the compliance with all its terms does not and will not result in any violation of any existing contractual agreement or of any provision of any law or decree or regulation presently in effect and applicable to Petrogas.
5. Petrogas is a legal entity organized and existing in good standing under the laws of the Arab Republic of Egypt with full authority to carry on its present business, to carry out the Project to be financed under the Development Credit Agreement of even date herewith between the Association and the Arab Republic of Egypt and to execute and deliver the Project Agreement relating to said Project.

6. Petrogas has heretofore disclosed in writing to you all agreements material to the Project Agreement and the Project and all other circumstances which may materially affect the carrying on of Petrogas's business, its legal status, the Project or the compliance by Petrogas with its obligations under the Project Agreement.
7. Petrogas has furnished to the Association true copies in English of the Borrower's Decree No. 118.

It is our understanding that in making the Credit, the Association may rely on the statements and the representations contained or referred to herein.

Very truly yours,

PETROLEUM GAS COMPANY

By /s/ Ashraf Ghorbal
Authorized Representative

EGYPTIAN GENERAL PETROLEUM CORPORATION

June 4, 1980

International Development Association
1818 "H" Street, NW
Washington, DC 20433
United States of America

Re: Credit No. 1024 EGT
(Cairo Gas Distribution Project)
EGPC Representations

Dear Sirs:

In connection with the Project Agreement of even date herewith for the above-captioned Project among the Association, Petroleum Gas Company and Egyptian General Petroleum Corporation (hereinafter called EGPC), EGPC hereby undertakes and warrants to you as follows:

1. EGPC's balance sheets as of December 31, 1978, copies of which have been furnished to the Association, correctly set forth the financial condition of EGPC as of such date and since such date there has been no material adverse change in the financial and operation condition of EGPC.
2. EGPC is not engaged in litigation as plaintiff or defendant, the outcome of which might materially and adversely affect the financial condition of EGPC or its organization or its ability to fulfill its obligations under the Project Agreement.
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6. EGPC has heretofore disclosed in writing to you all agreements material to the Project Agreement and all other circumstances which may materially affect the carrying on of EGPC's business, its legal status, or the compliance by EGPC with its obligations under the Project Agreement.
7. EGPC has furnished to the Association true copies in English of the Borrower's Law No. 20 of 1976.

It is our understanding that in making the Credit, the Association may rely on the statements and the representations contained or referred to herein.

Very truly yours,

EGYPTIAN GENERAL PETROLEUM CORPORATION

By /s/ Ashraf Ghorbal
Authorized Representative

PETROLEUM GAS COMPANY

June 4, 1980

International Development Association
1818 "H" Street, NW
Washington, DC 20433
United States of America

Re: Credit No. 1024 EGT
(Cairo Gas Distribution Project)
Petrogas Organizational Structure
and Staffing

Dear Sirs:

With reference to Section 3.01(a) of the Project Agreement of even date herewith between us for the above-captioned Project, we hereby confirm that the organizational structure to be established and maintained pursuant to the provisions of such Section shall consist of a senior management group, a construction management group and a natural gas operations group, all as described in Annexes A, B and C hereto, respectively.

We also hereby confirm to you that we shall employ qualified and experienced personnel in sufficient numbers according to a timetable acceptable to you, all as agreed between us before the date hereof.

It is finally understood that the organizational structure described in the Annexes hereto may be modified only by agreement between us.

Please indicate your agreement with the foregoing by counter-signing this letter as indicated below.

Sincerely yours,

PETROLEUM GAS COMPANY

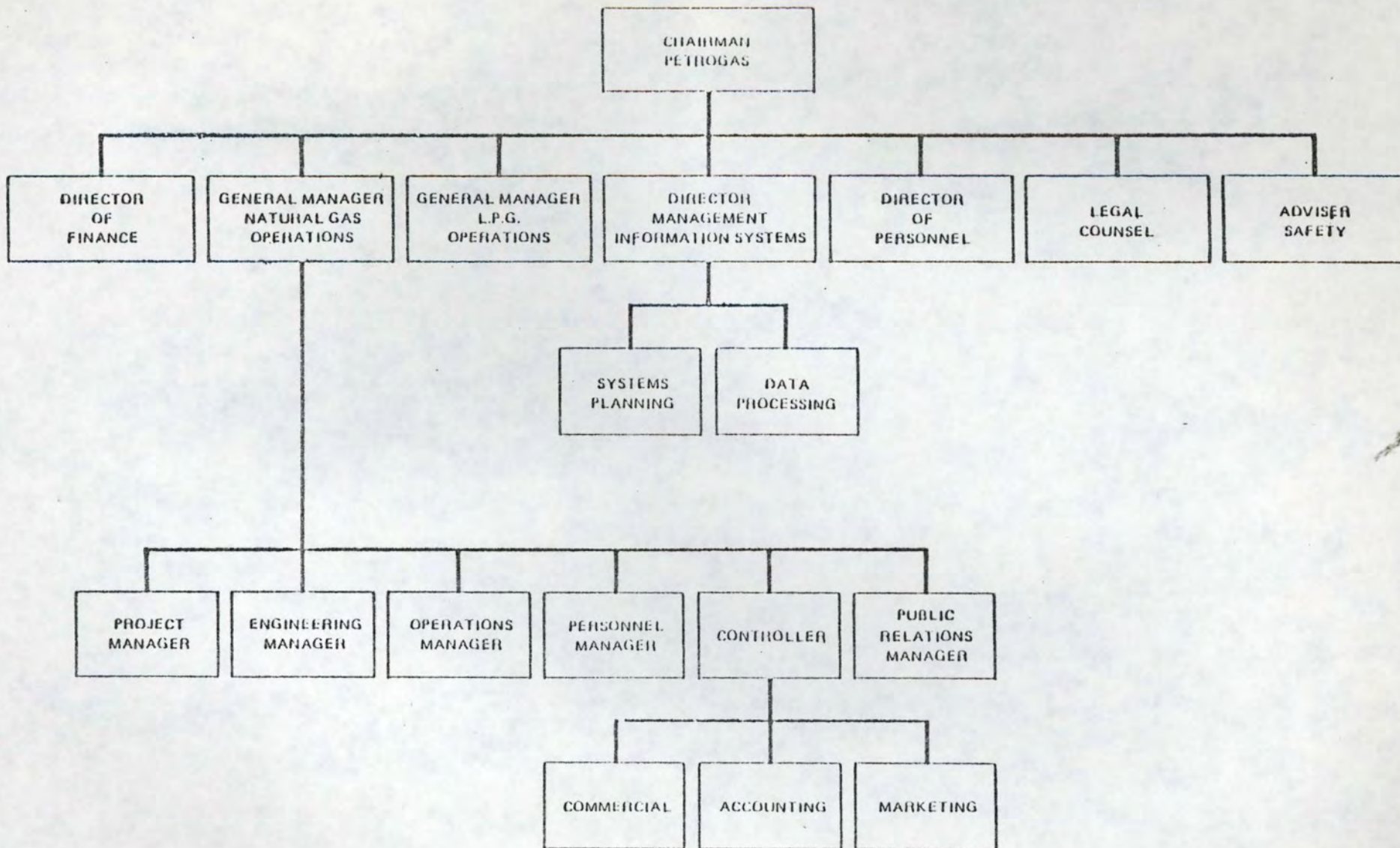
By /s/ Ashraf Ghorbal
Authorized Representative

CONFIRMED:

INTERNATIONAL DEVELOPMENT ASSOCIATION

By /s/ Roger Chauffournier

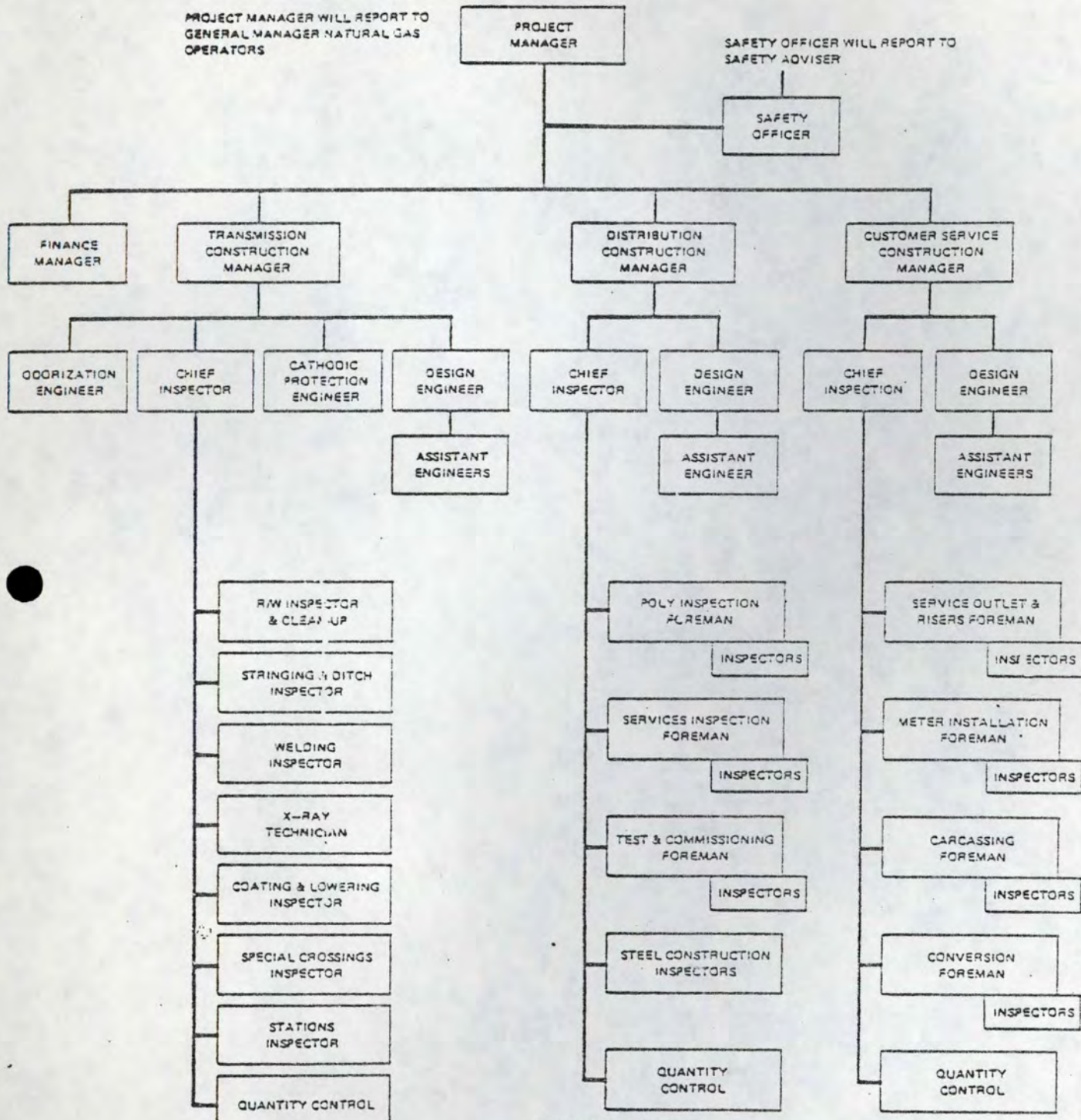
CAIRO
GAS DISTRIBUTION PROJECT
PETROGAS – SENIOR MANAGEMENT GROUP
ORGANIZATION CHART



CAIRO
 GAS DISTRIBUTION PROJECT
 PETROGAS - CONSTRUCTION MANAGEMENT GROUP
 ORGANIZATION CHART

PROJECT MANAGER WILL REPORT TO
 GENERAL MANAGER NATURAL GAS
 OPERATORS

SAFETY OFFICER WILL REPORT TO
 SAFETY ADVISER



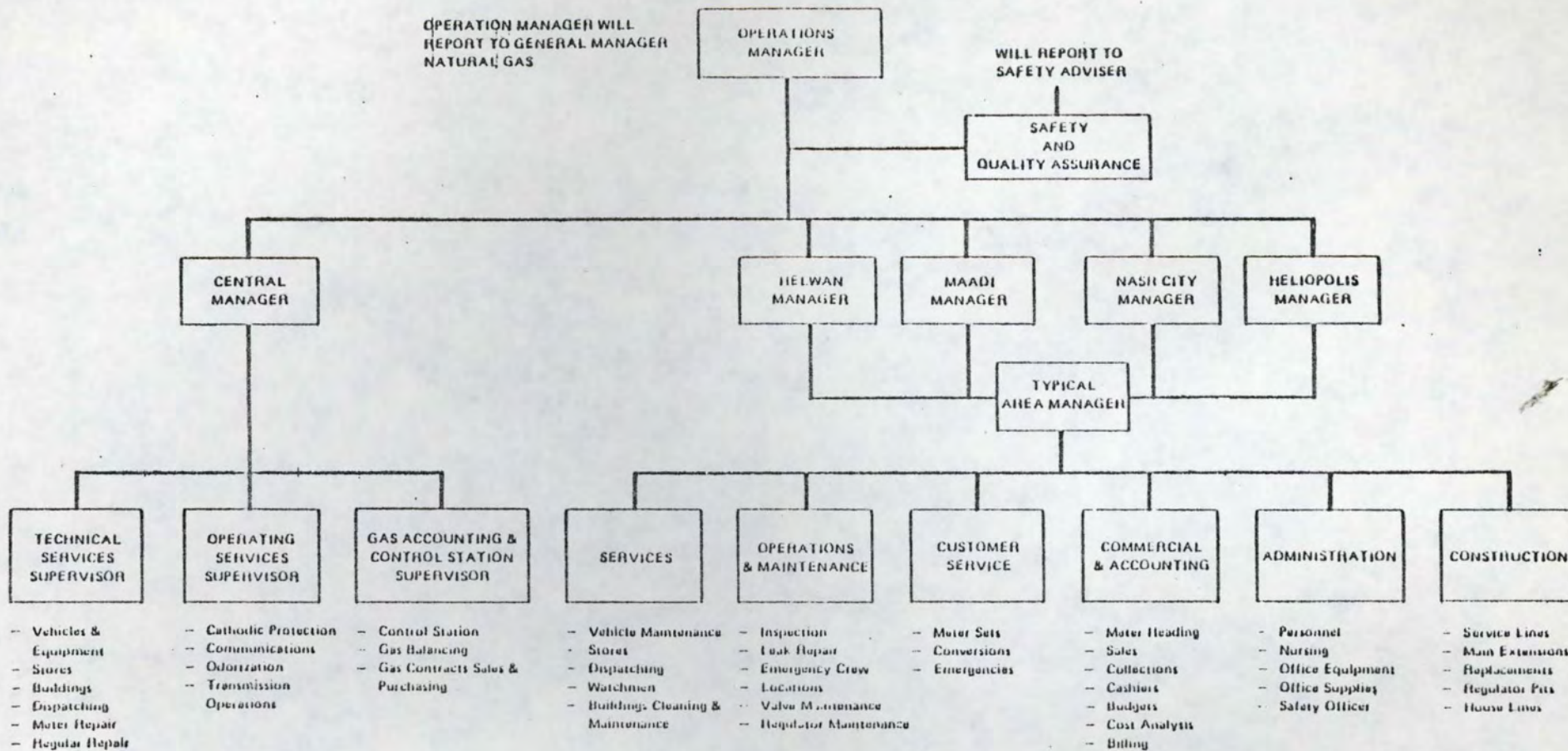
5 MANAGEMENT PEOPLE

DISTRICITION
 15 FIRST LINE INSPECTORS (POLY)
 4 FIRST LINE INSPECTORS (STEEL) AS REQ'D
 4 ENGINEERS

TRANSMISSION
 10 FIRST LINE INSPECTORS
 5 ENGINEERS

CUSTOMER SERVICE
 35 FIRST LINE INSPECTORS
 4 ENGINEERS

**CAIRO
GAS DISTRIBUTION PROJECT
PETROGAS – NATURAL GAS OPERATIONS GROUP
ORGANIZATION CHART**



PETROLEUM GAS COMPANY

June 4, 1980

International Development Association
1818 "H" Street, NW
Washington, DC 20433
United States of America

Re: Loan No. 1024 EGT
(Cairo Gas Distribution Project)
Index to be used for the valuation or
revaluation of Petrogas' fixed assets
in service related to natural gas
operations and the accumulated
depreciation pertaining hereto.

Gentlemen:

For the purpose of making the valuation or revaluation of both the fixed assets in service related to our natural gas operations and the accumulated depreciation pertaining thereto referred to in Section 4.06 of the Project Agreement of even date herewith between us, we hereby confirm to you that we will use the index published by the United Nations for the prices of machinery and equipment exported by developed countries. To that end, we understand that you will provide us with copies of this index as and when it is revised.

Please confirm your agreement with the foregoing by counter-signing this letter as indicated below.

Sincerely yours,

PETROLEUM GAS COMPANY

By /s/ Ashraf Ghorbal
Authorized Representative

CONFIRMED:

INTERNATIONAL DEVELOPMENT ASSOCIATION

By /s/ Roger Chaufournier

CREDIT NUMBER 1024 EGT

Development Credit Agreement

(Cairo Gas Distribution Project)

between

ARAB REPUBLIC OF EGYPT

and

INTERNATIONAL DEVELOPMENT ASSOCIATION

Dated

June 4, 1980

DEVELOPMENT CREDIT AGREEMENT

AGREEMENT, dated June 4, 1980, between ARAB REPUBLIC OF EGYPT (hereinafter called the Borrower) and INTERNATIONAL DEVELOPMENT ASSOCIATION (hereinafter called the Association.)

WHEREAS (A) the Borrower has requested the Association to assist in the financing of a portion of the foreign exchange cost of the Project described in Schedule 2 to this Agreement by extending the Credit as hereinafter provided;

(B) the Project will be carried out by the Petroleum Gas Company (hereinafter called Petrogas) with the assistance of the Borrower and the Egyptian General Petroleum Corporation (hereinafter called EGPC) and, as part of such assistance, the Borrower will relend to Petrogas the proceeds of the Credit as hereinafter provided; and

WHEREAS the Association has agreed, on the basis inter alia of the foregoing to extend the Credit to the Borrower upon the terms and conditions hereinafter set forth and in the Project Agreement of even date herewith among the Association, EGPC and Petrogas;

NOW THEREFORE the parties hereto hereby agree as follows:

ARTICLE I

General Conditions; Definitions

Section 1.01. The parties to this Agreement accept all the provisions of the General Conditions Applicable to Development Credit Agreements of the Association, dated March 15, 1974, with the same force and effect as if they were fully set forth herein (said General Conditions Applicable to Development Credit Agreements of the Association being hereinafter called the General Conditions).

Section 1.02. Wherever used in this Agreement, unless the context otherwise requires, the several terms defined in the General Conditions and in the Preamble to this Agreement have the respective meanings therein set forth and the following additional terms have the following meanings:

(a) "Project Agreement" means the agreement among the Association, EGPC and Petrogas of even date herewith, as the same may be amended from time to time, and such term includes all schedules to the Project Agreement and all agreements supplemental to the Project Agreement.

(b) "Subsidiary Loan Agreement" means the agreement to be entered into among the Borrower, EGPC and Petrogas pursuant to Section 3.01 (d) of this Agreement, as the same may be amended from time to time, and such term includes all schedules to the Subsidiary Loan Agreement and "Subsidiary Loan" means the proceeds of the Credit to be relented to Petrogas by the Borrower under such agreement, as provided in such Section.

(c) "LPG" means liquified petroleum gas.

(d) "Project Area" means the area described in the preamble of Schedule 2 hereto.

(e) "Decree No. 118" means the Borrower's decree No. 118 of 1978 establishing Petrogas and governing Petrogas operations, as the same may be amended from time to time.

(f) "Law No. 20" means the Borrower's law No. 20 of 1976 establishing EGPC and governing EGPC operations, as the same may be amended from time to time.

(g) "LE" and "Egyptian Pound" mean the currency of the Borrower.

(h) "Mcf" means one thousand standard cubic feet.

ARTICLE II

The Credit

Section 2.01. The Association agrees to lend to the Borrower, on the terms and conditions in the Development Credit Agreement set forth or referred to, an amount in various currencies equivalent to fifty million dollars (\$50,000,000).

Section 2.02. The amount of the Credit may be withdrawn from the Credit Account in accordance with the provisions of Schedule 1 to this Agreement, as such Schedule may be amended from time to time by agreement between the Borrower and the Association, for expenditures made (or, if the Association shall so

agree, to be made) in respect of the reasonable cost of goods and services required for the Project and to be financed out of the proceeds of the Credit.

Section 2.03. (a) The Borrower confirms to the Association that Petrogas has awarded the contract dated November 22, 1979 for all the goods and works for Parts A and B of the Project to be financed out of the proceeds of the Credit in accordance with procedures consistent with those set forth in the "Guidelines for Procurement under World Bank Loans and IDA Credits" published by the Bank in March 1977 (hereinafter called the Guidelines), on the basis of international competitive bidding as described in Part A of the Guidelines.

(b) Should such contract be suspended or terminated and, as a result thereof, the invitation of new bids for such goods and works be necessary, the procurement of such goods and works shall, unless the Association shall otherwise agree, be governed by the provisions of the Schedule to the Project Agreement.

Section 2.04. The Closing Date shall be December 31, 1985 or such later date as the Association shall establish. The Association shall promptly notify the Borrower of such later date.

Section 2.05. The Borrower shall pay to the Association a service charge at the rate of three-fourths of one per cent ($3/4$ of 1%) per annum on the principal amount of the Credit withdrawn and outstanding from time to time.

Section 2.06. Service charges shall be payable semiannually on January 15 and July 15 in each year.

Section 2.07. The Borrower shall repay the principal amount of the Credit in semiannual installments payable on each January 15 and July 15 commencing July 15, 1990, and ending January 15, 2030, each installment to and including the installment payable on July 15, 2000, to be one-half of one per cent ($1/2$ of 1%) of such principal amount, and each installment thereafter to be one and one-half per cent ($1-1/2\%$) of such principal amount.

Section 2.08. The currency of the United States of America is hereby specified for the purposes of Section 4.02 of the General Conditions.

Section 2.09. Petrogas is designated as representative of the Borrower for the purposes of taking any action required or permitted to be taken under the provisions of Section 2.02 of this Agreement and Article V of the General Conditions.

ARTICLE III

Execution of the Project

Section 3.01. (a) Without any limitation or restriction upon any of its other obligations under the Development Credit Agreement, the Borrower shall cause EGPC and Petrogas to perform in accordance with the provisions of the Project Agreement and the Subsidiary Loan Agreement all their respective obligations therein set forth, shall take and cause to be taken all action necessary or appropriate to enable EGPC and Petrogas to perform such obligations (including the obligations set out in Section 4.06 of the Project Agreement), and shall not take or permit to be taken any action which would prevent or interfere with such performance.

(b) Without any limitation upon the generality of the foregoing, the Borrower shall, in conjunction with EGPC, provide Petrogas with: (i) all funds, facilities, services and other resources necessary for the carrying out of the Project until the completion thereof; and (ii) all funds (in addition to those for the carrying out of the Project) necessary to enable Petrogas: (A) to carry on its expansion; and (B) without any limitation upon the generality of the foregoing, to at all times meet its debt service requirements relating to its natural gas operations and maintain an adequate working capital for such operations.

(c) For purposes of the foregoing paragraph the terms "debt service requirements" and "working capital" shall have the meanings set out in Section 2.10 (b) of the Project Agreement.

(d) The Borrower shall relend the proceeds of the Credit to Petrogas under a subsidiary loan agreement to be entered into among the Borrower, EGPC and Petrogas under terms and conditions which shall have been approved by the Association. Except as the Association shall otherwise agree, such terms and conditions shall include the following:

- (i) the principal amount of the Subsidiary Loan repayable by Petrogas shall be the equivalent in

Egyptian Pounds (determined as of the date, or the respective dates, of repayment) of the value of the currency or currencies withdrawn from the Credit Account;

- (ii) the Subsidiary Loan shall be repaid by Petrogas in thirty equal or approximately equal semi-annual installments over twenty years (including five years of grace); and
- (iii) the Borrower shall charge Petrogas interest at eight and twenty-five hundredths per cent (8.25%) per annum on the outstanding balance of the Subsidiary Loan in addition to any charges payable by the Borrower to the Association on the Credit.

(e) The Borrower shall exercise its rights under the Subsidiary Loan Agreement in such manner as to protect the interests of the Borrower and the Association and to accomplish the purposes of the Credit, and except as the Association shall otherwise agree, the Borrower shall not assign, amend, abrogate or waive the Subsidiary Loan Agreement or any provision thereof.

Section 3.02. (a) The Borrower shall, by June 30, 1981 (or such other date as the Association may agree), carry out, or cause to be carried out, a study to review the economic viability of (i) rehabilitating and converting the existing gas distribution network in central Cairo from gas produced from naphta to natural gas and (ii) linking said network with the gas distribution network included in the Project.

(b) The Borrower shall, promptly upon completion of said study, exchange views with the Association on the findings thereof and shall, upon completion of such exchange of views, take, or cause to be taken, appropriate action to implement such recommendations emanating from such study, as shall be mutually acceptable to the Borrower and the Association.

Section 3.03. The Borrower shall, by December 31, 1980 (or such other date as the Association may agree), issue a decree providing that: (i) all buildings to be constructed in the Project

Area shall thereafter be fitted with appropriate internal carcassing and external piping up to the periphery of the property line of such building and (ii) such fitting shall be executed under the supervision of Petrogas.

Section 3.04. The Borrower shall, in a timely fashion for the carrying out of Part C of the Project, finance in conjunction with EGPC the cost of the internal carcassing of the approximately 160,000 existing dwellings of the Project Area and the conversion of approximately 300,000 related appliances, under arrangements satisfactory to the Association.

ARTICLE IV

Remedies of the Association

Section 4.01. For the purposes of Section 6.02 of the General Conditions the following additional events are specified pursuant to paragraph (h) thereof, namely, that:

(a) EGPC or Petrogas shall have failed to perform any of their respective covenants, agreements or obligations under the Project Agreement.

(b) An extraordinary situation shall have arisen which shall make it improbable that EGPC or Petrogas will be able to perform their respective obligations under the Project Agreement.

(c) Decree No. 118 shall have been amended, suspended, abrogated, repealed or waived in such a way as to materially and adversely affect the ability of Petrogas to carry out its covenants, agreements and obligations set forth in the Project Agreement.

(d) The Borrower or any other authority having jurisdiction shall have taken any action for the dissolution or disestablishment of EGPC or Petrogas, or for the suspension of their respective operations.

(e) Law No. 20 shall have been amended, suspended, abrogated, repealed or waived in such a way as to materially and adversely affect the ability of EGPC to carry out its covenants, agreements and obligations set forth in the Project Agreement.

(f) The decree to be issued pursuant to the provisions of Section 3.03 hereof shall have been amended, suspended, abrogated, repealed or waived in such a way as to materially and adversely affect the carrying out of the Project.

Section 4.02. For the purposes of Section 7.01 of the General Conditions, the following additional events are specified pursuant to paragraph (d) thereof, namely, that:

(a) the event specified in paragraph (a) of Section 4.01 of this Agreement shall occur and shall continue for a period of sixty days after notice thereof shall have been given by the Association to the Borrower, EGPC and Petrogas; and

(b) any event specified in paragraphs (c), (d), (e) or (f) of Section 4.01 of this Agreement shall occur.

ARTICLE V

Effective Date; Termination

Section 5.01. The following event is specified as an additional condition to the effectiveness of the Development Credit Agreement within the meaning of Section 12.01 (b) of the General Conditions, namely, that the Subsidiary Loan Agreement has been executed on behalf of the Borrower, EGPC and Petrogas.

Section 5.02. The following are specified as additional matters, within the meaning of Section 12.02 (b) of the General Conditions, to be included in the opinion or opinions to be furnished to the Association, namely, that:

(a) the Project Agreement has been duly authorized or ratified by Petrogas and EGPC, and is legally binding upon Petrogas and EGPC in accordance with its terms; and

(b) the Subsidiary Loan Agreement has been duly authorized or ratified by the Borrower, EGPC and Petrogas and is legally binding upon the Borrower, EGPC and Petrogas in accordance with its terms.

Section 5.03. The date *November 4, 1980* is hereby specified for the purposes of Section 12.04 of the General Conditions.

Section 5.04. The obligations of the Borrower under Sections 3.01 (b) (ii) of this Agreement and the provisions of Section 4.02 of this Agreement shall cease and determine on the date on which the Development Credit Agreement shall terminate or on a date twenty years after the date of this Agreement, whichever shall be the earlier.

ARTICLE VI

Representative of the Borrower; Addresses

Section 6.01. The minister of the Borrower responsible for economy and economic cooperation, or the under secretary of state of the Borrower responsible for economic organizations and international finance, is designated as representative of the Borrower for the purposes of Section 11.03 of the General Conditions.

Section 6.02. The following addresses are specified for the purpose of Section 11.01 of the General Conditions:

For the Borrower:

Ministry of Economy and Economic Cooperation
8 Adly Street
Cairo, Arab Republic of Egypt

Cable address:

Telex:

MINISTRY OF ECONOMY AND
ECONOMIC COOPERATION
Cairo

348 GAFEC

For the Association:

International Development Association
1818 H Street, N.W.
Washington, D.C. 20433
United States of America

Cable address:

Telex:

INDEVAS
Washington, D.C.

440098 (ITT)
248423 (RCA) or
64145 (WUI)

IN WITNESS WHEREOF, the parties hereto, acting through their representatives thereunto duly authorized, have caused this Agreement to be signed in their respective names in the District of Columbia, United States of America, as of the day and year first above written.

ARAB REPUBLIC OF EGYPT

By */s/ Ashraf Ghorbal*
Authorized Representative

INTERNATIONAL DEVELOPMENT ASSOCIATION

By */s/ Roger Chaufourmier*
Regional Vice President
Europe, Middle East and North Africa

SCHEDULE 1

Withdrawal of the Proceeds of the Credit

1. The table below sets forth the Categories of items to be financed out of the proceeds of the Credit, the allocation of the amounts of the Credit to each Category and the percentage of expenditures for items so to be financed in each Category:

<u>Category</u>	<u>Amount of the Credit Allocated (Expressed in Dollar Equivalent)</u>	<u>% of Expenditures to be Financed</u>
(1) Goods and works for Parts A and B of the Project	43,000,000	100% of foreign expenditures
(2) Services for Tech- nical Assistance	4,000,000	100%
(3) Unallocated	3,000,000	
	<hr/>	
TOTAL	50,000,000	
	<hr/> <hr/>	

2. For the purposes of this Schedule the term "foreign expenditures" means expenditures in the currency of any country other than the Borrower and for goods or services supplied from the territory of any country other than the Borrower.

3. The disbursement percentages have been calculated in compliance with the policy of the Association that no proceeds of the Credit shall be disbursed on account of payments for taxes levied by, or in the territory of, the Borrower on goods or services, or on the importation, manufacture, procurement or supply thereof; to that end, if the amount of any such taxes levied on or in respect of any item to be financed out of the proceeds of the Credit decreases or increases, the Association may, by notice to the Borrower, increase or decrease the disbursement percentage then applicable to such item as required to be consistent with the aforementioned policy of the Association.

4. Notwithstanding the provisions of paragraph 1 above, no withdrawals shall be made in respect of payments made for expenditures prior to the date of this Agreement, except that withdrawals, in an aggregate amount not exceeding the equivalent of \$5,000,000 may be made in respect of Categories (1) and (2) on account of payments made for such expenditures before that date but after November 22, 1979.

5. Notwithstanding the allocation of an amount of the Credit or the disbursement percentages set forth in the table in paragraph 1 above, if the Association has reasonably estimated that the amount of the Credit then allocated to any Category will be insufficient to finance the agreed percentage of all expenditures in that Category, the Association may, by notice to the Borrower: (i) reallocate to such Category, to the extent required to meet the estimated shortfall, proceeds of the Credit which are then allocated to another Category and which in the opinion of the Association are not needed to meet other expenditures, and (ii) if such reallocation cannot fully meet the estimated shortfall, reduce the disbursement percentage then applicable to such expenditures in order that further withdrawals under such Category may continue until all expenditures thereunder shall have been made.

6. If the Association shall have reasonably determined that the procurement of any item in any Category is inconsistent with the procedures set forth or referred to in this Agreement, no expenditures for such item shall be financed out of the proceeds of the Credit and the Association may, without in any way restricting or limiting any other right, power or remedy of the Association under the Development Credit Agreement, by notice to the Borrower, cancel such amount of the Credit as, in the Association's reasonable opinion, represents the amount of such expenditures which would otherwise have been eligible for financing out of the proceeds of the Credit.

SCHEDULE 2

Description of the Project

The Project aims at (i) creating a gas distribution network for domestic gas consumers in the four districts of Cairo of Helwan, Maadi, Nasr City and Heliopolis and (ii) supplying natural gas to the power stations at Nasr City and Heliopolis.

The Project consists of the following Parts:

Part A: Transmission System

(a) Construction of approximately 55 km of 24" buried steel pipeline from an existing installation near Mrazik Bridge to a proposed power station at Heliopolis, together with the necessary system for cathodic protection.

(b) Installation of an inlet, and construction of an odorizing unit, near Mrazik Bridge.

(c) Construction of four pressure reduction stations at Helwan, Maadi, Nasr City and Heliopolis, with offtake from the main line, each of such stations consisting basically of three separate preassembled skid mounted units for filtration, pressure reduction, and metering, with connecting manifolds.

(d) Installation of an offtake for the proposed power stations at Nasr City and Heliopolis, with a terminal at Heliopolis.

(e) Installation of a pigging system complete with pig traps, launchers, and receiving stations.

Part B: Distribution System

(a) Installation of a distribution network of medium density polyethylene pipe of approximately 900 km in length in the Project Area.

(b) Provision of approximately 9,000 services for connecting customers in the Project Area with gas at an average rate of one service for approximately 18 customers.

Part C: Carcassing and Conversion

(a) Installation of outlet service pipes from ten feet outside the dwellings in the Project Area to the gas meters,

together with service risers, laterals and other related pieces of equipment.

(b) Internal installation of pipes in approximately 160,000 dwellings to function at a pressure not exceeding 30 millibars, pipe ducts, control cocks, and other related pieces of equipment.

(c) Conversion to natural gas of approximately 300,000 existing appliances burning LPG.

Part D: Technical Assistance

(a) Detailed assessment of the overall training requirements of Petrogas personnel in various aspects of construction, maintenance and operation of a gas utility, through the provision of an adequate number of man-months of consultants' services.

(b) Assistance to Petrogas for (i) the designing and supervision of the construction of the Project, (ii) the preparation of a draft code of supervisory and safety tests necessary for the operation of the facilities included in the Project, and (iii) (A) the designing and the implementation of a management information system appropriate to enable Petrogas to inter alia establish and maintain separate accounts for its natural gas operations, (B) the improvement of its financial management and cost accounting and cost control system in accordance with the recommendations on the subject to be made by EGPC as a result of the on-going review included in Part 9 of the Project described in the Loan Agreement dated June 29, 1979 between the Bank and EGPC (Loan No. 1732 EGT) and carried out by EGPC in consultation with Petrogas, and (C) the review of the internal control required for its overall operations, all through the provision of about an adequate number of man-months of consultants' services.

* * *

The Project is expected to be completed by December 31, 1984.

014 b12

CREDIT NUMBER 1024 EGT

Project Agreement

(Cairo Gas Distribution Project)

among

INTERNATIONAL DEVELOPMENT ASSOCIATION

and

EGYPTIAN GENERAL PETROLEUM CORPORATION

and

PETROLEUM GAS COMPANY

Dated

June 4, 1980

PROJECT AGREEMENT

AGREEMENT, dated June 4, 1980, among INTERNATIONAL DEVELOPMENT ASSOCIATION (hereinafter called the Association), and EGYPTIAN GENERAL PETROLEUM CORPORATION (hereinafter called EGPC) and PETROLEUM GAS COMPANY (hereinafter called Petrogas).

WHEREAS by the Development Credit Agreement of even date herewith between Arab Republic of Egypt (hereinafter called the Borrower) and the Association, the Association has agreed to make available to the Borrower an amount in various currencies equivalent to fifty million dollars (\$50,000,000), on the terms and conditions set forth in the Development Credit Agreement, but only on condition that EGPC and Petrogas agree to undertake such obligations towards the Association as are hereinafter set forth; and

WHEREAS by a subsidiary loan agreement to be entered into among the Borrower, EGPC and Petrogas, the proceeds of the credit provided for under the Development Credit Agreement will be relent to Petrogas on the terms and conditions therein set forth; and

WHEREAS EGPC and Petrogas, in consideration of the Association's entering into the Development Credit Agreement with the Borrower, have agreed to undertake the obligations hereinafter set forth;

NOW THEREFORE the parties hereto hereby agree as follows:

ARTICLE I

Definitions

Section 1.01. Wherever used in this Agreement, unless the context shall otherwise require, the several terms defined in the Development Credit Agreement and in the General Conditions (as so defined) have the respective meanings therein set forth.

ARTICLE II

Execution of the Project

Section 2.01. Petrogas shall, with the assistance of EGPC, carry out the Project described in Schedule 2 to the Development

Credit Agreement with due diligence and efficiency and in conformity with appropriate administrative, financial, engineering and gas practices.

Section 2.02. In order to assist Petrogas in designating and supervising the construction of the Project and in preparing a draft code of supervisory and safety tests necessary for the operation of the facilities included in the Project, Petrogas shall continue to employ engineering consultants whose qualifications, experience and terms and conditions of employment shall be satisfactory to the Association.

Section 2.03. (a) Petrogas shall, by December 31, 1980 (or such other date as the Association may agree), prepare, with the assistance of the consultants referred to in Section 2.02 hereof, and submit to the Association for its review and comments a draft code of supervisory and safety tests necessary for the operation of the facilities included in the Project.

(b) Petrogas shall, promptly upon completion of such review by the Association, take all appropriate steps to finalize and then implement such code taking into account the Association's comments.

Section 2.04. (a) Petrogas represents that it has awarded the contract dated November 22, 1979 for all the goods and works for Parts A and B of the Project to be financed out of the proceeds of the Credit in accordance with procedures consistent with those set forth in the "Guidelines for Procurement under World Bank Loans and IDA Credits" published by the Bank in March 1977 (hereinafter called the Guidelines), on the basis of international competitive bidding as described in Part A of the Guidelines.

(b) Should such contract be suspended or terminated and, as a result thereof, the invitation of new bids for such goods and works be necessary, the procurement of such goods and works shall, unless the Association shall otherwise agree, be governed by the provisions of the Schedule hereto.

Section 2.05. (a) Petrogas undertakes to insure, or make adequate provision for the insurance of, the imported goods to be financed out of the proceeds of the Credit relented to it by the Borrower against hazards incident to the acquisition, transportation and delivery thereof to the place of use or installation, and for such insurance any indemnity shall be payable in a

currency freely usable by Petrogas to replace or repair such goods.

(b) Except as the Association may otherwise agree, Petrogas shall cause all goods and services financed out of the proceeds of the Credit relent to it by the Borrower to be used exclusively for the Project.

Section 2.06. (a) Petrogas shall furnish to the Association, promptly upon their preparation, the plans, specifications, reports, contract documents and procurement schedules for the Project, and any material modifications thereof or additions thereto, in such detail as the Association shall reasonably request.

(b) Petrogas: (i) shall maintain records and procedures adequate to record and monitor the progress of the Project (including its cost and the benefits to be derived from it), to identify the goods and services financed out of the proceeds of the Credit, and to disclose their use in the Project; (ii) shall enable the Association's accredited representatives to visit the facilities and construction sites included in the Project and to examine the goods financed out of the proceeds of the Credit and any relevant records and documents; and (iii) shall furnish to the Association monthly progress reports containing all such information as the Association shall reasonably request concerning the Project, its cost and, where appropriate, the benefits to be derived from it, the expenditures of such proceeds and the goods and services financed out of such proceeds.

(c) Promptly after completion of the Project, but in any event not later than six months after the Closing Date or such later date as may be agreed for this purpose between Petrogas and the Association, Petrogas shall prepare and furnish to the Association a report, of such scope and in such detail as the Association shall reasonably request, on the execution and initial operation of the Project, its cost and the benefits derived and to be derived from it, the performance by Petrogas and the Association of their respective obligations under the Project Agreement and the accomplishment of the purposes of the Credit.

(d) Petrogas shall enable the Association's representatives to examine all its plants, installations, sites, works, buildings, property, equipment, records and documents relevant to the Project, the operation and maintenance of the facilities constructed

under the Project and the performance by Petrogas of its obligations hereunder.

Section 2.07. EGPC and Petrogas shall each duly perform all its obligations under the Subsidiary Loan Agreement. Except as the Association shall otherwise agree, each of EGPC and Petrogas shall not take or concur in any action which would have the effect of amending, abrogating, assigning or waiving the Subsidiary Loan Agreement or any provision thereof.

Section 2.08. (a) EGPC and Petrogas shall each, at the request of the Association, exchange views with the Association with regard to the progress of the Project, the performance of its obligations under this Agreement and under the Subsidiary Loan Agreement and other matters relating to the purposes of the Credit.

(b) EGPC and Petrogas shall each promptly inform the Association of any condition which interferes or threatens to interfere with the progress of the Project, the accomplishment of the purposes of the Credit, or the performance by either entity of its obligations under this Agreement and under the Subsidiary Loan Agreement.

Section 2.09. Petrogas shall take or cause to be taken all such action as shall be necessary to acquire as and when needed all land and rights in respect of land as shall be required for carrying out the Project and shall furnish to the Association, promptly after such acquisition, evidence satisfactory to the Association that such land and rights in respect of land are available for purposes related to the project.

Section 2.10. (a) EGPC shall, in conjunction with the Borrower, provide Petrogas with: (i) all funds, facilities, services and other resources necessary for the carrying out of the Project until the completion thereof; and (ii) all funds (in addition to those for the carrying out of the Project) necessary to enable Petrogas: (A) to carry on its expansion; and (B) without any limitation upon the generality of the foregoing, to at all times meet its debt service requirements relating to its natural gas operations and maintain an adequate working capital for such operations.

(b) For purposes of the foregoing paragraph:

(i) "Debt" means all debt incurred by Petrogas for its natural gas operations including the assumption

or guarantee of debt and any renewal, extension or modification of the terms of the debt or of the assumption or guarantee thereof, except debt incurred in the ordinary course of business and maturing by its terms on demand or less than one year after its incurrence.

- (ii) Debt shall be deemed to be incurred under a contract or loan agreement, on the date the contract or loan agreement providing for such debt is entered into and under a guarantee agreement, on the date the agreement providing for such guarantee is entered into.
- (iii) "Debt service requirements" means the aggregate amount of amortization (including sinking fund payments, if any), interest and other charges on debt.
- (iv) "Working capital" shall be the difference between current assets of Petrogas relating to its natural gas operations and current liabilities of Petrogas relating to its natural gas operations, as such terms are defined below.
- (v) "Current assets" includes cash, accounts receivable due within twelve months (less reasonable provisions for bad debts relating to natural gas operations), inventories convertible to saleable goods within twelve months, and all other assets relating to natural gas operations which could, in the ordinary course of business, be converted within twelve months into cash.
- (vi) "Current liabilities" includes accounts payable within twelve months, customer advances, income taxes, dividends, bonuses, loan maturities, interest and all other liabilities relating to natural gas operations which would be due and payable or could be called for payment within twelve months.
- (vii) Whenever it shall be necessary to value in Egyptian Pounds debt payable in another currency, such valuation shall be made on the basis of the rate of exchange at which such other currency is obtainable

by Petrogas from the Central Bank of Egypt at the time such valuation is made, for the purposes of servicing such debt.

Section 2.11. EGPC shall operate the gas fields at Abu Ghardig, or other gas fields which may be subsequently discovered and linked with Cairo, in such a way as to supply, on a continuing basis, the gas distribution network included in the Project with sufficient quantities of natural gas over a period of at least 16 years after the date of completion of the Project.

Section 2.12. EGPC shall maintain at all times Petrogas's "commission" pertaining to LPG distribution by Petrogas at a level sufficient to enable Petrogas to meet all its operating expenses (including administrative expenses, adequate maintenance and depreciation) relating to such distribution.

Section 2.13. EGPC shall, in a timely fashion for the carrying out of Part C of the Project, finance in conjunction with the Borrower the cost of the internal carcassing of the existing 160,000 apartments of the Project Area and the conversion of about 300,000 related appliances, under arrangements satisfactory to the Association.

ARTICLE III

Management and Operations of Petrogas

Section 3.01.(a) Petrogas shall: (i) manage at all times its affairs, maintain its financial position, plan its future expansion and carry on the operations of the facilities included in the Project and its other operations, in accordance with appropriate financial, engineering, industrial and gas practices, and under the supervision of qualified and experienced management assisted by qualified and experienced personnel in sufficient numbers, and (ii) establish, by December 31, 1980 (or such other date as the Association may agree), and thereafter maintain at all times an organizational structure acceptable to the Association.

(b) Petrogas shall, by December 31, 1980 (or such other date as the Association may agree), carry out with the assistance of its training consultants employed at the date hereof a detailed assessment of the overall training requirements of its personnel, as described in Part D (a) of the Project.

(c) Petrogas shall, by March 31, 1981 (or such other date as the Association may agree), prepare in the light of the result of such foregoing assessment of its training requirements and then submit to the Association for its review and comments a complete training program for its personnel. Promptly upon completion of such review by the Association, Petrogas shall take all appropriate steps to finalize and then implement such training program taking into account the Association's comments.

(d) Without any limitation upon the generality of the provisions included in the foregoing paragraph (c), Petrogas shall, by December 31, 1980 (or such other date as the Association may agree), enter into an agreement satisfactory to the Association with the contractor to whom the contract for goods and works included in the Project has been awarded to train Petrogas personnel in the operation of the facilities to be constructed under the Project.

Section 3.02. Petrogas shall: (a) at all times take all steps which are necessary to maintain its existence and its right to carry on operations and to acquire, maintain and renew all interests in land and other properties and all rights, powers, and privileges which are necessary or useful in the carrying out of the Project or in the conduct of its business; (b) at all times properly operate and maintain its plant, machinery, equipment and other property, and promptly make all necessary repairs and renewals thereof, in accordance with appropriate engineering practices; and (c) not sell, lease, transfer or otherwise dispose of any of its property or assets which shall be required for the efficient operation of its business and undertaking.

Section 3.03. Petrogas shall take out and maintain with responsible insurers, or make other provisions satisfactory to the Association for, insurance against such risks and in such amounts as shall be consistent with appropriate practice.

Section 3.04. Petrogas shall take all necessary measures to ensure that the construction and operations of facilities included in the Project shall be carried out with due regard to safety, health, ecological and environmental factors.

ARTICLE IV

Financial Covenants

Section 4.01. (a) Petrogas shall maintain records adequate to reflect in accordance with consistently maintained appropriate accounting practices its operations and financial condition.

(b) Without any limitation upon the generality of the foregoing, Petrogas shall, by December 31, 1980 (or such other date as the Association may agree), establish and thereafter maintain separate accounts for its natural gas operations.

(c) In order to assist Petrogas in: (i) designing and implementing a management information system appropriate to inter alia establish and maintain separate accounts for its natural gas operations; (ii) improving its financial management and cost accounting and cost control systems in accordance with the recommendations on the subject to be made by EGPC as a result of the on-going review included in Part 9 of the Project described in the Loan Agreement dated June 29, 1979 between the Bank and EGPC (Loan No. 1732 EGT) and carried out by EGPC in consultation with Petrogas; and (iii) reviewing the internal control required for its overall operations, Petrogas shall, by March 31, 1981 (or such other date as the Association may agree), employ accounting consultants whose qualifications, experience and terms and conditions of employment shall be satisfactory to the Association.

Section 4.02. Petrogas shall: (i) have all its accounts and financial statements (balance sheets, statements of income and expenses and related statements) for each fiscal year audited in accordance with auditing principles consistently applied by independent auditors acceptable to the Association; (ii) furnish to the Association as soon as available, but in any case not later than nine months after the end of each such year, (A) certified copies of its financial statements for such year as so audited and (B) the report of such audit by said auditors, of such scope and in such detail as the Association shall have reasonably requested; and (iii) furnish to the Association such other information concerning the accounts and financial statements of Petrogas and the audit thereof as the Association shall from time to time reasonably request.

Section 4.03. EGPC and Petrogas shall, by December 31, 1980 (or such other date as the Association may agree), enter into an agreement whereby EGPC shall supply Petrogas with the quantities of natural gas required to service the power stations referred to in Part A (d) of the Project and the domestic gas consumers of the

Project Area at a price which would not be less per British Thermal Unit than the domestic price of fuel oil British Thermal Unit supplied to power stations.

Section 4.04. (a) EGPC and Petrogas shall, by December 31, 1980 (or such other date as the Association may agree), carry out jointly a study on the ways and means of introducing a graduated price structure which would enable Petrogas to earn revenues from its natural gas operations sufficient to meet the tests set out in Section 4.06 hereof while affecting only moderately the average domestic fuel bill for the poorer domestic gas consumers of the Project Area.

(b) EGPC and Petrogas shall, promptly upon its completion, submit such study to the Borrower and the Association for their review and comments.

(c) Petrogas shall, upon receipt of the Association's comments, take promptly all appropriate action to apply the graduated price structure reviewed in such study to the domestic gas consumers of the Project Area in due course to match the first supply of natural gas to such consumers.

Section 4.05. (a) Except as the Association shall otherwise agree, Petrogas shall not incur any debt for its natural gas operations in any year unless a reasonable forecast of Petrogas' projected net revenues for its natural gas operations for each year during the term of the debt to be incurred shall be (i) for each of the years 1981 and 1982, not less than Petrogas' projected debt service requirements for such year, and (ii) for each year thereafter, not less than 1.5 times Petrogas' projected debt service requirements for such year, on all debt of Petrogas including the debt to be incurred.

(b) For purposes of this Section:

- (i) "Debt" means all debt incurred by Petrogas for its natural gas operations including the assumption or guarantee of debt and any renewal, extension or modification of the terms of the debt or of the assumption or guarantee thereof, except debt incurred in the ordinary course of business and maturing by its terms on demand or less than one year after its incurrence.
- (ii) Debt shall be deemed to be incurred under a contract or loan agreement, on the date the contract or loan agreement providing for such debt is

entered into and under a guarantee agreement, on the date the agreement providing for such guarantee is entered into.

- (iii) "Net revenue" means gross revenue from natural gas operations, less all operating expenses which, according to a methodology acceptable to the Association, EGPC and Petrogas may be attributed to natural gas operations, including adequate maintenance, taxes or payments in lieu of taxes, (if any), and administrative expenses, but before provision for depreciation and interest and other charges on debt.
- (iv) "Debt service requirements" means the aggregate amount of amortization (including sinking fund payments, if any), interest and other charges on debt.
- (v) "Reasonable forecast" means a forecast prepared by Petrogas in the fiscal year in which the debt in question is to be incurred, which both the Association and Petrogas accept as reasonable and as to which the Association has notified Petrogas of its acceptability, provided, however, that no event has occurred since such notification which has or may reasonably be expected in the future to have a material adverse effect on the financial condition of Petrogas or its future operating results related to its natural gas operations.
- (vi) Whenever it shall be necessary to value in Egyptian Pounds debt payable in another currency, such valuation shall be made on the basis of the rate of exchange at which such other currency is obtainable by Petrogas from the Central Bank of Egypt at the time such valuation is made, for the purposes of servicing such debt.

(c) EGPC shall take, or cause to be taken, all action necessary or appropriate to enable Petrogas to perform the obligations set out above.

Section 4.06. (a) Except as the Association shall otherwise agree, Petrogas shall:

- (i) set from time to time the prices of natural gas supplied to the domestic gas consumers of the Project Area and the power stations referred to in Part A (d) of the Project at such levels as it may be necessary to produce revenues to Petrogas sufficient:
 - (1) (A) to cover, until the end of the 1983 fiscal year, all Petrogas' operating expenses (including administrative expenses and adequate maintenance but excluding depreciation) relating to its natural gas operations and debt service requirements also relating to its natural gas operations and (B) to provide, until the end of such fiscal year, Petrogas with an adequate working capital relating to its natural gas operations, it being understood that the average prices for said gas consumers and power stations shall at no time be less than LE 3 and LE 0.51 per Mcf, respectively; and
 - (2) to produce an annual rate of return on the average current net value of its fixed assets in service of not less than (A) 3% per annum in the 1984 and 1985 fiscal years, (B) 4% per annum in the 1986 and 1987 fiscal years, (C) 5% per annum in the 1988 and 1989 fiscal years, (D) 7% per annum in the 1990 fiscal year, and (E) 9% per annum in the 1991 fiscal year and thereafter; and
 - (ii) review on the basis of realistic forecasts, for the first time on March 31, 1983 and, thereafter, on March 31 in each of its fiscal years, the adequacy of its prices for natural gas to produce for the current and following fiscal years the annual return agreed above, and furnish to the Association a copy of such review upon its completion.
- (b) For purposes of the foregoing paragraph (a):
- (i) "Fiscal year" means Petrogas fiscal year;
 - (ii) "Debt service requirements" and "Working capital" shall have the meanings set forth in Section 2.10 (b) hereof;

- (iii) the annual rate of return shall be calculated by dividing Petrogas' net operating income for the fiscal year in question by one-half of the sum of the current net value of Petrogas' fixed assets in service at the beginning and at the end of that fiscal year, expressed as a percentage;
- (iv) "Net operating income" means gross revenues from all sources related to Petrogas' natural gas operations less all expenses which, according to a methodology acceptable to the Association, EGPC and Petrogas, may be attributed to natural gas operations, including administration, adequate maintenance and taxes or any payments in lieu of taxes, and provision for depreciation on a straight-line basis at a rate of not less than 5% per annum of the average current gross value of Petrogas' fixed assets in service related to its natural gas operations. Interest and other charges on debt are not considered to be operating expenses for the purposes of sub-paragraph (a) (1) (2); and
- (v) "Current net value of Petrogas' fixed assets in service" means the gross value of Petrogas' fixed assets in service related to its natural gas operations less the amount of accumulated depreciation, both valued or revalued from time to time in accordance with appropriate and consistently maintained methods of valuation or revaluation acceptable to the Association and Petrogas.

(c) EGPC shall take, or cause to be taken, all action necessary or appropriate to enable Petrogas to perform the obligations set out above.

ARTICLE V

Effective Date; Termination;
Cancellation and Suspension

Section 5.01. This Agreement shall come into force and effect on the date upon which the Development Credit Agreement becomes effective.

Section 5.02. (a) This Agreement and all obligations of the Association, EGPC and Petrogas thereunder shall terminate on the earlier of the following two dates:

- (i) the date on which the Development Credit Agreement shall terminate in accordance with its terms; or
- (ii) a date twenty years after the date of this Agreement.

(b) If the Development Credit Agreement terminates in accordance with its terms before the date specified in paragraph (a) (ii) of this Section, the Association shall promptly notify EGPC and Petrogas of this event.

Section 5.03. All the provisions of this Agreement shall continue in full force and effect notwithstanding any cancellation or suspension under the General Conditions.

ARTICLE VI

Miscellaneous Provisions

Section 6.01. Any notice or request required or permitted to be given or made under this Agreement and any agreement between the parties contemplated by this Agreement shall be in writing. Such notice or request shall be deemed to have been duly given or made when it shall be delivered by hand or by mail, telegram, cable, telex or radiogram to the party to which it is required or permitted to be given or made at such party's address hereinafter specified or at such other address as such party shall have designated by notice to the party giving such notice or making such request. The addresses so specified are:

For the Association:

International Development Association
1818 H Street, N.W.
Washington, D.C. 20433
United States of America

Cable address:

INDEVAS
Washington, D.C.

Telex:

440098 (ITT)
248423 (RCA) or
64145 (WUI)

For EGPC:

Egyptian General Petroleum Corporation
Osman Abdel Hafiz Street
Nasr City
Cairo, Arab Republic of Egypt

Cable address:

Telex:

PETMISR
Cairo

92049 UN

For Petrogas:

Petroleum Gas Company
P.O.B. 2048
Cairo, Arab Republic of Egypt

Cable address:

Telex:

PETGAS
Cairo

93049 PTGAS

Section 6.02. Any action required or permitted to be taken, and any document required or permitted to be executed, under this Agreement on behalf of EGPC or Petrogas, or on behalf of the Borrower by Petrogas under the Development Credit Agreement, may be taken or executed by their respective Chairmen, or such other person or persons as EGPC or Petrogas, as the case may be, shall designate in writing, and EGPC or Petrogas shall furnish to the Association sufficient evidence of the authority and the authenticated specimen signature of each such person.

Section 6.03. This Agreement may be executed in several counterparts, each of which shall be an original, and all collectively but one instrument.

IN WITNESS WHEREOF, the parties hereto, acting through their representatives thereunto duly authorized, have caused this Agreement to be signed in their respective names in the District

of Columbia, United States of America, as of the day and year first above written.

INTERNATIONAL DEVELOPMENT ASSOCIATION

By /s/ Roger Chanfournier
Regional Vice President
Europe, Middle East and North Africa

EGYPTIAN GENERAL PETROLEUM CORPORATION

By /s/ Ashraf Ghorbal
Authorized Representative

PETROLEUM GAS COMPANY

By /s/ Ashraf Ghorbal
Authorized Representative

SCHEDULE

Procurement

A. International Competitive Bidding

1. Goods and works shall be procured under contracts awarded in accordance with procedures consistent with those set forth in the "Guidelines for Procurement under World Bank Loans and IDA Credits" published by the Bank in March 1977 (hereinafter called the Guidelines), on the basis of international competitive bidding as described in Part A of the Guidelines.

2. For goods and works to be procured on the basis of international competitive bidding, in addition to the requirements of paragraph 1.2 of the Guidelines, Petrogas shall prepare and forward to the Association as soon as possible, and in any event not later than 60 days prior to the date of availability to the public of the first tender or prequalification documents relating thereto, as the case may be, a general procurement notice, in such form and detail and containing such information as the Association shall reasonably request; the Association will arrange for the publication of such notice in order to provide timely notification to prospective bidders of the opportunity to bid for the goods and works in question. Petrogas shall provide the necessary information to update such notice annually so long as any goods or works remain to be procured on the basis of international competitive bidding.

3. Bidders for the goods and works included in the Project shall be prequalified as described in paragraph 1.3 of Part A of the Guidelines.

4. For the purpose of evaluation and comparison of bids for the supply of goods to be procured on the basis of international competitive bidding: (i) bidders shall be required to state in their bid the c.i.f. (port of entry) price for the imported goods, or the ex-factory price or off-the-shelf price of other goods, offered in such bid; and (ii) customs duties and other import taxes levied in connection with the importation, or the sales and similar taxes levied in connection with the sale or delivery, pursuant to the bid, of the goods shall not be taken into account in the evaluation of the bids.

B. Review of Procurement Decisions by the Association

1. Review of prequalification. Petrogas shall, before qualification is invited, inform the Association in detail of the procedure to be followed, and shall introduce such modifications in said procedure as the Association shall reasonably request. The list of prequalified bidders, together with a statement of their qualifications and of the reasons for the exclusion of any applicant for prequalification shall be furnished by Petrogas to the Association for its comments before the applicants are notified of Petrogas' decision, and Petrogas shall make such additions to, deletions from, or modifications in, the said list as the Association shall reasonably request.

2. Review of invitations to bid and of proposed awards and final contracts:

With respect to all contracts for goods and works:

(a) Before bids are invited, Petrogas shall furnish to the Association, for its comments, the text of the invitations to bid and the specifications and other bidding documents, together with a description of the advertising procedures to be followed for the bidding, and shall make such modifications in the said documents or procedures as the Association shall reasonably request. Any further modification to the bidding documents shall require the Association's concurrence before it is issued to the prospective bidders.

(b) After bids have been received and evaluated, Petrogas shall, before a final decision on the award is made, inform the Association of the name of the bidder to which it intends to award the contract and shall furnish to the Association, in sufficient time for its review, a detailed report, on the evaluation and comparison of the bids received, and such other information as the Association shall reasonably request. The Association shall, if it determines that the intended award would be inconsistent with the Guidelines or this Schedule, promptly inform Petrogas and state the reasons for such determination.

(c) The terms and conditions of the contract shall not, without the Association's concurrence, materially differ from those on which bids were asked or prequalification invited.

(d) Two conformed copies of the contract shall be furnished to the Association promptly after its execution and prior to

the submission to the Association of the first application for withdrawal of funds from the Credit Account in respect of such contract.

3. Before agreeing to any material modification or waiver of the terms and conditions of a contract, or granting an extension of the stipulated time for performance of such contract, or issuing any change order under such contract (except in cases of extreme urgency) which would increase the cost of the contract by more than 10% of the original price, Petrogas shall inform the Association of the proposed modification, waiver, extension or change order and the reasons therefor. The Association, if it determines that the proposal would be inconsistent with the provisions of this Agreement, shall promptly inform Petrogas and state the reasons for its determination.







Record Removal Notice

File Title Cairo Gas Distribution Project - Egypt, Arab Republic of - Credit 1024 - P005023 - Correspondence		Barcode No. 1264595		
Document Date 04 March, 1980	Document Type Memorandum			
Correspondents / Participants To : Mr. C. M. Southall, LEG From : Claude Duval, LEG				
Subject / Title Egypt - Cairo Gas Distribution Project				
Exception(s) Attorney-Client Privilege				
Additional Comments		The item(s) identified above has/have been removed in accordance with The World Bank Policy on Access to Information. This Policy can be found on the World Bank Access to Information website.		
		<table border="1"><tr><td>Withdrawn by Chandra Kumar</td><td>Date 12-Mar-15</td></tr></table>	Withdrawn by Chandra Kumar	Date 12-Mar-15
Withdrawn by Chandra Kumar	Date 12-Mar-15			

OFFICE MEMORANDUM

TO Mr. M. P. Benjenk, Vice President, EMENA Region

DATE February 26, 1980

FROM Attila Karaosmanoglu, Director, EMI AK

SUBJECT EGYPT: Proposed \$50 Million IDA Credit for the
Cairo Gas Distribution Project

1. I attach for your approval and transmission to the Loan Committee the draft President's and Staff Appraisal Reports, draft legal documents and a memorandum to the Loan Committee on the above project. The Issues Paper and Decision Memorandum for this project were distributed on October 31 and November 6, 1979, respectively. This project is the first of two projects in the energy sector to be presented to the Board this year; sector issues, principally pricing, are the major issues related to a successful impact of both projects. They are addressed to in paras. 7 to 13 below.

Project Objectives and Description

2. The proposed project is designed to provide natural gas from the Abu Ghardig fields (about 270 km west of Cairo) for the creation of a gas distribution network in four districts of Cairo, as well as to supply two (small) power units. Natural gas would be used in these districts primarily for domestic purposes, mainly cooking and water heating, thus largely replacing presently imported liquefied petroleum gas (LPG). The resulting foreign exchange savings to Egypt on LPG imports are projected to be substantial. The project would also include a large technical assistance component to help Petrogas, the implementing authority, in implementing and managing the project and to establish it as a public gas utility following sound managerial, operating and financial practices. The physical facilities of the project would consist of a high-pressure transmission pipeline, a medium-pressure distribution system, carcassing and conversion of 160,000 existing households from LPG to natural gas.

Project Cost and Financing

3. The project's total cost is estimated at about \$154 million with a foreign exchange component of about \$102 million. With the proposed IDA credit of \$50 million, IDA would finance 33 percent of total or 49 percent of the project's foreign cost. The Government and/or the Egyptian General Petroleum Corporation (EGPC), Petrogas' parent company, would finance the project's remaining foreign and local cost as well as any cost overruns. The proposed credit would be made to the Arab Republic of Egypt which, in turn, would on-lend the proceeds to Petrogas through a subsidiary loan agreement. The sub-loan to Petrogas would be for a period of 20 years with a grace period of five years at an interest rate equal to that prevailing on Bank loans at the time the credit is approved by the Executive Directors.

Procurement

4. Following a request by the Egyptian Government and Petrogas and after a review by the Bank's procurement advisor, the Chairman of the Loan Committee agreed that IDA should approve that a single responsibility contract for the entire project works be awarded through advanced contracting, with the following proviso: (i) that the Egyptian Government be advised in writing that an increase in the price of gas to about \$2.50 equivalent per one thousand cubic feet (Mcf) 1/ is an "essential, immutable precondition" for the proposed credit and (ii) that the Government be advised of the usual conditions, i.e. that the proposed contract be satisfactory to IDA and IDA financing would be available only if and when IDA's Executive Directors have given their approval. Following further IDA review and approval, such contract has since been awarded and a letter of intent has been issued. Retroactive financing of up to \$5 million is recommended for expenditures incurred by Petrogas (essentially down-payments) on items proposed to be financed by IDA between November 21, 1979 (date of the contract award) and the date of the credit signing.

Prices of Gas and LPG

5. In connection with this project, tentative agreement has been reached on pricing natural gas supplied to (i) domestic consumers at about \$4.20 per Mcf (or \$168 per toe), i.e. substantially above the level stipulated by the Chairman of the Loan Committee (see para. 4 above) and (ii) two EEA power stations at about \$0.85 per Mcf (or \$34 per toe). 2/ These price levels are expected to ensure Petrogas' financial viability through 1984. Natural gas has been little used in Egypt for domestic consumption and, therefore, no real price comparison can be made. For reference, a price of \$0.29 per Mcf (or \$11 per toe) is presently charged for gas used for industrial purposes and power generation. Current international prices for gas oil and fuel oil are about \$365 per toe and \$180 per toe, respectively. It should be noted that the gas price increase to EEA, if limited to only 2 power plants and not compensated for by some rationing mechanism by EGPC (which, as the supplier of both oil and gas could in fact apply such a mechanism), could encourage EEA to use fuel oil in place of natural gas.

6. We had requested the Government in writing to increase the domestic price of LPG to a level comparable to the one proposed for natural gas since we were concerned about the possible resistance of existing consumers to switch over to natural gas if a significant price differential existed between these two mutually substitutionable fuels. Following indications received from the Chairman of the Loan Committee we even indicated to the Government that, subject to such price increase of LPG, IDA may be in a position to increase the credit

1/ This is equivalent to \$100 per ton of oil equivalent (toe).

2/ Based on recent information to be confirmed during negotiations and not reflected in the President's and Appraisal Reports.

amount for the proposed project by about \$23 million, thus alleviating the substantial burden on the Government which, with an IDA credit of only \$50 million, would have to finance 67 percent of total or 51 percent of the project's foreign cost. However, the Government has been adamant that any price increase for LPG was out of the question at the present time. On the other hand, the Government has already taken measures which are designed to encourage the use of domestic gas instead of LPG. For the reasons spelt out in para. 70 of the President's Report, we believe that these measures are adequate to minimize to an acceptable level the risk that consumers in the project area might continue to use LPG. It should also be noted that LPG accounts only for about 3 percent of total petroleum product consumption in Egypt.

Energy Pricing Strategy

7. The above tentative agreements regarding the price of gas should be considered in the context of agreements reached under our second power project approved in June 1979, under which the Government and the Egyptian Electricity Authority agreed to take all measures, including tariff increases, if necessary, to reach a minimum 9 percent rate of return on revalued assets by 1983. Agreement on measures that will achieve a 5 percent rate of return in 1980 is a condition of effectiveness of the second power loan and presently being discussed. As part of such measures the Government has already decided to increase substantially domestic consumer tariffs with effect for this year. (This decision has been taken in the context of the 1980 budget which is expected to be approved by Parliament shortly.) However, to achieve the 5 percent rate of return, additional measures need to be taken.

8. While all these agreements are positive steps forward in energy pricing in Egypt, they affect only a very small share of total energy consumption and do not address the major issue, which is the heavily subsidized price of energy inputs to industry. Presently, fuel oil supplied to industry which constitutes about 30 percent of total petroleum product consumption in Egypt, is priced at \$11 per toe as compared with an international price of about \$180 per toe.

9. We have discussed within the Bank and also with the Government how we might move away from a project by project consideration of energy pricing. However, we are not yet in a position to establish a broad-based energy pricing strategy which could be firmly proposed to the Government as a condition of lending. The following aspects of the Egyptian economy make such a determination difficult: (i) the lack of a clear model on which to test the impact of price changes in the complex industrial sector, (ii) no assessment of the extent to which low domestic energy prices have in fact led to uneconomic decisions or inefficient utilization, (iii) uncertainty about the likely volume of oil and gas resources in the future, (iv) a resource base in which oil and gas are essentially fungible, (although there are some indications regarding major gas deposits, proven gas reserves are neither extremely plentiful nor a surplus commodity) and (v) uncertainty about the net impact of higher energy prices on government resources--given that the public sector is a large user of energy and that final output prices remain constrained by many factors including

competing import prices.

10. Nonetheless, there is no doubt that Egypt should gradually move domestic fuel prices closer to world market prices (border prices). Moreover, in moving prices, it is important to do so in a way that generates a relative price structure reflecting the price structure of world prices, even if absolute levels remain for some time below world market levels. This position has been made clear to the Egyptian Government which is fully aware of the need for a comprehensive energy pricing policy. ^{1/} However, as reflected in the Decision Memoranda for both the proposed gas project and the third power project (dated December 19, 1980), no specific undertakings have been proposed in connection with these projects other than the aforementioned pricing proposals in regard to natural gas. Accordingly, any proposal of further measures in this respect as conditions of lending at this stage would most likely raise extremely difficult negotiating problems especially when one takes account of the five points mentioned above. In this context, it should be noted that the Government has insisted that because of the complex inter-linkages involved in energy pricing, a study to evaluate options and their effects on end product prices would have to be prepared. Such a study is being financed by the Bank in the context of the Gulf of Suez Gas Project (Loan 1732 EGT). The above project also includes a study on gas use optimization and the need to upgrade this resource from a fuel oil substitute to higher value uses. While the legal documents for the Gulf of Suez Gas Project provided for the completion of the studies by June 30, 1980, it has taken more time than anticipated to draw up appropriate terms of reference and issue invitations to selected consultants. Consultants' proposals have now been received and are being evaluated. Allowing for sufficient mobilization time for the consultants, actual work is unlikely to start before June 1, 1980 and is expected to take about one year. Thus, the results cannot be incorporated in undertakings in connection with the two projects currently being processed.

11. Despite this, in order to achieve some further positive movement, we propose to seek agreement with the Egyptian Government during negotiations on the proposed gas project, on a memorandum of understanding in which (a) the policy of moving domestic prices toward world market prices would be affirmed, (b) the Government would agree to start discussions with the Bank as soon as preliminary results of the pricing study become available, and continue these discussions on an agreed timetable with a view to agreeing on specific measures to be taken to achieve this following completion of these studies, and (c) in any event, these measures would include an increase of the price of hydrocarbon fuel used for power generation in general to the level tentatively agreed to be paid by EEA for gas supplied under the proposed gas project to the two power plants. This increase, which would result in a tripling of the existing price, would be achieved by the end of 1982, presumably in gradual stages. We would also propose to assist the Egyptian Government in improving the fuel efficiency of power plants and industrial plants in order to offset the increase in prices.

^{1/} This is why the Government recently established a High Council for Energy, which is chaired by the Minister of Petroleum.

While not fully addressing the issue, the tariff increases to domestic consumers of natural gas and the higher price for the natural gas to be used by the two power stations supplied under the proposed project, constitute a positive step towards improving energy pricing in Egypt. The same applies to a recent decision by the Government to increase the prices of petroleum products with the exception of fuel oil and LPG, on the average, by 20 percent.

12. The Bank has so far concentrated its intervention in the petroleum sector in Egypt on the natural gas subsector. This subsector is expected to become increasingly important in the next few years. Major deposits of gas are believed to exist off-shore, and possibly onshore, and the development of these fields could provide the domestic market with a substitute for fuel oil. Because of the substantial capital investment required for such development and the involvement of foreign oil companies (who are likely to welcome Bank participation in such investments), the Bank should have a continuing opportunity to influence progress in the oil and gas subsector, and increasing leverage on gas and fuel oil prices.

13. In summary, it is recognized that the above arrangements fall far short of closing the substantial gap between existing energy prices in Egypt and their international prices. However, compared to the situation about two years ago, certain positive developments have taken place or will take place in connection with the proposed gas and power projects. We seek your concurrence that we proceed as proposed above at this stage. In any event, even the package with the impact on the subsidized price structure is likely to be difficult to negotiate and may be unacceptable to the Egyptians, in which case we will ask the Government to present an alternative which would be referred back to you before any agreement is reached. A more complete note is being prepared to incorporate the latest information on this issue as obtained by missions which have just returned from Egypt. We expect to submit this note to you by the end of March.

14. The current lending program is attached. . . .

15. The attached documents have been cleared by the Departments concerned. Please refer any comments or questions to Mr. Kaps, extension 74528.

Attachments

Cleared with & cc: Messrs. Knox, Carmignani, Fish (EMP); Bourcier/McCarthy (EGY); K8pp (EML)

cc: Messrs. Rovani, Sheehan, Friedmann, Nayyar o/r. Daffern, Ms. Zurayk, Ms. Julius (EGY); El Darwish (EMP); Maiss o/r (EML); Elwan, Roa, Mathai (EMP); Swayze, Dervis (EML); Duval (LEG); Hakim (CTR).

FKaps:aw

International Development Association

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WBG ARCHIVES

For consideration on
May 20, 1980

IDA/R80-70

FROM: Vice President and Secretary

May 1, 1980

EGYPT: Cairo Gas Distribution Project

1. Attached is the President's Report and Recommendation (P-2793-EGT) on a proposed credit to the Arab Republic of Egypt for the Cairo gas distribution project.
2. A report entitled "Arab Republic of Egypt: Recent Economic Developments and External Capital Requirements" (2738-EGT) was distributed on November 2, 1979 (SecM79-838).
3. A detailed report entitled "Staff Appraisal Report: Egypt - Cairo Gas Distribution Project" (2766-EGT) is being distributed separately.
4. A draft Development Credit Agreement, a draft Project Agreement and the Statutory Committee Recommendation are being distributed as report IDA/R80-70-L.
5. Questions on these documents should be referred to Mr. Kaps (X74528).

Distribution:

Executive Directors and Alternates
President
Senior Vice President
President's Report
Vice Presidents, IFC
Directors and Department Heads, Bank and IFC

Document of
The World Bank

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Report No. P-2793-EGT

REPORT AND RECOMMENDATION
OF THE
PRESIDENT OF THE
INTERNATIONAL DEVELOPMENT ASSOCIATION
TO THE
EXECUTIVE DIRECTORS
ON A
PROPOSED CREDIT
TO THE
ARAB REPUBLIC OF EGYPT
FOR THE
CAIRO GAS DISTRIBUTION PROJECT

April 30, 1980

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CURRENCY EQUIVALENTS

1 Egyptian Pound (LE) = US\$ 1.44
1 US Dollar = LE 0.69

FISCAL YEAR

January 1 to December 31

LIST OF ABBREVIATIONS

EGPC - Egyptian General Petroleum Corporation
GODE - Gulf Organization for the Development
of Egypt
LPG - Liquefied Petroleum Gas
MMcf/d - Million cubic feet per day
scf - Standard cubic feet

ARAB REPUBLIC OF EGYPT

CAIRO GAS DISTRIBUTION PROJECT

Credit Summary

Borrower: Arab Republic of Egypt
Beneficiary: Petrogas
Amount: US\$50 million IDA Credit
Terms: Standard
Relending Terms: 20 years, including 5 years grace, at 8.25 percent interest.

Project

Description: The objective of the project is to reduce Egypt's reliance on imports of liquified petroleum gas (LPG), gas oil, and kerosene by replacing it with natural gas, a locally available source of energy. The gas would be used to supply a gas distribution network in four districts of Cairo: Helwan, Maadi, Nasr City and Heliopolis and to provide fuel to two gas turbine plants. Specifically, the project would comprise: (i) construction of a high-pressure pipeline, (ii) an odorizing unit and four pressure-reduction stations, (iii) a distribution network of medium-density polyethylene pipes and related connection services, (iv) external and internal installation of pipes in households and related services as well as conversion of existing LPG appliances to natural gas, (v) supervisory control and cathodic protection for the gas pipelines, and (iv) technical assistance, training and project related studies.

The project faces certain technical risks inherent in this type of project and project implementation risks resulting from the fact that Petrogas is a fairly recent public utility. However, precautionary measures have been included under the project to reduce these risks to a minimum acceptable level. Actions by the Government to ameliorate economic risks which may arise from the expected price differential between natural gas and LPG and kerosene are being discussed and certain actions are being taken to induce consumers to utilize natural gas rather than competing products.

Estimated Cost:

<u>Item</u>	<u>US\$ Million</u>		
	<u>Foreign Cost</u>	<u>Local Cost</u>	<u>Total Cost</u>
1. High Pressure Transmission Pipeline	14.0	6.8	20.8
2. Odorizing Unit	0.3	0.1	0.4
3. Pressure-regulating stations	1.4	0.7	2.1
4. Distribution Network	23.7	11.8	35.5
5. Gas Meters	8.2	4.1	12.3
6. External Service Line including Laterals, Risers, etc.	12.5	6.1	18.6
7. Internal Services	11.7	5.7	17.4
8. Conversion of Appliances	6.8	3.3	10.1
9. Training	1.4	0.7	2.1
10. Consultancy	4.3	0.7	5.0
11. Basic Project Cost	<u>84.3</u>	<u>40.0</u>	<u>124.3</u>
12. Physical Contingency	8.4	4.0	12.4
13. Price Contingency	<u>11.1</u>	<u>7.2</u>	<u>18.3</u>
TOTAL	<u>103.8</u>	<u>51.2</u>	<u>155.0</u>

Financing Plan:

	<u>US\$ Million</u>		
	<u>Foreign</u>	<u>Local</u>	<u>Total</u>
Government/EGPC	51.7	45.3	97.0
Petrogas net internal cash generation	-	5.9	5.9
IBRD (Loan 1732-EGT)	2.1	-	2.1
IDA	<u>50.0</u>	-	<u>50.0</u>
TOTAL	<u>103.8</u>	<u>51.2</u>	<u>155.0</u>

Estimated Disbursements:

	IDA FY	<u>US\$ Million</u>			
		<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Annual		21.0	11.1	11.7	6.2
Cumulative		21.0	32.1	43.8	50.0

Economic Rate of Return: 43 percent

Staff Appraisal Report: No. 2766-EGT, dated April 1980
Energy Department
Petroleum Projects Department

INTERNATIONAL DEVELOPMENT ASSOCIATION

REPORT AND RECOMMENDATION OF THE PRESIDENT OF IDA
TO THE EXECUTIVE DIRECTORS ON A PROPOSED
DEVELOPMENT CREDIT TO THE ARAB REPUBLIC OF EGYPT
FOR THE CAIRO GAS DISTRIBUTION PROJECT

1. I submit the following report and recommendation on a proposed development credit to the Arab Republic of Egypt for the equivalent of US\$50 million on standard IDA terms to help finance part of the foreign exchange cost of the Cairo Gas Distribution Project. The proceeds of the credit would be relent to Petrogas for 20 years, including 5 years grace, with interest at 8.25 percent per annum.

PART I - THE ECONOMY 1/

2. The latest economic mission visited Egypt during September-October 1979. Subsequent to that a report on "Recent Economic Development and External Capital Requirements" (SecM 79-839) was distributed to the Executive Directors on November 28, 1979. The findings of this report are incorporated in the following. Country data sheets are attached.

The Open-Door Strategy

3. Economic trends in Egypt have been strongly influenced by the "open-door" strategy enunciated by President Sadat in October 1973 and approved in a national referendum in May 1974. This strategy aims at accelerating economic development through modernization and making Egypt's largely publicly-owned and centrally-controlled economy more market-oriented. Specifically, the strategy envisages (i) a gradual dismantling of government regulations, many of which are to be replaced by the price mechanism; (ii) the decentralization of decision-making in state-owned enterprises; (iii) a more active role for the private sector, including private foreign investors; and (iv) expanded economic cooperation with other countries. Substantial inflows of external assistance are considered essential to support the strategy.

4. To implement the open-door strategy the Government has taken a number of specific policy actions. Among the more important ones were the gradual devaluation of the Egyptian pound, and the concurrent liberalization of foreign exchange regulations. Starting in 1973 when the parallel market rate was introduced, Egypt's currency has been effectively devalued by 44 percent from US\$2.56 to US\$1.43 per pound at present. Exchange restrictions were eased, specific import allocations were replaced by general import quotas, and more foreign exchange was made available to both the public and private

1/ Part I is identical to Part I of the recent President's Report for the Textile II Project, distributed to the Executive Directors on April 10, 1980.

sector. A new investment law (1974, amended in 1977) offers attractive incentives to foreign firms. Trade agreements, especially with the EEC, opened new markets for export products; at the same time, bilateral trade with COMECON countries was much reduced. A debt management unit was established in the Central Bank, and became operative in mid-1978.

5. A Five-Year Plan was adopted in 1978 and is currently under revision, in accordance with the Government's desire to periodically reassess development perspectives and respond to changing economic conditions and investment options. In support of the overall plan, a number of sector and subsector programs are currently under preparation with the assistance of the Bank and other donors. These include a Water Master Plan, various industrial subsector studies, a review of the transport sector, and an electrification program.

6. In accordance with the objective of greater decentralization, the autonomy of public enterprises has been somewhat strengthened, especially by a new law issued in 1978 which grants greater flexibility to individual enterprises in (i) setting up organizational structures, (ii) introducing material incentives; (iii) establishing productivity related wage scales, (iv) adjusting the work force to production requirements by not having to hire additional people, and (v) undertaking some investments from their own resources. Provincial authority to undertake regional development programs has also been expanded. Central bureaucratic control remains strong, however, over most investment decisions.

7. A start has been made in rationalizing the price structure and increasing price flexibility. The share of industrial output subject to centralized price control has decreased, and prices for a number of controlled products (including agricultural crops and some public service tariffs) were substantially increased. Interest rates have been raised several times and now stand at 10 to 12 percent for lending (to non-government sector) and 6 to 8.5 percent for term deposits. Private sector activity is being encouraged and has been freed from many previous restrictions. Moreover, a growing number of foreign investment contracts are being signed, especially in the important oil and tourist sectors.

Impact of the "Open-Door" Strategy

8. The open-door strategy and subsequent policy actions have yielded impressive results. Above all, they have led to a rapid increase in Egypt's foreign exchange earnings which rose from \$1.4 billion in 1973 to \$5.5 billion in 1978. During this period, oil exports, workers' remittances, tourism and the Suez Canal emerged as major new sources of foreign exchange. This was accompanied by a major shift of agricultural and industrial exports from COMECON countries to the hard currency area. In addition, the Government managed to attract large amounts of foreign assistance. Gross inflows of medium- and long-term capital averaged \$3.4 billion per annum during 1975-78, compared with an average of only \$0.6 billion during 1967-72. The bulk of these aid flows came from Arab and western donors and were provided at highly concessional terms.

9. Increased exchange earnings and foreign aid inflows have resulted in a consolidation of Egypt's external debt and have strengthened the country's

creditworthiness. Short-term credits owed by the Government to commercial banks were reduced from \$1.4 billion at the end of 1976 to \$443 million at end-1978, largely with the help of loans granted by the Gulf Organization for the Development of Egypt (GODE). During the same period substantial arrears in debt payments, which had built up in previous years, were cleared. These changes have solved the pressing liquidity problems that threatened Egypt's financial position in 1975 and 1976. Favorable terms on new borrowings have also eased the burden on the country's medium- and long-term debt. Although Egypt's total medium- and long-term public debt increased sharply during recent years--from \$2.1 billion at the end 1973 to an estimated \$10.0 billion at the end-1978--the debt service ratio declined from 33 percent to 24 percent, during the same period. This reflects not only more favorable credit terms -- i.e., lower interest rates and longer maturities--but also the rapid increase in foreign exchange earnings.

10. The increased availability of foreign exchange from Egypt's own exports of goods and services and from external assistance has allowed much higher levels of imports. This in turn paved the way for a rapid increase of investment, larger domestic consumption, and a better utilization of existing production capacities. Imports of goods and services (excluding interest payments) rose from about \$2.0 billion in 1973 to an estimated \$6.5 billion in 1978; imports of capital goods increased at an even faster rate. Increased availability of foreign exchange to industrial producers and farmers enabled them to import more raw materials, intermediate goods--including fertilizer and pesticides--and spare parts, thus breaking crucial bottlenecks that had constrained local production. Together with investments in new capacities and a vigorous expansion of services such as trade, tourism and shipping, these developments sharply accelerated the rate of economic growth.

11. The Ministry of Planning estimates that GDP at constant prices rose at an average rate of close to 9 percent per annum during 1974-78. Much of the growth was concentrated in petroleum, construction, manufacturing, transport and public utilities. Agricultural production, on the other hand, increased very slowly (about 1 percent per annum). The growth rate of GNP was very high, about 13 percent per annum, because of the massive growth in workers' remittances from \$189 million in 1974 to \$1,760 million in 1978. The higher level of economic activity together with large-scale labor migration to neighboring oil exporting countries has absorbed much of the excess labor force that existed in the early 1970s. In fact, serious labor shortages have begun to emerge in a number of occupations, especially in the construction sector.

12. Since 1974 Egypt's investment rate (investment/GNP) increased from about 18 percent to about 25 percent on average in the 1976-78 period. This increase was made possible by the substantial contribution of foreign savings including the massive growth in workers' remittances. National savings increased from 2.3 percent of GNP in 1974 to more than 12 percent in 1978, reflecting the rise in remittance income. The domestic savings rate, however, while showing some growth since 1974, financed less than a quarter of investment in the 1974-78 period. A major cause for this inadequate level of domestic savings was the continuously low and sometimes even negative savings generated by the government budget. During 1974-78 current budget surpluses averaged less than one percent

of GNP, and their contribution to the financing of public investment averaged less than 10 percent. This was the result of high defense and security expenditures, large consumer subsidies and fast growing interest payments which, taken together, claimed 79 percent of the government's tax revenues in 1978. At the same time, savings generated by public enterprises remained constrained by price regulations. The result has been a continuous shortage of domestic funds, which in many instances has slowed down the implementation of investment projects.

Recent Economic Developments

13. Preliminary estimates indicate that GDP growth in 1979 was about 8.6 percent, close to the average achieved during 1975-78. The increase of agricultural value added (2.6 percent) was significantly above the long-term trend because of favourable climatic conditions and improved distribution of inputs. Growth in industry and mining continued at 7.8 percent, close to the 1975-78 average. There was, however, a marked slowdown in the growth of the petroleum sector, 20 percent in 1979 compared to 34 percent in 1978, reflecting the lack of major discoveries in recent years and the approaching "peak" in production from existing fields. Overall, the growth rate in the commodity sectors realized in 1979 (6.9 percent) was close to the 1975-78 average (7.6 percent). Growth in the distributive and service sectors, about 12 percent and 9 percent respectively, continued to be significantly higher than in the commodity sectors.

14. Egypt's foreign exchange earnings continued to grow rapidly in 1979. Based on preliminary estimates, merchandise exports increased by about 38 percent in value due to a major increase in petroleum revenue made possible by the surge in world prices. Merchandise imports, on the other hand, increased by only 11 percent in current value. With the continued growth in Suez Canal earnings (17 percent) and officially recorded workers' remittances (11 percent), the current account deficit declined by about 15 percent from its 1978 value to about \$1.5 billion. While the current account improved substantially, estimated medium- and long-term capital inflow in 1979 (\$2,410 million) was about 29 percent below its 1978 value (\$3,373 million) reflecting the cessation of cash inflows from GODE (\$500 million in 1978), and a drastic decline in bilateral disbursements from Arab sources (about \$70 million in 1979 compared to about \$300 million in 1978). As a result, the overall balance (current account plus net MLT capital flows) showed a small deficit (\$18 million), and there was some net short-term borrowing (about \$150 million). Prospects for 1980 are reasonably good, with petroleum revenue expected to exceed \$2 billion and Suez Canal earnings increasing as a result of recent increases in the Canal's capacity as well as higher tariffs. In addition net MLT capital flows are projected to grow significantly. Growth in these sources of foreign exchange, and continued growth in workers' remittances and tourism receipts, would permit the resumption of rapid growth in imports of producer goods essential for sustaining high rates of investment and GDP growth.

15. Reforms in trade, exchange rate and incentive policies have contributed significantly to the recent improvements in the balance of payments. Continued care must be taken, however, that incentives remain appropriate and

are adapted to changing circumstances. The gap between interest rates on foreign and domestic deposits (presently about 4 percentage points) will have to be closed to channel more workers' remittances and tourism receipts into official channels and prevent the re-emergence of a large dual foreign exchange market. Periodic adjustments in the exchange rate may also become necessary if the unofficial "free market" rate were to start deviating substantially from the "unified" official rate. In 1979 the free market premium fluctuated around 8 percent and significant downward pressure on the exchange rate did not develop.

16. The domestic fiscal situation remains an area of major concern. The overall budget deficit increased to reach about 22 percent of GNP in 1979. Domestic financing of this deficit has gone up from 5.9 percent of GNP in 1977 to about 13.2 percent in 1979, increasing the pressure on money supply and prices. While public revenue increased by 21 percent, current expenditure alone increased by about 37 percent, principally because of a doubling of subsidy payments linked to the exchange rate adjustment. Furthermore, in spite of increasing revenue from petroleum and the Suez Canal, the public enterprise sector still generated only half of the surplus that would be required to finance its investment program.

17. There are indications of a growing Government effort to contain widening budgetary deficits. Already in 1979 two major agricultural input prices (e.g., fertilizers and pesticides) and a wide range of other prices (e.g., cement, gasoline, railway freights, etc.,) have been substantially raised. The 1980 budget contains similar provisions and net domestic borrowing is projected to decline. This is expected to be achieved through a variety of measures: a new sales tax and elimination of tax loopholes, increases of 20 to 30 percent in consumer prices of mass consumption articles such as cloth, cigarettes, soft drinks, sugar, petrol, kerosene, as well as limiting the ration card system to the lowest income groups and eliminating subsidies on flour for uses other than the production of traditional bread. The net revenues derived from these measures will be complemented by a large increase in revenue from the petroleum sector. The overall fiscal situation is, therefore, likely to improve in 1980, unless massive increases in public investment expenditures are allowed to outweigh the increase in revenues.

Development Potential and Constraints

18. Egypt has considerable potential for further development. The reasons for this are, in brief: a large domestic market, a relatively skilled and literate population, an agricultural resource base not yet fully developed, varied raw materials (including oil and gas), and a key geographical location. In addition, there are good prospects for continued growth of foreign exchange earnings from tourism, workers' remittances and the Suez Canal which is undergoing a major expansion. While oil exports are likely to decline in volume in the long-run--in the light of increasing domestic consumption and less optimistic assumptions on new discoveries--the outlook for exports of new industrial and agricultural products is promising.

19. Future economic growth may come less easily, however, than during the past years. The need to gradually substitute domestic for foreign savings

will become more pressing as foreign contributions decline in relation to GNP. Capacities are now strained in a number of sectors, including infrastructure. Investment in new capacities has been slowed down by administrative inefficiency, inadequate fiscal resources and weakness in national coordination and sector programming. Managerial effectiveness in public enterprises and financial incentives for production are inadequate in many instances. Higher levels of economic activity together with labor emigration have led to shortages in critical professional and technical skills. Educational facilities in Egypt still reflect a non-technical bias and their quality needs to be upgraded.

20. Another key issue is population. Already very large for Egypt's limited living space--about 39 million in 1978 with an average density exceeding 1,300 per square kilometer of agricultural land--the population was growing at a rate of about 2.2 percent per annum in the mid-1970's, adding almost one million people every year. This continues to create great pressures on resources for consumption and investment and aggravates the employment problem in the longer run. In the past years the Government has made a new commitment to direct action on population matters. While it has already initiated such action (e.g., an intensified home visiting program under the second IDA financed population project), it will take time for measurable results in fertility reduction to be achieved.

21. A serious side-effect of the open-door strategy has been a growing disparity in consumption levels. Currently the lower 40 percent of the rural population receive about 25 percent of the rural incomes while in the urban areas the proportion is about 21 percent. About 30 percent of the rural and 22 percent of the urban population live in absolute poverty. Although this pattern of inequality and incidence of absolute poverty is no worse than in most economies at similar income levels, it is nevertheless a serious problem, which could become more severe if no effective policy action is taken.

22. To maintain the momentum of development, major efforts are required to overcome present structural constraints. Specifically, action is needed to (i) increase the efficiency of government administration through organizational and procedural modifications and selective changes in salary structures; (ii) strengthen the capacity for development programming and project preparation/implementation; (iii) pursue a vigorous and balanced program to upgrade the country's physical infrastructure; (iv) substantially expand the program to curb population growth; (v) articulate urban and rural strategies aimed at decentralizing urban agglomeration and economic opportunities; (vi) further increase the use of prices as indicators of relative scarcities; (vii) strengthen the management of public enterprises; (viii) improve professional and technical education; (ix) increase domestic savings; and (x) develop a coordinated export promotion policy. There is an ongoing dialogue on all these issues between the Egyptian authorities and the Bank; they have also been the focus of the discussion among the members of the Consultative Group for Egypt.

External Debt and Creditworthiness

23. Egypt's non-military medium- and long-term public debt outstanding and disbursed as of July 31, 1979 was estimated at about \$10.6 billion. Bilateral loans comprised about \$6.5 billion or about 62 percent of the debt outstanding while the shares of multilateral credit and suppliers' credit were about 24 percent (\$2.5 billion) and 8 percent (\$0.8 billion) respectively, with the remainder being held by financial institutions. Major creditors were the GODE and USA, followed by Saudi Arabia, Kuwait, and the Federal Republic of Germany. IBRD/IDA debt comprised about 4 percent of the total disbursed debt. The estimated end-December 1979 total disbursed debt was about \$11.0 billion. Debt service on medium- and long-term debt was estimated at \$1.4 billion in 1979 giving a debt service ratio of about 20 percent. No reliable estimates of military debt are available.

24. The Government's recent policy actions have initiated structural adjustments called for by Egypt's economic situation and international environment. If progress towards overcoming present constraints is maintained and the country's foreign exchange earning potential realized, the average deficit on current account is estimated to be about \$2.5 billion per annum for the coming five years. The required capital inflows are large--but if they are available on concessional terms, Egypt would have the debt servicing capacity to borrow the amounts envisaged, including a limited amount on harder terms. The burden of servicing medium- and long-term debt as a percentage of total foreign exchange earnings is estimated to fluctuate around 20 percent during 1980-84, and to decline gradually thereafter.

PART II - BANK GROUP OPERATIONS IN EGYPT 1/

25. The proposed development credit would be the World Bank's forty-eight lending operation in Egypt. It would bring Bank and IDA commitments made since 1970 to \$1,674.5 million. 2/ Annex II contains a summary of Bank loans and IDA credits as of March 31, 1980, and notes on the execution of ongoing projects.

26. Egypt faces a host of basic structural problems: pressure of population on resources; inadequate economic infrastructure; a large but inefficient public sector constrained by out of date equipment, overstaffing, weak management and a network of controls over investment, production, distribution and prices; significant balance of payments deficits and shortages of

1/ Paras. 26-30 are identical to paras. 26-30 of the recent President's Report for the Textile II Project, distributed to the Executive Directors on April 10, 1980.

2/ Assumes that one other project will be presented to the Executive Directors before the proposed Cairo Gas project: \$30 million loan for MIDB (DFC).

domestic resources. The Bank's response has been tailored to address these long-term developmental issues in a very broad fashion and in close cooperation with other donors. Its strategy involves entry into the spectrum of sectors in order to provide not only direct finance with its relatively limited resources but, equally, to act as a catalyst for other agencies, bilateral and multilateral, and as a spur for initiating discussion and, hopefully, positive action on a coherent framework of policies and investment proposals which can tackle the substantive issues. The approach also includes delivery of technical assistance not only for adequate implementation of specific investment programs but for developing the domestic institutional capability to devise and implement future policies and investment programs. The Bank's deliberately broad multisectoral intervention has been differentiated by sectors and tailored to the pace at which the Egyptian authorities can reasonably be expected to address these issues and implement the programs.

27. Industry, which has received the largest portion of Bank resources and significant attention over the past five years, illustrates the nature and scope of the Bank's intervention. The Government looks to industry to create productive employment, cater to basic consumer needs, generate an "export surplus", and stimulate growth of the economy. However, this sector is beset by a complex set of problems which stem largely from the rigidity of centralized control and lack of management autonomy, distorted pricing, and the lack of incentives for better use of productive capacity. Efforts under Bank financed projects have gone beyond the immediate objective of improving capacity utilization (imports loans and credits Nos: Cr. 524, Ln. 1062 and Ln. 1456) and increasing production capacity and supply of essential commodities in resource-based industries (cotton ginning, textiles, cement and fertilizer projects). The more fundamental effort is directed at introducing policy and structural improvements. Towards this end the Bank is assisting the Government in reviewing the planning apparatus and strengthening sectoral planning and project preparation and implementation capabilities with the objective of formulating an industrial strategy and plan for the 1980's. It has also financed six subsector studies in textiles, building materials, pulp and paper, food processing, metallurgy, and engineering industries, in order to assist the Government in formulating a package of policy and investment proposals, which would be embodied in future projects. Two subsectors, textiles and steel, are planned for study in greater detail with a view to developing specific recommendations concerning the major issues facing public enterprises in Egypt, such as those relating to employment, wages, prices, profit retention and the relationship between the public and private sectors. To complement these efforts the Bank has also carried out a study on small-scale industries which is laying the basis for joint Egyptian/Bank efforts in this area. In addition, the Bank is assisting the Government in undertaking a major study of the construction/contracting industry, which is one of the most critical bottlenecks facing Egyptian industry today, as well as in initiating studies to develop a brick master plan and cement distribution master plan.

28. The above sketch illustrating the scope and breadth of the Bank's intervention in one sector is representative of the multifaceted approach that it has adopted in varying degrees in the other sectors of the Egyptian economy. It is a role that is in harmony not only with the Egyptian Government's wishes

but is welcomed by the various bilateral and multilateral donors as an appropriate function for the Bank as the Chairman of the Consultative Group for Egypt. Preparation of projects for future lending follows this strategy, and the pipeline includes projects in education, power, gas exploration, rural and urban development, transportation, rural water supply, agriculture (including drainage), agro-industry, development finance and industry.

29. Bank Group disbursements in 1978 represent 2.8 percent of Egypt's medium- and long-term capital inflow. The Bank and IDA shares of total external debt outstanding and disbursed were about 1.8 percent and 2.4 percent, respectively, as of July 31, 1979. For the future, the Bank and IDA shares of total external debt outstanding and disbursed (excluding military debts) are estimated to reach about 5.0 and 3.5 percent respectively in 1981. It is estimated that in 1981, debt service payments due to the Bank and IDA will represent about 2.3 percent and 0.2 percent, respectively of service payments due on Egypt's external debt.

30. Total IFC participation and lending for projects in Egypt now total about \$37 million and include: a ceramics project (approved in 1976) a ready-made garment project (1977); a project for an agricultural complex primarily for sugar beet (May 1978); a poultry project (July 1978); and a fish farming project (December 1979). IFC is discussing several other private sector and joint venture projects.

PART III - OIL AND GAS SECTOR

Introduction

31. Egypt's energy outlook has continuously improved over the last decade. With the commissioning of the Aswan High Dam, Egypt successfully developed its largest hydroelectric resource. Increases in oil production have made it first self-sufficient and, more recently, an exporter of oil. In 1978 petroleum exports accounted for 50 percent of its foreign trade receipts. Gas finds have further strengthened the energy base and increased export possibilities of oil. These positive developments notwithstanding, the medium and long term outlook is not as clear. Much of Egypt's current economic and industrial planning is predicated upon ample and continued availability of low cost energy and a significant increase in oil exports. However, it is not certain that this will necessarily come about. A fast growing domestic demand for oil stimulated by prices well below the international level, declining production from some of Egypt's existing major oil fields, the need for increased efforts in exploration and in developing natural gas, are the areas of concern.

Resource Endowment

32. The main sources of primary commercial energy in Egypt are hydro power and petroleum. Coal deposits have been discovered in the western desert and Sinai peninsula, and are estimated at around 100 million tons. A feasibility study for a coal-fired power plant in Sinai is presently under preparation. As in other developing economies, non-commercial fuels in the form of crop residues and animal waste are in extensive use and are estimated to represent about one quarter of the total commercial energy used.

33. Hydro power for Egypt is an important source and in 1977 accounted for 20 percent of primary commercial energy. By equipping the Aswan Dam with turbine generators having a total capacity of 345 MW, the first step was taken in 1960 to tap the hydro power potential of the river Nile. With the completion of the Aswan High Dam in 1970, with an installed capacity of 2100 MW, 80 percent of the Nile's hydro power potential has been harnessed. ^{1/} The remaining 60 meter drop between Aswan and Cairo represents a generating potential of 460 MW which, subject to the establishment of economic viability, could be secured by electrifying three existing barrages and developing other potential barrage sites not yet identified. The only other potential source of hydro power is the Qattara project and mini-hydro schemes along water canals connected to the Nile. The Qattara project which would utilize the drop of 60 meters between the Mediterranean and the Qattara Depression in the Western desert could produce about 640 MW during the first 12 years, and about 340 MW thereafter.

Oil and Gas

34. Hydrocarbons are a major source of commercial energy in Egypt and on account of limited hydro potential, are likely to be relied upon increasingly for meeting Egypt's incremental demand for energy. Though the first oil well in Egypt was drilled in 1886, oil exploration was not taken up on a systematic basis until the turn of the century. Commercial production commenced in 1913, but it was only after 1968 that oil production exceeded 10 million tons. The current production level is around 500,000 barrels a day (25 million tons per annum) of which about 25 percent represents the share of foreign partners, 45 percent is consumed domestically and the balance is exported. Recoverable reserves are estimated at around 2.5 billion barrels (350 million tons). Associated with the production of oil, 100 million cubic feet a day (MM cf/d) of gas (one million tons of oil equivalent per annum) is estimated to have been produced in 1979, which is being flared except for a small amount consumed in the oil fields. Four non-associated gas fields at Abu Gharadig, Abu Madi, Abu Qir and Amal are estimated to have recoverable reserves amounting to 3.3 trillion cubic feet. Of these, the first three gas fields have been developed

^{1/} In the context of the proposed third power project which is also being processed for consideration in FY80, the hydropower generating facilities of the (old) Aswan will be increased by an additional 270 MW.

is predicated upon new discoveries being made, which will not only double the current level of production but would also compensate for the decline in production from oil fields which have already peaked. Failure to achieve the assumed discovery rates could result in a significant shortfall. In any case, the lags which are inherent in the development of an oil field will make it extremely difficult to achieve the target originally stipulated for the 1978-82 Plan period.

Consumption Pattern

38. The consumption of petroleum products has been rising sharply, increasing from 6.7 million tons in 1974 to 9.1 million tons in 1977 and to an estimated 11.7 million tons in 1979. The overall annual growth rate has been in the order of 11.8 percent with liquified petroleum gas (LPG) recording the sharpest increase (16 percent). Over the next two years EGPC projects an overall growth rate of 12.5 percent. It is anticipated that, in the absence of effective demand management and/or significant increase in the price levels, this growth rate in consumption would be maintained until 1985. This relatively high growth rate is attributable in part to a quantum jump in thermal power generation which is projected to rise from 17 billion kWh in 1980 to 28 billion kWh in 1985. The growth rate beyond 1985 would depend, in part, on the introduction of coal-fired and nuclear power plants. Egypt hopes to commission after 1990 a nuclear plant having a capacity of 600 MW. Delays in commissioning the proposed plants would result in a greater reliance on fossil fuels for power generation.

Energy Sector Issues

39. The price system in Egypt is still characterized by a great deal of centralized control and involves substantial explicit or implicit subsidies on many goods and services. The prices of energy supplies are set at levels that are substantially below their opportunity cost (border prices) to the economy. The Government has traditionally kept the overall price of energy low relative to the rest of the domestic prices to foster industrial growth through publicly owned enterprises. At present, close to 58 percent of the petroleum products is consumed by industry and the power sector, and about 82 percent of the electricity generated is consumed either by industry or Government-related activities. The low prices for energy continue to hinder the ability of the entities in the energy sector to generate sufficient revenues to finance the capital investment necessary to meet future needs. An additional shortcoming of the prevailing pricing structure is that the relative scarcity of the various competing energy products is not reflected in the prevailing price system. This leads to the use of energy resources in a non-optimal combination.

40. Increasing the domestic prices of energy resources to the international level should be the goal of the national energy pricing policy. However, this is a long-term objective which is primarily determined by the ability of the Egyptian economy to structurally adjust and absorb the new higher prices. This adjustment is particularly difficult in the Egyptian economy with its extensive system of subsidies, price controls and quantity rationing where the impact of increases in the price of energy requires careful analysis. In connection with the Gulf of Suez Gas Project (Loan

1732-EGT) and the first power project (Loan 1453-EGT), the Bank is financing a pricing study for petroleum products and another study for the formulation of electricity tariffs. Both studies aim at the improvement of the overall pricing of energy in Egypt. The implementation of the results of these studies will require continued Bank involvement in the sector which is being provided for under existing agreements.

41. Pending the outcome of the above studies, the Bank intends to continue its dialogue with the Government, in connection with ongoing and proposed gas and power projects, aimed at bringing about improvements in energy pricing policy affecting key petroleum products and electricity tariffs. In this regard, the Government has confirmed its policy to bring about over the coming three years a gradual real increase in average energy prices, so as to significantly reduce this gap in nominal terms by the end of 1983. Where energy is used by public sector economic enterprises, the Government will direct them to pass additional costs on to final consumers, except in a limited number of identified cases (e.g., mass transportation) where conservation goals dictate a different policy. Further, certain specific positive developments have already taken place. Under the proposed Cairo Gas Distribution project, for instance, the Government has agreed to two important pricing measures: (i) domestic consumers will be charged a price which is substantially above the current price of city gas and liquefied petroleum gas, and (ii) two small power stations to be supplied with natural gas under the project will pay about two and a half times the price charged until recently to all power stations. Also, it should be noted that in January 1980, in a move to improve energy pricing, the Government increased prices of petroleum products by about 20 percent with the exception of the prices of liquefied petroleum gas and fuel oil, which remained unchanged. Electricity tariffs for residential and small commercial consumers were also increased on the average by 20 percent.

42. Also, as mentioned in paragraph 34, the Bank is financing a study to address the questions of gas use optimization and the need to upgrade this resource from a fuel oil substitute to higher value uses. Even now, before the study is completed, there are known areas where gas may be used as a substitute for liquid fuels thereby increasing exports (fuel oil) and reducing imports (LPG and kerosene). Government policy has encouraged such substitutions since in recent years, the Government has faced increasing difficulties in meeting domestic consumer demand in large urban areas as international prices for LPG and kerosene (the two main fuels used) have increased rapidly, putting a heavy and constant burden on Egypt's balance of payments. In addition, the rapid change taking place in Cairo from low level housing to modern high rise buildings, makes the regular use of portable fuels extremely hazardous. The two alternatives for meeting domestic urban fuel needs are electricity and piped gas. Since electricity is less energy efficient and more costly than gas, the government has decided to embark on a program to create gas distribution networks in the major cities. The first step in this program, for which the Government has requested IDA assistance under the proposed project, would be the construction of a gas distribution network in four districts of Cairo which, because of the nature of the housing and the level of consumer demand appears to be the most suitable. The project should be followed by the expansion of gas distribution to other areas in Cairo and in Alexandria.

Bank Group Participation in the Energy Sector

43. The Bank Group has made two loans/credits for power in Egypt. A loan (1453 EGT) of \$48 million was made in 1977 for regional electrification providing for rehabilitation and extension of electric power facilities serving a regional population in urban zones and rural centers outside Cairo and Alexandria. Progress on the project is satisfactory and the project is expected to be completed on schedule by the end of 1980. In June 1979 an IDA credit of \$37 million, a Bank loan of \$102 million, and an EEC Special Action credit of \$35 million (Loan 1733 EGT et al) were approved to help finance part of the foreign cost of the first stage (600 MW) of a 900 MW thermal power station at Shoubrah El Kheima. Bidding documents for civil works and electro-mechanical equipment are expected to be issued in late 1980, respectively. The expansion of the Shoubrah El Kheima power station to cover part of the foreign cost of the third 300 MW unit together with the installation of additional hydropower generation facilities at Aswan and a regional electrification component are the subject of a proposed third power project which is also scheduled for Board consideration during the current fiscal year. In the oil and gas sector, the Bank made a first loan of \$75 million to the Egyptian General Petroleum Corporation (EGPC) for the Gulf of Suez Gas Project (Loan 1732-EGT) in June 1979. The project is designed to gather, process and transport associated gas from oil fields in the Gulf of Suez which is presently being flared. The stripped gas would be used principally as fuel for electric power generation and industrial users, thus freeing fuel oil and diesel oil which could be exported. The project also includes financing for several important sector studies covering energy pricing, oil/gas reserve assessment and optimal utilization of gas as mentioned above.

The Beneficiary

44. The proposed IDA credit would be onlent by the Government to Petrogas, a Government owned enterprise established as a subsidiary of EGPC in September 1978. Petrogas has assumed all functions relating to storage, distribution and marketing of LPG in Egypt, which were formerly performed by the Societe Cooperative des Petroles (COOP), another fully owned EGPC subsidiary. Nevertheless it was created primarily to promote and implement the proposed gas distribution project and upon its completion to function as a gas utility. While Petrogas is a relatively new entity it has drawn upon the competent and experienced personnel of EGPC and its subsidiaries to man its senior levels. Most of the present managers in Petrogas have extensive experience in the oil industry and are therefore capable of discharging their functions satisfactorily in so far as they relate to LPG operations. The oil industry in Egypt, however, has had little experience in domestic gas distribution. Petrogas, moreover, being a new entity, needs to create an organization which, besides overseeing LPG operations, would be capable of implementing the proposed project and operating a safe gas utility. The organization and staffing needs of Petrogas were considered at length. Petrogas agreed with the Association that in order to adequately implement and manage the proposed project, it would need to strengthen the existing corporate structure by establishing and maintaining a senior management group, a construction management group and a natural gas operations group. Petrogas further agreed to establish and appropriately staff the structure agreed to, by December 31, 1980 (Project Agreement (PA), Section 3.01(a)).

PART IV - THE PROJECT

Background

45. The project was identified in January 1978. Following the preparation of a detailed project report by EGPC with the assistance of consultants, extensive consultations took place between EGPC and IDA on the proposed design which was found to be expensive and inflexible. A new project design was therefore prepared with the assistance of newly appointed consultants (British Gas), who are financed under the Gulf of Suez Gas Project (Loan 1732 EGT). The revised project design was appraised in October 1979. Negotiations were held in Washington from March 24 to April 1, 1980. The Government of Egypt was represented by Mr. Samir Koraiem, Undersecretary, Ministry of Economy, Foreign Trade and Economic Cooperation; EGPC by Mr. Abdul Aziz, Vice Chairman, Financial Affairs and Petrogas by Mr. Abu Bakr, Chairman. A supplementary project data sheet is attached as Annex III. A staff appraisal report (No. 2766-EGT) is being circulated separately to the Executive Directors.

Project Objective

46. In order to reduce its reliance on imports, Egypt intends to use natural gas, available within the country, as a replacement for LPG, kerosene, and gas oil. As a first step in this direction, the proposed project aims at providing natural gas to two gas turbine plants and creating a gas distribution network in four districts of Cairo--Helwan, Maadi, Nasr City and Heliopolis. In so doing, natural gas use would be upgraded from a substitute for fuel oil, to a replacement for higher value products such as LPG and gas oil. Currently Egypt imports 70 percent of its LPG requirements, as well as marginal quantities of gas oil. This project would thus generate significant foreign exchange savings and make the Egyptian economy less vulnerable to external price fluctuations.

Project Description

47. The project would consist of the following components:
- (a) construction of approximately 55 km of high-pressure pipeline which would be optimally sized to serve up to 640,000 households;
 - (b) an odorizing unit and four pressure-reduction stations at Helwan, Maadi, Nasr City and Heliopolis;
 - (c) a distribution network of medium-density polyethylene pipes, approximately 900 km in length; along with 9,000 services for connecting customers with gas at an average rate of one service for approximately 18 customers;
 - (d) external and internal installation of pipes in about 160,000 households complete with gas meters, service risers, laterals, etc; and conversion of about 300,000 existing appliances from LPG to natural gas;

- (e) supervisory control and cathodic protection for the gas pipelines; and
- (f) technical assistance, training, and project-related studies.

Supply and Market

48. The sources of gas supply for the proposed project would be the oil and gas field at Abu Gharadig, South of El Alamein, about 270 km from Cairo (see map). This field which was discovered in 1971 has estimated recoverable reserves of 600 billion standard cubic feet (scf). If exclusively dedicated to the project, the reserves would be adequate to support it over its economic life of 30 years. EGPC agreed to operate the Abu Gharadig or any other gas fields subsequently discovered and linked to the Cairo gas distribution system, in a manner permitting the availability of gas for the system over at least 16 years after completion of the project (PA, Section 2.11) The project area is composed of four suburbs on the south-east side of Cairo. Factors responsible for the selection of these four districts were proximity to the gas source, relative ease in laying the distribution network and undertaking carcassing, ^{1/} density of accessible consumers and future growth potential. All the selected districts are currently heavy users of LPG and are expected to grow rapidly in terms of high rise housing, which lends itself ideally to a gas distribution network. The proposed project would provide gas to nearly all households in the four areas.

49. City gas is not new to Cairo. The Egyptian Electricity Authority is presently operating a network, producing gas from naphta. Over the years this network which supplies only 5000 customers has developed extensive leaks and fallen into disrepair. While it is doubtful that the area covered under the system (covering central Cairo) will be connected to the gas distribution system under the proposed project, the Government agreed (i) that a study be carried out by June 30, 1981, reviewing the economic feasibility of rehabilitating and converting this system to natural gas and link it with the project, and (ii) to implement recommendations emanating from the study, which are mutually acceptable to the Government and the Association (Development Credit Agreement (DCA), Section 3.02).

50. Between 1980-83 the project would convert 160,000 existing households from LPG to natural gas. The Government agreed to finance, or cause EGPC to finance, the cost of internal carcassing of these apartments and the conversion of related appliances (DCA, Section 3.04). In addition, during the same period, it is estimated that 30,000 new dwellings needing gas connections would be built in the project area. In new housing, the responsibility for internal carcassing and external piping up to the periphery of the property

^{1/} The term "carcassing" refers to outlet service pipes, service risers, laterals, installation of pipes inside the dwellings, pipe ducts, control cocks, etc.

line would rest with the builder. The Government agreed to issue prior to December 31, 1980 a relevant decree reflecting this responsibility (DCA, Section 3.03). Petrogas would be required to provide service lines from the "mains" to the property line. It is estimated that by the end of 1983 there will be 190,000 consumers which would increase to 640,000 by year 2005.

51. As to the consumption pattern, it has been estimated that once the gas network has become operative, initial gas consumption would be at the same level as the average consumption per customer of LPG, i.e. 315 kilograms equivalent per annum. But once a piped gas supply becomes continuously available, the consumption per household would grow at 1 percent per annum. In aggregate terms, demand for gas by domestic households is estimated at 8 MMcf/d in the fifth year and 19 MMcf/d in the twentieth year of operation. In addition to supplying gas to domestic households, the proposed project would also meet the requirements of two power stations (gas turbine units) at Nasr City and Heliopolis at a cumulative gas load of 12 MMcf/d.

Project Implementation

52. Petrogas would have overall responsibility for implementing the proposed project. It has appointed British Gas as its engineering consultants who will assist in designing and supervising the construction of the project. This arrangement is considered satisfactory. Since consultants are important to the successful implementation of the project, Petrogas agreed to continue to employ experienced consultants on terms and conditions satisfactory to the Association (PA, Section 2.02). Consistent with current practice in the gas industry, Petrogas has awarded a single responsibility contract for the entire project (see para. 56 below). The selected contractor would be responsible for detailed engineering, construction of the high pressure pipeline, the distribution network, carcassing of dwellings and conversion of appliances. The contractor has agreed to a detailed construction schedule and is committed to complete the project within a period of four years (i.e. by December 1983). Although the selected contractor is responsible for building the project on a turnkey basis, it would nonetheless impose a considerable burden on the organization of Petrogas. For this reason Petrogas' organizational requirements, recruitment schedule, and the training needs were evaluated. Necessary action by Petrogas with respect to organizational changes and recruitment requirements as well as training needs are referred to in paras. 44 and 58, respectively.

Project Cost and Financing

53. The project cost is estimated at US\$155.0 million, of which US\$103.8 million would be in foreign exchange. The basic project cost of US\$124.3 million is based on the firm bids 1/ received from the lowest evaluated bidder.

1/ Bids were invited on unit rate basis and evaluated on a detailed estimate of quantities. While these estimates are fairly firm for the transmission network, the quantities involving carcassing and conversion are likely to undergo modification as detailed design progresses.

It must, however, be noted that an element of uncertainty remains in regard to cost estimates for internal carcassing and conversion of appliances. Petrogas, at the Bank's suggestion, undertook a sample survey to estimate the average length of service lines, risers, laterals, and carcassing required per household, and to assess the density, diversity, and condition of appliances. While the cost estimates take note of the survey, the possibility of deviation in the actual cost for carcassing and conversion cannot be excluded. In light of initial construction experience Petrogas would refine carcassing and conversion estimates.

54. In computing cost estimates, physical contingencies have been estimated, on the average, at 10 percent for equipment, material and consultancy services and at 3 percent for the high pressure transmission pipeline, odorizing unit, pressure regulating stations, and gas meters. A relatively low contingency factor has been assumed as the contract for these items has been awarded on a fixed rate basis. A contingency factor of 10 percent has been assumed for the distribution network and 15 percent for carcassing of apartments and conversion of appliances. Price contingencies of 9, 8 and 7 percent have been assumed for the project's foreign and 12 and 11 percent for the local components for 1981-83, respectively. Since Petrogas is exempt from import duty, no allowance has been made for this purpose in cost estimates. Engineering and consultancy services have been calculated on a unit cost of \$9,000 per man month. This rate was derived from the existing contract between Petrogas and its consultants.

55. The proposed IDA credit of \$50 million would finance 32 percent of total or 48 percent of the project's foreign cost. In addition, \$2.1 million are provided under Loan 1732-EGT for the Gulf of Suez Gas project for technical assistance as agreed under that project. The Government agreed to finance in conjunction with EGPC the remaining foreign and local cost as well as any cost overrun (DCA, Section 3.01(b)). The proposed credit would be made to the Arab Republic of Egypt which, in turn, would onlend the proceeds to Petrogas through a subsidiary loan agreement. The loan to Petrogas would be for a period of 20 years with a grace period of five years at 8.25 interest per annum. The execution of a subsidiary loan agreement between the Arab Republic of Egypt and Petrogas would be a condition of effectiveness of the credit (DCA, Section 5.02(b)).

Procurement and Disbursement

56. Consistent with current practice in the gas industry, Petrogas has awarded a single responsibility contract for the entire project. Separating the overall project into discrete components was considered but was discarded since it would have presented serious coordination problems, particularly at several points of interface where problems of safety are most acute. Petrogas invited prospective contractors to prequalify and fifty firms responded to Petrogas' bid invitation and nine firms were prequalified. Tender documents were prepared by Petrogas' consultants, in response to which three bids were received from prequalified contractors. Petrogas, with the assistance of its consultants, evaluated the bids and awarded the contract to the lowest

evaluated bidder on November 22, 1979. IDA reviewed the procurement procedures, including the specifics of prequalification, and found them generally to comply to its guidelines. IDA agreed to advance contracting because of the emergence of exceptional conditions in the international oil market during and immediately following bid preparation. By not allowing advance contracting, project implementation would have been delayed significantly, increasing not only the project costs, but also substantially the import burden. While staging of the project would have reduced the extent of advance contracting, it would have increased the overhead costs of the contractors and increased the risk of delays and of not having a sufficient number of customers connected to the network when the latter is completed. Before agreeing to advanced contracting: (a) the overall project design was reviewed and found appropriate; (b) the Government was advised that it was awarding the contract at its own risk and that it did not in any fashion commit IDA to grant a credit for the project; and (c) the Executive Directors were advised of the advance contracting through the Monthly Operational Summary.

57. Disbursements would be made against 100 percent of foreign exchange expenditures on the high pressure transmission pipeline, odorizing unit, pressure regulating stations, and distribution network, and training, as well as consultants' services. Retroactive financing of US\$5 million is recommended for expenditures incurred by Petrogas (essentially downpayments) on items proposed to be financed by IDA between November 22, 1979 (date of the award of contract) and the date of the signature of the credit. It is anticipated that the credit would be fully disbursed by June 1984.

Training

58. As indicated above, little or no experience exists in Egypt on the construction of a gas distribution network and operation of a gas utility. With the help of its consultants, Petrogas has agreed to design and implement an extensive training program for various categories of personnel. It would in this context also establish a training school to train Egyptians in various facets of gas industry. Training is essential not only to ensure adequate supervision of the contractor, but also to create a corps of trained manpower which can rapidly replace the expatriate work force. To ensure that the necessary transfer of skills and technology is effected, it would be necessary for Petrogas and Petrojet (a construction and contracting subsidiary of EGPC), to depute its personnel to the contractor. The contractor would provide the requisite training and thereafter utilize this personnel in project construction. Petrogas and Petrojet are currently negotiating such an arrangement with the contractor. Petrogas agreed to (i) prepare by December 31, 1980, with the assistance of its consultants, a detailed assessment of the overall training requirements of its personnel, (ii) submit to the Association by March 31, 1981 a detailed training program for its review and implement the agreed upon training program thereafter. Furthermore, Petrogas agreed to enter into a satisfactory agreement with the contractor by December 31, 1980, to train Petrogas personnel (PA, Sections 3.01(b)-(d)).

Safety and Ecology

59. All fuels carry with them the risk of fire or explosion through a sudden release of energy. Although natural gas is a much safer fuel than

LPG (being lighter than air, of lower calorific value and transported through fixed pipes), no gas system is immune from risk. With proper care, however, these risks can be reduced. Customer and employee safety is a primary consideration for a gas utility. To realize this goal, three main conditions must be assured; firstly, good specifications that set out high material and construction standards; secondly, well-defined and high standard operating practices and procedures; and finally, a corps of well trained employees who serve established specifications, standards, practices, and procedures, and routinely record and monitor actual performance, to establish proof of adherence. To meet the above requirements for the proposed project, Petrogas has adopted British specifications where the gas system has a laudable safety record. It has also hired a contractor with extensive experience in laying gas networks and undertaking conversions in Europe. Separately, it would need to establish a rigorous supervisory procedure to ensure that the contractor adheres to specifications. This would, inter alia, require setting up an independent safety organization to undertake a technical audit, initiate a training program for the first line supervisors, and establish a detailed code for supervisory and safety tests. Petrogas agreed to continue to employ engineering consultants which would assist in preparing a code of supervisory and safety tests required for the project (PA, Section 2.02).

60. No major environmental problems are likely to result from the implementation of the project. Natural gas is benign to the environment and its extensive use as domestic fuel is likely to reduce the pollution level in Cairo. The pipeline itself would pose no serious environmental hazard since it would be buried, and measures would be taken to assure proper protection, maintenance and operation. Design and construction would be in accordance with appropriate codes and standards to minimize the chances of over-pressurization, corrosion, and third party damage.

Financial Aspects

61. Although Petrogas activities as of its date of incorporation (September 1, 1978) were exclusively LPG distribution, the emphasis of its responsibilities will progressively shift towards domestic gas distribution. While sales of LPG and natural gas serve a similar purpose (provision of energy to domestic users), the financial and managerial characteristics of both operations are very different. LPG incremental investments are directly linked to demand and are relatively inexpensive but the cost of this imported energy is high. Gas operations in turn are highly capital intensive with large initial investments and low incremental expenditures as consumption develops, but cost of the gas, an indigenous commodity, is low.

62. Petrogas purchases LPG at a highly subsidized price from EGPC (LE 24 per ton as compared to current border price of over LE 300 per ton) and resells it at the domestic price (LE 52 per ton). The difference (or 'commission') was set in such a way as to cover operating, storage, distribution costs, etc., as well as a budgeted margin of about 12.5 percent of selling price. This system permits financial viability of Petrogas LPG activities independently of the actual economic cost of the energy. Since November 1973, there have been no increases in the selling price of LPG to the public, nor

review of purchasing price from EGPC; as LPG operating costs have increased significantly with domestic and international inflation, margins have shrunk from LE 6.5 per ton in 1973 to LE 4.8 per ton in 1978. EGPC therefore agreed to maintain Petrogas' commission on LPG operations at a level which would enable it to meet all its operating expenses related to LPG distribution (PA, Section 2.12).

63. As regards natural gas operations, Petrogas would purchase its supplies from EGPC. The latter and Petrogas agreed to enter into an agreement whereby EGPC would supply Petrogas with the quantities of gas required to service the two gas turbine stations and the domestic consumers connected to the distribution system, at a price which would not be less, in terms of British Thermal Units (BTU), than the domestic price of fuel oil to power stations (PA, Section 4.03). Based on the present domestic price for fuel oil, a transfer price for gas of LE 0.19 (\$0.28) per Mcf, increasing by 10 percent a year, has been assumed in the financial projections. Pricing of natural gas by Petrogas will be set at a level so as to ensure that over the longer term, operating revenues cover operating expenses, debt service, and provide a reasonable contribution to future expansion of natural gas facilities. Because of the necessary time lag in connecting sizeable numbers of consumers, Petrogas will require a number of years before it can earn a reasonable rate of return on its net fixed assets, to achieve the objectives set above. On the basis of present forecasts it is reasonable to request Petrogas to earn 9 percent on its net revalued natural gas fixed assets only after 1990. In the meantime, Petrogas agreed to set the price of natural gas at such levels that would generate revenues sufficient to cover, until the end of 1983, at least operating expenses (excluding depreciation), debt service, and working capital needs. In this context, it is understood that the average price of natural gas to domestic consumers would at no time be less than LE 3 (\$4.32) and to the two power stations to be supplied under the project not less than LE 0.51 (\$0.73) per Mcf. Petrogas further agreed to review on the basis of realistic forecasts, for the first time on March 31, 1983, and, thereafter, on March 31 in each fiscal year, the adequacy of its prices for natural gas to produce for the current and next following fiscal year the following rates of return on revalued net assets:

<u>1984-85</u>	<u>1986-87</u>	<u>1988-89</u>	<u>1990</u>	<u>1991 and thereafter</u>
3%	4%	5%	7%	not less than 9%

(PA, Section 4.06(a) and (b)). The Government and EGPC agreed to take all action necessary on their part to enable Petrogas to meet the above obligations (DCA, Section 3.01(a) and PA, Section 4.06(c)).

64. It is anticipated that an average revenue from sales to domestic consumers of LE 3 per Mcf would provide sufficient income to cover operating expenses and debt service requirements during the period 1980 through 1984. As regards the sale of gas to the two power stations under the project, the above price of LE 0.51 (\$0.73) per Mcf represents a sizeable increase over the LE 0.19 (\$0.28) per Mcf charged until recently to all power stations. The

above financial arrangements would ensure that Petrogas functions as a non-subsidized public utility for its gas operations incurring all actual costs involved in the process of gas distribution, while still achieving an adequate return.

65. Setting the price for domestic users at the proposed level represents a major increase above the current price of LPG (an effective doubling) and could impose undue hardship on poorer consumers. To make the increased cost burden more equitable, a graduated tariff structure will be designed which would still secure Petrogas the average revenue indicated above while increasing only slightly the average domestic fuel bill of the smaller consumers. To this end, EGPC and Petrogas agreed to undertake jointly a relevant tariff study by December 31, 1980; the results of the study would be submitted to the Association for review and comment. Petrogas would implement the agreed tariff by the time the first consumers are connected (PA, Section 4.04).

Other Financial Covenants

66. Debt Service: While Petrogas' sales revenues should in principle enable it to cover debt service and working capital needs, the Government agreed to provide in conjunction with EGPC the necessary contribution should a shortfall arise. Also, Petrogas agreed not to incur long term debt for its natural gas operations without consulting with IDA, unless a reasonable forecast of Petrogas' projected net revenues from its natural gas operations for each year during the term of the debt to be incurred shall be (i) for 1981 and 1982 not less than 1 times, and (ii) for each year thereafter not less than 1.5 times the projected debt service requirements for these operations in such year (DCA, Section 3.01(b) and PA, Section 4.05).

67. Accounts and Audit: Petrogas is obligated by law to prepare full accounts of its financial position and of annual operations by the end of every year. These accounts are subject to an external audit by the Egyptian "Central Accounting Authority". Like all other public sector companies, Petrogas follows the "Unified Accounting System". A general review of the accounting practices of EGPC will be carried out shortly as part of a study financed under Loan 1732 EGT. EGPC has agreed to consult with the Bank on the findings of the diagnostic study and to commence the implementation of a plan of action for itself and its subsidiaries by July 31, 1980. In addition, in order to provide for an efficient follow up of project development Petrogas agreed to establish, with the assistance of consultants, an information system for its natural gas operations, which would lead to complete and separate accounts for those operations. As to audit, Petrogas agreed to have the project accounts and its other accounts and financial statements independently audited and to supply IDA with copies of such statements no later than nine months after the end of every year (PA, Section 4.01(c)).

Benefits and Justification

68. The project's primary justification is the savings which accrue to the Government of Egypt by upgrading the use of its natural gas from a replacement for fuel oil to a substitute for gas oil and LPG. The project is the least cost method of meeting domestic energy demand in the project area and

makes optimal use of Abu Ghardig gas. Natural gas prices will be increased significantly under the project, and a progressive tariff structure will be instituted to shield small consumers from international energy prices for their basic cooking needs, while encouraging larger users to conserve energy. The project has been designed to result in a significant transfer of technology and skills to Petrogas, which will enable it to expand domestic gas distribution in Cairo and other urban areas in the future with minimal expatriate input.

69. In computing the project's internal rate of return it has been assumed that without the project Egypt would continue using LPG and gas oil to meet project area demands and would use the natural gas as a replacement for fuel oil in Cairo. LPG and, in all probability, gas oil would have to be imported. Thus project benefits, in effect, are represented by the differential between the border prices of imported LPG and gas oil (c.i.f.) and the border price of fuel oil (f.o.b.) which is otherwise released for export. On this basis the internal rate of return on the project is 43 percent. The major uncertainties of the project affecting the rate of return are the timing of the carcassing and conversion activities needed to connect domestic consumers and the potential for marginal fuel substitution once increased natural gas prices are implemented. If only 60 percent of projected consumption were to take place each year due to delays in connections and/or LPG kerosene substitution, the project's rate of return would be reduced to 40 percent. If project costs were to increase by 30 percent, the total project return would fall to 29 percent. If currently prevailing gas oil/LPG/fuel oil price differentials were to continue over the project lifetime, the return would increase to 67 percent.

70. As regards technical risks, natural gas projects carry risks which can be minimized, but not entirely eliminated. The project faces operational and geological risks, and carries with it the risks of costly delays. None of these are however significant deterrents to the project. While all natural gas pipelines carry operational risks of explosion, etc., industry has developed techniques and technology to reduce them to a minimum level. The existing gas production facilities at Abu Ghardig are operated by an experienced oil company (GUPCO). Proven gas reserves are more than adequate to meet project needs. Possibilities of significantly augmenting gas supplies for Cairo are high. Since Cairo is not in the earthquake zone, other geological risks are minimal. However, slippages in implementation are likely for a project of this nature and magnitude. Project implementation has been designed to minimize these risks. The entire project has been awarded to one contractor so as to reduce delays arising out of inadequate coordination. In addition, substantial penalties for delays have been stipulated in the contract. Similarly, the contract contains significant incentives for early completion.

71. An economic risk of the project is the possibility that domestic consumers might prefer to continue to use heavily subsidized LPG and kerosene or electricity rather than the high priced natural gas. While it is expected that the energy pricing study financed under the previous loan to EGPC (see para. 40 above) will recommend an increase in kerosene and LPG prices, it

cannot be assumed that such recommendations will be implemented by the time this project is completed. Therefore, in addition to continuing discussions with the Government on the general issue of energy pricing, the potential for fuel substitution and its possible effect on project benefits has been carefully reviewed. With respect to kerosene, odor and safety problems limit its current and future use to the lowest income areas. In those areas, however, the progressive tariff structure with its lifeline rate for small users will minimize any substitution incentive. In the more affluent areas, electricity and LPG are the relevant candidates for natural gas substitution. With respect to electricity, very high front-end costs would be involved as all electric stoves have to be imported. In addition, the present power tariff of LE .02/kWh is significantly above the natural gas equivalent price even allowing for possible efficiency advantages of electric appliances. The risk of substantial switching back to LPG is limited because (i) the Government will close LPG distribution centers in the project area so that sizeable transportation costs would be involved; (ii) the initial houses connected to the distribution system will have to trade in the LPG cylinders in order to be converted free of charge to natural gas; (iii) switching back to LPG would require either re-conversion or replacement of appliances, which would represent high initial costs; and (iv) natural gas has advantages over LPG in terms of safety and supply which will be advertised and appreciated by such consumers. Sensitivity tests show that marginal substitution back to LPG or kerosene caused by the introduction of higher priced gas would have only a minimal effect on the project rate of return.

PART V - LEGAL INSTRUMENTS AND AUTHORITY

72. The draft Development Credit Agreement between the Arab Republic of Egypt and the Association, the draft Project Agreement between the Association, the Egyptian General Petroleum Corporation and Petrogas, and the Recommendation of the Committee provided for in Article V, Section 1. d. of the Articles of Agreement, are being distributed to the Executive Directors separately.

73. Special conditions of the project are listed in Section 3 of Annex III.

74. The execution of a Subsidiary Loan Agreement between the Government and Petrogas is a special condition of effectiveness of the credit (Development Credit Agreement, Section 5.02(b)).

75. I am satisfied that the proposed Development Credit would comply with the Articles of Agreement of the Association.

PART VI - RECOMMENDATION

76. I recommend that the Executive Directors approve the proposed Development Credit.

Robert S. McNamara
President

By Ernest Stern

Attachments
April 30, 1980
Washington, D.C.

TABLE 3A
EGYPT - SOCIAL INDICATORS DATA SHEET

LAND AREA (THOUSAND SQ. KM.)	EGYPT			REFERENCE GROUPS (ADJUSTED AVERAGES - MOST RECENT ESTIMATE) /a			
	TOTAL	1960 /b	1970 /b	MOST RECENT ESTIMATE /b	SAME	SAME	NEXT HIGHER
					GEOGRAPHIC REGION /c	INCOME GROUP /d	INCOME GROUP /e
TOTAL	1001.4						
AGRICULTURAL	29.6						
GNP PER CAPITA (US\$)	90.0	150.0	400.0	1532.5	209.6	467.5	
ENERGY CONSUMPTION PER CAPITA (KILOGRAMS OF COAL EQUIVALENT)	298.0	275.0	473.0	838.1	83.9	262.1	
POPULATION AND VITAL STATISTICS							
POPULATION, MID-YEAR (MILLIONS)	25.9	32.6	37.8	.	.	.	
URBAN POPULATION (PERCENT OF TOTAL)	38.0	42.3	43.9	49.0	16.2	24.6	
POPULATION PROJECTIONS							
POPULATION IN YEAR 2000 (MILLIONS)			58.0	.	.	.	
STATIONARY POPULATION (MILLIONS)			90.0	.	.	.	
YEAR STATIONARY POPULATION IS REACHED			2105	.	.	.	
POPULATION DENSITY							
PER SQ. KM.	26.0	33.0	39.0	19.9	49.4	45.3	
PER SQ. KM. AGRICULTURAL LAND	982.0	1125.0	1324.0	99.0	252.0	149.0	
POPULATION AGE STRUCTURE (PERCENT)							
0-14 YRS.	42.0	42.1	40.0	45.6	43.1	45.2	
15-64 YRS.	55.0	54.7	56.0	51.4	53.2	51.9	
65 YRS. AND ABOVE	3.0	3.2	4.0	2.8	3.0	2.8	
POPULATION GROWTH RATE (PERCENT)							
TOTAL	2.4	2.3	2.1	3.0	2.4	2.7	
URBAN	6.0	3.4	2.7	5.2	4.6	4.3	
CRUDE BIRTH RATE (PER THOUSAND)							
CRUDE BIRTH RATE (PER THOUSAND)	44.0	40.0	36.0	43.7	42.4	39.4	
CRUDE DEATH RATE (PER THOUSAND)							
CRUDE DEATH RATE (PER THOUSAND)	19.0	15.0	13.0	13.5	15.9	11.7	
GROSS REPRODUCTION RATE							
GROSS REPRODUCTION RATE	2.8/f	3.0	2.3	3.2	2.9	2.7	
FAMILY PLANNING							
ACCEPTORS, ANNUAL (THOUSANDS)	..	206.0	187.0	..	.	.
USERS (PERCENT OF MARRIED WOMEN)	..	9.0	21.1	..	12.2	13.2	
FOOD AND NUTRITION							
INDEX OF FOOD PRODUCTION PER CAPITA (1969-71=100)							
INDEX OF FOOD PRODUCTION PER CAPITA (1969-71=100)	92.6	99.0	95.0	90.8	98.2	99.6	
PER CAPITA SUPPLY OF CALORIES (PERCENT OF REQUIREMENTS)							
PER CAPITA SUPPLY OF CALORIES (PERCENT OF REQUIREMENTS)	95.0	106.0	113.0	99.0	93.3	94.7	
PROTEINS (GRAMS PER DAY)							
PROTEINS (GRAMS PER DAY)	66.0	66.0	70.7	63.6	52.1	54.3	
OF WHICH ANIMAL AND PULSE							
OF WHICH ANIMAL AND PULSE	17.0/g	16.0	16.0	16.0	13.6	17.4	
CHILD (AGES 1-4) MORTALITY RATE	31.0	23.0	18.0	15.9	18.5	11.4	
HEALTH							
LIFE EXPECTANCY AT BIRTH (YEARS)	46.0	51.0	54.0	53.8	49.3	54.7	
INFANT MORTALITY RATE (PER THOUSAND)	..	..	108.0	..	105.4	68.1
ACCESS TO SAFE WATER (PERCENT OF POPULATION)							
TOTAL	..	..	66.0	56.4	26.3	34.4
URBAN	..	..	88.0	83.4	58.5	57.9
RURAL	..	..	50.0	34.3	15.8	21.2
ACCESS TO EXCRETA DISPOSAL (PERCENT OF POPULATION)							
TOTAL	..	..	..	59.1	16.0	40.8
URBAN	..	..	..	78.2	65.1	71.3
RURAL	..	..	..	26.4	3.5	27.7
POPULATION PER PHYSICIAN							
POPULATION PER PHYSICIAN	2600.0	1910.0	1190.0/h	3677.0	11396.4	6799.4	
POPULATION PER NURSING PERSON							
POPULATION PER NURSING PERSON	2730.0/h	1640.0/h	1150.0/h	1730.6	5552.4	1522.1	
POPULATION PER HOSPITAL BED							
TOTAL	480.0	460.0	460.0	577.0	1417.1	726.5	
URBAN	..	290.0	250.0	..	197.3	272.7	
RURAL	..	2110.0	2090.0	..	2445.9	1404.4	
ADMISSIONS PER HOSPITAL BED	..	..	..	21.8	24.8	27.5
HOUSING							
AVERAGE SIZE OF HOUSEHOLD							
TOTAL	5.0	..	5.8	5.8	5.3	5.4	
URBAN	4.8	..	5.6	5.5	4.9	5.1	
RURAL	..	..	6.0	6.0	5.4	5.5
AVERAGE NUMBER OF PERSONS PER ROOM							
TOTAL	1.9	..	1.8	..	..	..
URBAN	1.6	..	..	..	..	..
RURAL	..	..	..	..	..	..
ACCESS TO ELECTRICITY (PERCENT OF DWELLINGS)							
TOTAL	38.0	..	45.7	45.1	23.5	28.1	
URBAN	37.8	..	77.0	67.9	17.8	45.1	
RURAL	..	..	19.6	..	..	9.9

TABLE 3A
EGYPT - SOCIAL INDICATORS DATA SHEET

	EGYPT			REFERENCE GROUPS (ADJUSTED AVERAGES - MOST RECENT ESTIMATE) /a			
	1960 /b	MOST RECENT ESTIMATE /b		SAME GEOGRAPHIC REGION /c	SAME INCOME GROUP /d	NEXT HIGHER INCOME GROUP /e	
		1970					
EDUCATION							
ADJUSTED ENROLLMENT RATIOS							
PRIMARY:	TOTAL	66.0	69.0	72.0	85.0	63.3	82.7
	MALE	80.0	84.0	88.0	103.7	79.1	87.3
	FEMALE	52.0	53.0	56.0	66.0	48.4	75.8
SECONDARY:	TOTAL	16.0	32.0	42.0	27.6	16.7	21.4
	MALE	24.0	44.0	54.0	39.2	22.1	33.0
	FEMALE	9.0	21.0	29.0	20.8	10.2	15.5
VOCATIONAL ENROL. (X OF SECONDARY)		22.0	19.0	18.0	4.3	5.6	9.8
PUPIL-TEACHER RATIO							
	PRIMARY	39.0	38.0	40.0	32.6	41.0	34.1
	SECONDARY	16.0	25.0	29.0	23.4	21.7	23.4
ADULT LITERACY RATE (PERCENT)		26.0	..	44.0	41.4	31.2	54.0
CONSUMPTION							
PASSENGER CARS PER THOUSAND POPULATION							
		3.0	4.0	6.4	16.7	2.8	9.3
RADIO RECEIVERS PER THOUSAND POPULATION							
		58.0	132.0	138.0	147.9	27.2	76.9
TV RECEIVERS PER THOUSAND POPULATION							
		1.9	16.0	17.0	36.0	2.4	13.5
NEWSPAPER ("DAILY GENERAL INTEREST") CIRCULATION PER THOUSAND POPULATION							
		..	22.0	21.0	17.9	5.3	18.3
CINEMA ANNUAL ATTENDANCE PER CAPITA							
		3.0	2.0	..	2.9	1.1	2.5
LABOR FORCE							
TOTAL LABOR FORCE (THOUSANDS)							
		7482.0	9319.0	9600.0	..	..	..
FEMALE (PERCENT)							
		7.3	7.2	7.6	8.6	24.8	29.2
AGRICULTURE (PERCENT)							
		58.4	54.4	51.0	43.0	69.4	62.7
INDUSTRY (PERCENT)							
		12.2	18.8	26.0	23.7	10.0	11.9
PARTICIPATION RATE (PERCENT)							
	TOTAL	28.9	28.0	28.0	26.7	36.9	37.1
	MALE	53.2	51.5	51.3	46.4	52.4	48.8
	FEMALE	4.2	4.1	4.3	5.1	18.0	20.4
ECONOMIC DEPENDENCY RATIO		1.6	1.6	1.8	1.8	1.2	1.4
INCOME DISTRIBUTION							
PERCENT OF PRIVATE INCOME RECEIVED BY							
	HIGHEST 5 PERCENT OF HOUSEHOLDS	17.5/1	17.4/1,1	22.0	21.4	..	15.2
	HIGHEST 20 PERCENT OF HOUSEHOLDS	44.4/1	42.8/1,1	49.2	48.6	..	48.2
	LOWEST 20 PERCENT OF HOUSEHOLDS	6.6/1	7.0/1,1	5.1	5.3	..	6.3
	LOWEST 40 PERCENT OF HOUSEHOLDS	17.5/1	18.7/1,1	14.8	15.0	..	16.3
POVERTY TARGET GROUPS							
ESTIMATED ABSOLUTE POVERTY INCOME LEVEL (US\$ PER CAPITA)							
	URBAN	..	..	116.0	201.3	99.2	241.3
	RURAL	..	..	84.0	134.2	78.9	136.6
ESTIMATED RELATIVE POVERTY INCOME LEVEL (US\$ PER CAPITA)							
	URBAN	..	..	153.0	288.6	91.9	179.7
	RURAL	..	..	65.0	107.0	54.8	103.7
ESTIMATED POPULATION BELOW ABSOLUTE POVERTY INCOME LEVEL (PERCENT)							
	URBAN	..	..	21.0	22.9	44.1	24.8
	RURAL	..	..	25.0	31.2	53.9	37.5

.. Not available
 . Not applicable.

NOTES

/a The adjusted group averages for each indicator are population-weighted geometric means, excluding the extreme values of the indicator and the most populated country in each group. Coverage of countries among the indicators depends on availability of data and is not uniform.

/b Unless otherwise noted, data for 1960 refer to any year between 1959 and 1961; for 1970, between 1969 and 1971; and for Most Recent Estimate, between 1974 and 1977.

/c North Africa & Middle East; /d Low Income (\$280 or less per capita, 1976); /e Lower Middle Income (\$281-550 per capita, 1976); /f 1950-55; /g 1960-62; /h Registered, not all practicing in the country; /i 1964-65; /j rural expenditure only.

Most Recent Estimate of GNP per capita is for 1978.

DEFINITIONS OF SOCIAL INDICATORS

Note: The adjusted group averages for each indicator are population-weighted geometric means, excluding the extreme values of the indicator and the most populated country in each group. Coverage of countries among the indicators depends on availability of data and is not uniform. Due to lack of data, group averages for Capital Surplus Oil Exporters and indicators of access to water and excreta disposal, housing, income distribution and poverty are simple population-weighted geometric means without the exclusion of extreme values.

LAND AREA (thousand sq. km)

Total - Total surface area comprising land area and inland waters.
Agricultural - Most recent estimate of agricultural area used temporarily or permanently for crops, pastures, market and kitchen gardens or to lie fallow.

GNP PER CAPITA (US\$) - GNP per capita estimates at current market prices, calculated by same conversion method as World Bank Atlas (1975-77 basis); 1960, 1970, and 1977 data.

ENERGY CONSUMPTION PER CAPITA - Annual consumption of commercial energy (coal and lignite, petroleum, natural gas and hydro-, nuclear and geothermal electricity) in kilograms of coal equivalent per capita.

POPULATION AND VITAL STATISTICS

Total population, mid-year (millions) - As of July 1; if not available, average of two end-year estimates; 1960, 1970, and 1977 data.

Urban population (percent of total) - Ratio of urban to total population; different definitions of urban areas may affect comparability of data among countries.

Population density

Per sq. km. - Mid-year population per square kilometer (100 hectares) of total area.

Per sq. km. agriculture land - Computed as above for agricultural land only.

Population age structure (percent) - Children (0-14 years), working-age (15-64 years), and retired (65 years and over) as percentages of mid-year population.

Population growth rate (percent) - total, and urban - Compound annual growth rates of total and urban mid-year populations for 1950-60, 1960-70, and 1970-75.

Crude birth rate (per thousand) - Annual live births per thousand of mid-year population; ten-year arithmetic averages ending in 1960 and 1970 and five-year average ending in 1975 for most recent estimate.

Crude death rate (per thousand) - Annual deaths per thousand of mid-year population; ten-year arithmetic averages ending in 1960 and 1970 and five-year average ending in 1975 for most recent estimate.

Gross reproduction rate - Average number of daughters a woman will bear in her normal reproductive period if she experiences present age-specific fertility rates; usually five-year averages ending in 1960, 1970, and 1975.

Family planning - acceptors, annual (thousands) - Annual number of acceptors of birth-control devices under auspices of national family planning program.

Family planning - users (percent of married women) - Percentage of married women of child-bearing age (15-44 years) who use birth-control devices to all married women in same age group.

FOOD AND NUTRITION

Index of food production per capita (1970=100) - Index number of per capita annual production of all food commodities.

Per capita supply of calories (percent of requirements) - Computed from energy equivalent of net food supplies available in country per capita per day. Available supplies comprise domestic production, imports less exports, and changes in stock. Net supplies exclude animal feed, seeds, quantities used in food processing, and losses in distribution. Requirements were estimated by FAO based on physiological needs for normal activity and health considering environmental temperature, body weights, age and sex distributions of population, and allowing 10 percent for waste at household level.

Per capita supply of protein (grams per day) - Protein content of per capita net supply of food per day. Net supply of food is defined as above. Requirements for all countries established by USDA provide for a minimum allowance of 60 grams of total protein per day and 20 grams of animal and pulse protein, of which 10 grams should be animal protein. These standards are lower than those of 75 grams of total protein and 23 grams of animal protein as an average for the world, proposed by FAO in the Third World Food Survey.

Per capita protein supply from animal and pulse - Protein supply of food derived from animals and pulses in grams per day.

Child (ages 1-4) mortality rate (per thousand) - Annual deaths per thousand in age group 1-4 years, to children in this age group.

HEALTH

Life expectancy at birth (years) - Average number of years of life remaining at birth; usually five-year averages ending in 1960, 1970, and 1975.

Infant mortality rate (per thousand) - Annual deaths of infants under one year of age per thousand live births.

Access to safe water (percent of population) - total, urban, and rural - Number of people (total, urban, and rural) with reasonable access to safe water supply (includes treated surface waters or untreated but uncontaminated water such as that from protected boreholes, springs, and sanitary wells) as percentages of their respective populations. In an urban area a public fountain or standpost located not more than 200 meters from a house may be considered as being within reasonable access of that house. In rural areas reasonable access would imply that the housewife or members of the household do not have to spend a disproportionate part of the day in fetching the family's water needs.

Access to excreta disposal (percent of population) - total, urban, and rural - Number of people (total, urban, and rural) served by excreta disposal as percentages of their respective populations. Excreta disposal may include the collection and disposal, with or without treatment, of human excreta and waste-water by water-borne systems or the use of pit privies and similar installations.

Population per physician - Population divided by number of practicing physicians qualified from a medical school at university level.

Population per nursing person - Population divided by number of practicing male and female graduate nurses, practical nurses, and assistant nurses.

Population per hospital bed - total, urban, and rural - Population (total, urban, and rural) divided by their respective number of hospital beds available in public and private general and specialized hospital and rehabilitation centers. Hospitals are establishments permanently staffed by at least one physician. Establishments providing principally custodial care are not included. Rural hospitals, however, include health and medical centers not permanently staffed by a physician (but by a medical assistant, nurse, midwife, etc.) which offer in-patient accommodation and provide a limited range of medical facilities.

Admissions per hospital bed - Total number of admissions to or discharges from hospitals divided by the number of beds.

HOUSING

Average size of household (persons per household) - total, urban, and rural - A household consists of a group of individuals who share living quarters and their main meals. A boarder or lodger may or may not be included in the household for statistical purposes. Statistical definitions of household vary.

Average number of persons per room - total, urban, and rural - Average number of persons per room in all, urban, and rural occupied conventional dwellings, respectively. Dwellings exclude non-permanent structures and unoccupied parts.

Access to electricity (percent of dwellings) - total, urban, and rural - Conventional dwellings with electricity in living quarters as percentage of total, urban, and rural dwellings respectively.

EDUCATIONAdjusted enrollment ratios

Primary school - total, and female - Total and female enrollment of all ages at the primary level as percentages of respectively primary school-age populations; normally includes children aged 6-11 years but adjusted for different lengths of primary education; for countries with universal education enrollment may exceed 100 percent since some pupils are below or above the official school age.

Secondary school - total, and female - Computed as above; secondary education requires at least four years of approved primary instruction; provides general vocational, or teacher training instructions for pupils usually of 12 to 17 years of age; correspondence courses are generally excluded.

Vocational enrollment (percent of secondary) - Vocational institutions include technical, industrial, or other programs which operate independently or as departments of secondary institutions.

Pupil-teacher ratio - primary, and secondary - Total students enrolled in primary and secondary levels divided by numbers of teachers in the corresponding levels.

Adult literacy rate (percent) - Literate adults (able to read and write) as a percentage of total adult population aged 15 years and over.

CONSUMPTION

Passenger cars (per thousand population) - Passenger cars comprise motor cars seating less than eight persons; excludes ambulances, hearses and military vehicles.

Radio receivers (per thousand population) - All types of receivers for radio broadcasts to general public per thousand of population; excludes unlicensed receivers in countries and in years when registration of radio sets was in effect; data for recent years may not be comparable since most countries abolished licensing.

TV receivers (per thousand population) - TV receivers for broadcast to general public per thousand population; excludes unlicensed TV receivers in countries and in years when registration of TV sets was in effect.

Newspaper circulation (per thousand population) - Shows the average circulation of "daily general interest newspaper", defined as a periodical publication devoted primarily to recording general news. It is considered to be "daily" if it appears at least four times a week.

Cinema annual attendance per capita per year - Based on the number of tickets sold during the year, including admissions to drive-in cinemas and mobile units.

EMPLOYMENT

Total labor force (thousands) - Economically active persons, including armed forces and unemployed but excluding housewives, students, etc. Definitions in various countries are not comparable.

Female (percent) - Female labor force as percentage of total labor force.

Agriculture (percent) - Labor force in farming, forestry, hunting and fishing as percentage of total labor force.

Industry (percent) - Labor force in mining, construction, manufacturing and electricity, water and gas as percentage of total labor force.

Participation rate (percent) - total, male, and female - Total, male, and female labor force as percentages of their respective populations.

These are ILO's adjusted participation rates reflecting age-sex structure of the population, and long time trend.

Economic dependency ratio - Ratio of population under 15 and 65 and over to the labor force in age group of 15-64 years.

INCOME DISTRIBUTION

Percentage of private income (both in cash and kind) received by richest 5 percent, richest 20 percent, poorest 20 percent, and poorest 40 percent of households.

POVERTY TARGET GROUPS

Estimated absolute poverty income level (US\$ per capita) - urban and rural - Absolute poverty income level is that income level below which a minimal nutritionally adequate diet plus essential non-food requirements is not affordable.

Estimated relative poverty income level (US\$ per capita) - urban and rural - Relative poverty income level is that income level less than one-third per capita personal income of the country.

Estimated population below poverty income level (percent) - urban and rural - Percent of population (urban and rural) who are either "absolute poor" or "relative poor" whichever is greater.

ECONOMIC INDICATORS

GNP PER CAPITA (1978)-US\$400
(World Bank Atlas Methodology)

MID-1978 POPULATION - 38.7 Million

GROSS NATIONAL PRODUCT IN 1978

ANNUAL RATE OF GROWTH (% Constant Prices)

	US\$ Mln.	%	ANNUAL RATE OF GROWTH (% Constant Prices)		
			1961-66 1/	1967-74 1/	1975-78 2/
GNP at Market Prices	13,600	100.0	5.4	3.6	13.3
Gross Domestic Investment	3,590	26.4	10.7	5.4	24.9
Current Account Balance	-1,760	12.9	.	.	.
Export of Goods, NFS	3,530	26.0	4.3	6.2	7.8
Import of Goods, NFS	6,490	47.7	8.8	9.2	7.0

OUTPUT, LABOR FORCE AND PRODUCTIVITY IN 1978

	Value Added		Labor Force 3/		V. A. Per Worker	
	US\$ Mln.	%	Mln.	%	US \$	%
Agriculture	3,350	28.7	4.135	41.1	810	15.7
Industry 4/	3,460	29.6	1.902	18.9	1820	35.4
Distributive Sector	2,340	20.0	1.560	15.5	1500	29.1
Services	2,530	21.7	2.472	24.5	1020	19.8
Total/Average	11680/2920	100.0	10,069	100.0	1160	100.0

GOVERNMENT FINANCE

	General Government 5/		
	US\$ Mln.	% of GNP	
	1978	1974	1978
Current Receipts	5,310	33.9	39.1
Current Expenditure	4,640	34.0	34.2
Current Surplus/Deficit	670	-0.1	4.9
Capital Expenditures	3,310	13.8	24.3
External Financing (net)	1,140	3.3	8.4

MONEY, CREDIT and PRICES

	1973	1974	1975	1976	1977	1978
	(Million L.E. outstanding end period)					
Money and Quasi Money	1207	1515	1883	2417	3185	4090
Bank Credit to Public Sector	1852	2338	3527	4123	4775	6035
Bank Credit to Private Sector	102	149	230	251	434	570
	(Percentages or Index Numbers)					
Money and Quasi Money as % of GDP	31.7	36.1	38.5	38.5	43.4	47.5
Wholesale Price Index (1973 = 100)	100.0	112.4	119.1	131.4	145.0	157.7
Annual percentage changes in:						
Wholesale Price Index	10.4	12.4	6.0	10.3	10.3	8.7
Bank Credit to Public Sector	9.6	26.2	50.9	16.9	15.8	26.4
Bank Credit to Private Sector	10.9	46.1	54.4	9.1	72.9	31.3

NOTE: All conversions to dollars in this table are at the 1978 weighted exchange rate of US\$1.496 = 1 LE.

1/ At 1965 Constant Prices.

2/ At 1975 Constant Prices.

3/ Total labor force; unemployed are allocated to sector of their normal occupation.

4/ Manufacturing and Mining, Petroleum, Electricity and Construction.

5/ Local Government comprises a small part of General Government.

. not applicable

BALANCE OF PAYMENTS

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
		(US\$ million)		
Exports of Goods, NFS	2,194	2,759	3,537	3,530
Imports of Goods, NFS	-4,931	-4,910	-5,486	-6,490
Imports of Foreign Oil Companies	-140	-240	-330	-290
Workers' Remittances	366	755	894	1,760
Other Factor Services (Net)	-104	-202	-205	-270
Net Factor Services	<u>262</u>	<u>553</u>	<u>689</u>	<u>1,490</u>
Balance on Current Account	-2,615	-1,838	-1,590	-1,760
Amortization	-600	-734	-812	-900
Total Deficit	<u>-3,215</u>	<u>-2,572</u>	<u>-2,402</u>	<u>-2,660</u>
Direct Foreign Investment	140	300	434	440
Grants	1,076	792	445	345
MLT Borrowing	<u>2,509</u>	<u>1,622</u>	<u>3,027</u>	<u>2,585</u>
	<u>3,725</u>	<u>2,714</u>	<u>3,906</u>	<u>3,370</u>
Other Capital (Net)	-152	236	-961	-495
Residual	-420	-333	-348	-145
Increase in Reserves (+)	-62	45	195	71
Gross Reserves (end year)	294	339	534	605
Fuel and Related Materials				
Imports				
of which: Petroleum	-477	-385	-250	-200
Exports				
of which: Petroleum	164	268	600	730

MERCHANDISE EXPORTS (AVERAGE 1975-78)

	<u>US\$ Mln.</u>	<u>%</u>
Cotton	354	19.8
Yarn and Textiles	364	20.4
Petroleum	442	24.7
Other Agriculture	224	12.5
All other commodities	<u>405</u>	<u>22.6</u>
Total	1,789	100.0

EXTERNAL DEBT (MLT), DECEMBER 31, 1978

	<u>US\$ Mln.</u>
Public debt, incl. guaranteed	9,970 ^{1/}
Repayments on public debt	900
Interest on public debt	390

DEBT SERVICE RATIO FOR 1978 ^{2/} 23.7%

^{1/} \$10,590 million as of July 31, 1979.

^{2/} Ratio of debt service to exports of goods and services.

February 4, 1980

THE STATUS OF BANK GROUP OPERATIONS IN EGYPT

A. STATEMENT OF BANK LOANS AND IDA CREDITS
(As of March 31, 1980)

Loan/Credit Numbers	Approved FY	Borrower	Purpose	Amount in million US dollars less cancellations		
				Bank	IDA	Undisbursed
Ln 243-UAR	60	SCA	Suez Canal Expansion	56.5	--	-
Cr 181-UAR	70	UAR	Nile Delta Drainage	--	26.0	1.9
Cr 284-UAR	72	ARE	Railways I	--	30.0	0.8
Cr 393-UAR	73	ARE	Upper Egypt Drainage	--	36.0	4.0
Cr 412-UAR	73	ARE	Development Industrial Bank 1/	--	15.0	0.3
Cr 423-UAR	74	ARE	Cotton Ginning Rehabilitation	--	18.5	3.5
Cr 437-UAR	74	ARE	Population	--	5.0	0.1
Cr 484-UAR	74	ARE	Talkha Fertilizer	--	20.0	0.4
Cr 524-EGT	75	ARE	Ag/Ind Imports	--	35.0	0.3
Ln 1062-EGT	75	ARE	Ag/Ind Imports	35.0	--	1.2
Ln 1064-EGT	75	SCA	Suez Canal Rehabilitation	50.0	--	21.7
Ln 1085-EGT	75	ARE	Tourah Cement	40.0	--	4.0
Ln 1098-EGT	75	ER	Railways II	37.0	--	10.4
Cr 548-EGT	75	ARE	Telecommunications	--	30.0	3.1
Cr 576-EGT	76	ARE	Development Industrial Bank II 1/	--	25.0	0.5
Ln 1239-EGT	76	APA	Alexandria Port	45.0	--	32.7
Ln 1276-T-EGT 2/	76	ARE	Fruit and Vegetable Dev.	50.0	--	42.3
Cr 637-EGT	76	ARE	Upper Egypt Drainage II	--	40.0	23.1
Ln 1285-EGT	76	ARE	Upper Egypt Drainage II	10.0	--	10.0
Ln 1292-EGT	76	ARE	Textile Rehabilitation	52.0	--	34.8
Ln 1369-EGT	77	AWA	Alexandria Water Supply	56.0	--	45.2
Cr 681-EGT	77	ARE	Education	--	25.0	5.8
Cr 719-EGT	77	ARE	Nile Delta Drainage II	--	27.0	13.9
Ln 1439-EGT	77	ARE	Nile Delta Drainage II	27.0	--	27.0
Ln 1440-T-EGT 2/	77	ARE	Nile Delta Drainage II	12.0	--	12.0
Ln 1453-EGT	77	EEA	Regional Electrification	48.0	--	28.6
Ln 1456-EGT	77	ARE	Industrial Imports	70.0	--	38.0
Ln S-005-ECT	77	ARE	Iron Ore Beneficiation and Engineering	2.5	--	1.1
Ln 1482-EGT	78	SCA	Suez Canal Expansion	100.0	--	41.4
Cr S-20-EGT	78	ARE	Water Supply Engineering	--	2.0	0.2
Cr 774-EGT	78	ARE	Telecommunications II	--	53.0	53.0
Ln 1533-EGT	78	DIB	Development Industrial Bank III	40.0	--	28.0
Cr 830-EGT	78	ARE	Agricultural Development	--	32.0	32.0
Cr 831-EGT	78	ARE	Urban Development	--	14.0	13.7
Cr 850-EGT	79	ARE	Second Population	--	25.0	24.9
Cr 868-EGT	79	ARE	Second Education	--	40.0	38.7
Ln S-14-EGT	79	ARE	New Valley Phosphate Engineering and Technical Assistance	11.0	--	4.3
Cr 909-EGT	79	ARE	Tourism	--	32.5	32.5
Ln 1732-EGT	79	ARE	Gulf of Suez Gas	75.0	--	75.0
Cr 935-EGT	79	ARE	Shoubrah El Kheima Thermal Power	--	37.0	37.0
Ln 1733-EGT	79	EEA	Shoubrah El Kheima Thermal Power 4/	102.0	--	102.0
	80	ARE	Agroindustries 3/	--	45.0	45.0
	80	DIB	DIB 3/	50.0	--	50.0
	80	ARE	Textiles 3/	69.0	--	69.0
Totals				1038.0	613.0	1013.4
Of which has been repaid				58.5		
Total now outstanding				979.5		
Amount sold			7.5			
Of which has been repaid			7.4		0.1	
Total now held by Bank and IDA				979.4	613.0	

B. STATEMENT OF IFC INVESTMENTS

Year	Obligor	Type of Business	(Amount in US\$ million)		
			Loan	Equity	Total
1976	Arab Ceramic Company	Ceramic Industry	4.25	.75	5.0
			(Plus .635 contingency commitment)		(5.635)
1977	Nile Clothing Company	Ready-Made Garment Industry	0.40	0.20	0.60
1978	Delta Sugar Company	Agricultural Production, mainly sugar	20.0	2.00	22.00
			(Plus 1.0 standby commitment)		(23.00)
1979	Ismailia Misr Poultry Company	Food and Food Processing	5.97	1.52	7.49
1979	Ismailia Fish Farming Company	Food and Food Processing	1.929	.453	2.382
			(Plus 0.1 contingency commitment)		(2.482)
			32.549	4.923	37.472
			(Plus contingency commitment)		(39.207)

1/ Formerly Bank of Alexandria
2/ Third Window Loan
3/ Not yet signed
4/ Not included in EEC Sp. Action Credit 20 of \$35.0

C. PROJECTS IN EXECUTION 1/

Cr. No. 181-UAR - Nile Delta Drainage I Project; US\$26 million Credit of April 17, 1970; Effective Date: December 22, 1970; Closing Date: December 31, 1980

The only outstanding activity on this project is installation of field drainage, which remains to be accomplished on about 9 percent of the project area of 950,000 feddans. Progress on this activity is slow due mainly to management problems with public sector contracting companies. Work is complete on other major components including some 1,700 km surface drains and eleven pumping stations. The Drainage Authority expects to achieve full completion of the project ending December 1980.

Cr. No. 284-UAR - Egyptian Railway Project; US\$30 million Credit of February 9, 1972; Effective Date: July 17, 1972; Closing Date: June 30, 1980.

The project generally was implemented satisfactorily but progress on the electrical signalling items which is 95 percent complete, has been at a standstill for the last two years due to difficulties with municipal authorities regarding site occupation. Successive extensions of the loan period have been necessary. ER has been informed that no further extensions will be agreed beyond the present closing date. The disbursement total is likely to be US\$29 million.

Cr. No. 393-UAR - Upper Egypt Drainage I Project; US\$36 million Credit of June 8, 1973; Effective Date: November 28, 1973; Closing Date: July 31, 1981.

Work is almost complete on some 1,640 km surface drains in 300,000 feddan project area. Of the five pumping stations, one is operational and work on the others is about 82 percent complete. Installation of tile drains is about 61 percent complete. Progress on this activity is slow because of inadequate management by contractors and physical difficulties arising from sugarcane which occupies in the cropping pattern some 50 percent of the area. Bilharzia Control Program is proceeding as scheduled. Progress on procurement is satisfactory.

1/ These notes are designed to inform the Executive Directors regarding the progress of projects in execution, and in particular to report any problems which are being encountered, and the action being taken to remedy them. They should be read in this sense, and with the understanding that they do not purport to present a balanced evaluation of strengths and weaknesses in project execution.

Cr. No. 423-UAR - Cotton Ginning Rehabilitation Project; US\$18.5 million Credit of July 30, 1973; Effective Date: February 15, 1974; Closing Date: December 31, 1980.

The scaled-down project financed by IDA is estimated to be completed in 1982. The remainder of the full project is being financed by a loan from the Saudi Fund for Development. The foreign cost estimates for the project have remained basically unchanged, but the local component continues to escalate mainly due to delays caused by shortage of local funds.

Cr. No. 484-UAR - Talkha II Fertilizer Project; US\$20 million Credit of June 24, 1974; Effective Date: January 22, 1975; Closing Date: April 1, 1980.

Project is nearing mechanical completion; procurement has been completed. According to the latest indication, the project is expected to be commissioned by mid-1980, about two years behind schedule, partly because of delays in civil works and procurement.

Cr. No. 524-EGT and Ln. No. 1062-EGT - Agricultural and Industrial Imports Project; US\$35 million Credit and US\$35 million Loan of December 20, 1974; Effective Date: March 19, 1975; Closing Date: December 31, 1980.

The bulk of the procurement actions has been completed and only about \$0.3 million and \$1.2 million remain to be disbursed under the credit and loan, respectively. The Government will utilize the uncommitted funds for a portion of the funds necessary for engineering services for the proposed Pulp and Paper project.

Ln. No. 1064-EGT - Suez Canal Rehabilitation Project; US\$50 million Loan of December 20, 1974; Effective Date: April 21, 1975; Closing Date: December 31, 1980.

Progress in implementation has improved and about 85 percent of the project funds have been committed. The design of the last major item of equipment to be financed from the loan is now being undertaken. Because of the initial delay in implementation, the project is now expected to be completed only by December 1981; the closing date of the loan will, therefore, have to be extended.

Ln. No. 1085-EGT - Tourah Cement Expansion Project; US\$40 million Loan of February 10, 1975; Effective Date: June 9, 1975; Closing Date: June 30, 1980.

Procurement of machinery and equipment is completed. Most items are already on site being erected. Slow civil works execution has further delayed project execution. Thus start-up of commercial operations is expected to be only towards early 1981.

Ln. No. 1098-EGT - Railways II Project; US\$37 million Loan of April 2, 1975; Effective Date: August 20, 1975; Closing Date: June 30, 1981.

Investment in mobile assets has been satisfactory but progress on fixed installations is slow. The Egyptian Railways' (ER) operations and maintenance situation remains very poor with low availability of locomotives and rolling stock. The track renewal and repair program is also behind schedule. Efforts are now being made to improve rolling stock maintenance with the help of consultants and ER plans to set up separate companies with overseas technical assistance to upgrade track conditions. The 1980-84 draft investment program contains many large investments including new lines for which no economic justification has been demonstrated. The financial situation is poor and a deficit of LE 38 million was forecast for 1979. After many years without tariff increases, substantial increases in freight tariffs were made in 1979, and passenger fare increases are promised for 1980. A draft decree which would establish a National Railway authority and aims to give the railways inter alia considerably more autonomy in relation to tariffs and staff salaries is under discussion.

Cr. No. 548-EGT - Telecommunications Project; US\$30 million Credit of May 16, 1975; Effective Date: August 14, 1975; Closing Date: December 31, 1980.

Procurement has now been completed and the IDA credit has been fully committed. Procurement of the telex exchanges was transferred to the Telecommunications II project. Physical installations are about two years behind the appraisal schedule mainly because of initial delays in procurement actions and in building construction.

Cr. No. 576-EGT - Second Development Industrial Bank (formerly Bank of Alexandria) Project; US\$25 million Credit of July 30, 1975; Effective Date: February 19, 1976; Closing Date: October 31, 1980.

The credit is now fully committed and \$24.5 million has been disbursed as of April 2, 1980.

Ln. No. 1239-EGT - Alexandria Port Project; US\$45 million Loan of April 19, 1976; Effective Date: August 30, 1976; Closing Date: December 31, 1980.

The contract for the major part of the civil works and dredging was awarded in April 1979 and work is now progressing. Procurement of equipment is also progressing satisfactorily. Because of the delayed start of the main civil works, the project is now expected to be completed only by June 1982; the closing date of the loan will, therefore, have to be extended.

Ln. No. 1276-EGT - Fruit and Vegetable Development Project; US\$50 million Third Window Loan of June 11, 1976; Effective Date: December 20, 1976; Closing Date: December 31, 1982.

The project is now over two years behind schedule. Work on the drainage and irrigation components of the project is proceeding although

behind schedule. The seed component has major problems, which the Bank is now discussing with Egyptian officials. The Agricultural Development Lending Unit in Bank Misr is attempting, with assistance from the World Bank, to ensure that the various sub-borrowers proceed with their respective investments, and to identify additional sub-borrowers. The project scope has been expanded to allow financing of agroindustries subprojects, and terms of financing liberalized.

Ln. No. 1285-EGT and Cr. 637-EGT - Upper Egypt Drainage II Project; US\$10 million Loan and US\$40 million Credit, both of June 11, 1976. Effective Date: January 31, 1977; Closing Date: June 30, 1983.

Work is progressing in accordance with the revised schedule on some 1,602 km of surface drains in 500,000 feddans. Overall progress is about 55 percent. As compared to appraisal target of 240,000 feddans, field drainage is complete on only about 24,000 feddans. This shortfall has resulted from a delay of almost two years with supply and erection of USAID financed equipment for three PVC pipe-making factories. As these factories are now nearing production, the work of installing tile drains will be accelerated. Contracts for the same have already been awarded covering the entire project area.

Ln. No. 1292-EGT - Textile Project; US\$52 million Loan of September 20, 1976. Effective Date: February 16, 1977; Closing Date: June 30, 1980.

The project is proceeding with a year and a half delay caused by a later and slower than anticipated start of the civil works. The project is now estimated to cost about US\$21 million equivalent (all in local currency) more than appraised, due to increased scope of civil works and general price increases of construction materials beyond what was expected at appraisal. No difficulties are foreseen in financing this, although some government equity contribution would be required in the next two years to supplement the companies' internal cash generation in order to adhere to the financial covenants as well as project costs. Early management problems have now been overcome and both companies have developed effective project implementation units. Disbursements are slower than anticipated reflecting initial delays in procurement. However, about 90 percent of the contracts for machinery and equipment have now been awarded and the balance is expected to be awarded in the near future.

Ln. No. 1369-EGT - Alexandria Water Supply Project; US\$56 million Loan of March 7, 1977; Effective Date: July 6, 1977; Closing Date: June 30, 1982.

After a second round of bidding for construction of the pipelines, borrower decided to reject all bids as being out of line with prices obtainable from local contractors for similar work, and informed the Bank that it wished to execute this component with local contractors using Egyptian funds. Accordingly it requested cancellation of that part of the loan. The Bank has thus cancelled US\$2.85 million. The construction contract for the treatment plant extensions is currently out to bid. Proposals for data processing equipment and training have been called for. Meter replacement to improve

Ln No. S-5 EGT - Iron Ore Engineering and Beneficiation Project; US\$2.5 Million Loan of July 15, 1977. Effective Date: February 2, 1978; Closing Date: December 31, 1980.

Consultants preparing both iron ore beneficiation and diagnostic studies have submitted the final feasibility studies. The closing date was extended to help finance consulting services to help prepare a rehabilitation and balancing project for Egyptian Iron and Steel Company.

Ln. No. 1482-EGT - Suez Canal Expansion Project; US\$100 Million Loan of September 28, 1977; Effective Date: February 8, 1978; Closing Date: December 31, 1981.

Progress in the execution of the project is close to appraisal estimates although in some areas, such as demolition and procurement of tugs, there is some delay. This, however, is not expected to materially affect the project completion date. The financial situation of the borrower is sound, canal traffic and revenue being higher than appraisal estimates.

Cr. No. S-20-EGT - Water Supply Engineering Project; US\$2.0 Million Engineering Credit of December 29, 1977; Effective Date: April 28, 1978; Closing Date: June 30, 1980.

Formal presentation of final draft report took place in December 1979 and Government comments have been incorporated into the draft report. Project in Beheira Governorate identified in the report.

Ln No. 1533-EGT - Development Industrial Bank III; US\$40.0 Million Loan of April 12, 1978; Effective Date: July 18, 1978; Closing Date: December 31, 1982.

Commitments and disbursements are progressing satisfactorily. As of February 29, 1980, \$10.8 million had been disbursed and \$35.5 million had been committed. The balance of the Loan is expected to be committed by June 1980.

Cr. No. 774-EGT - Second Telecommunications Project; US\$53.0 Million Credit of March 21, 1978; Effective Date: September 19, 1978; Closing Date: December 31, 1981.

Some reallocation of Credit proceeds was agreed to in September 1979. Bid documents for a substantial part of the equipment and materials to be financed under the Credit had been processed by January 1980, and the rest are expected by May 1980.

Cr. No. 830-EGT - Agricultural Development Project; US\$32.0 Million Credit of July 24, 1978; Effective Date: February 20, 1979; Closing Date: December 31, 1983.

Satisfactory progress has been made in procurement of farm machinery. Institutional development is lagging behind appraisal expectations.

Cr. No. 831-EGT - Egypt Urban Development Project; US\$14.0 Million Credit of August 30, 1978; Effective Date: April 30, 1979; Closing Date: December 31, 1982.

Key staff have been appointed, draft terms of reference for some advisors and consultants have been agreed and contracts are being finalized. Preliminary steps on the design of physical works have been started. Completion of the project is expected to be delayed by at least 18 months.

Cr. No. 850-EGT - Second Population Project; US\$25.0 Million Credit of October 30, 1978; Effective Date: May 1, 1979; Closing Date: December 31, 1983.

Civil works and procurement of furniture, equipment and vehicles are proceeding satisfactorily. Recruitment of project personnel shows progress, but is not complete.

Cr. No. 868-EGT - Second Education Project; US\$40.0 Million Credit of January 26, 1979; Effective Date: July 18, 1979; Closing Date: March 31, 1984.

Project implementation is proceeding very well. Of the twenty three institutions to be constructed, two are completed, eight will be completed by mid-1981, 10 will be completed in late 1981 and the three MOHE institutes are expected to be completed on schedule by late 1983. Eighty four percent of all equipment is under procurement with contracts already signed for 23 percent. All technical assistance has been contracted and implementation is underway. Disbursements are well ahead of schedule, a situation which is expected to continue.

Ln. No. 5-14-EGT - New Valley Phosphate Engineering and Technical Assistance Project; US\$11.0 Million Loan of May 25, 1979; Effective Date: October 19, 1979; Closing Date: June 30, 1982.

Procurement and delivery of mining equipment is underway and erection has started at mine site; laboratory tests of phosphate rock are being carried out.

Cr. No. 909-EGT - Tourism Project; US\$32.5 Million of June 13, 1979; Effectiveness Date: March 26, 1980; Closing Date: December 31, 1985.

Project implementation has started.

Ln. No. 1732-EGT - Gulf of Suez Gas Project; US\$75.0 Million of June 29, 1979; Effectiveness Date: January 29, 1980; Closing Date: September 30, 1982.

Project implementation is in progress. The onshore contract was signed on March 23, 1980. Construction completion is scheduled for 19 months after receipt of a 10 percent downpayment due within 30 days after signing.

Ln. No. 1733-EGT, Cr. No. 935-EGT and Special Action Cr. No. 20-EGT - Shoubrah El Kheima Thermal Power Project of September 6, 1979; Effectiveness Date: April 8, 1980; Closing Date: June 30, 1986.

Agreements declared effective on April 8, 1980.

ARAB REPUBLIC OF EGYPT

CAIRO GAS DISTRIBUTION PROJECT

Supplementary Project Data Sheet

Section I - Timetable of Key Events

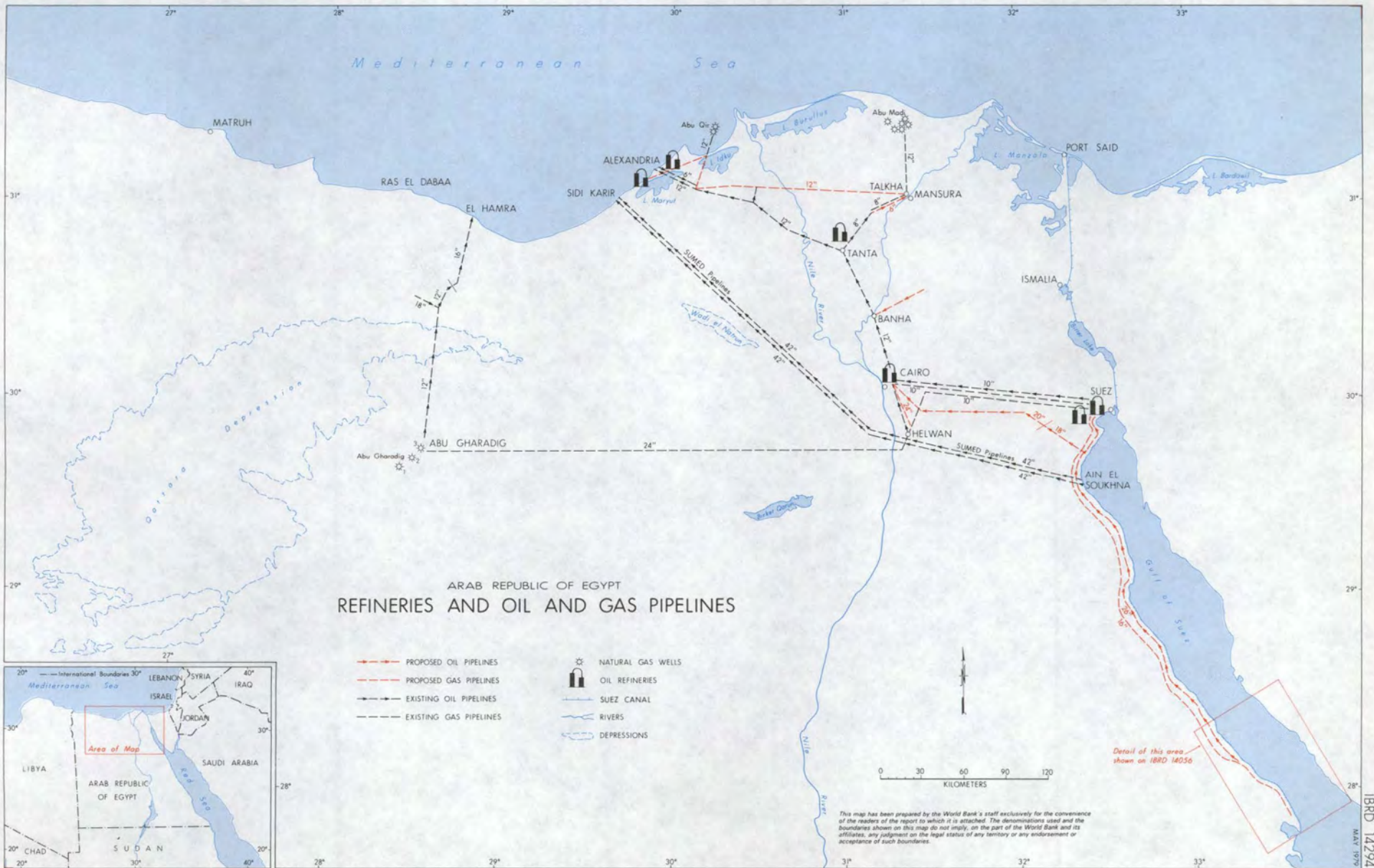
- | | |
|---|---------------|
| (a) Time taken to prepare project: | Nine Months |
| (b) Date of first presentation to IDA: | January 1978 |
| (c) Agency preparing project: | Petrogas |
| (d) Date of departure of appraisal mission: | October 1979 |
| (e) Date of completion of negotiations: | April 1, 1980 |
| (f) Planned date of effectiveness: | October 1980 |

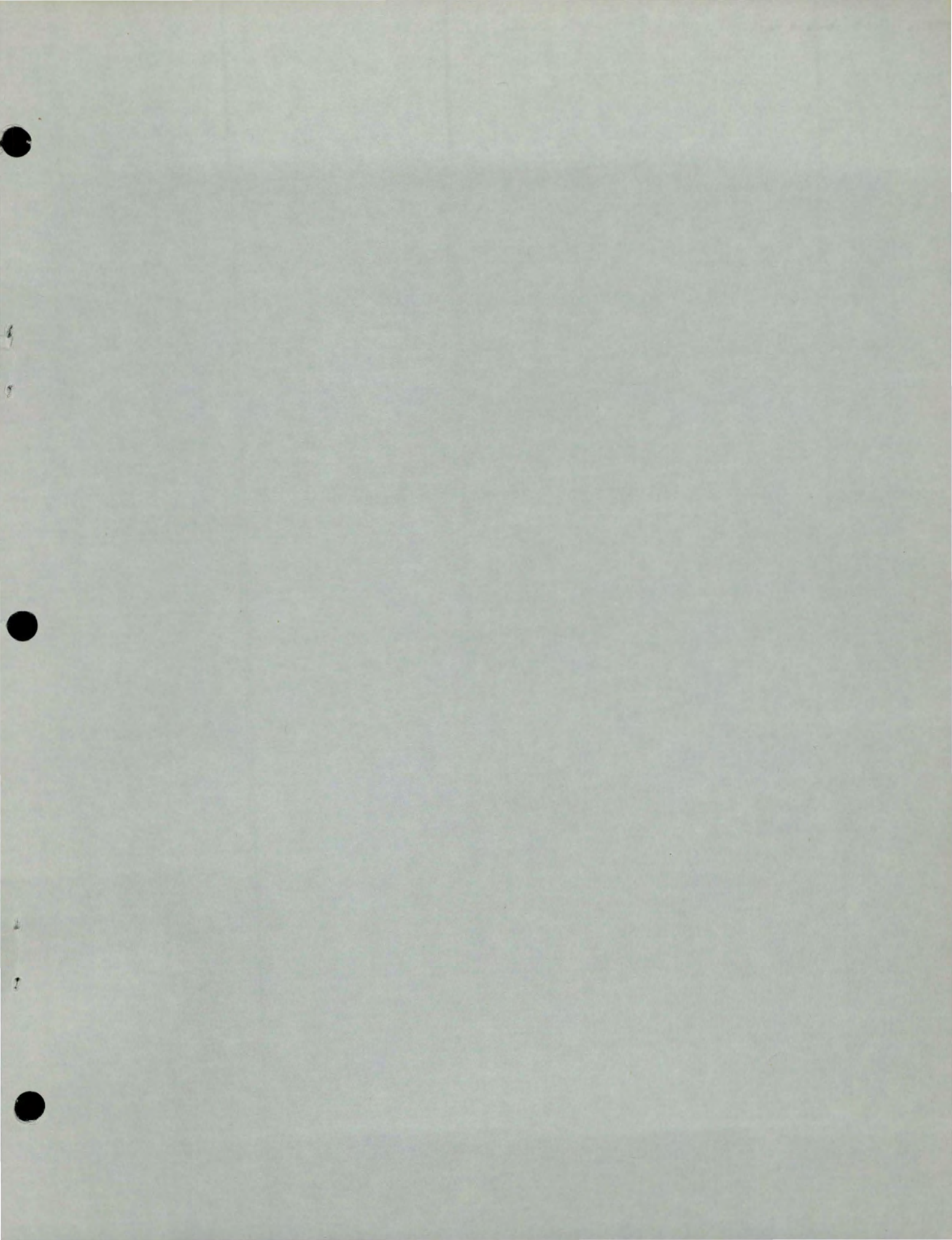
Section II - Special Bank Implementation Actions

None

Section III - Special Conditions

1. Operation of gas field to ensure availability of gas during project life (para. 48).
2. Government obligation to (i) assume financing of internal carcassing of apartments and conversion of appliances of existing household and (ii) issue a decree providing for builders of new housing to arrange for carcassing and conversion (para. 50).
3. Tariff provisions (para. 65).





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STAFF APPRAISAL REPORT

EGYPT

CAIRO GAS DISTRIBUTION PROJECT

April 1980

Energy Department
Petroleum Projects Division

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Report No. 2766-EGT

STAFF APPRAISAL REPORT

EGYPT

CAIRO GAS DISTRIBUTION PROJECT

CURRENCY EQUIVALENTS

LE1.0	=	US\$1.44
LE0.69	=	US\$1.00
LE1,000,000	=	US\$1,440,000

WEIGHTS AND MEASURES

1 Metric Ton (mt)	=	1,000 Kilograms (kg)
1 Meter Ton (mt)	=	2,204 Pounds (lb)
1 Metric (m)	=	3.28 Feet
1 Kilometer (km)	=	0.62 Miles
1 Cubic Meter (m ³)	=	35.3 Cubic Feet (cft)
1 Barrel (BBL)	=	0.159 Cubic Meter
1 Metric ton of Oil (API 30)	=	7.19 Barrels
1 kilocalorie (kc)	=	3.97 British Thermal Units (BTU)
Scf	=	Standard Cubic Foot
1 Ton Oil Equivalent (Toe)	=	10 Million Kilocalories (39.7 Million BTU)
Mcf/d	=	Thousand Cubic Feet per Day
MMcf	=	Million Cubic Feet
bb1/d	=	Barrels per Day
MW	=	Megawatt (1,000 Kilowatt)

PRINCIPAL ABBREVIATIONS AND ACRONYMS USED

ARE	-	Arab Republic of Egypt
EGPC	-	Egyptian General Petroleum Corporation
GUPCO	-	Gulf of Suez Petroleum Company
WEPCO	-	Western Desert Company
PETROBEL	-	Belayim Petroleum Company
LPG	-	Liquified Petroleum Gas
NGL	-	Natural Gas Liquids
API	-	American Petroleum Institute
GPC	-	General Petroleum Company

FISCAL YEAR

January 1 - December 31

This report has been prepared by Messrs. V. Nayyar and M. Wormser, Ms. Zurayk and Ms. Julius, of the Energy Department.

EGYPTCAIRO GAS DISTRIBUTION PROJECTSTAFF APPRAISAL REPORTTABLE OF CONTENTS

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MAPS

IBRD 14294	Egypt's Pipeline Network
IBRD 14728	Cairo Gas Distribution Project

I. ENERGY SECTOR 1/

Introduction

1.01 Energy prospects in Egypt have improved significantly over the last decade. With the commissioning of the Aswan High Dam, Egypt harnessed most of its hydroelectric potential. Successive increases in oil production have made Egypt, in turn, self-sufficient and an exporter of oil. Currently, Egypt views oil as a major source of foreign exchange earnings during the eighties. Gas finds have further strengthened the energy base and increased the export possibilities of oil. In 1978, petroleum provided 90% of Egypt's commercial energy and its exports accounted for 50% of foreign trade receipts. Current economic and industrial plans assume the continued availability of this resource.

1.02 Whereas Egypt is currently a net exporter of energy, it is not endowed with a particularly plenteous energy base. Hydropower, which in Egypt is synonymous with the River Nile, has been harnessed to the extent of 80%. Coal deposits in marginal quantities exist, but are not presently considered economic to mine. Solar energy, although available in abundance, must await a series of technological breakthroughs before it can be considered for extensive application. Hydrocarbons appear to be the only primary source which can sustain Egypt's incremental demand for energy. While Egypt can view the current level of oil production with satisfaction, its known endowment in oil is not high, at only about 0.4% of the world's resources. Its major oil fields are likely to peak in the early eighties. With burgeoning demand for hydrocarbons on the one hand and the prospects of reduced productivity from existing oil fields on the other, Egypt would need to redouble its exploratory efforts if it is to maintain its present status as exporter of energy over the next decade. It would, in addition, have to develop and increase its natural gas resources; to the extent that natural gas is used internally, it would release liquid hydrocarbons for export.

Energy Balance

1.03 The main sources of primary commercial energy in Egypt are hydro-power and petroleum. Coal deposits have been discovered in the Western Desert and the Sinai Peninsula and are estimated at around 100 million tons. A feasibility study for a coal-fired power plant in Sinai is presenting under preparation. As in other developing economies non-commercial fuels in the form of crop residue and animal waste, are used extensively, but no data is available on its magnitude. A recent study estimates energy produced by non-commercial fuels at around 5 million tons of oil equivalent, which is about one-third of the total commercial energy used. On the basis of energy consumption, production of oil and generation of hydropower, the table below estimates Egypt's energy balance (commercial) in oil equivalent for 1978.

1/ The review in this section is an updated summary of the Energy Sector contained in the Staff Appraisal Report of May 30, 1979, which may be referred to for a more detailed discussion.

ENERGY BALANCE 1978
(thousands tons oil equivalent)

<u>Production</u>		<u>Consumption</u>	
Crude Oil <u>1/</u>	24,400	Coal <u>2/</u>	850
Hydroelectricity	2,860	Refinery Losses	580
Natural Gas	<u>670</u>	Petroleum Products	10,100
		Hydroelectricity <u>3/</u>	2,860
Total Availability	<u>27,930</u>	Natural Gas <u>4/</u>	<u>670</u>
		Total Domestic Consumption	15,060
		Exports (Net of Imports) <u>5/</u>	
		Coal	(850)
		Crude Oil <u>6/</u>	12,260
		Petroleum Products	<u>1,460</u>
			12,870

Resource Endowment

1.04 At present, hydrocarbons and hydropower are the only two sources of primary commercial energy in Egypt. The specifics of Egypt's resource endowment, along with other potential sources of energy, are considered below:

(a) Hydropower

1.05 Hydropower for Egypt is an important source of energy and in 1978 it accounted for 19% of primary commercial energy used domestically. By equipping the Aswan Dam with turbine generators having a cumulative capacity of 345 MW, the first step was taken in 1960 to tap the hydropower potential of the River Nile. The Aswan High Dam was completed between 1960 and 1970, seven miles upstream of the Aswan Dam, and equipped with a generating capacity of

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- 1/ Consisting of Egypt's share of production of 17.1 million tons and foreign partners share of 7.3 million tons.
 - 2/ Estimated. Used largely to meet metallurgical requirements.
 - 3/ Conversion factor 1000 kWh = 0.286 tons of oil (assuming 30% efficiency).
 - 4/ 55,000 tons of gas purchased from partners.
 - 5/ Includes stock change.
 - 6/ Consists of 5.06 million tons (net) of exports by Egypt and 7.20 million tons of exports by foreign partners.

2,100 MW. The operational capabilities of both the Aswan Dams is severely constrained by conflicting irrigation needs and transmission systems reliability. At present the dependable generating capacity of both these plants is currently assessed at 1,645 MW, capable of generating nine billion kWh annually. With the completion of the Aswan High Dam, about 80% of the Nile's hydropower has been harnessed. ^{1/} The remaining 60 meter drop between Aswan and Cairo represents a generating potential of 460 MW, of which 190 MW could possibly be realized by adding generating facilities in three existing barrages: Nag Hammadi, Esna, and Assiut. The Qattara depression represents the only other hydropower possibility in Egypt. It would, however, involve canalizing water from the Mediterranean Sea to the Qattara depression (which extends 135 meters below sea level), and using the 60 meter descent to generate power. The power capabilities of this project are estimated at 640 MW during the first 12 years, and 340 MW thereafter. However, the construction of the proposed canal would require massive excavation, and it is doubtful whether this project could be viewed as a serious possibility over the next 20 years.

(b) Coal, Oil Shale and Nuclear Fuels

1.06 Coal deposits have been discovered in the Western Desert and in the Sinai Peninsula and, as mentioned above, a feasibility study for a coal-fired power plant in the Sinai is under preparation. Oil shale deposits have also been located in the Sinai Peninsula and are 10-15 feet thick. The data indicates that the shale is of poor quality and having low hydrocarbons content it cannot at present be considered as a possible energy source. No uranium or thorium is currently being produced in Egypt. An extensive ground radio-metric work would have to be conducted before reserves could be identified. Even if prospecting activities were accelerated, it is doubtful that Egypt would be in a position to mine and extract nuclear fuel during the eighties.

(c) Geothermal and Solar Energy

1.07 Limited information is available on the existence of geothermal energy as only a few geochemical and heat flow measurements have been made. Since there is no evidence to indicate the existence of a high temperature (greater than 200 degree centigrade) vapour dominated system, geothermal activity cannot be considered a potential source of energy for power generation, etc. However, Egypt has a vast potential for solar energy, but this source must await a series of technological breakthroughs before it can be considered for extensive application.

(d) Non-Commercial Energy

1.08 Although no data base exists for quantifying the extent of non-commercial energy use in Egypt, it is apparent that this form of energy

^{1/} In the context of the proposed third power project scheduled for FY80, an additional 270 MW are expected to be generated through an expansion of the Aswan Dam.

constitutes a significant proportion of the total energy use, especially in the rural areas. However, Egypt is not well endowed in biomass, with only 2.7% of its territory under permanent or seasonal crops, the rest being desert, or areas covered with dry or extremely arid vegetation. Only a nominal area is under forests and, therefore, crop residues and animal wastes are the main sources of non-commercial energy. According to a recent estimate, this form of energy currently caters to one-fourth of Egypt's total energy requirements. As in other developing countries, the level of utilization of animal and vegetable wastes is very high although the end use efficiency is low - typically 10% to 15%. Considerable potential exists for upgrading the end use efficiency through improved appliances.

1.09 While the use of non-commercial fuel is likely to increase over time, its relative share is anticipated to decline rapidly. Rural households are gradually replacing non-commercial fuels with kerosene, LPG and electric power. This trend is likely to strengthen over the next twenty years since the major source of non-commercial fuel will continue to be crop residue which is not likely to keep pace with even the growing rural demand. Urban households would therefore have to rely almost exclusively on mineral fuels. Presently there is a strong consumer preference for LPG (Liquefied Petroleum Gas) over kerosene in the urban areas, and with growing urbanization, its demand is likely to grow. However, indigenous natural gas can replace imported LPG and this is one of the objectives of the proposed project.

(e) Oil

1.10 Oil is a major source of commercial energy in Egypt and because of limited hydro potential it is likely to be relied upon increasingly to meet Egypt's incremental demand for energy. Although the first oil well was drilled in 1886, oil exploration was not done on a systematic basis until the turn of the century. Commercial production began in 1913, but it was only after 1968 that oil production exceeded 10 million tons. To date, 39 commercially exploitable oil and gas fields have been discovered. The current production level is around 500,000 barrels a day, (25 million tons per annum) of which about 25% represents the share of foreign partners, 45% is consumed domestically and the balance is exported. The recoverable reserves are currently estimated at around 2.5 billion barrels (350 million tons).

1.11 There are three main hydrocarbon bearing zones in Egypt: the Gulf of Suez, the Western Desert, and the Nile Delta. Of these, the Gulf of Suez has been the most prolific producer and is reckoned to hold the highest potential. More than 300 exploratory wells have been drilled in this area, resulting in the delineation of 28 fields. Currently more than 90% of Egypt's oil is produced from the Gulf of Suez. The Western Desert has been extensively surveyed and more than 200 exploratory wells have been drilled. The success ratio of this extensive exploration has, however, been limited. So far only seven commercial discoveries have been made and the recoverable reserves are estimated at 30 million tons. The current level of production from the Western Desert is less than a million tons. Despite limited success, the hope of making a major strike persists, as giant fields have been discovered in similar structures in neighboring countries. Exploratory drilling has been carried out in the Nile Delta, the Red Sea, and in the Nile

Basin, but no oil has been discovered. However, four gas fields have been found in the Nile Delta, of which only one, Abu Maadi, is considered commercially exploitable. With the transfer of territories under Israeli occupation, in November 1979, Egypt secured the Alma oil field, which is reported to be producing 20,000 bbl/day or 1 million tons of oil per annum. The hydrocarbon potential of this area is rated high, warranting an extensive exploratory effort.

(f) Natural Gas

Associated Gas

1.12 The current production level of associated gas in Egypt is around 100 million cubic feet a day (Mmcf/d), and, except for a nominal amount which is being used for meeting oil field needs, the rest is being flared. Most of the associated gas comes from the oil fields in the Gulf of Suez. Recent discoveries have added to the availability of associated gas and, according to the Gulf of Suez Gas project, present estimates of recoverable reserves of associated gas are in the order of 800 billion cubic feet. The Bank, through Loan 1732-EGT, is financing a project which would gather, process, and transport this gas to Suez and Cairo.

Non-Associated Gas

1.13 Non-associated gas on a commercially exploitable scale has been discovered at Abu Ghardig, Abu Maadi, Abu Qir, Abu Qir North, and the Amal fields. The specifics of the afore-mentioned gas fields are as follows:

(i) Abu Ghardig

This gas field was discovered in 1971, has an estimated recoverable reserve of 0.6 trillion cubic feet, and is operated by GUPCO (Gulf of Suez Petroleum Company), a subsidiary of AMOCO, (American Oil Company) and EGPC, (Egyptian General Petroleum Corporation). GUPCO has been producing gas from this field since 1977. The production sharing agreement provides that even the foreign partner's share (AMOCO) will be sold to EGPC on the basis of a predetermined formula. This gas is transported from Abu Ghardig through a 24" pipeline over 370 kilometers to Helwan, near Cairo. Petrogas will secure supplies for the proposed project from the gas terminal located at Mrazik Bridge, on the east side of the River Nile.

(ii) Abu Maadi

This gas field was discovered in the Nile Delta by ENI (Ente Nazionale Idrocarburi). After the renegotiation of the production sharing agreement its ownership was transferred to the Egyptian Government and the field is now being operated by Petrobel (Belayim Petroleum Company), a subsidiary of EGPC. The recoverable reserves of this field are estimated at one trillion cubic feet, capable of supplying 100 Mmcf/d for about 25 years.

(iii) Abu Qir

This offshore gas field, located on the periphery of the Western Desert and the Nile Basin, was discovered by Philips Petroleum in 1969. EGPC, as its partner, developed the field under the "sole risk" clause of the participation agreement. Now in the exclusive ownership of EGPC, this gas field is estimated to have recoverable reserves of 1.2 trillion cubic feet which would sustain a supply of 100 MMcf/d for around 30 years. A 57 kilometer pipeline, with a capacity of 100 MMcf/d, has been constructed from Abu Qir to Alexandria and from there to Damanhur via Kafr El Dawar.

(iv) Abu Qir North

Elf-Aquitaine has recently discovered an offshore gas field which is located 55 km northeast of Alexandria and about 20 km north of the existing Abu Qir gas fields. So far, one exploration well has been drilled and tested. Gas bearing sands were encountered in two zones, having a net pay of 64.5 meters and 185 meters respectively. The gas is relatively rich in condensates which are estimated at 25 bbl/MMcf. While further drilling would be required to fully delineate the field, recoverable reserves from the existing production data are estimated at three trillion cubic feet.

(v) Amal Field

This gas field, located offshore in the Gulf of Suez, was discovered by AMOCO and has recoverable reserves of 0.5 trillion cubic feet. AMOCO has relinquished its rights to this gas field which will be developed by EGPC, if necessary, to supplement the associated gas supply to Suez and Cairo.

1.14 The recoverable reserves of the present and projected level of production, are indicated in the table below.

EGYPT - NATURAL GAS RESERVES AND PRODUCTION
in MMcf/d

<u>Area</u>	Recoverable Reserves (Trillion cft)	<u>Actual</u>		<u>Estimated</u>	<u>Projected</u>	
		<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1985</u>
Abu Maadi	1.0	16	19	30	50	110
Abu Ghardig	0.6	32	55	60	100	100
Abu Qir	1.2	-	-	22	55	120
Abu Qir North	3.0	-	-	-	-	To be determined
Gulf of Suez	0.8	Flared	Flared	Flared	Flared	80
Amal <u>1/</u>	0.5	-	-	-	-	-
	<u>7.1</u>	<u>48</u>	<u>74</u>	<u>112</u>	<u>205</u>	<u>410</u>

Exploration Policy

1.15 For exploration, development and production of oil, Egypt has consistently followed an 'open-door policy' and almost all exploration and production work undertaken within the country has been through foreign oil companies. The exploration agreements have evolved from the 'concessions' of the pre-1960's to participation agreements which were subsequently converted into production sharing agreements. Under the current production sharing agreements, the cost of exploration and development is borne exclusively by foreign contractors and amortized, interest free, over the next 4 and 8 years respectively. After taking these costs into account, (as well as operating costs), 'profit oil' 2/ is shared between the foreign contractors and Egypt in a given ratio. In successive agreements, Egypt has improved upon its share of profit oil, and some agreements have been concluded recently in which Egypt's share of profit oil has been negotiated at 87%.

1.16 The exploration policy, as pursued by Egypt, has served well the Government's objective of maximizing oil production without bearing any risk of exploration. Of the present production level of 500,000 barrels per day, as much as 470,000 barrels are produced from these concessions. Since 1973, Egypt has made conscious efforts to invite foreign companies, and 53 exploration and production agreements have been entered into for an area covering about 160,000 sq. kms. At present, the foreign contractors share oil with the national oil company in the ratio of 1:3 on average. Even at the anticipated higher level of production, the share of foreign contractors is not likely to decrease significantly.

1/ Production planned only on the contingency that associated gas for the Ras Shukeir project falls below 80 MMcf/d.

2/ "Profit Oil" is the difference between total oil production and "cost oil". "Cost oil" consists of operating cost and amortized cost relative to exploration and development.

Current and Anticipated Level of Oil Production

1.17 There has been an impressive recovery in the production of oil in Egypt, which increased from 11.5 million tons in 1974 to 20.9 million tons in 1977, a level which had earlier been attained in 1969. Growth in the petroleum sector slowed thereafter and crude output grew by 17% (24.3 million tons) in 1978 and 3% (25.1 million tons) in 1979, against an average annual growth of about 40% in the previous three years. The slowdown in oil production reflects the lack of any major new discovery and the fact that oil fields in the Gulf of Suez, which currently account for 80% of Egypt's oil production, are peaking. Despite the slowdown, EGPC is projecting a significant increase in the level of oil production as indicated in the table below.

EGYPT'S FORECAST OF PETROLEUM PRODUCTION 1/
(in Million Tons)

Operating Company	Actual		Estim. 1979	Projected					
	1977	1978		1980	1981	1982	1983	1984	1985
1. GPC 2/	1.5	1.3	1.2	1.1	0.9	0.8	0.5	0.4	0.4
2. COPE	3.5	4.1	4.5	5.3	5.0	5.0	4.1	3.8	3.4
3. GUPCO	14.4	17.9	18.0	19.5	21.1	21.0	17.4	14.3	12.0
4. GUPCO (ABU GHARDIG)	0.9	0.5	0.7	0.4	-	-	-	-	-
5. WEPCO 3/	0.6	0.5	0.5	0.4	0.2	0.1	0.1	0.1	0.1
6. EGYPTCO (Moleha)	-	-	-	0.1	0.1	0.1	0.1	0.1	0.1
7. DEMINEX	-	-	0.2	0.2	1.3	3.0	4.5	6	7.5
8. New Discoveries	-	-	2.4	2.4	7.9	13.5	19.8	21.8	23.0
TOTAL	20.9	24.3	25.1	29.4	36.5	43.5	46.5	46.5	46.5

EGPC anticipates a sharp upswing in petroleum production which is projected to exceed 35 million tons by 1981 and to reach a level of 46.5 million tons in 1983. It hopes to maintain this production level thereafter. Attainment of the projected production rate is predicated upon new discoveries being made which will not only double the current level of production but would also compensate for the decline in production from oil fields which have already peaked. Failure to achieve the assumed discovery ratio could result in a significant shortfall. In any case, the lags which are inherent in the development of an oil field will make it extremely difficult to achieve the targets originally stipulated for the 1978-82 five year plan.

- 1/ Does not include oil produced in territories under Israeli occupation.
2/ General Petroleum Company.
3/ Western Desert Company.

Demand for Oil & Natural Gas

1.18 Consumption of petroleum products has been rising rapidly and for 1979 is estimated at 11.7 million tons. This is against a consumption of 9.1 million tons in 1977 and 6.7 million tons in 1974. The overall annual growth rate has been in the order of 11.8% with LPG recording the sharpest increase (16%). Consumption of LPG would have been higher except for the physical constraint of supply. Over the next two years EGPC projects a growth rate of 12.5%. It is anticipated that, in the absence of demand management and/or significant increase in the price levels, this growth rate in consumption would be maintained until 1985. This relatively high growth rate is attributable in part to rapidly growing thermal power generation which is projected to rise from 17 Gwh in 1980 to 28 billion Gwh in 1985. The growth rate beyond 1985 would depend, in part, on the introduction of coal-fired power plants and of nuclear power. Egypt hopes to commission the first nuclear plant (600 MW) in 1990. Delays in the nuclear program would result in a greater reliance on fossil fuels for power generation. Based on past trends and on the assumption that the gross national product grows at about 6.5% in real terms, the anticipated consumption pattern would be as indicated in the table below.

PROJECTED CONSUMPTION OF PETROLEUM PRODUCTS
('000 tons)

<u>Product</u>	<u>Actual</u>			<u>Estimated</u>	<u>Projected</u>	
	<u>1974</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1985</u>
Butane & Propane	159	247	297	335	350	630
Gasoline	556	833	958	970)	1,200	2,200
Naphtha	24	18	23	20)		
Kerosene	1,109	1,363	1,389	1,450	1,750	2,600
Turbine Fuel	119	101	182	318	350	400
Gas Oil	1,055	1,507	1,706	2,120)	2,500	3,500
Diesel Oil	168	150	154	110)		
Fuel Oil & Natural Gas:						
Power	849	1,529)			3,600	7,700
Others	2,471	3,031)	5,192	6,047	3,700	5,400
Asphalt	64	142		195		
Lube Oils	93	129	147	155	390	670
 Total	 <u>6,667</u>	 <u>9,050</u>	 <u>10,048</u>	 <u>11,720</u>	 <u>13,840</u>	 <u>23,100</u>
Availability of Natural Gas (fuel oil equivalent)	<u>-</u>	<u>386</u>	<u>596</u>	<u>901</u>	<u>1,650</u>	<u>3,300</u>
Demand for Liquid Hydrocarbons	<u>6,667</u>	<u>8,664</u>	<u>9,452</u>	<u>10,819</u>	<u>12,190</u>	<u>19,800</u>

1.19 The projected demand for hydrocarbons by 1985 would be around 23 million tons. A qualitative change in the pattern of consumption is, however, anticipated with natural gas being increasingly used as a substitute for liquid hydrocarbons. Egypt is making conscious efforts to increase the absorptive capacity for natural gas. The current production potential is 300 MMcf/d against a demand of 110 MMcf/d. The situation would reverse itself by 1985 when the peak potential demand of about 950 MMcf/d (average demand of 700 MMcf/d) is expected to outstrip the production potential of 400 MMcf/d (Annex 1.02). The gap between the projected demand and the likely supply of gas would have to be covered by liquid hydrocarbons which could otherwise have been exported. Egypt would have to increase its exploratory efforts for gas and accelerate the program of developing known gas fields, in order to maintain its status as an exporter of oil.

Prices and Fiscal Contribution of the Sector

1.20 Worldwide price increases and the consequent drop in the growth rates of oil consumption has had little impact in Egypt where domestic prices are well below international levels. The pump head prices are fixed through a governmental decree, and the revenue accruing to the government and EGPC results from the sale of products, net of refining, marketing and transportation costs. Current product prices and the estimated costs of refining, transporting, and marketing, are indicated below:

<u>Product</u>	<u>Pumphead</u>	<u>Average</u>	<u>Average</u>	<u>Marketing</u>	<u>Price Net</u>
	<u>Price</u>	<u>Refining</u>	<u>Transportation</u>		<u>of Marketing</u>
		<u>Cost</u>	<u>Cost</u>	<u>Cost</u>	<u>Cost</u>
			US\$/ton		
LPG	74.88	10.94		40.32	34.56
Gasoline P	261.14	9.07	0.29	13.10	248.04
Gasoline R	220.00	7.92	0.29	12.10	207.90
Kerosene	55.81	6.05	0.58	8.21	47.60
Gas Oil	52.19	5.62	0.14	5.91	46.28
Diesel Oil	43.95	4.61	2.30	6.91	37.04
Fuel Oil	10.80	1.30	0.29	1.73	9.07
Gas <u>1/</u>					11.50

1/ Natural gas to be sold to gas turbine stations supplied by the project will be priced at least at \$28/ton. Natural gas will be sold to domestic consumers at least \$166/ton.

1.21 EGPC secures a 'netback' of around US\$4.0 per barrel from domestic sales. Even after the excise and treasury dues are taken into account, the total revenue to the economy from the sale of crude in the domestic market is around \$7 per barrel. This is against a price of \$33 per barrel which EGPC is currently receiving from the export of oil. If Egypt were to price oil at international prices it would, at the present level of consumption, secure annual additional revenue in excess of \$2.2 billion.

Sector Issues and Role of the Bank

1.22 The review of Egypt's energy sector, carried out during and subsequent to the appraisal of the Gulf of Suez gas project, indicated the need for Egypt to take major decisions in order to optimize the use of internal energy resources and to ensure adequate supply for the future. Some of these crucial issues are considered below. In order to assist Egypt in taking these decisions, the Bank is providing the Government and EGPC with the necessary technical assistance.

(a) Level of Oil Production

1.23 Egypt's economic projections are based on the assumption that it will, by 1983, achieve a target of one million barrels per day or about 50 million tons per annum. This production rate depends upon new discoveries being made which will not only double the current level of production, but will also compensate for the shortfall in production from the old oil fields which have peaked. It is uncertain whether these targets will be achieved. Despite the fact that Egypt has entered into as many as 53 production sharing agreements, the interest of foreign oil companies appears to be slackening. New discoveries have not kept pace with increased output and the production reserve ratio has been falling over the past few years.

1.24 Egypt could stem this trend by reorganizing, coallating, and reinterpreting the existing geological, seismic and drilling data. The Bank has (under the Gulf of Suez project) provided the necessary funds to undertake this study. A part of this study, involving a few prospects in the Western Desert and offshore Abu Qir, has been completed. Terms of reference for a similar study in the Nile Delta and the remaining areas of the Western Desert have been finalized and consultants are being selected.

(b) Pricing Policy

1.25 Egypt has, as of January 1980, increased the prices of motor gasoline, diesel oil, gas oil, and kerosene. Although, with this price increase the netback (including excise taxes etc.) has increased from \$4 per barrel to \$7 per barrel (para. 1.21), yet it remains well below the current export price of \$33 per barrel of crude. By maintaining domestic prices at this level, Egypt is losing the unique opportunity of using its finite petroleum wealth to increase domestic resources. In addition, such a pricing policy encourages wasteful consumption. In the absence of major new discoveries, the peaking oil fields and the sharply rising internal demand could transform Egypt from an exporter into a net importer of oil by the mid-eighties. In order to curb wasteful consumption and rectify demand distortions, prices for petroleum products would have to be increased significantly. Increasing domestic prices

well as marginal quantities of gas oil. This project would thus generate significant foreign exchange savings and make the Egyptian economy less vulnerable to external price fluctuations.

Gas Supply & Reserves

2.04 The sources of gas supply for the proposed project would be the oil and gas field at Abu Ghardig, south of El Alamein, about 270 kms from Cairo. This field was discovered in 1971, has estimated recoverable reserves of 600 billion scf and is being operated by GUPCO, a subsidiary of AMOCO and EGPC. Twenty one wells have been drilled so far, of which eleven are producing oil and five gas. While oil is transported to El Alamein, associated gas, (15 MMcf/d), and non-associated gas, (50 MMcf/d), is piped to Cairo, after removal of condensates, through a 24" pipeline. LPG is extracted, (145 tonnes per day) at the Dahshour plant, and the dry gas is currently available at Mrazik Bridge on the East Bank of the River Nile. Petrogas, the beneficiary and implementing agency under the project, would take its supply for the project from this point. The current proven reserves, (600 Billion scf), if exclusively dedicated to the project, are adequate to support it over its economic life of 30 years.

2.05 Additional gas in significant quantities will be needed in the future to meet the rapidly rising demand in Cairo (para 1.19). At that time gas supply to Cairo for power generation and other industrial uses would need to be supplemented by:

- (a) Gas from the Gulf of Suez project currently being financed by the World Bank (Loan No. 1732-EGT);
- (b) Drilling and developing possible gas fields at Abu Sennan and in the blocks 29, 28, 27, and 5-1 in the Western Desert, adjacent to the existing Abu Ghardig gas fields. Gas shows have been encountered and in the context of the Gulf of Suez gas project the Bank is currently financing reinterpretation of drilling and seismic data relating to these structures; and
- (c) Development, and tie-in to Cairo, of Abu Qir North gas field recently discovered offshore, which has estimated gas reserves of at least three trillion cft.

Assurances have been obtained from EGPC that it would operate the gas fields at Abu Ghardig, (or other gas fields subsequently discovered and/or linked with the Cairo gas distribution system) in a manner permitting the availability of gas for the system over a period of at least 16 years after project completion.

Project Area and Consumption

2.06 The project area is composed of four suburbs on the south-east side of Cairo (IBRD Map No. 14728). Factors responsible for the selection of these four districts were proximity to the gas source, relative ease in laying the

distribution network and undertaking carcassing, 1/ density of accessible consumers, and future growth potential. All the selected districts are currently heavy users of LPG and are expected to grow rapidly in terms of high rise housing, which lends itself ideally to a viable gas distribution network. These areas are:

- (i) Helwan - a rapidly expanding industrial city 12 kms south of Cairo and close to the pipeline offtake point at Mrazik Bridge.
- (ii) Maadi - a suburb 5 kms south of Cairo, a relatively affluent residential area consisting of a mix of mid and low rise housing. High rise housing is expected to increase.
- (iii) Nasr City - a rapidly developing district with mostly high rise housing, 6 kms south-east of Cairo.
- (iv) Heliopolis - a district 10 kms north-east of Cairo, an extensive sprawling area with large pockets of new developments consisting of high rise housing.

2.07 The proposed project would provide gas to nearly all households in the four areas. For logistical reasons certain parts of Helwan have been excluded. The existing population, and expected growth, is shown below: 2/

	<u>Helwan</u>	<u>Maadi</u>	<u>Nasr City</u>	<u>Heliopolis</u>	<u>Total</u>
1. Existing Households (To be carcassed and converted under the project)	40,000	38,000	13,000	69,000	160,000
2. "Infill" Households (To be given gas connection under the project)	2,500	1,500	20,000	6,000	30,000
3. New Households (including new subdivisions) after 20 years	<u>77,500</u>	<u>70,500</u>	<u>147,000</u>	<u>155,000</u>	<u>450,000</u>
4. <u>Total</u>	<u>120,000</u>	<u>110,000</u>	<u>180,000</u>	<u>230,000</u>	<u>640,000</u>

1/ The term "carcassing" refers to outlet service pipes, service risers, laterals, installation of pipes inside the dwellings, pipe ducts, control cocks, etc.

2/ Based on survey undertaken and projections made by consultants, Integral Engineering and British Gas.

2.08 Between 1980-83 the project would convert 160,000 existing households from LPG to Natural Gas. In addition, during the same period, it is estimated that 30,000 new dwellings ("infill") needing gas connections would be built in the project area. The responsibility for internal carcassing and external piping up to the periphery of the property line, in new housing, would rest with the builder. Petrogas would be required to provide service lines from the "mains" to the property line. It is estimated that by the end of 1983 there will be 190,000 consumers which would increase to 640,000 by year 2005.

2.09 The average consumption of LPG per customer, as estimated by the consultant and subsequently confirmed by a survey, is about 315 kilograms per annum. However, considerable variation is observed in family consumption which appears to be correlated with income levels. It has been assumed that initial gas consumption would be at the same level as LPG (13,000 scf per annum per customer), but once a piped gas supply becomes available, the consumption per household would grow at 1% per annum. While the average consumption per consumer is estimated at 35 scf per day, the peak hour requirement is likely to be 7.3 scf per hour. A simulated demand curve gives a 43% diurnal swing with a peak hour to mean hour ratio of 4.8:1. Demand for gas by domestic consumers is estimated at 8 MMcf/d in the fifth year and 19 MMcf/d by the twentieth year.

2.10 The proposed gas system would also meet the requirements of power stations at Nasr City and Heliopolis. These stations are gas turbine units designed to meet peak loads. However, because of the delay in the implementation of the Suez power plant, these stations would operate for 4,000 hours per annum, at least up to 1986. In the event of the proposed steam turbine stations going on stream as scheduled, the load on these gas turbine stations may reduce after 1986. It has been assumed that the gas load through 1986 would be cumulatively of the order of 12 Mmcf/d, (Nasr City 7 Mmcf/d, Heliopolis 5 Mmcf/d) whereafter the gas load would decrease by 50%. Even if the gas load on account of these power stations does not diminish after 1986, the gas network would be able to meet, through compression, both the needs of these stations and the growing domestic demand.

Project Design

2.11 EGPC, with the assistance of consultants, prepared a detailed project report for the gas distribution network in the four districts of Cairo. IDA reviewed the network design, which was based on a low pressure system, and found it to be expensive and inflexible. EGPC accordingly appointed new consultants, British Gas, to redesign the gas network based on a medium pressure system, which would operate at four bar. The consultants used transient flow analysis to design the gas network. This entails dividing the transmission system into small cells and examining each cell for pressure drop resulting from flow effect and stock requirements. A computer program developed by British Gas was used to determine the size of the pipeline. The high pressure transmission line is optimally sized to serve the ultimate target of 640,000 customers, eliminating the need for separate storage capacity to meet peak requirements at least up to 1992. The high pressure transmission line would work at 26 bar, and four regulator stations would drop the inlet pressure

to four bar, a pressure at which the distribution network would operate. 1/ Medium density polyethylene pipe would be used for the distribution network, while pipes above ground level would be made of steel. For safety reasons, the pressure would be reduced to 50 millibars three meters from the property line. Gas would be fed into the property, through service risers, which would be located either in the ventilation shafts, or attached to the external walls of the property. A schematic diagram of the proposed gas system is at ANNEX 2.01.

2.12 The project authority (Petrogas) would be responsible for internal carcassing in 160,000 existing apartments, and conversion 2/ of 300,000 existing appliances from LPG to natural gas. In buildings subsequently constructed in the project area, the builder would be responsible for providing the internal carcassing, risers and external piping, up to the periphery of the property line. GOE has covenanted to issue a decree, prior to December 31, 1980, obligating the builder to discharge the above responsibility under Petrogas supervision. Draft legislation has already been prepared by Petrogas.

Description of the Project

2.13 The major project components are:

(a) Transmission System

- (i) Construction of approximately 55 km of 24" buried steel pipeline from an existing installation near Mrazik Bridge to a proposed power station at Heliopolis, along with the necessary system for cathodic protection;
- (ii) Installation of inlet and odorizing plants near Mrazik Bridge;
- (iii) Construction of four pressure reduction stations at Helwan, Maadi, Nasr City, and Heliopolis, with offtake from the main line. Each of the stations would consist basically of three separate preassembled skid-mounted units for filtration, pressure reduction, and metering, with connecting manifolds;
- (iv) Installation of offtake for the proposed power stations at Nasr City and Heliopolis, with a terminal at Heliopolis;
- (v) Installation of pigging system complete with pig traps, launchers, and receiving station.

1/ For reasons of safety, and/or where the streets are narrow, low pressure islands would be created.

2/ This involves converting existing appliances (essentially cookers, ovens and water heaters) from burning LPG, to burn natural gas. In most cases this would require a change of jets, in some cases replacement of burners and in very few cases, the appliance itself.

(b) Distribution System

- (i) Installation of a distribution network of medium density polyethylene pipe, approximately 900 km in length, in the project area;
- (ii) Provision of approximately 9,000 services for connecting customers with gas, at an average rate of about one service for 18 customers.

(c) Carcassing & Conversion

- (i) Installation of outlet service pipes from ten feet outside the dwelling to the gas meters along with service risers, laterals, etc.;
- (ii) Internal installation of pipes in about 160,000 dwellings to function at a pressure not exceeding 30 millibars complete with gas meters, pipe ducts, control cocks, etc.;
- (iii) Conversion of about 300,000 existing appliances burning LPG, to burn natural gas.

(d) Training & Consultancy

Consultancy, engineering, and training of Egyptian personnel in various aspects of construction, maintenance, and operation of a gas utility.

Project Cost

2.14 The project cost is estimated at LE107.6 million (US\$155.0 million) of which LE72.0 million (US\$103.8 million) would be in foreign exchange. Basic project cost of LE86.3 million (US\$124.3 million) is based on the firm bids 1/ received from the lowest evaluated bidder. It must, however, be noted that an element of uncertainty remains in regard to cost estimates for internal carcassing and conversion of appliances. Petrogas, at the Bank's suggestion, undertook a sample survey to estimate the average length of service lines, risers, laterals, and carcassing required per household, and to assess the density, diversity, and condition of appliances. While the cost estimates take note of the survey, the possibility of deviation, in the actual cost for carcassing and conversions, cannot be excluded. In the light of construction experience, Petrogas will periodically review and refine cost estimates. GOE/EGPC have agreed to assume responsibility for any cost overruns that may arise.

2.15 In computing cost estimates, physical contingencies have been estimated, on the average, at 10% for equipment, material, and consultancy

1/ Bids were invited on unit rate basis and evaluated on a detailed estimate of quantities. While these estimates are fairly firm for the transmission network, the quantities involving carcassing and conversion are likely to undergo modification as detailed design progresses.

services. A physical contingency of 3% has been assumed for the high pressure transmission pipeline, odorizing unit, pressure regulating stations, and gas meters. A relatively low contingency factor has been assumed as contract for these items has been awarded on a fixed rate basis. A contingency factor of 10% has been assumed for the distribution network and 15% for carcassing of apartments and conversion of appliances. Engineering and consultancy services have been calculated on a unit cost of US\$9,000 per man month. This rate was derived from the existing contract between Petrogas and its consultants. In accordance with the contract, no price escalation has been assumed for the first year. Price escalation for year two has been assumed at 9% for the foreign exchange component and 12% for local expenditure, at 8% and 7% for the foreign exchange cost component for years three and four, and at 11% for both those years for local expenditures. Since Petrogas is exempt from import duty, no allowance has been made for this purpose in cost estimates.

2.16 Estimated costs for the project are summarized below.

	L.E. Million			US\$ Million		
	Foreign	Local	Total	Foreign	Local	Total
1. High Pressure Transmission Pipeline	9.7	4.7	14.4	14.0	6.8	20.8
2. Odorizing Unit	0.2	0.1	0.3	0.3	0.1	0.4
3. Pressure-regulating stations	1.0	0.5	1.5	1.4	0.7	2.1
4. Distribution Network						
(i) Mains	9.9	4.9	14.8	14.4	7.0	21.4
(ii) Service Lines	3.1	1.5	4.6	4.4	2.2	6.6
(iii) Regulators	2.4	1.2	3.6	3.5	1.7	5.2
(iv) Infill	1.0	0.6	1.6	1.4	0.9	2.3
5. Gas Meters	5.7	2.8	8.5	8.2	4.1	12.3
6. External Service Line Including Laterals, Risers, etc.	8.7	4.2	12.9	12.5	6.1	18.6
7. Internal Services	8.1	4.0	12.1	11.7	5.7	17.4
8. Conversion of Appliances	4.7	2.3	7.0	6.8	3.3	10.1
9. Training	1.0	0.5	1.5	1.4	0.7	2.1
10. Consultancy	3.0	0.5	3.5	4.3	0.7	5.0
11. Basic Project Cost	<u>58.5</u>	<u>27.8</u>	<u>86.3</u>	<u>84.3</u>	<u>40.0</u>	<u>124.3</u>
12. Physical Contingency	5.8	2.8	8.6	8.4	4.0	12.4
13. Price Contingency	<u>7.7</u>	<u>5.0</u>	<u>12.7</u>	<u>11.1</u>	<u>7.2</u>	<u>18.3</u>
TOTAL	<u>72.0</u>	<u>35.6</u>	<u>107.6</u>	<u>103.8</u>	<u>51.2</u>	<u>155.0</u>

Project Financing Plan

2.17 The total estimated cost of the project, US\$155.0 million equivalent, is expected to be funded as follows:

<u>FINANCING PLAN</u>			
<u>US\$ million</u>			
	<u>Foreign Cost</u>	<u>Local Cost</u>	<u>Total</u>
GOE/EGPC	51.3	45.3	96.6
IBRD (Loan No. 1732-EGT)	2.5	-	2.5
IDA	50.0	-	50.0
Net Internal Cash Generation	-	<u>5.9</u>	<u>5.9</u>
Total	<u>103.8</u>	<u>51.2</u>	<u>155.0</u>

The proposed credit of US\$50 million would represent 48% of the project's foreign exchange cost and would be used to finance 100% of the foreign exchange cost of items 1 to 3, 4(i), 4(ii), 4(iii), and (together with US\$2.5 million provided under Loan 1732-EGT) 100% of expenditures on items 9 and 10. EGPC and GOE have agreed to finance local currency expenditure, equivalent to US\$45.3 million and foreign exchange expenditure equivalent to US\$51.3 million, plus costs of any overruns. The proposed credit would be made to the Arab Republic of Egypt, who, in turn, would onlend the proceeds to Petrogas through a subsidiary loan agreement. The loan to Petrogas would be for a period of 20 years with a grace period of five years at a 8.25% annual rate of interest.

Allocation and Disbursement of Credit

2.18 The proposed credit of US\$50 million would be disbursed as follows:

- (a) 100% foreign exchange expenditure on the high pressure transmission pipeline, odorizing unit, pressure regulating stations, and distribution network (items 1, 2, 3, 4(i), 4(ii) and 4(iii));
- (b) 100% of expenditure on training;
- (c) 100% of expenditure for consultant's services.

2.19 Disbursement of the IDA credit will be as follows. A detailed schedule of disbursement is in ANNEX 2.02.

<u>US\$ Millions</u>				
<u>Calendar Year</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Incremental	15.0	11.7	10.9	12.4
Cumulative	15.0	26.7	37.6	50.0

Retroactive financing of US\$5 million will be provided for expenditure incurred by Petrogas, (essentially downpayments) on items proposed to be financed by IDA, between November 22, 1979 (date of the award of contract) and the date of the signature of the credit. It is anticipated that the credit would be fully disbursed by June, 1984.

Implementation

2.20 Petrogas would have overall responsibility for implementing the proposed project. EGPC as a holding company will provide Petrogas with all the necessary support to complete and operate the project. Petrogas has appointed British Gas as its Engineering Consultants, who will assist in designing and supervising the construction of the project. This arrangement is considered satisfactory. Since consultants are important in the successful implementation of the project, assurance has been obtained that Petrogas will continue to employ experienced consultants, on terms and conditions satisfactory to the Association. Consistent with current practice in the gas industry, Petrogas has awarded a single responsibility contract for the entire project. The selected contractor would be responsible for detailed engineering, construction of the high pressure pipeline, the distribution network, carcassing of dwellings and conversion of appliances. Undertaking discrete components of the project through separate contractors would have presented serious coordination problems, particularly at several points of interface, where problems of safety are most acute. In Egypt there is little or no expertise in the construction of domestic gas distribution networks, especially with polyethylene pipes. The contractor would therefore need to employ a large expatriate workforce to implement the project. The contractor would initially employ 40 expatriates, which would increase to 140 in the second year and decline smoothly over the next two years as these skills are transferred to the local workforce.

2.21 The contractor has agreed to a detailed construction schedule and is committed to complete the project within a period of four years. The implementation schedule requires the contractor to complete the entire high pressure transmission pipeline, odorization plant, and the pressure regulation stations within the first year. The yearly schedule for the distribution network and conversion of appliances is as indicated in the table below.

<u>Calendar Year</u>	<u>No. of Customers</u>	<u>Conversion</u>	<u>No. of ^{1/}Services</u>	<u>Mains (Km)</u>
1980	8,000	15,000	600	80 to 100
1981	40,000	75,000	2,200	250 to 275
1982	54,000	100,000	3,000	250 to 275
1983	<u>58,000</u>	<u>110,000</u>	<u>3,200</u>	<u>250 to 275</u>
TOTAL	<u>160,000</u>	<u>300,000</u>	<u>9,000</u>	<u>900</u>

The proposed project is scheduled to be completed by December, 1983. The master schedule showing the timing and completion dates of various project-related activities is in ANNEX 2.03. CPM for the Transmission Pipeline, odorization plant, and pressure regulation station is in ANNEX 2.04 and the logic diagram for the remaining activities is in ANNEX 2.05.

2.22 Although the selected contractor is responsible for building the project on a turnkey basis, it would nonetheless impose a considerable burden on the organization of Petrogas. For this reason Petrogas' organizational requirements, recruitment schedule, and the training needs were evaluated. Immediate recruitment and training needs were identified and agreed upon during appraisal. Other important organizational issues were separately identified during appraisal and consultants were asked to undertake necessary studies. Recommendations based on these studies were reviewed during negotiation, (for fuller treatment of these issues see Section 3.07 to 3.11).

Procurement

2.23 Because of the considerations stated in Para. 2.20 and reviewed by IDA prior to appraisal, Petrogas decided to award a single responsibility contract for the entire project. Petrogas, through extensive local and international advertisements, invited contractors to prequalify; 50 firms responded to Petrogas' invitation. The criterion used for prequalification was based on the contractors' previous experience in distribution networks, organizational capability, financial standing, and experience in the Middle East. Primarily because experience in gas distribution, along with carcassing and conversion is relatively rare, only nine contractors prequalified. Tender documents were prepared by Petrogas' consultants, in response to which three bids were received from prequalified contractors. Petrogas, with the assistance of its consultants, evaluated the bids and awarded the contract to the lowest evaluated bidder on November 22, 1979. The Association 2/ reviewed the procurement procedures, including the specifics of prequalification, and found them generally to conform to its guidelines.

1/ In addition about 1800 services would need to be provided for an estimated 30,000 "infill" customers. Most of these "infill" hookups would be required in year three and four. It is assumed that by this time Petrogas would have built up the necessary capability for providing this service from within its own organization.

2/ Detailed IDA review of Petrogas' procurement procedures, responsive nature and evaluation of bids is available on Project file.

2.24 The Bank agreed to advanced contracting because of the emergence of exceptional conditions in the international oil market during and immediately following bid preparation. Even prior to the current round of price escalations, the cost of importing LPG and gas oil was US\$170 per ton and US\$140 per ton respectively. Recent disruptions in oil supplies have increased the price sharply; Egypt is presently importing LPG cargoes at a cost of \$450 per ton. By not allowing advanced contracting project implementation would have been delayed significantly, increasing not only the project costs, but also substantially, the import burden. Before agreeing to advanced contracting:

- (a) It was assured that the overall project design is appropriate (Para. 2.11).
- (b) GOE was advised that it was awarding the contract at its own risk and that it did not in any fashion commit the Association to grant a credit for the project; and
- (c) Executive Directors were advised of the possibility of advanced contracting through the monthly Operational Summary.

Safety

2.25 All fuels carry with them the risk of fire or explosion through a sudden release of energy; no gas system is immune from these risks. Natural gas may escape through leaks in transmission and distribution lines, failure of joints to remain gas-tight, leakage through pipe valves as a result of conversion, or from ill-fitting and maladjusted connections, careless or accidental misuse of appliances, etc. Fires in general have been more lethal than even the most spectacular explosions.

2.26 The above risks notwithstanding, the use of natural gas in Cairo would distinctly improve safety levels over those for LPG which is currently being used as a domestic fuel. Natural gas is a safer fuel than LPG. Being much lighter than air (specific gravity 0.58) it tends to dissipate rapidly into the atmosphere when escaping from leaks. On the other hand, butane and propane (LPG) being heavier than air, (specific gravity 1.96 and 1.47 respectively), tend to settle on the ground providing the flammable source for longer periods of time. In addition since the calorific value of LPG is twice that of natural gas, energy release is much higher in the event of an accident. The fact that LPG comes in movable containers with flexible connections makes it more prone to accident than a natural gas system which has fixed outlets and couplings. In the United Kingdom accidents recorded in the domestic sector from the use of LPG (per million therm) have been six times higher than from natural gas. An increasing number of accidents and fatalities in Egypt, arising from LPG use, attest similarly to its hazards.

2.27 Nonetheless, the proposed gas system carries with it the risk of serious accidents. With proper care, however, these risks can be reduced. Customer and employee safety is a primary consideration for a gas utility. To realize this goal, three main conditions must be assured: firstly, good specifications that set out high material and construction standards; secondly, well-defined and high standard operating practices and procedures; and finally, a corps of well trained employees who observe established specifications, standards, practices, and procedures, and routinely record and monitor actual performance, to establish proof of adherence.

2.28 To meet the above requirements in the Cairo gas distribution project, Petrogas has adopted British specifications where the gas system has a laudable safety record. It has also hired a contractor with extensive experience in laying gas networks and undertaking conversions in Europe. Separately, it would need to establish a rigorous supervisory procedure to ensure that the contractor adheres to specifications. This would, inter alia, require setting up an independent safety organization to undertake a technical audit, initiating a training program for the first line supervisors, and establishing a detailed code for supervisory and safety tests. Consultants have been asked to assist Petrogas in compiling, establishing and implementing a code for this purpose, with expatriate assistance in the initial phase of the project. Preliminary recommendations of the consultants were reviewed during negotiations; Petrogas has agreed to codify the required procedures and after review with IDA implement them by December 31, 1980.

Ecology

2.29 No major environmental problems are likely to result from the implementation of the project. Natural gas is benign to the environment and its extensive use as domestic fuel is likely to reduce the pollution level in Cairo. The pipeline itself would pose no serious environmental hazard since it would be buried, and measures would be taken to assure proper protection, maintenance and operation. Design and construction would be in accordance with appropriate codes and standards to minimize the chances of over-pressurization, corrosion, and third party damage.

Project Risk

2.30 Natural gas projects carry risks which can be minimized, but not entirely eliminated. The project faces operational and geological risks, and carries with it the risks of costly delays. None of these are significant deterrents to the project. While all natural gas pipelines carry operational risks of blow-ups, etc., industry has developed techniques and technology to reduce them to a minimum level. The existing gas production facilities at Abu Ghardig are operated by an experienced oil company (GUPCO). Proven gas reserves are more than adequate to meet project needs. Possibilities of significantly augmenting gas supplies for Cairo are high. Since Cairo is not in the earthquake zone, other geological risks are minimal. However, slippages in implementation are likely for a project of this nature and magnitude. It is Petrogas' objective to convert 190,000 households to natural gas in the first four years. While it should be possible to complete the transmission pipeline within the stipulated time period (one year), the distribution network, conversion, and carcassing could face delays. Project implementation has been designed to attenuate these risks. The entire project has been awarded to one contractor so as to reduce delays arising out of inadequate coordination. In addition, substantial penalties for delays have been stipulated in the contract. Similarly, the contract contains significant incentives for early completion.

Schedule and Reporting

2.31 The proposed project is scheduled to be completed by December 31, 1984. During negotiations agreement has been reached with Petrogas to submit monthly progress reports on each of the project sub-components.

III. BENEFICIARY

Background

3.01 LPG, presently the principal domestic fuel in the urban areas, was first introduced in Egypt by Shell in 1935. The Bottle Gaz Company, a local concessionaire, was in charge of distribution. In 1957, the Societe Cooperative des Petroles, (COOP), a petroleum products marketing company and presently fully-owned subsidiary of EGPC, took over the Bottle Gaz Company. Petrogas was incorporated through a Decree in September, 1978, and is a fully held subsidiary of EGPC. Besides assuming all functions relating to processing, distributing, and marketing LPG in Egypt, it was primarily created to promote and implement a natural gas distribution project which would subsequently function as a gas utility. All LPG related assets have now been transferred from COOP to Petrogas, with COOP functioning as a marketing company for all other petroleum products.

3.02 EGPC functions as a holding company and by virtue of its statutes oversees the entire spectrum of oil and oil-related operations within the Egyptian economy. Its activities range from exploration to downstream operations like marketing and refining. However, except for foreign trade in crude oil and refined products, EGPC works through foreign partners, (exploration) and fully-owned subsidiaries, (refining, transportation, and marketing). These latter companies operate essentially on a cost plus basis and charge EGPC a fee for processing and marketing crude oil and petroleum products. Petrogas distributes and markets LPG on this basis.

Statutory Functions

3.03 The main functions of Petrogas under its charter of creation are as follows:

- (i) Provision for storing, filling, transporting, and marketing of LPG;
- (ii) Purchase, import, manufacture, sale, and maintenance of appliances which use LPG or natural gas;
- (iii) Provision and sale of natural gas to industrial plants, power stations and residential areas; and
- (iv) Entry into joint venture with any local or foreign entity having similar objectives.

While the functions as enumerated in its charter of creation relate to every aspect of gas distribution in Egypt, presently it is the intention of EGPC that Petrogas, besides managing the distribution of LPG, focuses exclusively on implementing the proposed gas distribution project. EGPC will, however, in December 1980 review the organizational capacity of Petrogas for purposes of determining the desirability of entrusting it with additional work of gas distribution to power and industrial units in Cairo.

Capital Structure

3.04 The authorized capital of the company is LE30 million consisting of six million shares. Of this, LE22.5 million is to be subscribed by EGPC and the balance of LE7.5 million by COOP. One million shares, (LE5 million) can be subscribed in cash and the balance of five million shares, (LE25 million) is to be subscribed in kind. COOP has subscribed fully its share of LE7.5 million through asset transfer; EGPC has subscribed LE5.7 million, also through asset transfer. Under the decree, Petrogas can call the balance equity within five years by giving EGPC fifteen days notice. In order to meet the financial needs of the project, Petrogas will revise appropriately the limits on its capital as set above.

Organization

3.05 Petrogas, under its statutes, is to be run by a Board of Directors consisting of a Chairman and eight members. The Chairman and four members of the Board are appointed by the Prime Minister and the remaining four are elected by the labour syndicate. In addition, the Prime Minister can appoint two technical experts, but their intervention in the Board's deliberations is limited to the area of their expertise. So far, only the Chairman has been appointed and the powers of the Board of Directors are vested in him. The Government of Egypt intends to nominate the Board of Directors over the next year. As in other subsidiaries, the directors would be selected from the senior managers and labour representatives working within Petrogas. The holding company, (EGPC), would not be represented on the Board of Directors. This reflects on the relative independence of the subsidiary in its day-to-day operations. However, EGPC would closely monitor Petrogas' development during the implementation period. Furthermore, EGPC reviews the company's performance twice a year in the general body meeting. The general body also approves the company's operating and capital budget.

Existing Operations

3.06 Petrogas' existing operations are confined almost exclusively to transportation, distribution, and marketing of LPG. Imported LPG is transported in special tankers to Alexandria and Suez where it is pumped through pipelines to storage facilities. From here, the LPG is transported by road tankers and pipelines to four refilling plants at Mex, Moustorod, Tomuh, and Suez. Indigenously produced LPG is similarly transported to the refilling plants. There are presently in Egypt, 3.5 million LPG cylinders of 30 liters capacity for domestic use and 200,000 cylinders of 90 liters capacity for industrial use. Since domestic capacity for the fabrication of cylinders is limited, (400,000 cylinders per annum), a fair proportion has to be imported. After being refilled these cylinders are transported by road to 300 distribution centers in Egypt, of which 100 are located in Cairo, 30 in Alexandria, and 170 in other areas of Egypt.

Project Management Needs

3.07 While Petrogas is a relatively new entity it has drawn upon the competent and experienced personnel of EGPC and the subsidiaries of EGPC, to man its senior levels. Most of the present managers in Petrogas have

extensive experience in the oil industry and are therefore capable of discharging their functions satisfactorily insofar as they relate to LPG operations. The oil industry in Egypt, however, has had little experience in domestic gas distribution. Petrogas, moreover, being a new entity, needs to create an organization which, besides overseeing LPG operations, would be capable of implementing the project and operating a safe gas utility.

3.08 Project implementation as currently designed takes note of these limitations. Overall design specifications and network analysis was carried out by Petrogas' consultants (British Gas), who have extensive experience in this area. The task of implementation, (including detailed engineering, of the distribution network, internal carcassing, and conversion) has been entrusted to a contractor who has extensive experience in similar projects in other countries. Initially, Petrogas will secure expatriate assistance for supervising project implementation, (Para. 2.20 to 2.22).

3.09 Nonetheless, Petrogas' managerial and organizational capabilities are critical to the successful implementation and operation of the project. It would need to establish an organization capable of managing the contract, ensuring extensive and effective supervision, and operating and maintaining a safe and dependable supply of gas to its customers. During the preconstruction stage, it would need to acquire rights of way, provide specific facilities for the contractor, develop a manpower recruitment and training schedule and create a corporate structure capable of managing the project and servicing customers. During construction it would be called upon to approve detailed engineering as carried out by the contractor, supervise construction, ensure that work quality adheres to safety standards, record and keep all documents relating to the project, such as "as-built" drawings, micro-films, etc. It would also need to service the contract in terms of quality checks of material used, material quantification, approval of bills, invoices, etc. Separately, it would need to establish an operational organization to service customers, undertake new extensions, establish emergency centers and handle emergency calls. Petrogas would also be required to provide the necessary interface between the contractor and other local bodies, launch extensive publicity campaigns, etc.

Organization for Natural Gas Operations

3.10 The present organizational structure and staffing level is inadequate to meet the above requirements. During appraisal the organization and staffing needs of Petrogas were considered at length. For satisfactory implementation and management of the proposed project, an action plan is required, firstly to strengthen the existing corporate structure, secondly, to set up a construction management organization and finally, to establish a gas operating organization.

(a) Corporate Structure

The present structure of the company is geared to manage LPG operations and would therefore need to be strengthened and modified to take account of Petrogas' expanded responsibility of a natural gas supplying utility. While common staff functions would be performed by the director of finance, the director of personnel

and the legal counsel, LPG and natural gas operations would have to be split and each operation would have to be headed by a General Manager. Separately, a director for management information would have to be appointed who would be responsible for data processing, computer services and systems planning for the company. Because of safety considerations the chairman would need to be assisted by a safety adviser under whose aegis technical audits relating to safety would be carried out. The organization chart relating to the company and to the office of General Manager, Natural Gas Operations, is given in ANNEX 3.01. This was reviewed and agreed upon during appraisal and key personnel have been appointed.

(b) Project Construction Management

A Project Manager would be responsible for supervising project construction activities. He would be assisted by three functional managers in charge of transmission, distribution, and customer services. These divisions would supervise the contractor's work on the transmission pipeline, distribution network and carcassing and conversion. They would carry out the necessary tests and ensure that the contractor adheres to technical and safety specifications. In addition, the Project Manager would be assisted by a finance manager responsible for maintaining accounts and processing the bills, etc., relating to the contract. The organization chart of project management and the number of personnel required is in ANNEX 3.02. A Project Manager has been appointed. During appraisal, agreement was also reached on the number and categories of construction management staff which would be recruited. Pursuant to this agreement, seventy-two field level supervisors have been recruited.

(c) Natural Gas Operations

It is expected that the first set of consumers would be converted to natural gas by the end of 1980. Petrogas would need to organize itself beforehand, so that it can discharge all the functions of a gas utility. For this purpose a separate department for natural gas operations would have to be established under an Operations Manager who would be assisted by a Central Manager and four Regional Managers for Helwan, Maadi, Nasr City and Heliopolis. The Central Manager would provide centralized services to the regions including technical services, (vehicles, stores, etc.), operating services, (cathodic protection, odorizing, communications, etc.), gas control and accounting (control stations, gas balancing, gas contracts), etc. The Area Managers for each of the four districts would oversee gas operations in those districts and provide all operation and maintenance services, customer services, construction of new service lines and hookups, emergency services, etc. In addition, Area Managers would be responsible for sales, meter reading, and billing. The organizational chart for the natural gas operations is in ANNEX 3.03.

Agreement was reached with Petrogas on the overall organizational structure as delineated above and as shown in ANNEX 3.01, 3.02 and 3.03. Detailed job specifications and recruitment schedules have been worked out by Petrogas, with the assistance of its consultants. While key personnel have been appointed, Petrogas has agreed to fully staff the organization by December 31, 1980.

Training

3.11 As indicated above, little or no experience exists in Egypt in regard to the construction of a gas distribution network and operation of a gas utility. Petrogas would have to design and implement an extensive training program for various categories of personnel. Training programs would have to be drawn up, trainers identified and trained, and all facilities, tools and equipment needed for this purpose, acquired. Training is essential not only to ensure adequate supervision of the contractor, but also to create a corps of trained manpower which can rapidly replace the expatriate workforce. To ensure that the necessary transfer of skills and technology is effected, it would be necessary for Petrogas and Petrojet (a construction and contracting subsidiary of EGPC), to depute their personnel to the contractor. The contractor would provide the requisite training and thereafter utilize these personnel in project construction. Petrogas and Petrojet are currently negotiating such an arrangement with the contractor. British Gas is separately assessing in detail the overall training requirements including the establishment of a permanent training institute. The proposed credit would adequately finance the training requirements. Petrogas agreed to (i) prepare by December 31, 1980, with the assistance of its consultants, a detailed assessment of the overall training requirements of its personnel, (ii) submit to the Association by March 31, 1981 a detailed training program for its review and implement the agreed upon training program thereafter. Furthermore, Petrogas agreed to enter into a satisfactory agreement with the contractor by December 31, 1980, to train Petrogas personnel.

Accounts and Audit

3.12 Petrogas is obligated by law to prepare full accounts of its financial position and of its annual operations, by the end of every year. These accounts are subject to an external audit by the Egyptian "Central Accounting Authority," and to the approval of the general meeting of stockholders held regularly within six months after the end of the year. Like all other public sector companies, Petrogas follows the "Unified Accounting System" established by a Presidential Decree in 1966. In addition, the Company must follow specialized subsystems of cost accounting and reporting developed by EGPC, in conformance with the Unified System, for use by all its petroleum sector subsidiaries. A general review of the accounting practices of EGPC will be carried out (as part of a study financed through Bank Loan 1732-EGT) by financial consultants to be appointed by EGPC in May 1980. EGPC has agreed through Loan 1732-EGT to consult with the Bank on the findings of the diagnostic study and to commence the implementation of a plan of action for itself and its subsidiaries by July 31, 1980.

3.13 In addition, in order to provide for an efficient follow up of project development, an information system should be established for the

natural gas operations of Petrogas, which would lead to separate accounts for those operations. Petrogas has agreed to employ EGPC's consultants to (i) assist it in the design and implementation of an information system which would permit segregation of accounts pertaining to natural gas operations and accounts related to LPG operations; (ii) help it to implement the cost accounting and cost control systems to be developed under the contract with EGPC, and (iii) review internal control for its overall operations, and develop recommendations for improvements. The consultant's recommendations will be reviewed by December 31, 1980.

3.14 Having been instituted as a new company towards the end of 1978, Petrogas' first set of complete accounts will, as an exception, not be due before January 1980. Due to delays in the transfer of certain aspects of LPG operations from COOP to Petrogas, the company's accounts of its position since September 1, 1978, are at present still provisional and incomplete. Petrogas has agreed to submit to IDA, not later than September 30, 1980, a complete set of auditor's approved accounts of its position and operations covering the first sixteen months of operation between September 1, 1978 and December 31, 1979. During negotiations, Petrogas furthermore agreed to have the project accounts and its other accounts and financial statements independently audited, and to supply IDA with copies of such statements no later than nine months after the end of every year.

Insurance

3.15 Petrogas covers all of its major facilities and equipment against fire, blowups, damage, and theft through comprehensive insurance schemes. The company has, in particular, extensive agreements to protect it against a variety of risks involved in the transportation, bottling, and delivery of LPG. Petrogas will enter into specific insurance agreements for its natural gas operations, including third party liability. Petrogas is covered by insurance policies with the three major public sector insurance companies within Egypt, (Misr, Ashark, and Al Ahliyah Insurance), who are in turn re-insured outside the country.

IV. FINANCIAL ASPECTS

Introduction

4.01 Although Petrogas' activities as of its date of incorporation (September 1, 1978) were exclusively LPG distribution, the emphasis of its responsibilities will progressively shift towards domestic gas distribution with the implementation of this project, as well as with the future development of other gas distribution projects in Cairo or in Alexandria. While sales of LPG and natural gas serve a similar purpose (provision of energy to domestic users), the financial and managerial characteristics of both operations are bound to be very different. LPG incremental investments are directly linked to demand and are relatively inexpensive, but the cost of this imported energy

is high. Gas operations are highly capital intensive with large initial investments and low incremental expenditures as consumption develops, but cost of the gas, an indigenous commodity, is low. For social and political reasons, it is difficult for the government to set prices of fuels for domestic use (LPG and kerosene) at a level which would fairly represent the economic cost of importing and distributing these energies. In contrast, it appears possible to reflect opportunity costs and aim for independent financial viability on gas operations. These major differences call for different financial objectives as well as separate follow-up and accounting systems.

LPG Operations

4.02 A summary and brief explanation of Petrogas LPG operations is given in ANNEX 4.01. Petrogas net fixed assets were LE13.3 million as of September 1, 1978. They consisted essentially of LPG cylinders, vehicles, filling plants and storage facilities. Petrogas' current assets were LE6.2 million which were mainly LPG stocks and spare parts, (LE4.1 million) and receivables, (LE1.8 million). Current liabilities were LE6.3 million, of which 44% related to payments due to EGPC for LPG supplies. Petrogas had no long-term debt and its equity was LE13.2 million. The level of paid-in capital will need to be revised (see para. 3.04). This revision will take into account the investment plan for LPG activities shown in ANNEX 4.01; LPG funding requirements are at present estimated at LE34 million for the period FY80 through FY85.

4.03 LPG activities of Petrogas are quite typical of the arrangements for marketing subsidiaries in the oil sector in Egypt. Petrogas purchases LPG at a highly subsidized price from EGPC (LE24 per ton as compared to current border price of over LE300 per ton) and resells it at the domestic price, (LE52 per ton). The difference (or 'commission') was set in such a way as to cover operating, storage, distribution costs, etc., as well as a budgeted margin of about 12.5% of selling price. This system permits financial viability of Petrogas' LPG activities, independent of the actual economic cost of the energy.

4.04 Since November 1973, there has been no increase in the selling price of LPG to the public, nor review of purchasing price from EGPC; as LPG operating costs have increased sensibly with domestic and international inflation, margins have shrunk from LE6.5 per ton in 1973 to LE4.8 per ton in 1978. EGPC has therefore agreed to maintain at all times Petrogas' commission on LPG distribution at a level sufficient to cover for Petrogas all LPG operating costs.

Natural Gas Operations

4.05 Because of the fundamental differences between LPG and natural gas operations (para. 4.01), Petrogas has agreed to have separate accounting and financial follow up to its new natural gas operations. Prices for natural gas sales would be set at a level which would enable revenues to cover related operating expenses, generate enough cash internally to adequately ensure debt servicing, and finance the greater part of Petrogas' future expansion in the project areas (see para. 4.12).

Provision of Fixed Assets

4.06 In its natural gas operations, Petrogas will provide all fixed assets up to the property line (transmission pipeline, gas regulating stations, distribution system, service lines and gas meters). While Petrogas will be responsible for the supervising and commissioning of internal carcassing in all the existing 160,000 apartments, and for the conversion of about 300,000 existing appliances from LPG to natural gas envisaged under the Project, the Government/EGPC will finance the costs of the respective investments, which are presently estimated at LE200 per household. During negotiations, the Government and EGPC agreed to make enough funds (both in foreign exchange and local currencies) available to provide for the timely completion of this work.

4.07 The Government took the decision to finance the costs of carcassing and appliance conversion for the following reasons: (i) consumers in existing households would be unwilling/unable to bear the full cost of carcassing and conversion; such a charge would be very large in relation to domestic fuel bills and incomes and would not be warranted by their marginal preference for gas over LPG; (ii) if the costs were met through the gas tariff the price to consumers to achieve viable natural gas operations would have to be set at a level (LE4/Mcf) which would impose too heavy a burden on low income consumers and might encourage shifts to low priced, but high value substitutes, such as LPG or kerosene, thus defeating the government's policy to encourage the substitution of more economic fuels. In addition, such a method of cost recovery would also be inequitable since it would require all consumers to pay for part of the cost of the carcassing undertaken for the initial 160,000 consumers.

4.08 There would remain, however, some avenues for the Government to recover, at least partially, the initial costs of carcassing and conversion from consumers, without jeopardizing their willingness to convert to gas. Consumers would be asked to trade in their bottles of LPG in exchange for conversion. Since Petrogas could use these bottles for its LPG operations, this could provide LE9 million, or about 25% of the total cost of carcassing and conversion. Another possibility is to have the consumer bear the cost of service lines or carcassing where it exceeds a certain stipulated length. These and other possible avenues would be considered in a short study to be undertaken by EGPC and Petrogas, with the help of consultants (see para. 4.16).

4.09 On completion of the project, Petrogas' capital assets for natural gas operations, (LE65.4 million) will consist of: (i) the high transmission pipeline (LE14.4 million); (ii) the odorizing unit (LE0.3 million); (iii) the pressure regulating stations (LE1.5 million); (iv) the distribution network including mains (LE14.8 million), service lines (LE4.6 million), regulators (LE3.6 million) and infill (LE1.6 million); (v) gas meters (LE8.5 million); (vi) training (LE1.5 million); (vii) consultancy (LE3.5 million); and (viii) related price and physical contingency (LE11.1 million). Capital assets will be depreciated according to a schedule consistent with the Unified Accounting System. An assumption of a 5% depreciation rate has been used in the financial forecasts. This is conservative, in view of the projected life of the assets.

For the purposes of computing rates of return on assets (para. 4.12) Petrogas agreed to revalue its gas related capital assets, depreciation charge and accumulated depreciation each year, according to a method acceptable to IDA. During negotiations, it was agreed that this revaluation will be achieved by using the index published by the United Nations for the prices of machinery and equipment exported by developed countries. In the financial projections, a revaluation rate of 10% a year has been assumed.

Purchase of Gas

4.10 Petrogas will purchase its natural gas supplies from EGPC. EGPC and Petrogas have agreed to enter by December 31, 1980 into an agreement whereby EGPC would supply Petrogas with the quantities of gas required to service the two power stations and the domestic/commercial consumers connected to the distribution system, at a price which would not be less, in terms of BTU, than the domestic price of fuel oil supplied to power stations. Based on the present domestic price for fuel oil, a transfer price for gas of LEO.19 per Mcf, increasing by 10% a year, has been assumed in the financial projections.

Sale of Gas

4.11 Petrogas' natural gas revenues will be obtained from the sale of gas to two power stations along the pipeline route and to private consumers in four districts of Cairo (see paras. 2.06 to 2.10). The power stations will be the major customer in the initial years, with an expected combined consumption of 2.2 billion cu.ft. in FY (Fiscal Year) 80, and 4.4 billion cu.ft. in FYs81 through 86; these gas turbine power stations are being established to function as base load stations up to 1986. However, once major steam turbine units come into service in Suez and Cairo, the units would work only for 2000 hrs/year for meeting peak requirements. It is expected that their demand for gas would thereafter fall to 2.2 billion cu.ft. per year. Private consumption will increase in correlation with the number of houses connected. The overall growth of gas consumption is expected as follows (see para. 2.21).

Growth Pattern of Gas Consumption

<u>Year Ending</u>	<u>1980</u>	<u>1983</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>	<u>2005</u>
Houses connected (000) <u>1/</u>	8	190	271	363	455	548	640
Private consumption (MMcf)	56	2,220	3,739	5,508	7,296	9,257	11,402
Power station consumption (MMcf)	<u>2,220</u>	<u>4,440</u>	<u>4,440</u>	<u>2,220</u>	<u>2,220</u>	<u>2,220</u>	<u>2,220</u>
Total consumption (MMcf)	2,276	6,660	8,179	7,728	9,516	11,477	13,622

1/ These figures include infill.

Pricing Policy

4.12 Pricing of natural gas sales to consumers should (i) ensure that over the longer term, operating revenues cover operating expenses, debt service, and provide a reasonable contribution to the future expansion of natural gas facilities; and (ii) price gas higher than its opportunity cost (i.e. fuel oil, f.o.b. price). It is realized that because of the necessary time lag in connecting sizeable numbers of consumers, Petrogas will require a number of years before it can earn a reasonable rate of return on its net fixed assets, to achieve the objectives set above. On the basis of present forecasts it would be reasonable to request Petrogas to earn 9% on its net revalued natural gas fixed assets only after 1990. In the meantime it is proposed to request Petrogas to meet the undermentioned financial targets: from FY 80 through FY 83, revenues should be sufficient to cover at least operating expenses (excluding depreciation), debt service, and working capital needs. Thereafter, Petrogas should achieve the following rates of return on revalued net assets:

<u>FYs 84/85</u>	<u>FYs 86/87</u>	<u>FYs 88/89</u>	<u>FY 90</u>	<u>FY 91 and thereafter</u>
3%	4%	5%	7%	not less than 9%

During negotiations the Government and Petrogas agreed to these targets.

4.13 Different sets of policies could be chosen at this stage in order to meet the financial objectives: (i) decrease the price of natural gas below its present level in order to stimulate consumption and therefore aim for financial viability through increased volume of sales, or (ii) set the price at a higher level, taking into account the risk of substitution of other fuels, and the effect on per capita consumption level. The first alternative has been adopted in many developed countries such as France, the U.K., and the Netherlands, in the 1950s-60s when natural gas distribution was substituted for town gas. In the context of Egypt, it is preferred to follow the increased price alternative for the following reasons: (i) this price ensures that economic pricing will be met; (ii) it encourages conservation of domestic fuels; and (iii) the risk of substitution of other fuels and/or decrease in consumption appears to be limited at present. These risks are addressed in detail in para. 5.16.

4.14 Because of the social problems involved in the supply of domestic fuels, the Government is of the view that the price of gas to domestic consumers should remain constant during the first five years of operation. Current forecasts indicate that to meet the objectives of viability set above, the average price to domestic consumers would have to be set initially at LE3 per Mcf. During negotiations the Government/EGPC confirmed that the average price of gas would at no time be less than that level. Furthermore, during negotiations, the Government and Petrogas agreed to submit every year, starting in March 1983, financial projections showing that the tariff, appropriately revised, meets the objectives of financial viability set in para. 4.12. It is expected that in the initial period (FY80 through FY84), there would be no need for revision of the initially agreed price, unless the

conditions (price escalation, number of connections achieved, etc.) were to differ from present assumptions.

4.15 It is anticipated that an average revenue of LE3 per Mcf would provide sufficient income to cover operating expenses and debt service requirements, during the period FY80 through FY84. It is also projected that the proposed tariff would enable Petrogas to meet its capital expenditure requirements for the program from its internally generated funds from gas operations after 1983. The DCF internal rate of return would be 20.6% in current terms (i.e. about 11% in real terms) over the life of the project. Projections assume that Petrogas' average earnings from gas sales to private consumers would be LE3 per Mcf between 1980-85, and would increase at a rate of 10% a year afterwards.

4.16 Setting the price for domestic users at the proposed level would represent a major increase above the current price of LPG (an effective doubling), and could impose undue hardship on poorer consumers. To make the increased cost burden more equitable, Government has agreed to consider the possibility of setting a graduated tariff structure which would still secure Petrogas the average revenue indicated above while increasing only slightly the average domestic fuel bill of the poorer consumer. EGPC and Petrogas have agreed to undertake a tariff study to evolve such a graduated structure. This study should be finalized and submitted to the Association for review before December 31, 1980. Petrogas and the Government have also concurred that the agreed tariff will be implemented in time to match the first supply to consumers.

4.17 The gas to be supplied to power stations will be sold at, at least, LE0.51 per Mcf. This price represents a sizeable increase over the LE0.19 per Mcf charged until recently to all power stations. Under Loan 1732-EGT, Government has agreed to revise energy prices in Egypt as a result of the Products Pricing and Gas Utilization studies which are now being undertaken, and which should be finalized by January 1981. Projections assume a price of gas to power stations of LE0.51 per Mcf in 1980, increasing by 10% a year thereafter.

4.18 The proposed financial arrangement would ensure that Petrogas functions as a non-subsidized public utility for its gas operations incurring all actual costs involved in the process of gas distribution, while still achieving an adequate return. It represents a significant change in policy when compared with the commission system presently existing for Petrogas' LPG operations and EGPC's marketing subsidiaries (see para. 4.03).

Petrogas' Financing Plan 1/

4.19 The table set out below gives a summary of Petrogas' estimated capital requirements for natural gas for the four year (FY 80-83) construction period of the project and the sources from which they could be met. Further details are given in ANNEX 4.02.

1/ As described in para 4.09, Petrogas capital assets will exclude external service lines, internal services and conversion of appliances.

	<u>LE</u> (millions)	<u>US\$</u>	<u>%</u>
<u>Requirements</u>			
Construction - Project	65.4	94.2	99
Working Capital	<u>0.7</u>	<u>1.0</u>	<u>1</u>
Total Requirements	<u>66.1</u>	<u>95.2</u>	<u>100</u>
<u>Sources</u>			
Internal Cash Generation	11.9	17.1	18
Less: Debt Service	<u>(6.4)</u>	<u>(9.2)</u>	<u>(10)</u>
Net Internal Cash Generation	5.5	7.9	8
EGPC - equity contribution	24.1	34.8	36
Borrowing:			
IBRD Loan 1732-EGT	1.7	2.5	3
Proposed IDA Credit	<u>34.8</u>	<u>50.0</u>	<u>53</u>
Total Sources	<u>66.1</u>	<u>95.2</u>	<u>100</u>

4.20 IDA funds will be onlent at the current Bank lending rate, i.e. 8.25% interest, with a repayment period of 20 years including an initial grace period of five years. The Government of Egypt will bear the foreign exchange risk of the credit. EGPC will contribute the balance of the funds needed by Petrogas in excess of its net internal cash generation and long term debt drawdowns. An assurance from Government, and EGPC that they will provide Petrogas with the required funds, as and when needed, has been obtained during negotiations. EGPC is expected to contribute about LE24 million toward the project in the first four years.

Future Finances

4.21 Forecast Income Statements and Balance Sheets for natural gas operations for FYs 1980-2005 are given in ANNEXes 4.03 and 4.04 with relative notes in ANNEX 4.05. Salient features of the finances over the shorter period, FY 80-86, are set out below.

Growth Pattern of Gas Consumption

<u>FY</u>	<u>80</u>	<u>81</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>
Net Income (before interest) 000 LE	(379)	419	1,000	1,758	2,769	4,067	5,489
Operating Ratio %	129	89	84	82	78	75	71
Rate of Return on Revalued Net Assets %	(4.0)	1.7	2.6	3.1	4.1	5.6	7.2
Debt/Equity Ratio	59/41	65/35	59/41	55/45	50/50	43/57	37/63
Current Ratio (times)	2.6	3.1	3.2	3.2	7.2	8.5	12.6

4.22 Using as a basis for the forecasts the pricing set in paragraph 4.10, (for purchase of gas) and paragraph 4.11 (for sale of gas), the following comments can be made: (i) Return on revalued net assets is projected at about 6% in FY85, progressing to 10% in FY90. The conservative level of these returns is due to the fact that gas distribution system will be fully operational only after 26 years, once all 640,000 households are connected and, by the end of the disbursement period of the proposed IDA credit (1983), only 30% of the total projected connections will have been achieved. (ii) Net income would increase from LE419 thousand in FY81 to LE5.5 million in FY86; however, owing to the heavy interest charges, annual net losses would be incurred until FY84; these should be eliminated by FY86 from net profits. (iii) The current ratio is expected to be satisfactory throughout the projected period. Nevertheless if, during the initial stage, internal cash generation were insufficient to cover debt service and working capital needs, EGPC would provide the necessary deficiency contribution. This has been confirmed during negotiations. (iv) Debt/equity ratio is expected to improve from 59/41 in FY80 to 37/63 in FY86. Debt service coverage should increase from 1.3 times in FY80 to 1.7 times in FY85, with higher coverages after FY87. During negotiations Petrogas agreed not to incur long term debt for its natural gas operations, without consulting IDA, unless its future debt service for these operations is (i) for each of the years 1981 and 1982 covered 1 times, and (ii) for each year thereafter covered 1.5 times, by a reasonable forecast of net natural gas income in such year, before charging depreciation.

4.23 Petrogas is required to set aside reserves as prescribed by law, and in its charter of incorporation, in the following pattern: 2% of net income is invested in Nasr Bank shares; 5% of profit is allocated to constitute legal reserves; 5% of profit is used to buy government bonds or to be deposited in a special account at the Central Bank; and 5% contributes to the inflation reserves. After the appropriation to reserves, the rest of the net income is distributed as follows: 5% of paid capital is contributed to shareholders and employees; 10% of the remaining amount is EGPC's management fee; and the rest is either distributed to shareholders and employees, or set aside as reserves, according to the decision of the General Assembly of Shareholders. Since Petrogas' natural gas operations are expected, under depreciation assumptions, to have accumulated net losses until FY85, these provisions will only become effective in FY86. Despite these distribution arrangements, forecast indicates that net internal cash generation will be sufficient to cover expansion program requirements after 1983. Nevertheless, an assurance from the Government and EGPC that they will provide Petrogas with any funds required to carry on its expansion has been obtained during negotiations.

Financial Sensitivity Analysis

4.24 Cases considered in sensitivity analysis are presented in ANNEX 4.06.

Results of Sensitivity Analysis

	<u>Financial Rate of Return</u> (real terms)	<u>Return on Revalued Net Fixed Assets 1985</u> %	<u>Return on Revalued Net Assets 1990</u> %	<u>Debt Service Coverage 1985</u>
Base Case	10.6	5.6	10.5	1.7
Case 1	12.3	7.9	11.9	2.0
Case 2	8.9	4.4	8.0	1.5
Case 3	7.1	3.0	5.6	1.3
Case 4	8.7	4.3	7.8	1.5
Case 5	9.3	4.7	8.6	1.6
Case 6	7.9	3.7	6.8	1.4
Case 7	12.2	7.1	13.1	1.9
Case 8	8.2	3.8	7.2	1.7

Results indicate that (i) financial viability is very sensitive to pricing policies, both to power station, (Case 1) and to domestic consumers, (Cases 2 and 3). These results underline the need for close monitoring of pricing issues during project implementation and a thorough supervision in order to ensure that Petrogas' financial objectives are met; (ii) should only 90%, or even 80%, of the scheduled connections be achieved each year, (Cases 5 and 6) the financial results would be lower, but still acceptable. Similarly, should there be a drop of consumption to 90% of estimated level, (Case 4) the financial viability would not be dramatically impaired; and (iii) 20% overruns on the total project cost would bring DCF internal rate of return to 8.2% and rate of return on revalued net assets in 1990 to 7.2%, (Case 8). However, financial viability is rather insensitive to cost overruns on fixed assets acquired after 1983.

V. ECONOMIC ANALYSIS

5.01 The project's primary justification is the savings which accrue to the Government of Egypt by upgrading the use of its natural gas from a replacement for fuel oil to a substitute for gas oil and LPG. The project is the least cost method of meeting domestic energy demand in the project area and makes optimal use of Abu Ghardig gas. Natural gas prices will be increased significantly under the project, and a progressive tariff structure will be instituted to shield small consumers from international energy prices for their basic cooking needs, while encouraging larger users to conserve energy. The project has been designed to result in a significant transfer of technology and skills to Petrogas, which will enable it to expand domestic gas distribution in Cairo and other areas, in the future, with minimal expatriate input.

Least Cost Solution

5.02 There are three steps to the least cost evaluation of this project. The first is to determine that natural gas is the least cost alternative for meeting demand in the project area. The second is to ensure that the project represents the optimal use of Abu Ghardig gas and, finally, that the project itself is the least cost design configuration.

5.03 The alternative to natural gas for the two gas turbines in the project area is gas oil, which they would otherwise have to use. The BTU equivalent border price of gas oil (at \$320/ton) is about \$7.6/mcf, compared with an average incremental cost of natural gas delivered by the project of less than \$2.9/mcf for the power station component. To better assess domestic demand in the project area, a survey was undertaken by Petrogas of five percent of the households in the four areas. It was found that LPG is currently used for cooking in all of the houses, for water heating in about 35% of the houses, and for space heating in 3%. All houses use electricity for lighting (with 10 ampere connections), but only one percent has electric stoves. In the poorer areas, some consumers have a kerosene burner which is used to heat water. The primary domestic alternatives to natural gas, therefore, are (i) continued use of LPG, (ii) replacement by kerosene, and (iii) upgrading electricity supplies to allow electric stoves and water heaters.

5.04 Replacing LPG with kerosene would merely be substituting one expensive, internationally tradeable commodity for another. Both are high value petroleum products, although the storage problems of LPG in Egypt (necessitating smaller purchase lots) mean that kerosene's delivered cost to the consumer is marginally lower than that of LPG. A direct BTU-equivalent comparison between the two is not valid, however, due to the clear quality advantage of LPG in meeting consumer needs (para. 5.17).

5.05 The possibility of upgrading existing electricity supplies to satisfy cooking and water heating requirements was also considered, although on energy conservation grounds it is unlikely that burning fuel to produce power would be economical compared with direct fuel use by consumers. Indeed, the additional fuel cost alone required to produce the incremental power equivalent of the gas consumption, over the life of the project, would have a total present value cost of LE280 million, or more than double the total domestic gas distribution costs of the proposed project. In addition, the electricity alternative would require investment in generation facilities, upgrading of the distribution system and house connections and the replacement of existing stoves and heaters by electric appliances (which are not locally manufactured at present). Therefore, the LPG and gas oil alternatives are used as the basis of comparison in the rate of return analysis.

5.06 The major alternative use of natural gas in Egypt is as a fuel oil replacement in Cairo. Higher grade uses, such as feedstock, are not currently available in the area. Under the Gulf of Suez loan to Egypt, financing was included for a study of the optimal utilization of Egypt's natural gas resources. Given existing pipeline infrastructure and the current and projected international prices for LPG versus fuel oil (para. 5.09), the proposed

project represents the optimal use of the Abu Ghardig gas. Its net present value exceeds that of the next best alternative (fuel oil replacement in Cairo) by LE130 million at a 12% discount rate.

5.07 The third stage of the least cost analysis is the design of the project itself. As discussed in para. 2.11, the original project design was completely revised following Bank review, and the current project configuration resulted from a detailed computer simulation of design alternatives.

Return on Investment

5.08 The project's return on investment has been calculated through a comparison of the costs and benefits of the project with those which would be incurred without the project. The without project alternative in this case is to continue using LPG to meet domestic demands in the project area, to use gas oil in the gas turbines at Nasr City and Heliopolis, and to use the natural gas in Cairo as a substitute for fuel oil. These alternatives are summarized below.

	<u>Domestic Consumers</u>	<u>Gas Turbine Plants</u>	<u>Non-project areas in Cairo</u>
Without project	LPG	Gas oil	Natural gas
With Project	Natural Gas	Natural Gas	Fuel oil

The LPG and, in all probability, gas oil would have to be imported. The fuel oil is available locally and could otherwise be exported. Thus the border consequences of the project would be to reduce LPG and gas oil import requirements and to reduce the amount of fuel oil which could be exported. Project benefits, in effect, are represented by the differential between the border prices of imported LPG and gas oil (c.i.f.) and the border price of fuel oil (f.o.b.) which is otherwise released for export.

5.09 Prior to the current round of escalations, prices of petroleum products maintained a relatively stable relationship with the price of crude oil. Gas oil and LPG were priced at about 120% and 115% respectively, of the price of Arabian light crude oil, while fuel oil prices were about 75% of the crude price. On this basis, and pricing oil at US\$33/barrel, international prices of LPG, gas oil and fuel oil would be US\$275, US\$290 and US\$150 per ton, respectively. Freight charges for LPG and gas oil are estimated as US\$75 and US\$30 per ton, respectively. Recent disruptions in oil supplies have tended to increase both the international price differential and the freight charges which are applicable to LPG and gas oil. For the purpose of the base case analysis, however, the prices of LPG (c.i.f.), gas oil (c.i.f.), and fuel oil (f.o.b.), have been taken as US\$350, US\$320 and US\$150 per ton.

5.10 Project costs at constant (1980) prices, excluding taxes and subsidies, and including the incremental carcassing costs of future new houses have been used. The foreign exchange component has been converted to border prices at the exchange rate of US\$1.44/LE and labor costs have been valued at market prices. The LPG/gas oil alternative includes all incremental costs associated with continued production and distribution.

5.11 On this basis the internal rate of return on the project is 44%. The return on the component which supplies gas to the two gas turbine plants (if implemented alone with a smaller transmission pipeline) would be over 100%, and the incremental return on the domestic gas distribution component is 23%. The latter adds LE55 million in net present value to the project.

5.12 The major uncertainties of the project are the timing of the car-cassing and conversion activities needed to connect domestic consumers and the potential for marginal fuel substitution once increased natural gas prices are implemented. If only 60% of projected consumption were to take place each year due to delays in connections and/or LPG/kerosene substitution, the project's rate of return would be reduced to 40% (and that of the domestic distribution component to 17%). If project costs were to increase by 30%, the total project return would fall to 29%. If currently prevailing gas oil/LPG/fuel oil price differentials were to continue over the project life-time, the return would increase to 67%.

Pricing

5.13 As shown below, Egypt's regime of administered prices has resulted in domestic petroleum product prices which, except for gasoline, are less than one fourth of their border equivalents (para 1.25). By maintaining prices at this level a valuable opportunity for increasing domestic resource mobilization is being lost.

<u>Product</u>	<u>Price in US\$/ton</u>		<u>Percent of domestic requirements met by imports (exported)</u>	
	<u>Domestic</u>	<u>Approx. Border</u>	<u>1977</u>	<u>Projected 1980</u>
LPG	75	350	74	86
Premium gasoline	261	375)		
Regular gasoline	220	365)	(87)	(51)
Kerosene	56	325	(1)	11
Gas oil	52	320)		
Diesel oil	44	320)	(4)	26
Fuel oil	11	150	(16)	(15)

To lay the groundwork for a fundamental change in Egypt's energy pricing policy, the Bank's previous loan in this sector included financing for a comprehensive study of alternative price scenarios and their effects upon energy consumers. The study is expected to be completed by January 1981. Pending that detailed review, this project will succeed in raising natural gas prices to domestic consumers to an average level of LE3/mcf, which is above the border price of gas' current opportunity cost as a fuel oil replacement (about LE2.6/mcf). By comparison, the average incremental cost of gas produced and distributed by the project is about LE2/mcf, at a discount rate of 12%, and the equivalent border price of LPG is about LE5/mcf.

5.14 To avoid imposing hardship on the poorer project area residents who use gas only for cooking, a progressive tariff structure will be agreed upon whereby the minimal requirements for cooking will be sold at a reduced rate

(para. 4.16). This will also minimize any incentive for the poor to switch from gas to low priced, but high value, kerosene (para. 5.17). A short tariff study will be conducted to determine the appropriate blocks in the tariff structure, but it is expected that consumption in excess of about 1,000 cf/month will be charged at a rate which exceeds the border price of natural gas' current opportunity cost as a fuel oil replacement.

5.15 The price of natural gas sold to power stations to be supplied by the project will be set at, at least, LE0.51/Mcf (para. 4.17). The Egyptians covenanted under the first loan to address the question of natural gas prices to the power and industrial sectors through the pricing study discussed above, in order to work toward a broader solution to energy sector pricing.

Fuel Substitution Risks

5.16 As noted in para. 5.12 a possible economic risk of the project is the possibility of fuel substitution by domestic consumers. The table below shows the current BTU equivalent prices of kerosene, LPG and electricity compared with the proposed natural gas price.

<u>Fuel</u>	<u>LE/mcf</u> <u>equivalent 1/</u>
Kerosene	0.88
LPG (official) <u>2/</u>	1.15
Electricity <u>3/</u>	5.90
<u>Natural gas</u>	<u>3.00</u>

While it is expected that the energy pricing study financed under the previous loan to EGPC will recommend an increase in kerosene and LPG prices, it cannot be assumed that such recommendations will be implemented by the time this project is completed. Therefore, in addition to continuing discussions with the Government on the general issue of energy pricing, the mission carefully examined the potential for fuel substitution and reviewed its possible effect on project benefits.

5.17 The project rate of return is rather insensitive to marginal switching from natural gas to kerosene or LPG. With respect to kerosene, there are several reasons why no more than marginal substitution is expected to take place. Its odor and safety problems limit its current and future use to the lowest income areas. In those areas, however, 70 percent of the households use only one bottle of LPG (LE0.56/mcf equivalent) per month. The progressive tariff structure with its lifeline rate for small users will minimize any substitution incentive for them. In the more affluent areas, electricity and LPG are the relevant candidates for natural gas substitution. In Maadi, for

1/ Does not take into account differing appliance efficiencies.

2/ The black market price for LPG is about LE1.5 per bottle which is equivalent to about LE2.7/mcf.

3/ Effective January 1980 for consumers using less than 100 kWh/month.

example, 73% of the households consume more than one bottle of LPG per month, and 39% consume 3 or more bottles. For them, the proposed gas price is likely to represent a significant increase even over present black market prices, so there may be an incentive to switch back to LPG or to electricity. The risk of substantial switching back to LPG is limited because (i) the Government will close LPG distribution centers in the project area so that sizeable transportation costs would be involved; (ii) the initial houses connected to the distribution system will have to trade in the LPG cylinders in order to be converted free of charge to natural gas; (iii) switching back to LPG would require either re-conversion or replacement of appliances, which would represent high initial costs; (iv) natural gas has advantages over LPG in terms of safety and supply which will be advertised and appreciated by such consumers; and (v) the black market price of LPG is likely to increase as supplies become tighter. With respect to electricity even higher front-end costs are involved as all electric stoves have to be imported. In addition, the present power tariff of LE.02/kWh is significantly above the natural gas equivalent price, even allowing for possible efficiency advantages of electric appliances.

VI. RECOMMENDATIONS

6.01 During negotiations the following issues were raised with EGPC and Petrogas and satisfactory assurances were obtained that:

- (i) EGPC would operate gas fields at Abu Ghardig or other gas fields subsequently discovered and linked with Cairo, in a manner which would permit availability of the gas for the Cairo gas distribution network over a period of at least 16 years after project completion (paragraph 2.05);
- (ii) Petrogas would continue to employ experienced consultants on terms and conditions satisfactory to IDA, (paragraph 2.20);
- (iii) Petrogas, with the assistance of its consultants, would by December 31, 1980 compile a detailed code for supervisory and safety tests. Measures in this respect would be reviewed and agreed upon with IDA, (paragraph 2.28);
- (iv) Petrogas would periodically submit project progress reports to IDA, (paragraph 2.31);
- (v) Petrogas would fully staff its agreed organizational structure by December 31, 1980 (paragraph 3.10);
- (vi) Petrogas would prepare by December 31, 1980 a detailed assessment of training requirements of its personnel. Petrogas would further present a complete training program to the Association, for review not later than March 31, 1981. It would also, by December 31, 1980, enter into a satisfactory training agreement with the contractor for the training of Petrojet and its personnel (para. 3.11);

- (vii) Petrogas would establish separate accounts for natural gas operations. It would, further, employ consultants satisfactory to the Association for assisting it, (a) in designing and implementing an information system which would permit segregation of accounts; (b) in implementing cost accounting and cost control systems; and (c) in reviewing internal control for its overall operations, (paragraph 3.13);
- (viii) Petrogas would submit to IDA project accounts and other accounts, duly audited by independent auditors, not later than nine months after the end of each year, (paragraph 3.14);
- (x) EGPC would review each year the commission on LPG distribution so as to ensure that it is sufficient to cover all LPG operating costs, (paragraph 4.04);
- (xi) Petrogas and EGPC would commission a study in order to evolve a graduated tariff structure and consider the possibilities of recovering, at least partially, the carcassing and conversion costs from the initial 160,000 consumers. This study should be finalized and submitted to the Association for review before December 31, 1980, (paragraph 4.08 and 4.16);
- (xii) Petrogas and EGPC would enter into an agreement which would ensure an adequate supply of gas to the project. The price would not be less, in terms of BTU, than the domestic price of fuel oil supplied to power stations (paragraph 4.10);
- (xiii) Petrogas would from time to time set the average price of natural gas supplied to domestic consumers and the power stations to meet the following targets: in FY 80 through FY 83, revenues should be sufficient to cover at least operating expenses (excluding depreciation), debt service and working capital needs; in FYs 84 and 85, Petrogas should achieve a 3% rate of return on revalued net assets, increasing to 4% in FYs 86 and 87, 5% in FYs 88 and 89, 7% in FY 90, and 9% in FY 91 and thereafter, it being understood that the average price to domestic consumers and the price to power stations shall at no time be less than LE3 per Mcf and LE0.51 per Mcf, respectively (paragraphs 4.12, 4.14 and 4.17);
- (xiv) Petrogas would not incur any long term debt for its natural gas operations without consulting with IDA, unless future debt service for natural gas operations is covered (a) for each of the years 1981 and 1982 1 times, and (b) for each year thereafter 1.5 times, by a reasonable forecast of net natural gas income in such year before charging depreciation (paragraph 4.22);

6.02 Assurances were obtained during negotiations from ARE and EGPC on the following:

- (i) ARE would by June 30, 1981 carry out a study to review the economic viability of rehabilitating and converting the existing gas distribution network in central Cairo from producer gas to natural gas and linking it with the proposed project, and would implement any recommendations mutually agreed with IDA (paragraph 2.02);
- (ii) ARE would issue a decree prior to December 31, 1980 in relation to the buildings to be constructed in the project area, which obligates the builder to make necessary provisions for internal carcassing and external piping up to the periphery of the property line, under the overall supervision of Petrogas, (paragraph 2.12);
- (iii) ARE would finance, in conjunction with EGPC, the cost of internal carcassing of the existing 160,000 apartments and conversion of about 300,000 appliances, (paragraph 4.06); and
- (iv) ARE would in conjunction with EGPC provide Petrogas with the funds required to meet capital expenditure needs during project construction, to carry on its expansion, and to cover any deficiencies in debt servicing and working capital during initial stages of project operation, (paragraphs 4.22 and 4.23).

6.03 Based on the above assurances, the project is suitable for an IDA credit of US\$50 million.

EGYPTIAN OIL PRODUCTION BY FIELD, 1955-76

<u>Oil Field</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	
Ras Gharib	1210	1031	1110	1018	931	889	859	725	602	491	424	446	383	472	208	357	383	457	387	470	472)		
Bakr						185	189	276	421	564	792	833	485	499	463	595	461	380	410	389	468)		
Karim						9	72	73	101	113	117	117	95	95	86	86	92	81	52	41	47)		
Amer											28	47	43	60	34	53	28	50	46	115	164)	1330	
Shoukeir												4	10	13	3		9	12	9	16	28)		
Ori El Yuer														52	100	216	386	411	387	391	400)		
Ayun															6	9	11	21	85	105	129)		
Kheir																			15	18	22)		
Morgan														2600	7305	10040	14047	12653	8206	5149	3363	4400	5310
July																					1054	1940	3640
Banadan																					23	1600	3755
Pazzak																		376	835	901	880	490	46
Abu el Gharadek																				563	105	151	320
W.D. 33																					42	44	33
El Alamein														410	1877	1697	1224	608	436	374	388	238	
Yetna																		43	395	355	287	257	60
Sudr	313	259	292	185	158	162	157	129	140	131	118	113	90	80	70	60	50	45	40	35	17)		
Assal	164	140	156	149	149	154	151	134	111	97	111	89	81	75	70	60	50	42	31	25	9)	104	
Abu Ruteis			59	385	374	241	171	129	100	93	133	134	84	128	198	205	228	207	176	139			
Balaein on shore	53	229	661	1343	1346	1498	2014	2845	3040	2623	2539	2260	915	12	161	1564	2066	2017	1841	1796)			
Balaein off shore									959	2021	1998	1913	1836	2173	2251	2105	2671	2886	2013	1815)	324		
Akza							5	19	20	22	18	13	5										
Feran	20	29	23	16	16	14	9	10	28	27	18	18	5				16	6	7	2			
	1760	1688	2301	3096	2974	3152	3627	4340	5522	6182	6296	5987	6632	11374	15567	21054	20371	16206	12837	11500	11740	18300	

Sources: Ministry of Petroleum,

PROJECTED DEMAND ^{1/}FOR NATURAL GAS1980 - 1985

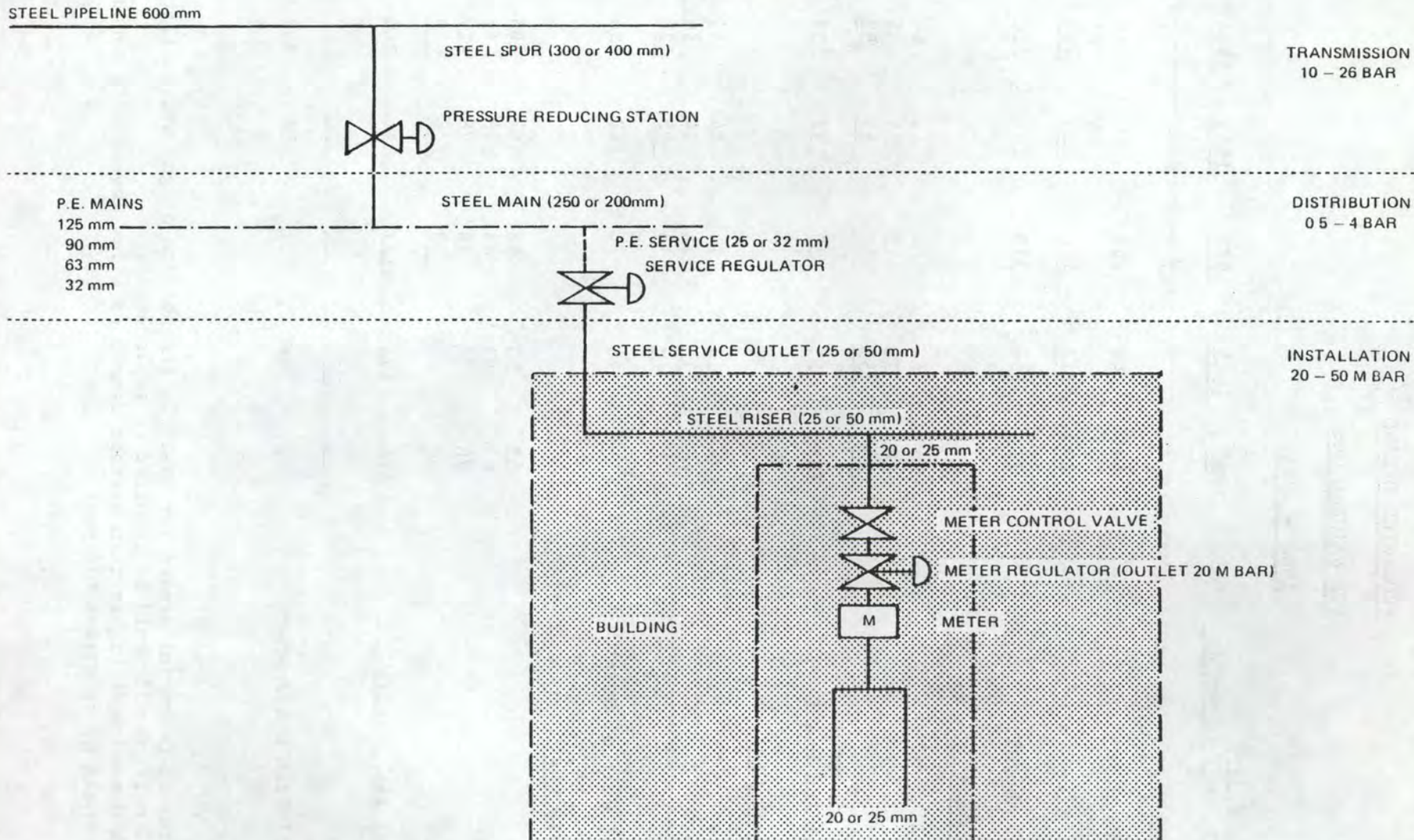
<u>Peak Consumption</u> <u>In million cu. ft. per day</u>	<u>1980</u> ^{1/}	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
<u>Abu Qir Gas:</u>						
Fertilizer	42	49	49	49	49	49
Sponge Iron	-	-	-	35	64	64
Power	<u>29</u>	<u>117</u>	<u>170</u>	<u>213</u>	<u>213</u>	<u>213</u>
Total Abu Qir	71	166	219	297	326	326
<u>Abu Maadi Gas:</u>						
Fertilizer	64	64	64	64	64	64
Textiles	18	18	18	35	35	35
Power	<u>53</u>	<u>53</u>	<u>53</u>	<u>53</u>	<u>53</u>	<u>53</u>
Total Abu Maadi	135	135	135	152	152	152
<u>Gulf of Suez Gas:</u>						
Fertilizer	-	14	14	14	14	14
Cement	-	14	14	14	14	14
Power	-	-	<u>43</u>	<u>85</u>	<u>128</u>	<u>128</u>
Total Gulf of Suez	-	28	71	113	156	156
<u>Abu Ghardig Gas:</u>						
Cement	53	53	53	67	85	85
Steel Works	43	43	43	43	43	43
Power	78	78	78	78	127	177
Households	-	<u>1</u>	<u>3</u>	<u>6</u>	<u>9</u>	<u>10</u>
Total Abu Ghardig	174	175	177	194	264	315
Total Peak Consumption	380	504	602	756	898	949

Source: EGPC

^{1/} Represent potential demand for gas. In the absence of gas availability, fuel oil/gas oil would be required as replacement.

2/ Peak demand much higher than average demand as a few investments consuming gas would go on stream mid year.

CAIRO GAS DISTRIBUTION PROJECT SYSTEM DESIGN



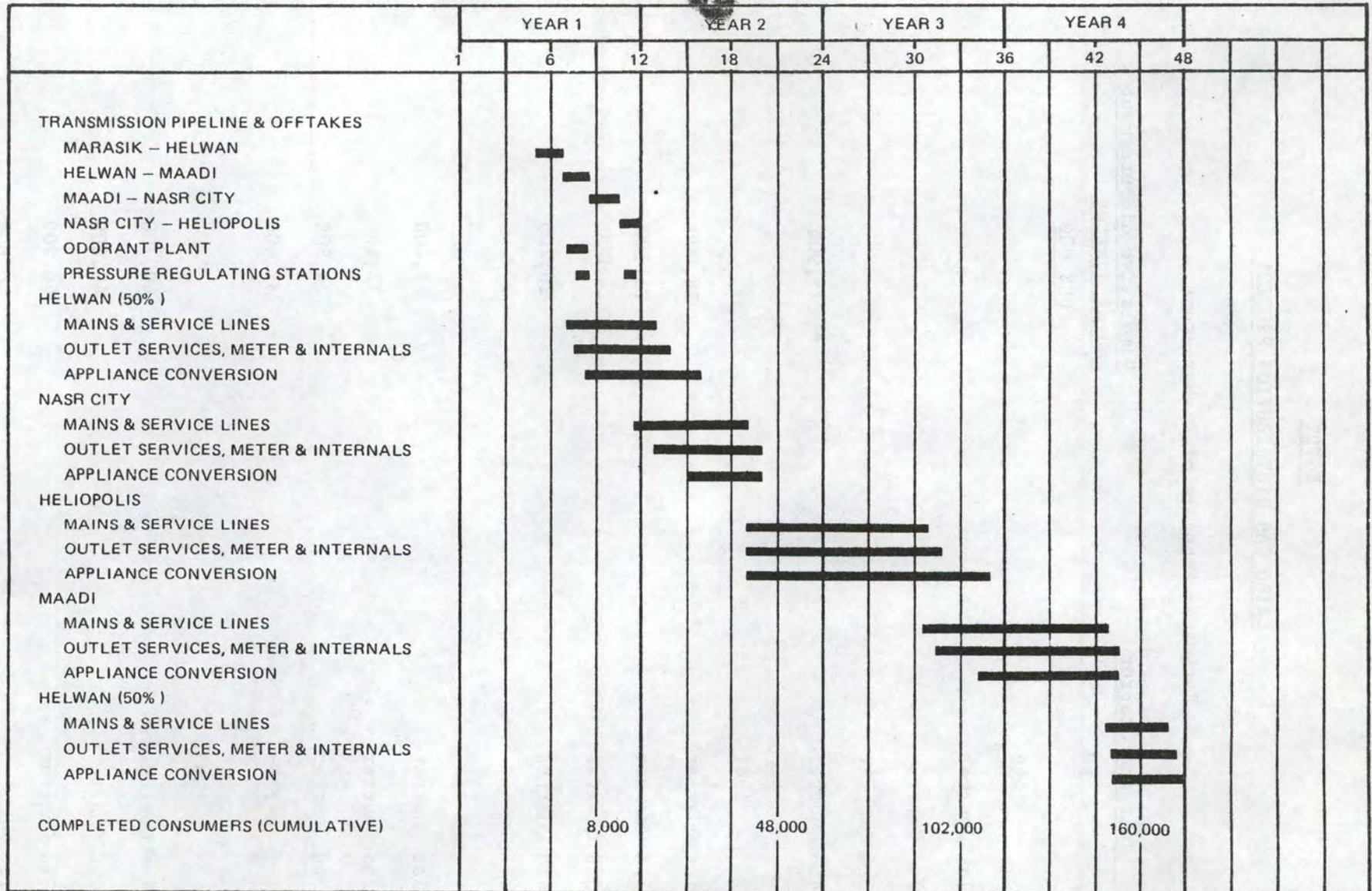
EGYPT

CAIRO GAS DISTRIBUTION PROJECT

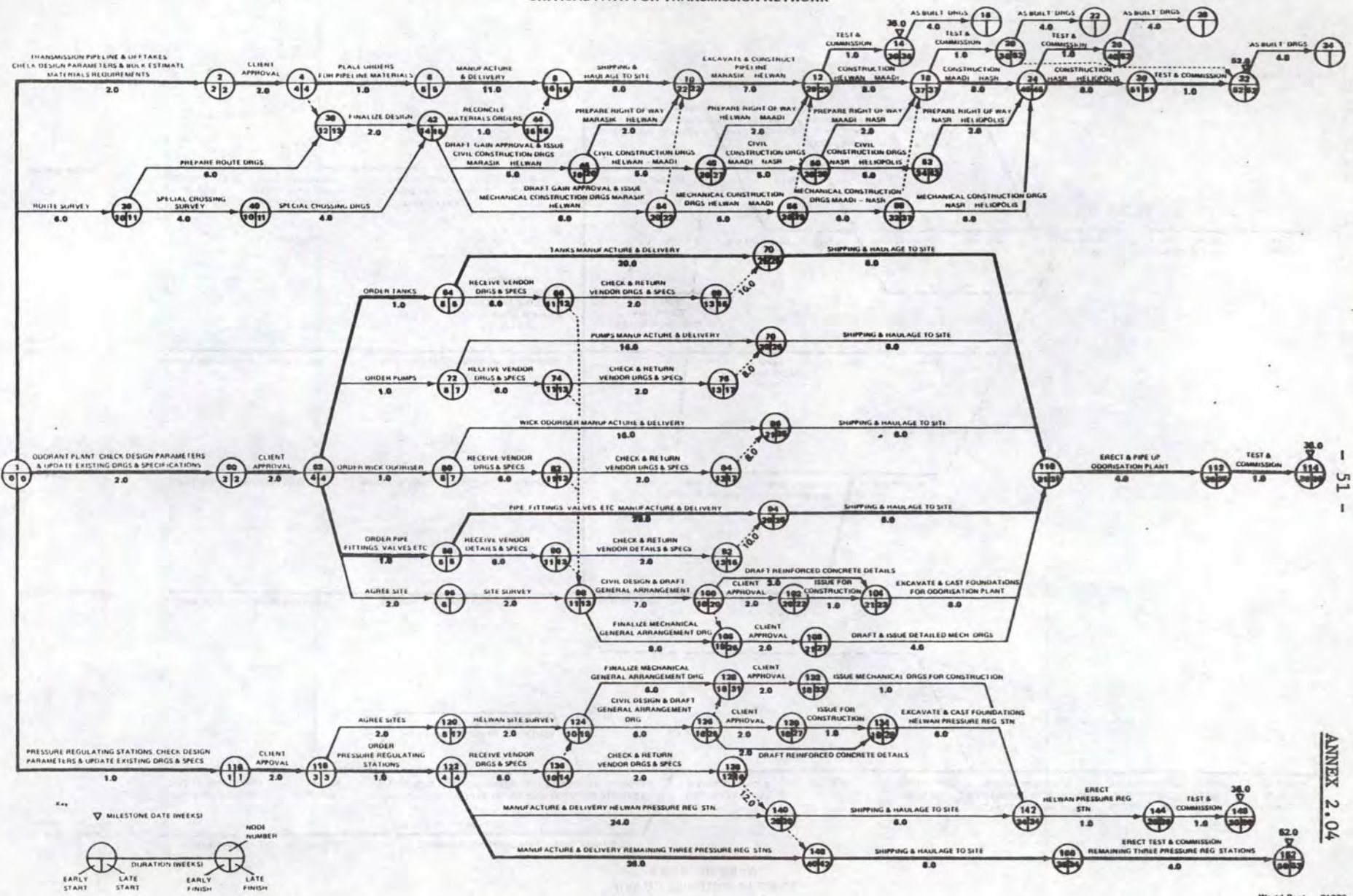
Estimated Schedule of Disbursement

<u>Calendar Year and Quarter</u>	<u>Cumulative disbursement end of quarter</u>
	<u>US\$ 000</u>
<u>1980</u>	
1st Quarter	-
2nd Quarter	-
3rd Quarter	-
4th Quarter	15,000
<u>1981</u>	
1st Quarter	18,000
2nd Quarter	21,000
3rd Quarter	24,000
4th Quarter	26,700
<u>1982</u>	
1st Quarter	29,400
2nd Quarter	32,100
3rd Quarter	34,800
4th Quarter	37,600
<u>1983</u>	
1st Quarter	40,700
2nd Quarter	43,800
3rd Quarter	46,900
4th Quarter	50,000

CAIRO GAS DISTRIBUTION PROJECT IMPLEMENTATION SCHEDULE



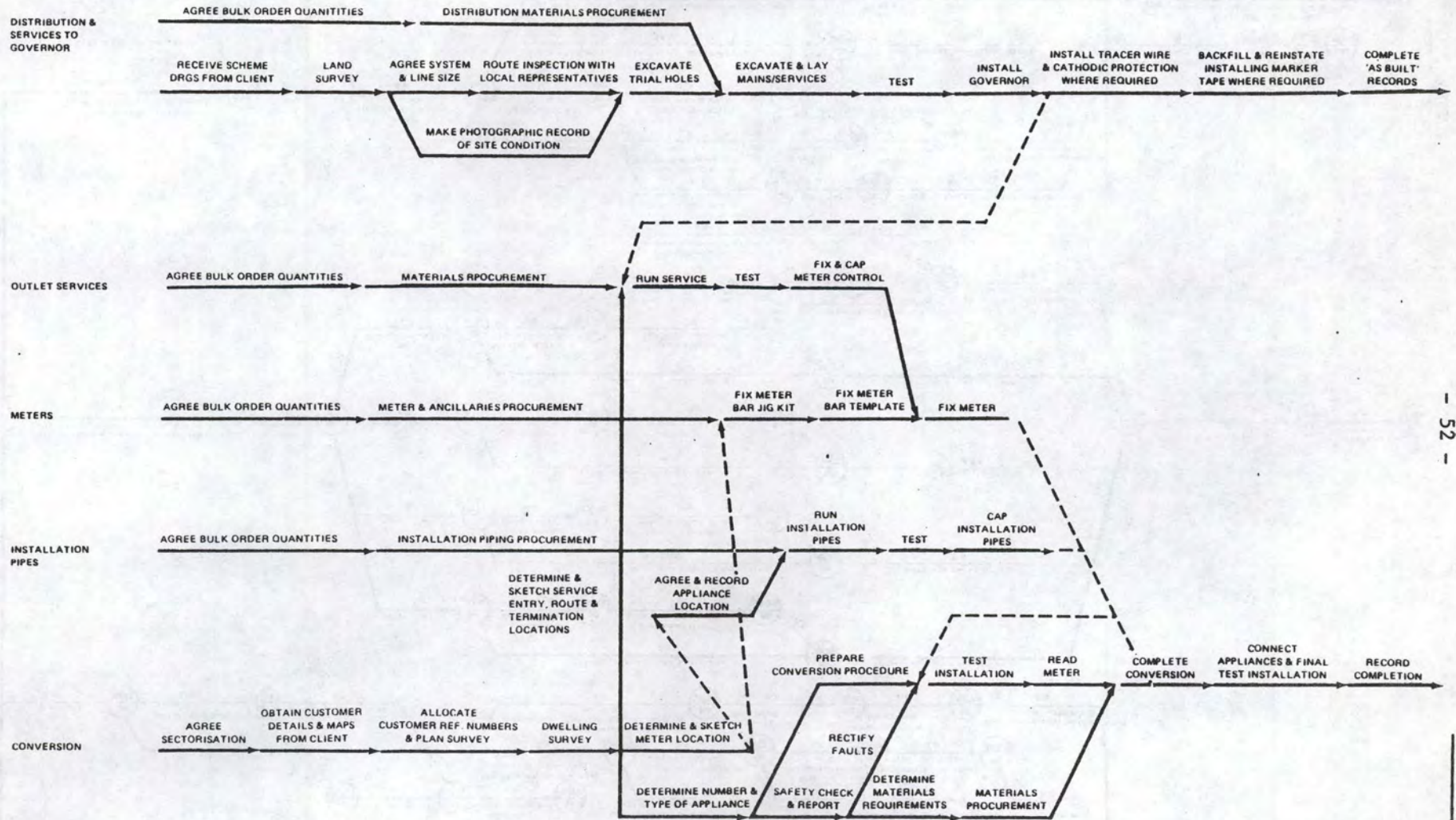
CAIRO
GAS DISTRIBUTION PROJECT
CRITICAL PATH FOR TRANSMISSION NETWORK



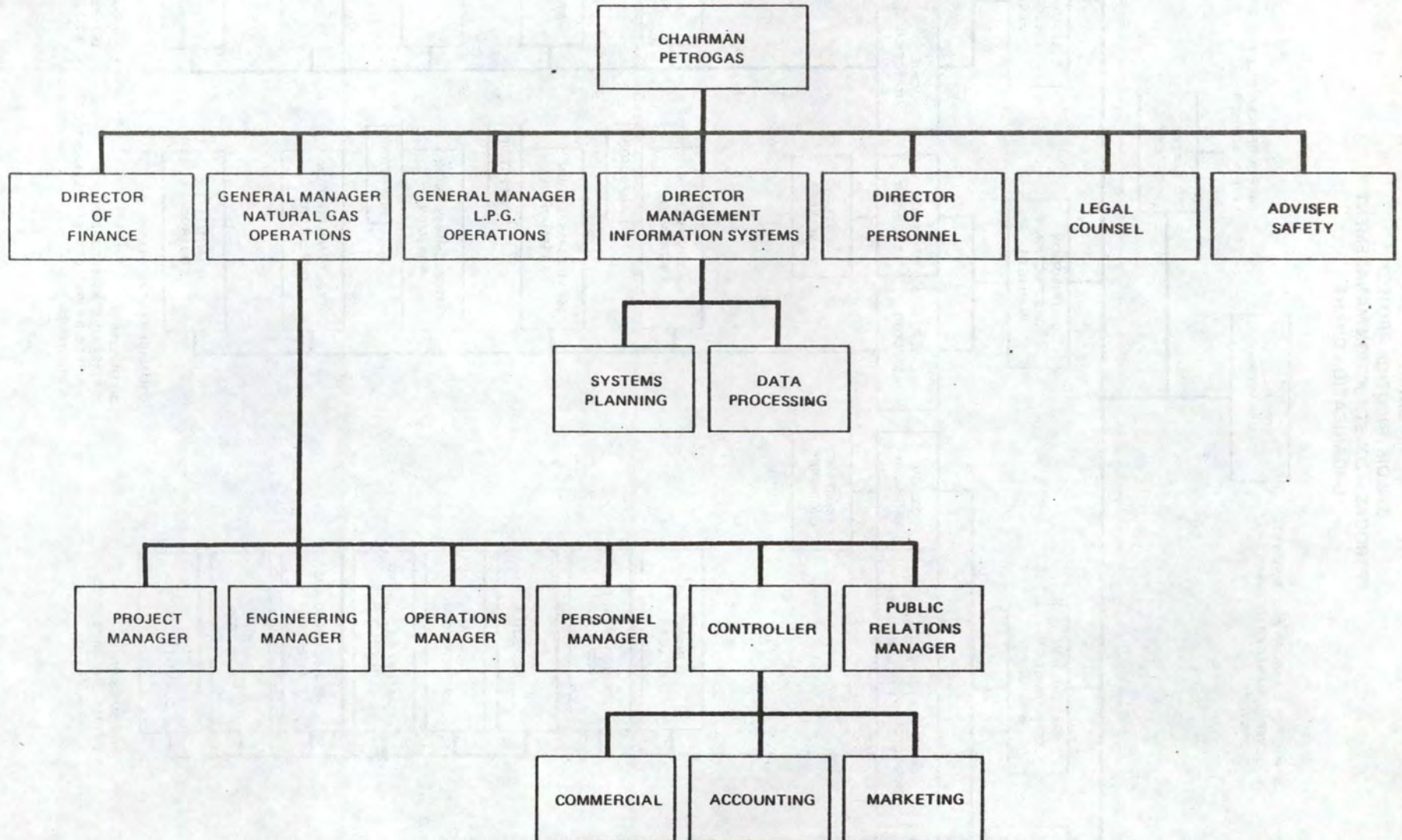
- 51 -

ANNEX 2.04

**CAIRO
GAS DISTRIBUTION PROJECT
LOGIC DIAGRAM**



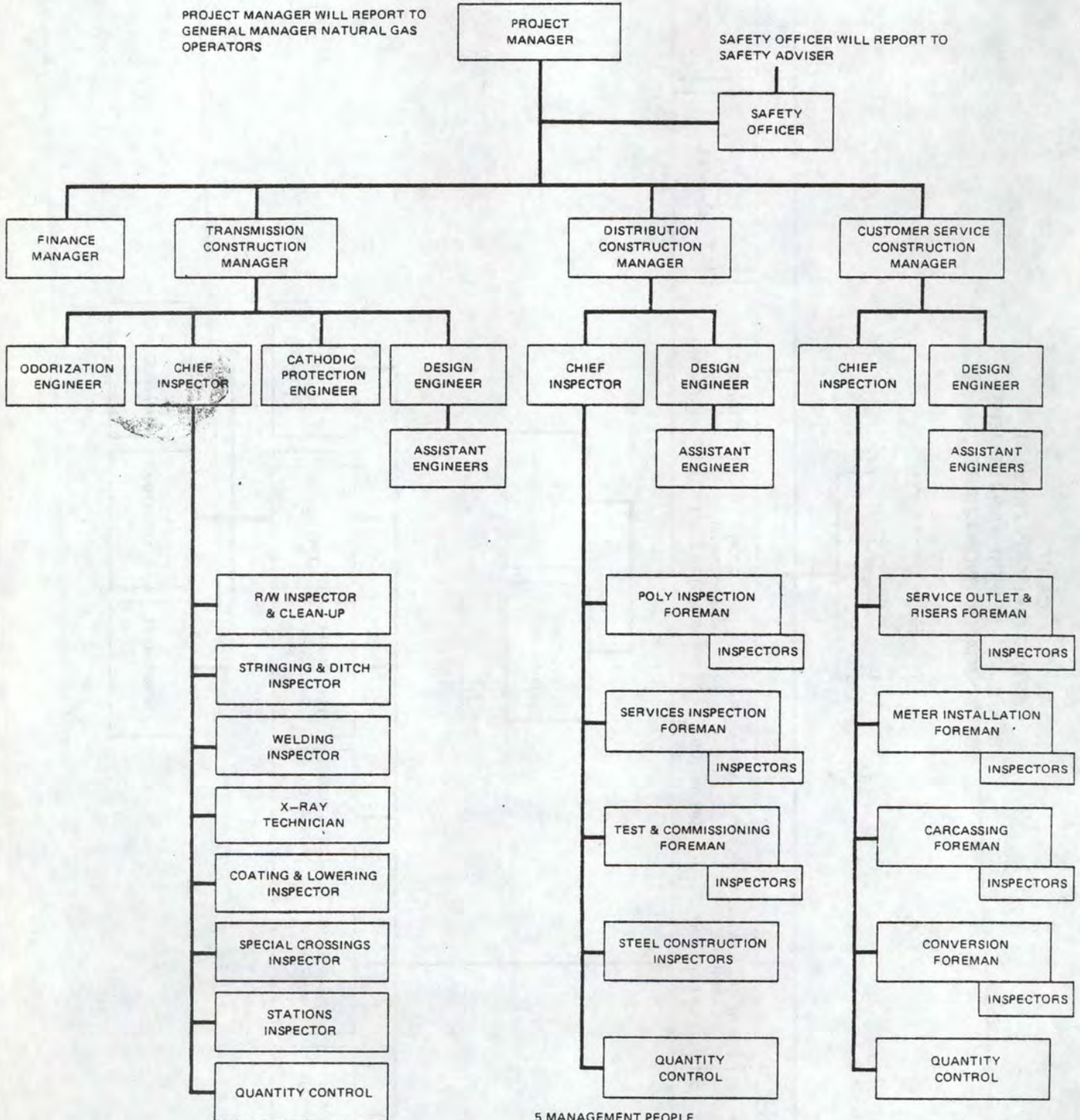
**CAIRO
GAS DISTRIBUTION PROJECT
PETROGAS – SENIOR MANAGEMENT
ORGANIZATION CHART**



CAIRO GAS DISTRIBUTION PROJECT PETROGAS – CONSTRUCTION MANAGEMENT ORGANIZATION CHART

PROJECT MANAGER WILL REPORT TO
GENERAL MANAGER NATURAL GAS
OPERATORS

SAFETY OFFICER WILL REPORT TO
SAFETY ADVISER

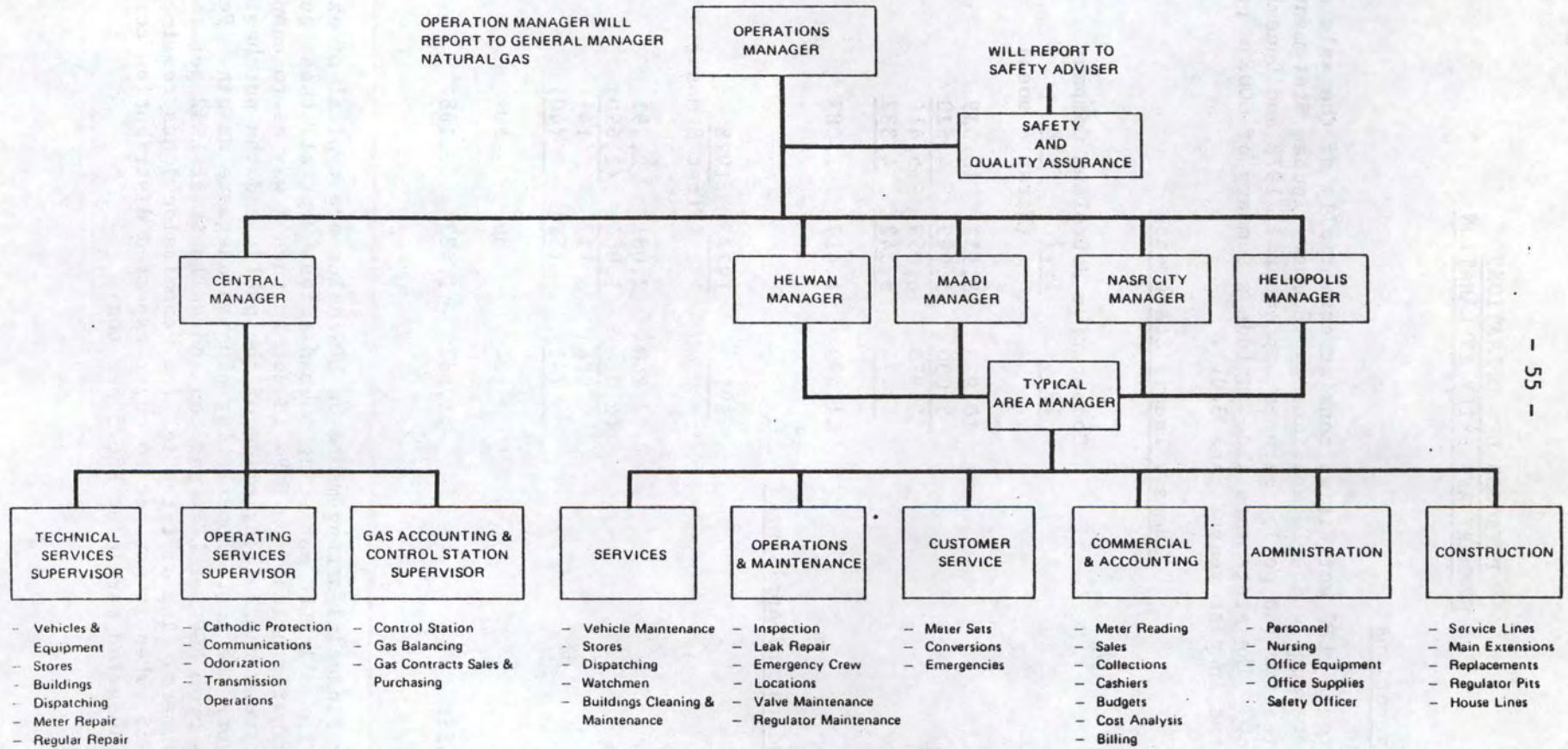


TRANSMISSION
10 FIRST LINE INSPECTORS
5 ENGINEERS

5 MANAGEMENT PEOPLE
DISTRIBUTION
15 FIRST LINE INSPECTORS (POLY)
4 FIRST LINE INSPECTORS (STEEL) AS REQ'D
4 ENGINEERS

CUSTOMER SERVICE
35 FIRST LINE INSPECTORS
4 ENGINEERS

**CAIRO
GAS DISTRIBUTION PROJECT
PETROGAS – NATURAL GAS OPERATIONS
ORGANIZATION CHART**



PETROGAS LPG OPERATIONS
SUMMARY AND BRIEF EXPLANATION

Income from Operations

Petrogas' LPG activities consist essentially of the sale of LPG and of LPG cylinders and household appliances. Summary Income Statements covering these activities for the period between September 1, 1978 and December 31, 1978 are given below. The statements also include a summary of COOP's position on these operations in past years (para 3.01).

Summary Income Statements

Sale of LPG

L.E. '000	Cooperative Petroleum Company			Petrogas
	<u>1976</u>	<u>1977</u>	<u>1978</u> (First 8 mos.)	<u>1978</u> (Last 4 mos.)
Sales	10,973	12,952	10,039	5,436
Cost of Sales	<u>5,000</u>	<u>5,993</u>	<u>4,620</u>	<u>2,472</u>
Gross Profit	5,973	6,959	5,419	2,964
Overhead	<u>4,474</u>	<u>5,542</u>	<u>4,332</u>	<u>2,678</u>
Net Profit	1,499	1,417	1,087	286

Sale of Cylinders and Appliances

L.E. '000	<u>1976</u>	<u>1977</u>	<u>1978</u> (First 8 mos.)	<u>1978</u> (Last 4 mos.)
	Sales	2,240	2,081	2,791	1,766
Cost of Sales	<u>(2,014)</u>	<u>(1,964)</u>	<u>(2,650)</u>	<u>(1,672)</u>
Gross Profit	226	117	141	94
Overhead	<u>(42)</u>	<u>(51)</u>	<u>(40)</u>	<u>(25)</u>
Net Profit	184	66	101	69
Total Net Profit	1,683	1,483	1,188	355

Sale of LPG

The financial arrangements on LPG sales are typical of existing arrangements for all EGPC marketing subsidiaries. For all these subsidiaries a products transfer price from EGPC is set in such a way as to ensure that the difference between the selling price of the public and the purchasing price from EGPC covers the cost of marketing plus an adequate margin. Petrogas purchases LPG from EGPC at LE24 per ton and sells it at LE52 per ton to domestic consumers. The differential (or "commission") has remained the same since 1965, when it was set to cover expected distribution costs, sales taxes, and a budgeted margin at LE6.5 per ton.

Because of increased costs the realized profit margin on LPG sales declined between 1965 and 1975 to LE4.5 per ton in 1975. It continued to erode in the last three years from a level of LE7.1 per ton in 1976, to LE5.7 per ton in 1977, to LE4.6 per ton in 1978, despite EGPC's having assumed payment of the sales tax on behalf of its subsidiary throughout this three year period. As a result, despite a growth in LPG sales from about 210 thousand tons in 1976, to 250 thousand tons in 1977, to 300 thousand tons in 1978, the total net annual profit earned on LPG sales has remained nearly unchanged at about LE1.4-1.5 million (or 89% of total net profit) for each of the three past years. Assurances would be obtained at negotiations that the Government would review annually the commission on LPG distribution (para. 4.04).

Sales of Appliances and Cylinders

In addition to the sale of LPG, Petrogas purchases and sells appliances and cylinders to customers. Empty cylinders are either purchased locally at the price of LE12.8 per cylinder (half the sales) or are imported at the cost of LE20. The price to the customers is LE14.9 for the first cylinder and LE29 for subsequent ones. This selling price includes a guarantee to repair or replace them as needed. The average life of the cylinder is ten years. In 1978 sales of 164 thousand 30-liter cylinders, 1,500 90-liter cylinders and 35 thousand LPG appliances yielded a net profit of LE170 thousand representing about 11 percent of net profit of LPG activities in that year.

Capitalization

Petrogas' capitalization as of September 1, 1978 (date of its incorporation and of its last Balance Sheet) was as follows:

	<u>LE</u> (millions)	<u>US\$</u>
Net Fixed Assets	13.3	19.2
Current Assets	6.2	
Less: Current Liabilities	<u>6.3</u>	<u>(0.2)</u>
Total Net Assets	<u>13.2</u>	<u>19.0</u>
Represented by Equity	<u>13.2</u>	<u>19.0</u>

The fixed assets consist essentially of LPG cylinders, vehicles and storage facilities. The major share of the company's current assets consisted of LPG stocks and spare parts, (LE4.1 million) and receivables, (LE1.8 million); a significant part (44%) of current liabilities relates to payments due to EGPC for LPG supplies.

At the time of its institution, Petrogas had no long term debt. Its authorized capital is presently set at LE30 million of which LE13.2 million has been paid in through LPG related set transfers. The level of paid in capital would be discussed at negotiations (paras. 3.04 and 4.02).

Future Operations

Based on requirements for asset renewals and for expansion in activity, Petrogas had projected capital expenditures on LPG investments amounting to LE34 million (US\$50 million) for the five year period between 1979 and 1983.

<u>Investments</u> <u>in LE Million</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1979/83</u>
Land - Buildings	1.9	2.7	1.8	0.9	0.8	8.1
Machinery	0.2	1.5	1.0	1.0	1.0	4.7
Vehicles	1.0	0.8	0.8	0.8	0.7	4.1
Cylinders	6.7	3.8	1.8	1.9	1.9	16.1
Other Expenditure	<u>0.3</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>0.2</u>	<u>1.1</u>
Total Expenditure	10.1	9.0	5.6	4.8	4.6	34.1

Given the limited projected profit on sales, and profit distribution requirements as detailed in para. 4.23, the company's internal cash generation from LPG operations is unlikely to cover more than 20% of this requirement over this period. It is therefore probable that the largest share of these budgeted investments will be met from EGPC resources. Assurances will be obtained at negotiations that Petrogas would not dispose of its surplus funds generated by natural gas operations for its LPG activities, unless sufficient funds are available to meet the totality of requirements for gas operations (para. 4.04).

EGYPT DISTRIBUTION PROJECT
 PETROGAS SOURCE AND APPLICATION OF FUNDS
 IN THOUSAND EGYPTIAN POUNDS
 AFTER REVALUATION OF ASSETS
 FINANCIAL
 04/22/80

	1980	1981	1982	1983	1984	1985	1986	1987	1988
SOURCES									
NET INCOME BEFORE INTEREST	(379.08)	418.80	999.69	1,757.63	2,769.12	4,067.20	5,488.95	5,382.18	6,618.94
DEPRECIATION	991.05	1,674.46	2,622.55	3,796.76	4,271.38	4,803.91	5,401.29	6,082.23	6,842.34
INTERNAL CASH GENERATION	611.97	2,093.26	3,622.24	5,554.39	7,040.50	8,871.11	10,890.24	11,464.41	13,461.28
INCREASE IN ACCOUNTS PAYABLE	56.66	82.67	88.62	111.08	122.34	112.85	85.55	31.15	110.25
LONG TERM DEBT DRAWDOWN	11,240.00	9,040.00	7,570.00	8,610.00	-	-	-	-	-
EGPC CONTRIBUTION	8,522.01	2,049.31	6,610.01	6,984.72	-	-	-	-	-
TOTAL SOURCES	20,430.64	13,265.24	17,890.87	21,260.19	7,162.84	8,983.96	10,975.79	11,495.56	13,571.53
USES OF FUNDS									
CAPITAL EXPENDITURE	19,821.00	11,686.00	15,613.00	18,239.00	1,898.97	2,107.86	2,339.69	2,816.28	3,037.77
RETURN TO SHAREHOLDERS	-	-	-	-	-	-	60.69	1,701.66	2,506.90
MANAGEMENT FEE	-	-	-	-	-	-	-	117.84	237.14
DISTRIBUTION TO EMPLOYEES	-	-	-	-	-	-	20.23	567.21	835.63
INCREASE IN ACCOUNTS RECEIVABLE	106.95	204.43	214.29	269.89	244.48	273.49	263.83	81.45	284.38
INCREASE IN CASH	39.04	74.61	78.22	98.51	2,011.44	1,264.25	3,153.52	1,273.83	1,932.95
INTEREST LONG TERM DEBT	463.65	1,300.20	1,985.36	2,652.79	3,007.95	2,907.69	2,707.16	2,506.62	2,306.09
REIMBURSEMENT , LONG TERM DEBT	-	-	-	-	-	2,430.67	2,430.67	2,430.67	2,430.67
TOTAL DEBT SERVICE	463.65	1,300.20	1,985.36	2,652.79	3,007.95	5,338.36	5,137.83	4,937.29	4,736.76
TOTAL APPLICATIONS	20,430.64	13,265.24	17,890.87	21,260.19	7,162.84	8,983.96	10,975.79	11,495.56	13,571.53
DEBT SERV. COVERAGE	1.32	1.61	1.82	2.09	2.34	1.66	2.12	2.32	2.84

RETURN ON INVESTMENT = 20.563%

EGYPT DISTRIBUTION PROJECT
PETROGAS SOURCE AND APPLICATION OF FUNDS
IN THOUSAND EGYPTIAN POUNDS
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	1989	1990	1991	1992	1993	1994	1995	1996	1997
SOURCES									
NET INCOME BEFORE INTEREST	8,112.91	9,918.90	11,987.79	14,280.48	17,029.24	20,350.92	24,170.32	28,584.83	33,616.14
DEPRECIATION	7,699.92	8,657.05	9,720.43	10,923.06	12,258.91	13,768.90	15,470.30	17,349.49	19,484.26
INTERNAL CASH GENERATION	15,812.83	18,575.95	21,708.22	25,203.54	29,288.15	34,119.82	39,640.62	45,934.32	53,100.40
INCREASE IN ACCOUNTS PAYABLE	123.28	137.30	159.77	185.14	204.12	228.45	262.27	298.51	339.59
LONG TERM DEBT DRAWDOWN	-	-	-	-	-	-	-	-	-
EGPC CONTRIBUTION	-	-	-	-	-	-	-	-	-
TOTAL SOURCES	15,936.11	18,713.25	21,867.99	25,388.68	29,492.27	34,348.27	39,902.89	46,232.83	53,439.99
USES OF FUNDS									
CAPITAL EXPENDITURE	3,466.93	3,742.84	3,953.47	4,611.59	4,871.03	5,681.93	6,490.12	6,643.18	7,996.46
RETURN TO SHAREHOLDERS	3,456.24	4,580.41	5,851.85	7,248.66	8,901.01	10,874.32	13,126.48	15,712.06	18,643.21
MANAGEMENT FEE	377.78	544.32	732.68	939.62	1,184.41	1,476.76	1,810.41	2,193.46	2,627.70
DISTRIBUTION TO EMPLOYEES	1,152.07	1,526.79	1,950.61	2,416.21	2,966.99	3,624.77	4,375.49	5,237.35	6,214.39
INCREASE IN ACCOUNTS RECEIVABLE	328.21	377.99	432.56	489.38	559.63	648.82	742.45	845.95	962.70
INCREASE IN CASH	2,618.65	3,605.20	4,811.65	5,748.58	7,275.09	8,508.09	10,024.89	12,468.31	14,063.54
INTEREST LONG TERM DEBT	2,105.56	1,905.03	1,704.50	1,503.97	1,303.44	1,102.91	902.38	701.85	501.32
REIMBURSEMENT , LONG TERM DEBT	2,430.67	2,430.67	2,430.67	2,430.67	2,430.67	2,430.67	2,430.67	2,430.67	2,430.67
TOTAL DEBT SERVICE	4,536.23	4,335.70	4,135.17	3,934.64	3,734.11	3,533.58	3,333.05	3,132.52	2,931.99
TOTAL APPLICATIONS	15,936.11	18,713.25	21,867.99	25,388.68	29,492.27	34,348.27	39,902.89	46,232.83	53,439.99
DEBT SERV. COVERAGE	3.49	4.28	5.25	6.41	7.84	9.66	11.89	14.66	18.11

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EGYPT DISTRIBUTION PROJECT
 PETROGAS SOURCE AND APPLICATION OF FUNDS
 IN THOUSAND EGYPTIAN POUNDS
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	1998	1999	2000	2001	2002	2003	2004	2005
SOURCES								
NET INCOME BEFORE INTEREST	39,432.83	46,191.38	54,048.41	63,000.89	73,501.69	85,563.20	99,128.20	114,980.47
DEPRECIATION	21,866.62	24,649.43	27,649.02	30,975.20	34,744.73	38,910.75	43,801.64	49,033.87
INTERNAL CASH GENERATION	61,299.45	70,840.81	81,697.43	93,976.09	108,246.42	124,473.95	142,929.84	164,014.34
INCREASE IN ACCOUNTS PAYABLE	385.30	425.96	490.43	552.06	620.22	694.07	788.33	891.46
LONG TERM DEBT DRAWDOWN	-	-	-	-	-	-	-	-
EGPC CONTRIBUTION	-	-	-	-	-	-	-	-
TOTAL SOURCES	61,684.75	71,266.77	82,187.86	94,528.15	108,866.64	125,168.02	143,718.17	164,905.80
USES OF FUNDS								
CAPITAL EXPENDITURE	8,678.66	11,922.98	10,693.05	11,225.52	13,440.11	13,831.04	19,996.28	17,041.22
RETURN TO SHAREHOLDERS	22,014.36	25,913.17	30,371.25	35,386.88	41,269.96	48,027.41	55,627.21	64,508.44
MANAGEMENT FEE	3,127.13	3,704.73	4,365.19	5,108.25	5,979.81	6,980.92	8,106.81	9,422.55
DISTRIBUTION TO EMPLOYEES	7,338.11	8,637.72	10,123.74	11,795.62	13,756.65	16,009.13	18,542.39	21,502.81
INCREASE IN ACCOUNTS RECEIVABLE	1,098.17	1,254.94	1,433.78	1,618.61	1,859.68	2,103.88	2,390.69	2,723.46
INCREASE IN CASH	16,696.86	17,302.35	25,200.85	29,393.27	32,560.43	38,215.64	39,054.79	49,707.32
INTEREST LONG TERM DEBT	300.79	100.26	-	-	-	-	-	-
REIMBURSEMENT , LONG TERM DEBT	2,430.67	2,430.62	-	-	-	-	-	-
TOTAL DEBT SERVICE	2,731.46	2,530.88	-	-	-	-	-	-
TOTAL APPLICATIONS	61,684.75	71,266.77	82,187.86	94,528.15	108,866.64	125,168.02	143,718.17	164,905.80
DEBT SERV. COVERAGE	22.44	27.99	-	-	-	-	-	-

EGYPT DISTRIBUTION PROJECT
 PETROGAS SOURCE AND APPLICATION OF FUNDS
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	1998	1999	2000	2001	2002	2003	2004	2005
SOURCES								
NET INCOME BEFORE INTEREST	39,432.83	46,191.38	54,048.41	63,000.89	73,501.69	85,563.20	99,128.20	114,980.47
DEPRECIATION	21,866.62	24,649.43	27,649.02	30,975.20	34,744.73	38,910.75	43,801.64	49,033.87
INTERNAL CASH GENERATION	61,299.45	70,840.81	81,697.43	93,976.09	108,246.42	124,473.95	142,929.84	164,014.34
INCREASE IN ACCOUNTS PAYABLE	385.30	425.96	490.43	552.06	620.22	694.07	788.33	891.46
LONG TERM DEBT DRAWDOWN	-	-	-	-	-	-	-	-
EGPC CONTRIBUTION	-	-	-	-	-	-	-	-
TOTAL SOURCES	61,684.75	71,266.77	82,187.86	94,528.15	108,866.64	125,168.02	143,718.17	164,905.80
USES OF FUNDS								
CAPITAL EXPENDITURE	8,678.66	11,922.98	10,693.05	11,225.52	13,440.11	13,831.04	19,996.28	17,041.22
RETURN TO SHAREHOLDERS	22,014.36	25,913.17	30,371.25	35,386.88	41,269.96	48,027.41	55,627.21	64,508.44
MANAGEMENT FEE	3,127.13	3,704.73	4,365.19	5,108.25	5,979.81	6,980.92	8,106.81	9,422.55
DISTRIBUTION TO EMPLOYEES	7,338.11	8,637.72	10,123.74	11,795.62	13,756.65	16,009.13	18,542.39	21,502.81
INCREASE IN ACCOUNTS RECEIVABLE	1,098.17	1,254.94	1,433.78	1,618.61	1,859.68	2,103.88	2,390.69	2,723.46
INCREASE IN CASH	16,696.86	17,302.35	25,200.85	29,393.27	32,560.43	38,215.64	39,054.79	49,707.32
INTEREST LONG TERM DEBT	300.79	100.26	-	-	-	-	-	-
REIMBURSEMENT , LONG TERM DEBT	2,430.67	2,430.62	-	-	-	-	-	-
TOTAL DEBT SERVICE	2,731.46	2,530.88	-	-	-	-	-	-
TOTAL APPLICATIONS	61,684.75	71,266.77	82,187.86	94,528.15	108,866.64	125,168.02	143,718.17	164,905.80
DEBT SERV. COVERAGE	22.44	27.99	-	-	-	-	-	-

EGYPT DISTRIBUTION PROJECT
 PETROGAS INCOME STATEMENT
 IN THOUSAND EGYPTIAN POUNDS
 AFTER REVALUATION OF ASSETS
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	1988	1989	1990	1991	1992	1993	1994	1995
RATE OF INFLATION, LOCAL	2.3253	2.5811	2.8650	3.1802	3.5300	3.9183	4.3493	4.8277
RATE OF INFLATION, FOREIGN	1.7175	1.8206	1.9298	2.0456	2.1683	2.2984	2.4363	2.5825
GENERAL RATE OF INFLATION	2.1437	2.3581	2.5939	2.8533	3.1386	3.4525	3.7978	4.1776
GAS DWELLINGS, AVERAGE NUMBER, 000	317.00	335.50	354.00	372.50	391.00	409.00	427.50	446.00
SALE OF GAS, MMCF, PRIVATE USERS	4,834.25	5,170.06	5,508.24	5,855.70	6,205.17	6,556.27	6,921.23	7,296.56
SALE OF GAS TO POWER STATIONS, MMCF	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00
UNIT PRICE OF GAS, PRIVATE USERS, LE/MCF	4.39	4.83	5.32	5.85	6.43	7.07	7.78	8.56
UNIT PRICE OF GAS TO POWER STATIONS, LE/MCF	1.09	1.20	1.32	1.46	1.60	1.76	1.94	2.13
UNIT COST OF GAS, LE/MCF	0.41	0.45	0.49	0.54	0.60	0.66	0.72	0.79
REVENUES								
SALE OF GAS, PRIVATE USERS	21,222.36	24,971.39	29,303.84	34,255.85	39,899.24	46,352.83	53,847.17	62,458.55
SALE OF GAS, POW. ST.	2,419.80	2,664.00	2,930.40	3,241.20	3,552.00	3,907.20	4,306.80	4,728.60
TOTAL REVENUES	23,642.16	27,635.39	32,234.24	37,497.05	43,451.24	50,260.03	58,153.97	67,187.15
OPERATING EXPENSES								
GAS PURCHASED	2,892.24	3,325.53	3,786.84	4,360.88	5,055.10	5,792.34	6,581.69	7,518.08
REVALUED DEPREC.CHARGE	6,842.34	7,699.92	8,657.05	9,720.43	10,923.06	12,258.91	13,768.90	15,470.30
GAS FIXED OPERATING COSTS	943.23	1,037.56	1,141.32	1,255.45	1,380.98	1,519.10	1,671.03	1,838.14
GAS VARIABLE OPERATING COSTS	5,912.05	6,884.46	7,989.78	9,245.45	10,678.21	12,286.36	14,124.60	16,212.10
INCOME TAXES	433.36	575.01	740.35	927.05	1,133.41	1,374.08	1,656.83	1,978.21
TOTAL OPERATING COSTS	17,023.22	19,522.48	22,315.34	25,509.26	29,170.76	33,230.79	37,803.05	43,016.83
NET INCOME BEFORE INTEREST	6,618.94	8,112.91	9,918.90	11,987.79	14,280.48	17,029.24	20,350.92	24,170.32
INTEREST	2,306.09	2,105.56	1,905.03	1,704.50	1,503.97	1,303.44	1,102.91	902.38
INCOME AFTER INTEREST AND TAXES	4,312.85	6,007.35	8,013.87	10,283.29	12,776.51	15,725.80	19,248.01	23,267.94
OPERATING RATIO	0.72	0.71	0.69	0.68	0.67	0.66	0.65	0.64

EGYPT DISTRIBUTION PROJECT
 PETROGAS INCOME STATEMENT
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	1996	1997	1998	1999	2000	2001	2002
RATE OF INFLATION, LOCAL	5.3587	5.9482	6.6025	7.3288	8.1350	9.0299	10.0232
RATE OF INFLATION, FOREIGN	2.7375	2.9018	3.0759	3.2605	3.4561	3.6635	3.8833
GENERAL RATE OF INFLATION	4.5754	5.0549	5.5604	6.1164	6.7280	7.4008	8.1409
GAS DWELLINGS, AVERAGE NUMBER, 000	464.50	483.00	501.50	520.00	538.50	557.00	575.50
SALE OF GAS, MMCF, PRIVATE USERS	7,673.54	8,056.44	8,450.28	8,850.40	9,256.82	9,669.52	10,094.27
SALE OF GAS TO POWER STATIONS, MMCF	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00
UNIT PRICE OF GAS, PRIVATE USERS, LE/MCF	9.42	10.36	11.39	12.53	13.79	15.16	16.68
UNIT PRICE OF GAS TO POWER STATIONS, LE/MCF	2.34	2.58	2.84	3.12	3.43	3.77	4.15
UNIT COST OF GAS, LE/MCF	0.87	0.96	1.06	1.16	1.28	1.41	1.55
REVENUES							
SALE OF GAS, PRIVATE USERS	72,284.75	83,464.72	96,248.69	110,895.51	127,651.55	146,589.92	168,372.42
SALE OF GAS, POW. ST.	5,194.80	5,727.60	6,304.80	6,926.40	7,614.60	8,369.40	9,213.00
TOTAL REVENUES	77,479.55	89,192.32	102,553.49	117,821.91	135,266.15	154,959.32	177,585.42
OPERATING EXPENSES							
GAS PURCHASED	8,607.38	9,865.38	11,310.50	12,841.66	14,690.33	16,764.22	19,087.12
REVALUED DEPREC.CHARGE	17,349.49	19,484.26	21,866.62	24,649.43	27,649.02	30,975.20	34,744.73
GAS FIXED OPERATING COSTS	2,021.98	2,224.16	2,446.58	2,691.22	2,960.32	3,256.35	3,582.00
GAS VARIABLE OPERATING COSTS	18,570.71	21,242.34	24,262.57	27,669.20	31,518.41	35,865.23	40,762.67
INCOME TAXES	2,345.16	2,760.04	3,234.39	3,779.02	4,399.66	5,097.43	5,907.21
TOTAL OPERATING COSTS	48,894.72	55,576.18	63,120.66	71,630.53	81,217.74	91,958.43	104,083.73
NET INCOME BEFORE INTEREST	28,584.83	33,616.14	39,432.83	46,191.38	54,048.41	63,000.89	73,501.69
INTEREST	701.85	501.32	300.79	100.26	-	-	-
INCOME AFTER INTEREST AND TAXES	27,882.98	33,114.82	39,132.04	46,091.12	54,048.41	63,000.89	73,501.69
OPERATING RATIO	0.63	0.62	0.62	0.61	0.60	0.59	0.59

EGYPT DISTRIBUTION PROJECT
 PETROGAS INCOME STATEMENT
 IN THOUSAND EGYPTIAN POUNDS
 AFTER REVALUATION OF ASSETS
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	2003	2004	2005
RATE OF INFLATION, LOCAL	11.1258	12.3496	13.7081
RATE OF INFLATION, FOREIGN	4.1163	4.3633	4.6251
GENERAL RATE OF INFLATION	8.9550	9.8505	10.8356
GAS DWELLING, AVERAGE NUMBER, 000	594.00	612.50	631.00
SALE OF GAS, MMCF, PRIVATE USERS	10,549.74	10,957.63	11,402.17
SALE OF GAS TO POWER STATIONS, MMCF	2,220.00	2,220.00	2,220.00
UNIT PRICE OF GAS, PRIVATE USERS, LE/MCF	18.35	20.18	22.20
UNIT PRICE OF GAS TO POWER STATIONS, LE/MCF	4.57	5.02	5.53
UNIT COST OF GAS, LE/MCF	1.70	1.87	2.06
REVENUES			
SALE OF GAS, PRIVATE USERS	193,037.23	221,124.97	253,128.17
SALE OF GAS, POW. ST.	10,145.40	11,144.40	12,276.60
TOTAL REVENUES	203,182.63	232,269.37	265,404.77
OPERATING EXPENSES			
GAS PURCHASED	21,657.56	24,642.17	28,061.67
REVALUED DEPREC. CHARGE	38,910.75	43,801.64	49,033.87
GAS FIXED OPERATING COSTS	3,940.20	4,334.22	4,767.66
GAS VARIABLE OPERATING COSTS	46,278.54	52,491.25	59,484.37
INCOME TAXES	6,832.38	7,871.89	9,076.73
TOTAL OPERATING COSTS	117,619.43	133,141.17	150,424.30
NET INCOME BEFORE INTEREST	85,563.20	99,128.20	114,980.47
INTEREST	-	-	-
INCOME AFTER INTEREST AND TAXES	85,563.20	99,128.20	114,980.47
OPERATING RATIO	0.58	0.57	0.57

EGYPT GAS DISTRIBUTION PROJECT
 PETROGAS BALANCE SHEET
 IN THOUSAND EGYPTIAN POUNDS
 AFTER REVALUATION OF ASSETS
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	1980	1981	1982	1983	1984	1985	1986	1987
ASSETS								
GROSS FIXED ASSETS	19,821.00	33,489.10	52,451.01	75,935.11	85,427.59	96,078.21	108,025.72	121,644.57
LESS ACCUMULATED DEPRECIATION	(991.05)	(2,764.62)	(5,663.63)	(10,026.75)	(15,300.81)	(21,634.80)	(29,199.57)	(38,201.76)
NET FIXED ASSETS	18,829.95	30,724.48	46,787.38	65,908.36	70,126.78	74,443.41	78,826.15	83,442.81
ACCOUNTS RECEIVABLE	106.95	311.38	525.67	795.56	1,040.04	1,313.53	1,577.36	1,658.81
CASH	39.04	113.65	191.87	290.38	2,301.82	3,566.07	6,719.59	7,993.42
TOTAL ASSETS	18,975.94	31,149.51	47,504.92	66,994.30	73,468.64	79,323.01	87,123.10	93,095.04
LIABILITIES AND EQUITY								
CAPITAL	8,522.01	10,571.32	17,181.33	24,166.05	24,166.05	24,166.05	24,166.05	24,166.05
REVALUATION RESERVE	-	1,882.99	4,955.44	9,634.18	16,225.01	23,237.69	30,682.03	38,564.64
NASSER BANK SHARES	-	-	-	-	-	-	1.95	59.46
LEGAL RESERVE	-	-	-	-	-	-	4.88	148.66
ASSETS RESERVE	-	-	-	-	-	-	4.88	148.66
STATE BOND RESERVE	-	-	-	-	-	-	4.88	148.66
TOTAL CAPITAL AND RESERVES	8,522.01	12,454.31	22,136.77	33,800.23	40,391.06	47,403.74	54,864.67	63,236.13
ACCUMULATED LOSSES	(842.73)	(1,724.13)	(2,709.80)	(3,604.96)	(3,843.79)	(2,684.28)	-	-
TOTAL EQUITY	7,679.28	10,730.18	19,426.97	30,195.27	36,547.27	44,719.46	54,864.67	63,236.13
LONG TERM DEBT	11,240.00	20,280.00	27,850.00	36,460.00	36,460.00	34,029.33	31,598.66	29,167.99
ACCOUNTS PAYABLE	56.66	139.33	227.95	339.03	461.37	574.22	659.77	690.92
TOTAL LIABILITIES AND EQUITY	18,975.94	31,149.51	47,504.92	66,994.30	73,468.64	79,323.01	87,123.10	93,095.04
DEBT EQUITY RATIO	0.59	0.65	0.59	0.55	0.50	0.43	0.37	0.32
CURRENT RATIO	2.58	3.05	3.15	3.20	7.24	8.50	12.58	13.97
RETURN ON NET ASSETS (%)	(4.03)	1.69	2.58	3.12	4.07	5.63	7.16	6.63

EGYPT GAS DISTRIBUTION PROJECT
PETROGAS BALANCE SHEET
IN THOUSAND EGYPTIAN POUNDS
AFTER REVALUATION OF ASSETS
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	1988	1989	1990	1991	1992	1993	1994	1995
ASSETS								
GROSS FIXED ASSETS	136,846.80	153,998.41	173,141.09	194,408.67	218,461.13	245,178.27	275,378.03	309,405.95
LESS ACCUMULATED DEPRECIATION	(48,864.28)	(61,450.63)	(76,252.74)	(93,598.44)	(113,881.34)	(137,528.38)	(165,050.12)	(197,025.43)
NET FIXED ASSETS	87,982.52	92,547.78	96,888.35	100,810.23	104,579.79	107,649.89	110,327.91	112,380.52
ACCOUNTS RECEIVABLE	1,943.19	2,271.40	2,649.39	3,081.95	3,571.33	4,130.96	4,779.78	5,522.23
CASH	9,926.37	12,545.02	16,150.22	20,961.87	26,710.45	33,985.54	42,493.63	52,518.52
TOTAL ASSETS	99,852.08	107,364.20	115,687.96	124,854.05	134,861.57	145,766.39	157,601.32	170,421.27
LIABILITIES AND EQUITY								
CAPITAL	24,166.05	24,166.05	24,166.05	24,166.05	24,166.05	24,166.05	24,166.05	24,166.05
REVALUATION RESERVE	46,908.92	55,707.17	64,961.95	74,650.79	84,731.82	95,189.80	105,954.79	116,987.58
NASSER BANK SHARES	145.72	265.87	426.15	631.82	887.35	1,201.87	1,586.83	2,052.19
LEGAL RESERVE	364.30	664.67	1,065.36	1,579.52	2,218.35	3,004.64	3,967.04	5,130.44
ASSET RESERVE	364.30	664.67	1,065.36	1,579.52	2,218.35	3,004.64	3,967.04	5,130.44
STAT BOND RESERVE	364.30	664.67	1,065.36	1,579.52	2,218.35	3,004.64	3,967.04	5,130.44
TOTAL CAPITAL AND RESERVES	72,313.59	82,133.10	92,750.23	104,187.22	116,440.27	129,571.64	143,608.79	158,597.14
ACCUMULATED LOSSES	-	-	-	-	-	-	-	-
TOTAL EQUITY	72,313.59	82,133.10	92,750.23	104,187.22	116,440.27	129,571.64	143,608.79	158,597.14
LONG TERM DEBT	26,737.32	24,306.65	21,875.98	19,445.31	17,014.64	14,583.97	12,153.30	9,722.63
CURRENT LIABILITIES PAYABLE	801.17	924.45	1,061.75	1,221.52	1,406.66	1,610.78	1,839.23	2,101.50
TOTAL LIABILITIES AND EQUITY	99,852.08	107,364.20	115,687.96	124,854.05	134,861.57	145,766.39	157,601.32	170,421.27
DEBT EQUITY RATIO	0.27	0.23	0.19	0.16	0.13	0.10	0.08	0.06
CURRENT RATIO	14.82	16.03	17.71	19.68	21.53	23.66	25.70	27.62
RETURN ON NET ASSETS (%)	7.72	8.99	10.47	12.13	13.91	16.05	18.67	21.71

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	1996	1997	1998	1999	2000	2001	2002
ASSETS							
GROSS FIXED ASSETS	346,989.73	389,685.16	437,332.34	492,988.55	552,980.46	619,504.03	694,894.54
LESS ACCUMULATED DEPRECIATION	(234,077.46)	(276,969.47)	(326,533.04)	(383,835.77)	(449,868.37)	(525,830.41)	(613,158.18)
NET FIXED ASSETS	112,912.27	112,715.69	110,799.30	109,152.78	103,112.09	93,673.62	81,736.36
ACCOUNTS RECEIVABLE	6,368.18	7,330.88	8,429.05	9,683.99	11,117.77	12,736.38	14,596.06
CASH	64,986.83	79,050.37	95,747.23	113,049.58	138,250.43	167,643.70	200,204.13
TOTAL ASSETS	184,267.28	199,096.94	214,975.58	231,886.35	252,480.29	274,053.70	296,536.55
LIABILITIES AND EQUITY							
CAPITAL	24,166.05	24,166.05	24,166.05	24,166.05	24,166.05	24,166.05	24,166.05
REVALUATION RESERVE	128,225.64	139,516.84	150,788.43	161,868.36	172,783.64	183,094.85	192,462.21
NASSER BANK SHARES	2,609.85	3,272.15	4,054.79	4,976.61	6,057.58	7,317.60	8,787.63
LEGAL RESERVE	6,524.59	8,180.33	10,136.93	12,441.49	15,143.91	18,293.95	21,969.03
ASSETS RESERVE	6,524.59	8,180.33	10,136.93	12,441.49	15,143.91	18,293.95	21,969.03
STATE BOND RESERVE	6,524.59	8,180.33	10,136.93	12,441.49	15,143.91	18,293.95	21,969.03
TOTAL CAPITAL AND RESERVES	174,575.31	191,496.05	209,420.06	228,335.49	248,439.00	269,460.35	291,322.98
ACCUMULATED LOSSES	-	-	-	-	-	-	-
TOTAL EQUITY	174,575.31	191,496.05	209,420.06	228,335.49	248,439.00	269,460.35	291,322.98
LONG TERM DEBT	7,291.96	4,861.29	2,430.62	-	-	-	-
ACCOUNTS PAYABLE	2,400.01	2,739.60	3,124.90	3,550.86	4,041.29	4,593.35	5,213.57
TOTAL LIABILITIES AND EQUITY	184,267.28	199,096.94	214,975.58	231,886.35	252,480.29	274,053.70	296,536.55
DEBT EQUITY RATIO	0.04	0.02	0.01	-	-	-	-
CURRENT RATIO	29.73	31.53	33.34	34.56	36.96	39.27	41.20
RETURN ON NET ASSETS (%)	25.38	29.80	35.28	42.00	50.93	64.03	83.81

EGYPT GAS DISTRIBUTION PROJECT
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	2003	2004	2005
ASSETS			
GROSS FIXED ASSETS	778,215.03	876,032.81	980,677.31
LESS ACCUMULATED DEPRECIATION	(713,384.75)	(828,524.87)	(960,411.23)
NET FIXED ASSETS	64,830.28	47,507.94	20,266.08
ACCOUNTS RECEIVABLE	16,699.94	19,090.63	21,814.09
CASH	238,419.77	277,474.56	327,181.88
TOTAL ASSETS	319,949.99	344,073.13	369,262.05
LIABILITIES AND EQUITY			
CAPITAL	24,166.05	24,166.05	24,166.05
REVALUATION RESERVE	200,635.84	207,118.86	211,869.65
NASSER BANK SHARES	10,498.89	12,481.45	14,781.06
LEGAL RESERVE	26,247.19	31,203.60	36,952.62
ASSETS RESERVE	26,247.19	31,203.60	36,952.62
STATE BOND RESERVE	26,247.19	31,203.60	36,952.62
TOTAL CAPITAL AND RESERVES	314,042.35	337,377.16	361,674.62
ACCUMULATED LOSSES	-	-	-
TOTAL EQUITY	314,042.35	337,377.16	361,674.62
LONG TERM DEBT	-	-	-
ACCOUNTS PAYABLE	5,907.64	6,695.97	7,587.43
TOTAL LIABILITIES AND EQUITY	319,949.99	344,073.13	369,262.05
DEBT EQUITY RATIO	-	-	-
CURRENT RATIO	43.18	44.29	46.00
RETURN ON NET ASSETS (%)	116.76	176.48	339.31

NOTES AND ASSUMPTIONS OF FINANCIAL STATEMENTS

Revenue Account

1. Inflation on local costs has been estimated at 12% in 1981 and 11% afterwards. Inflation on foreign costs has been assumed at 9% in 1981, 8% in 1982, 7% from 1983 through 1985 and 6% afterwards.
2. Sales revenues are based on a price to domestic users of LE3 per Mcf for 1980 through 1984 increasing by 10% a year thereafter 1985. Price of gas sold to power stations has been assumed at LE0.51 per Mcf in 1980 increasing by 10% a year afterwards.
3. Gas is assumed to be purchased from EGPC at LE0.19 per Mcf in 1980 increasing by 10% a year afterwards.
4. Depreciation has been calculated on the basis of a composite straightline annual rate of 5% on revalued capital assets.
5. Operating costs were estimated by British Gas and are inflated by 10% a year.
6. Petrogas incurs taxes on its incomes retained as legal reserves, assets reserves and state bank reserve at the rate of 39.7%. For income tax purposes, depreciation expense is based on historical cost, and losses can be carried forward up to 3 years.
7. Loan interest has been taken at 8.25% on the average balance of long term debt outstanding for the year.

Balance Sheet and Flow of Funds

1. Gross capital assets and accumulated depreciation are revalued at the rate of 10% a year.
2. Accounts receivable represent one month of sales.
3. Cash is assumed to be at least 3% of the sales.
4. Petrogas allocates 2% of its earnings to Nasr Bank reserve. It furthermore allocates 15% of its net income as follows: 5% to Legal reserve, 5% to State Bank reserve and 5% to Assets reserve. The rest of its earnings are partly paid as dividends to shareholders, partly transferred to EGPC and partly distributed to employees according to usual practices in Egyptian petroleum sector. These provisions are taken to come into effect when incomes have absorbed initial losses.
5. Accounts payable represent one month of operating expenses and it has been assumed that Petrogas pays EGPC for gas within 30 days.

CASES CONSIDERED IN SENSITIVITY ANALYSIS

	Selling Price of Gas to Power Station LE/MCF	Selling Price of Gas to Private Consumers LE/MCF	Consumption of Gas per Household MCF	Houses connected in 1985 '000s	Cost Overruns %
Base Case	0.51	3	14.1	271	-
Case 1	0.75	3	14.1	271	-
Case 2	0.51	2.75	14.1	271	-
Case 3	0.51	2.50	14.1	271	-
Case 4	0.51	3	13.0	271	-
Case 5	0.51	3	14.1	244	-
Case 6	0.51	3	14.1	217	-
Case 7	0.51	3	15.5	271	-
Case 8	0.51	3	14.1	271	20

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	1980	1981	1982	1983	1984	1985
COST OF LPG(CIF), LE/TON	245.00	245.00	245.00	245.00	245.00	245.00
COST OF FUEL OIL(FOB), LE/TON	105.00	105.00	105.00	105.00	105.00	105.00
COST OF GAS OIL(CIF), LE/TON	224.00	224.00	224.00	224.00	224.00	224.00
NATURAL GAS						

DWELLINGS CONNECTED TO NATURAL GAS	4.00	30.50	84.50	153.00	212.00	252.50
CONSUMPTION OF GAS, PRIVATE CONSUMERS, MMCF	56.36	434.02	1,214.27	2,220.03	3,107.92	3,739.53
CONSUMPTION OF GAS, POWER STATIONS, MMCF	2,220.00	4,440.00	4,440.00	4,440.00	4,440.00	4,440.00

TOTAL CONSUMPTION OF GAS, MMCF	2,276.36	4,874.02	5,654.27	6,660.03	7,547.92	8,179.53
CONSUMPT. OF FUEL OIL AS REPLACEMENT TO GAS CONSUMED, 000 TONS	59.24	126.85	147.16	173.33	196.44	212.88
COSTS INVOLVED IN NATURAL GAS ALTERNATIVE						
COST OF GAS CONSUMED	432.51	926.06	1,074.31	1,265.41	1,434.10	1,554.11
FIXED ASSETS ACQUISITION	21,661.00	20,056.00	25,985.00	28,100.00	9,540.00	9,540.00
BOTTLES IN EXCHANGE FOR CARCASSING/CONVERSION (435.00)	(435.00)	(2,175.00)	(2,929.00)	(3,161.00)	-	-
NATURAL GAS PROJECT FIXED OPERATING COSTS	220.00	330.00	440.00	440.00	440.00	440.00
NG PROJECT, VARIABLE OPERATING COSTS	36.80	280.60	777.40	1,407.60	1,950.40	2,323.00
COST OF FUEL USED AS REPLACEMENT FOR GAS CONSUMED	6,220.20	13,319.25	15,451.80	18,199.65	20,626.20	22,352.40

TOTAL COSTS INVOLVED IN NG SOLUTION	28,135.51	32,736.91	40,799.51	46,251.66	33,991.10	36,209.91
=====						
LPG GAS OIL						

DWELLINGS WITH LPG	4.00	30.50	84.50	153.00	212.00	252.50
CONSUMPTION OF LPG, LPG ALTERNATIVE, 000 TONS	1.26	9.80	27.69	51.14	72.29	87.82
GAS OIL CONSUMPTION BY POWER STATION, 000 TONS	55.07	110.14	110.14	110.14	110.14	110.14
COSTS INVOLVED IN LPG ALTERNATIVE						
COST OF LPG CONSUMED	308.70	2,401.00	6,784.05	12,529.30	17,711.05	21,515.90
OPERATING COSTS, LPG	32.76	254.80	719.94	1,329.64	1,879.54	2,283.32
PLANT AND EQ, LPG ALTERNATIVE	2,520.00	2,930.00	3,070.00	3,070.00	4,060.00	3,430.00
COST OF GAS OIL CONSUMED BY POWER STATIONS	12,335.60	24,671.36	24,671.36	24,671.36	24,671.36	24,671.36
COST OF GAS CONSUMED OTHERWISE	432.51	926.06	1,074.31	1,265.41	1,434.10	1,554.11
FIXED OPERATING COSTS FOR GAS CONSUMED	44.00	66.00	88.00	88.00	88.00	88.00
VARIABLE OPERATING COSTS FOR GAS CONSUMED	7.36	56.12	155.48	281.52	390.08	464.60

TOTAL COST, LPG GAS OIL SOLUTION	15,681.01	31,305.34	36,563.14	43,235.23	50,234.13	54,007.29
=====						
PROJECT SAVINGS	(12,454.50)	(1,431.57)	(4,236.37)	(3,016.43)	16,243.03	17,797.38
=====						

RETURN ON INVESTMENT = 44.27%

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	1986	1987	1988	1989	1990	1991
COST OF LPG(CIF), LE/TON	245.00	245.00	245.00	245.00	245.00	245.00
COST OF FUEL OIL(FOB), LE/TON	105.00	105.00	105.00	105.00	105.00	105.00
COST OF GAS OIL(CIF), LE/TON	224.00	224.00	224.00	224.00	224.00	224.00
NATURAL GAS						

DWELLINGS CONNECTED TO NATURAL GAS	280.00	298.50	317.00	335.50	354.00	372.50
CONSUMPTION OF GAS, PRIVATE CONSUMERS, MMCF	4,186.00	4,507.35	4,834.25	5,170.06	5,508.24	5,855.70
CONSUMPTION OF GAS, POWER STATIONS, MMCF	4,440.00	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00
TOTAL CONSUMPTION OF GAS, MMCF	8,626.00	6,727.35	7,054.25	7,390.06	7,728.24	8,075.70
CONSUMPT. OF FUEL OIL AS REPLACEMENT TO GAS CONSUMED, 000 TONS	224.50	175.09	183.59	192.33	201.14	210.18
COSTS INVOLVED IN NATURAL GAS ALTERNATIVE						
COST OF GAS CONSUMED	1,638.94	1,278.20	1,340.31	1,404.11	1,468.37	1,534.38
FIXED ASSETS ACQUISITION	2,011.35	1,973.40	2,010.20	1,973.40	1,910.15	1,973.40
BOTTLES IN EXCHANGE FOR CARCASSING/CONVERSION	-	-	-	-	-	-
NATURAL GAS PROJECT FIXED OPERATING COSTS	440.00	440.00	440.00	440.00	440.00	440.00
NG PROJECT, VARIABLE OPERATING COSTS	2,436.00	2,596.95	2,757.90	2,918.85	3,079.80	3,240.75
COST OF FUEL USED AS REPLACEMENT FOR GAS CONSUMED	23,572.50	18,384.45	19,276.95	20,194.65	21,119.70	22,068.90
TOTAL COSTS INVOLVED IN NG SOLUTION	30,098.79	24,673.00	25,825.36	26,931.01	28,018.02	29,257.43
=====	=====	=====	=====	=====	=====	=====
LPG GAS OIL						

DWELLINGS WITH LPG	280.00	298.50	317.00	335.50	354.00	372.50
CONSUMPTION OF LPG, LPG ALTERNATIVE, 000 TONS	99.33	108.01	117.00	126.31	135.94	145.90
GAS OIL CONSUMTION BY POWER STATION, 000 TONS	110.14	55.07	55.07	55.07	55.07	55.07
COSTS INVOLVED IN LPG ALTERNATIVE						
COST OF LPG CONSUMED	24,335.85	26,462.45	28,665.00	30,945.95	33,305.30	35,745.50
OPERATING COSTS, LPG	2,582.58	2,808.26	3,042.00	3,284.06	3,534.44	3,793.40
PLANT AND EQ, LPG ALTERNATIVE	5,190.00	4,500.00	3,660.00	3,840.00	4,020.00	4,970.00
COST OF GAS OIL CONSUMED BY POWER STATIONS	24,671.36	12,335.68	12,335.68	12,335.68	12,335.68	12,335.68
COST OF GAS CONSUMED OTHERWISE	1,638.94	1,278.20	1,340.31	1,404.11	1,468.37	1,534.38
FIXED OPERATING COSTS FOR GAS CONSUMED	88.00	88.00	88.00	88.00	88.00	88.00
VARIABLE OPERATING COSTS FOR GAS CONSUMED	487.20	519.39	551.58	583.77	615.96	648.15
TOTAL COST, LPG GAS OIL SOLUTION	58,993.93	47,991.98	49,682.57	52,481.57	55,367.75	59,115.11
=====	=====	=====	=====	=====	=====	=====
PROJECT SAVINGS	28,095.14	23,318.98	23,857.21	25,550.56	27,349.73	29,857.68
=====	=====	=====	=====	=====	=====	=====

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	1992	1993	1994	1995	1996	1997
COST OF LPG(CIF), LE/TON	245.00	245.00	245.00	245.00	245.00	245.00
COST OF FUEL OIL(FOB), LE/TON	105.00	105.00	105.00	105.00	105.00	105.00
COST OF GAS OIL(CIF), LE/TON	224.00	224.00	224.00	224.00	224.00	224.00
NATURAL GAS						

DWELLINGS CONNECTED TO NATURAL GAS	391.00	409.00	427.50	446.00	464.50	483.00
CONSUMPTION OF GAS, PRIVATE CONSUMERS, MMCF	6,205.17	6,556.27	6,921.23	7,296.56	7,673.54	8,056.44
CONSUMPTION OF GAS, POWER STATIONS, MMCF	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00

TOTAL CONSUMPTION OF GAS, MMCF	8,425.17	8,776.27	9,141.23	9,516.56	9,893.54	10,276.44
CONSUMPT. OF FUEL OIL AS REPLACEMENT TO GAS CONSUMED, 000 TONS	219.27	228.41	237.91	247.68	257.49	267.46
COSTS INVOLVED IN NATURAL GAS ALTERNATIVE						
COST OF GAS CONSUMED	1,600.78	1,667.49	1,736.83	1,808.15	1,879.77	1,952.52
FIXED ASSETS ACQUISITION	1,910.15	1,973.40	2,011.35	1,906.70	2,011.35	1,981.05
BOTTLES IN EXCHANGE FOR CARCASSING/CONVERSION	-	-	-	-	-	-
NATURAL GAS PROJECT FIXED OPERATING COSTS	440.00	440.00	440.00	440.00	440.00	440.00
NG PROJECT, VARIABLE OPERATING COSTS	3,401.70	3,558.30	3,719.25	3,880.20	4,041.15	4,202.10
COST OF FUEL USED AS REPLACEMENT FOR GAS CONSUMED	23,023.35	23,983.05	24,980.55	26,006.40	27,036.45	28,083.30

TOTAL COSTS INVOLVED IN NG SOLUTION	30,375.98	31,622.24	32,887.98	34,041.45	35,408.72	36,659.37
=====						
LPG GAS OIL						

DWELLINGS WITH LPG	391.00	409.00	427.50	446.00	464.50	483.00
CONSUMPTION OF LPG, LPG ALTERNATIVE, 000 TONS	156.21	166.67	177.69	189.09	200.87	213.05
GAS OIL CONSUMPTION BY POWER STATION, 000 TONS	55.07	55.07	55.07	55.07	55.07	55.07
COSTS INVOLVED IN LPG ALTERNATIVE						
COST OF LPG CONSUMED	38,271.45	40,834.15	43,534.05	46,327.05	49,213.15	52,197.25
OPERATING COSTS, LPG	4,061.46	4,333.42	4,619.94	4,916.34	5,222.62	5,539.30
PLANT AND EQ, LPG ALTERNATIVE	4,280.00	5,260.00	5,560.00	6,900.00	6,530.00	8,390.00
COST OF GAS OIL CONSUMED BY POWER STATIONS	12,335.68	12,335.68	12,335.68	12,335.68	12,335.68	12,335.68
COST OF GAS CONSUMED OTHERWISE	1,600.78	1,667.49	1,736.83	1,808.15	1,879.77	1,952.52
FIXED OPERATING COSTS FOR GAS CONSUMED	88.00	88.00	88.00	88.00	88.00	88.00
VARIABLE OPERATING COSTS FOR GAS CONSUMED	680.34	711.66	743.85	776.04	808.23	840.42

TOTAL COST, LPG GAS OIL SOLUTION	61,317.71	65,230.40	68,618.35	73,151.26	76,077.45	81,343.17
=====						
PROJECT SAVINGS	30,941.73	33,608.16	35,730.37	39,109.81	40,668.73	44,683.80
=====						

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	1998	1999	2000	2001	2002	2003
COST OF LPG(CIF), LE/TON	245.00	245.00	245.00	245.00	245.00	245.00
COST OF FUEL OIL(FOB), LE/TON	105.00	105.00	105.00	105.00	105.00	105.00
COST OF GAS OIL(CIF), LE/TON	224.00	224.00	224.00	224.00	224.00	224.00
NATURAL GAS						

DWELLINGS CONNECTED TO NATURAL GAS	501.50	520.00	538.50	557.00	575.50	594.00
CONSUMPTION OF GAS, PRIVATE CONSUMERS, MMCF	8,450.28	8,850.40	9,256.82	9,669.52	10,090.27	10,519.74
CONSUMPTION OF GAS, POWER STATIONS, MMCF	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00
TOTAL CONSUMPTION OF GAS, MMCF	10,670.28	11,070.40	11,476.82	11,889.52	12,310.27	12,739.74
CONSUMPT. OF FUEL OIL AS REPLACEMENT TO GAS CONSUMED, 000 TONS	277.71	288.12	298.70	309.44	320.49	331.57
COSTS INVOLVED IN NATURAL GAS ALTERNATIVE						
COST OF GAS CONSUMED	2,027.35	2,103.38	2,180.60	2,259.01	2,339.71	2,420.55
FIXED ASSETS ACQUISITION	1,910.15	2,843.95	1,910.15	2,007.90	1,910.15	1,981.45
BOTTLES IN EXCHANGE FOR CARCASSING/CONVERSION	-	-	-	-	-	-
NATURAL GAS PROJECT FIXED OPERATING COSTS	440.00	440.00	440.00	440.00	440.00	440.00
NG PROJECT, VARIABLE OPERATING COSTS	4,363.05	4,524.00	4,684.95	4,845.90	5,006.85	5,167.80
COST OF FUEL USED AS REPLACEMENT FOR GAS CONSUMED	29,159.55	30,252.60	31,363.50	32,491.20	33,651.45	34,814.85
TOTAL COSTS INVOLVED IN NG SOLUTION	37,900.10	40,163.93	40,579.20	42,044.01	43,348.16	44,824.65
=====						
LPG GAS OIL						

DWELLINGS WITH LPG	501.50	520.00	538.50	557.00	575.50	594.00
CONSUMPTION OF LPG, LPG ALTERNATIVE, 000 TONS	225.63	238.63	252.07	265.94	280.27	295.06
GAS OIL CONSUMPTION BY POWER STATION, 000 TONS	55.07	55.07	55.07	55.07	55.07	55.07
COSTS INVOLVED IN LPG ALTERNATIVE						
COST OF LPG CONSUMED	55,279.35	58,464.35	61,757.15	65,155.30	68,666.15	72,289.70
OPERATING COSTS, LPG	5,866.38	6,204.38	6,553.82	6,914.44	7,287.02	7,671.56
PLANT AND EQ, LPG ALTERNATIVE	7,100.00	7,960.00	7,420.00	7,750.00	8,980.00	8,220.00
COST OF GAS OIL CONSUMED BY POWER STATIONS	12,335.68	12,335.68	12,335.68	12,335.68	12,335.68	12,335.68
COST OF GAS CONSUMED OTHERWISE	2,027.35	2,103.38	2,180.60	2,259.01	2,339.71	2,420.55
FIXED OPERATING COSTS FOR GAS CONSUMED	88.00	88.00	88.00	88.00	88.00	88.00
VARIABLE OPERATING COSTS FOR GAS CONSUMED	872.61	904.80	936.99	969.18	1,001.37	1,033.56
TOTAL COST, LPG GAS OIL SOLUTION	83,569.37	88,060.59	91,272.24	95,471.61	100,497.93	104,059.05
=====						
PROJECT SAVINGS	45,669.27	47,896.66	50,693.04	53,427.60	57,349.77	59,234.40
=====						

EGYPT DISTRIBUTION PROJECT
 ECONOMIC ANALYSIS
 IN THOUSAND EGYPTIAN POUNDS
 1980 PRICES
 04/10/80

ANNEX 5.01

Page 5 of 5

	2004	2005
COST OF LPG(CIF), LE/TON	245.00	245.00
COST OF FUEL OIL(IUB), LE/TON	105.00	105.00
COST OF GAS OIL(CIF), LE/TON	224.00	224.00
NATURAL GAS		

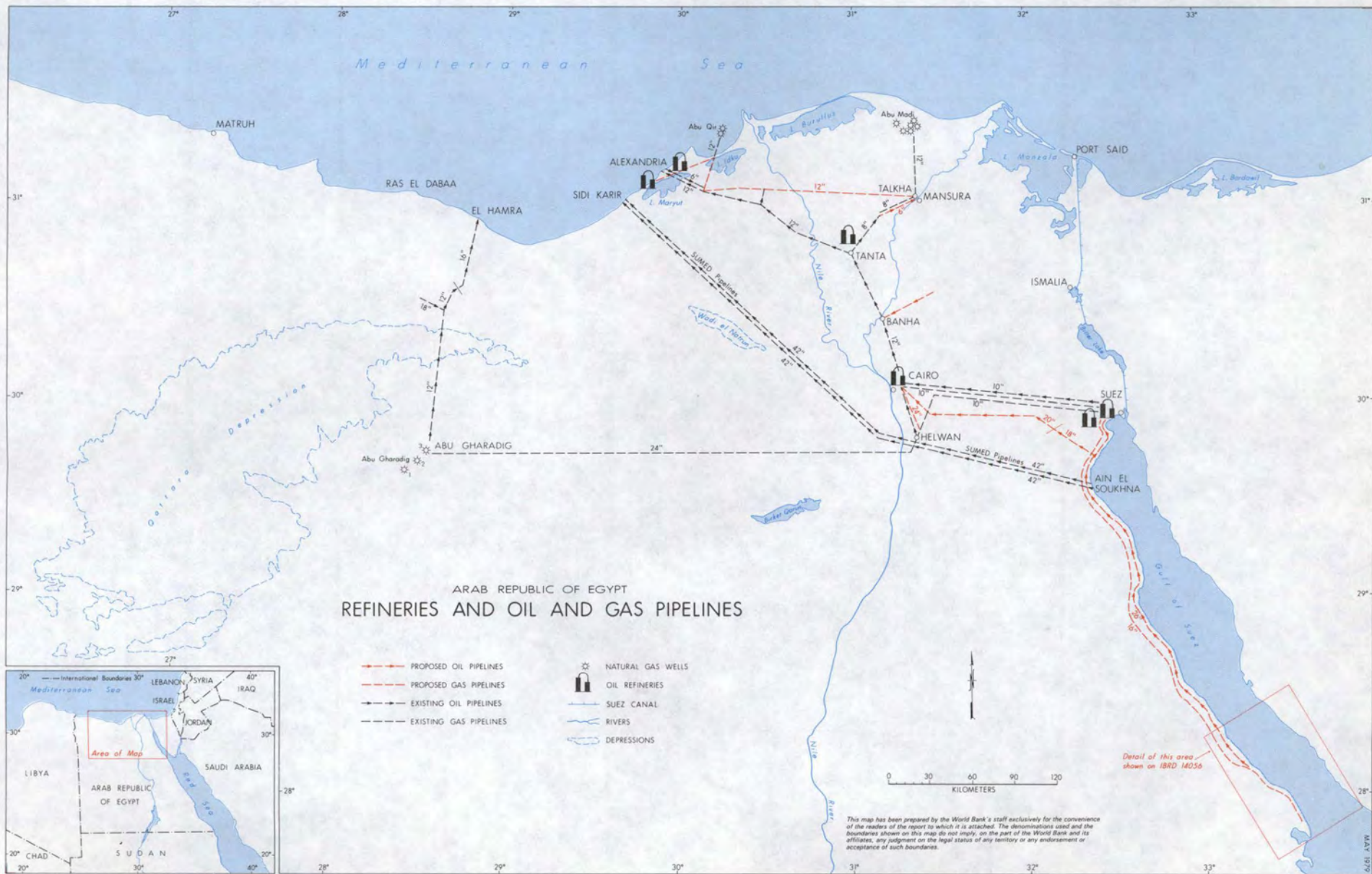
DWELLINGS CONNECTED TO NATURAL GAS	612.50	631.00
CONSUMPTION OF GAS, PRIVATE CONSUMERS, MMCF	10,957.63	11,402.17
CONSUMPTION OF GAS, POWER STATIONS, MMCF	2,220.00	2,270.00

TOTAL CONSUMPTION OF GAS, MMCF	13,177.63	13,622.17
CONSUMPT. OF FUEL OIL AS REPLACEMENT TO GAS CONSUMED, 000 TONS	342.96	354.53
COSTS INVOLVED IN NATURAL GAS ALTERNATIVE		
COST OF GAS CONSUMED	2,503.75	2,588.21
FIXED ASSETS ACQUISITION	2,772.65	-
BOTTLES IN EXCHANGE FOR CARCASSING/CONVERSION	-	-
NATURAL GAS PROJECT FIXED OPERATING COSTS	440.00	440.00
NG PROJECT, VARIABLE OPERATING COSTS	5,328.75	5,489.70
COST OF FUEL USED AS REPLACEMENT FOR GAS CONSUMED	36,010.80	37,225.65

TOTAL COSTS INVOLVED IN NG SOLUTION	47,055.95	45,743.56
=====		
LPG GAS OIL		

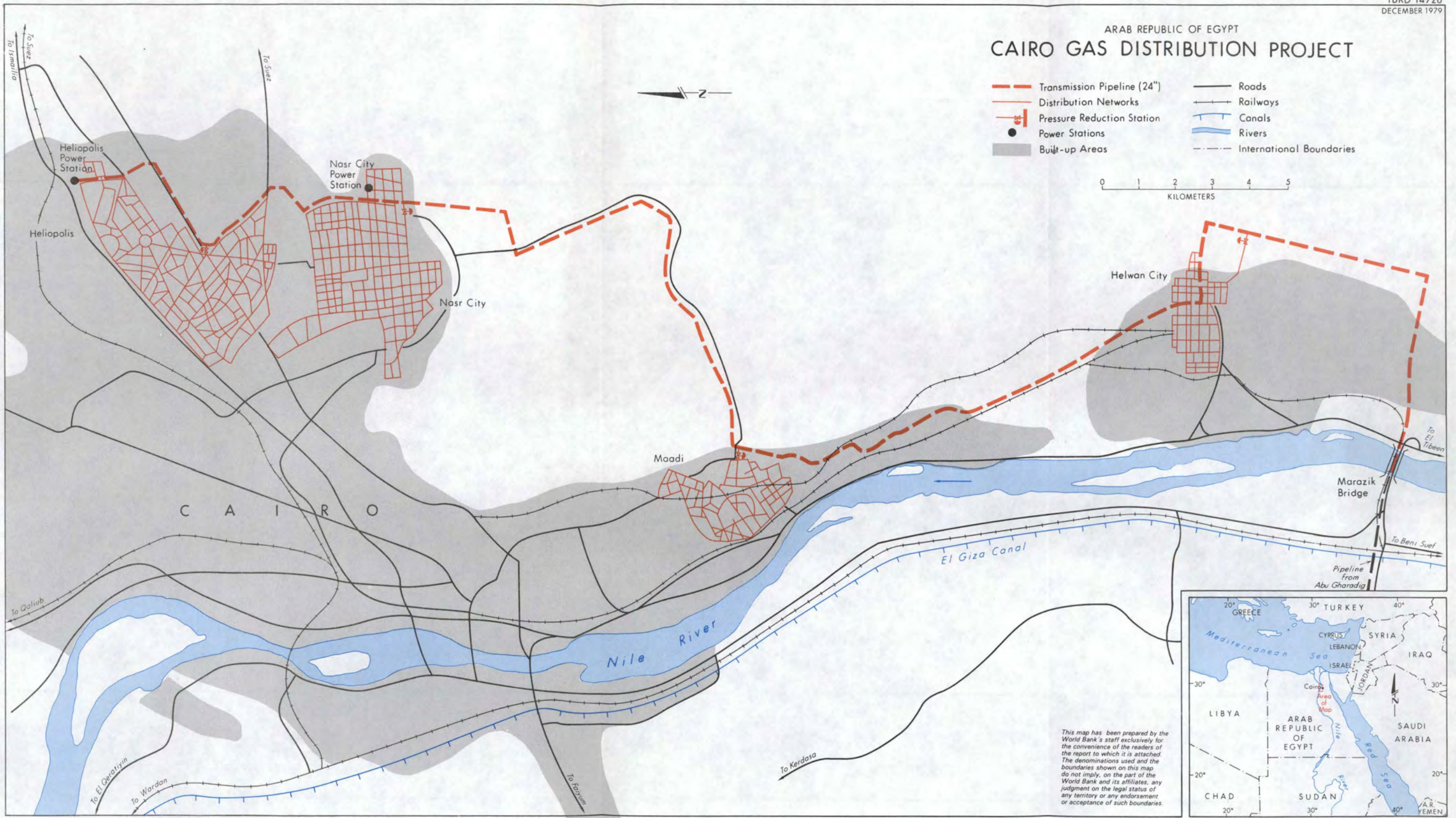
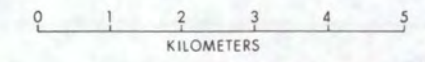
DWELLINGS WITH LPG	612.50	631.00
CONSUMPTION OF LPG, LPG ALTERNATIVE, 000 TONS	310.34	326.10
GAS OIL CONSUMPTION BY POWER STATION, 000 TONS	55.07	55.07
COSTS INVOLVED IN LPG ALTERNATIVE		
COST OF LPG CONSUMED	76,033.30	79,894.50
OPERATING COSTS, LPG	8,068.84	8,478.60
PLANT AND EQ, LPG ALTERNATIVE	10,350.00	9,880.00
COST OF GAS OIL CONSUMED BY POWER STATIONS	12,335.68	12,335.68
COST OF GAS CONSUMED OTHERWISE	2,503.75	2,588.21
FIXED OPERATING COSTS FOR GAS CONSUMED	88.00	88.00
VARIABLE OPERATING COSTS FOR GAS CONSUMED	1,065.75	1,097.94

TOTAL COST, LPG GAS OIL SOLUTION	110,445.32	114,362.93
=====		
PROJECT SAVINGS	63,389.37	68,619.37
=====		



ARAB REPUBLIC OF EGYPT CAIRO GAS DISTRIBUTION PROJECT

- Transmission Pipeline (24")
- Distribution Networks
- + Pressure Reduction Station
- Power Stations
- Built-up Areas
- Roads
- Railways
- Canals
- Rivers
- - - International Boundaries



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.



OFFICE MEMORANDUM

TO: Mr. R. Carmignani, EMP

DATE: February 22, 1980

FROM: P. Bourcier, EGYPP

SUBJECT: EGYPT: Cairo Gas Distribution Project - Proposed IDA Credit
Change List for Yellow Cover Appraisal Report

1. The following changes will be incorporated in the SAR, as a result of the Yellow Cover Review of the above project.

(i) Paragraph 4.17, should end with the following sentence:

The arrangements between EGPC, EEA and the Government relating to the sale of gas to power stations will be confirmed at negotiations.

(ii) Paragraph 5.18. The following new paragraph should replace the old.

The measures discussed in paragraph 5.17 above should ensure that LPG consumption in the project area remains supply constrained. As is also mentioned, the likelihood of large-scale substitution of natural gas by LPG or kerosene is small because of the expected LPG shortages, high front-end costs, and the consumers' aversion to kerosene usage for cooking. The project's rate of return is, in any case, rather insensitive to marginal switching from natural gas to these fuels. Nevertheless, in order to maximize project benefits, other measures which may limit further the risks of substitution and help maintain the supply constraint will be discussed at negotiations.

(iii) Paras. 2.12 and 3.04. The date September 1980 referred to in paras. 2.12 and 3.04 should be changed to read December 31, 1980.

2. Other minor editorial and clarification changes which do not introduce changes of substance would also be reflected in the Buff Cover.

Cleared with and cc: Mr. H.E. Köpp

cc: Messrs. M.P. Benjenk, EMNVP, V. Dubey, D. Richardson, U. Finzi, A.D. Knox, EMP, K.D. Jones, J.J. Fish, A. Roa, A. Karaosmanoglu, EMI, B.G. Kavalsky, O. Maiss, H.E. Köpp, F.H. Kaps (3), V. Rajagopalan, PAS (8), C. Duval, LEG, Y. Rovani, EGY, R.H. Sheehan, E. Friedmann, J.G. Davis, D.G. Fallen-Bailey, J. Bharier, P. Bourcier, EGYPP, E.D. McCarthy, V. Nayyar, M. Wormser, Ms. D. Julius, Ms. I. Zurayk, Regional Information Center, Reports Desk, Project File.

I Zurayk:bk

OFFICE MEMORANDUM

TO: Those Listed Below

DATE: February 1, 1980

FROM: Franz H. Kaps, *FH* Loan Officer, EMIDA

SUBJECT: EGYPT: Cairo Gas Distribution Project
Yellow Cover Review

A meeting to be chaired by Mr. Carmignani to review the yellow cover Staff Appraisal report and the draft President's Report on the above project, dated January 31, 1980, is scheduled to be held on February 8 at 2:30 in room C 710. Those unable to attend but wanting to comment are kindly requested to contact Mr. Kaps (Ext: 74528).

Messrs. Knox, Fish, Roa (EMP); Karaosmanoglu, KÜpp (EMI); Rajagopalan (PAS); Duval (LEG); Rovani, Sheehan, Friedmann, Bourcier, McCarthy, Nayyar, Ms. Julius, Ms. Zurayk (EGY)

FKaps:aw

OFFICE MEMORANDUM

TO: Those Listed Below

DATE: February 1, 1980

FROM: Franz H. Kaps *FK* Loan Officer, EMIDA

SUBJECT: EGYPT: Cairo Gas Distribution Project
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Messrs. Knox, Fish, Roa (EMP); Karaosmanoglu, Köpp (EM1); Rajagopalan (PAS); Duval (LEG); Rovani, Sheehan, Friedmann, Bourcier, McCarthy, Nayyar, Ms. Julius, Ms. Zurayk (EGY)

FKaps:aw

GRAY COVER MEMORANDA
(RVP AND VP, OPER.)

OFFICE MEMORANDUM

TO: Mr. Ernest Ştern, Vice President, Operations

DATE: April 24, 1980

FROM: Roger Chaufournier, Vice President, EMENA Region

SUBJECT: EGYPT: Proposed \$50 million Development Credit for
Cairo Gas Distribution Project

1. I attach for your approval the draft gray President's Report, Staff Appraisal Report, Development Credit Agreement and Project Agreement together with draft supplemental letters regarding (i) the organizational structure and staffing of the Petroleum Gas Company (Petrogas), the beneficiary agency and (ii) index to be used for valuation and revaluation of Petrogas' fixed assets, as well as Agreed Minutes of Negotiations, all pertaining to the proposed Cairo Gas Distribution Project. The Egyptian Government has confirmed its agreement to the Development Credit Agreement. Agreement by Petrogas and the Egyptian General Petroleum Corporation (EGPC), the parties to the Project Agreement, is expected shortly.^{1/} The documents, other than the supplemental letters, are scheduled to be distributed to the Executive Directors no later than May 1 for consideration on May 20, 1980. While you review the attached documents, may I also draw your attention to the gray cover documents for the proposed Power III project which I am submitting for your approval simultaneously. Since the sector issues for both projects are very similar, if not identical, the sector parts of the President's Reports for both projects are to a great extent identical.
2. Agreement on the terms and conditions of the Development Credit as approved by the Loan Committee, and subsequently modified by you in response to Mr. Knox's memorandum of March 19, 1980, has been reached. You may recall that Mr. Knox's memorandum addressed itself to the proposed Memorandum of Understanding to be entered into between the Government of Egypt and the Bank regarding certain undertakings by the Egyptian Government with respect to energy pricing. As agreed between you and Mr. Knox, this memorandum now has the form of a letter from the Egyptian Minister of Economy addressed to me, which I received on April 8, 1980 (copy attached). It incorporates, as requested by you, the undertakings reflected in the draft IMF Letter of Intent on energy pricing.
3. As regards two related points raised in Mr. Knox's memorandum of March 19, agreement has been reached during negotiations of the proposed third power project (which were completed on April 11), on an automatic fuel adjustment clause. (The accompanying memorandum for the power project gray cover documents dated April , 1980 provides further details, see para. 2 (i).) In addition, a detailed letter from the Bank to the Minister of Economy discussing and outlining in detail the quantitative objectives that would be desirable to be reached over the next three years with respect to energy pricing and their impact on output prices, is being prepared. As confirmed

^{1/} Approval of the Project Agreement by Petrogas and EGPC has just been received.

April 24, 1980

by the Minister of Economy, this letter will be submitted for review of both the Supreme Council for Energy headed by the Minister of Petroleum and the Economic Planning and Production Committee of the Cabinet. The Minister of Economy has assured us that he will give this matter his personal attention.

4. Finally, we would like to draw your attention to the fact that we have been successful in obtaining the Government's concurrence with two important pricing issues: (i) domestic consumers will be charged about \$4.20 per one thousand cubic feet (Mcf) for natural gas being supplied under the project. This is a substantial increase over the current price of city gas of \$0.73 per Mcf and the current Bill equivalent price of LPG of \$1.7 per Mcf; and (ii) on the basis of a signed agreement between the Egyptian General Petroleum Corporation (EGPC) and the Egyptian Electricity Authority (EEA), two small power stations also to be supplied with natural gas under the project will pay about \$0.73 per Mcf versus a price of about \$0.28 per Mcf charged until recently to all power stations. While the actual price for the two power stations agreed upon between EGPC and EEA differs somewhat from our earlier assumptions, it is adequate to ensure Petrogas' (the implementing agency) financial viability through 1984.

5. This memorandum and the attached documents have been cleared by the Departments concerned.

6. Would you please give your comments, if any, to Mr. Kaps, extension 74528.

Attachments

Cleared with & cc: Messrs. Karaosmanoglu, Köpp (EM1); McCarthy, Nayyar (EGY); Duval (LEG); Hakim (CTR)

cc: Messrs. Knox, Carmignani, Reekie, Roa (EMP); Wormser, Ms. Julius, Ms. Zurayk (EGY) Dubey, Finzi (EMNVP); Maiss, Kavalsky, Ms. Schaeffer (EM1)

Distribution: Messrs. Stern (3)
Qureshi, VPF
Van der Tak
Nurick

cc: Mr. Hattori (CTR)

cc: Mr. McNamara (memo only)
Mr. Choi (memo only)

FKaps:aw

MINUTES OF
NEGOTIATIONS

ARAB REPUBLIC OF EGYPT

PROPOSED CAIRO GAS DISTRIBUTION PROJECT

AGREED MINUTES

April 1, 1980

During negotiations of the above project held in Washington from March 24 to April 1, 1980 between representatives of the Government of the Arab Republic of Egypt, the Egyptian General Petroleum Corporation (EGPC) and the Petroleum Gas Company (Petrogas) and representatives of the Association on the basis of the draft Development Credit and Project Agreements dated March 24, 1980 respectively, understandings were reached on the following matters:

Credit Amount

1. The Egyptian delegation requested the Association delegation to consider the possibility of granting a \$25 million Bank loan in addition to the \$50 million IDA credit, being the subject of negotiations. In response, the Association delegation pointed out that the current fiscal year 1980 lending program could unfortunately not be increased and that the Government and EGPC would therefore have to comply, amongst others, with their obligations under the proposed agreements of providing the necessary funds to complete the project.

Petrogas' Capital Structure

2. The Egyptian delegation presented to the Association delegation that by decision of Petrogas' General Assembly, the share capital of Petrogas may be increased in kind or in cash above the level of LE 30 million spelled out in decree No. 118 of 1978 establishing Petrogas. Consequently, no amendment of decree No. 118 is required for the purpose.

Disbursement

3. With reference to Schedule I, category (2) to the draft Development Credit Agreement, the Egyptian and Association delegations concurred that it was understood that the term "services for technical assistance" refers only to the Consultant services referred to in Part D of Schedule 2.

Technical Assistance

4. It is understood that Part D of the Project will be carried out with the assistance of about 450 man-months of consultants' services.

*JK**Amr**Reb**SK*

Audit

5. Referring to Section 4.01 (c) of the draft Project Agreement, the Egyptian delegation explained that the relevant audit is carried out by the Egyptian Central Organization for Accounting and Audit. The Association staff stated that this is satisfactory.

Debt Provision

6. With reference to para. 4.05 (b) (v) of the draft Project Agreement, the Egyptian and Association delegations agreed that the "reasonable forecast" mentioned in said paragraph, will be prepared by Petrogas and submitted to the Association at the beginning of each fiscal year, starting January 1, 1981. The forecasts will cover a period of ten years from the date of their preparation. They will explicitly state the assumptions used in order to derive "net revenue" defined in the Project Agreement in paragraph 4.05 (b) (iii) which will include, inter alia, a forecast of the consumption of domestic and other consumers tied to the gas system and projected tariff to be applied to each category of consumers.

Reporting Requirements

7. The schedule for reporting the progress of the project was reviewed with the Association delegation and agreed upon.

Training

8. With reference to Sections 3.01 (b) - (d) of the Project Agreement, the training requirements of Petrogas personnel were reviewed. The Egyptian delegation indicated that some of Petrogas' personnel had already received training in the UK. It was Petrogas' objective to use extensively in future its consultant (British Gas) and the contractor (William Press) for imparting training to its personnel. It was, however, recognized that there was a need to prepare an overall master plan for training, and delineate the precise role of British Gas and William Press to avoid duplication. In this context, the need for setting up the training institute in Cairo was accepted. It was agreed that the master plan for training and the nature of permanent institute required by Petrogas would be firmed up by Petrogas, with the assistance of British Gas, and reviewed in Egypt by the first supervisory mission (July 1980).

Safety

9. The Egyptian delegation pointed out that closest attention would be paid to all aspects of safety of the project facilities. Petrogas was in the process of establishing rigorous supervisory procedures to ensure that the contractor adheres to technical specifications. It was agreed that a separate safety organization, responsible to the Chairman of Petrogas, would be set up which would carry out a stipulated number of safety audits and enquire into any incident which may occur. Separately, safety procedures would be the essential ingredient of all training programs.

Distribution and Sale of Gas

10. The Egyptian delegation indicated that it was EGPC's intention to transfer all works relating to the distribution and sale of gas in Cairo over

Handwritten signatures and initials:
A large stylized signature on the left.
A signature "Casson" with a horizontal line underneath.
A signature "P. B." with a horizontal line underneath.
The initials "JUC" written below the "P. B." signature.

and above those included in the project description for the Cairo Gas Distribution Project, including power stations and all other industrial and commercial consumers, to Petrogas. It was agreed that EGPC, Petrogas and the Association will jointly hold a review by December 31, 1980 and review the further course of action.

Use of Natural Gas

11. The Egyptian delegation indicated that every effort would be made to further develop the acceptability of natural gas by domestic consumers. In this context it was, inter alia, intended to launch an extensive advertising campaign to inform the public of the benefits of natural gas over LPG, in terms of convenience, safety, and cleanliness. The Egyptian delegation also pointed out that in those districts of Cairo converted to natural gas, LPG would not be available as an alternative; it was anticipated that LPG bottles would be taken away from the consumers and in any case, the appliances would no longer be capable of working on LPG. Furthermore, it was Petrogas' intention to cease supplying bottled LPG immediately after a household had been converted to natural gas use and to close the distribution center, after the area covered by it had been fully converted to natural gas.

Energy Sector Issue

12. The Association delegation made reference to the discussions on the issue of energy pricing and that agreement on how to treat this issue would have to be resolved during negotiations on the proposed third power project.

M. Samir Koraïem April 1, 1980

For Arab Republic of Egypt

E. Abdel Aziz

For Egyptian General Petroleum Corporation

A. A. Abdulah

For Petrogas

Franz H. Keys

For International Development Association

MINISTER OF ECONOMY, FOREIGN TRADE
AND ECONOMIC COOPERATION

Cairo
Arab Republic of Egypt

April 8, 1980

Mr. Roger Chaufournier
Regional Vice President
Europe, Middle East and
North Africa Region
World Bank
1818 H Street, N.W.
Washington, D.C. 20433

Dear Mr. Chaufournier:

I have been informed of the status of negotiations concerning this fiscal year's two projects in the energy sector, i.e. the Cairo Gas Distribution and the Third Power Projects, and also of the more general discussions on energy pricing, which took place in connection with these projects both in Cairo and in Washington. From these discussions I understand that the Bank will send me a letter in the near future which will discuss and outline the qualitative and quantitative objectives which the Bank would consider desirable for Egypt to reach over the next three years with respect to energy pricing. I would like to confirm that I shall submit this letter to both the Supreme Council for Energy headed by His Excellency the Minister of Petroleum and to the Economic Planning and Production Committee of the Cabinet and that I shall ensure that it will be given proper consideration.

In this context, I would like to draw your attention to the recent negotiations between the Egyptian Government and the IMF, which we hope to be concluded shortly with an agreement permitting Egypt to make use of the Extended Fund Facility. As we have informed you already, both the Government and the IMF have agreed to include the following paragraph in the Government's Letter of Intent which we will send, when finally agreed upon, to the IMF in this connection:

"One particular area in which we have already taken some important steps, and where we plan major further action over the life of the program 1/ is in the field

1/ In this context, this means a three-year period.

of energy pricing. Egypt has adequate supplies of energy for its own needs, from petroleum, natural gas and hydro-electric sources. Nevertheless, we recognize our international responsibility to conserve energy, and the potential financial resources that could be generated from a higher level of energy prices. At present there is a substantial gap between selling prices for energy products in Egypt and comparable world market prices. Our policy over the coming three years will be to bring about a gradual real increase in average energy prices, so as to significantly reduce this gap in nominal terms by the end of the program period. Where energy is used by public sector economic enterprises, they will be directed to pass additional costs on to final consumers, except in a limited number of identified cases (e.g., mass transportation) where conservation goals dictate a different policy."

As you can see, the policy outlined above which we intend to pursue in this important area, is quite in line with my statement in this respect at the most recent meeting of the Consultative Group for the Arab Republic of Egypt in Paris. This policy will guide us also in our dialogue with the Bank on this matter and in our cooperation on specific projects being financed by the Bank.

With my best personal regards,

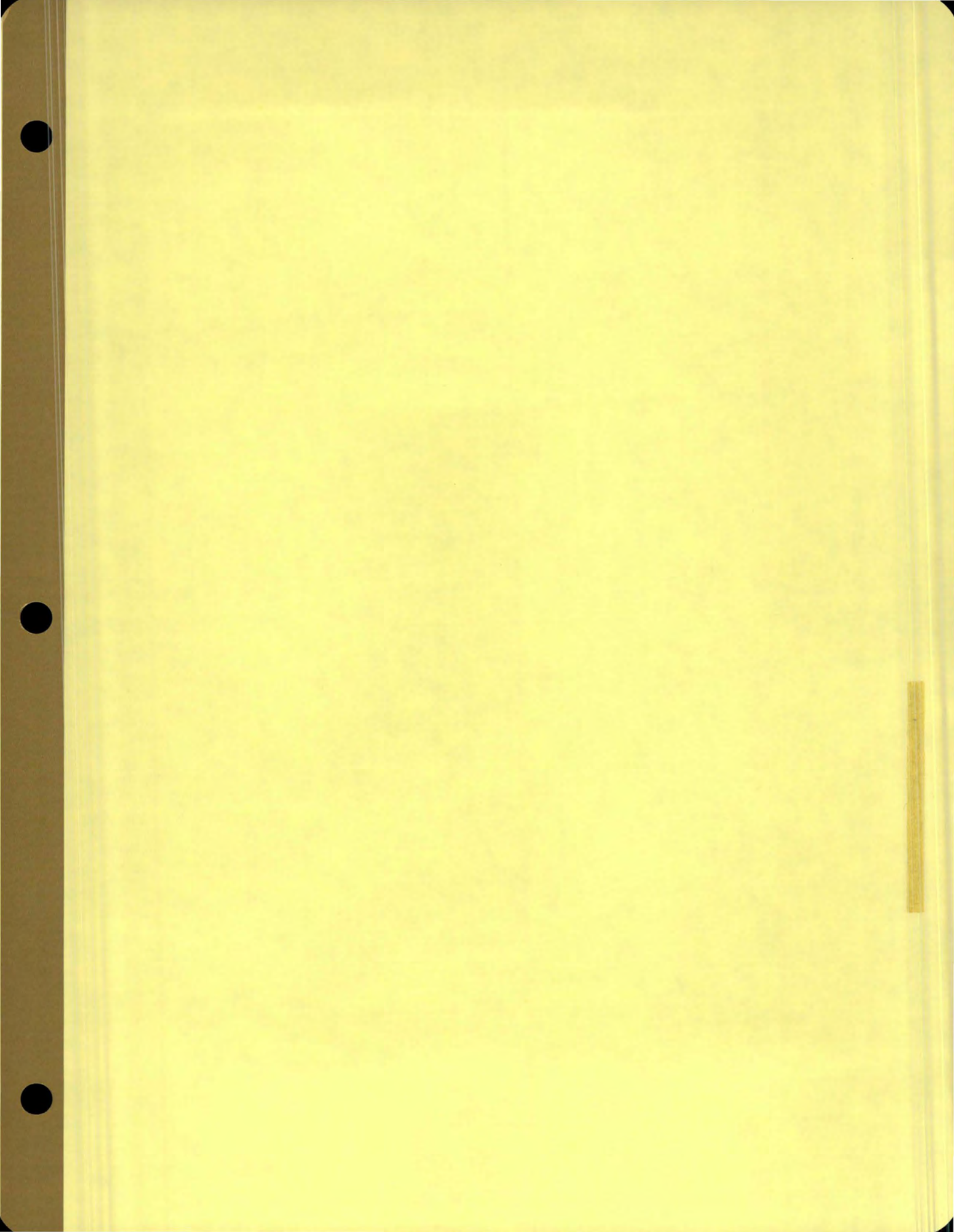
Sincerely yours,

ARAB REPUBLIC OF EGYPT

BY:

F01

M. Samir Koraiem
Dr. Hamed Abdel-Latif El-Sayeh
Minister of Economy, Foreign
Trade and Economic Cooperation



OFFICE MEMORANDUM

TO: Files

FROM: Hans-Eberhard Köpp, Division Chief, Country
Programs Department 1, EMENA Region

SUBJECT: EGYPT: Cairo Gas Distribution Project

DATE: April 4, 1980

Mr. Koraiem informed me that he has received final agreement from His Excellency Dr. El-Sayeh, Minister of Economy, Foreign Trade and Economic Cooperation, on the legal documents for the Cairo Gas Distribution Project.

cc: Messrs. Rovani, Bourcier, McCarthy, Nayyar,
Wormser, Ms. Zurayk

Karaosmanoglu, Carmignani, Reekie,
Duval, Hakim, Kaps

HEKöpp:orp

OFFICE MEMORANDUM

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Wormser, Ms. Zurayk

Karaosmanoglu, Carmignani, Reekie,
Duval, Hakim, Kaps

HEKöpp:orp

THE WORLD BANK

ROUTING SLIP

DATE: 3/7/80

NAME

ROOM NO.

Mr. Karapinar

Kee

APPROPRIATE DISPOSITION

NOTE AND RETURN

APPROVAL

NOTE AND SEND ON

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PER OUR CONVERSATION

COMMENT

PER YOUR REQUEST

FOR ACTION

PREPARE REPLY

INFORMATION

RECOMMENDATION

INITIAL

SIGNATURE

NOTE AND FILE

URGENT

REMARKS:

I have sent a copy to
Mr. El Naggar

FROM: Hans-Eberhard Köpp
Division Chief

ROOM NO.: C708

EXTENSION: 74731

Class of Service: **TELEX**
Telex No.: **348 GAFEC UN**

Date: **MARCH 7, 1980**
Originator's Ext.: **74731**

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START
HERE TO

MINISTRY OF ECONOMY, FOREIGN TRADE AND ECONOMIC COOPERATION

TO/COUNTRY

8 ADLY STREET, CAIRO, ARAB REPUBLIC OF EGYPT

MESSAGE NO

MR. SAMIR KORAIEM, UNDERSECRETARY FOR INTERNATIONAL FINANCE.

THANKS YOUR TELEX MARCH 6. VERY MUCH REGRET UNABLE ACCOMMODATE
 EGPC WISH TO POSTPONE GAS PROJECT NEGOTIATIONS TO MARCH 31.
 SUCH POSTPONEMENT WOULD ALSO NECESSITATE POSTPONEMENT OF
 BOARD DATE. HOWEVER, AT THIS STAGE THIS WOULD MEAN POSTPONEMENT
 TO JULY SINCE AGENDA OF ALL REMAINING BOARD MEETINGS COMPLETELY
 FULL UNTIL FISCAL YEAR END. ALSO IN VIEW SCHEDULE FOR THREE
 OTHER NEGOTIATIONS, VERY MUCH URGE YOU TO START NEGOTIATIONS
 GAS PROJECT MARCH 17. EXPECT TO ISSUE FORMAL INVITATION
 MARCH 11. ALSO, PLEASE INFORM RAKTA AND NATIONAL PAPER
 COMPANIES THAT SUBJECT TO MANAGEMENT APPROVAL WE INTEND
 START NEGOTIATIONS ON PULP AND PAPER PROJECT MARCH 31 SO
 THAT THEY CAN MAKE TRAVEL ARRANGEMENTS. BEST REGARDS AND
 MANY THANKS AGAIN FOR YOUR KIND HOSPITALITY, KOEPP, WORLD
 BANK

END
OF
TEXT

NOT TO BE TRANSMITTED

SUBJECT: **1) Cairo Gas**
EGYPT: 2) Pulp and Paper

DRAFTED BY: **HEK8pp:orp**

CLEARANCE AND COPY DISTRIBUTION

cc: **Dr. El-Naggar (with copy of incoming), ED (Egypt)**

cc: **Mr. Bourcier**
Mr. Iskander

AUTHORIZED BY (Name and Signature)
Hans-Eberhard Köpp, Dir. Chief,
 DEPARTMENT
Country Programs Dept. 1, EMENA

SECTION BELOW FOR USE OF CABLE SECTION
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440098 WORLDBANK

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TO WORLDBANK

6.3.80

Distribution: fca
Mr. Koepp ✓
Industrial Projects

WE CONVEY THE FOLLOWING ON BEHALF OF MR. SAMIR KORAIEM

QUOTE

MR. KOEPP
INTBAFRAD
WORLD BANK

WOULD LIKE TO EXPLORE POSSIBILITY OF NEGOTIATING
SIDEBYSIDE BOTH GAS AND PULP PROJECTS STARTING MARCH 31
THRU APRIL 4. SINCE EGPC BELIEVES TIME IS TIGHT ON THEIR
SIDE. POSITION NOW MIDB AND PULP READY TO GO. AND
ELECTRICITY WAITING RESULTS OF PARIS MEETING. URGENTLY
TELEX RESPONSE. REGARDS

SAMIR KORAIEM

UNQUOTE

MIRBANK

440098 WORLDBANKMMMMM

Class of Service: TELEX Date: MARCH 7, 1980
Telex No.: 348 GAFEC UN Originators Ext: 74731

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OF
TEXT

MINISTRY OF ECONOMY, FOREIGN TRADE AND ECONOMIC COOPERATION
8 ADLY STREET, CAIRO, ARAB REPUBLIC OF EGYPT
MR. SAMIR KORAIEM, UNDERSECRETARY FOR INTERNATIONAL FINANCE.
THANKS YOUR TELEX MARCH 6. VERY MUCH REGRET UNABLE ACCOMMODATE
EGPC WISH TO POSTPONE GAS PROJECT NEGOTIATIONS TO MARCH 31.
SUCH POSTPONEMENT WOULD ALSO NECESSITATE POSTPONEMENT OF
BOARD DATE. HOWEVER, AT THIS STAGE THIS WOULD MEAN POSTPONEMENT
TO JULY SINCE AGENDA OF ALL REMAINING BOARD MEETINGS COMPLETELY
FULL UNTIL FISCAL YEAR END. ALSO IN VIEW SCHEDULE FOR THREE
OTHER NEGOTIATIONS, VERY MUCH URGE YOU TO START NEGOTIATIONS
GAS PROJECT MARCH 17. EXPECT TO ISSUE FORMAL INVITATION
MARCH 11. ALSO, PLEASE INFORM RAKTA AND NATIONAL PAPER
COMPANIES THAT SUBJECT TO MANAGEMENT APPROVAL WE INTEND
START NEGOTIATIONS ON PULP AND PAPER PROJECT MARCH 31 SO
THAT THEY CAN MAKE TRAVEL ARRANGEMENTS. BEST REGARDS AND
MANY THANKS AGAIN FOR YOUR KIND HOSPITALITY, KOEPP, WORLD
BANK

NOT TO BE TRANSMITTED

SUBJECT: 1) Cairo Gas
EGYPT: 2) Pulp and Paper

DRAFTED BY: HEKÜpp:orp

CLEARANCES AND COPY DISTRIBUTION
cc: Dr. El-Naggar (with copy of incoming), ED (Egypt)
cc: Mr. Bourcier
Mr. Iskander

AUTHORIZED BY (Name and Signature)
Hans-Eberhard Köpp, Chief,
DEPARTMENT
Country Programs Dept. 1, EMENA
CHECKED FOR DISPATCH

440098 WORLDBANK

92543 MIDB UN

FM MISR IRAN DEVELOPMENT BANK CAIRO
TO WORLDBANK

6.3.80

Distribution; fca
Mr. Koepp ✓
Industrial Projects

WE CONVEY THE FOLLOWING ON BEHALF OF MR. SAMIR KORAIEM

QUOTE

MR. KOEPP
INTBAFRAD
WORLD BANK

WOULD LIKE TO EXPLORE POSSIBILITY OF NEGOTIATING
SIDE BY SIDE BOTH GAS AND PULP PROJECTS STARTING MARCH 31
THRU APRIL 4. SINCE EGPC BELIEVES TIME IS TIGHT ON THEIR
SIDE. POSITION NOW MIDB AND PULP READY TO GO. AND
ELECTRICITY WAITING RESULTS OF PARIS MEETING. URGENTLY
TELEX RESPONSE. REGARDS

SAMIR KORAIEM

UNQUOTE

MIRBANK

✻

440098 WORLDBANKMMMMM

Class of Service: **TELEX**

Date: **MARCH 12, 1980**

Telex No.:

Originator's Ext: **74731**

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BOOK OF THREE (SEE ATTACHED TEXT)

CITY/COUNTRY

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1. HIS EXCELLENCY
DR. HAMED ABDEL-LATIF EL-SAYEH
MINISTER
MINISTRY OF ECONOMY, FOREIGN TRADE AND
ECONOMIC COOPERATION
CAIRO, EGYPT

TELEX: 348 GAFEC UN

2. DR. ENG. RAMZI EL-LEITHY
CHAIRMAN
EGYPTIAN GENERAL PETROLEUM CORPORATION
CAIRO, EGYPT

TELEX: 92049 PETMISR UN

3. ENG. ABDEL HAMID ABU BAKR
CHAIRMAN
PETROLEUM GAS COMPANY
CAIRO, EGYPT

TELEX: 93049 PTGAS UN

END
OF
TEXT

EGYPT: Cairo Gas Distribution

HEK:pp:aw

cc: Dr. El-Naggar
cc: Messrs. Knox, Carmignani,
Bourcier, Reekie, Duval, Kaps,
Hakim

Attila Karaosmanoglu, Director
Country Programs 1, EMENA Region

SECTION FOR USE BY THE SECTION
CHECKED FOR DISPATCH

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HIS EXCELLENCY DR. HAMED ABDEL-LATIF EL-SAYEH, MINISTER OF ECONOMY, FOREIGN TRADE AND ECONOMIC COOPERATION, ENGINEER RAMZI EL-LEITHY, CHAIRMAN, EGYPTIAN GENERAL PETROLEUM CORPORATION AND ENGINEER ABDEL HAMID ABU BAKR, CHAIRMAN, PETROGAS, CAIRO, EGYPT. BANK IS PLEASED TO INVITE YOU TO SEND REPRESENTATIVES TO WASHINGTON FOR NEGOTIATIONS ON A PROPOSED US DOLLARS 50 MILLION IDA CREDIT FOR THE PROPOSED CAIRO GAS DISTRIBUTION PROJECT. ISSUES FOR DISCUSSION AND ON WHICH WE WOULD SEEK AGREEMENT DURING NEGOTIATIONS ARE THOSE PRESENTED BY RECENT BANK MISSION HEADED BY MR. ROGER CARMIGNANI. AS SUGGESTED BY YOU, WE INTEND TO START NEGOTIATIONS ON MONDAY MARCH 24. BEST REGARDS, KARAOSMANOGLU, WORLD BANK.

<p>EGYPT: Cairo Gas Distribution</p> <p>cc: Dr. El-Naggar cc: Messrs. Knox, Carmignani, Bourcier, Reekie, Duval, Kaps, Hakim</p>	<p>HEKupp:aw</p> <p><i>Attila Karaosmanoglu</i> Attila Karaosmanoglu, Director</p> <p>Country Programs 1, EMENA Region</p> <p>CHECKED FOR INSPECTION</p>
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International Development Association

IDA/SecM80-101

FROM: Vice President and Secretary

April 1, 1980

STATUS OF NEGOTIATIONS

ARAB REPUBLIC OF EGYPT

CAIRO GAS DISTRIBUTION PROJECT

Negotiations have been substantially completed and credit documents will be submitted to the Executive Directors on a date to be determined.

The following is a description of the proposed credit:

Borrower:	Arab Republic of Egypt
Beneficiary:	Petroleum Gas Company (Petrogas)
Amount:	US\$ 50 million equivalent
Terms:	Standard
Relending Terms:	20 years, including 5 years of grace at the Bank's standard interest rate.
Purpose:	To help finance part of the foreign exchange cost to supply a gas distribution network in four districts of Cairo and provide fuel to two gas turbine plants.

Distribution:

Executive Directors and Alternates
President
Senior Vice President
President's Council
Vice Presidents, IFC
Directors and Department Heads, Bank and IFC

International Development Association

IDA/SecM80-66

FROM: Vice President and Secretary

March 7, 1980

NOTICE OF INTENTION TO NEGOTIATE

ARAB REPUBLIC OF EGYPT

CAIRO GAS DISTRIBUTION PROJECT

The Association is planning to invite the Government of the Arab Republic of Egypt to send representatives to Washington to negotiate a proposed development credit of \$50 million for the Cairo Gas Distribution Project.

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Vice Presidents, IFC
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copied to Law. A, ~~etc~~

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Directors and Department Heads, Bank and IFC

COMMENTS ON LOAN
COMMITTEE PACKAGE

OFFICE MEMORANDUM

TO: Mr. W. S. Humphrey, Acting Director, Country
Programs Department 1, EMENA Region

FROM: Hans-Eberhard Köpp, Division Chief,
Country Programs Department 1, EMENA

SUBJECT: EGYPT: Cairo Gas Project

DATE: February 22, 1980

1. Please find attached the Loan Committee package for the Cairo Gas Project.
2. The Loan Committee memorandum which deals most importantly with the question of overall energy pricing in Egypt was discussed and agreed yesterday at a meeting chaired by Mr. Knox and attended by Messrs. Carmignani, El Darwish, Bourcier, Fish, Mathai, Elwan, Maiss, Dervis, Kaps and myself.
3. As you know, Mr. Maiss sent his comments on an earlier draft of the memorandum which, however, is very similar to the one attached; a copy of this memorandum is attached also. Mr. Maiss did not take up any of these points during the meeting yesterday but he indicated to me that he would talk to me on his comments. Unfortunately, we did not get to that yesterday before Mr. Maiss left. I would think that one could say that he has cleared the approach in substance but I would like to leave this to your own interpretation.

Attachment

HEKöpp:orp

OFFICE MEMORANDUM

TO: Mr. H.E. Köpp
FROM: Otto Maiss *OM*
SUBJECT: Egypt Energy Pricing

DATE: February 21, 1980

1. You asked for my comments on the departmental memorandum to Mr. Benjenk concerning the \$50 million credit for the Cairo Gas Distribution Project. Briefly, my reaction is as follows:

- a) The sections on prices and pricing strategy (pp. 3 ff) are too long-winded to be easily absorbed by decision makers.
- b) By shortening the text one could bring out more clearly the two principal issues, i.e. the urgent need for:
 - (i) a general increase in energy prices;
 - (ii) the elimination of structural distortions in energy pricing.

2. Given the very large gap between domestic and international prices the arguments put forward in para. 9 become rather weak. There seems to be also no point in delaying action before the completion of the study mentioned in para. 10. Finally, general speculations about possible reactions of the Egyptians to a rational Bank position (see para. 10) appear to be premature at this point in time. They could perhaps be raised during negotiations.

cc: Mr. Humphrey

OMaiss:cb

OFFICE MEMORANDUM

AK

TO: Mr. S. Shahid Husain, Acting VPO

DATE: March 5, 1980

FROM: H. G. van der Tak, Director, Projects Staff

Tulu

SUBJECT: EGYPT - Cairo Gas Distribution Project

You requested a summary of my major concerns regarding the energy pricing policy issue in the proposed loan documents for the above project. Briefly, I would suggest the following:

(i) The President's and Appraisal Reports should give a full account of the energy pricing issues, the first steps now to be made toward a more satisfactory policy and the long way the policy still has to go.

(ii) The proposed memorandum of understanding (see para. 11 of Mr. Karaosmonoglu's memorandum of 26 February) should specify that it is the Government's policy to move domestic energy prices to world market prices "within a reasonable period";

(iii) The Government should agree not just to discussions to be held in accordance with an agreed timetable, but following review of the pricing study (included in the Gulf of Suez Gas Project but delayed by about a year), to establish a satisfactory timetable for specific measures to implement the policy sub (ii); and

(iv) As a first step the Government should agree to increase, by the end of 1982, the price of hydrocarbon fuel not only for fuel used for power generation in general (as proposed by the Region) but also for industry to the level tentatively agreed to be paid by EEA for gas supplied under the proposed project to the two power plants.

This package will undoubtedly be difficult to negotiate, but it would represent a significant, albeit a still very modest, move in the right direction.

HGvanderTak:lfb

cc: Messrs. Benjenk, Karaosmonoglu, Knox
Baum, Rovani, Horsley

OFFICE MEMORANDUM

TO: Files

DATE: March 6, 1980

FROM: Franz H. Köpp, ^{FK} Loan Officer, EM1DASUBJECT: EGYPT: Cairo Gas Distribution Project

1. Further to my memorandum of March 6 recording Mr. Husain's approval of issuing the Notice of Intention to Negotiate the \$50 million Development Credit for the above project, additional comments have been received on the credit documents.
2. Mr. Raizen, on behalf of Mr. van der Tak, commented as follows:
 - (i) Referring to para. 5 of Mr. Karaosmanoglu's memorandum dated February 26, Mr. van der Tak noted that there was a difference between the price quoted for the power stations as compared to the prices mentioned in the loan documents. He wondered what impact the 25 percent lower price for the power station would have on Petrogas's financial viability. In response, I indicated that the new price had been conveyed informally to a recent Bank mission and that confirmation on the actual price would be sought during a mission scheduled to visit Cairo at the end of this week. The Petroleum Division was presently making an assessment as to the financial implications of the lower price. In case they would adversely affect the project's financial viability, we would insist that the Government agreed to the higher prices reflected in the loan documents. In a subsequent conversation, Mr. Raizen indicated that after further review Mr. van der Tak is of the opinion that it would be important to have a uniform price for both power and industry, preferably at the higher price of \$1.14 per Mcf. However, if for the sake of uniformity this price level could not be reached, he would be prepared to agree to a lower price uniformly applicable to both power and industry.
 - (ii) Referring to the gas prices domestic consumers and the power stations would be charged under the proposed project, Mr. van der Tak would like the gray cover documents to spell out what price developments we would envisage in the long run taking into account the basic understanding that the existing prices were still way below border prices and that they be adjusted accordingly in years to come.
 - (iii) Regarding disbursement, it would be preferable that the loan documents provide for Bank financing of 100 percent of the

foreign exchange cost of foreign consultant services (over and above the financing already provided for consultants' services under the Gulf of Suez Gas Project) and training. The remainder of the credit amount should finance a specific percentage of the single responsibility contract.

- (iv) As to the financial covenants included under the project, Mr. Raizen has discussed his comments directly with representatives of the Energy Division.

3. Mr. Morse commented on the procurement arrangements and wondered whether it was essential to have a detailed Schedule 1 to the draft Project Agreement since a single responsibility contract has already been awarded. I informed Mr. Morse that the Legal Department had opted for retaining Schedule 1 to take account of the possibility of a new procurement process in case the contract between Petrogas and the general contractor should be terminated ahead of time.

4. The Legal Department commented that in view of the important role the Egyptian General Petroleum Corporation had in assisting Petrogas to comply with a number of covenants under the legal documents, these should be reformulated in such a way that rather than having only a project agreement between IDA and Petrogas, this agreement be extended to include EGPC as an additional contracting party.

cc: Messrs. Raizen (PAS); Karaosmanoglu (EMI); Knox, Carmignani, Reekie, Roa (EMP); KUpp, Dervis (EMI); Rovani, Sheehan, Bourcier, McCarthy, Daffern, Nayyar (EGY); Duval (LEG); Hakim (CTR); Ms. Zurayk (EGY)

FKaps:aw

OFFICE MEMORANDUM

TO: Files

FROM: Franz H. Kaps, *FK* Loan Officer, EMLDA

SUBJECT: EGYPT: Cairo Gas Distribution Project

DATE: March 6, 1980

Mr. Horsley called on March 5 to convey Mr. Husain's, Acting VPO, decision that the Executive Directors can be informed of IDA's intention to negotiate a \$50 million development credit for the above project on terms and conditions set out in the credit documents, distributed under a cover memorandum of Mr. Benjenk, dated February 28, 1980, as modified by the proposals contained in Mr. van der Tak's memorandum, dated February 28, 1980.

Attachment

Cleared with & cc: Mr. Horsley (VPO)

cc: Messrs. Husain,
Qureshi
Benjenk
Baum
Nurick

cc: Messrs. Karaosmanoglu (EMI); Hattori (CTR); Knox, Carmignani (EMP); Köpp/Swayze (EMI); Fish, Roa, K. Jones (EMP); Finzi (EMNVP); Rovani, Friedmann, Bourcier, McCarthy, Nayyar, Ms. Zurayk (EGY); Duval (LEG); Hakim (CTR); Raizen (PAS)

FKaps:aw

OFFICE MEMORANDUM

TO: Mr. S. Shahid Husain, Acting VPO

DATE March 5, 1980

FROM: H. G. van der Tak, Director, Projects Staff

SUBJECT: EGYPT - Cairo Gas Distribution Project

You requested a summary of my major concerns regarding the energy pricing policy issue in the proposed loan documents for the above project. Briefly, I would suggest the following:

(i) The President's and Appraisal Reports should give a full account of the energy pricing issues, the first steps now to be made toward a more satisfactory policy and the long way the policy still has to go.

(ii) The proposed memorandum of understanding (see para. 11 of Mr. Karaosmonoglu's memorandum of 26 February) should specify that it is the Government's policy to move domestic energy prices to world market prices "within a reasonable period";

(iii) The Government should agree not just to discussions to be held in accordance with an agreed timetable, but following review of the pricing study (included in the Gulf of Suez Gas Project but delayed by about a year), to establish a satisfactory timetable for specific measures to implement the policy sub (ii); and

(iv) As a first step the Government should agree to increase, by the end of 1982, the price of hydrocarbon fuel not only for fuel used for power generation in general (as proposed by the Region) but also for industry to the level tentatively agreed to be paid by EEA for gas supplied under the proposed project to the two power plants.

This package will undoubtedly be difficult to negotiate, but it would represent a significant, albeit a still very modest, move in the right direction.

HGvanderTak:1fb

cc: Messrs. Benjenk, Karaosmonoglu, Knox
Baum, Rovani, Horsley

OFFICE MEMORANDUM

TO: The Loan Committee

FROM: Munir P. Benjenk, Vice President, EMENA Region *by*

SUBJECT: EGYPT: Proposed \$50 Million Development Credit to the Arab Republic of Egypt for the Cairo Gas Distribution Project

DATE: February 28, 1980

1. The Committee is requested to consider the draft President's and Staff Appraisal Reports and draft legal documents for a proposed \$50 million development credit for the Cairo Gas Distribution Project, which were submitted to me under cover of a memorandum from Mr. Karaosmanoglu, dated February 26, 1980, also attached. I concur with Mr. Karaosmanoglu's recommendations. Questions should be directed to Mr. Kaps (extension 74528).
2. In the absence of objection by close of business on March 4, 1980, we plan to inform the Executive Directors of the Association of our intention to negotiate the proposed development credit on the terms and conditions set out in the attached reports.

Attachments

cc: Messrs. E. Stern, Chairman (3)
Qureshi
Warren Baum (5)
L. Nurick (2)

cc: Messrs. Karaosmanoglu (EML); Hattori (CTR); Knox, Carmignani (EMP); Köpp/Swayze (EML); Fish, Roa, K. Jones (EMP); Finzi (EMNVP); Rovani, Friedmann, Bourcier, McCarthy, Nayyar, Ms. Zurayk (EGY); Duval (LEG); Hakim (CTR)

FKaps:aw

OFFICE MEMORANDUM

TO: Mr. M. P. Benjenk, Vice President, EMENA Region

DATE: February 26, 1980

FROM: Attila Karaosmanoglu, Director, EMI AK

SUBJECT: EGYPT: Proposed \$50 Million IDA Credit for the
Cairo Gas Distribution Project

1. I attach for your approval and transmission to the Loan Committee the draft President's and Staff Appraisal Reports, draft legal documents and a memorandum to the Loan Committee on the above project. The Issues Paper and Decision Memorandum for this project were distributed on October 31 and November 6, 1979, respectively. This project is the first of two projects in the energy sector to be presented to the Board this year; sector issues, principally pricing, are the major issues related to a successful impact of both projects. They are addressed to in paras. 7 to 13 below.

Project Objectives and Description

2. The proposed project is designed to provide natural gas from the Abu Ghardig fields (about 270 km west of Cairo) for the creation of a gas distribution network in four districts of Cairo, as well as to supply two (small) power units. Natural gas would be used in these districts primarily for domestic purposes, mainly cooking and water heating, thus largely replacing presently imported liquefied petroleum gas (LPG). The resulting foreign exchange savings to Egypt on LPG imports are projected to be substantial. The project would also include a large technical assistance component to help Petrogas, the implementing authority, in implementing and managing the project and to establish it as a public gas utility following sound managerial, operating and financial practices. The physical facilities of the project would consist of a high-pressure transmission pipeline, a medium-pressure distribution system, carcassing and conversion of 160,000 existing households from LPG to natural gas.

Project Cost and Financing

3. The project's total cost is estimated at about \$154 million with a foreign exchange component of about \$102 million. With the proposed IDA credit of \$50 million, IDA would finance 33 percent of total or 49 percent of the project's foreign cost. The Government and/or the Egyptian General Petroleum Corporation (EGPC), Petrogas' parent company, would finance the project's remaining foreign and local cost as well as any cost overruns. The proposed credit would be made to the Arab Republic of Egypt which, in turn, would on-lend the proceeds to Petrogas through a subsidiary loan agreement. The sub-loan to Petrogas would be for a period of 20 years with a grace period of five years at an interest rate equal to that prevailing on Bank loans at the time the credit is approved by the Executive Directors.

Procurement

4. Following a request by the Egyptian Government and Petrogas and after a review by the Bank's procurement advisor, the Chairman of the Loan Committee agreed that IDA should approve that a single responsibility contract for the entire project works be awarded through advanced contracting, with the following proviso: (i) that the Egyptian Government be advised in writing that an increase in the price of gas to about \$2.50 equivalent per one thousand cubic feet (Mcf) 1/ is an "essential, immutable precondition" for the proposed credit and (ii) that the Government be advised of the usual conditions, i.e. that the proposed contract be satisfactory to IDA and IDA financing would be available only if and when IDA's Executive Directors have given their approval. Following further IDA review and approval, such contract has since been awarded and a letter of intent has been issued. Retroactive financing of up to \$5 million is recommended for expenditures incurred by Petrogas (essentially down-payments) on items proposed to be financed by IDA between November 21, 1979 (date of the contract award) and the date of the credit signing.

Prices of Gas and LPG

5. In connection with this project, tentative agreement has been reached on pricing natural gas supplied to (i) domestic consumers at about \$4.20 per Mcf (or \$168 per toe), i.e. substantially above the level stipulated by the Chairman of the Loan Committee (see para. 4 above) and (ii) two EEA power stations at about \$0.85 per Mcf (or \$34 per toe). 2/ These price levels are expected to ensure Petrogas' financial viability through 1984. Natural gas has been little used in Egypt for domestic consumption and, therefore, no real price comparison can be made. For reference, a price of \$0.29 per Mcf (or \$11 per toe) is presently charged for gas used for industrial purposes and power generation. Current international prices for gas oil and fuel oil are about \$365 per toe and \$180 per toe, respectively. It should be noted that the gas price increase to EEA, if limited to only 2 power plants and not compensated for by some rationing mechanism by EGPC (which, as the supplier of both oil and gas could in fact apply such a mechanism), could encourage EEA to use fuel oil in place of natural gas.

6. We had requested the Government in writing to increase the domestic price of LPG to a level comparable to the one proposed for natural gas since we were concerned about the possible resistance of existing consumers to switch over to natural gas if a significant price differential existed between these two mutually substitutionable fuels. Following indications received from the Chairman of the Loan Committee we even indicated to the Government that, subject to such price increase of LPG, IDA may be in a position to increase the credit

1/ This is equivalent to \$100 per ton of oil equivalent (toe).

2/ Based on recent information to be confirmed during negotiations and not reflected in the President's and Appraisal Reports.

amount for the proposed project by about \$23 million, thus alleviating the substantial burden on the Government which, with an IDA credit of only \$50 million, would have to finance 67 percent of total or 51 percent of the project's foreign cost. However, the Government has been adamant that any price increase for LPG was out of the question at the present time. On the other hand, the Government has already taken measures which are designed to encourage the use of domestic gas instead of LPG. For the reasons spelt out in para. 70 of the President's Report, we believe that these measures are adequate to minimize to an acceptable level the risk that consumers in the project area might continue to use LPG. It should also be noted that LPG accounts only for about 3 percent of total petroleum product consumption in Egypt.

Energy Pricing Strategy

7. The above tentative agreements regarding the price of gas should be considered in the context of agreements reached under our second power project approved in June 1979, under which the Government and the Egyptian Electricity Authority agreed to take all measures, including tariff increases, if necessary, to reach a minimum 9 percent rate of return on revalued assets by 1983. Agreement on measures that will achieve a 5 percent rate of return in 1980 is a condition of effectiveness of the second power loan and presently being discussed. As part of such measures the Government has already decided to increase substantially domestic consumer tariffs with effect for this year. (This decision has been taken in the context of the 1980 budget which is expected to be approved by Parliament shortly.) However, to achieve the 5 percent rate of return, additional measures need to be taken.

8. While all these agreements are positive steps forward in energy pricing in Egypt, they affect only a very small share of total energy consumption and do not address the major issue, which is the heavily subsidized price of energy inputs to industry. Presently, fuel oil supplied to industry which constitutes about 30 percent of total petroleum product consumption in Egypt, is priced at \$11 per toe as compared with an international price of about \$180 per toe.

9. We have discussed within the Bank and also with the Government how we might move away from a project by project consideration of energy pricing. However, we are not yet in a position to establish a broad-based energy pricing strategy which could be firmly proposed to the Government as a condition of lending. The following aspects of the Egyptian economy make such a determination difficult: (i) the lack of a clear model on which to test the impact of price changes in the complex industrial sector, (ii) no assessment of the extent to which low domestic energy prices have in fact led to uneconomic decisions or inefficient utilization, (iii) uncertainty about the likely volume of oil and gas resources in the future, (iv) a resource base in which oil and gas are essentially fungible, (although there are some indications regarding major gas deposits, proven gas reserves are neither extremely plentiful nor a surplus commodity) and (v) uncertainty about the net impact of higher energy prices on government resources--given that the public sector is a large user of energy and that final output prices remain constrained by many factors including

competing import prices.

10. Nonetheless, there is no doubt that Egypt should gradually move domestic fuel prices closer to world market prices (border prices). Moreover, in moving prices, it is important to do so in a way that generates a relative price structure reflecting the price structure of world prices, even if absolute levels remain for some time below world market levels. This position has been made clear to the Egyptian Government which is fully aware of the need for a comprehensive energy pricing policy. ^{1/} However, as reflected in the Decision Memoranda for both the proposed gas project and the third power project (dated December 19, 1980), no specific undertakings have been proposed in connection with these projects other than the aforementioned pricing proposals in regard to natural gas. Accordingly, any proposal of further measures in this respect as conditions of lending at this stage would most likely raise extremely difficult negotiating problems especially when one takes account of the five points mentioned above. In this context, it should be noted that the Government has insisted that because of the complex inter-linkages involved in energy pricing, a study to evaluate options and their effects on end product prices would have to be prepared. Such a study is being financed by the Bank in the context of the Gulf of Suez Gas Project (Loan 1732 EGT). The above project also includes a study on gas use optimization and the need to upgrade this resource from a fuel oil substitute to higher value uses. While the legal documents for the Gulf of Suez Gas Project provided for the completion of the studies by June 30, 1980, it has taken more time than anticipated to draw up appropriate terms of reference and issue invitations to selected consultants. Consultants' proposals have now been received and are being evaluated. Allowing for sufficient mobilization time for the consultants, actual work is unlikely to start before June 1, 1980 and is expected to take about one year. Thus, the results cannot be incorporated in undertakings in connection with the two projects currently being processed.

11. Despite this, in order to achieve some further positive movement, we propose to seek agreement with the Egyptian Government during negotiations on the proposed gas project, on a memorandum of understanding in which (a) the policy of moving domestic prices toward world market prices would be affirmed, (b) the Government would agree to start discussions with the Bank as soon as preliminary results of the pricing study become available, and continue these discussions on an agreed timetable with a view to agreeing on specific measures to be taken to achieve this following completion of these studies, and (c) in any event, these measures would include an increase of the price of hydrocarbon fuel used for power generation in general to the level tentatively agreed to be paid by EEA for gas supplied under the proposed gas project to the two power plants. This increase, which would result in a tripling of the existing price, would be achieved by the end of 1982, presumably in gradual stages. We would also propose to assist the Egyptian Government in improving the fuel efficiency of power plants and industrial plants in order to offset the increase in prices.

^{1/} This is why the Government recently established a High Council for Energy, which is chaired by the Minister of Petroleum.

While not fully addressing the issue, the tariff increases to domestic consumers of natural gas and the higher price for the natural gas to be used by the two power stations supplied under the proposed project, constitute a positive step towards improving energy pricing in Egypt. The same applies to a recent decision by the Government to increase the prices of petroleum products with the exception of fuel oil and LPG, on the average, by 20 percent.

12. The Bank has so far concentrated its intervention in the petroleum sector in Egypt on the natural gas subsector. This subsector is expected to become increasingly important in the next few years. Major deposits of gas are believed to exist off-shore, and possibly onshore, and the development of these fields could provide the domestic market with a substitute for fuel oil. Because of the substantial capital investment required for such development and the involvement of foreign oil companies (who are likely to welcome Bank participation in such investments), the Bank should have a continuing opportunity to influence progress in the oil and gas subsector, and increasing leverage on gas and fuel oil prices.

13. In summary, it is recognized that the above arrangements fall far short of closing the substantial gap between existing energy prices in Egypt and their international prices. However, compared to the situation about two years ago, certain positive developments have taken place or will take place in connection with the proposed gas and power projects. We seek your concurrence that we proceed as proposed above at this stage. In any event, even the package with the impact on the subsidized price structure is likely to be difficult to negotiate and may be unacceptable to the Egyptians, in which case we will ask the Government to present an alternative which would be referred back to you before any agreement is reached. A more complete note is being prepared to incorporate the latest information on this issue as obtained by missions which have just returned from Egypt. We expect to submit this note to you by the end of March.

14. The current lending program is attached.

15. The attached documents have been cleared by the Departments concerned. Please refer any comments or questions to Mr. Kaps, extension 74528.

Attachments

Cleared with & cc: Messrs. Knox, Carmignani, Fish (EMP); Bourcier/McCarthy (EGY); Köpp (EML)

cc: Messrs. Rovani, Sheehan, Friedmann, Nayyar o/r, Daffern, Ms. Zurayk, Ms. Julius (EGY); El Darwish (EMP); Maiss o/r (EML); Elwan, Roa, Mathai (EMP); Swayze, Dervis (EML); Duval (LEG); Hakim (CTR).

FKaps:aw

OFFICE MEMORANDUM

TO: The Loan Committee

FROM: Munir P. Benjenk, Vice President, EMENA Region *MB*

SUBJECT: EGYPT: Proposed \$50 Million Development Credit to the Arab Republic of Egypt for the Cairo Gas Distribution Project

DATE: February 28, 1980

1. The Committee is requested to consider the draft President's and Staff Appraisal Reports and draft legal documents for a proposed \$50 million development credit for the Cairo Gas Distribution Project, which were submitted to me under cover of a memorandum from Mr. Karaosmanoglu, dated February 26, 1980, also attached. I concur with Mr. Karaosmanoglu's recommendations. Questions should be directed to Mr. Kaps (extension 74528).
2. In the absence of objection by close of business on March 4, 1980, we plan to inform the Executive Directors of the Association of our intention to negotiate the proposed development credit on the terms and conditions set out in the attached reports.

Attachments

cc: Messrs. E. Stern, Chairman (3)
Qureshi
Warren Baum (5)
L. Nurick (2)

cc: Messrs. Karaosmanoglu (EML); Hattori (CTR); Knox, Carmignani (EMP);
Köpp/Swayze (EML); Fish, Roa, K. Jones (EMP); Finzi (EMNVP); Rovani,
Friedmann, Bourcier, McCarthy, Nayyar, Ms. Zurayk (EGY); Duval (LEG);
Hakim (CTR)

FKaps:aw

OFFICE MEMORANDUM

TO: Mr. M. P. Benjenk, Vice President, EMENA Region

DATE: February 26, 1980

FROM: Attila Karaosmanoglu, Director, EMI AK

SUBJECT: EGYPT: Proposed \$50 Million IDA Credit for the
Cairo Gas Distribution Project

1. I attach for your approval and transmission to the Loan Committee the draft President's and Staff Appraisal Reports, draft legal documents and a memorandum to the Loan Committee on the above project. The Issues Paper and Decision Memorandum for this project were distributed on October 31 and November 6, 1979, respectively. This project is the first of two projects in the energy sector to be presented to the Board this year; sector issues, principally pricing, are the major issues related to a successful impact of both projects. They are addressed to in paras. 7 to 13 below.

Project Objectives and Description

2. The proposed project is designed to provide natural gas from the Abu Ghardig fields (about 270 km west of Cairo) for the creation of a gas distribution network in four districts of Cairo, as well as to supply two (small) power units. Natural gas would be used in these districts primarily for domestic purposes, mainly cooking and water heating, thus largely replacing presently imported liquefied petroleum gas (LPG). The resulting foreign exchange savings to Egypt on LPG imports are projected to be substantial. The project would also include a large technical assistance component to help Petrogas, the implementing authority, in implementing and managing the project and to establish it as a public gas utility following sound managerial, operating and financial practices. The physical facilities of the project would consist of a high-pressure transmission pipeline, a medium-pressure distribution system, carcassing and conversion of 160,000 existing households from LPG to natural gas.

Project Cost and Financing

3. The project's total cost is estimated at about \$154 million with a foreign exchange component of about \$102 million. With the proposed IDA credit of \$50 million, IDA would finance 33 percent of total or 49 percent of the project's foreign cost. The Government and/or the Egyptian General Petroleum Corporation (EGPC), Petrogas' parent company, would finance the project's remaining foreign and local cost as well as any cost overruns. The proposed credit would be made to the Arab Republic of Egypt which, in turn, would on-lend the proceeds to Petrogas through a subsidiary loan agreement. The sub-loan to Petrogas would be for a period of 20 years with a grace period of five years at an interest rate equal to that prevailing on Bank loans at the time the credit is approved by the Executive Directors.

Procurement

4. Following a request by the Egyptian Government and Petrogas and after a review by the Bank's procurement advisor, the Chairman of the Loan Committee agreed that IDA should approve that a single responsibility contract for the entire project works be awarded through advanced contracting, with the following proviso: (i) that the Egyptian Government be advised in writing that an increase in the price of gas to about \$2.50 equivalent per one thousand cubic feet (Mcf) 1/ is an "essential, immutable precondition" for the proposed credit and (ii) that the Government be advised of the usual conditions, i.e. that the proposed contract be satisfactory to IDA and IDA financing would be available only if and when IDA's Executive Directors have given their approval. Following further IDA review and approval, such contract has since been awarded and a letter of intent has been issued. Retroactive financing of up to \$5 million is recommended for expenditures incurred by Petrogas (essentially down-payments) on items proposed to be financed by IDA between November 21, 1979 (date of the contract award) and the date of the credit signing.

Prices of Gas and LPG

5. In connection with this project, tentative agreement has been reached on pricing natural gas supplied to (i) domestic consumers at about \$4.20 per Mcf (or \$168 per toe), i.e. substantially above the level stipulated by the Chairman of the Loan Committee (see para. 4 above) and (ii) two EEA power stations at about \$0.85 per Mcf (or \$34 per toe). 2/ These price levels are expected to ensure Petrogas' financial viability through 1984. Natural gas has been little used in Egypt for domestic consumption and, therefore, no real price comparison can be made. For reference, a price of \$0.29 per Mcf (or \$11 per toe) is presently charged for gas used for industrial purposes and power generation. Current international prices for gas oil and fuel oil are about \$365 per toe and \$180 per toe, respectively. It should be noted that the gas price increase to EEA, if limited to only 2 power plants and not compensated for by some rationing mechanism by EGPC (which, as the supplier of both oil and gas could in fact apply such a mechanism), could encourage EEA to use fuel oil in place of natural gas.

6. We had requested the Government in writing to increase the domestic price of LPG to a level comparable to the one proposed for natural gas since we were concerned about the possible resistance of existing consumers to switch over to natural gas if a significant price differential existed between these two mutually substitutionable fuels. Following indications received from the Chairman of the Loan Committee we even indicated to the Government that, subject to such price increase of LPG, IDA may be in a position to increase the credit

1/ This is equivalent to \$100 per ton of oil equivalent (toe).

2/ Based on recent information to be confirmed during negotiations and not reflected in the President's and Appraisal Reports.

amount for the proposed project by about \$23 million, thus alleviating the substantial burden on the Government which, with an IDA credit of only \$50 million, would have to finance 67 percent of total or 51 percent of the project's foreign cost. However, the Government has been adamant that any price increase for LPG was out of the question at the present time. On the other hand, the Government has already taken measures which are designed to encourage the use of domestic gas instead of LPG. For the reasons spelt out in para. 70 of the President's Report, we believe that these measures are adequate to minimize to an acceptable level the risk that consumers in the project area might continue to use LPG. It should also be noted that LPG accounts only for about 3 percent of total petroleum product consumption in Egypt.

Energy Pricing Strategy

7. The above tentative agreements regarding the price of gas should be considered in the context of agreements reached under our second power project approved in June 1979, under which the Government and the Egyptian Electricity Authority agreed to take all measures, including tariff increases, if necessary, to reach a minimum 9 percent rate of return on revalued assets by 1983. Agreement on measures that will achieve a 5 percent rate of return in 1980 is a condition of effectiveness of the second power loan and presently being discussed. As part of such measures the Government has already decided to increase substantially domestic consumer tariffs with effect for this year. (This decision has been taken in the context of the 1980 budget which is expected to be approved by Parliament shortly.) However, to achieve the 5 percent rate of return, additional measures need to be taken.

8. While all these agreements are positive steps forward in energy pricing in Egypt, they affect only a very small share of total energy consumption and do not address the major issue, which is the heavily subsidized price of energy inputs to industry. Presently, fuel oil supplied to industry which constitutes about 30 percent of total petroleum product consumption in Egypt, is priced at \$11 per toe as compared with an international price of about \$180 per toe.

9. We have discussed within the Bank and also with the Government how we might move away from a project by project consideration of energy pricing. However, we are not yet in a position to establish a broad-based energy pricing strategy which could be firmly proposed to the Government as a condition of lending. The following aspects of the Egyptian economy make such a determination difficult: (i) the lack of a clear model on which to test the impact of price changes in the complex industrial sector, (ii) no assessment of the extent to which low domestic energy prices have in fact led to uneconomic decisions or inefficient utilization, (iii) uncertainty about the likely volume of oil and gas resources in the future, (iv) a resource base in which oil and gas are essentially fungible, (although there are some indications regarding major gas deposits, proven gas reserves are neither extremely plentiful nor a surplus commodity) and (v) uncertainty about the net impact of higher energy prices on government resources--given that the public sector is a large user of energy and that final output prices remain constrained by many factors including

competing import prices.

10. Nonetheless, there is no doubt that Egypt should gradually move domestic fuel prices closer to world market prices (border prices). Moreover, in moving prices, it is important to do so in a way that generates a relative price structure reflecting the price structure of world prices, even if absolute levels remain for some time below world market levels. This position has been made clear to the Egyptian Government which is fully aware of the need for a comprehensive energy pricing policy. ^{1/} However, as reflected in the Decision Memoranda for both the proposed gas project and the third power project (dated December 19, 1980), no specific undertakings have been proposed in connection with these projects other than the aforementioned pricing proposals in regard to natural gas. Accordingly, any proposal of further measures in this respect as conditions of lending at this stage would most likely raise extremely difficult negotiating problems especially when one takes account of the five points mentioned above. In this context, it should be noted that the Government has insisted that because of the complex inter-linkages involved in energy pricing, a study to evaluate options and their effects on end product prices would have to be prepared. Such a study is being financed by the Bank in the context of the Gulf of Suez Gas Project (Loan 1732 EGT). The above project also includes a study on gas use optimization and the need to upgrade this resource from a fuel oil substitute to higher value uses. While the legal documents for the Gulf of Suez Gas Project provided for the completion of the studies by June 30, 1980, it has taken more time than anticipated to draw up appropriate terms of reference and issue invitations to selected consultants. Consultants' proposals have now been received and are being evaluated. Allowing for sufficient mobilization time for the consultants, actual work is unlikely to start before June 1, 1980 and is expected to take about one year. Thus, the results cannot be incorporated in undertakings in connection with the two projects currently being processed.

11. Despite this, in order to achieve some further positive movement, we propose to seek agreement with the Egyptian Government during negotiations on the proposed gas project, on a memorandum of understanding in which (a) the policy of moving domestic prices toward world market prices would be affirmed, (b) the Government would agree to start discussions with the Bank as soon as preliminary results of the pricing study become available, and continue these discussions on an agreed timetable with a view to agreeing on specific measures to be taken to achieve this following completion of these studies, and (c) in any event, these measures would include an increase of the price of hydrocarbon fuel used for power generation in general to the level tentatively agreed to be paid by EEA for gas supplied under the proposed gas project to the two power plants. This increase, which would result in a tripling of the existing price, would be achieved by the end of 1982, presumably in gradual stages. We would also propose to assist the Egyptian Government in improving the fuel efficiency of power plants and industrial plants in order to offset the increase in prices.

^{1/} This is why the Government recently established a High Council for Energy, which is chaired by the Minister of Petroleum.

While not fully addressing the issue, the tariff increases to domestic consumers of natural gas and the higher price for the natural gas to be used by the two power stations supplied under the proposed project, constitute a positive step towards improving energy pricing in Egypt. The same applies to a recent decision by the Government to increase the prices of petroleum products with the exception of fuel oil and LPG, on the average, by 20 percent.

12. The Bank has so far concentrated its intervention in the petroleum sector in Egypt on the natural gas subsector. This subsector is expected to become increasingly important in the next few years. Major deposits of gas are believed to exist off-shore, and possibly onshore, and the development of these fields could provide the domestic market with a substitute for fuel oil. Because of the substantial capital investment required for such development and the involvement of foreign oil companies (who are likely to welcome Bank participation in such investments), the Bank should have a continuing opportunity to influence progress in the oil and gas subsector, and increasing leverage on gas and fuel oil prices.

13. In summary, it is recognized that the above arrangements fall far short of closing the substantial gap between existing energy prices in Egypt and their international prices. However, compared to the situation about two years ago, certain positive developments have taken place or will take place in connection with the proposed gas and power projects. We seek your concurrence that we proceed as proposed above at this stage. In any event, even the package with the impact on the subsidized price structure is likely to be difficult to negotiate and may be unacceptable to the Egyptians, in which case we will ask the Government to present an alternative which would be referred back to you before any agreement is reached. A more complete note is being prepared to incorporate the latest information on this issue as obtained by missions which have just returned from Egypt. We expect to submit this note to you by the end of March.

14. The current lending program is attached.

15. The attached documents have been cleared by the Departments concerned. Please refer any comments or questions to Mr. Kaps, extension 74528.

Attachments

Cleared with & cc: Messrs. Knox, Carmignani, Fish (EMP); Bourcier/McCarthy (EGY);
Köpp (EML)

cc: Messrs. Rovani, Sheehan, Friedmann, Nayyar o/r, Daffern, Ms. Zurayk,
Ms. Julius (EGY); El Darwish (EMP); Maiss o/r (EML); Elwan, Roa, Mathai (EMP);
Swayze, Dervis (EML); Duval (LEG); Hakim (CTR).

FKaps:aw

OFFICE MEMORANDUM

TO: Mr. W. S. Humphrey, Acting Director, Country
Programs Department 1, EMENA Region

FROM: Hans-Eberhard Köpp, Division Chief,
Country Programs Department 1, EMENA

SUBJECT: EGYPT: Cairo Gas Project

DATE: February 22, 1980

1. Please find attached the Loan Committee package for the Cairo Gas Project.
2. The Loan Committee memorandum which deals most importantly with the question of overall energy pricing in Egypt was discussed and agreed yesterday at a meeting chaired by Mr. Knox and attended by Messrs. Carmignani, El Darwish, Bourcier, Fish, Mathai, Elwan, Maiss, Dervis, Kaps and myself.
3. As you know, Mr. Maiss sent his comments on an earlier draft of the memorandum which, however, is very similar to the one attached; a copy of this memorandum is attached also. Mr. Maiss did not take up any of these points during the meeting yesterday but he indicated to me that he would talk to me on his comments. Unfortunately, we did not get to that yesterday before Mr. Maiss left. I would think that one could say that he has cleared the approach in substance but I would like to leave this to your own interpretation.

Attachment

HEKöpp:orp

OFFICE MEMORANDUM

TO: Mr. H.E. Köpp

DATE: February 21, 1980

FROM: Otto Maiss *OM*SUBJECT: Egypt Energy Pricing

1. You asked for my comments on the departmental memorandum to Mr. Benjenk concerning the \$50 million credit for the Cairo Gas Distribution Project. Briefly, my reaction is as follows:

- a) The sections on prices and pricing strategy (pp. 3 ff) are too long-winded to be easily absorbed by decision makers.
- b) By shortening the text one could bring out more clearly the two principal issues, i.e. the urgent need for:
 - (i) a general increase in energy prices;
 - (ii) the elimination of structural distortions in energy pricing.

2. Given the very large gap between domestic and international prices the arguments put forward in para. 9 become rather weak. There seems to be also no point in delaying action before the completion of the study mentioned in para. 10. Finally, general speculations about possible reactions of the Egyptians to a rational Bank position (see para. 10) appear to be premature at this point in time. They could perhaps be raised during negotiations.

cc: Mr. Humphrey

OMaiss:cb

EK

FORM NO. 1599
(8-79)

THE WORLD BANK

ROUTING SLIP		DATE 9/25
OFFICE OF THE VICE PRESIDENT, OPERATIONS		
NAME		ROOM NO.
Mr. Knox <i>W.M. G.P.</i>		
<i>Mr. Haraszkiewicz</i>		
<i>M. Kepp</i>		
To Handle		Note and File
Appropriate Disposition		Note and Return
Approval		Prepare Reply
Comment		Per Our Conversation
Full Report		Recommendation
Information		Signature
Initial		Send On
REMARKS		
<p>How much is involved?</p> <p>Principal point is that we must advise clearly and in writing that an increase to about \$2.25 is an essential, immutable precondition. They should not proceed with advance contracting under any misunderstanding of our position on price.</p>		
FROM		Ernest Stern

OFFICE MEMORANDUM

TO: Mr. Ernest Stern, Vice President, Operations

DATE: September 25, 1979

FROM: A. David Knox, Acting Vice President, EMENA Region

SUBJECT: EGYPT: Cairo Gas Distribution Project

1. I attach a memorandum from Mr. Rovani to me on two important matters relating to the above project. I think that before we act on the recommendation of this paper we should have your concurrence. Since one of the problems, viz. the advance contracting, is urgent I should be grateful if you could review the matter before you leave for the Annual Meetings.

2. I have reviewed the paper with Mr. Rovani and others concerned with the project. I agree with the proposal that we should accept advance contracting. We are, however, still exploring one possibility that may allow us to reduce some of the risks associated with advance contracting. This is a proposal to explore with the Egyptians-- the possibility of dividing the project into two or possibly three smaller projects phased over time in the hope that thereby we could ensure firmer cost estimates for at least the later projects. While this would make the project, to be considered now, somewhat smaller, it would not remove the need to agree to advance contracting; thus the proposal even if it should prove to be practical does not affect the question that we are addressing to you now as to whether you would agree to advance contracting.

3. The second problem raised in Mr. Rovani's paper is on gas pricing. Paragraph 10(c) proposes that we should secure the Government's approval in principle to a price increase in the range suggested in the memorandum as a condition for the Bank's agreement to advance contracting. After my discussions I would suggest that we do not make such an agreement a condition for our accepting advance contracting. Instead we should make it clear to the Egyptian authorities as soon as possible the importance we attach to a satisfactory price increase as a condition for making the loan and that we put into the green cover documents precise proposals on whether such an increase should be, for example a condition of negotiations or of Board presentation.

4. May we please discuss?

Attachment

cc: Mr. Rovani
Mr. Carmignani
Mr. Karaosmanoglu
Mr. Köpp
Mr. Hardy

ADKnox/11j

How much is involved?

Principal point is we must advise clearly that an increase to about \$2.25 is an essential, irrevocable precondition. They should not proceed with advance contracting until any misunderstanding of our position on price is cleared up in writing.

OFFICE MEMORANDUM

TO: Mr. Ernest Stern, Vice President, Operations

FROM: A. David Knox, Acting Vice President, EMENA Region

SUBJECT: EGYPT: Cairo Gas Distribution Project

DATE: September 25, 1979

1. I attach a memorandum from Mr. Rovani to me on two important matters relating to the above project. I think that before we act on the recommendation of this paper we should have your concurrence. Since one of the problems, viz. the advance contracting, is urgent I should be grateful if you could review the matter before you leave for the Annual Meetings.

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4. May we please discuss?

Attachment

cc: Mr. Rovani
 Mr. Carmignani
 Mr. Karaosmanoglu ✓
 Mr. Köpp
 Mr. Hardy

ADKnox/11j

E.K.
 - As I mentioned you
 Mr. Stern wants it to be
 made perfectly clear
 to the Govt. that
 a) they can proceed with
 advance contracting at their
 own risk
 b) we would under no
 circumstances bring the
 project to the Board unless
 a satisfactory adjustment has
 taken place.

OFFICE MEMORANDUM

TO: Mr. A.D. Knox, EMP
 FROM: Y. Rovani, EWT
 SUBJECT: CAIRO: Gas Distribution Project

DATE: September 21, 1979

Project Background

1. The objective of the proposed project is to create a gas distribution network which would permit the replacement of liquid petroleum gas (LPG) and gas oil by indigenously available natural gas. Egypt is not self-sufficient in these products, and has to rely on imports for meeting fully its requirement. The proposed project would result in substantial foreign exchange saving by reducing Egypt's import needs. Current production potential of natural gas in Egypt is around 350 million cubic feet per day (MMcf/d). By 1985 new discoveries are anticipated to increase gas availability to 700 MMcf/d. Internal demand for industrial use, electricity generation, domestic needs, etc. would still be almost twice the likely supply. A careful choice will need to be made in allocating gas between competing users and for this purpose the Bank has agreed to finance a Gas Use Study in Egypt (Loan No. 1732) While the results of the study are not yet available, I believe that investment on this project is appropriate inasmuch as it would upgrade the use of gas from a relatively low-value fuel oil substitute to a high-value replacement for liquified petroleum gas and gas-oil. The project is likely to commit less than 5% of the total gas availability within Egypt. The economic rate of return from the project is anticipated to exceed 30%. The project brief prepared for this project (copy attached), underscored for management's consideration, a number of project and sector-related issues which have since been considered at length. Of these, I believe the issues relating to procurement and pricing are important enough to warrant the guidance of senior management.

Advance Contracting

2. PETROGAS has appointed British Gas as engineering consultants who will assist PETROGAS in designing and supervising the implementation of the project. Consistent with practice prevailing in the gas industry, the prospective borrower (EGPC/PETROGAS) intends to award a single-responsibility contract for the entire project. The selected contractor will be responsible for detailed engineering, construction of the high pressure transmission pipeline, the distribution network, and the carcassing of dwellings and conversion of appliances. PETROGAS, through extensive local and global advertisement (nine major newspapers in USA, UK, Germany, Japan, Italy, Belgium, Holland, etc.) invited contractors for prequalification for the proposed project. Altogether about 50 firms responded to the PETROGAS invitation. Criteria used for prequalification related to the contractor's previous experience in distribution network, its organizational capability and financial standing, experience in the Middle East etc., and, on this basis, nine contractors were prequalified.

1/ Approval postponed
 2/ Approval of other projects
 3/ not worth of agreement to the adv. contract
 4/ Contracting

(Annex 2). Tender documents were prepared by PETROGAS consultants (British Gas) and in response to these tenders three bids were received from prequalified contractors. PETROGAS is currently engaged in evaluating these bids with the assistance of its consultants. Technical evaluation, which preceded financial evaluation, ranks the contractors in the following order:

- (i) William Press (UK);
- (ii) NACAP (Holland);
- (iii) PETROJET (fully-owned subsidiary of EGPC-proposed borrower) acting for Snam Progettandi Montubi (Italy).

3. Results of the preliminary financial evaluation undertaken by British Gas are in Annex 3. These are, however, in the nature of preliminary assessment and could change significantly after PETROGAS completes securing necessary clarification from the bidders in which it is currently engaged. PETROGAS will approach the Bank for its approval in regard to the contractor it intends to select for the project. In the event of the Bank concurring in the choice of the contractor, PETROGAS would award the contract by October 18, 1979, which would be immediately after the completion of the Appraisal. This will result in advanced contracting prior to Board approval, for the entire project. Retroactive financing would, however, be limited to disbursements against actual expenditure incurred by the selected contractor and as such should not exceed 10% of the proposed loan. Required downpayment would be made by EGPC

4. According to Bank policy (OM2.41) prior to concurring in advance contracting, we are required to ensure that:

(a) The prospective borrower has followed procurement procedures which are consistent with Bank practice. The first issue which arises in this regard relates to PETROGAS decision of packaging various components of the project into one single responsibility contract. While other solutions were possible, it is our opinion after consultations with various gas utilities, that a single contract encompassing the entire project is most appropriate in the Egyptian context for the following reasons.

- (i) Bringing gas to consumers involves a number of activities, namely, laying of high pressure transmission pipeline and medium pressure distribution network, carcassing, conversion and testing; activities for which a high degree of coordination is required both for operational and safety considerations. A management consultant in charge of supervising several contractors undertaking discrete components of the project would have serious problems in ensuring adequate coordination particularly at several points of "interface" where problems of safety are most acute.

- (ii) Since presently no expertise exists in Egypt in regard to gas distribution networks, a large and experienced expatriate workforce will have to be used, particularly in the early years of the project, to ensure that the work is carried out according to acceptable safety and trade standards. Only a contractor with similar experience in other countries could ensure that an adequate workforce will be available throughout the contract.

- (iii) Considerations of safety are paramount specially at the stage of carcassing and conversion. It is doubtful if any international contractor would have been interested in bidding for a contract relating only to conversion and carcassing since it is the least attractive component of the project. It was therefore necessary to require the contractor who bids for the high pressure transmission pipeline and the network to also undertake the task of carcassing.

The above aspects, as well as the adequacy of tender documents and international advertisement, have been reviewed by the Procurement Adviser (PAS) and found to be in conformity with Bank procedures. The specific prequalification criteria and the reasons for rejecting, or accepting, prequalification applicants have not yet been reviewed but appear to have been reasonable. This shall be reviewed during appraisal. *Timing?*

(b) The overall project design is appropriate. As indicated in paragraphs 5 & 6 of the Project Brief, the design of the distribution network was reviewed in August 1978 and found to be suboptimal; being both expensive and inflexible. PETROGAS accepted the design changes suggested by the Bank and appointed new consultants to re-work the network on medium pressure, as against their earlier plans for a low pressure system. The network, as designed by British Gas, was reviewed with EGPC/PETROGAS in Washington in July, 1979, and accepted after some modification. While appraisal of the entire project is yet to be carried out, the design parameters have been carefully scrutinized and agreed upon.

(c) In the event of the proposed loan not securing Board approval, alternate sources of funds are available for implementing the project. Chairmen of EGPC and PETROGAS have indicated that Egyptian Government attached a high priority to the project and in case Bank assistance was not forthcoming, they would finance the project through domestic resources by requisitioning funds from other projects. *at least not the project*

5. Fulfillment of the above conditions notwithstanding, advance contracting in this magnitude, can be justified only under exceptional circumstances. We believe such circumstances exist, because:

(a) As an alternative to advance contracting, we could ask Egypt to delay the award of the contract. As current bids are valid only up to October 18, 1979, and the Board is unlikely to accord its approval before April 1980, an extension of six months would be required. It is uncertain if bidders would agree to such an extension. PETROGAS would, in all probability, have to re-tender, thereby delaying the project implementation by a year and inevitably resulting in increased project costs.

(b) Even prior to the current round of price escalations, the costs of importing LPG and gas oil were high (\$170 per ton and \$140 per ton respectively). The recent disruptions in oil supplies have resulted in increasing the prices sharply, and current cost of importing LPG to Egypt is \$385 per ton and that of gas oil \$350 per ton. The cost of delaying the project by a year would therefore be significant.

(c) There are in Egypt compelling political considerations for ensuring adequate supply of domestic fuel, which is principally LPG in the urban areas. Egypt has been making conscious effort to achieve self-sufficiency in cooking gas. The Gulf of Suez project, being financed by the Bank, would augment the domestic availability of LPG but would not make Egypt self-sufficient in domestic fuels. The present boycott and difficulty in securing LPG from traditional suppliers have lent new urgency to this objective and Egypt views this project as one way to reduce its vulnerability to embargoes.

6. The Bank has been instrumental in persuading Egypt to defer the implementation of the project until such time as it had evolved appropriate project design. Given the above costs of delay, it is unlikely if Egypt would agree to further deferment; more so when the design parameters have been reviewed and agreed upon. Safeguards necessary in advance contracting would, of course, be taken. The Executive Directors would be advised through the monthly operational summary about the possibility of advance contracting. In addition, the borrower has been advised that advance contracting is being undertaken at its own risk and does not in any fashion commit the Bank to make a loan for the project. This would be reiterated during appraisal.

Gas Pricing

7. In conformity with its existing regime of administered prices, Egypt prices oil products and natural gas at a fraction of international prices. Currently the cost of importing and distributing LPG approximates US\$425 per ton. It is sold in the domestic market for US\$75 per ton. This project, by replacing LPG with natural gas, would reduce the burden of subsidy on the government (US\$350 per ton or US\$10 per consumer per month); and the Government would be the major beneficiary of this investment.

8. The overall issue of prices relating to petroleum products including inter-sectoral linkages, is a subject of detailed study under the

Gulf of Suez gas project. However, the proposed credit is likely to be processed before the results of the Pricing Study have been obtained and reviewed. Yet we cannot accept current internal price of US\$0.28/Mcf for industrial use and US\$0.71/Mcf for domestic use, against an international price of around US\$3.5/Mcf (based on thermal equivalence of fuel oil.) An ad hoc price increase would need to be considered. In addition we would need to evolve and secure government's approval to a tariff structure which would meet the following objectives:

- (i) Produce sufficient revenue for PETROGAS to ensure its financial viability;
- (ii) Improve resource allocation by providing consumers with a more appropriate pricing signal;
- (iii) Remain competitive with underpriced but higher valued substitutes like LPG and kerosene.

9. In the Egyptian context trade-offs will be necessary among the above objectives, but I believe that we can be instrumental in furthering both financial and economic objectives relative to the status quo. Gas network as is being designed now would ultimately feed 640,000 consumers. Government of Egypt intends to undertake carcassing and conversion for the first 160,000 dwellings. For the remaining apartments (480,000) which would be connected in subsequent phases, the owner/builder would be responsible for internal carcassing and conversion. It would be inequitable to incorporate the cost of conversion and carcassing in the tariff base as it would require all consumers to pay for the carcassing undertaken for the initial set of consumers. On the other hand, cost of carcassing and conversion cannot be shifted entirely upon the initial beneficiaries as it would impose too onerous a burden and result in increasing their fuel costs almost by a factor of five. Under these circumstances I am of the view that:

(a) Government should be asked to accept the responsibility of subsidising, to the extent it considers necessary, internal carcassing and conversion.

(b) The liability of PETROGAS like any other public utility should be limited to providing gas only up to the property line.

(c) The Appraisal Mission should endeavor to secure government's concurrence to a tariff in the range of US\$2.25/Mcf to US\$3.00/Mcf which would be set in the context of objectives stated in paragraph 7 above. After the results of the pricing study become available next year, the tariff structure may need to be reviewed. The initial tariff would represent a significant increase over the present level of gas prices, but would not discourage consumption as this range is only marginally above the retail price of LPG. In addition, it will ensure an element of financial viability for the public utility which we will endeavor to strengthen further through financial covenants.

Recommended Action

10. In view of the foregoing, we should secure the approval of senior management to the following:

- (a) PETROGAS be authorized (subject to subpara (c) below) to proceed with the advance contracting.
- (b) PETROGAS be responsible for providing gas only up to the property line. The responsibility for carcassing and conversion should rest with the Government for the initial set of consumers and subsequently on the consumers themselves.
- (c) Appraisal Mission would secure Government approval in principle to a price increase in the range suggested above as a condition of Bank agreement to the advance contracting.

cc: Messrs. Raizen, CPSVP
Karaosmanoglu, EMI
Kopp, EMI
Kaps, EMI
Carmignani, EMP
Bourcier, EGYPP
McCarthy, EGYPP
Davis, EGY

VN/BK

OFFICE MEMORANDUM

TO: Files

FROM: Franz H. Kaps *FK* Loan Officer, EMIDA

SUBJECT: EGYPT: Proposed Cairo Gas Distribution Project

DATE: September 25, 1979

I refer to Mr. Köpp's memorandum of August 22 addressed to the British Executive Director's Office regarding possible ODA assistance for the above project. Miss Amanda Humm of the UK Office called me yesterday to convey that ODA has notified the UK Office that it will not be in a position to support the above project. Thus, the only possible source of external finance other than the Bank, is not available.

cc: Messrs. Hornstein (VPO), Carmignani (EMP), Köpp (EMI), Fish (EMP),
Bourcier (EWT), Nayyar (EWT)

FKaps:aw



MINISTRY OF ECONOMY
AND ECONOMIC COOPERATION

Cairo, November 15, 1979

Dear Mr. Karasomanglou,

Reference to your letter dated Oct. 4, 1979, addressed to H.E. Dr. H. El-Sayeh, regarding Cairo Gas Distribution Project.

I would like to comment on the statement included in your letter regarding the prices of natural gas and related products. I believe that there may be no problem in setting prices of natural gas in a way that ensure the viability of the project, since this will be a new products coming into consumption for the first time.

As far as the prices of L.P.G. are concerned, the Government, prefers to wait for the results of the pricing study financed under the Gulf of Suez Gas Project. However, it may be found that it is politically more favorable to continue the subsidization of L P G, in view of its wide consumption by low income segments of the society while making up for the difference by raising the prices of other products.

Moreover, we do not believe that there would be that much of competition between L P G and natural gas, in the project areas, due to the acute shortage of L P G and the large market for *natural gas*, beside the easy accessibility to natural gas after the completion of the project.

Thank you for taking these prints into consideration,

I remain,

Sincerely Yours

Samir Koraiem
Undersecretary

Mr. Attila Karasomanglou
Director,
EMENA I
WORLD BANK
WASHINGTON D.C
U.S.A

OFFICE MEMORANDUM

TO: Those Listed Below

FROM: Franz H. Kaps, ^{FK} Loan Officer, EMIDA

SUBJECT: EGYPT: Proposed Credit for Cairo Gas Distribution Project
Loan Committee Comments

DATE: November 29, 1979

1. Ms. Duersten conveyed the following comments of Mr. Stern on the Decision Memorandum of the above project dated November 16, 1979.

Tariff Structure

2. Referring to paras. 10 and 11 of the Decision Memorandum which endorsed a tariff structure for future gas tariffs whereby poor consumers would have to pay less, while Petrogas (the implementing agency) would on average receive a price of \$4.20 per thousand cubic feet, Ms. Duersten indicated that Mr. Stern was in agreement with the strategy for such tariff structure, but emphasised that the final tariff structure ought to be agreed upon by the Bank and the Egyptian Government.

LPG Price

3. Referring to paras. 12 and 13 of the Decision Memorandum which reflect the Egyptian Government's opposition to any stipulation which would require an increase in the price of LPG as a precondition for approving the credit under the proposed project, Mr. Stern concurs with the Decision Meeting's decision that this issue should be pursued further with the Government, with the view of achieving at least a gradual price increase of LPG comparable to that of natural gas. However, at the green cover stage, Mr. Stern would like to receive a short note reporting on the status of discussions with the Government on this subject at that time; also the green cover documents ought to include an analysis of the comparative prices of competitive products.

Gas Prices

4. Referring to paras. 8 and 9 of the Decision Memorandum, which indicate that the Minister of Petroleum has agreed to a price of \$4.20 per thousand cubic feet and that said gas price would not need to be revised for a period of 5 years provided inflation would not exceed 10% between now and 1985, Mr. Stern is of the opinion that while the above gas price appears to reflect a proper price at present, he does not believe, however, that fixing of the price for 5 years should be agreed upon by the Bank; rather, the possibility should be left open for another price adjustment, taking into account inflationary trends, other than the 10% envisaged at present.

Cleared with & cc: Ms. Duersten (VPO)

cc: Messrs. Stern (VPO); Rajagopalan (CPSVP); Benjenk (EMNVP); Karaosmanoglu (EMI); Knox, Carmignani, Fish, Hume (EMP); Maiss (EMI); Finzi (EMNVP); Köpp (EMI); Oubouzar (EMI); Rovani, Sheehan, Bourcier, Nayyar, Wormser (EGY); Gustafson, Hovaguimian (IFC); Ms. Schaeffer (EMI), Ms. Zurayk (EGY); Mrs. Julius (EGY)

FKaps:aw

H. Köpp

THE WORLD BANK
DECISION MEMORANDUM TRANSMITTAL SHEET

TO: Distribution

FROM: Hans-Eberhard Köpp *HK*, Chairperson, Decision Meeting

COUNTRY/PROJECT: EGYPT: Cairo Gas Distribution Project

DATE OF ISSUES PAPER: October 31, 1979	ESTIMATED PROJECT COST: Total \$146.6 million
DATE OF DECISION MEETING: November 9, 1979	Foreign Exchange \$98.5 million
SCHEDULED YELLOW COVER DATE: January 31, 1980	PROPOSED LOAN/CREDIT AMOUNT: \$50 million IDA
SCHEDULED BOARD PRESENTATION DATE: May 20, 1980	AMOUNT OF LOAN IN APPROVED LENDING PROGRAM: \$50 million IDA
	AMOUNT AND SOURCE OF CO-FINANCING: None identified yet.

1. DECISIONS SOUGHT:

None.

2. SPECIAL FEATURES:

Before Board presentation, price of natural gas should be established at an appropriate level (see paras. 8 and 9 of Decision Memorandum). Increase in price of LPG as the main competing fuel should be pursued further with Government (see paras. 12 and 13 of Decision Memorandum).

DISTRIBUTION

- 1. Mr. Stern, VPO, through RVP (*initial*) *MS* (3 copies with Issues Paper and Project Brief)
- 2. Standard Distribution: *wstt*

OFFICE MEMORANDUM

TO: Those Listed Below

FROM: Hans-Eberhard Küpp Division Chief, EMIDA

SUBJECT: EGYPT: Proposed Credit for Cairo Gas Distribution Project
Decision Memorandum

DATE: November 16, 1979

1. A meeting was held on November 9, 1979 to review the Issues Paper dated October 31, 1979 for the above project. Messrs. Carmignani, Fish (part-time), McCarthy, Nayyar, Wormser, Ms. Zurayk, Mrs. Julius, Mr. Buky, Mr. Kaps and I attended the meeting. The following decisions were reached.

Procurement (para. 6 (h) of the Issues Paper)

2. Although the Bank has already accorded its approval to Petrogas for awarding the single responsibility contract for the whole project to the lowest evaluated bidder, the meeting asked the mission to present in more detail the reasons which had led it to recommend such approval. The mission which had been part-time supported in the field by Mr. Morse, had come to the conclusion that the bidding procedure followed by Petrogas had by and large complied with the Bank's procurement guidelines. Although perhaps an even greater number of contractors might have expressed interest in the job, had the invitation to bid been more specific and mentioned that the World Bank was considering financing this project, still a substantial number of contractors (49) had expressed interest. Of these, 9 had been prequalified in accordance with acceptable criteria and practically all of those had been aware that the Bank was interested in the project. Eventually, only three contractors had placed a bid of which the lowest and the highest were fully responsive and the second (after prequalification this originally prequalified bidder had formed a consortium with an Egyptian firm), appearing not to be fully responsive. In general, it was felt that there was no evidence that by changing the procedure, the competition would have been increased. The mission reported that the Chairman of EGPC had for a moment considered retendering because he felt that the bid price of the lowest bidder was too high but on reflection had decided to award the contract to the lowest bidder. The mission also reported that staging the carcassing component of the project had been discussed with the Egyptians but that the idea had been rejected (for details see under next issue).

3. It was agreed that the mission explore immediately whether the contract has actually been signed in the meantime 1/.

Project Cost and Staging of Project (para. 6 (a) of the Issues Paper)

4. The meeting recalled that the mission had been asked to explore the possibility of dividing the carcassing component of the project into

1/ Subsequent to the Decision Meeting, the mission informed that the contract had not yet been signed.

two or possibly three smaller parts, which would permit firmer cost estimates of the latter parts, reduce the size of the contract that would have to be signed before Board approval and decrease the financing gap. The mission reported that the Egyptian parties involved rejected the idea of staging this project component for the reasons spelt out in the Issues Paper.

5. The mission was of the view that the balance of advantage would lie in proceeding with carcassing and conversion under the project, as originally envisaged. Economies of scale in distribution networks dictated sizing of pipes to meet future growth requirements. Once these costs are incurred, the economic return on the project is maximized by connecting consumers as rapidly as possible. Furthermore, analysis of contractors' costs indicated that the deployment of a large expatriate force, establishment of camp sites, and mobilization of equipment, represents a major portion (US\$ 25 million), of the overall project cost. Reducing the number of houses to be carcassed would only have a marginal impact on overhead costs and would thus result in increasing the per unit cost. In any event, as the contractor is to be reimbursed on a unit rate basis, initial uncertainty of cost estimates does not carry a financial risk for Petrogas.

6. It was decided to accept the recommendation to concur with the original project design of converting 160,000 households in order to save overhead costs, and ensure that a sufficient number of customers (i.e. all existing houses in the 4 sections of Cairo which are to be connected to the gas pipeline) would be connected to the network when the latter is completed, and to avoid the risk of delays which might result from retendering or renegotiating of the contract being finalized now. As a consequence, no action was to be taken concerning the contract even if this was found still to be possible (see para. 3 above).

Carcassing and Conversion (para. 6 (b) of the Issues Paper)

7. While the high-pressure transmission pipeline included in the project is optimally sized to serve 640,000 customers, only the external and internal carcassing and conversion of appliances in 160,000 existing houses would be part of the proposed project. The additional customers would be owners of houses to be built in the 4 sections of Cairo and the construction of these new houses would include the necessary gas pipes to be connected with the pipeline right from the beginning. Thus, their cost would be part of the construction cost and would be borne by the individuals concerned. The meeting endorsed the mission's recommendation that customers in the first phase should not be asked to bear the relatively large cost of carcassing and conversion. It was agreed that the Government or EGPC would cover the initial carcassing cost of these consumers to the extent that these costs would not be recovered through requiring these consumers to trade in their LPG bottles in exchange for conversion.

Gas Prices (para. 6 (c) of the Issues Paper)

8. The meeting noted that we had written to the Minister of Economy that in the context of the proposed project the Government would have to consider how to set the prices of the domestic fuels with which natural gas would compete. The letter had suggested that (i) subject to the appraisal team's review of Petrogas' future financial viability, the natural gas price for domestic use be set with respect to its alternative use as a fuel oil replacement and this implied a mid-1979 price between \$2.50 and \$3 per thousand cubic feet; and (ii) that the domestic price of LPG also be increased to a level comparable to the one suggested for natural gas. The letter had made it clear that we could only present this project to the Executive Directors once we have reached an agreement on these measures. The mission reported that as a result of a series of meetings with the Minister of Petroleum and EGPC, a price of \$4.20 had been agreed. This price would ensure that revenues from the sale of natural gas would be adequate to make Petrogas a financially viable entity. After a reasonable period, Petrogas would be in a position to extend its services without further Government/EGPC financial assistance and the gas price would not need to be revised for a period of five years provided inflation would not exceed 10% between now and 1985 as is assumed in the analysis underlying the above price. The mission confirmed that the Ministry of Economy had not yet taken any definite position on this issue.

9. It was decided to endorse the recommendation of the mission and to pursue the issue further with the Government, especially with the Ministry of Economy. The impact of such a price increase on the Bank's position in the context of two industrial projects which are currently under consideration, should be reviewed as soon as possible by all departments concerned.

Tariff Structure (para. 6 (d) of the Issues Paper)

10. The mission reported that the Egyptian parties involved had strongly urged to structure the future gas tariffs in such a way that poorer consumers would have to pay less while Petrogas would, on average, receive a price of \$4.20 per thousand cubic feet. A short study to work out details in this respect is underway and its results should be available by April. It was suggested that the study give due regard to the consumption pattern of the poorer consumers since it was not necessarily so that these customers were consuming lesser quantities than better-off customers.

11. The recommendation of the mission to agree with a structured tariff was endorsed.

LPG Prices (para. 6 (j) of the Issues Paper)

12. The mission reported that it had communicated to the Government of Egypt and EGPC the Bank's concern in regard to LPG prices and the need for increasing them urgently. While all Egyptian officials, including the Minister of Petroleum, accepted the need to increase the price of LPG, they were of the view that on account of delicate social implications, the price increase would need to be timed appropriately. They were, however, strongly opposed to any stipulation which would require an increase in the price of LPG as a precondition for approving the loan under the proposed project. A formal response by the Government is, however, still outstanding. The mission noted that the differences between the suggested gas price for the poorer consumers and the current LPG price was not so great that potential consumers of gas under the project would necessarily insist on using LPG. Also, the Minister of Petroleum had indicated that there was a shortage of LPG and that the Government would be able to stop the distribution of LPG in the four districts of Cairo to be connected with the gas system. The Government had also indicated that it might increase the price of LPG for industrial and commercial purposes.

13. In view of the risk that the gas to be provided through the proposed project would not be used as planned if the price of LPG remained at its current level, it was decided to pursue this issue further with the Government with the view of achieving at least a gradual price increase of LPG comparable to that of natural gas. Should these efforts remain unsuccessful, we would have to report back to the Bank's management prior to preparing the green cover appraisal report.

Financial Issues (para. 6 (e) of the Issues Paper)

14. The mission explained the difference in approach between the proposed project and the Suez gas project which was approved by the Board in June. While in the latter project we dealt with EGPC which functions as a holding company with responsibility for the whole petroleum sector, the main responsibility for the execution and operation of the proposed project would be with Petrogas which should and could be developed into a viable public utility. Although this might require major efforts and considerable time, it had been agreed with EGPC's and Petrogas' management to pursue such an objective. It was decided that appropriate financial covenants would be developed and proposed to the Egyptians during negotiations. In this context, it was also agreed that Petrogas would be a suitable beneficiary for the proposed IDA credit.

Management and Training (para. 6 (f) of the Issues Paper)

15. The mission clarified that consultants' services and training as pre-conceived would cost about \$5 million in addition to the \$2 million

already covered by the Suez gas project. While Petrogas' request for additional technical assistance was welcomed in principle, it was decided that the mission, in the course of preparing the appraisal report, would provide details of such training and consultancy services in order to be able to decide on the extent of their inclusion in the project.

Electricity as an Alternative to Natural Gas (para. 6 (g) of the Issues Paper)

16. It was decided that this presentational issue be discussed and decided upon in a separate meeting between the Energy Division and the EMENA Power Division under the direction of the senior economist of the EMENA Projects Department 1/.

Financing Plan

17. In response to a question, the mission clarified that the representative of the Ministry of Economy (Mr. Koraiem, Undersecretary, Ministry of Economy) had indicated that if EGPC had stated that it could finance the still existing substantial gap, this would be acceptable to the Government in general. It was decided, however, that we should seek confirmation of this position from the Ministry of Economy.

Preparation of Appraisal Report

18. It was agreed that on the basis of the above decisions, the mission should proceed with the preparation of its appraisal report and that it should spell out in some detail the various problems and the reasons for the decisions and approaches taken, e.g. on advance contracting and staging of the project.

1/ A meeting took place on November 13, 1979 and agreed that there was no substantive issue and that the Appraisal report would clearly identify the alternatives and their respective costs.

Distribution

Mr. E. Stern (VPO) (3)

Messrs. van der Tak (PAS) (3); Benjenk, Dubey, Richardson (EMNVP); Karaosmanoglu, Ms. Schaeffer, Köpp, Kaps, Oubouzar, Imam, Dervis (EM1); Chittleburgh (EDC); Fuchs, Dewey, Nayar, Iskander (IPD); Gustafson, Tan (IFC); Knox, Carmignani, Hume, K. Jones (EMP); Rovani, Bourcier, McCarthy, Ms. Zurayk, Mrs. Julius, Wormser, Buky (EGY); Hassan (LEG); Hakim (CTR)

Cleared with & cc: Messrs. Fish, Elejalde, Nayyar

HEKöpp:aw

OFFICE MEMORANDUM

TO: Those Listed Below

FROM: Hans-Eberhard Köpp, Division Chief, EMLDA

SUBJECT: EGYPT: Proposed Cairo Gas Distribution Project
Change in Schedule of Decision Meeting

DATE: November 6, 1979

The meeting to review the issues paper dated November 2, 1979 for the above project, originally scheduled for Thursday November 8 at 11:30, will now be held on Friday November 9 at 2:30 pm, in room E 725. Those unable to attend but wishing to comment are kindly requested to convey their comments to Mr. Kaps, extension 74528.

cc: Messrs. Rajogopalan (CPSVP); Rovani, Sheehan, Friedmann, Davis, Fallen-Bailey, Bharier, Bourcier, McCarthy, Nayyar, Ms. Zurayk, Mrs. Julius (EGY); Knox, Carmignani, Fish (EMP); Hassan (LEG); Hakim (CTR); Zaborski, Ms. Schaeffer (EML)

FKaps:aw

OFFICE MEMORANDUM

TO: Those Listed Below
FROM: Hans-Eberhard Köpp, Division Chief, EMLDA
SUBJECT: EGYPT: Proposed Cairo Gas Distribution Project

DATE: November 5, 1979

A meeting to review the issues paper dated November 2, 1979 for the above project, will be held on Thursday November 8 at 11:30 am in room E 725. Those unable to attend but wishing to comment are kindly requested to convey their comments to Mr. Kaps, extension 74528.

cc: Messrs. Rajogopalan (CPSVP), Rovani, Sheehan, Friedmann, Davis, Fallen-Bailey, Bharier, Bourcier, McCarthy, Nayyar, Ms. Zurayk, Mrs. Julius (EGY); Knox, Carmignani, Fish (EMP); Hassan (LEG); Hakim (CTR); Zaborski, Ms. Schaeffer (EML)

FKaps:aw

OFFICE MEMORANDUM

*EK**To review whenever convenient to you*

TO: Mr. Y. Rovani, Director, EGY

FROM: P. Bourgeois, Chief, EGYPP

SUBJECT: EGYPT: Proposed Credit for Cairo Gas Distribution Project
Issues Paper

DATE: November 1, 1979

FK

I attach hereto draft Issues Paper relating to the Cairo Gas Distribution Project. I would propose that we consider this paper before November 2, 1979. This would permit us to issue the paper within the stipulated time period (five days after the return of the appraisal mission). Satisfactory agreement has been reached on most of these issues with the Borrower/Beneficiary, and are recorded in the Minutes of Understanding of 10/23/1979, (attached as an ANNEX to the draft Issues Paper.)

cc: Messrs. R.H. Sheehan, EGY
E. Friedmann, EGY
J.G. Davis, EGY
D.G. Fallen-Bailey, EGY
J. Bharier, EGY

VNayyar:bk

OFFICE MEMORANDUM

TO: Mr. P. Bourcier, Division Chief, EGYPT

DATE: October 31, 1979

FROM: V. Nayyar, ^{Vincent Nayyar} I. Zurayk, ^{I. Zurayk} M. Wormser, and D. Julius ^{D. Julius}SUBJECT: EGYPT: Proposed Credit for Cairo Gas Distribution Project
Issues PaperSummary

1. It is proposed to recommend IDA's participation, to the extent of US\$50 million, in financing part of the foreign exchange costs of the Cairo Gas Distribution Project. The proposed credit would be made to the Arab Republic of Egypt. The Government of Egypt (GOE) would, in turn, onlend the funds to Petrogas, a wholly-owned subsidiary of the Egyptian General Petroleum Corporation (EGPC), on terms and conditions satisfactory to the Bank. This loan would permit the construction of a gas distribution network in the four districts of Cairo, (Helwan, Nasr City, Maadi and Heliopolis). Through this network it would be possible to replace, with indigenously-available natural gas, gas oil currently being used for power generation, and liquified petroleum gas (LPG) presently being used as domestic fuel. The loan would also finance technical assistance in the form of consultants and engineering services, project-related studies, and training of Egyptian personnel in various aspects of construction, maintenance, and operation of a gas utility.

Project Objective

2. The objective of the proposed project is to create a gas distribution network, initially in the four districts of Cairo, that would enable the substitution of domestically produced gas for imported LPG, thus upgrading the use of gas and freeing the domestic customers from price fluctuations which are beyond the control of the government. This would also generate significant foreign exchange savings since Egypt has to import 70% of its requirements, or risk considerable social disturbance. LPG consumption has been increasing at an annual rate of 16% despite supply constraints. In the urban areas there is a marked consumer preference for LPG over kerosene. In the rural areas both LPG and kerosene are used to supplement the limited supply of non-commercial fuels (crop residue and animal waste) that Egypt produces. Thus, the project would also alleviate supply constraints which particularly affect the poor, in the domestic fuel market.

Project Description

3. The project would consist of the following components:

- (a) Construction of approximately 55 km of high-pressure pipeline from an offtake point near Mrazik Bridge to Heliopolis;
- (b) Odorizing unit and four pressure-reduction stations at Helwan, Maadi, Nasr City, and Heliopolis;
- (c) Distribution network of medium-density polyethelene pipes, approximately 900 km in length, in four districts of Cairo; along with 9,000 services for connecting customers with gas at an average rate of one service for 18 customers;

Why not
to EGPC
as we can
of sury gas?

Will the
poor be able
to afford gas
price?

(d) External and internal installation of pipes in about 160,000 dwellings complete with gas meters, service risers, laterals, etc;

(e) Conversion of about 300,000 existing appliances from LPG to natural gas;

(f) Supervisory control and cathodic protection for the gas pipelines;

(g) Technical assistance, training, and project-related studies.

Project Cost Estimates

4. The cost estimates including physical and price contingencies are as follows:

	<u>L.E. Million</u>			<u>US\$ Million</u>		
	<u>Foreign</u>	<u>Local</u>	<u>Total</u>	<u>Foreign</u>	<u>Local</u>	<u>Total</u>
1. High Pressure Transmission Pipeline	9.7	4.8	14.5	14.0	6.8	20.8
2. Odorizing Unit	0.2	0.1	0.3	0.3	0.1	0.4
3. Pressure-regulating stations	1.0	0.5	1.5	1.4	0.7	2.1
4. Distribution Network						
(i) Mains	9.9	4.9	14.8	14.4	7.0	21.4
(ii) Service Lines	3.1	1.5	4.6	4.4	2.2	6.6
(iii) Regulators	2.4	1.2	3.6	3.5	1.7	5.2
5. Gas Meters	5.7	2.8	8.5	8.2	4.1	12.3
6. External Service Line Including Laterals, Risers, etc.	8.7	4.2	12.9	12.5	6.1	18.6
7. Internal Services	8.1	4.0	12.1	11.7	5.7	17.4
8. Conversion of Appliances	4.7	2.3	7.0	6.8	3.3	10.1
9. Training & Consultancy	3.5	-	3.5	5.0	-	5.0
10. Basic Project Cost	<u>57.0</u>	<u>26.3</u>	<u>83.3</u>	<u>82.2</u>	<u>37.7</u>	<u>119.9</u>
11. Physical Contingency	5.3	2.5	7.8	7.6	3.6	11.2
12. Price Contingency	<u>6.1</u>	<u>4.7</u>	<u>10.8</u>	<u>8.7</u>	<u>6.8</u>	<u>15.5</u>
TOTAL	<u>68.4</u>	<u>33.5</u>	<u>101.9</u>	<u>98.5</u>	<u>48.1</u>	<u>146.6</u>

Assumptions

- (i) Physical contingency of 3% assumed for item 1, 2, 3, & 5;
- (ii) Physical contingency of 10% assumed for item 4;
- (iii) Physical contingency of 15% assumed for item 6, 7 & 8;
- (iv) As per contract no price escalation assumed for year 1; for year 2, 3 & 4, price contingencies have been assumed as per Bank guidelines.

What is rational for these assumptions?

155, Has this been accepted by Petrogas? → interest rate

Is this over and above the \$ 2.0 million consulting services included under ~~costs~~ for full of. See for

Issues Paper fails to spell out what training/consultancy would consist of + what it is expected to achieve. 64

The proposed credit (US\$50 million) would represent 50% of the project's foreign exchange cost, and would be used to finance 60% of the costs of items 1 to 5, and full cost of item 9. EGPC and GOE have agreed to finance local currency expenditure equivalent to US\$48 million, and foreign exchange expenditure equivalent to US\$48 million, plus cost of overruns, if any.

*Min. of Econ
committed?*

Project Implementation

5. Petrogas would have overall responsibility for implementing the proposed project. It has appointed British Gas as its engineering consultants who will assist it in designing and supervizing the implementation of the project. Consistent with practice prevailing in the gas industry, Petrogas has awarded a single responsibility contract for the entire project. The selected contractor is responsible for detailed engineering, construction of the high-pressure pipeline, the distribution network, carcassing of dwellings, and conversion of appliances. The issue relating to the packaging of various discrete components of the project into one contract has already been considered at length in the Bank, and agreed upon. The contractor has agreed to a detailed implementation schedule and is committed to complete the project within a period of four years. The implementation schedule requires completion of the high-pressure transmission pipeline for the entire project, odorant plant, and pressure-regulation stations in the first year, the distribution network relating to Nasr City (100%), Helwan (50%), and Heliopolis (50%) in the year two; in Maadi and the remaining work in Heliopolis and Helwan in years three and four. Internal carcassing and conversion would take place concurrently; and under the agreed schedule 8,000 consumers would be connected in year one, 48,000 consumers in year two, 102,000 in year three, and 160,000 by year four.

any penalties?

Principal Issues

6. The Project Brief of August 27, 1979 underscored for management's consideration a number of project and sector-related issues. These were specifically considered and reviewed with the appropriate Egyptian authorities during appraisal. We believe that most of these issues have been satisfactorily resolved as indicated specifically below:

(a) Project Cost: Estimates of project costs insofar as they relate to the high-pressure transmission pipeline, odorizing unit, pressure-regulating stations and the distribution network are fairly firm as they have been computed on the basis of the lowest evaluated bidder for the contract. Nonetheless, an element of uncertainty remains in regard to the cost estimates for internal carcassing and conversion of appliances. So as to attenuate this uncertainty, Petrogas, at our suggestion, undertook a sample survey for estimating the average length of service lines, and carcassing required per household, and assessing the density, diversity, and condition, of appliances. Revised costs take note of the survey, but the possibility of significant deviation in actual costs for carcassing and conversion cannot be excluded. The appraisal mission was asked to examine the possibility of "staging" the project in two or three discrete components insofar as carcassing and conversion were concerned. Government of Egypt/EGPC were opposed to such a proposal for the following reasons:

any idea about the extent of possible deviations?

- (i) The high-pressure transmission pipeline is optimally sized to serve 640,000 customers. The distribution network, without reinforcement would be capable of servicing 300,000 customers. Since infrastructure cannot be further staged, both financial and economic returns are maximized by connecting customers as rapidly as possible. Indeed, it is for this reason that the contractor has been persuaded to abridge the implementation schedule from 5 to 4 years.
- (ii) Analysis of the contractors' costs indicates that deployment of a large expatriate force, establishment of camp sites, and mobilization of equipment represented a major portion (about US\$25 million). Reducing the number of houses to be carcassed and converted would only have a marginal impact on the overhead costs and would result in increasing the per unit cost.
- (iii) Since the costs relating to carcassing and conversion are reimbursable on a unit rate basis, and the contract amount will be periodically adjusted to reflect actual experience, the initial uncertainty of cost estimates for this component does not carry a financial risk for Petrogas.
- (iv) The price of LPG has escalated further to \$450 per ton, which lends new urgency to undertaking conversions with greatest possible speed.

Having looked at the problem closely, we believe that no specific advantage can be secured by further staging the project and reducing the number of customers. Therefore we should concur with Petrogas' original project design of converting 160,000 customers.

(b) Carcassing and Conversion Costs: An important element of expenditure, as indicated above, relates to external and internal carcassing, and conversion of existing appliances, (which is estimated to be in excess of LE200 per household). The consumers would be unwilling to bear these costs in full; both because they represent a very large amount relative to annual fuel costs and incomes and because natural gas is only marginally preferable to LPG, in that continuity of supply is assured. On the other hand, were Petrogas to bear the cost of carcassing and conversion, it would need to set a price at a fairly high level (LE4 per mcf) so as to achieve an acceptable rate of return. Besides imposing too onerous a burden on consumers it could be counter-productive by encouraging shifts to low priced, but high valued, substitutes such as LPG or kerosene. This would also be inequitable as it would require all consumers (640,000) to pay for the cost of carcassing undertaken for the 160,000 consumers. Therefore, it was agreed that Government or EGPC would cover the initial car-

What are the chances that regardless of whether gas is LE3 or LE4 per mcf that consumers will try every thing to stay with much cheaper LPG or kerosene?

When will 640,000 customers be connected to system?

?
↑ ?

cassing costs, to the extent necessary (see below). The financial liability of Petrogas, like any other public utility, would be limited to providing gas up to the property line.

There are, however, some avenues for partial recovery of the initial costs of carcassing and conversion from consumers without jeopardizing their willingness to convert to gas. The first is for them to trade in their bottles of LPG in exchange for conversion. Since Petrogas could use these bottles for its LPG operations, this could provide LE 9 million, or about 25% of the total cost of carcassing and conversion. Another possibility is to have the consumer bear the cost of meters (as is now being done by EEA) and/or be charged for service lines or carcassing where it exceeds a certain stipulated length. These and other possible avenues would be considered in a short study to be undertaken by Petrogas, with the help of consultants (Para. 6 (d) below.)

Has any analysis been made whether consumers are in fact prepared to switch from LPG to natural gas?

wouldn't we need to have a fairly good idea about project acceptance before entering into project

(c) Gas Prices: In conformity with its existing system of administered prices, Egypt prices oil products and natural gas at a fraction of international prices. The current domestic price for natural gas is US\$0.28/Mcf for industrial use and US\$0.71 per Mcf for domestic use, compared with a border price of around US\$3.00 per Mcf (based on thermal equivalence to fuel oil priced at US\$125/ton.) Prior to its departure, appraisal mission was asked to secure Egypt's concurrence to price the natural gas for domestic consumers between about US\$2.5-3.00 per Mcf.

The Mission held a series of meetings with Egyptian officials, including two meetings with the Minister of Petroleum. Agreement was reached that the price of natural gas for domestic consumers should be fixed at a level which would ensure that:

- (i) revenues from the sale of natural gas are adequate to make Petrogas a financially viable entity;
- (ii) after a reasonable period Petrogas should be in a position to extend gas services (at least in the project area) without needing to rely upon Government/EGPC for financial assistance;
- (iii) suggested price should be one which would not need to be revised for a period of five years as frequent revisions in prices were difficult to secure in Egypt. (This objective was incorporated at the specific insistence of the Minister for Petroleum).

how can Petrogas become financially viable if, at least for some years to come, it will have to rely upon Gov. support?

What would be impact on price if one was to forecast price developments over next five years?

According to our preliminary assessment a price of US\$4.2 (LE3.00) per Mcf would meet the above objectives in case conversion and carcassing costs are borne by EGPC/Government. The Chairman of EGPC agreed that the average price of gas to domestic consumers should be set at this level and asked the appraisal mission to proceed with evaluation of the project on this basis. To ensure that these objectives are achieved, the mission recommends that the financial covenants discussed in Para.6(e) be agreed at negotiations, and that a price for natural gas which will satisfy these covenants (over the initial five year period) be approved by the Government of Egypt prior to Board presentation.

see (b) above

Mr. Ec. ?

Any idea whether parliamentary intervention envisaged or required?

what would this be?

(d) Tariff Structure: Setting the price of gas to domestic consumers at the proposed level of LE3.00 per Mcf would represent a significant increase (260%) above the current prices of LPG and would therefore impose a hardship on poorer consumers. To make the increased cost burden more equitable it would be desirable to have a graduated tariff structure which would still secure for Petrogas the average revenue agreed upon. For example, the first 500 scf of gas could be priced at LE2.00 per Mcf (equivalent to LE1.1 for a bottle of LPG), the next 500 scf at LE3.00 per Mcf and monthly consumption in excess of 1,000 scf could be charged at the rate of LE4.00 per Mcf. The Mission suggested and EGPC/Petrogas agreed to undertake a short study, with Bank assistance, for:

what would be timing of such a study?

(i) evolving a tariff structure which would meet the objectives set above, and

→ agreement on tariffs condition of Board presentation

(ii) examining the means for partial recovery of the costs of carcassing.

(e) Financial Issues: As in other sectors of the Egyptian economy, all publicly-held companies in the oil sector function essentially on a cost plus principle. EGPC subsidiaries are recompensed for their services and their profits are determined ex ante, so that their securing an adequate return on their investment is no index of their efficiency. As part of our institution building responsibilities we should attempt to make of Petrogas an actually viable entity where this utility would cover all its actual costs and still generate sufficient margin to self-finance part or whole of its future expansion. This major departure from current Egyptian practice would require that normal financial objectives be set for Petrogas and its performance be measured in terms of norms which would include, inter alia, securing an acceptable rate of return on its revalued net assets, maintaining an adequate debt-service coverage and being in a position to finance most of its future expansion in Cairo from its own resources. It is also necessary that Petrogas acquire and own the project-related assets and maintain accounting for its gas operations separate from its LPG operations. EGPC's/Petrogas' management concurred with the above objectives. Loan agreement would contain relevant financial covenants to this effect.

All of this was explained in a memo in case of EGPC under Gulf of Suez gas studies. How come that in case of Petrogas situation so different?

??

What is status?

(f) Management & Training: Barring unforeseen circumstances, the contract for the project will be awarded by the end of October 1979 and project implementation will commence as of January 1980. The implementation schedule, which was already fairly tight, has been further abridged from five to four years. This would impose considerable strain on the organization of Petrogas, and it is in this context that the needs of the company and project organization were reviewed. The evaluation indicated that Petrogas would need to urgently initiate action at various levels, including recruitment of key personnel. Similarly, a training program for all levels of staff would need to be devised and initiated as Egypt has extremely limited experience in domestic gas distribution systems, although Petrogas is well equipped to supervise the pipeline component. Training would not only be essential for ensuring adequate supervision of the contractor, but also for creating a corpus of trained manpower which can readily replace the expatriate work-force in building and expanding the

right!

gas network. An action plan which addressed itself to various aspects of management needs and training was drawn up by the Mission in consultation with Petrogas, who agreed to implement all activities delineated in the plan. Petrogas has requested that the loan amount be enhanced by at least US\$5 million to take account of expenditure on training and consultancy, which we recommend be granted.

i.e. about \$50 mio?

26.

(g) Electricity as an Alternative to Natural Gas: The EMENA Power Division has suggested that we consider the alternative of satisfying the domestic energy needs of the project area by electricity as an alternative to natural gas. We have considered this alternative and find that it would require:

- (i) Additional generating capacity of 200 megawatts for meeting the energy requirements of customers likely to be connected in the first five years (about US\$110 million);
- (ii) Upgrading transmission lines (about US\$20 million);
- (iii) Upgrading the wiring from the sub-station to the houses and internal wiring within the apartment from 10 Amps to 40 Amps (about US\$80 million);
- (iv) Replacing LPG cookers and water heaters by electric cookers and water heaters; (at least US\$50 million, all of which could be foreign exchange).

J. Fish 2

Over and above this capital cost of US\$260 million, providing electric power for domestic cooking would require a much higher level of operating costs. The thermal efficiency of power generation, which in Egypt is about 22%, compares poorly with the proposed gas system which has the efficiency of around 97%. The annual cost differential in terms of fuel cost alone would be of the order of US\$60 million. Thus at all discount rates, natural gas is a superior alternative to electricity for the project area.

(h) Procurement: Prior to the departure of the appraisal mission, the Bank agreed to allow Petrogas to award the contract in advance of Board approval. This was subject, inter alia, to the Mission's review of Petrogas' procurement procedures. These procedures, including the specifics of pre-qualification, were scrutinized by the Mission and subsequently by the Procurement Adviser, PAS. It was determined that the procedures followed by Petrogas, including pre-qualification, were in conformity with Bank practice. Bids received were judged to be responsive and representative of an acceptable level of competition. The lowest evaluated bid was William Press which, in the Mission's view, conformed satisfactorily to the contractual and technical requirements. Consequent to these findings, the Bank has accorded its approval to Petrogas for awarding the contract to the lowest evaluated bidder. Retroactive financing, including down payment on items proposed to be financed by IDA, is likely to be US\$5 million or 10% of the proposed loan.

What does contract that was supposed to have been awarded in late Oct. say?

among Board who?

however, we also stated that Egypt was running the usual kind of EDs having final word and also from

conditions re gas price

October 31, 1979

(j) LPG Prices: Mission advised the GOE and EGPC of Bank's concern in regard to LPG prices and the need for increasing them urgently. We were advised that LPG was an extremely delicate issue and previous attempts to increase the prices had led to large scale public unrest. While all Egyptian officials, including the Minister of Petroleum, accepted the need to increase the price of LPG, we were advised that such a step would have to be timed appropriately. We were further informed that GOE would be responding to the Bank's communicating on this issue separately. GOE/EGPC were, however, willing to consider the proposal for increasing the price of LPG which was currently being used for industrial and commercial purposes. The price increase would be possible as soon as an adequate number of distinct (large-sized) containers had been imported and an effective arrangement made for administering a system of dual prices. We would propose that Bank's position on this issue be re-assessed in light of GOE's response.

When + how?

Recommendations

7. The sector and project issues, as considered above, were discussed at length with the Egyptian officials including the Minister of Petroleum. Satisfactory agreement was reached on all the issues and is recorded in the Minutes of Understanding, which were signed by the Chairman of Petrogas and Vice Chairman, EGPC (Annex I). Mission's Memorandum to the Minister of Petroleum, containing its recommendations on gas prices for domestic consumers, is attached as Annex II. We would recommend that the agreement contained in the Minutes of Understanding and other recommendations in this paper be considered and endorsed by the Decision Meeting.

cc: Messrs. Y. Rovani, EGY
R.H. Sheehan, EGY
E. Friedmann, EGY
J.G. Davis, EGY
D.G. Fallen-Bailey, EGY
J. Bharier, EGY

Mission team (4), Files (5)

VNayyar:bk

MINUTES OF UNDERSTANDING

1. The Government of Egypt requested the World Bank to assist it in financing the Cairo gas distribution project. The objective of the project is to create a gas distribution network which would permit the replacement of LPG and gas oil in the four districts of Cairo by indigenously available natural gas. With the implementation of this network, Egypt would be able to upgrade the use of gas from a relatively low value fuel oil substitute to a replacement for high value liquified petroleum gas and gas oil. It would, in addition, reduce Egypt's dependence on imports.
2. Pursuant to this request, the World Bank is currently engaged in appraising the project. Our preliminary economic analysis indicates that the project is economically attractive. Subject, therefore, to a satisfactory resolution of certain issues, the Mission proposes to recommend to the World Bank's management, that it participates in financing the foreign exchange costs of the project.
3. We set out below some of the important project and sector related issues and the broad agreements arrived at during our discussions with His Excellency the Minister of Petroleum, the Chairman EGPC, the Chairman Petrogas and senior officials of these companies.
 - a) The viability of the project is closely linked to reliable and continuous supply of gas. As gas for this project represents premium use, EGPC agreed to operate the gas fields at Abu Ghardig, or other gas fields subsequently discovered and/or linked with the Cairo gas distribution system, in a manner which would ensure availability of gas for the system over its economic life, namely 30 years.
 - b) Present estimates suggest that the project is likely to cost \$ 150 million (including contingencies and escalation) of which foreign exchange costs would be of the order of \$ 85 million. The proposed loan is anticipated to be an IDA credit which would be made to the Arab Republic of Egypt. The Government of Egypt would, in turn, onlend the funds to Petrogas, on terms and conditions satisfactory to the Bank. It is the Bank's policy that onlending terms be fixed on commercial basis. It was further agreed that assets created under the project would be held by Petrogas in its own accounts.

Has this been
discussed with
Min of Econ

- c) As the possibility of securing bilateral assistance at this time is limited, it was agreed that EGPC / Government of Egypt would finance the balance of project related needs, including the foreign exchange gap, from within its own resources. Completion of a satisfactory financing plan would be a condition of the proposed credit.
- d) The objective of making Petrogas a financially viable entity was accepted. It was accordingly agreed that the price of natural gas should be set at a level which would not only eliminate the need of recurring subsidies from Government / EGPC, but also permit Petrogas, inter-alia, to secure an acceptable return on its revalued net assets, maintain adequate debt service coverage and be in a position to finance most of its future expansion in the project area from within its own resources.
- e) Analysis undertaken at the request of His Excellency Minister of Petroleum indicated that were the cost of internal carcassing and conversion to be borne by Petrogas, the institution would be able to achieve the above objectives only if the gas was priced at LE 4.00 per Mcf. Such a price level would result in increasing the domestic fuel costs in the relevant districts by a factor of four. It was felt that a price increase in such a magnitude would be counter productive as it would create considerable resistance to the use of natural gas and encourage consumers to use low price, but high value products, like LPG and Kerosene.
- f) It was consequently agreed that the cost of internal carcassing and conversion would be borne by the Government / EGPC. The liability of Petrogas, like any other public utility, would be limited to providing gas upto the property line. With the cost of internal carcassing and conversion excluded, the same analysis, indicates that an initial average price to domestic consumers of LE 3.00 per Mcf would be necessary to achieve the objectives set out in para (d) above. The price would need to be revised in line with inflation after initial period of 5 years and assumes that the transfer price of gas from EGPC to Petrogas would be set at LE 0.2 per Mcf. Chairman EGPC agreed in principle to the need of setting price at this level and asked the Appraisal Mission to proceed with the evaluation of the project on the is basis.

Min E.

- g) In order, however, to diminish the impact of price increase on the urban poor, it was agreed that the tariff structure should be progressive and higher per unit cost be charged to larger consumers. It was agreed that a short study would be undertaken for (a) evolving the tariff structure which would meet the objective set above and (b) examining the means for partial recovery of the cost of carcassing. World Bank will assist Petrogas in undertaking the study.
- h) It was agreed that Petrogas would maintain the accounts of natural gas operations separate from LPG operations. In order to allow for efficient follow up of Petrogas cost, it was agreed that (a) Petrogas would develop its accounting system with a view to establish complete and separate accounts for these operations, (b) this system would be reviewed by EGPC financial consultants. Furthermore, Petrogas agreed to finalise the 1978 LPG accounts prior to negotiations.
- i) Petrogas agreed to undertake immediately, and complete within a month, a rapid market survey of industrial and commercial energy loads in order to determine the possibilities of using gas as a replacement for gas oil and other high value petroleum products.
- j) Petrogas will enter into an agreement with the Egyptian Electricity Authority to supply Nasr City and Heliopolis power station with natural gas at a price equivalent to the domestic price of gas oil. This price would be reviewed in the light of the recommendations made by the pricing study currently being undertaken by EGPC.
- k) Barring unforeseen circumstances, the contract is scheduled to be awarded by the end of October 1979 and the project implementation would commence as of January 1980. The implementation schedule, has been abridged from 5 to 4 years during negotiations with the contractor. This would impose considerable strain on the organisation of Petrogas and it is in this context that the needs of the company and project organisation were reviewed. This evaluation indicated that Petrogas would need to initiate immediate action at various levels, including recruitment of key personnel. Action plan, as agreed upon, is attached at Annex.

? How?

→ ?

1) Training for all level of staff was considered to be of crucial importance as inhouse experience in domestic gas distribution system is limited. Training would not only be essential for adequate supervision over the contractor but also for creating a corpus of trained manpower which can readily replace expatriate work force. Immediate training needs, required under the project, would be examined by Petrogas consultants and training schedule implemented. Plan of action for this purpose is at Annex. In addition, there would be long term training requirements which also would be studied by British Gas and a training programme would be agreed upon during negotiations.

m) Mission advised the Government of Egypt and EGPC of the Bank's concern in regard to LPG prices and the desirability of increasing them urgently. Mission was advised that the price of LPG was an extremely delicate issue and the Government of Egypt would be responding to the Bank in this regard separately.

EGPC was however willing to consider the proposal for increasing the price of LPG, currently being used for industrial and commercial purposes. The price increase would be possible as soon as adequate number of distinct (large size) containers have been imported and effective arrangements made for administering dual prices.

A. H. Abu Bakr
A. H. Abu Bakr
Chairman Petrogas

Samy Andrawis
Samy Andrawis
Vice Chairman
E G P C

Vineet Nayyar
Vineet Nayyar
World Bank

Cairo.

23/10/1979

October 22, 1979

To
His Excellency
Mr. Ahmed Ez Eldin Hilal
Minister of Petroleum
Garden City - Cairo
Arab Republic of Egypt.

Excellency,

In response to your directions, we have attempted to examine the question of the price of natural gas to domestic consumers. In doing so, we have closely adhered to the objectives set out by you in our previous two meetings, namely :

1. - Revenues from natural gas should be adequate to make PETROGAS a financially viable public utility.
 - After a reasonable period, PETROGAS should be in a position to extend gas services (at least in the project area) without needing to rely upon Government / EGPC for subvention .
 - Tariff structure should be fixed for a period of five years, thereby doing away with the need for frequent revisions.
 - Tariff structure should be progressive, placing a heavier per unit cost burden on larger and therefore more affluent consumers.
2. We have, on the basis of the above objectives, attempted to study the implication of a different set of prices upon the financial viability of PETROGAS, as measured by its rate of return on assets. The results of our study are given in the attached table. These figures are based upon our preliminary analysis, and therefore would need to be reviewed, as cost estimates are updated and improved. Results are sensitive to the policy decision of integrating into the tariff structure the cost of carcassing and conversion for the initial 160,000 consumers.
3. In case the costs of carcassing and conversion were to be borne by the public utility, PETROGAS would need to set its price for gas at LE 4.00 per Mcf, in order to achieve a rate of return on assets comparable with that expected of other public utilities. This would result in increasing domestic fuel costs almost by a factor of four. Besides imposing too onerous a burden on consumers, it would, in our view, be counter-productive as it might result in shifts to low priced but high value substitutes, such as LPG or Kerosene. This would also be inequitable as it would require all consumers (640,000) to pay for the cost of carcassing undertaken for the first set of consumers (160,000).

7. We hope the above analysis has been responsive to your request. As you know, a comprehensive study of the energy prices in Egypt was included as part of the first World Bank loan to the sector, and we are assisting EGPC to speed its progress. In the mean time, we thank you for this opportunity to express our views, and remain at your disposal to discuss these issues further.

With warm regards.

Sincerely yours,

Vineet Nayyar

(Vineet Nayyar) _____

Mission Leader

World Bank Appraisal Team

4. In the event of it being decided to exclude initial cost of carcassing and conversion from the rate base, a price of at least LE 3.00 /Mcf (equivalent to LE 1.70 per bottle of LPG) would be required, to approximate the same objectives of viability. The suggested price level of LE 3.00 appears reasonable, and we would, therefore, suggest that the Government / EGPC considers accepting the responsibility of subsidizing, to the extent it considers necessary, initial carcassing costs. The financial liability of PETROGAS, like any other public utility, be limited to providing gas upto the property line.
5. We, however, see some avenues for partial recovery of initial costs of carcassing and conversion from consumers, without jeopardizing their willingness to convert to gas. The first is for them to trade in, free of charge, their bottles of LPG in exchange for conversion. This could possibly yield LE 9 million, or about 25 % of the total costs of carcassing and conversion. Another possibility is to have the consumer bear the cost of the meter (as is now being done by EEA) and/or charge for service lines or carcassing where it exceeds a certain stipulated length. This also brings into focus, the need for an early issue of a decree whereunder builders of new buildings within the project area, would be liable to undertake all carcassing and other services necessary for providing gas within the property limits.
6. Setting the price of gas to private consumers at the proposed level of LE 3.00 per Mcf would represent a major increase above the current price of LPG, and could impose a hardship on poorer consumers. To make the increased cost burden more equitable, we would suggest that a graduated tariff structure be considered, which would still secure for PETROGAS the average revenue indicated above. For example, the first 500 scf of gas could be priced at LE 2.00 per Mcf (equivalent to LE 1.1 for a bottle of LPG) and the price for the next 500 scf at LE 3.00 per Mcf. The monthly consumption in excess of 1000 scf could be charged at the rate of LE 4.00 per Mcf. We would in the above context suggest a short study for (i) evolving tariff structure which would meet the objectives set above and, (ii) examining the means for partial recovery of the costs of carcassing. The preceding analysis is based on the assumption of a 10 % annual inflation rate over the 20 year course of the project. Thus, in order for PETROGAS to continue to meet its objectives of financial viability, another significant increase would be required in 1985. In addition, should inflation exceed 10% between now and 1985, a price increase would be required sooner.

Preliminary Analysis Of Natural Gas Prices
And Return On Revalued Net Assets

1980-85 Average Price to Domestic Consumers <hr/> (LE/Mcf)	Rate of Return on Revalued Net Assets - 1985		C o m m e n t <hr/>
	With Car/Con %	Without Car/Con %	
1.15	(-5.9)	(-5.7)	Equivalent to existing LPG price of 65 Piasters per bottle.
2.0	(-3.5)	(-1.9)	
2.5	(-2.1)	0	
2.8	(-1.2)	1.5	Price equivalent to fuel oil at \$ 150/ton.
3.0	(-1.0)	2.4	
3.5	1	4.6	
7.0	10	20	Price equivalent to LPG \$ 450 / ton.

Assumptions :

1. Ten percent annual inflation.
2. Gas sold to PETROGAS from EGPC at LE 0.2 / mcf.
3. Gas sold by PETROGAS to power stations at LE 0.79 / mcf.

OFFICE MEMORANDUM

TO: Those Listed Below
FROM: P. Boincier, Chief, EGYPP
SUBJECT: EGYPT: Cairo Gas Distribution Project

DATE: August 29, 1979

Please find attached a Project Brief relating to the Cairo Gas Distribution Project. Questions and comments may be addressed to Mr. V. Nayyar, extension 75338.

cc: Messrs. Y. Rovani, R. Sheehan, E. Friedmann, J. Davis, J. Bharier, D. Fallen-Bailey, Ms. D. Julius (EGYDR); M. P. Benjenk, V. Dubey, D. Richardson, U. Finzi (EMNVP); A. D. Knox, K. D. Jones, J. J. Fish, I. Elwan (EMP); A. Karaosmanoglu, B. G. Kavalsky, H. Köpp, F. Kaps (EM1); H. van der Tak (8) (PAS); R. Krishna (LEG)

EMENA Files
PPD File - Egypt

VNayyar:rm

Sector : Oil and Gas
Project Code : 5EGTGS01
Appraisal Date: 9/23/79 - 10/10/79

Date of this Brief: August 27, 1979

Project Officer: Vineet Nayyar
Lead Adviser : Philippe Bourcier

EGYPT

CAIRO DOMESTIC GAS DISTRIBUTION PROJECT

PROJECT BRIEF

A. SECTORAL CONTEXT^{1/}

Sector Issues and Objectives

1. Egypt's energy outlook has consistently improved over the last decade. With the commissioning of the Aswan High Dam, Egypt successfully developed its largest hydro-electric resource. Increases in oil production have made Egypt self-sufficient and, more recently, an exporter of oil. Over the last few years, it has doubled its production of oil; Egypt currently produces 25 million tons of oil per annum of which more than 50 per cent is exported and, in 1978, accounted for 25 per cent of its foreign trade earnings. Recoverable reserves are estimated at around 2.5 billion barrels or 350 million tons. Recent discoveries of non-associated gas fields at Abu Gharadig, Abu Maadi, Abu Qir and Amal which have cumulative recoverable reserves of 3.5 trillion cubic feet, have further strengthened Egypt's energy base. When fully exploited, these non-associated gas fields would provide an energy source equivalent to four million tons of oil and consequently release similar amounts of liquid hydrocarbons for export. Gas shows have been encountered offshore Abu Qir which appear to hold significant gas potential (estimated at 3 to 4 trillion cubic feet) and await fuller delineation. In addition, associated with the production of oil, annually 100 million cubic feet of gas is being produced which is being flared thus far.

2. These positive developments notwithstanding Egypt's medium and long-term outlook is not as clear. Most of the major oil fields which currently account for 80 per cent of Egypt's oil production are anticipated to peak by 1981. On the other hand, internal consumption of petroleum products has been rising sharply, and, over the past five years, has recorded a growth of 11 per cent per annum; with motor gasoline and liquified petroleum gas growing annually at a rate exceeding 15 per cent. Against the present consumption level of 10 million tons and in the absence of demand management the consumption of petroleum products in 1985 is expected to exceed 20 million tons of oil equivalent. With burgeoning internal demand for hydrocarbons on the one hand, and prospects of reduced productivity from existing oil fields on the other, Egypt would need to take a series of critical steps if it is

^{1/} For a fuller discussion of Egypt's Oil and Gas Sector, please refer to Sections I and II of the Staff Appraisal Report for the Gulf of Suez Gas Project (No. 2435-EGT, dated May 30, 1979).

to maintain its present status as an exporter of oil over the next decade. These would, inter alia, encompass:

- (i) a review of present pricing policy in the petroleum sector, which in part, is responsible for the fast growing demand for oil products;
- (ii) with rapidly declining reserve production ratio, there is need for increasing exploratory efforts including efforts at reorganizing, collating and reinterpreting the existing geological, seismic and drilling data;
- (iii) increasing the domestic absorptive capacity for gas so that it releases liquid hydrocarbons for export or reduces the need for import;
- (iv) accelerating the development of known gas fields and creating an infrastructure which would permit increased gas use;
- (v) stimulating exploratory efforts in structures which are believed to hold potential only for gas and as such are not of immediate interest to foreign oil companies.

Bank Role and Sector Lending Strategy

3. So as to retrieve energy resources which are currently being wasted, the Bank has recently approved a loan for a project which would gather, process and transport associated gas from the oil fields in the Gulf of Suez to Suez and Cairo. This loan also includes components designed to address sector issues enumerated above through studies relating to pricing, exploration and gas utilization. These studies should provide Egypt with critical inputs it requires for evolving an appropriate energy policy. In terms of future lending operation, the Bank could best assist Egypt by providing financial and technical assistance in exploring, delineating as also rapidly developing the known gas fields. Bank assistance could also be deployed usefully for creating the necessary infrastructure which would permit increased gas use in the economy. To the extent gas replaces liquid hydrocarbons, it increases Egypt's export capability in terms of oil and petroleum products. Even in the absence of major oil discoveries, such a strategy would permit Egypt to sustain its rapidly rising internal demand without eroding its export earnings from oil.

B. PROJECT FORMULATION AND PREPARATION

Project Objective

4. Less than 4 per cent of Egypt's territory is under permanent or seasonal crops, the balance being desert or areas covered with dry or extremely arid vegetation. Crop residue and animal wastes, to the limited

extent of their availability, form an important source of domestic fuel in the rural areas. This clearly is not adequate, resulting in a rapidly rising demand for mineral fuels (kerosene and LPG) in the rural areas. The current annual consumption of kerosene, which is used almost exclusively as a domestic fuel, is about 1.5 million tons and is expected to grow annually at around 9%. In the urban areas, there is almost an exclusive reliance on these fuels, with a marked consumer preference for LPG over kerosene. Consequently, the demand for LPG has been growing rapidly (16%) and the current annual demand at 350,000 tons. As its internal production is around 100,000 tons, Egypt has to import the balance. Consumption of LPG would be much higher but for the physical constraint of supply. The objective of the proposed project is to create a domestic gas distribution network in four districts of Cairo (Helwan, Maadi, Nasr City and Heliopolis) which would replace LPG with natural gas and in doing so:

- (i) upgrade the use of natural gas from fuel oil equivalent (at \$125^{1/} per ton) to a replacement for a more valuable product (LPG and gas oil \$200^{1/} per ton);
- (ii) reduce Egypt's need to import LPG and other ancillaries, such as LPG bottles, tank, lorries, etc.

Project Origin and Design Improvements

5. The Government of Egypt approached the World Bank in January 1978 for financing the proposed project. The project envisages supplying gas in the four districts of Cairo as domestic fuel. The number of households to be converted over the next five years would be 160,000^{2/} which would ultimately be increased to 640,000. EGPC had appointed consultants (Integral Engineering) to investigate the feasibility of this project who proposed the construction of a high pressure transmission line, from a point 30 kms. off Cairo, running on the outskirts of Helwan, Nasr City, Heliopolis and Maadi, which would feed a medium pressure ring which in turn would be linked to a low pressure network which would provide gas to households. The system proposed by the consultants also incorporated a plan for installing several balancing tanks so as to meet peak load requirements.

6. The low pressure system (LPS) for the distribution network, as designed by the consultants, was reviewed by a Bank mission in August 1978. This review indicated that the proposed design was expensive, outdated, inflexible and failed to take advantage of the high wellhead pressure.

^{1/} On account of recent developments, it is difficult to assess with any authenticity, the average international price of these products. Fuel oil, gas oil and LPG (Butane) are currently being sold in the spot market respectively at \$150, \$350 and \$300 per ton.

^{2/} Number of households would be 235,000 in case we take account of new constructions between project Year 1 and 5.

The mission indicated a strong preference for a medium pressure system (MPS) in which the distribution network would have an operating pressure of 4 bar. Through such a shift, the pipeline diameters of the network could be reduced (from 900-700 mm to 300-50 mm) resulting in significantly lower project costs. MPS network would, in addition, have a higher built-in storage capacity, which would allow the system to meet peak loads thereby rendering unnecessary investment on storage tanks proposed under LPS. Medium pressure as a system was also more elastic in relation to LPS and capable of expansion in future, at relatively marginal costs. EGPC accepted the design change suggested by the Bank and appointed new consultants (British Gas) to rework the network at medium pressure.

Project Description

7. Broad features of the redesigned network are as under:

(a) Supply Source

Gas supply source for the proposed project would be the gas fields at Abu Gharadig, south of El Alamein, about 270 kms from Cairo. The recoverable reserves of these gas fields are estimated at one trillion cubic feet and are, therefore, more than adequate to meet the demand of the proposed project (20-MMcf/d)^{1/} over the economic life of the project (25 years). Abu Gharadig gas is already being transported through a sixteen-inch pipeline to Cairo and is available at Marazik Bridge on the east bank of the Nile. Fall-back alternate source of supply considered necessary for a domestic gas distribution system, would be provided by Gulf of Suez^{2/} associated gas which would be gathered and brought to Cairo by a project currently under implementation, and financed by the World Bank.

(b) Market

(i) Project Area

The proposed project would supply gas to the following areas (see Map at Annex I):

- (a) Helwan - A rapidly expanding industrial city 12 kms south of Cairo and close to the pipeline offtake point at Marazik Bridge.

^{1/} Including requirements of the power station at Nasr City and Heliopolis.

^{2/} Gas supplies to Cairo would be further augmented when the newly discovered gas field at Abu Qir is linked to Cairo.

- (b) Maadi - a suburb, 5 kms south of Cairo, relatively affluent residential area consisting essentially of low rise housing.
- (c) Nasr City - a rapidly developing district comprising largely of high rise flats, 6 kms south east of Cairo.
- (d) Heliopolis - a district 10 kms north east of Cairo, an extensive sprawling area with large pockets of new developments consisting of high rise flats.

(ii) Gas load

(a) Domestic Load

Project objective is to convert 160,000 LPG consumers to natural gas between 1980-84. In addition to these households, new dwellings estimated at 75,000 would be built during the same period, which too would need to be connected with gas. The responsibility for carcassing for new buildings would rest with the builder. While the project objective is to supply natural gas to 235,000 households (of which project authorities would undertake carcassing and conversion for only 160,000 households), the long-term load (by 2000 AD) in the project area is estimated at 640,000 households, and the high pressure pipeline is being sized to meet this ultimate load. The consumption of LPG per customer is currently 155 therms per annum (equivalent to 330 kilograms of LPG), and it has been assumed that the same level will apply to natural gas. However, once natural gas becomes available, consumption per household is estimated to grow at 2% per annum. By the fifth year the demand for gas is estimated at 8MMcf/d which would increase to 19 MMcf/d by the twentieth year.

(b) Power Stations

The proposed gas system would also meet the requirements of power stations at Nasr City and Heliopolis. These stations are gas turbine units designed to meet peak loads. However, on account of the delay in the implementation of the Suez power plant, these units would have to operate as base load stations up to 1985. The gas load until 1985 would cumulatively be of the order of 12 MMcf/d (Nasr City 7 MMcf/d and Heliopolis 5 MMcf/d).

In the event of the proposed steam turbine stations going onstream as scheduled, the gas load on account of these power units should reduce by 50% after 1985.

(c) Pipeline Distribution System

The consultants (British Gas) using transient flow analysis have recommended 24" diameter for the high pressure pipeline (50 kms in length); a size which would be capable of meeting the peak hour storage requirements (at least up to 1992) thereby eliminating the need for having separate storage capacity. Four regulatory stations would drop the inlet pressure of up to 26 bar to 4 bar, a pressure at which the distribution network, would operate. For safety considerations, the pressure would be reduced to 50 millibar, 3 meters from the property line. Medium density polyethylene pipes would be used for the distribution network. Pipes above the ground level would be in steel or copper. Gas would be fed into the building through service risers which will be located either in the skylight or attached to the external walls of the property.

(d) Carcassing and Conversion

Project authority would be responsible for internal carcassing in all the existing apartments in the four districts and it would be done in steel or copper pipes of varying diameter. In addition 300,000 appliances would be replaced/ converted from LPG to natural gas under the project. In the buildings to be constructed subsequently in the project area, the builder will be responsible by statute for the internal carcassing.

Project Costs

8. Project costs have been estimated as under:

	In Millions			
	Total Cost		Foreign Exchange Cost	
	LE	US\$	LE	US\$
High Pressure Transmission	16.7	24.3	8.1	11.7
Distribution Network	23.8	34.2	14.1	20.5
Carcassing and Conversion	42.0	60.5	24.1	35.0
	82.5	119.0	46.3	67.2
Price and Physical Contingencies	27.0	39.0	11.7	16.8
Total	109.5	158.0	58.0	84.0

Cost of house installation and conversion = LE 350 per customer

9. The cost estimates relating to internal carcassing and conversion of appliances are based on certain assumptions relating to average length of line pipes for service connections and internal carcassing, nature of apartments and ventilation available therein, proportion of imported appliances to indigenous, etc. The actual cost could vary significantly, depending upon the validity of these assumptions. As expenses on carcassing and conversion represent 50% of the project costs it would be necessary to test the validity of these assumptions through a sample survey.

10. No detailed discussions have been held with the borrower on the financing plan. The possibility of Egypt securing bilateral assistance for the project will be explored after tenders have been evaluated and the source of supply determined. In so far as the Bank is concerned IDA assistance of US\$50 million has tentatively been earmarked for the project. Possibility of co-financing to cover the foreign exchange gap and the financing plan for local costs and residual foreign exchange needs would be finalized during appraisal.

Project Justification

11. In the absence of the proposed project, the power stations at Nasr City and Heliopolis would use gas oil, and the domestic households would need to be provided with LPG. LPG, and in all probability gas oil, would need to be imported. Separately Abu Gharadig gas could find adequate market in Cairo as a replacement for fuel oil. This project would thus result in upgrading the use of gas from a replacement for fuel oil to a substitute for gas oil and LPG. Given its current use pattern, the opportunity cost of Abu Gharadig gas approximates the international price (f.o.b.) of fuel oil. The project justification therefore rests on the cost differential between the border price of fuel oil, on the one hand, and that of LPG and gas oil (c.i.f.) on the other.

12. Prior to the current round of escalations, prices of petroleum products (gas oil, fuel oil, and to a certain extent, LPG), have maintained a stable relationship with the price of crude oil. Price of gas oil and LPG has normally been 120% and 115% of the price of crude oil (Arabian light) (Annex I). Fuel oil prices have on an average been 75% of the price of crude oil. On this basis, and pricing oil at \$23 a barrel, the differential between gas oil/LPG and fuel oil should be of the order of \$75 per ton. Recent disruptions in oil supplies have however tended to exacerbate the price differential, with gas oil selling in the spot market at \$350 a ton, LPG at \$300 a ton and fuel oil at \$140 a ton. In consonance with the prices of petroleum products, freight charges have escalated rapidly, and currently Egypt is paying a freight charge of \$90 per ton for LPG.

13. We believe that the price differential as it exists now is atypical and is not likely to constitute a new trend in oil product price relationship. Furthermore, once product prices stabilize, the freight charges should come down. For purposes of computing the rate of return on this project, it has been assumed that the product price interrelationship would revert to the original level and the price differential would be about \$75 a ton (1979 dollars). Furthermore, freight charges for LPG would average at \$75 per ton and that for diesel oil \$30 per ton. On these assumptions the rate of return from the proposed project would exceed 30%.

Project Organization

14. The project will be funded through the Egyptian General Petroleum Corporation (EGPC) which would also be the Borrower of the proposed loan. While EGPC will look after overall coordination, the responsibility for actual implementation, day-to-day supervision, and subsequent operation of the gas network would be with PETROGAS. EGPC functions as a holding company and by virtue of its statutes, oversees the entire spectrum of oil and oil related functions within the Egyptian economy. Its activities range from exploration to down-stream operations like marketing and refining. However, except for foreign trade in crude oil and refined products, EGPC discharges these functions through foreign partners (exploration) and fully owned subsidiaries (refining, transportation and marketing). These companies operate on a cost plus basis and charge EGPC a fee for performing various functions relating to the processing and marketing of crude oil and petroleum products. PETROGAS is one such subsidiary, which was created in 1978 with the objective of supplying natural gas and LPG to industrial and domestic consumers. Currently its activities are confined to provision, storage, filling, transportation and marketing of LPG. In addition, it imports and manufactures appliances which utilize LPG.

15. EGPC's management at senior level is competent and experienced in various aspects of oil and gas industry. It has, over the last decade, expanded its marketing operations to meet the growing demand, set up and rehabilitated a number of refineries, laid an extensive network of crude, petroleum products and gas pipelines; facilities which it operates with considerable competence. While PETROGAS is a relatively new subsidiary, it has drawn upon the experienced personnel of EGPC and other subsidiaries to man its senior levels. Yet EGPC and PETROGAS are devoid of experience in the implementation, management and supervision of a domestic gas distribution network. Furthermore, these organizations have no experience in operating and maintaining a gas utility. PETROGAS has set up a project organization relating to the various facets of the project but it is yet to be fully manned. Project personnel would require extensive training and until such time as it gains requisite experience in operating and maintaining this gas utility, it would require considerable expatriate assistance.

Implementation

16. PETROGAS would have the overall responsibility for supervising the implementation of the proposed project. PETROGAS, in turn, has appointed British Gas as engineering and management consultants who would assist PETROGAS in designing, implementing and supervising the project. In addition, British Gas would assist the project authority in training the personnel for maintaining and operating the gas system. PETROGAS proposes to award one single responsibility contract and the selected contractor would not only be

responsible for detailed engineering, construction of the high pressure transmission pipeline and distribution network but also for all procurement, carcassing and conversion appliances.

17. Petrogas expects to award contract by September 1, 1979. The work on the project is scheduled to start by January 1, 1980. The high pressure transmission pipeline is expected to be completed by the end of 1980. The work relating to distribution network would start at the same time but internal carcassing and conversion of appliances would need to await detailed apartment survey which would be carried out by the contractor in the first six months. The yearly schedule relating to mains, services, conversions and customers is indicated in the table below:

TENTATIVE PROGRAM FOR DISTRIBUTION AND CONVERSION

Calendar Year	No. of Customers	Conversion	No. of Services	Mains (Km)
1980	8,000	12,000	800	80 to 100
1981	38,000	71,000	2,000	165 to 170
1982	38,000	72,000	2,000	165 to 170
1983	38,000	72,000	2,000	165 to 170
1984		73,000	2,000	143 to 150
TOTAL	160,000	300,000	8,800	740

Procurement

18. PETROGAS, through global advertisement (9 international newspapers), invited contractors for prequalification for the proposed project. Altogether, about 45 firms responded to PETROGAS invitation. Criteria used for pre-qualification related to the contractor's previous experience in the distribution network, its organization capabilities and financial standing, experience in the Middle East, etc., and, on this basis 9 contractors were

prequalified. Prequalification procedure was reviewed and it conforms broadly with the Bank's guidelines. Tender documents were prepared by British Gas and were reviewed. In response to these three bids were received from prequalified contractors. These bids are being evaluated and PETROGAS would secure Bank approval prior to the award of contract. In the event of the Bank concurring in the choice of the contractor, PETROGAS, in all probabilities, would award the contract prior to appraisal.

C. ISSUES AND RECOMMENDATIONS

Sector Issues

19. There are a number of sector issues relating to exploration, gas use and pricing of petroleum products (para. 2), in regard to which EGPC and the Government of Egypt have agreed to undertake indepth studies. Only after these studies have been completed would a meaning ful dialogue and consequent policy changes be possible.

Gas Pricing

20. In conformity with its existing regime of administered prices, Egypt prices oil products and natural gas at a fraction of international prices. As indicated above, the overall issue of prices relating to petroleum products, including intersectoral linkages, is the subject of detailed study. However, the implementation schedule of the project is such which would not permit deferment of the credit processing till after the result of the pricing study has been obtained and reviewed. Yet the internal sale price of \$0.25/Mcf against an international price of around \$3 Mcf (based on thermal equivalence of fuel oil) would not be acceptable and as such an ad hoc upward revision may need to be considered. A part of this objective could be achieved by transferring "front end" costs to the consumer. Currently, the responsibility for internal carcassing and conversion of appliances, estimated to cost LE 350 per customer, rests with the project authority. The consumer could, as a consideration for the conversion turn over, gratis, LPG bottles which he had originally purchased. On an average, each customer has two bottles which would command a market price of LE 58. In addition, attempts should be made to pass on, a part if not the whole, of the remaining costs for conversion and carcassing (LE 300) to the consumer in the form of a demand charge amortized over 20 years. EGPC/PETROGAS would need to be assisted in evolving a tariff structure which would assure an adequate financial return and the result in pricing the gas, insofar as it replaces domestic fuel, at its border price. This issue will be discussed in detail by the appraisal mission with the Government of Egypt and EGPC.

Project Costs

21. Project costs have been estimated on the basis of bid evaluation and are therefore fairly firm insofar as the high-pressure pipeline and the distribution network are concerned. However, the cost estimates relating to internal carcassing and conversion of appliances are based on certain a priori assumptions and actual costs could vary significantly. Furthermore, the financial viability of the project is extremely sensitive to these costs, as this component represents 50% of the total project costs. It was therefore considered prudent to test the validity of these assumptions and accordingly PETROGAS was asked to undertake a sample survey so as to gather data relating to:

- (i) density, diversity and condition of appliances per household;
- (ii) average carcassing required per household including the length of the riser and lateral pipes; and
- (iii) the average pipeline length from the distribution network to the apartments surveyed.

PETROGAS has since completed the survey and is currently tabulating the results. During appraisal the project costs would need to be revised after taking into account the results of this survey.

Project Planning and Management

22. It is presently anticipated that the project implementation would start as of January 1, 1980. Implementation schedule, as drawn up by the consultants is extremely tight and presupposes PETROGAS/Government of Egypt initiating a series of advance actions for each of the phases relating to pre-construction, construction and operations. These aspects have not received adequate attention, no serious effort has been made to delineate critical activity levels for each phase much less initiate the required advance action.

23. It was, therefore, recommended that EGPC, with assistance of its consultants (British Gas), quickly undertakes a planning study, identify clearly and separately (through CPM) activities relatable to the following components of the project:

- (i) high pressure transmission pipeline;
- (ii) distribution network;
- (iii) carcassing and conversion of appliances;

- (iv) operation and maintenance of the proposed gas system.

On account of public safety considerations (see following para.) considerable emphasis would need to be placed on quality assurance. The study would therefore be required to make specific recommendations with regard to the skills, experience and the number of supervisory staff required for each of the above components. In this context, consultants would work out the necessary training requirements and the extent to which the Egyptian personnel would need to be supplemented by expatriate personnel. It had earlier been hoped that the preliminary results of the study would be available prior to appraisal. On account of its failure to reach agreement with PETROGAS in regard to fees, etc., British Gas has so far not commenced work. We would need to stipulate that this study be completed prior to negotiations and its recommendations reviewed and understanding reached thereupon, during negotiations.

Safety Considerations and Quality Assurance

24. Safety considerations are paramount in a project of this nature. This would require formulating a detailed code of safety practices, enacting the necessary legislation and establishing an enforcement organization. It would also require extensive supervision during project implementation so as to ensure meticulous adherence to the safety standards and specification. PETROGAS would need to initiate early action to create such an organization.

Procurement

25. Petrogas intends to award a single responsibility contract for the entire project. The bids that have been received from prequalified contractors are now being evaluated and Petrogas has agreed to secure Bank's approval prior to the award of the contract. In the event Bank concurs in the choice of the contractor, Petrogas is likely to award the contract prior to appraisal. The Bank would therefore need

- (i) to agree to advance contracting; and
- (ii) retroactive financing, precise quantum of which would be determined during appraisal.

In view of the advanced state of contracting, the appraisal mission will also ascertain Government/EGPC commitment to provide all necessary funds prior to the effectiveness of the proposed IDA credit which, according to the present schedule, is expected at the earliest by the third quarter of 1980.

D. BANK PROCESSING OF PROJECT

Status of the Dialogue with the Borrower

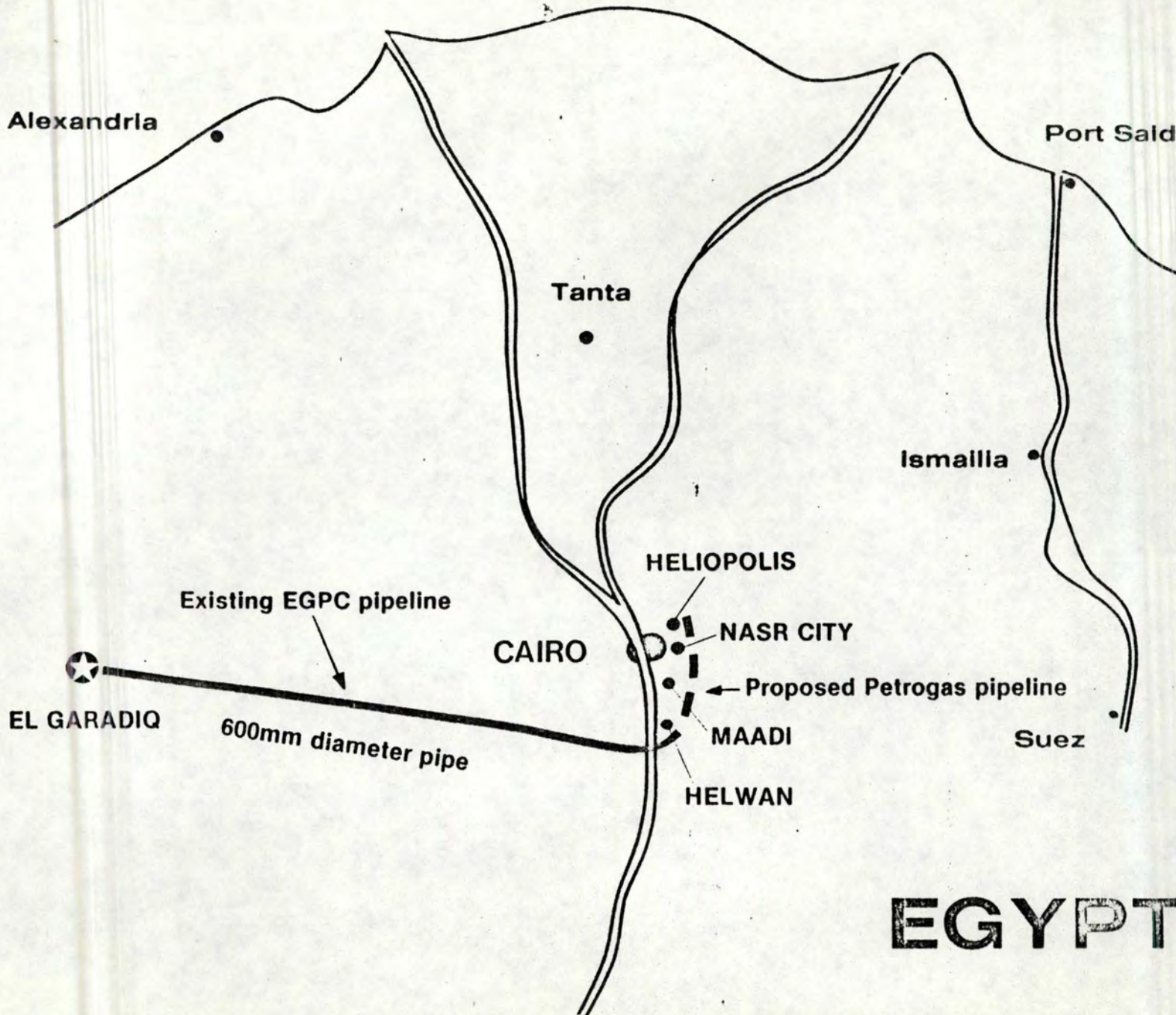
26. Most of the above issues were discussed with the officials of EGPC/PETROGAS in a review held in Washington between June 28 and July 1, and subsequently in Cairo on July 24 to July 30, 1979. An understanding was reached on most of the issues. On the basis of the above, it is recommended that the Cairo Gas Distribution Project be appraised during September-October 1979 for a possible IDA credit of about US\$50 million.

Prepared by: Vineet Nayyar
(Project Officer)

Reviewed by: Franz Kaps
(Loan Officer)

MEDITERRANEAN SEA

ANNEX I



Alexandria

Port Sald

Tanta

Ismailia

HELIOPOLIS

CAIRO

NASR CITY

MAADI

HELWAN

Suez

Existing EGPC pipeline

Proposed Petrogas pipeline

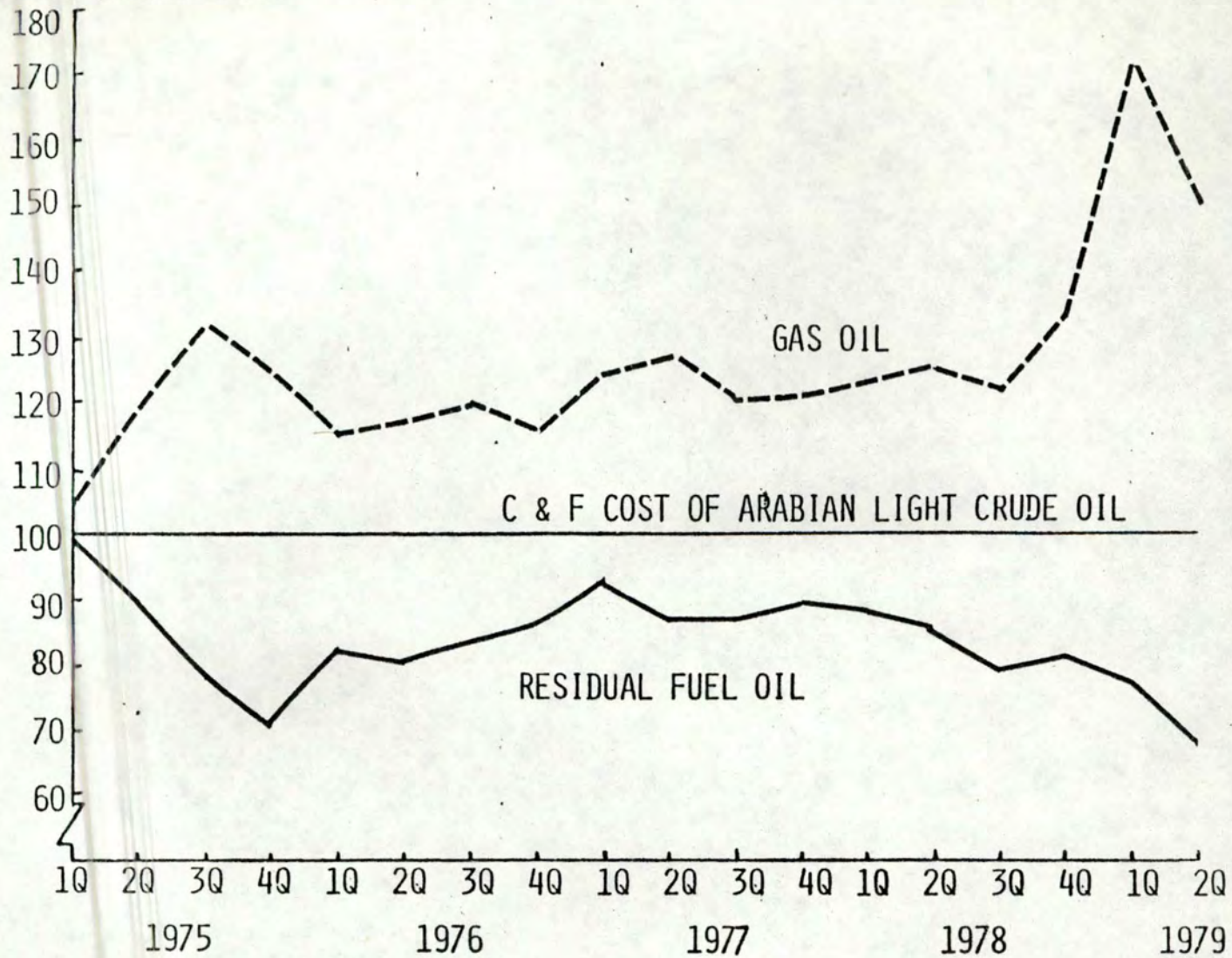
600mm diameter pipe

EL GARADIQ

EGYPT

SPOT PRICES OF GAS OIL AND HIGH SULPHUR RESIDUAL FUEL OIL IN MEDITERRANEAN CARGO
MARKETS EXPRESSED AS A % OF THE LANDED COST OF ARABIAN LIGHT CRUDE OIL

% CRUDE OIL C & F COST



Dr. Kapp

OFFICE MEMORANDUM

TO: Files

FROM: Franz Kaps *[Signature]* Loan Officer, EM1DA

SUBJECT: EGYPT - Proposed Cairo Gas Distribution Project

DATE: February 13, 1979

1. During a recent visit to Egypt, Mr. Zaborski and I met with Mr. Sami Selim, General Manager of Petro Gas, a subsidiary of the Egyptian Petroleum Corporation.^{1/}
2. Mr. Selim informed us that the prequalification for the above project was carried out in September 1978 as a result of which 9 out of 32 firms interested in participating as general contractors under the project have been prequalified.
3. As we have been informed before, Petro Gas has contracted British Gas to do the detailed project engineering and preparation of tender documents for the project. The present time schedule calls for completion of tender documents by February 23.
4. Mr. Selim intends to visit British Gas by the end of February to review the draft documents. He would be agreeable for the Bank to participate in said review. The bid documents are scheduled to be issued in March and bid evaluation should take place around August. Mr. Selim said that he hoped that contracts with suppliers could be signed as early as September 1979.
5. As to the project cost, he informed that present indications are that the project as designed would cost about LE50 million or about \$70 million of which about LE30 million or about \$42 million would be in foreign exchange.
6. Subsequent to the meeting with Mr. Selim, I met with Mr. Ramsy el Leithy, Chairman of the Egyptian Petroleum Corporation and Mr. Samir Koraiem, Undersecretary of the Ministry of Economy, Foreign Trade and Economic Cooperation, who confirmed the Government's interest in obtaining Bank financing for the project. A copy of Mr. Koraiem's letter specifying said request in writing is also attached.

Attachment

FKaps/mojw:cb

cc: Messrs. Paijmans (o/r)/Kaji, KÜpp, Zaborski, Fares (EML), Pollan, Fish (EMP), Bourcier, Nayar/Schober (IPD), Krishna (LEG)

^{1/} Address: 2 Medan, Kasr El Dubara, 8th Floor, Cairo.
(Office telephone: 31007, Mr. Selim's home phone: 32817)



MINISTRY OF ECONOMY
AND ECONOMIC COOPERATION
Economic Cooperation Division
Office Of The Under Secretary

Cairo, Feb. 7, 1979

CAIRO- Gas Distribution Project

Dear Mr. Koepf,

Further to Mr. R. ELLEITHY letter of Feb. 1, 1979. I would like to confirm the Egyptian Government's interest in obtaining financing from the World Bank group for the above project
Best Wishes.



Samir Koraiem
Samir Koraiem
Under Secretary

Mr. Eberhard Koepf
Division Chief
IBRD
Washington D.C