

THE MINERAL INDUSTRY OF

BAHRAIN

By Bernadette Michalski

The mineral industry of Bahrain supplied about 90% of Government revenues and export earnings in 1995. Crude oil production from Bahrain's Awali Field was supplemented by part of the production from the Abu Saafa offshore field that is co-owned with Saudi Arabia.

Production of the Nation's mineral commodities for the most part has stabilized. Output of crude petroleum has been maintained at nearly 15 million barrels per year (Mbbbl/yr) sustained by natural gas injection; it was expected to continue near this level throughout this decade. Unless additional reserves are identified, domestic onshore production was expected to cease by the year 2000. Bahrain's assigned share of production from the offshore Abu Saafa Field also approaches 15 Mbbbl/yr.

The availability of natural gas for electric power generation has fostered the Nation's aluminum smelting and fabrication industries for a quarter of a century. Feedstock for the aluminum plant was imported with about 75% of the alumina supply obtained from Alcoa of Australia. Aluminium Bahrain's (ALBA) smelter at 460,000 metric tons per year (t/yr) capacity was the largest in the Middle East.

ALBA has operated at near-capacity levels throughout the decade. However, production targets were temporarily reduced in 1993 and part of 1994 to support world aluminum prices. (See table 1.) Billet and rolling slab represent about 40% of production. ALBA signed a contract with Aluminium Pechiney in mid-1995 to provide technical assistance in monitoring environmental control programs at ALBA.

Aluminum accounted for more than one-fourth of total exports by value in 1995. Nearly two-thirds of the exported aluminum was delivered to the Gulf Cooperation Council (GCC) member countries.

Combined exports of methanol and ammonia were 869,432 metric tons (t) in 1995. All production was exported to markets principally in Asia and Western Europe. Urea production is contemplated for the near future, eventually resulting in a decline of ammonia exports in favor of domestic consumers.

Bahrain's oil and natural gas industry was wholly Government-owned, and most other mineral commodity ventures were Government controlled. However, the Bahrain Aluminium Extrusion Co. (BALEXCO), formerly wholly owned by the Government, has been totally privatized by

yearend 1995. It was the first state-owned company offered for privatization.

Government approval has been granted to proceed with the \$130 million expansion program elevating the ALBA aluminum smelter's capacity by 36,500 t/yr to nearly 496,500 t/yr. The expansion will reportedly involve extending the third potline by 76 cells and was scheduled for completion in May 1997. Additional production would be absorbed by increasing demand from downstream industries in Bahrain and the other GCC member countries. This includes BALEXCO where expansion to 21,000 t/yr was anticipated by the end of 1996 with the commissioning of a third extrusion line. The Bahrain Alloys Manufacturing Co. uses molten aluminum from the ALBA smelter to manufacture foundry alloys for the automotive and aerospace industries with markets principally in Europe. The company's 20,000 t/yr aluminum alloy plant, reportedly costing \$2.7 million, was commissioned in late 1995.

The Gulf Aluminum Rolling Mill Co. (GARMCO), Bahrain's aluminum coil and sheet producer for the construction and foil industry, tripled capacity to 120,000 t/yr by the close 1995. Raytheon Co. of the United States was the consultant for the expansion engineering work.

The bulk of Bahrain's natural gas production is extracted from the Khuff Zone. Only 23% of the natural gas supply is derived from associated gas in the Awali Field. More than one-fourth of total natural gas production was injected for enhanced recovery operations necessary to maintain petroleum production at the Awali Field. The remaining output was utilized in the production of electric power and as a petrochemical feedstock.

Gulf Petrochemical Industries Co. (GPIC), a joint venture between Bahrain and Kuwait, operated an ammonia and methanol plant at Sitra producing more than 400,000 t/yr of each commodity in recent years. The petrochemical use of natural gas was approximately 1.15 billion cubic meters (m³) in 1995. GPIC has awarded a construction contract for its 1,700 metric tons per day (t/d) urea plant, which will consume 80% of GPIC's ammonia output. Total cost of the project is estimated at \$140 million.¹

The 250,000 barrels per day (bbl/d) capacity refinery at Sitra has consistently operated at or above capacity. About 84% of the refinery's throughput was delivered by pipeline from Saudi Arabia and the remainder from the Awali Field.

The domestic demand for petroleum products exceeded 10,000 bbl/d, with the remaining output, destined for the export market.

According to the Ministry of Oil and Industry, proven crude oil reserves were estimated at 210 Mbbbl. Natural gas reserves were estimated at about 170 billion m³.

The island Nation's basic infrastructure is in place, including a network of petroleum pipelines and storage facilities to accommodate Sitra refinery receipts from the Awali Field and the Abu Saafa Field shared with Saudi Arabia. In addition, 16 product pipelines extend for 5 kilometers (km) from the Sitra refinery storage facilities to a deepwater terminal for export. Natural gas pipelines servicing Bahrain's power generation and industry complexes totaled 32 km in length.

The Directorate of Electricity operates plants at Manama, Sitra, and Riffaa. Their combined capacity was 992 megawatts (MW). An additional 200 MW from ALBA's 800-MW powerplant was available. Bahrain Petroleum Co. also produces its own electricity from a 60-MW plant.

¹Where necessary, values have been converted from Bahraini dinars (BD) to U.S. dollars at the rate of BD0.376=US\$1.00.

Major Sources of Information

Ministry of Industry and Development

Manama, Bahrain

Bahrain National Oil Co.

P.O. Box 25504

Awali, Bahrain

Telephone: (973) 754 666

Fax: (973) 753 203

Bahrain Petroleum Co.

Awali, Bahrain

Telephone: (973) 754 444

Fax: (973) 752 924

Bahrain National Gas Co.

P.O. Box 29099

Riffaa, Bahrain

Telephone: (973) 756 222

Fax: (973) 756 991

Aluminium Bahrain (ALBA)

P.O. Box 570

Manama, Bahrain

Telephone: (973) 661 751

TABLE 1
BAHRAIN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1991	1992	1993	1994	1995	
Aluminum, smelter output, primary metal	227,000	292,400	447,514	447,000	450,709	
Cement	150,000	220,000	225,000	225,000 e/	225,000 e/	
Gas, natural:						
Gross	million cubic meters	8,027	9,415 r/	9,798	9,946 r/	10,054
Dry	do.	5,522	4,015	6,926	7,091 r/	7,205
Methanol		435,000	413,691	428,458	419,322	427,350
Natural gas plant liquids:						
Propane	thousand 42-gallon barrels	1,474	1,608	1,471 r/	1,455 r/	1,375
Butane	do.	1,102	1,236	1,116 r/	1,190	1,163
Naphtha	do.	1,569	1,848	1,800	1,863	1,848
Nitrogen: N content of ammonia		319,500	332,800	348,375	337,506	357,504
Petroleum:						
Crude	thousand 42-gallon barrels	15,434	15,123	14,875	14,695	14,468
Refinery products:						
Gasoline	do.	7,840	8,500 r/	9,228	7,704	7,766
Jet fuel	do.	7,477	7,500	4,410	7,106	6,219
Kerosene	do.	10,427	10,500	12,282	10,409	11,327
Distillate fuel oil	do.	28,110	28,000	29,360	28,852	31,027
Residual fuel oil	do.	23,570	23,500	22,188	20,896	20,807
Other	do.	16,300	16,300	12,190	13,630 r/	14,728
Total	do.	93,724	94,300 r/	89,658	88,597 r/	91,874
Sulfur		56,100 r/	56,600 r/	53,700 r/	52,312 r/	55,390

e/ Estimate. r/ Revised.

1/ Table includes data available through May 1, 1996.