THE MINERAL INDUSTRY OF

BAHRAIN

By Bernadette Michalski[1]

In 1998, the mineral industry supplied about 90% of Government revenues and export earnings. Crude oil from Awali Field, the only oilfield in Bahrain, was supplemented by production from the offshore Abu Saafa Field in the territorial waters of Bahrain and Saudi Arabia. Natural gas, principally from the Khuff reservoir, was available for low-cost electric power generation to sustain the nation's aluminum smelting and fabrication industries. Other mineral value-added products included ammonia, cement, iron ore pellets, methanol, natural gas liquids, and petroleum refined products.

The oil sector accounted for 60% of export revenues. In 1997, the latest year for which trade data is available, the country exported 260,000 barrels per day (bbl/d) of petroleum products and a minor amount of crude oil, which earned a total of $3.15 billion.

Aluminium Bahrain B.S.C.'s (ALBA) smelter capacity was expanded to 496,500 metric tons per year (t/yr) in 1997. Expansion of cell line No. 3 had not been fully completed until early 1998 (Metal Bulletin, 1998). Alumina feedstock was imported principally from Australia. ALBA's development plans included construction of a 450,000-t/yr coke calcination plant to come on-stream in 2001, replacing imports of calcined coke from Argentina and the United States. ALBA will import 585,000 t/yr of green coke for feedstock. When the plant is operating at full capacity, about 200,000 t/yr of calcined coke will be available for export. The expansion project included the construction of a desalination plant with a capacity of 41,800 cubic meters per day. In November, ALBA awarded a $7.4 million consultancy contract for reclamation of 141,000 square meters of land at ALBA's marine terminal, 10 kilometers northeast of the aluminum smelter. The $400 million project will be financed by six banks led by Chase Manhattan. Other construction projects include a 100,000-metric-ton (t) aluminum storage facility, a new jetty to accommodate ships up to 80,000 deadweight tons, construction of loading and unloading facilities for green coke and raw materials used to produce calcined coke, and construction of a 5,000-t calcined coke storage facility to be linked with the existing smelter (Middle East Economic Digest, 1998b).

The Gulf Industrial Investment Company (GIIC) owned and operated a 4-million-metric-ton-per-year (Mt/yr)-capacity iron ore pelletizing plant at Al Hidd. Iron ore feedstock was imported from Brazil, India, and possibly Iran. The Nippon Denro Ipsat Group of India completed a feasibility study for the construction of a $290 million, 1.2-Mt/yr-capacity sponge iron plant at the site. The Ipsat Group will supply $64 million in equity for the project. Additionally, Mitsui & Company of Japan, having acquired a 20% equity in the project, will contribute $16 million, with the remainder to be supplied by regional and international financial markets.

In February 1998, Chevron Corporation of the United States obtained an exploration agreement for three offshore blocs north and west of the island covering a total of 5,900 square kilometers. Chevron conducted two- and three-dimensional surveys in 1998. Exploratory drilling was scheduled for 2000. This represented the first active petroleum exploration work in Bahrain by a foreign entity since the mid-1980's.

Natural gas production stabilized at about 28 million cubic meters per day (Mm^3/d). About 80% of the gas was derived from nonassociated gas reservoirs; the remainder was associated gas from Al Awali crude oil production. Nearly 50% of the dry natural gas production was consumed by ALBA, followed closely by gas reinjection requirements at Al Awali Field; the remainder was consumed in electric power generation.

Crude oil production was derived from Al Awali where a series of workovers and gas-injection programs have helped stabilize production levels at between 14 million and 15 million barrels per year (Mbbl/yr) since 1984. Output was considerably below peak levels of 28 Mbbl/yr in the 1970's.

Caltex Petroleum Corporation sold its 40% equity in the Bahrain Petroleum Co. (BAPCO) to the Government of Bahrain in 1997. In 1998, the Bahrain Government refined and marketed 100% of petroleum products instead of 60%. Although the equity ownership interest was altered, Caltex remained as the supplier of the technical services to the refinery and continued in partnership with the Government in the airport refueling and natural gas ventures. Caltex remained actively involved as a major lubricants marketer, as well as continuing to provide refined product storage in Sita.

BAPCO launched a $500 million upgrade of its 250,000-bbl/d refinery. The upgrade will reduce the sulfur content in the diesel to 0.05% from 0.75% to 1%. The project was being implemented to meet the requirements of BAPCO's main market, India, where sulfur tolerance was 0.25% maximum. United States licensors were spearheading the upgrade. A 70,000-bbl/d diesel hydrotreater and pressure swing absorption unit will be licensed by Universal Oil Products. The 18-Mm^3/d hydrogen plant will be licensed by Kinetics Technology International. Two new 200-metric-ton-per-day (t/d) sulfur plants will be licensed by TPA Inc. The licensor for the upgrade of the existing midhydrocracker was Mobil, Akzo,

[1]Deceased.

Kellogg (MAK). The MAK technology should allow a 10% increase in conversion (Middle East Economic Digest, 1998a).

Gulf Petrochemical Industries Company, a joint Bahraini-Kuwait venture, opened a $180 million, 1,700-t/d-capacity urea plant in January 1998, raising the company's capacity to 4,100 t/d of methanol, urea, and ammonia. More than 98% of the output was exported to Australia, Canada, China, and Southeast Asia.

Bahrain's crude oil reserves were 210 million barrels, and natural gas reserves were 142 billion cubic meters (Arab Petroleum Research Center, 1998, p. 59-76).

The Asian economic crisis seriously affected the nation's oil and aluminum export revenues as prices of both commodities have fallen. Nevertheless, plans for ALBA's coke calcination plant and other ancillary projects, as well as GIIC's sponge iron plant, have not been altered because most of the financing for these projects will be obtained from the Arab and the Islamic Development Funds and commercial banks.

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Major Sources of Information

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TABLE 1
BAHRAIN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1994	1995	1996	1997	1998 e/
Aluminum, smelter output, primary metal		447,000	450,709	461,245	489,847	499,000 2/
Cement		225,000 e/	196,568	192,000	171,854	172,000
Gas, natural:						
Gross	million cubic meters	9,946	12,538	10,210	10,500 e/	10,500
Dry	do.	7,091	7,205	6,950 e/	8,030	8,030
Methanol		419,322	427,350	384,558	447,969	450,000
Natural gas plant liquids:						
Propane	thousand 42-gallon barrels	1,455	1,375	1,272	1,213	1,210
Butane	do.	1,190	1,163	1,087	1,048	1,050
Naphtha	do.	1,863	1,848	1,784	1,716	1,700
Nitrogen, N content of ammonia		337,506	357,504	322,500 r/	355,900 r/	335,900 2/
Petroleum:						
Crude	thousand 42-gallon barrels	14,695	14,468	14,124	14,159	14,160
Refinery products:						
Gasoline	do.	7,704	7,766	8,139	7,377	7,400
Jet fuel	do.	7,106	6,219	6,450 e/	6,300 e/	6,300
Kerosene	do.	10,409	11,327	11,600 e/	11,200 e/	11,200
Distillate fuel oil	do.	28,852	31,027	21,407	19,188	19,200
Residual fuel oil	do.	20,896	20,807	30,430	33,000 e/	33,000
Other	do.	13,630	14,728	16,800 e/	14,310 e/	14,300
Total	do.	88,597	91,874	94,826	91,375	91,400
Sulfur		52,312	55,390	74,282	66,334	66,500

e/ Estimated. r/ Revised.

1/ Table includes data available through April 1, 1999.

2/ Reported figure.