

THE MINERAL INDUSTRY OF UNITED ARAB EMIRATES

By Philip M. Mobbs^{1 2}

The production of crude petroleum and natural gas was the most important facet of both the United Arab Emirates' (UAE) mineral industry and the country's economy in 1994. The country's gross domestic product (GDP) increased 3%, from \$35.6 billion³ in 1993 to \$36.7 billion in 1994.⁴ Crude petroleum and natural gas accounted for approximately 80% of the Nation's income and slightly less than 40% of the country's GDP. However, depressed oil prices resulted in lower-than-expected oil revenues for the country.

Aluminum metal from Dubai, ammonia from Abu Dhabi, and cement manufactured in six of the seven emirates were significant in terms of production volume and export earnings. Dubai also was one of the world's leading gold bullion importer and jewelry exporting center.

All mineral resources were owned and controlled by the individual emirates and only loosely administered by the Federal Government. The Ministry of Petroleum and Mineral Resources coordinated Federal UAE activities with the international community. The Government continued to encourage the expansion of the country's mineral production capacity.

To increase non-oil income, customs duties were increased from 1% to 4% during 1994. However, iron and steel for the construction industry and unworked gold were excluded from the higher duties. A \$27.24 per person annual residence tax was to become effective in 1995, as were increased visa fees, transit fees, and departure taxes.

The Federal Environment Authority (FEA), organized under Federal Law No. 7 of 1993, was responsible for combating pollution in the UAE. The FEA drafted new environmental legislation to combat oceangoing tankers' oily bilges and tank blowdown discharges. Industrial companies' dumping of noxious waste in the desert also was to be targeted and eliminated.

Crude oil production, averaging approximately 2.2 million barrels per day (Mbbbl/d), was primarily from Abu Dhabi. Additional petroleum and gas production was from Dubai, Sharjah, and Ras al-Khaimah. Production was restrained by an Organization of Petroleum Exporting Countries (OPEC) quota.

Although the variety and output of minerals produced was small, demand for domestic industrial minerals continued to grow. (See table 1.)

The UAE in 1994 became the 117th member of the General Agreement on Tariffs and Trade (GATT).

Crude oil and refined petroleum products were the principal mineral products exported. Japan was the primary customer for UAE petroleum and natural gas, buying almost 50% of produced petroleum, and most of Abu Dhabi Gas Liquefaction Co.'s (ADGAS) liquefied natural gas (LNG) and liquefied petroleum gas (LPG).

Aluminum was exported primarily to Japan, South Korea, and Taiwan. Gold products were exported primarily to Asia and the Middle East.

The Government was heavily involved in the mineral industry, owning majority shares in the aluminum, fertilizer, natural gas, petroleum production and refining, and the sulfur industries. It also had a significant presence in the cement industry. Nonetheless, private investor participation in the mineral sector continued to grow with the Government's encouragement. International petroleum companies were heavily involved in crude oil and natural gas development and infrastructure projects in Abu Dhabi. Expatriates accounted for about 75% of the Emirate's labor force.

Chromite mining in Fujairah by Derwent Mining Ltd. of Ireland continued. Portman Mining Ltd. of Australia had sold its interest in the project during 1992.

The Dubai Aluminum Co. (Dubal) Ltd. recovered from the 1993 powerplant explosion and fire and new aluminum production reached record levels in 1994. Other metal operations in the UAE included the Ahli Steel Co., which had a 70,000-metric-ton-per-year (mt/a) steel plant for production of deformed reinforcing bar near Dubai; Solo Industries Ltd. Sharjah, which operated an 800-mt/a lead refinery for scrap recycling; and Lucky Recycling Ltd. Dubai, which melted copper scrap. At yearend 1994, a stainless steel bar plant was proposed for Dubai.

Ruwais Fertilizer Industries (Fertil) continued to expand fertilizer exports. Fertil proposed to increase its annual ammonia production capacity by 25% to 500,000 mt/a and urea production capacity by 15% to 600,000 mt/a. Smaller fertilizer plants included a 219,000-mt/a plant at Ajman and the 6,000-mt/a Union Kemira plant at Jebel Ali, Dubai. Abu Dhabi National Oil Co.'s (ADNOC) subsidiary, National Chlorine Industries, produced salt, chlorine, and caustic soda at its plant in Umm Al-Nar, Abu Dhabi.

Expansion was underway at Fujairah Cement Industries in Dibba, Fujairah, and at Ras al-Khaimah Co. for White Cement and Construction Material in Khor Kywair, Ras al-Khaimah. A project to reduce environmental emissions

commenced at Gulf Cement Co. at Al-Nakheel, Ras al-Khaimah.

Costain Abu Dhabi was awarded a contract to build a barite and bentonite grinding plant during 1995. Silica sand demand would be expected to increase with the proposed 1995 construction of a 280-million-bottle-per-year glass factory in Dubai. Abu Dhabi Investment Company announced that it was investigating the feasibility of constructing a plate glass plant in the country.

ADNOC began construction of an 80-metric-ton-per-day (mt/d) Claus unit to augment sulfur recover at Habshan. Liquid sulfur was trucked to Ruwais where the construction of two additional 1,100-mt/d granulation units was proposed at yearend.

The Government encouraged the expansion of production capacity to ensure that it could supply future world markets. According to a study by the Union of Arab Chambers of Commerce and Industry, the UAE was projected to increase sustainable capacity from 2.3 Mbb/d in 1991 to nearly 2.9 Mbb/d by 1996. Gas production also was projected to expand to 4.8 million cubic meters per day (Mm³/d) from 3.5 Mm³/d.

Domestic and international oil companies' investment in increase production capacity has included drilling infill wells, upgrading wellhead equipment, and adding oil and gas gathering facilities, such as new trunklines, flowlines, and remote manifold stations. But the UAE's production was restrained by the OPEC quota and onshore fields in Abu Dhabi were required by the Government to cut back on production. Operations in Dubai and high-cost offshore fields were apparently allowed to produce at higher rates than the onshore Abu Dhabi concessions.

In January 1994, ADNOC began operating the offshore Arzanah Field that the former operator, U.S.-based Amerada Hess Corporation, had relinquished in December 1993.

Exploration continued in the UAE with Dubai Production Co. contracting for a marine seismic survey adjacent to its offshore Fateh Field and Geco-Prakla starting a 2-year contract to shoot seismic over ADNOC's onshore concessions.

ADCO procured four additional wellhead platforms and associated facilities for the offshore Umm Al-Anbar Field. Bechtel Corp. of the United States was part of a joint venture that was contracted to upgrade the gas-processing facilities at Habshan. This \$1.3 billion onshore gas development project for ADNOC will further development of the Thamama B, C, and F sour gas reservoirs. A projected natural gas flow of 42 Mm³/d is to be treated to recover condensate and sulfur.⁵

ADGAS doubled its Das Island gas-processing capacity to approximately 58 Mbb/a with the construction of a third liquefied natural gas (LNG) production train on Das Island. The liquefaction train was completed in May 1994 and began full production in September. Tokyo Electric Power Co. was to receive 50 Mbb/a until 2019.

Abu Dhabi's Supreme Petroleum Council appraised the proposed expansion of the Ruwais refinery. The project, estimated to ultimately cost between \$1.3 and \$1.9 billion, had been studied and under consideration for more than 5 years. New condensate processing facilities and increasing distillation capacity to 270,000 bbl/d were proposed under the expansion.

According to the Kuwait-based Organization of Arab Petroleum Exporting Countries (OAPEC), the UAE had estimated proven petroleum reserves of 98 billion bbl at yearend 1994. Proven natural gas reserves for the UAE were estimated in OAPEC's annual report to be 5.79 trillion m³. Most of the UAE's hydrocarbon reserves were in Abu Dhabi.

The Nation's four governmental power organizations had a total installed electricity generating capacity of 5,500 megawatts. A number of gas-fired power and desalinization plants were under construction.

The United Arab Emirates had an extensive crude oil and natural gas pipeline network. A 125-kilometer, 106-centimeter-diameter gas pipeline from Bab to the Taweelah B power station was under construction. Coastal petroleum terminals were at Ruwais, Jebel Dhanna, Port Zayed, and Umm Al-Nar in Abu Dhabi; Jebel Ali and Port Rashid in Dubai; and in Sharjah. Island or mooring buoy loading facilities were at Abu Al-Bukhoosh, Das Island, Delma Island, Mubarraz, and Zirku Island in Abu Dhabi; Fateh, Dubai; and Mubarak, Sharjah.

The country's port facilities and merchandising capabilities are expected to attract additional precious metal and stone companies and continue to expand on its transshipment commerce.

Privatization, expanding economic interests, and Government interest should ensure growth for the mineral industry. Revenues from mineral fuels are expected to continue to be reinvested in diversification projects and downstream processing of higher valued materials.

¹Text prepared June 1995.

²Includes the following seven Emirates: Abu Dhabi, Ajman, Dubai, Fujairah, Ras al-Khaimah, Sharjah, and Umm al-Qaywayn.

³Where necessary, values have been converted from Emirian dirhams (Dh) to U.S. dollars at the rate of Dh3.67=US\$1.00.

⁴Middle East Economic Digest. "Doing Business in Dubai," Apr. 7, 1995, p. 4.

⁵Oil & Gas Journal. "Abu Dhabi Sets Upgrade/Expansion of Gas Facilities," V. 91, No. 14, Apr. 5, 1994, p. 25.

Major Sources of Information

Abu Dhabi National Oil Company (ADNOC)
P.O. Box 898
Abu Dhabi, United Arab Emirates
Telephone: (971) (2) 666-000
Facsimile: (971) (2) 602-3389

Abu Dhabi Gas Liquefaction Company (ADGAS)
P.O. Box 3500
Abu Dhabi, United Arab Emirates
Telephone: (971) (2) 333-888
Facsimile: (971) (2) 606-5456

Major Publication

Arab Oil & Gas Directory 1994, Arab Petroleum Research
Center, Paris, France, 1994, 616 pp.

TABLE 1
UNITED ARAB EMIRATES: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1990	1991	1992	1993	1994 e/
Aluminum, metal, primary ingot	174,000	239,000	245,000	242,000	247,000
Cement, hydraulic 3/ thousand tons	3,260	3,470	3,800	3,500 e/	3,800
Chromite	--	--	1,000 r/ e/	20,000 r/ e/	25,000
Fertilizer materials:					
Ammonia:					
Gross weight	358,000	348,000	332,000	350,000	295,000
N content	295,000	286,000	275,000	288,000	243,000
Urea:					
Gross weight	496,000	517,000	506,000 e/	520,000 e/	540,000
N content	231,000	241,000	236,000	243,000	250,000
Gas, natural:					
Gross million cubic meters	30,900	32,900	36,700	37,000 e/	37,000
Dry do.	23,800	25,900	29,000	29,500 r/ e/	29,000
Gypsum e/ thousand tons	89	95	95	95	100
Lime e/ do.	45	45	45	45	45
Natural gas plant liquids e/ thousand 42-gallon barrels	58,400	60,000	52,500 r/	58,000 r/	60,000
Petroleum:					
Crude 5/ do.	773,000	890,000	836,000	800,000	805,000
Refinery products e/ do.	71,200	71,200	76,700	76,700	77,000
Sulfur, byproduct: e/					
From petroleum refining	10,000	10,000	20,000	24,000	24,000
From natural gas processing	80,000	64,000	100,000	122,000	120,000
Total	90,000	74,000	120,000	146,000	144,000

e/ Estimated. r/ Revised.

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits.

2/ Table includes data available through June 22, 1995.

3/ In addition to the commodities listed, crude industrial minerals such as common clays, diabase, limestone, marble, shale, other construction stone, and sand and gravel gravel presumably are produced, but output is not reported, and general information is inadequate to make reliable estimates of output levels.

4/ Includes white cement.

5/ Includes lease condensate.