
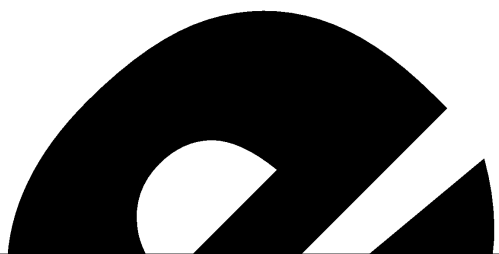


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**DIRECTORATE OF
INTELLIGENCE**

Intelligence Memorandum

Petroleum Developments in West Africa

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
February 1972

INTELLIGENCE MEMORANDUM

PETROLEUM DEVELOPMENTS IN WEST AFRICA

Introduction

1. Growing oil consumption and increasing dependence on a limited number of supplying countries -- many with unstable political situations -- have provided the international petroleum companies additional reasons for searching for new deposits. Part of the search is concentrated in West Africa, where the oil companies are attracted by the high-quality oil and its closeness to North American and West European markets. Exploration concessions have been awarded in virtually every country along the coast. One country already has become an important producer, two other countries have commercially significant outputs, and several appear to have some potential. This memorandum examines oil exploration, production, and trade in West Africa; indicates the area's place in world supply; and assesses the role of oil in the economies.

Discussion

Background

2. Rising living standards and an expanding world population are rapidly increasing the demand for energy. The Western World's consumption of primary energy rose by 70% from 1960 to 1970 and is expected to increase another 70% by 1980, according to estimates of a leading oil company. For centuries, coal was the leading energy source, but oil overtook it in the mid-1960s and by 1970 was filling more than one-half of the Western World's primary energy requirements. Only a few industrialized

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countries, notably the United States and Canada, are able to satisfy all or much of their oil demand from internal sources. Others, including all West European countries and Japan, must depend largely on petroleum imports.

3. The supply of oil for export increasingly has become concentrated in a few Middle Eastern and North African countries. This situation has created uneasiness in consuming countries about possible supply interruptions resulting from political instability, nationalism, or pressures for rapidly increasing oil revenues in many exporting countries. Consequently, international oil companies have sought greater geographic diversification of supply.

4. Much exploration activity currently is focused on the sedimentary shelves and slopes lying off all six continents. These offshore areas are believed to be packed with sediments of the Tertiary period and therefore offer promising opportunities for oil discoveries. In the exploration surge, the entire coast of Africa, and particularly the west coast, will be one of the world's most active arenas in the 1970s. If the oil companies' expectations of finding additional oil deposits in West Africa are at least partly realized, dependence on North Africa and the Middle East could be reduced to some extent. Moreover, since the West African countries are numerous, the oil companies could spread their political risk.

Exploration in West Africa

5. The search for oil is proceeding at a frenetic pace along the west coast of Africa, which is now lined by an almost solid string of concessions. Exploration is under way, mostly offshore, in most of the 20 countries and territories stretching from Spanish Sahara to Angola (see Figure 1). Although only three West African countries are now significant producers for world markets, discoveries in several others suggest the possibility of future commercial production. In addition, the international companies have found at least traces of oil in still other countries, particularly in the offshore areas. Exploration activities are summarized in Appendix A.

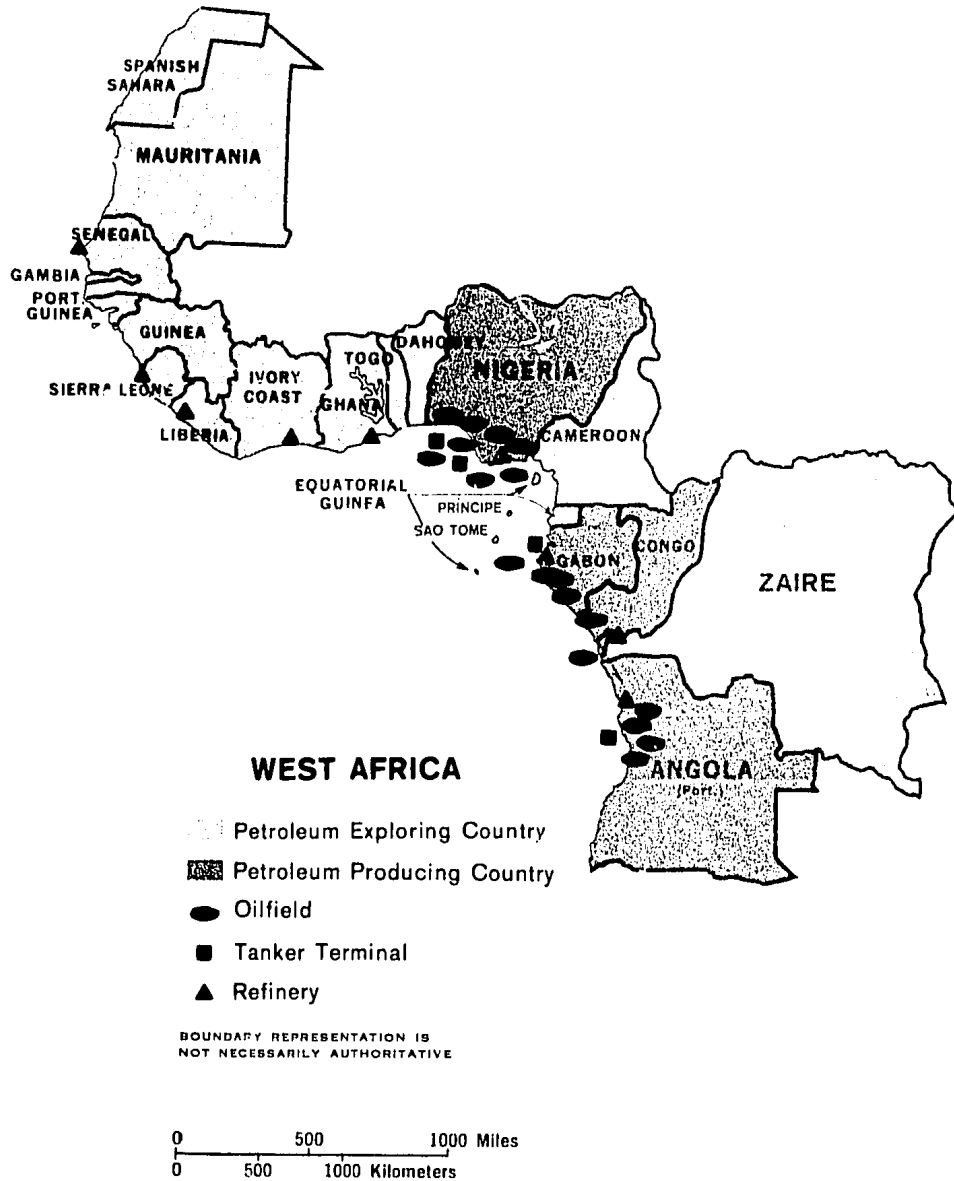
Petroleum Production

6. Nigeria, Gabon, and Angola are West Africa's main oil producers; in addition, Congo (Brazzaville) has a small output. Their combined output in 1971 averaged 1.8 million barrels per day (bpd), or 3.7% of the world total. West African output has reached significant proportions only within the last several years. Oil production in 1971 was almost four times that in 1966 - the last full year before the Nigerian civil war severely disrupted activities in the area's most prolific fields (see Table 1).

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Figure 1



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Table 1

West Africa: Growth in Oil Production

<u>Thousand Barrels per Day</u>					
<u>Year</u>	<u>Nigeria</u>	<u>Gabon</u>	<u>Angola</u>	<u>Congo</u>	<u>Total</u>
1960	17	11	0	1	29
1961	46	15	2	2	65
1962	67	16	10	2	95
1963	76	19	16	2	113
1964	121	21	18	2	162
1965	272	26	13	1	312
1966	418	29	12	1	460
1967	319	70	10	1	400
1968	142	92	19	1	254
1969	540	100	49	Negl.	689
1970	1,084	108	100	Negl.	1,292
1971 <u>a/</u>	1,530	110	120	Negl.	1,760

a. Estimated.

7. With output averaging 1.5 million bpd in 1971, Nigeria alone accounted for 87% of the West African total.* Although it has only 1% of the world's proved oil reserves, Nigeria contributed 3.2% of global output in 1971, ranking ninth among all producers. Production reached almost 1.7 million bpd at the end of the year and reportedly will climb to about 3.4 million bpd by 1975. More than one-fourth of production came from offshore fields in 1971, and within a few years these deposits probably will account for more production than the onshore deposits.

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8. Oil was discovered in Gabon and Angola in the 1950s after about 30 years of intermittent exploration, but output has shown a marked upward trend only in recent years. In 1971, production averaged an estimated 110,000 bpd in Gabon and 120,000 bpd in Angola. In Gabon, production is scheduled to rise to about 240,000 bpd by 1975, and in Angola proved reserves also promise continued rapid expansion of production. The most important producing fields and the best prospects for the future in Gabon are on the coast and offshore near Port Gentil and Gamba. Angola's best prospects lie offshore. After unsuccessful exploration for additional onshore deposits for eight years, drilling was undertaken offshore in 1966, and worthwhile reserves were discovered. Although hampered by the oil's heavy wax content, offshore production now accounts for most of Angolan production.

9. Congolese production is minor and has been declining recently because the only producing field is being depleted. Production dropped from about 2,000 bpd in the early 1960s to only 384 bpd in 1970 - a quantity considerably smaller than is obtained from an average well in Nigeria. Offshore concessions located between known oil deposits off Gabon and the Angolan district of Cabinda were awarded in 1968, oil was discovered in 1969, and production is to begin this year. The concessionaire estimates that the deposit will yield 30,000 bpd by the end of 1972, but a lack of pressure, the deep water location, and the oil's high viscosity may hold output below that level.

West African Oil Trade

10. Except for a small amount refined for local use,* all West African crude oil is exported. Exports have increased rapidly since the early 1960s; they accounted for almost 5% of the world total in 1970 (see Table 2). With exports of nearly 1.1 million bpd in 1970, Nigeria ranked seventh among all exporting countries. West African oil is particularly desirable because it is near the big markets in Western Europe and North America and contains little sulfur. Western Europe is by far the largest customer, taking over 70% of total exports in 1970 (see Figure 2). The United Kingdom, the Netherlands, France, and West Germany are the leading importers. The United States is also a growing importer, both directly and through refineries in the Caribbean.

Role in West African Economies

11. Petroleum development has enriched the economies of the three main producing countries - Nigeria, Gabon, and Angola. In each country, investments by oil companies are the largest ever made by one industry.

* For a list of refineries in the area, see Appendix B.

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Table 2
West Africa: Petroleum Exports

Year	Thousand Barrels per Day					Percent of World Petroleum Exports
	Nigeria	Gabon	Angola	Congo	Total	
1963	76	19	6	2	103	0.8
1965	266	26	2	1	295	2.0
1969	548	88	30	1	667	2.9
1970	1,059	90 <u>a/</u>	85	Negl.	1,234 <u>a/</u>	4.9

a. *Estimated.*

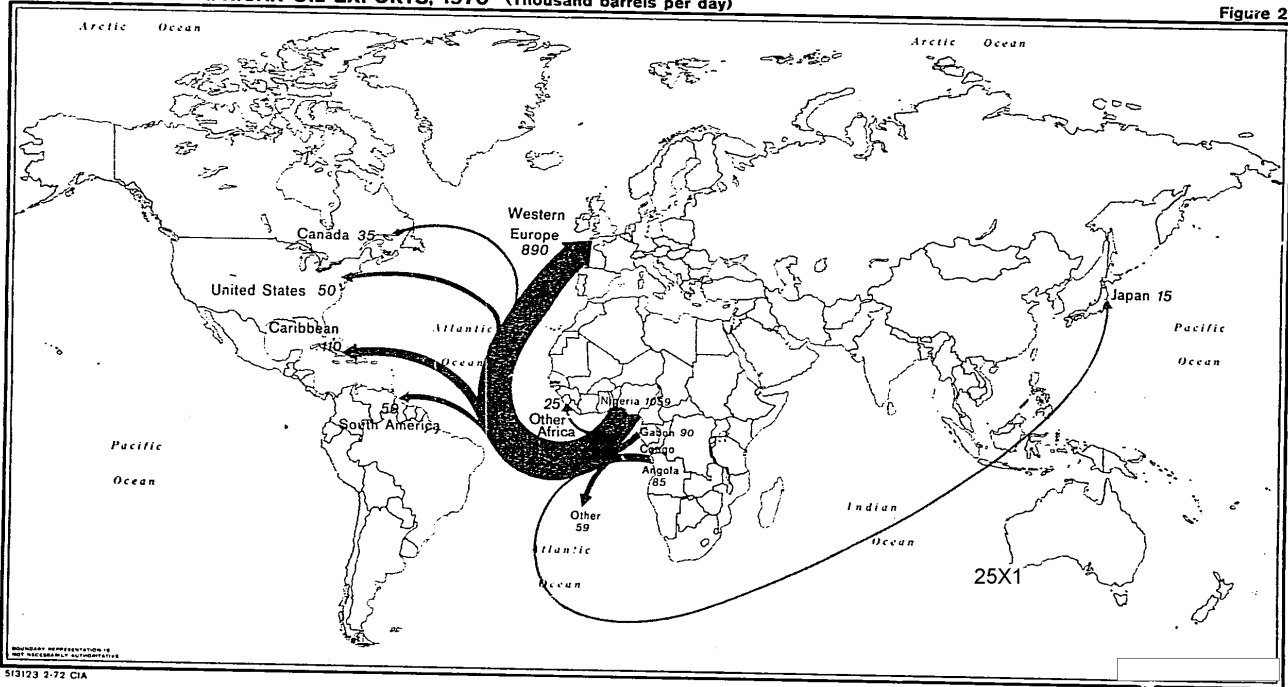
Investment in petroleum now totals more than \$1 billion in Nigeria, about one-half of which was made by Shell-BP, by far the largest producer. Investments in Gabon's oil industry are estimated at between \$250 million and \$300 million and have been made largely by the French government through its company, Equatorial African Petroleum Company (SPAFE). In Angola oil company investment amounts to about \$250 million.

12. Petroleum exports have become a major foreign exchange earner for the leading producing countries. Despite a long civil war that disrupted production until 1969, oil is now Nigeria's largest export by a wide margin, having grown from \$32 million (7% of total exports) in 1961 to \$713 million (57% of the total) in 1970. Petroleum's contribution to the balance of payments (receipts net of related payments) has grown concurrently from \$40 million in 1961 to \$369 million in 1970 (see Table 3). Petroleum exports have also increased rapidly in importance to the Gabonese. In 1967, oil surpassed manganese in export value and became the chief mineral export. Over the next three years, the value of Gabon's petroleum exports increased almost one-third, reflecting favorable world prices and increased production. In 1970 these exports amounted to \$62 million, or 35% of the total, and became the largest foreign exchange earner, surpassing forest products. Angolan petroleum exports rose from \$15 million in 1969 -- the first year of sizable sales -- to \$49 million in 1970, when they ranked third, after diamonds and iron ore.

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ESTIMATED WEST AFRICAN OIL EXPORTS, 1970 (Thousand barrels per day)

Figure 2



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Table 3

Nigeria: Export Earnings
and Government Revenues from Petroleum

Million US \$				
<u>Year</u>	<u>Value of Oil Exports</u>	<u>Oil Industry's Net Contribution to Balance of Payments a/</u>	<u>Contribution to Government Revenue</u>	<u>Percent of Total Revenue b/</u>
1961	32	40	20	5
1962	48	50	24	6
1963	56	39	14	3
1964	90	70	34	7
1965	191	91	36	7
1966	257	122	53	10
1967	202	136	76	17
1968	104	81	45	10
1969	367	149	78	13
1970	713	369	280	27
1971 c/	N.A.	N.A.	772	58

a. Nigeria's receipts net of related payments.

b. Determined by comparing petroleum revenues for each calendar year with total government revenues for the fiscal year beginning 1 April.

c. Estimated.

13. Petroleum's contribution to government revenue has also grown dramatically because of increased production and new tax agreements negotiated in the producing countries. In Nigeria, petroleum contributed an estimated \$772 million, or nearly three-fifths of government revenue, in 1971 (see Table 3). The US Embassy estimates that Nigerian government

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revenues from petroleum will exceed \$2 billion by 1975. Gabonese government revenues from petroleum reached an estimated \$11 million in 1971 - some 15% of total receipts. Government revenues from oil profits are less important in Angola than in Nigeria and Gabon because large exploration and development costs are still being written off. Angolan oil revenues probably approximated \$16 million in 1971 -- only 4% of the government's expected total.

Negotiations for Further Financial Gains

14. Nigeria has taken the lead in West Africa in demanding more benefits from and more control over oil resources. New tax agreements negotiated with the oil companies in November 1970 raised payments to the government, and agreements in April 1971 both raised and accelerated payments. Nigeria became the eleventh member of the Organization of Petroleum Exporting Countries (OPEC) in July 1971 and has been supporting other OPEC members in seeking further government participation in petroleum concessions. Its first participation agreement was negotiated in April 1971 with the French Petroleum Research and Exploitation Co. (SAFRAP). In return for permission to resume production - stopped soon after the civil war began in 1967 - SAFRAP had to yield a 35% ownership share to the Nigerian government. This share will gradually increase, reaching 50% when SAFRAP's production hits 400,000 bpd, ten times greater than its output at the end of 1971. In September 1971, Lagos exercised an option to take one-third participation in the Italian Petroleum Enterprise (AGIP)-Phillips operation. Agreements have also been reached with three of the companies bidding for offshore concessions, giving the Nigerian government 51% participation in any future production. The government has indicated that it intends to begin negotiations in 1972 for an equity interest in existing concessions, but it probably will move slowly here. All government shares in the oil industry will be held by the newly formed Nigerian National Oil Company, for which some promising offshore concessions also have been reserved.

15. Gabon and Angola also have negotiated increased benefits from oil exploitation. Gabon reached new agreements with the oil companies in 1970 and 1971, which raised the posted price and increased the government's share of gross profits from 19% to an estimated 35%. Angola renegotiated its agreement with Gulf Oil and began to calculate oil payments on the basis of posted prices in 1971. It probably will try in the future to exact increases in payments similar to those granted to OPEC countries.

16. Benefits to the West African producing countries from oil exploitation almost certainly will grow rapidly because of the industry's continued expansion and the more militant stand recently taken by OPEC

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in demanding higher prices from the international companies. Although Nigeria currently is the only West African member of OPEC, the organization's demands undoubtedly will also encourage the other West African producers to seek greater benefits. Nevertheless, the demands of the West African countries have not been extreme so far.

Conclusions

17. West African oil output remains relatively small, but it is growing considerably faster than the world total. About 1.8 million bpd were produced in 1971, largely for sale to Western Europe, and the area has promise of growing in importance as an oil exporter, particularly if the intensive exploration efforts now under way have some success. With production in 1971 averaging 1.5 million bpd, Nigeria rose in a decade from an insignificant position to ninth place among world producers and seventh place among oil exporting countries. Gabon and Angola currently provide nearly all of the remaining West African output. By 1975 the three main producing countries combined may well double their 1971 output. In addition, the Zaire Republic is expected - on the basis of recent discoveries offshore - to be producing on a commercial scale by 1973. Moreover, some of the other newly discovered but still undeveloped oilfields probably will be found to be economically exploitable in the 1970s because of rising prices and the likelihood of new technology to lower offshore drilling costs. If West African oil exports rise as anticipated and the world total grows at the expected annual rate of some 12.5%, West Africa could account for 7% of global exports by 1975, compared with 5% in 1970.

18. Petroleum development has substantially changed the economic prospects for the three main producing countries in West Africa and has given hope to others. In just a few years, oil has become the leading export in both Nigeria and Gabon and has become much more important in Angola's exports. Petroleum's contribution to government revenue in these countries also has increased dramatically. Financial benefits for West African producers will continue to grow rapidly as output is increased to help meet the soaring world demand for high-quality oil and as the OPEC countries probably continue to use concerted action to gain increased revenues per barrel from the oil companies.

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- Angola The most important discoveries have been made by Gulf Oil offshore of the Cabinda District. The only other producer is Petrangol, which holds several small concessions onshore around Luanda that account for less than 15% of total production.
- Cameroon The offshore area is adjacent to the active Nigerian oilfields, but worthwhile finds have proved to be elusive. Petroleum Research and Exploitation Company of Cameroon (SEREPCA) has found indications but no workable deposits of offshore oil; it has suspended operations. Amerada, Shell Exploration and Exploitation Company (CAMREX), Mobil, Gulf, and Occidental also hold concessions, but most of the companies are inactive.
- Congo The onshore field, Pointe-Indienne, is owned by SPAFE and is rapidly being depleted. Offshore concessions were awarded in 1968 to SPAFE and AGIP. Oil was discovered by SPAFE in 1969, and commercial production is expected in 1972.
- Dahomey Union Oil has discovered oil offshore, but exploitation has not been undertaken. Shell Oil and Pivipoy International Oil Company received concessions in 1971.
- Equatorial Guinea Oil has been found but not in commercially significant quantities despite drilling by several companies. Because of a boundary dispute with Gabon, the CONOCO-Gulf-Spanish Petroleum Company (CEPSA) consortium formally renounced its concession in December 1970.
- Gabon Eight firms are currently producing or exploring. Shell-Gabon, Mobil, and SPAFE are producing; Gulf, Texaco/Chevron, Union Carbide, Gabon Petroleum Corporation, and Oceanic Oil Corporation are exploring.
- Gambia Exploration has been undertaken by the sole concessionaire, Senegal Petroleum Company, but no oil has been found so far.
- Ghana An exploration surge began when the government received a favorable geological survey from a Romanian survey team. Seven company groups hold all available offshore acreage. The Signal group made a potentially significant offshore discovery in mid-1970.
- Guinea Shell held a two-year contract to explore the whole of Guinea's continental shelf, which it allowed to expire in 1970 after unsuccessful exploration.

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Ivory Coast A concession for all offshore exploration was awarded to a consortium of Esso, Shell, and Petroleum Exploration and Activities Enterprise (ERAP) in October 1970.

Liberia Offshore concessions were awarded to Union Carbide, Frontier Petroleum, and Chevron in 1969.

Mauritania Esso and an AMOCO-Planet Oil Company Group hold concessions and have carried out exploration. Only traces of oil have been found to date. Texaco was granted an exploration license in 1971.

Nigeria About 15 companies are active. Six - Shell-BP, Gulf, Mobil, AGIP/Phillips, Texaco/Chevron, and SAFRAP are producing. About six hold concessions but are not producing. Three additional companies - Occidental, Japanese Petroleum, and Deminex -- have just completed negotiations for offshore concessions. Two other companies are still negotiating.

Portuguese Island Territories Ball and Collins, Ltd., was awarded an initial 18-month concession covering the land and offshore areas of the islands of Sao Tome and Principe in May 1970.

Portuguese Guinea Esso has carried out exploration, but no oil has been found.

Senegal Texas Gulf Sulphur-West African Petroleum Company (COPETAO) made an offshore discovery in June 1970, but no exploitable field has been found. Esso Exploration has made a number of unsuccessful drillings. Shell also holds concessions.

Sierra Leone Three offshore exploration licenses were issued to Occidental, Union Carbide-Interocean, and Clinton International in 1970.

Spanish Sahara Onshore concessions were first awarded in 1960. Exploration had been abandoned by 1969 but was resumed at a modest level in 1971. Offshore concessions are held by Union Carbide, National Aragonese Petroleum Enterprise (ENPASA), and a Gulf-CEPSA-Continental consortium.

Togo Union Carbide consortium struck oil in late 1969 but has not discovered commercial quantities.

Zaire Republic A Gulf-led consortium has discovered potentially important reserves ten miles offshore. The offshore field could produce 40,000 barrels a day, and Gulf expects production on a commercial scale by 1973. Zairian Company of Petroleum Exploratory Research (SOZAREP) group is prospecting onshore near the coast.

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APPENDIX B

Refineries in West Africa

Nine West African countries now have refineries. In the producing countries of Nigeria, Gabon, and Angola, the refineries process local crude oil mostly to meet domestic requirements. The Nigerian refinery was forced to close in July 1967 because of war damage, but it reopened in May 1970. Currently the refinery is able to meet most of Nigeria's needs for refined petroleum products other than premium-grade gasoline. Imports partially fill the latter need. The Gabonese refinery was built as a joint venture of members of the Central African Customs and Economic Union (UDEAC), and refined products are exported to Chad, the Central African Republic, Cameroon, and Congo, as well as being consumed locally. Angola's refinery is large enough to meet current domestic requirements. If it is expanded and a second refinery is built, as now planned, Angola should remain self-sufficient in refined petroleum products throughout the 1970s. In the non-producing countries the refineries were established, as part of industrialization programs, to process imported crude oil for domestic consumption. Details on the area's refineries are as follows:

<u>Country</u>	<u>Location</u>	<u>Ownership</u>	<u>Capacity (bpd)</u>
Angola	Luanda	Angola Oil Co. (PETRANGOL)	14,000 <u>a/</u>
	Lobito <u>b/</u>	Portuguese Company for Exploitation of Angolan Petroleum (ANGOL)	13,000
Gabon	Port-Gentil	Equatorial Refining Co.	16,000
Ghana	Tema	Ghanian-Italian Petroleum Co.	30,000
Ivory Coast	Vridi-Abidjan	Ivorian Refining Society	19,000
Liberia	Monrovia	Liberia Refining Co.	10,000
Nigeria	Port Harcourt	Nigerian Petroleum Refining Co.	55,000
Senegal	Dakar	African Refining Co.	12,000
Sierra Leone	Freetown	Hafian Refineries	10,000
Zaire Republic	Moanda	Congolese-Italian Refining Co.	13,000

a. Being expanded to 20,000 bpd.

b. Scheduled to begin operation in 1975.