

# THE MINERAL INDUSTRY OF

# LIBYA

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Lacking substantial industrial diversification, nearly 95% of Libya's revenues were attributed to the hydrocarbon sector. Libya's petroleum reserves were the largest on the African Continent but remained underexploited. Libya was, however, the second largest crude oil producer in Africa, following Nigeria. With the exception of the heavily subsidized Libyan Iron and Steel Co. (LISCO) which is supplied by imported raw materials, the nation's nonfuel mineral industry sector offered little contribution to the economy. Nonfuel mineral output was confined to the extraction of salt from the coastal plains near Benghazi and Tripoli, the quarrying of gypsum and limestone near Al Khums, and the extraction of clays. LISCO's iron and steel complex was operating at only about three-fourths of its design capacity of 1.2 million metric tons per year (Mt/yr).

As of yearend 1996, the Libyan Government had not complied with the United Nations' Security Council's request to extradite Libyan suspects in the Lockerbie, Scotland, airline bombing to either the United Kingdom or the United States. As a result, the economic sanctions against the Government of Libya were renewed. The United Nations resolutions called for the banning of sales to Libya of equipment used at oil and natural gas export terminals and refineries and the freezing of Libyan funds, with the exception of revenue derived from oil and gas sales. These resolutions against Libya originally promulgated in 1993 by the United Nations' Security Council fell short of a comprehensive oil embargo. Libya has slipped into isolation while the Lockerbie affair remains unresolved. The trade embargo imposed on Libya by the United States, the United Nations' sanctions, and the Libyan Government's strong opposition to the normalization of Arab relations with Israel nurtured that country's political and commercial isolation. European nations, such as Germany, Italy, and Spain, did not support a total oil embargo owing to their continuing heavy dependence on Libyan crude oil.

The Libyan legal system is based on Italian civil law and Islamic law. The nation operated a predominantly state-run, socialist economy, and the mineral industry was no exception. 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 of all petroleum output.

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. A 1981 amendment 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 the least promising areas. An amendment followed in 1988 with revised terms that called for exploration costs to be recovered from output, with development costs to be equally split between the foreign operator and the NOC. The terms also called for production output to be shared between the contractor and NOC on a sliding scale and for tax and royalty exemption for the contractor.

Apart from hydrocarbons, mineral production in Libya was negligible. Activity was limited to the quarrying of gypsum, and limestone; and the extraction of clays. (*See table 1.*)

Hydrocarbons accounted for approximately 95% of total Libyan exports. In 1995, the total value of Libyan exports was \$9.3 billion<sup>1</sup> and the total value of imports was \$7.3 billion. Crude oil prices continued to improve in 1996. Libya exported 1.1 million barrels per day of petroleum in 1996. Italy remained Libya's largest single market receiving about 40% of crude oil exports.

About 1.5 million cubic meters of liquefied natural gas was exported in 1996 with Spain's Enagas as virtually the sole market.

The LISCO plant at Misurata, includes two 550,000-metric-ton-per-year (t/yr) Midrex direct reduction (DR) modules, six electric furnaces with a combined annual capacity of 1.25 Mt/yr, and a 140,000-t/yr cold-rolling mill. Although the plant has been operating below capacity, construction on a third DR module of 650,000 t/yr capacity began in 1995 with commissioning scheduled for 1998.

Natural gas production remained relatively stable in recent years; however, with the development of several new structures, production capacity could reach nearly 19 billion cubic meters by the year 2000. The Sirte Oil Co. currently produces over 10 billion m<sup>3</sup> annually from the Sirte basin. Italy's Azienda Generali Italiana Petroli S.p.A. (AGIP) in partnership with the NOC has undertaken the West Libyan Gas Development Project which will include the export gas from the Bouri Field to Italy. The field has a production potential of 6 billion cubic meters annually. The project also includes the development of the Wafaa Field with a production potential of 2 billion cubic meters annually, the construction of a gas treatment and separation facilities west of Tripoli, and a 1,040 kilometer (km) subsea gas pipeline to Italy. The issuance of procurement tenders for the project was scheduled for 1997. The company

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<sup>1</sup>Where necessary, values have been converted from Libyan dinars (LD) to U.S. dollars at the rate of LD0.35=US\$1.00.

is, however, hesitating on its large scale natural gas development project which should yield 8,000 Mm<sup>3</sup> annually for 30 years. AGIP has extensive interests in the United States and may be significantly affected by proposed sanctions on non-U.S. companies investing in the Libyan oil and gas sector. At mid year AGIP was hesitant to go further in case US sanctions would force it to freeze its \$5.7 billion project.

AGIP remained the largest foreign operator in Libya by virtue of its 310,000 barrels per day (bbl/d) combined production from the Bu Attifel (170,000 bbl/d) and Bouri (140,000 bbl/d) Fields. Other significant foreign operators included France's Société National Elf Aquitaine and Germany's Veba AG and Wintershall AG. Libya continued to rely on foreign expertise and technical personnel to develop its petroleum industry. A consortium of European companies composed of Repsol of Spain, TOTAL SA of France, and OMV of Austria had the Murzuk Field in southwest Libya under development since October 1994. The first oil flowed from Murzuk in December 1996. Expected to produce eventually 250,000 bbl/d, the field contains a reserve of 800 million to 1 billion barrels of 43° API low-sulfur crude. Initial production has been scaled back in volume and time and is now anticipated in 1997 at 45,000 bbl/d. (Middle East Economic Digest, 1996).

Domestic refining capacity was 342,000 bbl/d. Libya's three refineries in Europe have a combined capacity of 300,000 bbl/d bringing total refinery capacity at home and abroad to 642,000 bbl/d. Libya also has developed extensive distribution operations in its main European export markets—Italy, Germany, Switzerland, and the Netherlands. Distribution networks were established also in the Czech Republic, Hungary, Slovakia, and Spain. By the close of 1996, Libya's European distribution network included about 3,000 outlets.

Libya possessed the largest known crude oil reserves in Africa, estimated at 29.5 billion barrels. With the application of secondary and tertiary methods, the remaining recoverable reserves could total between 65 and 70 billion barrels. The Amal and Gialo Fields alone contain over 4 billion barrels of recoverable crude oil each. Total natural gas reserves in Libya were estimated by the NOC at 1.3 trillion cubic meters ranking third on the continent after Nigeria at nearly 3.5 trillion cubic meters and Algeria at 2.9 trillion cubic meters. (Arab Oil and Gas Directory, 1997). While Libya hosts other mineral resources, including gypsum, magnetite, phosphate rock, potash,

sodium chloride, and sulfur, no figures for these reserves have been officially reported.

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. operated a fleet of 25 vessels, which included 11 oil tankers with a total capacity of 1,321,700 deadweight tons.

Libya has been overlooked in the many new economic initiatives that are generating new prosperity for its North African and Mediterranean neighbors. In particular, the new Mediterranean trade zone is providing access to generous amounts of European Union funding for development. Furthermore, Libya's neighbors have launched successful privatization schemes to attract foreign investment and accelerate their economic development. In the long term, this could place Libya at a considerable competitive disadvantage. While Libya's export markets are relatively secure, earnings remain vulnerable to fluctuations in the price of oil, particularly since efforts to diversify its economy have not matched its ambitions.

### References Cited

- Arab Oil and Gas Directory, 1997, Libya: Paris, Arab Petroleum Research Center, 264 p.  
Middle East Economic Digest, 1996, Libya: Middle East Economic Digest, v. 40, no. 28, p. 12.

### Major Sources Of Information

Secretariat of Oil  
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TABLE 1  
LIBYA: PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity 2/	1992	1993	1994	1995	1996 e/
Cement, hydraulic	2,300	2,300	2,700 r/	3,210 r/	3,200
Gas, natural: e/					
Gross million cubic meters	13,440	12,410	12,510	12,460 r/	12,450
Dry do.	6,770	6,360	6,390	6,345 r/	6,330
Gypsum e/	180	160	180	180	180
Iron and steel:					
Metal:					
Direct-reduced iron	846	944	852	963 r/	862
Crude steel	822	920	874	909 r/	868
Lime e/	260	260	260	260	260
Nitrogen: N content of ammonia	347	350	350	350	350
Petroleum:					
Crude thousand 42-gallon barrels	522,935	496,765	507,313	509,175 r/	511,000
Refinery products:					
Gasoline do.	15,330	15,480	16,000	15,500 r/	15,500
Kerosene and jet fuel do.	13,870	13,578	13,800 r/	13,700 r/	13,700
Distillate fuel oil do.	29,635	28,908	29,600 r/	29,000 r/	29,000
Residual fuel oil do.	31,680	32,448	32,500 r/	32,000 r/	32,000
Other do.	9,709	9,272	10,200	10,500 r/	10,500
Total do.	100,224	99,686	102,100 r/	100,700 r/	100,700
Salt	12	15	15	15	15
Sulfur, byproduct of petroleum and natural gas e/	14	14	14	14	14

e/ Estimated. r/ Revised.

1/ Table includes data available through Oct. 1, 1997.

2/ 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.