THE MINERAL INDUSTRY OF

LIBYA

By Thomas P. Dolley[1]

Libya's petroleum industry remained relatively unaffected in 1994 by economic sanctions emplaced by the United Nations (UN) in November 1993. Indeed, production of crude petroleum, Libya's single most important source of revenue, increased in 1994 when compared with the previous year. The UN sanctions included a continuing trade embargo, originally prompted by the 1988 airliner bombing over Lockerbie, Scotland.

In any given year, Libyan oil production and sales accounts for nearly 95% of the Nation's revenues. Libya's estimated gross domestic product (GDP) for 1994 was $43 billion.[2] In 1994, Libya remained the second largest crude oil producer in Africa, following Nigeria. Libya's petroleum reserves were the largest hydrocarbon resource on the African continent, but remained underexploited. The nonfuel sector of the Libyan mining industry was not significant on a global scale.

The 1993 resolutions against Libya adopted by the UN Security Council fell short of a comprehensive oil embargo. European nations, such as Italy, Germany, and Spain, did not support a total oil embargo owing to their continuing heavy dependence on Libyan crude oil. In the absence of a multilateral agreement, the UN resolutions called for the banning of sales to Libya of equipment used at oil and natural gas export terminals and refineries, and freezing of Libyan funds, with the exception of revenue derived from oil and gas sales. These oil revenues were to be paid into special accounts authorized by central banks. Additional sanctions restricted Libyan civil aviation and curtailed Libyan imports of arms, aircraft, and military equipment.

The Libyan legal system is based on Italian civil law and Islamic law. The Libyan National Oil Corp. (NOC), created by the Government in 1970 to oversee petroleum and natural gas exploration, production, and marketing maintained complete control of Libyan oilfields and related investments, including marketing all the petroleum that is produced. Libya is a member of the Organization of Petroleum Exporting Countries.

As of yearend 1994, the Government had not complied with the UN Security Council's request to extradite Libyan suspects in the Lockerbie bombing to either the United Kingdom or the United States. As a result, UN Security Council Resolution 883 went into effect in December 1993. Additionally, the U.S. economic sanctions against the Government of Libya, dating from 1986, were renewed in 1994.

Scant information existed on environmental issues or problems in Libya. Information on the environmental effects, if any, caused by Libya's largest infrastructure project, the Great Manmade River (GMR), a $25 billion scheme to divert water from interior desert artesian fields in the Fezzan region to agricultural areas in coastal Libya, has not been readily available. As of yearend 1994, any environmental effects of petroleum production and exploration in Libya were unknown.

According to the Oil and Gas Journal of December 26, 1994, Libya's all-time historical petroleum production totaled 18 billion barrels (bbl) by yearend 1994. Apart from hydrocarbons, mineral production in Libya was negligible. Petrochemical and refining infrastructure development continued in Libya, but at a reduced pace owing to sanctions and austerity budgets. Mining activity included salt harvesting from coastal pans; quarrying of clays, gypsum, and limestone; and cement and ammonia production. Iron and steel production remained at a level less than design capacity. Heavily subsidized by the Government, iron and steel production relied upon imported feed materials. *(See table 1.)*

Crude oil accounted for more than 95% of total Libyan exports, with Italy, Germany, and Spain being the main importers. The Government reported that in 1994, the total value of Libyan exports was $8.7 billion and the total value of imports was $7.4 billion.

For the past several years, the Libyan parastatal (government-controlled industry) Oilinvest, registered in the Netherlands Antilles, had incorporated a variety of petroleum retail outlets and additional refining capacity in Europe. To circumvent the UN embargo in 1993, Libya relinquished its majority equity control in Oilinvest by selling its share to the Italian business groups Armani, Montanari, Triboldi, and the German independent oil distributor Eggert. Additionally, Oilinvest petroleum outlets grew to about 2,800 units in 1993.

Libya possessed a predominantly state-run, socialist economy, and the mineral industry was no exception. Hydrocarbon legislation in Libya dated back to the 1955 Petroleum Law. In 1969, some foreign petroleum operators were nationalized following the Libyan Revolution. According to the Government, all available acreage in Libya was expected to be offered for petroleum exploration bids in 1995. Concomitant with the acreage offerings were to be

changes in the structure of the Government's current production sharing legislation to allow greater incentives for foreign operators. As of yearend 1994, petroleum exploration and production sharing, along with any proposed mining activities, were based on the Fiscal Provisions, Revenue and Financial Law of July 1, 1977. As a result of the global petroleum market downturn of 1980, prior legislation was amended. This new legislation was known as EPSA-2, which defined production-sharing terms based on the following criteria: 85% to 15% in the Government's favor for highly significant hydrocarbon prospects, 81% to 19% for moderately significant oil prospects, and 75% to 25% for less significant oil prospects. These criteria were intended for foreign companies that wanted to pursue a more aggressive exploration program. Initially, the changes led to success in the oil sector; however, more foreign investment was desired by the Government. This policy led to the EPSA-3 agreements in 1988. EPSA-3's revised terms called for exploration costs to be recovered from output, with development costs to be equally split between the foreign operator and the parastatal NOC. Additionally, the terms called for production output to be shared between the contractor and NOC on a sliding scale, to include tax and royalty exemption for the contractor.

Italy's Azienda Generali Italiana Petroli S.p.A. (AGIP) remained the largest petroleum producer in Libya by virtue of its Bouri offshore oilfield production, but other significant foreign operators included France's Société National Elf Aquitaine and Germany's Veba AG and Wintershall AG. AGIP produced an average of 310,000 barrels per day (bbl/d) in 1994, of which 170,000 bbl/d came from it's Bou Attifel oilfield and 140,000 bbl/d from the Bouri offshore oilfield. Libya continued to rely on foreign expertise and technical personnel to develop its petroleum and mineral industry.

A number of foreign petroleum exploration companies signed individual agreements during the year. The largest of these agreements in 1994 was by a consortium of European companies composed of Repsol of Spain, Total of France, and OMV of Austria. The consortium signed a $1 billion deal to develop the Murzuk oilfield in southwest Libya, targeted to produce eventually 200,000 bbl/d.

Total throughput domestic refining capacity in Libya is 342,000 bbl/d via 5 refineries. Oilinvest's overseas throughput refining capacity totaled about 70.7 million barrels (Mbbl) in 1992, the last year for which data were available.

Libya possessed the largest hydrocarbon reserves in Africa, estimated by the Oil and Gas Journal of December 26, 1994, at 22.8 billion bbl. In contrast, the NOC estimated proven crude oil reserves at 45 billion bbl, assuming a recovery rate of 35% of 130 billion bbl in situ. The Bouri offshore oilfield alone contains 5 billion bbl of crude oil, of which 650 Mbbl is recoverable along with associated natural gas. Total natural gas reserves in Libya are estimated at 1.2 trillion cubic meters.

Libya had other industrial mineral resources, including gypsum, magnetite, phosphate rock, potash, sodium chloride, and sulfur, for which reserves have not been officially reported. These resources remained largely untapped due to lack of international capital investment and ready markets, along with high development costs.

Highways within Libya totaled 32,500 kilometers (km), of which 24,000 km were paved. Transportation of petroleum and natural gas was primarily through a network of pipelines from wellhead to processing and shipping points that were primarily on the Mediterranean coast. Crude oil pipelines totaled 4,383 km, and natural gas pipelines totaled 1,947 km. Petroleum products traversed 443 km of pipeline. Libyan oil exports were conducted through six main terminals at Es-Sider, Marsa el-Brega, Tobruk, Ras Lanuf, Zawia, and Zueitina. Libya's General National Maritime Transport Co. (GNMTC) operated a fleet of 25 vessels, which included 11 oil tankers with a total capacity of 1,321,700 deadweight tons. The first phase of the GMR was virtually complete, with the final stages to include water well drilling in the Kufra region and pipeline construction. The project is to be completed at the turn of the century.

By yearend 1994, the UN embargo banned crude oil processing equipment, turbines, and pumping equipment, but not exploration equipment. However, despite the banning of direct airline links with Libya, exploration was not severely affected because spare equipment can be shipped via Malta and Egypt. Depending on its duration, the embargo could have long-term effects on the petroleum industry by hampering plans to increase petroleum production capacity and upgrades. Additionally, effects have been minimal in the near term, owing to foreign petroleum operators in Libya having already stocked exploration and production equipment in anticipation of the UN embargo. However, a more comprehensive embargo on Libya in the future has not been ruled out by the UN to include a global embargo on Libyan crude oil. The likelihood of a multilateral agreement on further sanctions by the major European customers of Libyan oil with the UN would seem doubtful. As of yearend 1994, the freezing of the Government's overseas assets did not include revenues from the sale of crude oil, oil products, or natural gas. Additionally, continued austerity budgets imposed by the Government will continue to restrict development of major infrastructure projects.

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[1]Text prepared Apr. 1995.

[2]Where necessary, values have been converted from Libyan dinars (LD) to U.S. dollars at the rate of LD0.35=US$1.00.

Major Sources Of Information

Secretariat of Oil
P.O. Box 256
Tripoli, Libya
Telex: 61508

Cable: PETCOM, TRIPOLIBYA
National Oil Corp. (NOC)
P.O. Box 2655
Tripoli, Libya
Tel. 46180 (10 lignes)
Telex: 61508-20270

Major Publication

Salem, M. J., and M. T. Busrewil, (eds.). The Geology of Libya, v. I, II, and III. Al-Faeh University, Tripoli, Socialist People's Libyan Arab Jamahiriya, Academic, 1980.

TABLE 1
LIBYA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/		1990	1991	1992	1993	1994 e/
Cement, hydraulic	thousand metric tons	2,700	2,370	2,300	2,300	2,300
Gas, natural: e/						
Gross	million cubic meters	12,000	13,600	13,600	14,000	14,000
Marketed 4/	do.	6,500	6,500	6,500	6,500	6,400
Dry	do.	6,200	6,200	6,200	6,200	6,200
Gypsum e/	thousand metric tons	180	180	180	180	180
Iron and steel:						
Metal:						
Direct-reduced iron e/	do.	500	780	850	944	852
Crude steel e/	do.	492	718	822	920	874
Lime e/	do.	260	260	260	260	260
Nitrogen: N content of ammonia	do.	200	130	347	350	350
Petroleum:						
Crude	thousand 42-gallon barrels	502,000	551,000	545,000	500,000	504,000
Refinery products:						
Distillate fuel oil	do.	30,300	30,700	30,000	30,000	30,000
Gasoline	do.	11,000	15,000	15,000	15,000	15,000
Kerosene and jet fuel	do.	14,000	13,900	13,000	13,000	13,000
Residual fuel oil	do.	33,000	33,600	33,000	33,000	33,000
Other	do.	19,000	14,600	14,000	14,000	14,000
Refinery fuel and losses	do.	4,380	4,380	4,000	4,000	4,000
Total	do.	111,000	112,000	109,000	109,000	109,000
Salt	thousand metric tons	12	12	12	12	12
Sulfur, byproduct of petroleum and natural gas e/	do.	14	14	14	14	14

e/ Estimated. r/ Revised.

1/ Table includes data available through Mar. 1994.

2/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; may not add to totals shown.

3/ In addition to the commodities listed, a variety of construction stone, brick, and tile was produced, but available information was inadequate to make reliable estimates of output levels. Natural gas liquids were also produced but were blended with crude petroleum and were reported as part of that total.

4/ Excludes gas reinjected into reservoirs.