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STAFF APPRAISAL REPORT
GULF OF SUEZ GAS PROJECT

EGYPT

May 30, 1979

Petroleum Projects Division
Energy, Water and Telecommunications Projects

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CURRENCY EQUIVALENTS

LE 1.0	=	US\$1.44
LE 0.69	=	US\$1.00
LE 1,000,000	=	US\$1,440,000

WEIGHTS AND MEASURES

1 Metric Ton (mt)	=	1,000 Kilograms (kg)
1 Metric 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)
1 Ton Oil Equivalent (Toe)	=	10 Million Kilocalories (39.7 Million BTU)
Mcf/d	=	Thousand Cubic Feet per Day
MMcf	=	Million Cubic Feet
BPD	=	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
PPCO	-	Petroleum Pipeline Company
SOPCO	-	Suez Oil Processing Company
WEPCO	-	Western Desert Company
PETROBEL	-	Belayim Petroleum Company
LPG	-	Liquefied Petroleum Gas
NGL	-	Natural Gas Liquids
API	-	American Petroleum Institute
COPE	-	Cie. Orientals des Petrole D'Egypt
GPC	-	General Petroleum Company

FISCAL YEAR

January 1 - December 31

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I. ENERGY SECTOR

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 is viewing 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 1977, petroleum provided 70% of Egypt's commercial energy and its exports accounted for 25% of the foreign trade earnings. 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, though 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 too high, being only about 0.4% of the world resources. Its major oil fields are likely to peak in 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 in case it hopes to maintain its present status as exporter of energy over the next decade. It would in addition require to increase the economy's absorptive capacity for nonassociated gas and devise ways and means for utilizing associated gas currently being flared.

Energy Balance

1.03 The main sources of primary commercial energy in Egypt are hydropower and petroleum. While coal deposits have been discovered in the Western Desert and the Sinai Peninsula, they are not currently being extracted. As in other developing economies, non-commercial fuels in the form of crop residue and animal waste, are in extensive use but no data is available in regard to its magnitude. A recent study estimates energy produced by non-commercial fuels at around 5 million tons of oil equivalent, which would be about one-third of the total commercial energy used. On the basis of energy consumption, production of oil and generation of hydropower, an attempt has been made in the table below to estimate Egypt's energy balance (commercial) in terms of oil equivalent for 1977:

ENERGY BALANCE 1977
(thousands tons oil equivalent)

<u>Production</u>		<u>Consumption</u>	
Crude Oil /a	20,900	Coal /b	800
Hydroelectricity	2,600	Refinery Losses	500
Natural Gas	440	Petroleum Products	8,800
		Hydroelectricity /c	2,600
		Natural Gas /d	440
Total Availability	23,940		
		Total Domestic Consumption	13,140
		Exports (Net of Imports) /e	
		Coal	(800)
		Crude Oil /f	9,800
		Petroleum Products	1,800
		Total Exports	10,800

Sources of Energy

The major existing and potential sources of primary energy are indicated below:

(a) Oil and Gas

1.04 Hydrocarbons are a predominant source of commercial energy in Egypt. While production of oil in Egypt commenced in 1913, it was not until after 1968 that oil production exceeded 10 million tons. In 1978, against an estimated domestic consumption of about 10 million tons, the production level was around 500,000 barrels a day (25 million tons per annum) and the recoverable reserves are estimated at around 2.5 billion barrels (350 million tons). Associated with production of oil, gas to the extent of 100 million cubic feet a day (MMcf/d) is expected to be produced in 1979, which, but for a nominal oil field use, would be flared. Four non-associated gas fields

-
- /a Consisting of Egypt's share of production of 15.7 million tons and foreign partners share of 5.2 million tons.
- /b Estimated. Used largely to meet metallurgical requirements.
- /c Conversion factor 1000 KWH = 0.286 tons of oil (assuming 30% efficiency).
- /d 40,000 tons of gas purchased from partners.
- /e Includes stock change.
- /f Consists of 4.6 million tons (net) of exports by Egypt and 5.2 million tons of exports by foreign partners.

have been discovered which cumulatively have recoverable reserves of 3.5 trillion cubic feet. Egypt is currently planning to use associated gas and develop nonassociated gas which, when fully exploited, would annually replace liquid hydrocarbons to the extent of 4 million tons.

(b) Electric Power

1.05 Electricity was first introduced in Egypt in 1895. Up until the 1950's, electric facilities were confined to major population centers. Power was generated through isolated diesel and oil fired generators and the total generating capacity available in 1952 was only around 100 MW. While generation facilities increased thereafter, no national or regional grid existed; and for several years after the first generating capability had been created at Aswan, it operated as an isolated station supplying power to Upper Egypt and the fertilizer unit at Kima.

1.06 The first major power station in Egypt was set up at Aswan Dam. This Dam, which is located at the first cataract of the River Nile, was built in 1902, and raised successively in 1912 and 1933. The original purpose of the Dam was to provide flood control and irrigation and it was only in 1960/61 that it was equipped with power generating capabilities. The initial installed capacity of this hydro station was 345 MW. Between 1960 and 1970, the Aswan High Dam was completed seven miles upstream of the Aswan Dam. This Dam is equipped with 12 Francis type 175 MW hydraulic turbines giving it a total nameplate rating of 2100 MW. The operational capabilities of both the Aswan Dams is severely constrained by conflicting irrigation needs and transmission system reliability. As such, the dependable generating capacity of both these plants is currently being assessed at 1566 MW, capable of generating annually, 9 billion kWh. The untapped power potential of the River Nile consists of a 60 meter drop from Aswan to Cairo and from which 350 MW could possibly be realized with the extension of the Aswan High Dam and by adding generating facilities in three existing barrages at Nag Hammadi, Esna and Assiut. The other possible sites are in the nature of pumped storage schemes on the high plateaus; but they would only become viable if operated in conjunction with nuclear plants. The Qattara depression is the only other hydropower possibility. It would, however, involve canalizing water from the Mediterranean Sea to the depression (which extends 135 meters below sea level) and using the 60 meters descent to generate power. Estimated power capability of this project would be 640 MW during the first 12 years and 340 MW thereafter. However, construction of the proposed canal would require massive excavation (equal to about 40 times the volume required for the Aswan High Dam), and it is doubtful if this project could be viewed as a serious possibility over the next 20 years.

1.07 Whereas hydro capacity exists exclusively in Upper Egypt, most of the thermal power facilities have been established near the major load centers in Lower Egypt. These are in the form of steam power stations and gas turbine units having a dependable generating capacity of 919 MW and 236 MW respectively (Annex 1.01). In 1977, total gross generation was of the order of 13.5 billion kWh, of which two-thirds was through the hydro system. The hydropower

in Upper Egypt and the thermal power in Lower Egypt are interconnected by 500 kv lines running from the High Dam to Cairo over a distance of 788 kms. This is integrated into a unified power system through 230,132, 66 and 33 kv transmission lines and a distribution network of 11 kv lines functioning on a systems frequency of 50 H2.

1.08 The energy needs of Egypt are projected to rise rapidly and, in 1984, the net generation is expected to be about 29 billion kwh with a system requirement of about 4,600 MW. In addition to the existing reliable capacity of 2,721 MW, an additional 1,925 MW of steam units and 411 MW more of gas turbine units are under contract and are expected to be in operation by 1983 (Annex 1.02). These units would be just adequate to meet the anticipated requirements up to 1984, beyond which shortages are anticipated. The Egyptian Electricity Authority (EEA) is accordingly considering in terms of adding a 1,500 MW fossil fuel capability between 1983 and 1986 and commissioning four nuclear power plants having a combined capacity of 1,800 MW between 1987 and 1990. The addition of generating capacity in this magnitude along with the necessary transmission and distribution facilities would call for substantial investment, which for the period 1978-86 is estimated at about \$10 billion.

(c) Oil Shale and Coal

1.09 Oil shale deposits have been located in the Sinai Peninsula and around the Gulf of Suez. These deposits are only 10 to 15 feet in thickness and although a systematic survey has been undertaken, no estimates of reserve have been made. The available data indicates that shale is of poor quality having low hydrocarbon content and, as such, is not being considered as a possible energy resource. Coal deposits have been discovered in the Western Desert and in the Maghara anticline of the Sinai Peninsula. Total reserves are estimated at around 100 million tons of which only the Maghara deposits are considered recoverable to the extent of 35 million tons. However, these reserves are considered too small to be used for power generation. Furthermore, as this coal is not considered to be of coking quality, it would need to be blended with imported coal up to 75% before it can be utilized for metallurgical purposes. The other coal deposits have either not been characterized or are too poor to warrant economic exploitation.

(d) Nuclear Fuel

1.10 No uranium or thorium is currently being produced in Egypt. Extensive areas have, however, been covered by airborne surveys for radio activity and more than 7,000 anomalies have been identified. However, prospecting and ground radiometric work has been conducted on only 50 anomalies in the Qatrani, El Erediya, Missikat and Atshan areas. No discovery has been made on the basis of this survey. Geological conditions, however, appear favorable to the finding of uranium deposits but the matching of anomalies in the geologically favorable areas would need to be undertaken. Even if prospecting activities are accelerated, it appears doubtful if Egypt would be in a position to mine and extract nuclear fuel during the eighties.

(e) Solar Energy

1.11 Egypt has a vast potential for solar energy. Direct daily solar intensity is 350 calories/square centimeter in winter and about 710 calories/centimeter square in summer. In relation to the sunniest region in the United States (Albuquerque), northern Egypt receives 12.5% more of direct solar insolation and southern Egypt 70% more. Clouds and sand storms are the main causes of obstruction to direct solar insolation but their adverse effect does not exceed 4%.

(f) Geothermal and Wind Energy

1.12 Only limited information is available in regard to the existence of geothermal energy as only a few geochemical and heat flow measurements have been made in Egypt. There is no evidence to indicate the existence of high temperatures (greater than 200°C) vapor dominated system. Only a few water wells and natural springs yielding water at temperatures between the range of 40 to 60 degrees centigrade have been discovered. However, the possibility of discovering geothermal sources having a temperature of about 150 degrees centigrade are considered good. These low and intermediate temperature geothermal waters, cannot be used for generating power though they could conceivably be deployed for meeting the domestic and commercial requirements. Only two areas of Egypt, namely the Mersa Matruth region in the Mediterranean Sea and the Horghada region in the Red Sea, have recorded average wind speed high enough (around 20 km/hr) to warrant further investigation for the development of wind power generation.

(g) Non-Commercial Energy

1.13 Currently no data base exists for quantifying the extent of non-commercial energy use in Egypt. It is, however, apparent that this form of energy constitutes a significant proportion of the total energy use, specially in the rural areas. Egypt, however, is not too well endowed in biomass. Only 2.7% of its territory is under permanent or seasonal crops, the rest being desert or areas covered with dry or extremely arid vegetation. There is only a nominal area 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-third of Egypt's total energy requirements. As in other developing countries, the level of utilization of animal and vegetable wastes is very high though the end use efficiency is low; and typically of the order of 10% to 15%. 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 and this trend is likely to strengthen over the next twenty years; more so, as the major source of non-commercial fuels will continue to be crop residues and is not likely to keep pace with the rising rural demand. Considerable potential, however, exists for upgrading the end use efficiency through the adoption of improved appliances.

Pattern of Energy Use

1.14 Estimates in regard to current end use of petroleum products, natural gas and electric power, and the pattern as is likely to emerge in 1985, is given in the following table. The major shift in end use consumption relates to increased quantities of oil and natural gas being diverted for power generation. With rapidly rising demand for power, specially by the industrial sector, and on account of limited hydro potential, Egypt would need to rely largely on oil for power generation.

	Petroleum products 1000 Tons				Natural Gas 1000 Tons				Electricity Million kwh			
	1975	%	1985	%	1975	%	1985	%	1975	%	1985	%
Industry & Commerce	2,650	36	3,500	18	37	100	1,375	46	4,822	58.2	18,114	64
Agriculture	350	47	850	4					666	8.0	893	3.2
Transport	1,560	21	4,700	24					Nominal	-	Nominal	-
Electricity	1,130	15.3	5,800	30			1,600	53	-	-	-	-
Domestic	1,300	17.5	3,000	15.5			25	1	1,976	23.8	8,006	28.2
Others	398	5.5	1,650	8.5					830	10	1,298	4.6
	<u>7,388</u>	<u>100.0</u>	<u>19,500</u>	<u>100.0</u>	<u>37</u>	<u>100</u>	<u>3,000</u>	<u>100</u>	<u>8,294</u>	<u>100.0</u>	<u>28,311</u>	<u>100.0</u>

Energy Sector Planning

1.15 A joint assessment of Egypt's energy resources and planning was conducted during March-July 1978 by a US team of experts under the management of US Department of Energy in collaboration with Egyptian management and technical officials. The binational team assessed Egypt's energy resources to the year 2000 and the energy demand and supply options which are now or will be available to Egypt by that time. A report setting out several major observations that can be drawn from the assessment was distributed in December 1978. Major issues are the gaps and inconsistencies present in Egypt's current energy and related planning and the lack of an adequate planning data base. In addition, the report points out the need to strengthen Egypt's current ability to expand its energy supply capacity and Egypt's needs for continuing assistance in establishing a comprehensive energy planning capability and in preparing and implementing these plans effectively. To firm up these efforts, the Bank has agreed with the Government in the context of the proposed Shoubrak El Kheima Power project which is scheduled for consideration by the Executive Directors on June 19, 1979 to establish not later than December 31, 1979 an Inter-Ministerial Coordinating Committee on Energy to follow up on the work initiated by the Egypt/United States joint energy assessment team. Specific tasks to be assigned to the Committee would be:

- (a) take the lead responsibility and authority for integrated energy planning activities in Egypt;
- (b) promote the active participation of the agencies that are responsible for planning in various sectors of the economy;
- (c) coordinate the involvement of economic, finance and budget agencies in the energy planning activity; and
- (d) establish a structured process for policy level reviews of the final product of the energy planning activities.

The new Committee would supersede and expand the functions assigned to the Ministerial Committee on Energy created under Prime Minister Decision No. 252 of October 26, 1974.

II. OIL AND GAS SECTOR

Background

2.01 Oil seepage was noted as early as the Roman times in the Gulf of Suez. Though the first well was drilled in 1886, oil exploration was not taken up on a systematic basis till the turn of the century. The first oil field was discovered in 1908. So far, 39 commercially exploitable oil and gas fields have been discovered in Egypt having recoverable reserves of 530 million tonnes of oil and 3.5 trillion cubic feet (cft) of gas. As most of the Egyptian oil fields have been producing over a considerable time, the remaining recoverable oil reserves as of the present are estimated at 350 million tonnes.

Oil and Gas Bearing Structures

2.02 The main oil and gas bearing zones in Egypt are:

- (a) Gulf of Suez: This, 320 km arm of the Red Sea between the Eastern Desert and Sinai Peninsula comprising of about 20,000 sq. km has been most extensively explored and has yielded the most prolific results. Geologically, it is believed that Miocene shales transgressed over the pre-Miocene faults to form oil reservoirs. More than 300 exploratory wells have been drilled in this area (including about 80 which are either offshore or on islands) resulting in the delineation of 28 oil fields. Currently, more than 90% of Egypt's oil is produced from the Gulf of Suez.

- (b) Western Desert: This prospective zone covers an area of 650,000 sq. km and extends from the Mediterranean coast to latitude 25°N and its eastern boundary is bounded by the Nile Delta. It has been extensively surveyed and more than 200 exploratory wells have been drilled. The success ratio attending this extensive exploration has been low and so far only 7 commercial discoveries of oil and/or natural gas have been made. Oil has been discovered in limestone and Cretaceous reservoirs and the recoverable results established so far, are 30 million tons of oil. In addition, gas fields, cumulatively having reserves of more than 1.6 trillion cft have been discovered at Abu Gharadig and Abu Qir. Despite limited success, hope of making a major strike still persists as giant fields have been discovered in similar structures in the neighboring countries.
- (c) Nile Delta: Geologically, the Nile Delta forms a part of the upper tertiary basin of the Miocene and Pliocene structures, covers an area of about 50,000 sq km and so far 50 exploratory wells have been drilled. No oil has been discovered though four gas fields have been found of which only one, Abu Madhi, is considered commercially exploitable. The possibility of making further gas discoveries in the Nile Delta is assessed as high by the Egyptian General Petroleum Corporation (EGPC). Mobil and Esso, through a production sharing agreement, are currently engaged in exploratory drilling in the offshore areas of the Delta. Exploratory drilling has also been undertaken in the Red Sea and in the Nile Basin but with no success to date.

Exploration Policy

2.03 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. ^{1/} Prior to 1938, exploration and production of oil was exclusively with the Anglo-Egyptian Oil Company, an affiliate of British Petroleum and Shell. Immediately after the World War, Esso, Caltex and subsequently Ente Nazionale Idrocarburi (ENI), Philips Petroleum and Amoco were granted 'Concessions' to explore the Western Desert and the Gulf of Suez. However, as of 1973, the Government of Egypt has made a conscious effort to invite foreign companies and since then 53 exploration and production agreements have been entered into for an area covering about 160,000 sq km (Annex 2.01).

^{1/} The only exception is the General Petroleum Corporation (GPC) - a fully-owned subsidiary of EGPC, which was formed, after the Anglo-Egyptian Oil Company was taken over.

Exploration Agreements

2.04 History. The nature of exploration agreements have seen the usual transition from the 'Concessions' of the pre-1960's, to the participation agreements which were subsequently converted into production sharing agreements. Under the concession arrangements, the government would impose royalty and tax on the oil companies, provided the tax, etc., did not exceed the oil companies', net of cost realization (which were computed on the basis of a posted price) by more than 50%. In 1963, the Government of Egypt for the first time entered into a participation agreement with the ENI whereunder the costs of exploration and development were shared equally between the foreign contractor and the national oil company. The profit oil was also shared equally, with the Government reserving the right to tax the foreign contractor to a maximum level of 50% on his share of profit oil. By this device, the level "Government take" was increased significantly over the earlier concession arrangements.

Production Sharing Agreements

2.05 In 1970, following the Indonesian model, the Government of Egypt entered into the first production sharing contract. Under this agreement, the cost of exploration and development was to be borne exclusively by the foreign contractor and amortized, interest-free over the next 4 and 8 years respectively. After taking into account amortization, and also the operating cost, the profit oil was to be shared between the foreign contractor and the Government in the ratio of 40:60. In successive agreements, Egypt has improved upon these conditions and currently some agreements have been concluded in which Egypt's share in the profit oil has been negotiated at 87%. Furthermore, a minimum cost recovery factor is assumed at 20% and in the case of costs falling below this level, the difference is appropriated by the State. The contractor's share of oil is free of all taxes and in the event of any tax being assessed by any authority within Egypt, EGPC is obligated to reimburse the foreign contractor to the extent of the assessed tax.

Exploration Plan

2.06 The Exploration Policy, as pursued by Egypt, has well served the Government's objectives of maximizing oil production without bearing any risk of exploration. Of the present level of production of about 500,000 barrels per day, as much as 470,000 barrels are produced from these concessions. Over the next four years, geological surveys, seismic work and exploratory drilling (both offshore and onshore) as is expected to be undertaken by oil companies in various structures, is indicated in the Table below:

EGYPT'S EXPLORATION PLAN 1979-82

Area	Geophysical Surveys (Party Months)			Exploratory Drilling (No. of Wells)		
	Onshore	Offshore	Total	Onshore	Offshore	Total
Red Sea	-	4	4	-	4	4
Gulf of Suez	40	29	69	20	29	49
North Sinai	16	2	18	8	2	10
Nile Delta	16	2	18	8	2	10
Western Desert						
Mediterranean	<u>40</u>	<u>2</u>	<u>42</u>	<u>20</u>	<u>2</u>	<u>22</u>
Total	<u>112</u>	<u>39</u>	<u>151</u>	<u>56</u>	<u>39</u>	<u>95</u>

Current and Anticipated Level of Oil Production

2.07 Over the past few years, there has been an impressive recovery in the production of oil in Egypt which rose from 11.5 million tons in 1974 to 20.9 million tons in 1977, a level which had earlier been attained in 1969. Field-wise production of oil from 1955 to 1976 is indicated at Annex 2.02. EGPC's projections, as indicated in the Table below, envisage that the production of oil would reach a level of about 50 million tons by 1982 and remain at that level thereafter.

EGYPT'S FORECAST OF PETROLEUM PRODUCTION 1/
(in Million Tons)

Operating Company		Actual 1977	Estimated 1978	1979	1980	1981	1982	1983	1984	1985
1.	GPC	1.5	1.2	1.1	1.0	0.95	0.8	0.7	0.6	0.5
2.	COPE	3.5	4.4	4.5	4.0	4.0	3.8	3.6	3.4	3.4
3.	GUPCO	14.4	18.9	24.6	29.0	29.0	26.35	21.3	18.8	16.8
4.	ABU GHARDIG	0.9	0.8	0.7	0.4		-	-	-	-
5.	WEPCO	0.6	0.5	0.6	0.5	0.3	0.1	0.1	0.1	0.1
6.	WEPCO (Moleha)	-	-	-	0.1	0.16	0.15	0.1	0.1	0.1
7.	DEMINEX	-	-	0.3	0.3	0.3	0.3	1.0	1.2	1.2
8.	New Discoveries	<u>-</u>	<u>-</u>	<u>-</u>	0	12.1	15.3	20.0	22.6	24.7
TOTAL		20.9	25.8	31.8	36.6	46.8	46.3	46.8	46.8	46.6

1/ In the event of Egypt regaining Sinai from Israel, it would secure an oil field which is reportedly producing 20,000 bbl./day or 1 million tons per annum. EGPC considers the hydrocarbon potential of this area as high warranting intensive exploratory effort.

While Gulf of Suez crude, designated as El Morgan Blend has an API gravity of 32.7 degrees, the Sinai Peninsula crude (Belayim) is of relatively low value, having high sulfur content. GUPCO secures 75% of the oil production from the Gulf of Suez; essentially from El Morgan, July and Ramadan oil fields.

2.08 Egypt anticipates a sharp upswing in petroleum production which is projected to exceed 35 million tons by 1980 and reach 47 million tons by 1982, a production level it hopes to sustain over the next 20 years. These projections take account of the fact that major oil fields, which currently account for 80 percent of Egypt's oil production, are anticipated to peak by 1981. Attainment of the targeted production rate of 47 million tons is, predicated upon new discoveries being made, which will not only double the current level of production but would also make good the decline in production from oil fields which have 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 target stipulated for the current Five Year Development Plan (1978-82).

Refining, Transportation and Marketing

2.09 An element of duality can be discerned in Government's policy toward foreign companies in the oil sector. While in exploration, Egypt has actively sought foreign assistance/participation, insofar as refining, transportation and marketing of oil products is concerned, it has followed a policy of progressive nationalization. The International Egyptian Oil Company (IEOC) was partially nationalized in 1957. In 1964 the Petroleum Cooperative Society, formed in 1934 to refine and market products, was nationalized. In the same year, the Suez Refinery was nationalized to form the El Nasr Oil Company and SERCOP formed in 1954 to establish and operate a refinery in Alexandria was fully nationalized and renamed as the Alexandria Oil Company. Currently, all refining, transportation and marketing 1/ is in the hands of EGPC or its fully owned subsidiaries.

Refining Capacity

2.10 The first refinery in Egypt was built in Suez in 1913. Currently, Egypt has six refineries located in Suez, Alexandria, El Ameria, Cairo and Tanta cumulatively having a capacity of about 12 million tons. However, after completion of current debottle-necking and balancing programs, the capacity will increase to about 16 million tons. The current refinery throughput is of the order of around 11.5 million tons. The product yield as anticipated by EGPC from its refineries is indicated in the table below:

1/ Mobil and Esso are still involved in marketing of oil products, but together, they share less than 25% of the market.

PRODUCT YIELD OF EGYPTIAN REFINERIES
('000 tons)

Products	Actual			Estimated	Projected			
	1977	1976	1977	1978	1979	1980	1981	1982
Butane and Propane	49	59	63	54	48	48	75	93
Gasoline/Naphtha	1,331	1,476	1,556	1,553	1,731	1,812	1,980	2,151
Kerosene	1,142	1,320	1,381	1,400	1,480	1,550	1,668	1,747
Turbine Fuel	152	119	123	220	230	240	150	166
Gas Oil	1,607	1,717	1,957	1,788	1,775	1,840	2,295	2,525
Fuel Oil	4,165	5,056	5,272	5,582	6,418	6,470	7,185	7,899
Asphalt	118	135	145	235	200	200	300	330
Lube Oils	31	39	48	80	90	100	150	150
Others	19	23	20	69	22	22	126	96
Total	<u>8,614</u>	<u>9,944</u>	<u>10,655</u>	<u>10,961</u>	<u>11,994</u>	<u>12,282</u>	<u>13,929</u>	<u>15,157</u>

2.11 It would be seen from the table that the proportion of low value heavy ends like fuel oil and asphalt is more than 50% while the output of relatively high value middle distillates is relatively low (35%); this is despite the fact that increasingly Egyptian refineries have been using a much larger proportion of relatively light El Morgan crude having specific gravity of 32°API. Investment in secondary processing including installation of fluid catalytic crackers, could with advantage, be considered by EGPC, more so as demand for middle distillates and light ends is anticipated to rise.

Transportation and Marketing

2.12 For internal transportation and marketing of petroleum products, EGPC uses a variety of modes including product pipelines, railways, barges, and road transport. In 1977, it is estimated that 7 million tons of products moved by pipeline, 5 million tons through trucks, 600,000 tons through railway and another 600,000 tons through river barges. A pipeline network to carry 8 million tons of crude from Ras Shukeir to Suez is currently under construction. From Suez to Cairo, two pipelines having a capacity of 5 million tons already exist. These pipelines had earlier been constructed for transporting black and white products, but are currently being used to transport crude to the Cairo refinery. Separately, another product/crude pipeline has been constructed from Cairo to Alexandria via Tanta. This pipeline is capable of working in reverse direction and is being used both for pumping crude and white 1/ products. Additionally, there is a product pipeline from

1/ White products, which constitute the light ends and middle distillates of crude oil, comprise typically of motor gasoline, naphtha, kerosene, diesel oil, etc.

Helwan to Tebbin which has a capacity of 1.5 million tons and is used for transporting products to Upper Egypt. Two other product pipelines, each having a capacity of 0.75 million tons, exist from Tanta to Mansura and Benha to Zagazig. Recently the Sumed pipeline, consisting of two 42" pipelines and having a capacity of 80 million tons, was completed at a cost of US\$500 million. This 320 mile pipeline connects Ain El Soukhna on the Gulf of Suez to Sidi Kreir on the Mediterranean, is owned jointly by Egypt (50%), Kuwait (15%), Saudi Arabia (15%), UAE (15%) and Qatar (5%) and will be used for transporting Persian Gulf crude to Europe. It is currently being used by Exxon, Mobil and Agip, and its throughput as at the beginning of the current year was reported to be running at 415,000 bbl/day.

2.13 While Mobil and Esso continue to market petroleum products, the major share of the market is controlled by two subsidiaries of EGPC, namely the Cooperative Petroleum Company and Misr Petroleum Company.

Consumption Pattern

2.14 Consumption of petroleum products has been rising sharply and in 1977 was of the order of 9.1 million tons against 6.7 million tons in 1974. While the overall annual growth rate was of the order of around 9.5%, motor gasoline and LPG recorded a growth rate ranging from 13% to 15%. Over the next four years, EGPC projects a growth rate of 12.5%. A qualitative change in the pattern of consumption is, however, anticipated with natural gas being increasingly used to substitute liquid hydrocarbons especially fuel oil. It is hoped that by 1980, natural gas would replace fuel oil to the extent of 2 million tons and in 1985 by 3.6 million tons. A precise assessment of the likely demand for petroleum products during the eighties must await the preparation of a detailed input output matrix; based on the past trend and in the anticipation that gross national product would grow at about 6.5% in real terms, consumption level by 1985 could be of the order indicated in the table below. For purposes of working out the demand for fuel oil, the requirements of the Power Sector have been taken account of separately.

PROJECTED CONSUMPTION OF PETROLEUM PRODUCTS
(⁰000 tons)

<u>Product</u>	<u>Actual</u>		<u>Projected</u>		<u>Average</u>	
	<u>1974</u>	<u>1977</u>	<u>1980</u>	<u>1985</u>	<u>Growth Rate Per Year</u>	
					<u>1974-77</u>	<u>1977-85</u>
					<u>%</u>	<u>%</u>
Butane and						
Propane	159	247	350	630	16	12.5
Gasoline	556	833	1,200	2,200	13.5	12.5
Naphtha	24	18				
Kerosene	1,109	1,363	1,750	2,600	7	8.5
Turbine Fuel	119	101	250	400	-15	19
Gas Oil	1,055	1,507	2,200	3,500	10.5	10
Diesel Oil	168	150				
Fuel Oil &						
Natural Gas:						
Power	849	1,529	3,600	7,700	21	22.5
Others	2,471	3,031	3,700	5,400	7	7.5
Asphalt	64	142				
Lube Oils	<u>93</u>	<u>129</u>	<u>390</u>	<u>670</u>	<u>20</u>	<u>12</u>
Total	<u>6,667</u>	<u>9,050</u>	<u>13,440</u>	<u>23,100</u>	<u>11</u>	<u>12.5</u>
Availability						
of Natural						
Gas (fuel						
oil equiv-						
alent)			2,000	3,600		
Demand for Liquid						
Hydrocarbons			<u>11,440</u>	<u>19,500</u>	<u>11</u>	<u>10</u>

2.15 From the above, it would be seen that the consumption of petroleum products is projected to grow annually at around 11% between 1980 and 1985. This in part is attributable to a quantum jump in thermal power generation which is anticipated to rise from 17.1 billion kwh to 28.3 kwh. The growth rate beyond 1985 would depend in part on the induction of nuclear power. Delay in commissioning of the proposed nuclear plants (which is not unlikely) having a capacity of 2400 MW (between 1986 to 1990) would result in a greater reliance on fossil fuel for power generation.

crude averages to around \$11 per ton - a figure which is net of about \$17 per ton paid to the Government in excise fees and treasury dues. Thus, the total revenue which the economy derives from the sale of crude domestically is around \$30 per ton or \$4/bbl - which is about equal to what it costs Egypt to produce a barrel of oil in terms of cost oil and profit oil. In relation to the level of petroleum production, the fiscal and budgetary contribution to the economy is minimal. In 1978, a production level of 25 million tons valued at around \$2,500 million is envisaged; but the revenues which Egypt would secure from domestic sales and exports would be about \$1 billion.

Natural Gas

2.18 Associated Gas. The current level of production of associated gas in Egypt is around 100 million cubic feet a day (MMcf/d), and save for a nominal amount which is being used for meeting oil field needs, the rest is being flared. The energy thus lost is equivalent to around 1 million tons of oil equivalent, which is more than what Egypt currently uses for power generation. This gas is rich in butane and propane and has an average calorific value of 1350 BTU/cft. Most of the associated gas is produced from the fields of El Morgan, July, Ramadan and Block 382 in the Gulf of Suez, and according to present estimates, the total gas which would be produced in association with oil from these fields would be of the order of 450 billion cft. The proposed project aims at recovering and utilizing this gas in Suez and Cairo by constructing a pipeline from Ras Shukeir to the city of Suez. Surplus gas would move to Cairo through existing pipelines.

2.19 Non-Associated Gas. Non associated gas on a commercially exploitable scale has been discovered at Abu Qir, Abu Madhi, Abu Gharadig and the Amal field. It has an average calorific value of 1100 BTU/cft, is clean with virtually no sulfur content. The main gas fields are:

- (a) Abu Qir. This gas field 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. This gas is now in the exclusive ownership of EGPC. The recoverable reserves have been estimated at 1.2 trillion cf which would be capable of sustaining a supply of 100 MM cf/d for around thirty years. A 57 km pipeline having a capacity of 100 MM cf/d has been constructed from Abu Qir to Alexandria and therefrom to Damanhur via Kafr El Dawar. While the current level of absorption is low, in order to fully utilize the gas, a urea plant having a capacity of 570,000 tons, a 220 MW power station in Damanhur and a 300 MW station at Kafr El Dawar are currently under construction. Supplies likely to become available from the Abu Qir field are fully committed on the basis of existing investment decisions (Annex 2.03). The Elf-Aquitaine group has recently found gas shows in this region, but the discovery, which appears promising, is yet to be quantified.

- (b) Abu Madhi. This gas field was discovered in the Nile Delta by ENI but after the renegotiation of the production sharing agreement it now belongs exclusively to the Egyptian Government and is being operated by Petrobel, a subsidiary of EGPC. Recoverable reserves are estimated at 0.8 trillion cf capable of supplying 100 MMcf/d for about 20 years. Currently 15 MMcf/d are being utilized by the Talkha ammonium nitrate plant and the El Mahala El Kubra Textile Mill. With the commissioning of the Talkha Urea Plant (570,000 tons) and the Talkha Power Station, this gas supply would be fully preempted.
- (c) Abu Gharadig. This gas field was discovered in 1971, has estimated recoverable reserves of 0.8 trillion cft and is being operated by GUPCO, a subsidiary of AMOCO and EGPC. For purposes of utilizing this gas, a 24" pipeline has been built over 370 km from Abu Gharadig in the Western Desert to Helwan near Cairo. Though the current level of utilization is low, the gas supply is likely to be fully taken up by the cement plants, the Helwan steel mill and the 240 MW Helwan Power Station (Annex 2.03). In addition, thereto, EGPC proposes to supply this gas to four districts of Cairo as domestic fuel so as to replace LPG which is currently being imported, and has requested Bank assistance for this purpose.
- (d) Amal Field. This gas field, located offshore in the Gulf of Suez, was discovered by AMOCO and has recoverable reserves of 0.5 trillion cft. This company has relinquished its rights on this gas field, which would be developed, if considered necessary, by EGPC. In the proposed project, Amal gas, it is envisaged, would supplement associated gas when supply of associated gas falls below 80 MMcf/d.

2.20 The recoverable reserves, the present level of production and the projected consumption level is indicated in the Table below:

EGYPT - NATURAL GAS RESERVES AND PRODUCTION
(in thousand tons)

<u>Area</u>	<u>Recoverable Reserves</u> (Trillion cf)	<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 Madhi	0.8	132	168	250	400	900
Abu Gharadig	0.8	264	515	700	800	800
Abu Qir	1.2	-	85	350	450	1,000
Gulf of Suez	0.45	Flared	Flared	Flared	Flared	300
Amal 1/	0.5	-	-	-	-	-
Total		<u>396</u>	<u>768</u>	<u>1,300</u>	<u>1,650</u>	<u>3,000</u>

Proposed Investment in Petroleum Sector

2.21 Egypt plans to make substantial investment in the petroleum sector over the five year period 1978-82. Besides expenditure on exploration and development of production facilities, resources for which would come essentially from foreign companies, EGPC proposes to invest in refining, marketing and transportation. The existing grid of gas and crude/products pipelines too would be expanded.

2.22 The total sector investment between 1978-82 is tentatively estimated at LE 3,264 million. The break-down of the planned investment is indicated below:

1/ Production planned only on the contingency of associated gas for the Ras Shukeir project falling below 80 MMcf/d.

Investment Plan for Petroleum Sector 1978-82
(million Egyptian Pounds)

	<u>Total</u>	<u>Foreign Exchange Component</u>
<u>Production and Exploration:</u>		
EGPC	173	127
GPC	69	50
Foreign Contractors:		
i. Exploration	542	434
ii. Production and Development	<u>1,500</u>	<u>1,200</u>
Subtotal	2,284	1,811
<u>Refining and Processing:</u>		
EGPC	469	319
Alexendria Petroleum Co	73	41
Suez Oil Processing Co.	88	54
El Nasr Petroleum Co.	<u>103</u>	<u>70</u>
Subtotal	733	414
<u>Marketing and Distribution</u>		
EGPC	157	110
Misr Petroleum Co	29	19
Coop. Petroleum Co	54	27
Petroleum Pipelines Co	3	1
Mobil	2	2
Esso	<u>2</u>	<u>2</u>
Subtotal	<u>247</u>	<u>161</u>
Total Investment	[US\$4700 million] 3,264	2,386
Public Investment	[US\$1750 million] 1,218	748
Private Investment	[US\$2950 million] 2,046	1,638

2.23 The major share of the planned public investment LE 1.2 billion (US\$1.75 billion) would need to be financed by the Government as the retained surplus with EGPC under the present Government policy regarding retention of public sector companies' and corporations' profits is not anticipated to exceed LE 50 million for the same period. An element of uncertainty attaches to the proposed public investment in the refining and processing sectors. Precise sources of funds have not been fully identified and in the case of

certain major investments, such as the proposed petrochemical complex and the new refinery in Suez, serious project preparation has not yet been initiated. Similarly, investment in production and development of oil (almost 50% of the proposed investment) by foreign contractors is only indicative and would, to a large extent, depend upon the nature and magnitude of new discoveries.

Issues and Recommendations

2.24 A recent review of Egypt's energy sector brings out the need for Egypt to take major policy decisions in order to optimize the use of internally available energy resources and ensure adequate supply for the future. In order to assist Egypt in taking these decisions, an agreement was reached with the government and EGPC that EGPC undertake, with Bank's financial and technical assistance, the following sector related studies.

(a) Exploration Study

The current projections regarding the attainment of a production level of one million barrels a day by 1982 is predicated upon discoveries being made which would not only double the current level of production but also compensate for reduced production in oil fields which are likely to peak by 1980-81. Consumption levels may also be higher than those currently anticipated. Therefore, if Egypt has to rely upon oil as a major source of foreign exchange earnings, it would need to redouble its efforts in oil exploration. Despite Egypt having entered into as many as 53 production sharing agreements, the interest of foreign oil companies appears to be slackening, especially in the western desert.

One possible way of stemming this trend would be for Egypt to reorganize, collate and reinterpret the existing geological seismic and drilling data. The purpose of this review would be to assess whether the current exploration program is adequate and as to whether there is a need to reorient it towards other prospective areas which may have been neglected initially because of a higher cost or lack of data. Parallel to this effort, the study would also cover past production data and assess whether it would be viable to go in for enhanced/secondary recovery. We anticipate that this study would be taken up in two stages. The first would attempt to quantify the problem and identify areas requiring detailed analysis. This would form the basis for drawing up the terms of reference for the subsequent and more detailed study.

(b) Pricing Study

Egypt currently prices a barrel of crude for domestic consumption at less than \$4 (including excise, taxes, etc.) against international price of more than \$14. By artificially maintaining the petroleum price at this level, it is losing a unique opportunity of using its finite petroleum wealth for raising domestic resource. Such a pricing policy, in addition, encourages wasteful consumption and could accelerate growth well beyond the level currently stipulated. Selective increase in price, especially of products like motor gasoline and diesel oil, therefore, requires immediate consideration.

Yet it is anticipated that Egypt will not consider a general price increase until its incidence on end prices and on various categories of consumers has been quantified and carefully evaluated. As a first step towards more realistic pricing of petroleum products, Egypt would undertake a study, as a part of this loan which would, inter alia, aim at evaluating the effect of discrete price increases of goods and services in which petroleum products constitute an important input. This study would attempt at suggesting various sets of policy options for the Government spelling out clearly the fiscal and other implications of the proposed measures and its effect on demand and consumption pattern.

(c) Gas Utilization Study

Important gas discoveries have been made in Egypt during the last decade. It is, however, easy to overestimate the abundance of gas. These finds (both associated and non-associated) when fully developed would produce not more than four million tonnes of oil equivalent energy. Over the long run, these gas fields would need careful husbanding so as to maximize the benefits which the economy can derive therefrom. Natural gas usage would also need to be upgraded from fuel equivalent for boilers to higher value use, such as, fertilizers, domestic fuel, etc.

However, the process of evolving a set of policy options for the economy is a complex one requiring difficult technical and economic evaluation. As a part of the loan an optimization study will therefore be undertaken and a gas development plan prepared thereunder. This plan could form the basis of the Bank's future lending operations.

Terms of reference for the above studies were reviewed and broadly agreed upon during negotiations. Consultants for the studies will be appointed shortly; completion of the exploration study is expected by June 30, 1981, while the pricing and gas utilization studies should be completed by June 30, 1980, respectively. EGPC agreed to implement all recommendations that are satisfactory to the Government, EGPC and the Bank in accordance with an agreed time schedule for each study.

III. THE BENEFICIARY

History

3.01 To oversee all matters relating to the petroleum industry and especially after the sequestration of Anglo-Egyptian Oil Company, Egypt General Petroleum Company was created in 1956. With the general restructuring of the public sector in 1962, this authority was converted into the Egyptian General Petroleum Organization (EGPO) with almost similar functions. With the promulgation of Law 20 of 1976, EGPO was converted into Egyptian General Petroleum Corporation (EGPC), the beneficiary of the proposed loan. While the Ministry of Petroleum, which was created in 1973, acts as a link between EGPC and other government bodies, the primary responsibility of managing and operating the petroleum sector rests with EGPC.

Statutory Functions

3.02 The main functions of EGPC under Law 20 are to:

- draw up a general policy for converting and granting concessions, negotiating and preparing concession agreements for approval of the government;
- supervise exploration and exploitation activities of the oil companies engaged in the search of oil and production of oil and/or natural gas;
- plan, coordinate and control the activities of various affiliates in the field of production, refining, transporting and distribution of petroleum products;
- undertake the export of crude oil and petroleum products and effect similar imports for balancing domestic requirements;

- determine, in conjunction with other competent authorities, the pricing of petroleum products; 1/ and
- supervise the operation and management of all subsidiary companies.

Capital Structure

3.03 EGPC's capital of 50 million Egyptian Pounds is invested in the capital of joint venture companies and in companies established for participation in oil production with foreign partners. Funds available to EGPC for its operation, consists of its share in the net profits of all its affiliates in the petroleum sector, its share in the net profit of the joint venture companies and profits arising out of supervision and administrative fees. In addition, it secures funds from the government as loans. EGPC, as a distinct corporate entity, can and has borrowed from external financial agencies.

Organization and Management

3.04 EGPC is governed by a Board consisting of the Chairman and three Vice-Chairmen who are in charge of exploration and production, planning and projects and operations. In addition, thereto, a General Manager (administration), and General Manager (Finance) are members of the Board. Separately, through a ministerial decree, three Chairmen of subsidiary companies (General Petroleum Company, Suez Petroleum Company and the Petroleum Cooperative Society) along with the General Manager of the Egyptian Petroleum Research Institute have been appointed to the Board of EGPC (Annex 3.01).

3.05 EGPC has been vested with considerable autonomy. Within the framework of general policies set by the Supreme Petroleum Council and stipulated in the Company's statutes, its Board is competent to issue any decree it deems suitable, any governmental regulation or system to the contrary, notwithstanding. It is, therefore, competent to establish its own internal regulations for financial, administrative and technical management, as also evolve its own norms regarding conditions of employment, remuneration, etc. EGPC is, however, obliged to consider policy directives issued by and otherwise function under the guidance of the Supreme Petroleum Council which is presided over by the Minister of Petroleum and for which EGPC functions as a secretariat. Furthermore, all resolutions of the Board have to be approved by the Minister of Petroleum who can, at his discretion, amend or cancel any such resolution.

1/ While Law 20 vests with EGPC the authority to determine prices, in effect prices have been fixed through governmental decree in which EGPC, has at best an advisory role.

3.06 EGPC's management at the senior level is competent and experienced in various aspects of the oil and gas industry. It has, over the last decade, expanded the marketing organization to meet 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 competence. It has created within its organization a specialized group which has successfully negotiated production sharing agreements with 53 foreign oil companies. Separately, EGPC has developed three non-associated gas fields within Egypt and linked them to the market. While foreign partners are largely responsible for the production of oil, EGPC closely monitors their exploration and development programs. Egypt's improved energy position is in no small measure due to EGPC's effective intervention in the sector. It currently faces the problem experienced by many national oil companies of competing with the private sector and the Gulf area for experienced staff. Rapid growth has further strained its managerial resources. Plans are underway to install a computerized management information system to assist in effective control of these multi-faceted operations which will increase in complexity as time goes on. EGPC may find concurrent review of its management system and practices rewarding. There is an apparent need for assistance in the area of financial planning, rationalization of accounts and budgeting techniques. There is also a need to give the Company's finance and economics division staff wider exposure and further training in current industry procedures and practices. The proposed loan would include funds for financing consultants (para. 5.10) and training.

Functional Structure

3.07 EGPC functions as a holding company and performs the variegated functions with which it is charged through seven fully owned affiliates; three operating companies formed in partnership with the foreign oil companies and two joint ventures. These companies have been set up on a functional basis and relate to the following sectors (Annex 3.02).

(a) Exploration and Production

3.08 All work relating to geophysical surveys and exploration are carried out by General Petroleum Company and 53 foreign contractors who have been awarded concessions in Egypt. These companies, under the terms of their agreements, are obliged to spend a fixed amount on exploration and surveys during the primary exploration period. The annual work program of each of these companies is drawn up under the general framework of its respective agreement and reviewed and approved by a joint committee consisting of the representative of EGPC and the company. Once a commercial discovery has been made, a non-profit operating company is formed which operates and works the concession on behalf of the partners and allocates oil (after deducting operating costs) to the partners in accordance with the terms of the concession agreement. Currently, there are three such operators, namely, the Gulf of Suez Petroleum Company (GUPCO), the Western Desert Company (WEPCO) and the

Belayim Petroleum Company (PETROBEL). GUPCO was formed in participation with AMOCO, WEPCO in participation with Phillips Petroleum Co., and PETROBEL in participation with the Delta Petroleum Co., Oriental Petroleum Co. and the International Egyptian Oil Co.

(b) Refining and Processing

3.09 All refining and processing of petroleum products is undertaken by three fully owned affiliates for EGPC, namely, El Nasr Petroleum Company, Alexandria Petroleum Company and the Suez Oil Processing Company. The Suez Oil Processing Company, which would be responsible for supervising the construction and thereafter possibly operating the processing unit of this project; currently owns and operates three refineries at Suez, Tanta and Mostorod.

(c) Petroleum Pipeline Sector

3.10 Egypt's extensive network of pipelines for transporting crude oil, petroleum products and gas is owned and operated by the Petroleum Pipelines Company, a fully owned subsidiary of EGPC. Currently this company is supervising the construction of Ras Shukeir-Suez-Mostorod crude oil pipeline and a gas pipeline from Abu Qir to Kafr-el-dawar and Damanhour. This company will also supervise the construction of the gas pipeline from Ras Shukeir to Suez under this project.

(d) Distribution Sector

3.11 Marketing and distribution of petroleum products is undertaken by two affiliates, namely the Misr Petroleum Company and the Corporative Petroleum Company. These companies control the major share of the market, though marketing of petroleum products is also being undertaken by two foreign companies, namely Mobil and Esso.

(e) Joint Ventures

3.12 For purposes of transporting crude oil from the Gulf of Suez to the Mediterranean Sea, a pipeline with an annual capacity of forty million tons has been constructed. This pipeline is owned and managed by the Arab Petroleum Oil Company (SUMED) of which EGPC is a 50 percent shareholder with Saudi Arabia (15%), Kuwait (15%), the United Arab Emirates (15%) and Qatar (5%) owning the balance. Recently another joint venture, namely, Petroleum Projects and the Technical Consulting Company (PETROJET) has been established jointly by EGPC and Montubi for purposes of undertaking design and construction work for all projects related to the petroleum and gas industry in Egyptian, Arab and African countries.

Accounts and Audit

3.13 EGPC, like other Egyptian public undertakings, follows the 'Unified Accounting System' which was established by a Presidential Decree in 1966. This accounting system was evolved, inter alia, with a view to establishing

uniform denomination of accounts, accounting rules, definitions and terminology. Similar and compatible financial statements for capital operations, current operations and cash flows, for all public sectors undertakings have been stipulated by the system. EGPC is required to prepare detailed accounts and financial statements for periodic review in addition to following stipulated financial control. EGPC undertakes detailed internal auditing through its Department of Internal Control, and the Department for Financial Evaluation. While the former audits of all financial operations within EGPC, the latter is responsible for checking and evaluating financial systems and procedures, not only of EGPC but all the affiliated companies. This department is responsible for assessing and evaluating the efficiencies of various units being operated by EGPC and its affiliates and evolving improved systems and procedures. EGPC accounts are also subject to an annual external audit by the Central Accounting Authority. Aside from documentary audits, this review is effected in collaboration with the Ministry of Finance to ensure that the expenditures were in accordance with the authorized budgeted amounts. EGPC would be required to have the project accounts and its other accounts and financial statements audited by independent auditors and supply to the Bank copies of such statements no later than nine months after the end of each year.

Insurance

3.14 EGPC affiliates carry adequate comprehensive insurance on its major facilities and equipment against fire, blowups, damage and theft. Insurance agreements are entered into directly by each company with insurance companies within Egypt who are, in part, reinsured by foreign insurance companies.

IV. THE PROJECT

Project Objective

4.01 More than 90% of Egypt's oil production is concentrated in the Gulf of Suez. During 1979 about 100 MMcf/d of associated gas from these fields will be flared. This co-exists with a situation where fuel oil of almost equivalent thermal value (one million tons of oil equivalent) and which could otherwise be exported is being used for power generation. Oil production from existing Gulf of Suez oil fields, however, is now declining and consequently gas supplies will drop over the coming years. Studies show that there is demand for gas in Suez and Cairo and a fair proportion could be economically gathered and transported to these markets from the Gulf of Suez. To utilize this energy resource, EGPC proposes to install a system of gas gathering, transmission, distribution and processing facilities capable of processing and transporting up to 80 MMcf/d of gas to Suez and Cairo.

4.02 Natural gas liquids (NGL) and liquified petroleum gas (LPG) would first be recovered from the natural gas at Ras Sukheir and the dry gas would be transported and distributed to end users. In Suez the stripped gas would

be used principally as a fuel for electric power generation and cement manufacture, where it would displace fuel oil, and as a feedstock for ammonia synthesis (fertilizer plant), where it would displace naphtha. Surplus gas, up to a maximum of 42 MMcf/d, would be transported to Cairo where it would augment the existing gas supplies from the non-associated gas fields of Abu Ghardig. In Cairo the gas would also be used for power generation where it would replace fuel oil in the steam generation power plants and high value diesel oil in the gas turbine plants. The equivalent quantities of these petroleum products, along with naphtha recovered from gas, would be exported. Currently, Egypt imports 70% of its domestic LPG requirement and to the extent LPG becomes available from this project, the import requirements would diminish.

4.03 The existing Gulf of Suez oil fields will not be able to sustain the proposed 80 MMcf/d gas supply rate over the economic life of the facilities to be financed under the proposed project. However, the Gulf of Suez contains unexploited gas deposits, and EGPC plans to develop the off-shore Amal non-associated gas field when it becomes necessary to supplement the declining production from the existing oil fields. EGPC presently estimates that Amal gas will have to flow sometime between 1983 and 1986 to maintain the proposed supply rate. The cost of developing the Amal field is not included in the proposed project because the timing of the investment cannot yet be definitely ascertained, but it has been included in the financial and economic analyses of the project. The transmission line will be designed so that its throughput can be increased by 50%, with the addition of more compressors, should additional markets and supplies develop in the future.

Gas Supplies and Reserves

4.04 The proposed project provides for utilizing, to the extent feasible, natural gas being produced in the Gulf of Suez in association with oil production. However, as the associated gas from existing oil fields appears inadequate to support the gas system for the economic life of the project, non-associated gas would be used to supplement and subsequently replace associated gas. The associated and non-associated gas fields, which are proposed to be fed into the system, are:

- (1) Ramadan field. The Ramadan field is located off-shore in the Gulf of Suez and is composed of three sub-parallel northwest/southeast trending fault-bounded structural blocks. This field was placed on production in 1974 and as of 1st September 1978, the field was producing at the rate of 125,000 BBLs of oil per day and 50 MMcf/d of gas. The field is likely to peak within the next year or so, but as it is operating above the bubble point pressure, no change in the gas-oil ratio is anticipated. This would permit solution gas production to remain at about 30 MMcf/d through 1986, before significant declines occur.

- (2) July field. This field was placed on production in November 1973. It consists of two reservoirs, of which in one (Nubian) it would be possible to maintain reservoir pressure, while the other (Rudeis) would require pressure maintenance through water injection. Both reservoirs would produce significant quantities of gas, until about 1986, before decline occurs.
- (3) Location 382. This off-shore field started producing in December 1977 but has yet to be fully delineated. Four wells have so far been drilled and the fifth well is currently being drilled. The initial gas-oil ratio was 1,010 standard cf/BBL, yielding a solution gas production rate of about 50 MMcf/d. Of late, gas-oil ratio has risen rapidly, but full characteristics of the field would be firmed up only after further drilling. Because of its high gas content, production rates will be adjusted to gas demand so as to minimize flaring in the area.
- (4) Amal field. This non-associated gas field consists of six wells, which are either shut in or abandoned. It has two primary hydrocarbon reservoirs which contain gas-bearing sand. The proved gas-in-place estimates for the Amal field are 250,000 MMcf and the proved-plus-probable estimate of gas in place are 497,000 MMcf. Depending upon the reservoir behavior of the associated gas fields, development of this gas field would need to be timed appropriately so as to ensure that cumulative gas availability is about 80 MMcf/d.
- (5) One-well fields. Five one-well fields presently under delineation/development are considered prospective sources of supply for the Ras Shukeir gas system. Of these, four are oil fields (173-1, 185-1, 195-1, and 195-2) and one is a non-associated gas field designated as Deminex LL-87-1. The Deminex gas field, by virtue of its close proximity to July and Ramadan fields, presents an extremely viable alternative. All these fields would, however, require additional development drilling before gas availability can be quantified.

4.05 An evaluation of the gas reserves was secured by the Bank from independent consultants, DeGolyer and MacNaughton. These consultants studied the sources of supply and developed projections in regard to the flow and the length of time these gas supply sources would be available at Ras Sukheir. There is an element of uncertainty in predicting precise well behavior in fields with no production history (Amal, Location 382). The consultants have conservatively estimated the proven and probable gas reserves in these fields in accordance with established geological and geophysical procedures. For purposes of our evaluation, we have taken the level of reserves at proved-plus-half probable, and disregarded the gas availability from the four one-well oil fields and the Deminex gas field. These new discoveries, even though promising, require further development work. Gas availability projections on this basis are indicated in Annex 4.01.

4.06 In order to facilitate the overall investment planning for this project and to ensure that the gas facilities operate at full capacity, it would be necessary for EGPC to further develop location 382 oil field. The proven reserves of gas are estimated at 137 billion cubic feet (Bcf) and the proven-plus-probable of 421 Bcf of gas. Further development of the field would assist in determining the extent to which probable reserves could be classified as proved. A similar exercise is necessary in regard to Deminex 87 gas field. Such an evaluation is essential for determining the time sequence for developing the Amal gas field. Separately, there is a need to re-evaluate the internal consumption requirements of the July and Ramadan oil fields. A sharp increase over the previous requirement is being suggested as of 1982; which may in fact not materialize. A more realistic re-evaluation could show that, in fact, larger quantities of gas would be available for the project which, in turn, would have a bearing on the development of the Amal field. EGPC confirmed that it was aware of this situation and that it would take the necessary action to defer the development of Amal as long as possible. On the basis of the above, EGPC agreed to review with the Bank its plans for the development (including the financing thereof) of Location 382, Deminex, Amal, the in-field requirements of July and Ramadan and the associated and non-associated gas reserve data for the Gulf of Suez.

Status of Project Preparation

4.07 A feasibility and optimization study for the project was completed in mid-1978 by Braun Egypt Engineering, who are qualified consultants and are an affiliate of the USA based engineering firm, C.F. Braun and Co. Braun Egypt subsequently updated the study to incorporate revised gas supply estimates, and issued a final report in late November 1978. The Braun Egypt study forms the basis for the project scope defined in the following section. Braun Egypt has been awarded a contract (November 1978) to provide the process design and detailed engineering for the project facilities and to lend the necessary technical assistance during procurement. EGPC will retain overall responsibility for project management, procurement and construction (para. 4.09).

Description of the Project

4.08 The proposed project forms the first phase of EGPC's program for associated gas utilization and includes the necessary gathering facilities comprising pipelines and compressors to collect gas from the Ramadan and location 382 oil separator stations and the GUPCO separator station and bring it to compressors and an LPG plant located near Ras Shukeir. A 16" pipeline, constructed parallel to a new crude oil line, will transport the gas from Ras Shukeir to a terminal at Suez. From there it will be distributed to the customers in Suez through a system of smaller pipelines. Excess gas, up to about 42 MMcf/d, will be delivered to Cairo over an existing 10" gas line and a 10" white products line looped together with a 24" tie-in to the Cairo distribution system. Location of these facilities are shown on Map IBRD 14056 and their relationships to Egypt's pipeline network on Map IBRD 14294. The major project components are:

1. Gas Gathering System

- (a) Combustion gas turbine driven centrifugal compressors with ancillaries to handle the gas released from gas oil separators at:
 - (i) Ramadan Station (located offshore);
 - (ii) 382 Station (located onshore); and
 - (iii) GUPCO Station (located onshore).
 - (b) Pipelines from the separator stations to the Ras Shukeir compressor station and LPG plant including approximately:
 - (i) 50 km of 10" submarine pipeline from Ramadan Station;
 - (ii) 32 km of 16" pipeline from 382 Station, all on land and buried; and
 - (iii) 12 km of 16" pipeline from GUPCO Station, all on land and buried.
2. Ras Shukeir Compressor Station and LPG Plant. Major facilities included are:
- (a) gas driven centrifugal compressors for associated gas and pressure boosters with their ancillaries;
 - (b) turbo expanders to cool the gas;
 - (c) one gas fractionation unit to extract NLG and LPG;
 - (d) LPG storage and loading facilities;
 - (e) one fired heater and hot oil system;
 - (f) laboratory, workshop, warehouse, and other support facilities; and
 - (g) operating personnel quarters and recreation and support facilities.
3. Ras Shukeir - Suez Gas Pipeline. Consist of:
- (a) approximately 300 km of 16" buried pipeline; and
 - (b) communication and supervisory control system.

4. Distribution System. Consists of approximately 30 km of 8" - 10" buried pipeline from the pipeline terminal to the customers' metering and receiving stations.
5. Looping and Conversion of Suez Cairo Pipelines: Involves alterations to reverse flow in the existing 10" Cairo-Suez gas pipeline. In addition, the present 10" white product pipeline would be converted to gas and looped with the gas pipeline. Compression facilities would be added to create a cumulative capacity of 42 MMcf/d, and a 24" pipeline would tie the Suez system into the Cairo grid.
6. Miscellaneous Support Items. Includes earth moving and transport equipment, cranes, mobile communication equipment, testing equipment and similar items to support maintenance, operations and management of the new facilities.
7. Project Management, Technical Assistance and Engineering Services. Includes project supervision, optimization and feasibility studies, design engineering, procurement, controls, construction supervision, inspection and all related activities required for the complete execution of the project.
8. Petroleum Pricing Study. The study is intended to evaluate the downstream effects on Egypt's economy of an import parity pricing policy for petroleum products (para. 2.24 (b)).
9. Gas Optimization Study. The study would examine Egypt's available gas supplies and establish usage priorities whereby, the economy would derive the maximum benefit from this natural resource (para. 2.24 (c)).
10. Exploration Study. The study would first concentrate on accumulating, collating and reinterpreting existing geological and geophysical data with the objective of determining ways and means for optimizing oil and gas exploration. The findings and recommendations could then be implemented as a second phase of the study (para. 2.24 (a)).
11. Training and Consulting Services. Includes in-house and overseas training in the operation and maintenance of machinery, control systems, etc. comprising the proposed facilities and specialized overseas training in accounting and finance for professional personnel. Funds are included for consultants' assistance in analyzing and improving EGPC's financial management and accounting system.
12. Project II Engineering. Includes engineering and consulting services for a gas distribution project to be installed in Cairo and for which the Government and EGPC have sought Bank assistance.

Implementation

4.09 EGPC would have overall responsibility for implementing the proposed project. A project management team would be assembled and attached to its Planning and Projects Department to coordinate and supervise the various implementation functions necessary to design, procure, construct and commission the project facilities. Assistance in carrying out the construction and commissioning phase of the project would be assigned to two operating subsidiaries:

- (i) the Suez Oil Processing Company (SOPCO) for the LPG plant, the main compressor station, the gas gathering stations and distribution system; and
- (ii) the Petroleum Pipeline Company (PPCO) for the Ras Shukheir - Suez pipeline, Suez - Cairo lines and 24" tie-in to the Cairo distribution system.

Staffing of the project management team would come mainly from within EGPC's organization including SOPCO and PPCO. Additional technical assistance requiring skills and/or equipment not available within EGPC's organization or in Braun Egypt's scope of work (para 4.07) would be assigned to local or expatriate consultants whose qualifications, experience and condition of employment would be satisfactory to the Bank and EGPC.

4.10 To expedite completion of the project EGPC has proposed and the Bank has agreed for EGPC to procure and construct the gathering facilities, LPG plant and compressor station through two single responsibility contracts, one for the onshore portion and the other for the Ramadan field which entails mostly offshore work. Prospective contractors are being prequalified prior to being asked to bid. This arrangement will greatly simplify project implementation, and judging from similar cases in the past there should be active competition for the contract. The Ras Shukheir-Suez pipeline will be constructed by the joint venture company, PETROJET, which is also installing a parallel 16" crude oil line.

4.11 The onshore contract bidding documents are scheduled to be completed during 1979 and no problems are anticipated in meeting the project completion date of this portion of the project. The offshore facilities are complicated by plans to install the Ramadan compressor package on an offshore production platform currently being designed by GUPCO. Space has been allocated for the compressor package on the platform, but its final design depends on the actual compressor packages selected by EGPC. EGPC has agreed to expedite this matter and has assigned Braun Egypt the task of preparing the design and procurement documents so that bids can be requested by no later than end of August 1979. After selecting the lowest evaluated offer, EGPC will investigate the modifications necessary to set the compressor package on the GUPCO platform. EGPC will concentrate on completing this investigation by no later than December 1979 to maintain the planned commissioning by December 1981. If

for some unforeseen reason the GUPCO platform cannot accommodate the compressor package, EGPC would install a separate platform adjacent to GUPCO's. This probably would not entail a significant delay in commissioning, but it would increase EGPC's cost by US\$5-10 million. The Ramadan offshore gas gathering facilities also include a submarine line which is also being designed by Braun Egypt.

4.12 The composition, qualification and organization of the management team set up in EGPC for overall management of the project were reviewed during negotiations and found satisfactory. Similar organizations, principally to oversee construction and to carry out start-up and commissioning of the facilities, will be established in SOPCO and PPCO once contracts have been awarded. The composition, qualification and organization of these units has been reviewed and found satisfactory. At EGPC's request its project implementation and commissioning teams would be assisted by qualified consultants (Braun Egypt). The experience and education resumes of those considered for early assignment to EGPC have been reviewed and found satisfactory.

4.13 Satisfactory agreements were reached on planning the project activities. EGPC will prepare a critical path method (CPM) plan of its activities leading up to the award of contracts for the onshore, offshore and main pipeline components of the project. Each contractor will be required to prepare and maintain a CPM plan for carrying out his portion of the project. Since the three project components are to a large extent independent projects, this is a workable arrangement.

Project Costs

4.14 The project is estimated to cost US\$167 million of which US\$123 million or 74% represents the foreign exchange component. A physical contingency of 10% was applied against the cost of the LPG plant, main pipeline and compressor station and 15% against the gas gathering facilities and distribution networks. It was felt prudent to use a high contingency factor for these facilities because no right of way studies and surveys had been completed for the gathering and distribution pipelines and because offshore pipelaying and equipment is involved. Price contingency is calculated on a combined equipment/civil works escalation of 7% during 1978 and 6.5% thereafter for all foreign exchange expenditures and 15% per year for local costs. The cost of consultants is based on a rate of \$7,000 per month, and is in line with current costs of similar services in Egypt.

4.15 The development of Amal gas field is estimated to cost US\$45 million (1978 dollars). This expense has not been included in the project cost estimates (para 4.03). The estimated project costs are summarized below. Annex 4.03 gives a more detailed breakdown of the various components of costs.

	In LE Million			In US\$ Million		
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
1. Project Design, Implementation, Training & Studies	2.2	5.2	7.4	3.2	7.4	10.6
2. 382 Gas Gathering Station	3.3	8.4	11.7	4.8	12.0	16.8
3. GUPCO Gas Gathering Station	0.7	3.0	3.7	1.1	4.2	5.3
4. Ramadan Gas Gathering Station	2.9	8.1	11.0	4.1	11.6	15.7
5. Ras Shukeir-Suez Pipeline	5.3	17.0	22.3	7.6	24.4	32.0
6. Suez Distribution System	1.1	1.4	2.5	1.6	2.0	3.6
7. LPG Plant & Compressor Station	5.6	16.7	22.3	8.0	24.0	32.0
8. Suez-Cairo Pipelines and 24" tie-in line	2.2	7.3	9.5	3.1	10.5	13.6
9. Misc. Support Items	<u>0.7</u>	<u>2.2</u>	<u>2.9</u>	<u>1.0</u>	<u>3.2</u>	<u>4.2</u>
Basic Project Estimate	24.0	69.3	93.3	34.5	99.3	133.8
Physical Contingency	3.1	8.5	11.6	4.4	12.7	17.1
Price Contingency	<u>3.6</u>	<u>7.5</u>	<u>11.1</u>	<u>5.1</u>	<u>11.0</u>	<u>16.1</u>
Estimated Project Cost	30.7	85.3	116.0	44.0	123.0	167.0

Project Financing Plan

4.16 The total foreign exchange cost, US\$123 million, is to be financed as follows:

	<u>Bank</u>	<u>Suppliers Credit</u>	<u>EGPC</u>	<u>Total</u>
1. Gas Gathering Facilities	27.8	-	-	27.8
2. LPG & Compressor Station	24.0	-	-	24.0
3. Ras Shukeir-Suez Pipeline & Distribution	-	13.5	12.9	26.4
4. Suez-Cairo Pipelines & 24" tie-in line	-	5.9	4.6	10.5
5. Project Design, Supervision, etc.	1.0	-	1.0	2.0
6. Training	0.8	-	-	0.8
7. Sector Studies	2.5	-	-	2.5
8. Project II Engineering	2.1	-	-	2.1
9. Misc. Support Items	<u>3.2</u>	<u>-</u>	<u>-</u>	<u>3.2</u>
Sub-Total	61.4	19.4	18.5	99.3
Physical & Price Contingencies	<u>13.6</u>	<u>5.1</u>	<u>5.0</u>	<u>23.7</u>
	75	24.5	23.5	123.0
% of Total	61	20	19	100

4.17 As indicated in the table above, the Bank loan, excluding the cost of studies and Project II engineering services, would represent approximately

41% of the total cost of the project. It is 31% of the anticipated investment, when the development costs of Amal (anticipated to cost US\$58 million in current dollars), are included. The proposed Bank loan would be made to EGPC at the current lending rate for 20 years including four years of grace. In addition, EGPC would pay a guarantee fee to the Government so that the effective rate of interest to EGPC would be 10%.

4.18 The Government has agreed that the local expenditure equivalent to US\$44 million and foreign exchange expenditures of \$23.5 million and the Amal gas development costs would be borne by EGPC from its own resources and through budgetary allocations from the Ministry of Finance. It was also agreed that in order to ensure that Amal field or any other appropriate non-associated gas field is developed in time, and there is full utilization of the project facilities, the Bank would monitor and review associated and non-associated gas reserves data until such time that an adequate gas supply (80 MMcf/d) is assured for the life of the project.

Market

4.19 No problem is foreseen regarding disposal of condensates recovered from natural gas. The condensate which is essentially naphtha would be blended into crude oil and exported. LPG would be readily absorbed in the domestic market, where a continuing and growing deficit, is anticipated. The dry gas is slated for use in the city of Suez by the existing fertilizer plant [14 MMcfd], a 30 MW power station [45 MMcfd] currently under construction and the proposed cement plant and other industrial loads [15 MMcfd]. A slippage of one to two years is anticipated in the Suez power plant. This could, in the absence of an alternative market, result in EGPC having to flare, on-shore, a proportion of the dry gas after the condensates have been recovered. It is in this context that the project has been redesigned to tie the Suez gas in with the Cairo gas distribution grid through looping and converting the existing gas and white products pipelines between Cairo and Suez. These pipelines would have cumulative capacity of 42 MMcfd and no difficulty is anticipated in absorbing these quantities of gas in Cairo. Nevertheless, between the time the project is completed [1981] and the Suez power plant is commissioned [1983] production from Location 382 may have to be kept at a reduced rate (para. 4.04,(3)) to avoid flaring. EGPC has provided satisfactory assurances regarding sales agreements with the major consumers.

Procurement

4.20 The gas gathering, compression and process (LPG) facilities would be procured and constructed under two separate single responsibility contracts (para. 4.10) on the basis of international competitive bidding in accordance with procedures set forth in the Bank's guidelines. Bidders would be separately prequalified for each of the two contracts. Proceeds of the proposed loan would finance 100% of the foreign exchange cost of the two contracts, estimated at US\$62.5 million including contingencies. Miscellaneous items of maintenance, operating and management equipment which cost less than US\$250,000 each but not exceeding US\$4.0 million in the aggregate,

would be procured in accordance with EGPC's limited international bidding procedures which are satisfactory to the Bank. In the event that the estimated amount of any contract or the aggregate amount is likely to be exceeded, EGPC would consult and agree with the Bank on the procurement procedure to be followed.

4.21 The proposed loan would be disbursed against (i) 100 percent of the foreign expenditures for (a) two single responsibility contracts for on-shore and off-shore facilities, respectively, (b) engineering and related services, and (c) technical assistance, training and studies, and (ii) 100 percent of the foreign and local expenditures, ex-factory, and 70% of local expenditures for imported items procured locally.

4.22 The loan would be fully disbursed by June 30, 1982 in accordance with the projected disbursement schedule in Annex 4.02.

Project Risks

4.23 The risks associated with the project are those inherent in petroleum production and pipeline industry. These risks are somewhat compounded by off-shore work, though it forms a minor part of the proposed project. Over the years, industry has developed techniques and technology to reduce them to a minimal level. The existing oil and gas production facilities are operated by an experienced oil company with a good safety record. New production facilities would be installed and operated in accordance with the same standards as those now in operation. EGPC's consultants for the design and implementation of the gas pipeline and its auxiliary facilities are experienced and well-qualified for the assignment. Only experienced pre-qualified contractors will be invited to construct the facilities.

4.24 There are, however, two risks specific to the project; namely,

- (a) adequate and continuous supply of associated gas from the oil fields of July, Ramadan, and location 382; and
- (b) slippage in the implementation schedule of the power plant, presently under construction in Suez and slated to be the main consumer of dry gas.

In order to reduce these risks the Bank has secured an independent reservoir evaluation from DeGolyer and MacNaughton which confirms, in conjunction with the non-associated gas from Amal, adequate levels of gas availability for the proposed project. Furthermore, the possibility of gas availability from Deminex 87 and other one-well fields in the gulf of Suez provides additional insurance. Separately, by re-designing the project, which would enable gas to be moved to Cairo, the risk arising from the inadequacy of the market has been satisfactorily contained for the life of the proposed project.

Training

4.25 Although EGPC subsidiaries already operate similar facilities, it will be necessary to train supervisors and operating personnel in the operation and maintenance of new or unfamiliar equipment introduced by the project. The main items in this category are the large combustion gas turbines and compressors, the telemetry and supervisory control system for operating the pipelines and the turbo-expansion LPG process. Approximately 70 man months staff time will be required for overseas visits to manufacturers' plants for training in the operation and maintenance of the equipment being supplied and for visits to facilities similar to those included in the project. Additional on-the-job training will be provided during construction and start-up by equipment manufacturers' representatives who will be at the job site during those periods.

Ecology and Safety

4.26 Two of the major consumers of the natural gas supplied by the project would be a power plant and cement factory which otherwise would have to burn residual fuel oil. By displacing these two major sulfur dioxide emission sources, the project in effect makes a significant contribution to atmospheric pollution control in the Suez area.

4.27 The pipeline itself would pose no serious environmental hazard since it would be buried and since measures would be taken to assure proper protection, maintenance and operation. Design and construction would be in accordance with the appropriate codes and standards to minimize the chances of overpressurization, corrosion and third party damage. To minimize risks, the offshore pipeline portions would be buried in areas where the pipe may be subject to damage from marine activity. Adequate "fail-safe" features would be incorporated into the supervisory control system to minimize the possibility of operator errors.

Schedule and Reporting

4.28 The proposed project is scheduled to be completed in September 1981 except for the Ramadan offshore portion which may extend into December 1981. A schedule showing the timing and completion of the various project activities is shown in Annex 4.01. During negotiations agreement was reached that EGPC would submit quarterly project progress reports up to the time major equipment has arrived in the field and monthly reports thereafter.

V. FINANCIAL ASPECTS

Introduction

5.01 Within the framework of Law 20, the primary responsibility of managing the petroleum sector rests with EGPC. Its activities range from exploration to downstream operations like marketing and refining. However, except for foreign trade in crude oil and refined products, EGPC discharges these functions through foreign partners ^{1/} (exploration) and wholly-owned subsidiaries (refining, transportation and marketing). While EGPC is vested with considerable managerial and technical authority it is not financially autonomous. In the domestic market EGPC has, at best, an advisory role in the determination of petroleum products prices. All surplus from its operations, but for a nominal proportion, is transferred to the Government, and EGPC has to seek appropriations from the general budget on a loan basis to finance most of its investments.

EGPC's Past Financial Performance and Present Situation

Income

5.02 Under the terms of the production sharing contracts entered into with EGPC's foreign partners, a proportion of oil produced is used to cover costs and the balance (profit oil) is shared between the partners. EGPC receives and owns Egypt's share of profit oil. Its income is derived almost exclusively from the sale of this oil in the domestic and export markets. On account of the low level of domestic product prices, EGPC's net income depends critically on the volume of its exports.

Exports

5.03 Rising production levels over the last few years have led to a significant increase in EGPC's exportable oil surplus. This, coupled with the sharp increase in the international price of oil, has had a significant effect on its income. The increase in EGPC's profit from LE 4 million in 1973 to LE 218 million in 1978 is almost exclusively relatable to its exports which increased from LE 7 million in 1973 (7% of sales) to LE 270 million (60% of its net sales) in 1978.

Domestic Sales

5.04 Although its statute vests EGPC with the authority to determine domestic prices, retail prices of petroleum products are in practice set by Government and are currently well below the international prices. EGPC's net income from domestic sales is determined on the basis of fixed product prices less various costs relatable to refining, transportation, marketing,

^{1/} The only exception being the General Petroleum Company (GPC) a wholly-owned subsidiary of EGPC engaged in exploration and production.

Government fees, excises and dues. It is appropriately designated as 'net-back', which in 1977 for El Morgan blend (the major Egyptian crude) was as given below:

	<u>LE/bbl.</u>	<u>\$/bbl.</u>
	(1 LE=\$1.44)	
Weighted Average Revenue from Sale to Distributors	<u>3.297</u>	<u>4.75</u>
Weighted Average Expenses:		
Processing	0.307	0.44
Special Processing	0.031	0.05
Products' Transport	0.030	0.04
Customs & Excise & Fees	0.745	1.07
Treasury Rights	<u>0.955</u>	<u>1.38</u>
	2.068	2.98
Net Income	1.229	1.77
Less Crude Transport Cost	<u>0.120</u>	<u>0.17</u>
<u>Net-back</u>	<u>1.109</u>	<u>1.60</u>

5.05 As indicated in paras. 3.05 and 3.10, all functions relating to refining, transmission and marketing are handled by EGPC's subsidiaries. EGPC sells refined products to its marketing companies at the set level less marketing margins. Its other non-producing subsidiaries are separately recompensed for their services (refining, distribution, etc.), on a cost plus basis. So as to have an element of control over the functioning of these subsidiaries, EGPC periodically predetermines reimbursable costs and profits on the basis of a fixed set of norms. This system is not uncommon in the oil industry. However, the fact that these subsidiaries make a profit is not an index of their efficiency. Since the Government continues to be reluctant to increase the retail prices of refined products, any increase in refining, transmission and marketing costs would result in a corresponding decrease in EGPC's net-back.

5.06 A summary of EGPC's unconsolidated income statements and the distribution of profit for the period 1973 to 1978 is given below. Detailed accounts are in Annex 5.01.

UNCONSOLIDATED INCOME STATEMENTS

Year Ended December 31:	<u>Actual</u>					<u>Estimated</u>
	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>
	-----LE Millions -----					
Total Income	180.8	266.3	360.7	514.1	746.2	783.6
Total Costs, Expenses and Taxes	<u>176.7</u>	<u>259.3</u>	<u>310.1</u>	<u>395.4</u>	<u>547.8</u>	<u>565.4</u>
Net Profit	4.1	7.0	50.6	118.7	198.4	218.2
Retained by EGPC	-	3.8	33.0	34.3	21.2	31.6
Distribution to Government	4.1	3.2	17.6	84.4	177.2	186.6

The above statements record an impressive increase in EGPC's profits from LE 4 million in 1973 to LE 218 million in 1978. These profits are mostly attributable to increases in the exportable surplus and international prices.

Appropriation of Surplus and Financing Investment

5.07 EGPC, after meeting costs relating to its operations, is allowed to retain 10% of its profits with Government appropriating the balance. EGPC has recently been permitted to keep, at the discretion of the Government, an additional 5% of its profits for new project financing. The Government, therefore, is the major beneficiary of the sector's growing surplus. Prior to 1974 most of the Government's income came in the form of taxes and royalties, EGPC's surplus forming only a small proportion. By 1977, with increased profits, the sums paid to the Government from these two sources had become roughly comparable: about LE 195 million on account of taxes and LE 177 million as the State's share of EGPC's surplus. In 1978 the Government anticipates a revenue of LE 400 million from these two sources (Annex 5.01). As the Government mops up almost the entire surplus, EGPC must, for financing its investment, secure appropriations from the national budget; which is in consonance with Egypt's practice in other sectors of the economy. However, once a program of investment has been approved by the Government and is included in the Five Year Development Plan, EGPC, under its statutes, is permitted to use its earnings through export of oil to meet its foreign exchange requirement. This system will apply in the case of the proposed project, where EGPC aside from meeting the local cost requirement will cover the foreign exchange gap not covered by the proposed loan.

5.08 As shown in EGPC's unconsolidated balance sheets (Annex 5.01) EGPC's investments in fixed assets (mostly buildings) are relatively small and mostly depreciated. Its investments in subsidiaries and in projects in progress have in contrast been steadily increasing, as a result of extensive rehabilitation and extension programs required to meet domestic needs in the oil sector. EGPC has chosen, since 1977, to curtail its lending to subsidiaries and presently finances its investments in these companies through equity contributions. To cover these growing investments and its other requirements for funds, EGPC has relied primarily on its retained earnings, on Government funds and, to a lesser extent, on the funds borrowed from subsidiaries and loans from commercial and development banks.

The expected position as at December 31, 1978 was as below. These figures have not been audited and may be changed on consolidation.

<u>Assets</u>	<u>L.E. Millions</u>
Net fixed assets	15
Projects under construction	120
Investments in subsidiaries	317
Net working capital	<u>11</u>
	<u>463</u>
 <u>Financing</u>	
Equity	50
Reserves	172
Domestic Loans	164
Foreign Loans	<u>77</u>
	<u>463</u>

Financial practices

5.09 A number of the financial practices are in need of review, in particular the debt service situation outlined below and problems detailed in the next paragraph. It has been already noted that eighty-five to ninety per cent of EGPC's net earnings must be distributed to the Government and that any of these used by EGPC are treated as loans. It has also been noted that while EGPC finances most of its investments by borrowing it has transferred them to its subsidiaries without transferring equivalent loan obligations. Taken together the situation could arise where EGPC generates insufficient funds to meet its debt service obligations. Therefore, (i) the Government and EGPC agreed that EGPC would retain out of its profits a specific reserve, additional to its other reserves as prescribed by law, for the repayment of the Bank's loan; and (ii) EGPC agreed that prior to deciding to transfer the assets created under the project to one or more of its subsidiaries, it would submit for the Bank's approval its plans for such a transfer. EGPC also agreed to maintain separate project accounts until the project completed or the assets have been transferred, whichever is later.

5.10 EGPC like other public sector undertakings follows Egypt's Unified Accounting System (3.11). EGPC has the critical task of setting standards of cost accounting and for financial reporting which must follow the Unified System and yet be fitting and useful for the industry. In setting up guidelines for uniform costing, for investment analysis and valuation of assets, for the consolidation of accounts and flexible budgeting, EGPC's financial managers have come up against numerous problems which are still not resolved to their satisfaction. The accounts are not kept in a manner which permits accurate consolidation. The accounting procedures require review and simplification. EGPC has requested technical assistance in this area. EGPC therefore agreed to appoint consultants on terms and conditions satisfactory to the Bank, who would (i) review the accounting systems and financial practices of EGPC and its subsidiaries and their financial relationship with the Government; (ii) recommend suitable changes in financial policies and practices; (iii) assist EGPC and its subsidiaries in instituting a system of medium term

planning; and (iv) review and advise on future institutional and financial arrangements in the gas subsector. Consultants would be required to complete a diagnostic study by April 30, 1980, on the above issues. EGPC also agreed to consult with the Bank on the findings of the diagnostic study and commence the implementation of a time-phased plan of action by July 31, 1980.

EGPC's Future Financial Prospects

5.11 The Sector Plan envisages a total investment of LE 3.2 billion during the current Plan period (1978-1982). Of this, investment of LE 2 billion would be undertaken by foreign partners and the balance (LE 1.2 billion) by EGPC and its subsidiaries. It is anticipated that EGPC and its subsidiaries will provide LE 50 million from internal resources and as such almost all incremental investment would need to be financed by the Government.

5.12 As indicated in para. 2.23, considerable uncertainty attaches to EGPC's investment program particularly in the refining and processing sector. The flow of income is dependent upon the rate of future oil and gas discoveries. In view of the uncertainties attending EGPC's future sources of income and the levels of investment expenditure, it is impossible to project EGPC's future financial performance with any precision and this, therefore, is not being attempted. Nevertheless, we do not believe that there is any cause for concern about EGPC's finances over the medium term. We are satisfied that the underlying potential income based on Egypt's oil production is sound and substantial. Present income levels should increase over the next two to three years and the prospects for retaining a more than adequate level of income are good. Given the present uncertainties in the financial information available for EGPC it will only be possible to set financial objectives in the conventional manner after the completion of the proposed studies (see para. 5.10). Nevertheless it is necessary to ensure that financial performance over the longer term does not fall below a minimum standard; it was therefore agreed that EGPC would review its finances and those of its subsidiaries by September 30 of each year to ensure that, based on the findings of such review, the consolidated net revenues of EGPC and all its subsidiaries for such year shall not be less than 1.5 times the consolidated debt services requirements of EGPC and all of its subsidiaries for that year.

Project Cost and Benefit

Investment

5.13 Investment in the initial phase of the project is estimated at US\$167 million of which US\$7 million is for studies and technical assistance and US\$160 million for the project, including price escalation. We have, for purposes of incremental analysis of the project taken into account, as a second phase, the cost of the development of the Amal field.

	PHASE I US\$ million		PHASE II US\$ million
1979	26	1984	15
1980	85	1985	29
1981	<u>49</u>	1986	<u>27</u>
	<u>160</u>		<u>27</u>

The pipeline system will have a physical life not less than the 20-year period used for project evaluation.

Profit Estimate

5.14 The projected increase in EGPC's income and expenditure resulting from the project is indicated in Annex 5.02. A summary of the project income and expenditure statement consolidated for EGPC and its subsidiaries is given below. In view of the substantial impact of inflation on company income taxes the projections take account of inflation at 7% annually, except in relation to domestic prices. This exception is of little consequence in relation to the projections.

	<u>1981-85</u>	<u>1986-90</u>	<u>1991-95</u>	<u>1996-2000</u>
In \$ Millions (including 7% inflation)				
Consolidated Project Income (net of fees):				
Gas	46	34	32	31
LPG	6	5	4	1
Naphtha	52	64	66	24
Fuel Oil (Net)	261	399	516	717
Diesel Oil (Net)	42	-	-	-
Total Income	<u>407</u>	<u>502</u>	<u>618</u>	<u>773</u>
Expenses:				
Operating Cost	78	112	153	210
Depreciation	40	67	71	45
Interest and Charges	51	44	22	5
Income Taxes	<u>87</u>	<u>103</u>	<u>143</u>	<u>201</u>
Total Expenses	<u>256</u>	<u>326</u>	<u>389</u>	<u>461</u>
Net Profit (before distribution)	<u>151</u>	<u>176</u>	<u>229</u>	<u>312</u>

The average annual incremental income from the project would be US\$115 million. Of this, direct sales both internal and external (dry gas, LPG and naphtha),

would account for no more than US\$18 million which would be barely adequate to cover operating costs. The major flow of income would be from increased fuel oil exports.

Income

5.16 As explained previously, the Gulf of Suez project will result in a significant addition to the quantities of gas available in the domestic market where it will replace fuel oil and diesel. Processing of the gas will produce LPG for the domestic market and natural gas liquids as naphtha for the export market. The income generated for EGPC as a result of the project will be from the sale of (i) initially about 90 MMcf/d of gas, falling to 80 MMcf/d after 1985, which sells domestically at a price equivalent to US\$0.25 per MCF; (ii) around 50,000 tons per year of LPG for which the net of tax selling price is US\$15.29 per ton; (iii) about 50,000 tons per year of naphtha at an estimated normal export price of US\$129 per ton and (iv) the higher price obtained by EGPC from selling 600,000 tons of fuel oil overseas instead of in the domestic market, consequent on the supply of natural gas. The price obtainable will be about US\$70 per ton instead of US\$10.80.

Expenses

5.17 EGPC's expenses will increase as a result of the project but on a scale much below the increase in income. Operating costs are expected initially to be about US\$12 million annually. Initially, taxes are the largest single element of cost and will equal the operating costs over the project period.

Profitability

5.18 Net profit to EGPC would be US\$43 million per annum. The financial profitability of the proposed project is therefore beyond question. The project gives an after tax financial rate of return of 13% in real terms. This figure is conservative particularly in that it takes no account of the developments in the oil industry in 1979, and assumes that both domestic prices and relative prices of oil products will remain unchanged over the project life.

VI. ECONOMIC ANALYSIS

Project Justification

6.01 The projects principal justification lies in its securing for Egypt an energy resource, which is presently being wasted. Natural gas, both associated and non-associated, gathered from the Gulf of Suez would be processed for recovery of LPG and NGLs. While LPG would be sold in the domestic market, the NGLs which will consist essentially of the naphtha fraction would be exported. Dry gas on an average of about 80 MMcf/d would be sold in Suez and Cairo, where it would essentially replace fuel oil, which in turn will be exported.

The total gas anticipated to be recovered by the system during the life of the project would be 570 billion cft (equivalent to 16.3 million tons of oil), one million tons of LPG and 860,000 tons of naphtha.

Rate of Return and Sensitivity Analysis

6.02 Project costs at constant prices (1978 dollars) are estimated at US\$190 million including the cost of the development of Amal. The benefit stream consists of the net incremental revenues derived from exports of fuel oil valued at international prices and savings in import of LPG. The economic rate of return on this project has been calculated on an incremental basis, with the past investment on the development of oil fields in the Gulf of Suez being considered as sunk costs. In computing the rate of return, petroleum products have been valued at international FOB prices. No adjustment is considered necessary for internal freight as products not consumed in the city of Suez can be exported therefrom, especially fuel oil as bunker to the tanker trade. We have further assumed that there would be no change in the relative prices of petroleum products.

6.03 The economic cost and benefit streams for the project are shown in Annex 6.01. The summary results for the economic rate of return and sensitivity analysis are shown below. The parameters chosen for measuring the sensitivity of the project's rate of return are:

The Base Case: DeGolyer and MacNaughton's (D&M) estimates of proved plus half probable gas reserves and final capital cost as estimated by the mission.

The Best Case: D&M estimates of proved plus probable gas reserves and a 15% underrun in capital cost.

The Worst Case: D&M estimates of proved gas reserves and a 15% overrun in capital cost.

Intermediate Case 1: proved plus half probable reserves and a 15% capital cost underrun.

Intermediate Case 2: proved plus probable reserves and estimated capital cost.

Intermediate Case 3: proved plus half probable reserves and a 15% capital cost overrun.

Intermediate Case 4: proved reserves and estimated capital cost.

Economic Real Rate of Return

Best Case:	41%
Intermediate Case 1:	38%
Intermediate Case 2:	35%
Base Case:	32%
Intermediate Case 3:	28%
Intermediate Case 4:	26%
Worst Case:	22%

6.04 As indicated above, the economic rate of return is 32% for the base case. While the rate of return is sensitive to the variations of the sensitivity parameters, specially the availability of gas, it remains satisfactory even under adverse assumptions.

VII. RECOMMENDATIONS

7.01 During negotiations the following issues were raised with EGPC and satisfactory assurances were obtained that:

- (a) EGPC would prepare and maintain a CPM plan for implementing the project (para. 4.13);
- (b) EGPC would undertake sector studies related to exploration, pricing and natural gas utilization with consultants and terms of reference satisfactory to the Bank (para. 2.24);
- (c) EGPC would develop location 382 reserves and optimize in-field consumption (para. 4.06);
- (d) EGPC would periodically review with the Bank associated gas supplies and undertake the timely development of Amal to maintain 80 MMcf/d (para. 4.18);
- (e) EGPC would appoint consultants satisfactory to the Bank to review its cost accounting, financial reporting system, financial policies, medium term planning and training needs and review with the Bank the findings and recommendations (para. 5.10);
- (f) EGPC would submit audited accounts within 9 months after each fiscal year (para. 3.13);
- (g) EGPC would submit project progress reports to the Bank (para. 4.28); and
- (h) EGPC would submit its plans for the transfer of assets to subsidiaries to the Bank for prior approval (para. 5.09).

7.02 Assurances were obtained from the ARE during negotiations that:

- (a) ARE would make provisions for EGPC to retain additional reserves for repaying the Bank loan (para. 5.09);
- (b) ARE would review the findings and recommendations of the sector studies with the Bank (para. 2.24); and
- (c) ARE would make funds available to EGPC for the timely development of the Amal gas field (para. 4.18).

7.03 Based on the above assurances, the project is suitable for a Bank loan of US\$75 million equivalent for 20 years including 4 years of grace.

EGYPT

GULF OF SUEZ GAS PROJECT

TOTAL INSTALLED CAPACITY OF ELECTRIC PLANTS

EXISTING STEAM AND GAS TURBINE POWER UNITS

PLANT LOCATION	PL'T (1) CAP MW	No. & SIZE (1) UNITS	YEAR COMMISSIONED
<u>Steam Power</u>			
Cairo West	261	3 x 87	'66-'68
Cairo South	240	4 x 60	'57-'65
Cairo North	100	2 x 30	'54-'55
		1 x 20	'52-'53
		2 x 10	'52-'53
El Tebbin	45	3 x 15	'58-'59
Talkha	127	3 x 12.5	'55-'56
		3 x 30	'66-'67
Damanhour	225	2 x 15	'60
		3 x 65	'68
El Siouf	113	2 x 26.5	'61
		2 x 30	'69
Karmouz	64	4 x 16	'49-'56
Assiut	90	3 x 30	'66-'67
Suez (Damaged)	100	4 x 25	'64
El-Max	28	2 x 14	'66
Suez	17	1 x 17	'76
Ismailia	22(4)	1 x 21.6	'77
Cairo North	22(4)	1 x 21.6	'77
Fayum	22(4)	1 x 21.6	
Tahrir Matamir	22(4)	1 x 21.6	'78
Heliopolis	35(4)	3 x 12.5	'78
Karmouz	24(4)	2 x 12.5	'78
Port Said	46	2 x 23	'77
Total	1603		

EGYPT

ANNEX 1.02
Page 1 of 2

GULF OF SUEZ GAS PROJECT

TOTAL INSTALLED CAPACITY OF ELECTRIC PLANTS

STEAM AND GAS TURBINE POWER UNITS UNDER CONTRACT

PLANT LOCATION	PL'T (1) CAP MW	No. & SIZE (1) UNITS	YEAR COMMISSIONED	FUEL
Kafr El-Dawar	330	3 x 110	'79-'82	
Cairo West	87	1 x 87	'79	
Abu-Qir I	300	2 x 150	'80	
Ismalia	300	2 x 150	'83	
Abu-Qir II	300	2 x 150	'81	
Suez I	300	2 x 150	'82	
Helwan	132	5 x 25.5	'78	Diesel Oil
Talkha	198	8 x 24.8	'78	Diesel Oil
El-Tebbin	50	2 x 25	'79	Diesel Oil
Cairo East	50	2 x 25	'79	Diesel Oil
Total	2047			

Source: Sanderson and Porter

EGYPT

GULF OF SUEZ GAS PROJECT

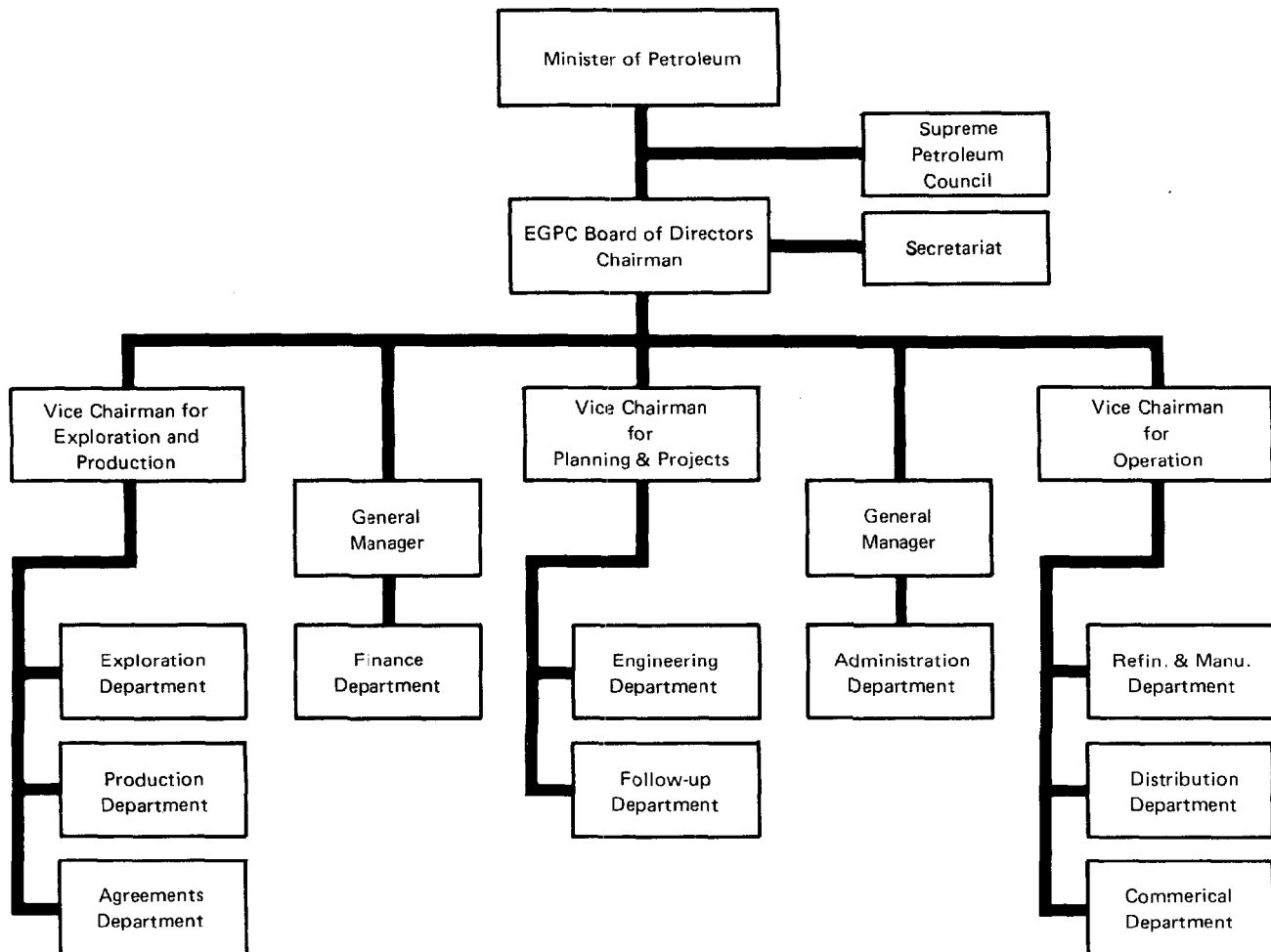
TOTAL INSTALLED CAPACITY OF ELECTRIC PLANTS

EXISTING STEAM AND GAS TURBINE POWER UNITS

PLANT LOCATION	PL'T (1) CAP MW	No. & SIZE (1) UNITS	YEAR COMMISSIONED
<u>Steam Power</u>			
Cairo West	261	3 x 87	'66-'68
Cairo South	240	4 x 60	'57-'65
Cairo North	100	2 x 30	'54-'55
		1 x 20	'52-'53
		2 x 10	'52-'53
El Tebbin	45	3 x 15	'58-'59
Talkha	127	3 x 12.5	'55-'56
		3 x 30	'66-'67
Damanhour	225	2 x 15	'60
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Port Said	46	2 x 23	'77
Total	1603		

Source: Sanderson and Porter

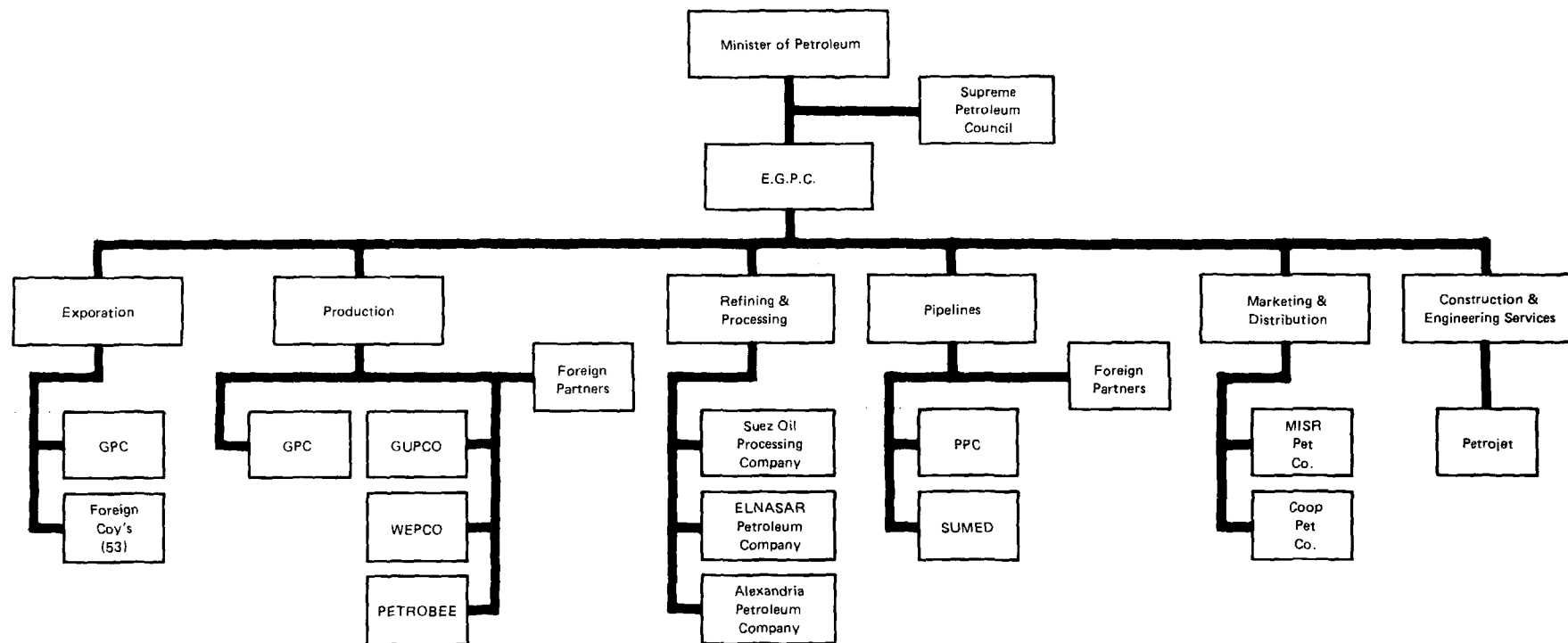
EGYPT
GULF OF SUEZ GAS PROJECT
ORGANIZATION STRUCTURE



Source: Egyptian General Petroleum Corporation

World Bank — 20395

**EGYPT
GULF OF SUEZ GAS PROJECT
FUNCTIONAL STRUCTURE OF OIL INDUSTRY**



Source: Egyptian General Petroleum Corporation

World Bank -- 20396

EGYPT

GULF OF SUEZ GAS PROJECT

ESTIMATE OF GAS AVAILABILITY

FROM THE GULF OF SUEZ

(In millions of cubic feet per day)

Year	July and Ramadan	OilField Use	July and Ramadan	382	Amal	Total
	Gross		Net	Proved + 1/2 Probable		
1981	71	40	31	75	-	106
1982	63	44	19	74	-	93
1983	71	45	26	75	-	101
1984	73	44	29	70	-	99
1985	63	38	25	60	-	85
1986	54	37	17	50	13	80
1987	45	34	11	42	27	80
1988	36	30	6	35	39	80
1989	29	25	4	29	47	80
1990	24	20	3	24	53	80
1991	21	17	4	19	37	80
1992	11	11	-	16	54	80
1993	2	2	-	13	67	80
1994	-	-	-	11	69	80
1995	-	-	-	9	71	80
1996	-	-	-	8	72	80
1997	-	-	-	7	73	80
1998	-	-	-	-	80	80
1999	-	-	-	-	80	80
2000	-	-	-	-	80	80

Source: De Colyer and MacNaughton
Reservoir Study
Egyptian General Petroleum Corp.

EGYPT

GULF OF SUEZ GAS PROJECT

Estimated Schedule of Disbursement

<u>IBRD Fiscal Year and Quarter</u>	<u>Cumulative Disbursement at End of Quarter (US\$ 000)</u>
<u>1979/80</u>	
September 30, 1979	1,000
December 31, 1979	2,000
March 31, 1980	7,000
June 30, 1980	15,000
<u>1980/81</u>	
September 30, 1980	25,000
December 31, 1980	35,000
March 31, 1981	45,000
June 30, 1981	55,000
<u>1981/82</u>	
September 30, 1981	65,000
December 31, 1981	70,000
March 31, 1982	73,000
June 30, 1982	75,000

Source: Mission estimate
May, 1979

GULF OF SUZUK GAS PROJECT

Summary of Project Costs

1. PROJECT DESIGN IMPLEMENTATION, TRAINING & STUDIES	In LE Million		In US\$ Million	
	Local	Foreign	Local	Foreign
Project Management, Engineering and Technical Services	1.1	1.4	2.5	1.6
Operator & Maintenance Training	0.1	0.2	0.3	0.1
Financial Training & Consultancy	0.1	0.4	0.5	0.2
Sector Studies	0.7	1.7	2.4	1.0
Project II Engineering	0.2	1.5	1.7	0.3
Sub-Total	2.2	5.2	7.4	3.2
2. 382 GAS GATHERING STATION				
Compressors	-	2.4	2.4	-
Auxiliary Equipments & Materials	0.3	0.9	1.2	0.5
Station Construction	1.7	1.7	3.4	1.3
Line Pipe, Valves & Fittings	-	1.5	1.5	2.4
Coating, Wrap & Cathodic Protection	-	0.1	0.1	-
Tele Control	-	0.1	0.1	0.1
Pipeline Construction	0.9	1.4	2.3	1.3
Handling Charges	0.4	0.3	0.7	0.6
Sub-Total	3.3	6.4	11.7	4.8
3. GUPCO GAS GATHERING STATION				
Compressors	-	1.4	1.4	-
Auxiliary Equipments & Materials	0.1	0.6	0.7	0.2
Station Construction	0.3	0.6	0.9	0.5
Line Pipe, Valves & Fittings	-	0.1	0.1	-
Coating, Wrap & Cathodic Protection	-	0.1	0.1	-
Pipeline Construction	0.2	0.1	0.3	0.2
Handling Charges	0.1	0.1	0.2	0.2
Sub-Total	0.7	3.0	3.7	1.1
4. RAMADAN GAS GATHERING STATION				
Compressors	-	1.0	1.0	-
Auxiliary Equipments & Materials	0.6	0.8	0.8	0.8
Station Construction	1.3	1.5	1.5	1.3
Line Pipe, Valves & Fittings	-	0.8	0.8	-
Coating, Wrap & Cathodic Protection	-	0.1	0.1	-
Tele Control	-	0.1	0.1	-
Pipeline Construction	2.0	3.3	5.3	2.8
Handling Charges	0.3	0.1	0.4	0.4
Sub-Total	2.9	8.1	11.0	4.1
5. RAS SHUKR-SUEZ PIPELINE				
Pipe, Valves & Fittings	-	8.6	8.6	-
Coating & Wrap	-	0.4	0.4	-
Cathodic Protection	-	0.1	0.1	-
Tele Control	-	0.6	0.6	-
Handling Charges	1.0	0.6	1.5	1.4
Construction	4.2	6.7	11.0	6.2
Sub-Total	5.3	17.0	22.3	7.6
6. DISTRIBUTION SYSTEM				
Pipe & Materials	-	0.7	0.7	-
Installation	1.1	0.7	1.8	1.6
Sub-Total	1.1	1.4	2.5	1.6
7. LPG PLANT & COMPRESSOR STATION				
Engineered Equipment	-	7.2	7.2	-
Instruments	0.6	0.4	0.6	0.6
Concrete	0.8	-	0.8	0.9
Buildings	-	0.8	0.8	-
Piping	-	2.0	2.0	-
Electrical Materials	0.2	0.6	0.8	0.2
Miscellaneous & Consumables	0.1	0.3	0.6	0.2
Handling Charges	0.9	0.5	1.4	1.3
Installation & Construction	3.0	5.5	9.2	4.2
Sub-Total	5.6	16.7	22.3	8.0
8. SUEZ-CAIRO PIPELINES 1/				
Compressors	-	3.0	3.0	-
Looping	0.1	0.1	0.2	0.1
Sub-Total	0.1	3.1	3.2	0.1
9. CAIRO DISTRIBUTION SYSTEM 1/				
Pipe and Materials	-	2.7	2.7	-
Installation	2.1	1.5	3.6	3.0
Sub-Total	2.1	4.2	6.3	3.0
10. MISC. SUPPORT FACILITIES				
BASIC PROJECT ESTIMATE (BPE)	0.7	2.2	2.9	1.0
Physical Contingency (PC) 12.5% 2/	24.0	69.3	93.3	34.5
Price Contingency (10.5% of BPE and PC) 3/	3.1	9.5	11.6	4.4
	3.6	7.5	11.1	5.1
ESTIMATED PROJECT COST	30.7	85.3	115.0	44.0
				123.0
				167.0

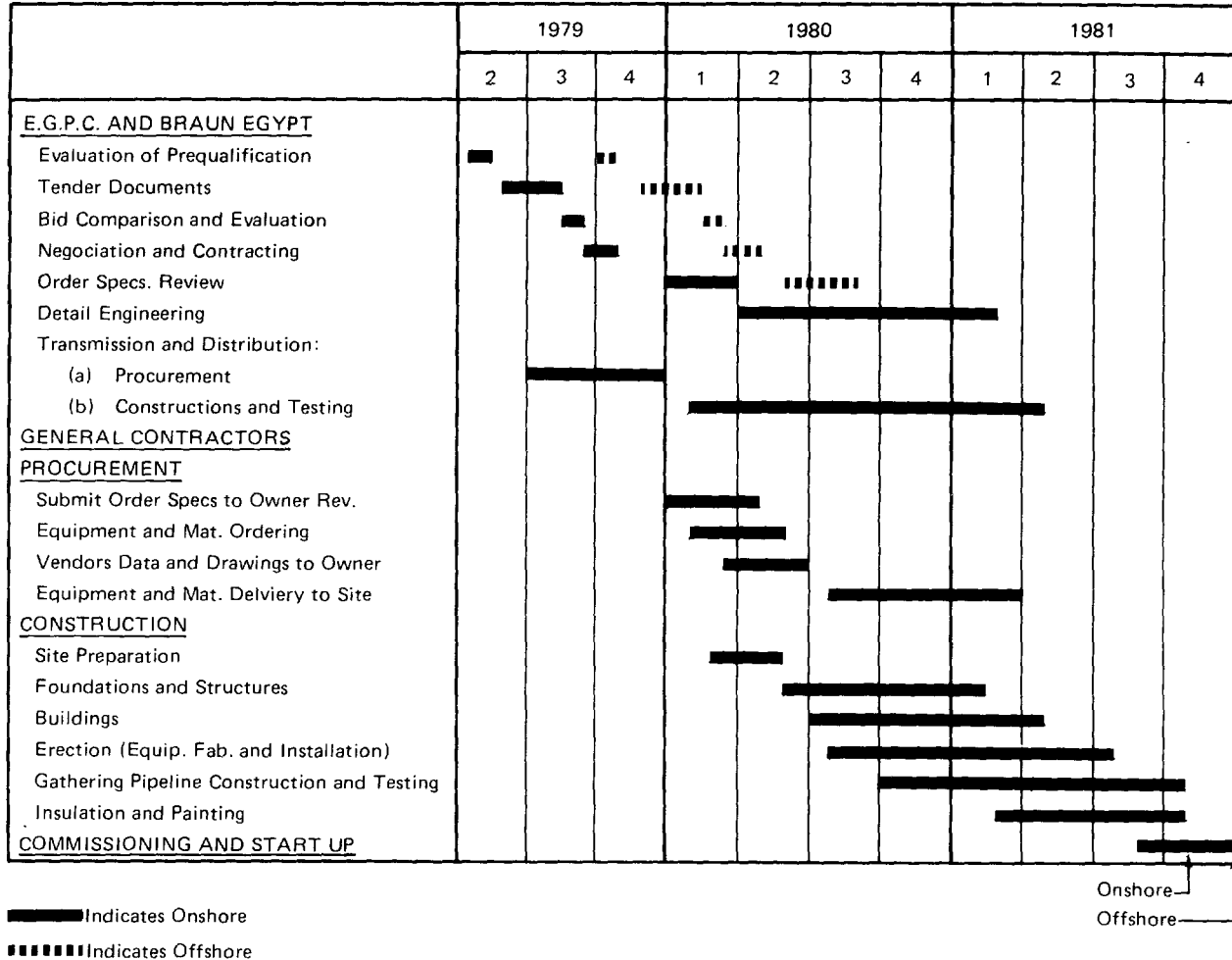
1/ Preliminary Estimates

2/ 15% on gas gathering systems, Suez-Cairo Pipelines, and distribution networks; 10% on balance of project.

3/ Based on a combined equipment/civil works increase of 7% for 1979 and 6.5% for 1980-81.

Source: EGPC
Mission estimate

**EGYPT
GULF OF SUEZ GAS PROJECT
GAS PROCESSING AND TRANSMISSION
MASTER SCHEDULE**



EGYPT
E. G. P. C.
OPERATING ACCOUNT
IN L. E. MILLIONS

Fiscal Year Ending December 31:	Actual					Estimated	Projected	
	1973	1974	1975	1976	1977	1978	1979/1	1979/2
<u>Income from</u>								
<u>Sales and Services:</u>								
Petroleum Products	127.9	147.1	165.2	189.9	217.9	222.0	273.3	298.0
Crude Oil	17.4	43.1	45.7	51.4	89.4	78.0	81.0	79.8
Natural Gas	-	-	-	1.0	2.4	6.6	8.7	8.7
<u>Exports</u>								
Crude Oil	5.0	1.8	19.9	125.7	159.5	309.4	298.3	522.2
Petroleum Products	12.9	35.9	54.5	76.5	73.3	87.8	87.7	157.1
Total Sales	163.2	227.9	285.3	444.5	542.5	703.8	749.0	1,065.8
Sales of Services	4.4	5.5	3.6	0.2	4.9	2.4	2.2	2.2
Total Income	167.6	233.4	288.9	444.7	547.4	706.2	751.2	1,068.0
<u>Costs and Other</u>								
<u>Operating Expenses:</u>								
<u>Local Purchases</u>								
Crude for Refineries	34.3	67.1	73.8	96.4	124.6	91.2	112.4	125.3
Crude for Export	0.7	2.0	-	-	-	93.5	-	-
Natural Gas	-	-	-	-	-	5.9	7.3	8.9
<u>Foreign Purchases</u>								
Crude Oil	11.3	19.1	28.9	-	-	30.5	-	-
Products	10.0	24.3	20.1	77.5	53.9	34.0	64.8	116.0
Total Cost of Purchases	56.3	112.5	122.8	173.9	178.5	255.1	184.5	250.2
<u>Operating Expenses</u>								
Transport of Crude & Products	12.5	12.3	23.6	15.9	18.3	25.7	26.5	33.0
Refining Fees & Expenses	17.2	19.3	22.6	27.4	34.1	37.5	41.9	41.9
Petroleum Royalties	7.9	8.9	11.4	16.4	27.2	35.7	37.9	44.1
Treasury Rights, Customs & Excise Fees	53.3	61.2	66.7	73.7	75.3	80.0	90.6	93.6
	90.9	101.7	124.3	133.4	154.9	178.9	196.9	212.6
Total Costs & Expenses	147.2	214.2	247.1	307.3	333.4	434.0	381.4	462.8
<u>Net Operating Income</u>								
Before Subsidies	20.4	19.2	41.8	137.4	214.0	272.2	369.8	605.2
Subsidies	-	-	10.7	10.2	12.4	15.0	31.9	74.8
Net Operating Income	20.4	19.2	52.5	147.6	226.4	287.2	401.7	680.0

/1 Based on official rate of exchange, 1 L.E. = 2.5\$

/2 Based on parallel market rate, 1 L.E. = 1.44\$

EGYPT
E. G. P. C.
PROFIT AND LOSS ACCOUNTS
IN L.E. MILLIONS

Fiscal Year Ending December 31:	Actual					Estimated	Projected	
	1973	1974	1975	1976	1977	1978	1979/1	1979/2
Net Operating Income	20.4	19.2	52.5	147.6	226.4	287.2	401.7	680.0
EGPC's Share in Affiliate's Profits	5.0	6.7	17.2	30.9	26.9	41.8	32.0	42.5
Management Fees	0.6	1.3	2.6	5.5	3.6	7.0	5.3	5.3
Other Income	7.6	24.9	41.3	22.8	155.9	13.6	9.2	15.2
Gross Profits	<u>33.6</u>	<u>52.1</u>	<u>113.6</u>	<u>206.8</u>	<u>412.8</u>	<u>349.6</u>	<u>448.2</u>	<u>743.0</u>
General and Administrative Expenses	5.5	9.0	10.0	6.3	101.6	5.5	6.7	7.9
Depreciation	11.2	7.8	9.1	10.7	11.2	11.2	14.3	20.7
Interest and Debt Expense	3.9	4.1	6.3	8.5	9.0	14.9	14.2	17.5
Taxes & Fees (other than income taxes)	5.6	8.8	12.6	13.4	17.6	18.9	23.0	23.0
Income Taxes	<u>3.3</u>	<u>15.4</u>	<u>25.0</u>	<u>49.2</u>	<u>75.0</u>	<u>80.9</u>	<u>91.2</u>	<u>156.6</u>
Profit for Distribution	<u>4.1</u>	<u>7.0</u>	<u>50.6</u>	<u>118.7</u>	<u>198.4</u>	<u>218.2</u>	<u>298.8</u>	<u>517.3</u>

EGYPT
E. G. P. C.
PROFIT DISTRIBUTION ACCOUNT
IN L.E. MILLIONS

Fiscal Year Ending December 31:	Actual					Estimated	Projected	
	1973	1974	1975	1976	1977	1978	1979/1	1979/2
Net Profit for Distribution	4.1	7.0	50.6	118.7	198.4	218.2	298.8	517.3
Reserve for Project Financing	-	-	10.0	5.0	0.6	10.0	14.9	25.9
Reserve for Loan Repayment	-	3.8	23.0	29.3	20.6	21.6	29.9	51.7
Government Surplus	<u>4.1</u>	<u>3.2</u>	<u>17.6</u>	<u>84.4</u>	<u>177.2</u>	<u>186.6</u>	<u>254.0</u>	<u>439.7</u>

/1 Based on official rate of exchange, 1 L.E. = 2.5\$

/2 Based on parallel market rate, 1 L.E. = 1.44\$

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EGYPT
E. G. P. C.
BALANCE SHEET
IN L.E. MILLIONS

As at December 31:	1973	1974	1975	1976	1977	Estimated 1978	Projected 1979 ^{1/}
Fixed Assets	58.5	68.5	74.6	77.0	79.8	79.8	79.7
Less Accumulated Depreciation	30.7	31.8	35.7	44.1	53.6	64.8	79.0
Net Fixed Assets	27.8	36.8	38.9	32.9	26.2	15.0	0.7
Projects in Progress	14.1	13.0	36.8	50.2	64.7	120.2	185.2
Investment in Affiliates							
Suez Oil Processing	32.3	33.0	33.7	34.5	35.4	37.9	44.8
El-Nasr Petroleum	38.0	38.1	38.9	40.7	46.0	51.5	57.6
Alexandria Petroleum	7.8	8.6	10.4	11.5	16.0	20.5	31.1
Cooperative Petroleum	8.0	8.4	10.2	18.0	23.8	26.7	30.0
Misr Petroleum	17.5	20.5	22.9	24.2	25.8	25.8	25.8
Petroleum Pipelines	13.8	14.9	15.8	17.2	18.3	18.3	18.3
Sumed	-	39.1	70.5	78.3	78.3	78.3	78.3
Cope	9.2	9.2	9.6	-	-	-	-
Petrobel	-	-	-	11.8	9.6	9.6	9.6
Others	10.8	14.8	23.3	32.8	44.5	48.6	63.9
Total Investment	137.4	186.6	235.3	269.0	297.7	317.2	359.4
Domestic Lending	6.7	0.9	0.5	15.6	-	-	-
Working Capital							
Current Assets	83.9	123.3	265.7	355.7	346.7		
Less Current Liabilities	78.3	124.0	252.0	335.1	336.9		
Net Working Capital	5.6	(0.7)	13.7	20.6	9.8	10.9	(6.4)
Total Assets	191.6	236.6	325.2	388.3	398.4	463.3	538.9
Equity	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Reserves	42.5	52.5	96.4	152.5	141.1	172.7	217.6
Total Equity	92.5	102.5	146.4	202.5	191.1	222.7	267.6
Foreign Commercial Bank Loans	1.8	22.3	42.2	47.7	46.7	43.1	54.9
Ministry of Finance Bank of Egypt Loans	56.4	67.7	90.4	89.3	116.5	164.1	186.3
Other Loans	40.9	44.1	46.2	48.8	44.1	33.4	30.1
Net Long-term Loans	99.1	134.1	178.8	185.8	207.2	240.6	271.3
Total Liabilities & Equity	191.6	236.6	325.2	388.3	398.4	463.3	538.9
Current Ratio	1.1	1.0	1.1	1.1	1.0		
Debt/Equity Ratio	1.1	1.3	1.2	0.9	1.1	1.1	1.0

^{1/} Based on the official rate of exchange, 1 L.E. = 2.5\$

SUMS PAID TO PUBLIC TREASURY
BY EGPC AND ITS SUBSIDIARY
PETROLEUM PUBLIC SECTOR COMPANIES

Fiscal Year Ending December 31: (Million L.E. 1/)	1973	1974	1975	1976	1977	Estimated 1978	Projected 1979 1/	Projected 1979 2/
<u>Sums Paid by EGPC 3/:</u>								
Petroleum Royalties	7.9	8.9	11.4	16.4	27.2	35.7	37.9	44.1
Excise Duties and Customs Fees	24.3	28.1	28.9	30.3	33.9	38.0	43.8	46.9
Treasury Rights and Subsidies	29.0	33.1	37.8	43.4	41.3	42.0	46.7	46.7
Other Fees and Taxes	5.6	8.8	12.6	13.4	17.7	18.9	23.0	23.0
Interest	3.7	3.9	5.6	5.9	6.5	9.2	9.7	9.7
Income Taxes	3.2	15.4	25.1	49.2	75.0	80.9	91.2	156.6
Government Surplus	4.1	3.2	17.6	84.4	177.2	186.6	254.0	439.7
Total Paid by EGPC	<u>77.8</u>	<u>101.4</u>	<u>139.0</u>	<u>243.0</u>	<u>378.5</u>	<u>411.3</u>	<u>506.3</u>	<u>766.8</u>

Sums Paid by Subsidiary
Companies 4/:

Excise Duties and Customs Fees	0.7	0.9	0.5	1.0
Taxes (other than Income Taxes)	2.6	2.5	2.3	2.5
Income Taxes	4.5	5.0	4.6	6.4
State Bonds Purchase Reserve	2.4	2.1	2.6	3.5
Central and Local Services	5.4	4.9	6.1	8.0
Employees Distribution Surplus	2.7	2.4	3.0	4.2
Nasser's Bank Share	1.1	1.0	1.2	1.5
Total Paid by Subsidiaries	<u>19.4</u>	<u>18.8</u>	<u>20.3</u>	<u>27.1</u>

1/ Based on official rate of exchange, 1 L.E. = 2.5\$

2/ Based on parallel market rate, 1 L.E. = 1.44\$

3/ Mission's approximate figures for interest on Government loans for 1973 through 1976.

4/ Excludes Eastern Petroleum Company.

GULF OF SUEZ GAS PROJECT
EGPC
STATEMENTS OF INCOME

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
INFLATION	1.0350	1.1049	1.1767	1.2532	1.3347	1.4214	1.5138	1.6122	1.7170	1.8286	1.9475	2.0740	2.2089	2.3524	2.5053	2.6682	2.8416	3.0263	3.2230	3.4325	3.6557	3.8933
TAX RATE	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397	0.397
SALES GAS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
THERMAL VALUE (BTU/CF)	-	-	1,150	1,150	1,150	1,150	1,100	1,050	1,050	1,050	1,000	1,000	950	950	950	950	950	950	950	950	950	950
SALES GAS CAIRO (MMCFD)	-	-	17	35	35	19	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SALES GAS SUEZ (MMCFD)	-	-	13	25	50	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
PRODUCT RATES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SALES GAS (MMCFD)	-	-	30	60	85	99	85	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
LPG (TON/D)	-	-	81	250	250	250	223	189	223	197	183	167	154	145	138	128	121	80	80	80	80	80
NAPHTHA (TON/D)	-	-	96	205	205	205	205	189	175	169	163	157	154	145	139	118	94	32	32	32	32	32
DOMESTIC PRICES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GAS (\$/THERM)	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
FUEL OIL (\$/TON)	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07
DIESEL OIL (\$/TON)	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32	37.32
LPG (\$/TON)	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56	34.56
EXCISE FEES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL OIL (\$/TON)	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
DIESEL OIL (\$/TON)	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35	17.35
LPG (\$/TON)	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27
EXPORT PRICES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL OIL (\$/TON)	72.00	77.00	82.00	88.00	93.00	99.00	106.00	113.00	120.00	128.00	136.00	145.00	155.00	165.00	175.00	187.00	199.00	212.00	226.00	240.00	256.00	273.00
DIESEL OIL (\$/TON)	114.00	122.00	129.00	138.00	147.00	156.00	167.00	177.00	189.00	201.00	214.00	228.00	243.00	259.00	276.00	294.00	313.00	333.00	355.00	378.00	402.00	428.00
NAPHTHA (\$/TON)	129.00	138.00	147.00	157.00	167.00	178.00	189.00	202.00	215.00	229.00	243.00	259.00	276.00	294.00	313.00	334.00	355.00	378.00	403.00	429.00	457.00	487.00
GAS CAIRO (1000 TONS F.O.E.)	-	-	158	336	326	177	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GAS SUEZ (1000 TONS F.O.E.)	-	-	121	233	465	744	712	680	680	680	647	647	615	615	615	615	615	615	615	615	615	615
PRODUCTION	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GAS (1000 TONS F.O.E.)	-	-	279	559	791	921	757	680	680	680	647	647	615	615	615	615	615	615	615	615	615	615
GAS CAIRO (MMCF)	-	-	6	12	12	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GAS SUEZ (MMCF)	-	-	4	8	17	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
GAS (MMCF)	-	-	10	20	29	32	28	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
LPG (1000 TONS)	-	-	27	83	83	83	74	62	74	65	60	55	51	48	46	42	40	21	21	21	21	21
NAPHTHA (1000 TONS)	-	-	32	68	68	68	68	62	58	56	54	52	51	48	46	39	31	11	11	11	11	11
GAS SALES CAIRO	-	-	3.6	7.1	7.1	3.6	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GAS SALES SUEZ	-	-	1.2	2.3	5.0	7.6	7.3	6.9	6.9	6.9	6.6	6.6	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
DOMESTIC SALES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GAS	-	-	4.8	9.4	12.1	11.2	8.4	6.9	6.9	6.9	6.6	6.6	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
LPG	-	-	0.9	2.9	2.9	2.9	2.6	2.1	2.6	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	0.7	0.7	0.7	0.7	0.7
LESS LPG EXCISE FEES	-	-	(0.5)	(1.6)	(1.6)	(1.6)	(1.4)	(1.2)	(1.4)	(1.3)	(1.2)	(1.1)	(1.0)	(0.9)	(0.9)	(0.8)	(0.8)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
LPG (NET OF FEES)	-	-	0.4	1.3	1.3	1.3	1.2	0.9	1.2	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.3	0.3	0.3	0.3	0.3
EXPORTS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NAPHTHA	-	-	4.7	10.7	11.4	12.1	12.9	12.5	12.5	12.8	13.1	13.5	14.1	14.1	14.4	13.0	11.0	4.2	4.4	4.7	5.0	5.4
DIRECT PROJECT INCOME	-	-	9.9	21.4	24.8	24.6	22.5	20.3	20.6	20.6	20.6	20.9	21.2	21.2	21.4	20.0	17.9	10.8	11.0	11.3	11.6	12.0
FUEL OIL EXPORTS	-	-	18.6	39.6	43.5	45.3	38.7	36.8	31.6	27.0	24.1	21.6	25.3	25.3	25.6	25.6	25.6	25.6	25.6	25.6	25.6	25.6
LESS DOMESTIC SALES	-	-	(2.1)	(4.1)	(6.2)	(7.8)	(6.7)	(6.2)	(6.2)	(6.2)	(5.9)	(5.9)	(5.6)	(5.6)	(5.6)	(5.6)	(5.6)	(5.6)	(5.6)	(5.6)	(5.6)	(5.6)
LESS EXCISE FEES	-	-	0.2	0.4	0.5	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
LESS DOMESTIC SALES (NET OF EXCISE FEES)	-	-	(1.9)	(3.7)	(5.7)	(7.1)	(6.1)	(5.7)	(5.7)	(5.7)	(5.4)	(5.4)	(5.1)	(5.1)	(5.1)	(5.1)	(5.1)	(5.1)	(5.1)	(5.1)	(5.1)	(5.1)
DIESEL OIL EXPORTS	-	-	6.8	15.0	16.0	9.2	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LESS DOMESTIC SALES	-	-	(2.0)	(4.1)	(4.1)	(2.2)	(0.6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LESS EXCISE FEES	-	-	0.9	1.9	1.9	1.0	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LESS DOMESTIC SALES (NET OF EXCISE FEES)	-	-	(1.1)	(2.2)	(2.2)	(1.2)	(0.3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INDIRECT PROJECT INCOME	-	-	22.4	48.7	71.6	86.2	74.8	71.1	75.9	81.3	82.6	88.4	90.2	94.4	102.5	109.9	117.3	125.3	133.9	142.5	152.3	162.8
TOTAL PROJECT INCOME	-	-	32.3	70.1	96.4	110.8	97.3	91.4	96.5	101.9	103.2	109.3	111.4	117.6	123.9	129.9	135.2	136.1	144.9	153.8	163.9	174.8
PROCESSING & PIPELINE EXPENSES	-	-	26.8	45.0	46.9	51.0	50.3	54.9	62.1	61.5	61.1	60.5	60.0	59.8	59.7	59.6	59.6	60.4	54.7	56.2	57.7	60.4
GROSS OPERATING PROFIT	-	-	5.5	25.1	49.5	59.8	47.0	36.5	34.4	40.4	42.1	48.8	51.4	57.8	64.2	70.3	75.6	75.7	90.2	97.6	106.2	114.4
RETURN ON STOCKS	-	-	8.3	8.0	7.4	7.1	6.6	9.8	9.3	8.6	8.0	7.1	6.5	6.0	5.1	4.5	3.9	3.5	2.9	2.7	2.3	2.3
MANAGEMENT FEE	-	-	1.5	1.5	1.4	1.3	1.2	1.8	1.7	1.6	1.5	1.3	1.2	1.1	1.0	0.8	0.7	0.6	0.6	0.5	0.4	0.4
INTEREST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL PROJECT INCOME	-	-	15.3	42.7	65.9	75.2	61.3	54.1	54.5	59.0	59.3	64.2	65.3	70.4	75.1	79.7	83.6	82.5	95.7	102.4	110.1	117.9
INTEREST & FEES	-	-	6.6	11.3	11.8	11.1	10.4	10.1	10.0	9.0	8.2	7.2	6.1	5.2	4.5	3.6	2.8	2.0	1.5	0.8	0.3	0.1
INCOME TAXES	-	-	3.5	12.5	21.5	25.4	20.2	17.5	17.7	19.9	20.3	22.6	23.5	25.9	28.0	30.2	32.1	32.0	37.4	40.3	43.6	46.1
DISTRIBUTIVE SURPLUS	-	-	5.2	18.9	32.6	38.7	30.7	26.5	26.8	30.1	30.8	34.4	35.7	39.3	42.6	45.9	48.7	48.5	56.8	61.3	66.2	71.0
RESERVE FOR LOAN REPAYMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RESERVE FOR NEW INVESTMENT	-	-	0.3	0.9	1.6	1.9	1.5	1.3	1.3	1.5	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.4	2.8	3.1	3.3	3.6
GOVERNMENT SURPLUS	-	-	4.4	16.1	27.7	32.9	26.1	22.5	22.8	25.6	26.2	29.3	30.3	33.4	36.2	39.0	41.4	41.2	48.3	52.1	56.3	60.3

GULF OF SUZ S GAS PROJECT
EGPC
STATEMENTS OF SOURCES AND APPLICATIONS OF FUNDS

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
DISTRIBUTIVE SURPLUS REPAYMENT BY AFFILIATE	-	-	5.2	18.9	32.6	38.7	30.7	26.5	26.8	30.1	30.8	34.4	35.7	39.3	42.6	45.9	48.7	48.5	56.8	61.3	66.2	71.0
	-	-	-	10.1	10.1	10.1	10.1	10.1	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	7.6	7.6	7.6	7.6
CAPITAL COST INCLUDING INTEREST & FEES DURING CONSTRUCTION	25.7	86.2	49.3	-	-	15.6	28.8	26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WORKING CAPITAL	(4.3)	(5.8)	11.4	14.5	4.4	(0.2)	(4.5)	(0.6)	5.3	0.9	0.2	1.0	0.4	1.0	1.1	1.0	0.8	0.2	1.5	1.4	1.7	1.8
CASH FLOW BEFORE FINANCING	(21.4)	(80.4)	(55.5)	14.5	38.3	33.4	16.5	10.6	35.7	43.4	44.8	47.6	49.5	52.5	55.7	59.1	62.1	62.5	62.9	67.5	72.1	76.8
ACCUMULATED NPV AT 10%	(19.5)	(85.9)	(127.6)	(117.7)	(93.9)	(75.0)	(66.5)	(61.6)	(46.5)	(29.8)	(14.1)	1.1	15.4	29.2	42.5	55.4	67.7	78.9	89.2	99.2	108.9	118.3
FOREIGN LOANS PRINCIPAL	13.8	39.7	35.0	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	-	-
CASH FLOW AFTER FOREIGN FINANCING	(7.6)	(40.7)	(20.5)	19.5	30.9	26.0	9.1	3.2	28.3	36.0	37.4	40.2	45.2	48.2	51.4	54.8	57.8	58.2	58.6	63.2	72.1	76.8
ACCUMULATED NPV AT 10%	(6.9)	(40.5)	(55.9)	(42.6)	(23.4)	(8.7)	(4.0)	(2.5)	9.5	23.4	36.5	49.3	62.4	75.1	87.4	99.3	110.7	121.2	130.8	140.2	149.9	159.3
DOMESTIC LOAN PRINCIPAL	2.5	31.5	24.0	-	-	5.7	12.7	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	4.8	4.8	4.8	4.8	4.8	7.7	7.7	7.7	7.7	7.7	7.7	7.7	2.8	2.8	2.8	2.8	2.8
CASH FLOW AFTER FINANCING	(5.1)	(9.2)	3.5	19.5	30.9	26.9	17.0	14.0	23.5	31.2	29.7	32.5	37.5	40.5	43.7	47.1	50.1	55.4	55.8	60.4	69.3	74.0
ACCUMULATED NPV AT 10%	(4.6)	(12.2)	(9.6)	3.7	22.9	38.1	46.8	53.3	63.3	75.3	85.7	96.1	107.0	117.7	128.2	138.5	148.4	158.4	167.5	176.5	185.9	195.0
GOVERNMENT TAKE	-	-	4.4	16.1	27.7	32.9	26.1	22.5	22.8	25.6	26.2	29.3	30.3	33.4	36.2	39.0	41.4	41.2	48.3	52.1	56.3	60.3
CASH FLOW AFTER FINANCING & GOVT TAKE	(5.1)	(9.2)	(0.9)	3.4	3.2	(6.0)	(9.1)	(8.5)	0.7	5.6	3.5	3.2	7.2	7.1	7.5	8.1	8.7	14.2	7.5	8.3	13.0	13.7
ACCUMULATED NPV AT 10%	(4.6)	(12.2)	(12.9)	(10.6)	(8.6)	(12.0)	(16.7)	(20.7)	(20.4)	(18.2)	(17.0)	(16.0)	(13.9)	(12.0)	(10.2)	(8.4)	(6.7)	(4.1)	(2.9)	(1.7)	0.1	1.8

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SUBSIDIARIES FINANCIAL STATEMENTS

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
SALE OF SERVICE	-	-	26.8	45.0	46.9	51.0	50.3	54.9	62.1	61.5	61.1	60.5	60.0	59.8	59.7	59.6	59.6	60.4	54.7	56.2	57.7	60.4
OPERATING COST	-	-	10.6	11.3	14.7	20.2	20.9	19.7	20.9	22.3	23.8	25.3	26.9	28.7	30.6	32.6	34.7	36.9	39.3	41.9	44.6	47.5
DEPRECIATION	-	-	-	10.1	10.1	10.1	10.1	10.1	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	7.6	7.6	7.6	7.6
INTEREST	-	-	-	8.1	7.6	7.0	6.5	6.0	9.1	8.4	7.7	7.0	6.2	5.5	4.8	4.1	3.4	2.7	2.0	1.6	1.2	0.8
INCOME TAXES	-	-	0.9	0.9	0.8	0.8	0.7	1.1	1.0	0.9	0.9	0.8	0.7	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.3
DISTRIBUTIVE SURPLUS	-	-	15.3	14.6	13.7	12.9	12.1	18.0	16.9	15.7	14.5	13.2	12.0	10.8	9.5	8.2	6.9	6.2	5.5	4.8	4.1	4.2
LEGAL RESERVE	-	-	0.8	0.7	0.7	0.6	0.6	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2
ASSETS RESERVE	-	-	0.8	0.7	0.7	0.6	0.6	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2
STATES BONDS RESERVE	-	-	0.8	0.7	0.7	0.6	0.6	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2
NASSER BANK SHARE	-	-	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
DIVIDENDS PAID EGPC	-	-	8.3	8.0	7.4	7.1	6.6	9.8	9.3	8.6	8.0	7.1	6.5	6.0	5.1	4.5	3.9	3.5	2.9	2.7	2.3	2.3
EMPLOYEE SHARE	-	-	2.8	2.7	2.5	2.4	2.2	3.3	3.1	2.9	2.7	2.4	2.2	2.0	1.7	1.5	1.3	1.2	1.0	0.9	0.8	0.8
EGPC MANAGEMENT FEE	-	-	1.5	1.5	1.4	1.3	1.2	1.8	1.7	1.6	1.5	1.3	1.2	1.1	1.0	0.8	0.7	0.6	0.6	0.5	0.4	0.4
SOURCES OF FUNDS																						
RESERVES	-	-	2.4	2.1	2.1	1.8	1.8	2.7	2.4	2.4	2.1	2.1	1.8	1.5	1.5	1.2	0.9	0.9	0.9	0.6	0.6	0.6
PROVISION FOR DEPRECIATION	-	-	-	10.1	10.1	10.1	10.1	10.1	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	7.6	7.6	7.6	7.6
SELF-FINANCING	-	-	2.4	12.2	12.2	11.9	11.9	12.8	16.6	16.6	16.3	16.3	16.0	15.7	15.7	15.4	15.1	15.1	8.5	8.2	8.2	8.2
EQUITY INVESTED	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LONG-TERM LOAN	-	-	161.2	-	-	-	-	71.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL SOURCES	-	-	163.6	12.2	12.2	11.9	11.9	83.8	16.6	16.6	16.3	16.3	16.0	15.7	15.7	15.4	15.1	15.1	8.5	8.2	8.2	8.2
REQUIREMENT FOR FUNDS																						
CAPITAL INVESTMENT	-	-	161.2	-	-	-	-	71.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LOAN REPAYMENT	-	-	-	10.1	10.1	10.1	10.1	10.1	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	7.6	7.6	7.6	7.6
FINANCIAL INVESTMENTS	-	-	0.8	0.7	0.7	0.6	0.6	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2
CASH & BANK BALANCES	-	-	1.6	1.4	1.4	1.2	1.2	1.8	1.6	1.6	1.4	1.4	1.2	1.0	1.0	0.8	0.6	0.6	0.6	0.4	0.4	0.4
TOTAL REQUIREMENT	-	-	163.6	12.2	12.2	11.9	11.9	83.8	16.6	16.6	16.3	16.3	16.0	15.7	15.7	15.4	15.1	15.1	8.5	8.2	8.2	8.2
FIXED ASSETS	-	-	161.2	161.2	161.2	161.2	161.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2	232.2
LESS ACCUMULATED DEPRECIATION	-	-	-	10.1	20.2	30.3	40.4	50.5	64.7	78.9	93.1	107.3	121.5	135.7	149.9	164.1	178.3	192.5	200.1	207.7	215.3	222.9
NET FIXED ASSETS	-	-	161.2	151.1	141.0	130.9	120.8	181.7	167.5	153.3	139.1	124.9	110.7	96.5	82.3	68.1	53.9	39.7	32.1	24.5	16.9	9.3
FINANCIAL INVESTMENTS	-	-	0.8	1.5	2.2	2.8	3.4	4.3	5.1	5.9	6.6	7.3	7.9	8.4	8.9	9.3	9.6	9.9	10.2	10.4	10.6	10.8
CASH & BANK BALANCES	-	-	1.6	3.0	4.4	5.6	6.8	8.6	10.2	11.8	13.2	14.6	15.8	16.8	17.8	18.6	19.2	19.8	20.4	20.8	21.2	21.6
CURRENT PORTION OF LONG TERM DEBT	-	-	(10.1)	(10.1)	(10.1)	(10.1)	(10.1)	(14.2)	(14.2)	(14.2)	(14.2)	(14.2)	(14.2)	(14.2)	(14.2)	(14.2)	(14.2)	(7.6)	(7.6)	(7.6)	(7.6)	-
WORKING CAPITAL	-	-	(8.5)	(7.1)	(5.7)	(4.5)	(3.3)	(5.6)	(4.0)	(2.4)	(1.0)	0.4	1.6	2.6	3.6	4.4	5.0	12.2	12.8	13.2	13.6	21.6
TOTAL ASSETS	-	-	153.5	145.5	137.5	129.2	120.9	180.4	168.6	156.8	144.7	132.6	120.2	107.5	94.8	81.8	68.5	61.8	55.1	48.1	41.1	41.7
EQUITY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RESERVES	-	-	2.4	4.5	6.6	8.4	10.2	12.9	15.3	17.7	19.8	21.9	23.7	25.2	26.7	27.9	28.8	29.7	30.6	31.2	31.8	32.4
TOTAL EQUITY	-	-	2.4	4.5	6.6	8.4	10.2	12.9	15.3	17.7	19.8	21.9	23.7	25.2	26.7	27.9	28.8	29.7	30.6	31.2	31.8	32.4
LONG TERM DEBT	-	-	151.1	141.0	130.9	120.8	110.7	167.5	153.3	139.1	124.9	110.7	96.5	82.3	68.1	53.9	39.7	32.1	24.5	16.9	9.3	9.3
TOTAL LIABILITIES	-	-	153.5	145.5	137.5	129.2	120.9	180.4	168.6	156.8	144.7	132.6	120.2	107.5	94.8	81.8	68.5	61.8	55.1	48.1	41.1	41.7

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GULF OF SUZ CAN PROJECT
CONSOLIDATED INCOME STATEMENTS

[illegible]

GULF OF SUEZ GAS PROJECT
CONSOLIDATED CASH FLOW STATEMENTS

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
DISTRIBUTION SURPLUS	-	-	10.7	24.0	37.5	43.2	35.0	32.9	32.7	35.6	35.8	39.2	40.0	43.0	46.0	48.8	51.0	50.6	58.8	62.9	67.6	72.5
DEPRECIATION	-	-	-	10.1	10.1	10.1	10.1	10.1	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	7.6	7.6	7.6	7.6
TOTAL SOURCES	-	-	10.7	34.1	47.6	53.3	45.1	43.0	46.9	49.8	50.0	53.4	54.2	57.2	60.2	63.0	65.2	64.8	66.4	70.5	75.2	80.1
CAPITAL COST INCLUDING INTEREST & FEES DURING CONSTRUCTION	25.7	86.2	49.3	-	-	15.6	28.8	26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FINANCIAL INVESTMENTS	-	-	0.8	0.7	0.7	0.6	0.6	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2
WORKING CAPITAL	(4.3)	(5.8)	11.4	14.5	4.4	(0.2)	(4.5)	(0.6)	5.3	0.9	0.2	1.0	0.4	1.0	1.1	1.0	0.8	0.2	1.5	1.4	1.7	1.8
NET CASH FLOW BEFORE FINANCING AND DISTRIBUTION	(21.4)	(80.4)	(50.8)	18.9	42.5	37.3	20.2	16.1	40.8	48.1	49.1	51.7	53.2	55.7	58.6	61.6	64.1	64.3	64.6	68.9	73.3	78.1
ACCUMULATED NPV AT 10%	(19.5)	(85.9)	(124.1)	(111.2)	(84.8)	(63.7)	(53.3)	(45.8)	(28.5)	(10.0)	7.2	23.7	39.1	53.8	67.8	81.2	93.9	105.5	116.1	126.3	136.2	145.8
NET CASH FLOW BEFORE FINANCING ACCUMULATED AT 10%	(21.4)	(80.4)	(58.3)	(0.2)	12.0	1.7	(8.4)	(10.1)	14.5	19.3	19.9	19.7	20.4	20.1	20.5	20.9	21.3	21.8	15.2	15.8	16.1	16.9
	(19.5)	(85.9)	(129.7)	(129.8)	(122.3)	(121.3)	(125.6)	(130.3)	(124.2)	(116.8)	(109.8)	(103.5)	(97.6)	(92.3)	(87.4)	(82.9)	(78.7)	(74.8)	(72.3)	(70.0)	(67.8)	(65.7)
FOREIGN LOANS PRINCIPAL	13.8	39.7	35.0	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	-	-
NET CASH FLOW BEFORE FOREIGN FINANCING ACCUMULATED AT 10%	(7.6)	(40.7)	(23.3)	4.8	4.6	(5.7)	(15.8)	(17.5)	7.1	11.9	12.5	12.3	16.1	15.8	16.2	16.6	17.0	17.5	10.9	11.5	16.1	16.9
	(6.9)	(40.5)	(58.0)	(54.7)	(51.8)	(55.0)	(63.1)	(71.3)	(68.3)	(63.7)	(59.3)	(55.4)	(50.7)	(46.5)	(42.6)	(39.0)	(35.6)	(32.5)	(30.7)	(29.0)	(26.8)	(24.7)
DOMESTIC LOANS	2.5	31.5	24.0	-	-	5.7	12.7	15.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PRINCIPAL	-	-	-	-	-	4.8	4.8	4.8	4.8	4.8	7.7	7.7	7.7	7.7	7.7	7.7	7.7	2.8	2.8	2.8	2.8	2.8
NET CASH FLOW BEFORE DISTRIBUTION AFTER FINANCING	(5.1)	(9.2)	8.2	23.9	35.1	30.8	20.7	19.5	28.6	35.9	34.0	36.6	41.2	43.7	46.6	49.6	52.1	57.2	57.5	61.8	70.5	75.3
ACCUMULATED AT 10%	(4.6)	(12.2)	(6.0)	10.3	32.1	49.5	60.1	69.2	81.3	95.1	107.0	118.7	130.6	142.1	153.3	164.1	174.4	184.7	194.1	203.3	212.8	222.1
NET CASH FLOW AFTER FINANCING AND DISTRIBUTION	(5.1)	(9.2)	0.7	4.8	4.6	(4.8)	(7.9)	(6.7)	2.3	7.1	4.8	4.6	8.4	8.1	8.5	8.9	9.3	14.7	8.1	8.7	13.3	14.1
ACCUMULATED AT 10%	(4.6)	(12.2)	(11.7)	(8.4)	(5.5)	(8.2)	(12.3)	(15.4)	(14.4)	(11.7)	(10.0)	(8.5)	(6.1)	(4.0)	(2.0)	(0.1)	1.7	4.3	5.6	6.9	8.7	10.4

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GULF OF SUEZ GAS PROJECT
GOVERNMENT TAKE

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
SAVING ON LPG SUBSIDY	-	-	4.4	14.6	15.7	16.9	16.2	14.7	18.7	17.8	17.5	17.2	17.1	17.3	17.8	17.3	17.7	10.0	10.7	11.4	12.2	13.0
LPG EXCISE FEES	-	-	0.5	1.6	1.6	1.6	1.4	1.2	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.8	0.4	0.4	0.4	0.4	0.4
LESS FUEL OIL EXCISE FEES	-	-	(0.9)	(1.9)	(1.9)	(1.0)	(0.3)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL SAVING ON SUBSIDIES & INCOME FROM FEES	-	-	3.8	13.9	14.9	16.8	16.7	15.4	19.6	18.6	18.2	17.8	17.6	17.7	18.2	17.6	18.0	9.9	10.6	11.3	12.1	12.9
INCOME TAXES	-	-	3.5	12.5	21.5	25.4	20.2	17.5	17.7	19.9	20.3	22.6	23.5	25.9	28.0	30.2	32.1	32.0	37.4	40.3	43.6	46.8
EBPC	-	-	0.9	0.9	0.8	0.8	0.7	1.1	1.0	0.9	0.9	0.8	0.7	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.3
AFFILIATES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL INCOME TAXES	-	-	4.4	13.4	22.3	26.2	20.9	18.6	18.7	20.8	21.2	23.4	24.2	26.5	28.6	30.7	32.5	32.4	37.7	40.6	43.8	47.1
DIVIDENDS	-	-	4.4	16.1	27.7	32.9	26.1	22.5	22.8	25.6	26.2	29.3	30.3	33.4	36.2	39.0	41.4	41.2	48.3	52.1	56.3	60.3
GOVERNMENT SHARE	-	-	2.8	2.7	2.5	2.4	2.2	3.3	3.1	2.9	2.7	2.4	2.2	2.0	1.7	1.5	1.3	1.2	1.0	0.9	0.8	0.8
EMPLOYEE SHARE	-	-	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
NASSER BANK SHARE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL DIVIDENDS	-	-	7.5	19.1	30.5	35.6	28.6	26.2	26.3	28.8	29.2	32.0	32.8	35.6	38.1	40.7	42.8	42.5	49.4	53.1	57.2	61.2
CASH FLOW BEFORE LENDING	-	-	15.7	46.4	67.7	78.6	66.2	60.2	64.6	68.2	68.6	73.2	74.6	79.8	84.9	89.0	93.3	84.8	97.7	105.0	113.1	121.2
ACCUMULATED NPV AT 10%	-	-	11.8	43.5	85.5	129.9	163.9	192.0	219.4	245.7	269.7	293.0	314.6	335.6	355.9	375.3	393.8	409.1	425.1	440.7	456.0	470.9
LENDING LESS REPAYMENT	(2.5)	(31.5)	(24.0)	-	-	(5.7)	(12.7)	(15.6)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	0.1	1.7	2.9	2.9	7.7	7.7	8.1	8.7	8.4	11.1	10.7	10.3	9.9	9.6	9.2	8.8	3.5	3.4	3.2	3.1	2.9
CASH FLOW AFTER LENDING	(2.5)	(31.4)	(6.0)	50.6	72.0	81.9	62.4	53.8	74.3	77.5	80.6	84.7	85.6	90.3	95.0	98.6	102.4	88.6	101.3	108.3	116.2	124.1
ACCUMULATED NPV AT 10%	(2.3)	(28.3)	(32.8)	1.8	46.5	92.7	124.7	149.8	181.3	211.2	239.4	266.4	291.2	315.0	337.7	359.2	379.5	395.4	412.0	428.1	443.8	459.0

NOTES AND ASSUMPTIONS ON FINANCIAL STATEMENTS

A. EGPC Statements (Annex 5.01)

1. Crude Accounts/Royalty. Most of Egypt's oil is currently produced according to the terms of production sharing agreements by operators owned jointly by EGPC and its foreign partners. EGPC administers the State's share of profit-oil, uses it to program the supply of its refineries' requirements and exports any excess. It supplements this crude supply to its refineries with purchases of indigenous crude from foreign partners, royalty crude due the Government from GPC, and imports.

EGPC is entitled to the State's share of profit-oil but bears the royalty due the State on the country's total oil production and oil reserves. Joint-venture foreign partners are not under an obligation for royalty payments except in the case of royalty dues on sole risk production.

EGPC has an agreement with the Government to value the royalty due on that portion of crude allocated for such payment and used for local refining on the basis of the net-back it derives from the domestic sale of the resulting refined products. The Company has followed the practice of recording on its operating account two balanced interdepartmental trading transactions, one for the sale, the other for the purchase of locally refined profit-oil and locally refined royalty crude, both valued by crude at netback. As a result of this procedure, its accounts of its crude sales and of its crude purchases are equally inflated through the addition of non-cash payments and receipts. Since detailed accounts of these were not available at the time of the mission, EGPC's operating accounts could not, at this time, be adjusted to reflect only actual cash payments.

2. Taxes. The Company benefits from an exemption from customs duties on imported capital goods, from export duties on crude oil and petroleum products and from fiscal fees on its equity investments in the capital of affiliates, on the loans it grants and on its purchases of stocks and bonds. Its tax obligations are, on the other hand, also extensive. EGPC must pay a transferable value tax on its share in its affiliates' and joint ventures' profits, as well as a commercial and industrial income tax (at a rate of 39.7%) on its net profits. This income tax is calculated after deduction of the value of royalty due the Government as well as the income taxes which EGPC bears on behalf of its joint venture production operations. The Company is subject in addition to excise duties and fees on its domestic sales of refined products, as well as customs duties on imported materials and petroleum products.

3. Profit Distribution. Current profit distribution regulations give EGPC the right to suggest to the Government the level of the reserves it requires for the settlement of its obligations to within at most 10% of its total net profits. The rest of the Company's profits is due to the Government as, what is termed, its surplus. The Company, which kept to the terms of the Law in 1977, has, at the discretion of the Government, allowed for an additional new projects financing reserve of the order of 5% of its net profits in its

budget for 1978. The amount to be allocated as reserves was not fixed as a specific percentage of net profits in previous statutes (Law No. 167, 1958). The allocation varied between 0% in 1973 and 65% in 1975.

Detailed regulations govern the distribution of each of EGPC subsidiaries' net profits, as well. These regulations stipulate that the following percentages of net profits be retained by each subsidiary as reserves: 5% as Legal reserves, 5% as State Bonds Purchase reserve, 5% as Assets Price Fluctuation reserve, and 10% as subsidies reserve (in case the operating capital is negative). The remaining surplus is distributed as follows: (i) 5% of the capital as a first distribution to shareholders (75%) and workers (25%); (ii) 10% of the rest to cover supervision and administrative expenses to be paid EGPC; (iii) a re-distribution of the remaining portion to shareholders and workers using the above ratios. Most of the surplus due the workers is in practice paid to governmental authorities.

4. Borrowing, EGPC relies for a major share of its investment requirements on Government allocations in the form of concessionary loans. Of its foreign commercial bank loans, the most significant has been the 1974 \$80 million loan from Chase Manhattan and others taken for the financing of the Company's share of its investment in the Sumed Pipeline. The Company's other borrowings include a 1975 loan for \$13 million from the First National City Bank for the Abu El Gharadig gas project, and two loans (for K.D. 8 million in 1975 and K.D. 7 million in 1977) from the Kuwait fund for Economic Development, for the Abu Qir project and the Ras Shukeir/Cairo pipeline.

Special statutory privileges given the Company, have facilitated its dealing in foreign currency. EGPC can keep the proceeds from sector exports in freely convertible U.S. currency in special accounts held with foreign banks or credit institutions, and arranged for by the National Bank of Egypt. It can withdraw from this account, to within the limits set by the Government's allocation for the sector, its requirements for the financing of sector imports and for the servicing of its obligations. At the end of each month, it must sell its net proceeds (resources less utilizations) to the Central Bank at the set rate of exchange.

B. Project Accounts (Annex 5.02)

1. Operating Income and Expenses. EGPC's project income is viewed in incremental terms and, thus, as a sum of direct income from the sale of gas, LPG and Naphtha, and indirect income arising from the replacement of liquid hydrocarbons by gas. EGPC's operating subsidiaries are paid by EGPC fees for their services; these fees which represent EGPC's processing and pipeline transportation expenses were assumed to be such as to yield these subsidiaries a net profit equal to 10% of the value of their total capital invested in the project.

2. EGPC Project Borrowing. It is assumed that the Bank loan will be repaid over a period of 20 years including four years' grace, and that the

sum of the interest on this loan and the guarantee fee paid the Government is 10%. It is also assumed that the suppliers credits will be for 12 years including four years' grace at an interest of 8%; and that the terms of the domestic loans will be the same as for Egyptian loans generally, a grace period covering the first three years of operation, a 12 year repayment period and interest at 5%.

3. Asset Transfer Financing. It is assumed that the transfer of project assets from EGPC to its operating subsidiaries is financed by loans equivalent to the project's total capital cost. It is further assumed that the schedule of repayment of these loans is based on the schedule adopted for the depreciation of project assets.

GULF OF SUZ GAS PROJECT
ECONOMIC REAL RATE OF RETURN ON INVESTMENT

6/61 '00 AM

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
SALES GAS NET THERMAL VALUE (BTU/CF)	-	-	1,150	1,150	1,150	1,150	1,100	1,050	1,050	1,050	1,000	1,000	950	950	950	950	950	950	950	950	950	950
PRODUCT RATES																						
SALES GAS (MMCFD)	-	-	30	60	85	99	85	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
LPG(TON/D)	-	-	81	250	250	223	189	189	223	197	183	167	154	145	138	128	121	64	64	64	64	64
NAPHTHA (TON/D)	-	-	96	205	205	205	189	175	169	163	157	157	154	145	139	118	94	32	32	32	32	32
EXPORT/IMPORT PRICES(\$/TON)																						
FUEL OIL	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70
LPG	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168
NAPHTHA	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125
PRODUCTION																						
GAS(1000 TONS F.O.E.)	-	-	279	559	791	921	757	680	680	680	647	647	615	615	615	615	615	615	615	615	615	615
LPG(1000 TONS)	-	-	27	83	83	83	74	62	74	65	60	55	51	48	46	42	40	21	21	21	21	21
NAPHTHA (1000 TONS)	-	-	32	68	68	68	68	62	58	56	54	52	51	48	46	39	31	11	11	11	11	11
VALUE OF PRODUCTION (IN \$MM)																						
GAS	-	-	21.7	43.5	59.8	66.9	53.6	47.6	47.6	47.6	45.3	45.3	43.1	43.1	43.1	43.1	43.1	43.1	43.1	43.1	43.1	43.1
LPG	-	-	4.5	13.9	13.9	13.9	12.4	10.4	12.4	10.9	10.1	9.2	8.6	8.1	7.7	7.1	6.7	3.5	3.5	3.5	3.5	3.5
NAPHTHA	-	-	4.0	8.5	8.5	8.5	8.5	7.8	7.3	7.0	6.8	6.5	6.4	6.0	5.8	4.9	3.9	1.4	1.4	1.4	1.4	1.4
TOTAL PROJECT BENEFITS	-	-	30.2	65.9	82.2	89.3	74.5	65.8	67.3	65.5	62.2	61.0	58.1	57.2	56.6	55.1	53.7	48.0	48.0	48.0	48.0	48.0
EXPENSES (IN \$MM)																						
OPERATING & MAINTENANCE COSTS	-	-	9.0	9.0	11.0	14.2	13.8	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
CAPITAL INVESTMENTS	6.8	22.9	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GAS GATHERING SYSTEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LPG PLANT & MAIN COMPRESSOR STATION	5.3	26.6	3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANSMISSION PIPELINE	11.3	15.6	8.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUEZ DISTRIBUTION NETWORK	-	2.3	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUEZ-CAIRO PIPELINE	-	2.6	2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAIRO DISTRIBUTION NETWORK	-	5.2	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUPPORT EQUIPMENT	-	-	4.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROJECT SUPERVISION, ENGINEERING & TECHNICAL SERVICES	1.4	1.5	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OPERATOR & MAINTENANCE TRAINING	-	0.2	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAPITAL COST																						
EXCLUDING AMAL	24.8	76.9	41.9	-	-	11.0	14.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAL WELLS	-	-	-	-	-	-	-	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAL PLATFORM	-	-	-	-	-	-	5.0	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAL PIPELINES	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAL DEVELOPMENT	-	-	-	-	-	11.0	19.0	16.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CAPITAL COST	24.8	76.9	41.9	-	-	11.0	19.0	16.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WORKING CAPITAL																						
INITIAL INVESTMENT	-	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ACCOUNTS PAYABLE	(4.1)	(8.7)	5.8	7.0	-	(1.8)	(1.4)	0.5	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-
ACCOUNTS RECEIVABLE	-	-	5.0	6.0	2.7	1.2	(2.5)	(1.4)	0.2	(0.3)	(0.5)	(0.2)	(0.5)	(0.2)	(0.1)	(0.2)	(0.3)	(1.0)	-	-	-	-
TOTAL WORKING CAPITAL	(4.1)	(5.0)	10.8	13.0	2.7	(0.6)	(3.9)	(0.9)	3.0	(0.3)	(0.5)	(0.2)	(0.5)	(0.2)	(0.1)	(0.2)	(0.3)	(1.0)	-	-	-	-
TOTAL PROJECT EXPENSES	20.7	71.9	61.7	22.0	13.7	24.6	28.9	27.8	15.2	11.9	11.7	12.0	11.7	12.0	12.1	12.0	11.9	11.2	12.2	12.2	12.2	12.2
NET CASH FLOW																						
ACCUMULATED NPV: 10%	(19)	(79)	(103)	(73)	(30)	7	31	49	71	92	110	126	139	151	162	171	179	186	192	197	202	206
ACCUMULATED NPV: 20%	(18)	(68)	(87)	(66)	(38)	(16)	(3)	6	16	25	32	37	41	45	48	50	52	53	54	55	56	57
ACCUMULATED NPV: 30%	(16)	(59)	(74)	(59)	(40)	(27)	(20)	(15)	(10)	(6)	(3)	(1)	1	2	3	4	4	4	4	4	4	4
DEFL. NET CASH FLOW																						

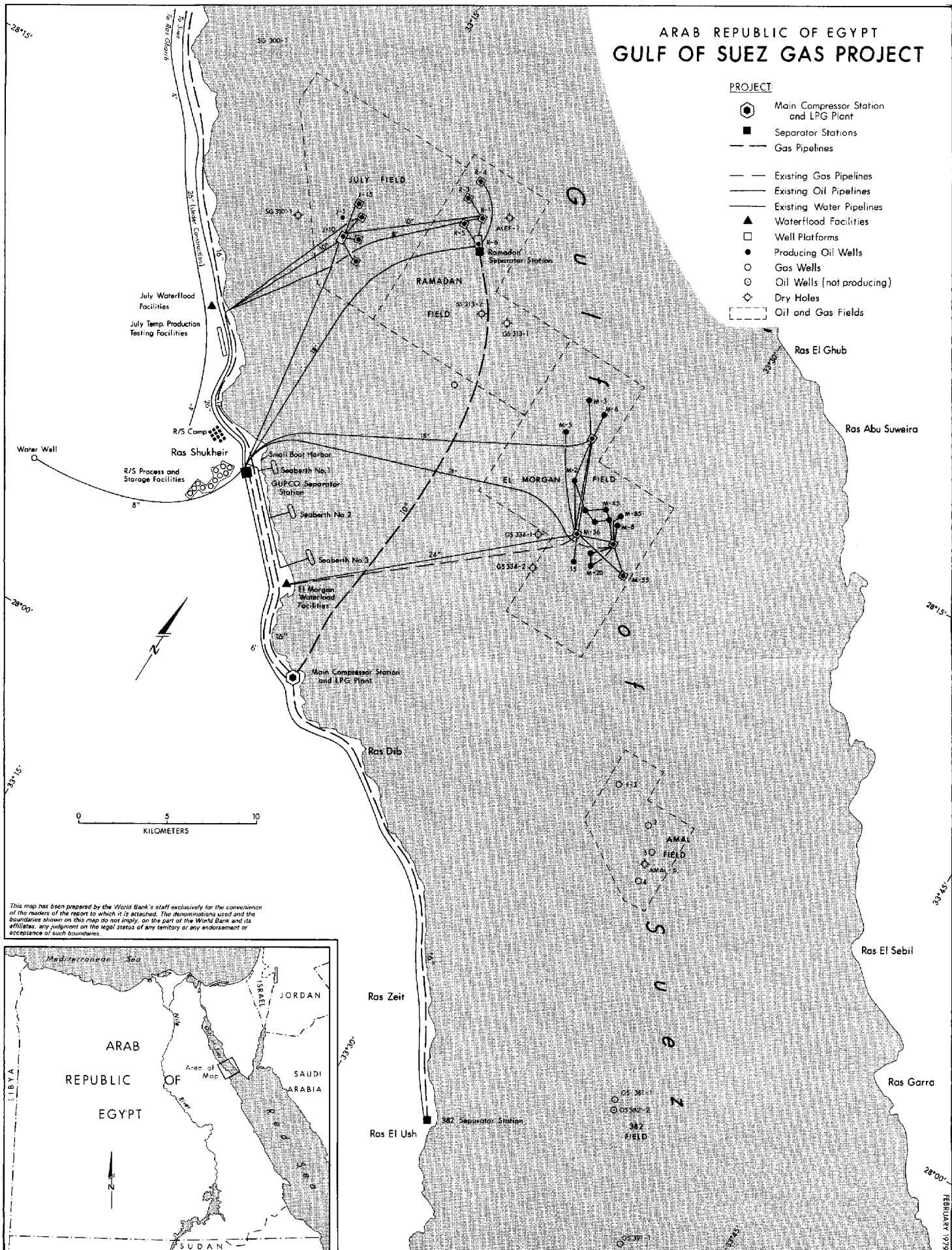
RETURN ON INVESTMENT = 32.023%

May 30, 1979

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
INFLATION	1.0350	1.1049	1.1767	1.2532	1.3347	1.4214	1.5138	1.6122	1.7170	1.8266	1.9475	2.0740	2.2089	2.3524	2.5053	2.6682	2.8416	3.0263	3.2230	3.4325	3.6557	3.8933
SALLES GAS NET THERMAL VALUE (BTU/CF)	-	-	1.150	1.150	1.150	1.150	1.150	1.050	1.050	1.050	1.000	1.000	950	950	950	950	950	950	950	950	950	950
PRODUCT RATES																						
SALLES GAS (MMCFD)	-	-	30	60	85	99	85	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
LPG(TON/D)	-	-	81	250	250	250	223	189	223	197	183	183	154	145	139	118	121	144	144	144	144	144
NAPHTHA (TON/D)	-	-	96	205	205	205	205	189	175	169	157	157	154	145	139	118	121	144	144	144	144	144
EXPORT IMPORT PRICES(\$/TON)																						
FUEL OIL	72	77	82	89	93	99	106	113	120	128	136	145	155	165	175	187	199	212	226	240	256	273
LPG	174	186	198	211	224	238	254	271	288	307	327	348	371	395	421	448	477	508	541	577	614	654
NAPHTHA	129	138	147	157	167	178	189	202	215	229	243	259	276	294	313	334	355	378	403	429	457	488
PRODUCTION GAS(1000 TONS F.O.F.)	-	-	279	559	791	921	737	680	680	680	647	647	615	615	615	615	615	615	615	615	615	615
LPG	-	-	27	83	83	83	74	63	74	65	60	55	51	48	46	42	40	21	21	21	21	21
NAPHTHA (1000 TONS)	-	-	32	68	68	68	68	58	58	56	54	52	51	48	46	39	31	11	11	11	11	11
TOTAL PROJECT BENEFITS	-	-	35.3	82.6	109.4	126.5	112.9	106.1	115.4	119.8	120.7	126.4	128.3	134.6	141.4	146.8	152.5	145.3	154.8	164.4	175.3	187.0
EXPENSES (IN \$MN)																						
OPERATING & MAINTENANCE COSTS	-	-	10.6	11.3	14.7	20.2	20.2	19.7	20.9	22.3	23.8	25.3	26.9	28.7	30.6	32.6	34.7	36.9	39.3	41.9	44.6	47.5
GAS GATHERING SYSTEM	7.0	25.3	16.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LFG PLANT & MAIN COMPRESSOR STATION	5.5	29.4	3.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANSMISSION PIPELINE	11.7	17.2	10.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUEZ DISTRIBUTION NETWORK	-	2.5	2.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUEZ-CAIRO PIPELINE	-	2.9	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CANAL DISTRIBUTION NETWORK	-	5.8	6.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EXPORT FACILITIES	-	-	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PROJECT SUPERVISION, ENGINEERING & TECHNICAL SERVICES	1.5	1.7	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OPERATOR & MAINTENANCE TRAINING	-	0.2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CAPITAL COST EXCLUDING AMAL	25.7	85.0	49.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAL WELLS	-	-	-	15.6	21.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAL PLATFORM	-	-	-	-	-	-	-	16.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAL PIPELINES	-	-	-	-	-	-	-	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AMAL DEVELOPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL CAPITAL COST	25.7	85.0	49.3	-	-	-	-	26.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WORKING CAPITAL	-	-	-	-	-	-	-	28.8	26.6	-	-	-	-	-	-	-	-	-	-	-	-	-
INITIAL INVESTMENT	-	-	-	-	-	-	-	28.8	26.6	-	-	-	-	-	-	-	-	-	-	-	-	-
ACCOUNTS PAYABLE	(4.3)	(9.9)	6.0	8.2	(2.6)	(2.2)	0.4	4.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ACCOUNTS RECEIVABLE	-	-	3.9	7.9	4.4	2.9	(1.1)	1.5	0.8	0.1	1.0	-	0.3	1.0	1.2	0.9	0.9	(1.2)	1.6	1.6	1.8	2.0
TOTAL WORKING CAPITAL	(4.3)	(5.8)	11.9	16.1	4.4	0.3	(4.5)	(0.7)	5.9	0.8	0.1	1.0	0.3	1.0	1.2	0.9	0.9	(1.2)	1.6	1.6	1.8	2.0
TOTAL PROJECT EXPENSES	21.4	79.2	71.8	27.4	19.1	16.1	45.2	45.6	26.6	23.1	23.9	26.3	27.2	29.7	31.8	33.5	36.6	35.7	40.9	43.5	46.4	49.5
NET CASH FLOW BEFORE FINANCING	(21.4)	(79.2)	(36.5)	55.4	90.3	90.4	67.7	60.5	88.6	96.7	96.8	100.1	101.1	104.9	109.6	113.3	116.9	109.6	113.9	120.9	128.9	137.5
NET DEBT CASH FLOW	13.8	38.6	30.7	(2.1)	(14.9)	(14.3)	(13.7)	(13.1)	(12.5)	(11.9)	(11.3)	(10.8)	(7.1)	(6.7)	(6.4)	(6.0)	(5.7)	(5.3)	(5.0)	(4.6)	-	-
NET CASH FLOW WITH FINANCING	(7.6)	(40.6)	(5.8)	53.3	75.4	76.1	54.0	47.4	76.1	84.8	85.5	89.3	94.0	98.2	103.2	107.3	111.2	104.3	108.9	116.3	128.9	137.5
ACCUMULATED NPV- 10% ACCUMULATED NPV- 20%	(7)	(41)	(46)	(10)	37	80	108	130	162	195	225	253	280	306	331	354	376	395	413	430	447	464
ACCUMULATED NPV- 30% ACCUMULATED NPV- 40%	(7)	(35)	(38)	(12)	18	43	58	69	84	98	110	120	129	137	144	150	155	159	162	165	168	170
NPV- 1% NET CASH FLOW	(6)	(30)	(33)	(14)	6	22	31	37	44	50	55	59	62	64	66	68	69	70	71	72	73	74
NPV- 1% NET CASH FLOW	(7)	(37)	(33)	(43)	57	54	36	29	44	46	44	43	43	42	41	40	39	34	34	34	35	35
TURN ON INVESTMENT = 67.3202																						

ARAB REPUBLIC OF EGYPT
GULF OF SUEZ GAS PROJECT

- PROJECT
- Main Compressor Station and LPG Plant
 - Separator Stations
 - Gas Pipelines
 - Existing Gas Pipelines
 - Existing Oil Pipelines
 - Existing Water Pipelines
 - Waterflood Facilities
 - Well Platforms
 - Producing Oil Wells
 - Gas Wells
 - Oil Wells (not producing)
 - Dry Holes
 - Oil and Gas Fields



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.

