

# THE MINERAL INDUSTRY OF UNITED ARAB EMIRATES

By Bernadette Michalski

The production of crude petroleum and natural gas was the most important facet of the United Arab Emirates<sup>1</sup> (UAE) mineral industry and the economy. Crude petroleum and natural gas, chiefly from Abu Dhabi, accounted for about 80% of Government revenues and 34% of the country's gross domestic product, which was \$42.7<sup>2</sup> billion in 1996.

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

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.

The Federal Environment Authority (FEA), organized under Federal Law No. 7 of 1993, was responsible for pollution control in the Emirates. The FEA drafted new environmental legislation to combat pollution from oceangoing tankers.

Crude oil production averaged 2.16 million barrels per day (Mbbbl/d) and was primarily from Abu Dhabi, which produced 1.95 Mbbbl/d. Additional petroleum and natural gas production was from Dubai and Sharjah. Ras al-Khaimah realized a portion of the production from the offshore Bukha Field shared with Oman. Umm al-Qaiwain held a 20% share in production from the Mubarak Field in Sharjah. Production was restrained by the Organization of Petroleum Exporting Countries (OPEC) quota limiting production from the UAE to 2.16 Mbbbl/d, leaving Abu Dhabi with about 500,000 barrels per day (bbl/d) of unused production capacity.

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

Crude oil, refined petroleum products, natural gas, and aluminum were the principal mineral products exported. The United States imported nearly 1 million barrels (Mbbbl) of crude oil from the UAE in 1996 (Energy Information Administration, 1997). Japan was the primary customer for the UAE's mineral exports buying most of Abu Dhabi Gas Liquefaction Co.'s liquefied natural gas (LNG) production, almost 65% of

produced petroleum, and about one-third of the aluminum output. Gold products were also 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 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.

In the metals sector, chromite mining in Fujairah by Derwent Mining Ltd. of Ireland continued. The Dubai Aluminum Co. Ltd. (Dubal) production exceeded a quarter million tons, topping last years record production level by 1%. Plans to commission a 130,000-metric-tons-per-year (t/yr) capacity potline by early 1997 were on target and should raise total capacity to 380,000 t/yr of aluminum. The smelter's products are chiefly billet, foundry alloy for automotive wheels, and high purity-ingot for electronics. Dubal expects to maximize sales of its higher value products, particularly foundry ingot shipments, which totaled 121,000 t in 1996. The size and infrastructure at the Jebel Ali site could support a 500,000-t/yr capacity smelter. A sixth 130,000-t/yr capacity potline is under consideration pending the lowering or removal of the 6% import tariff on unwrought metal deliveries to Europe from countries outside of the European Free Trade Association. Other metal operations included the Ahli Steel Co., which had a 70,000-t/yr steel plant for production of reinforcing bars in Dubai; Solo Industries Ltd., Sharjah, which operated an 800-t/yr lead refinery for scrap recycling; and Lucky Recycling Ltd., Dubai, which recycled copper scrap.

Within the industrial minerals sector, Ruwais Fertilizer Industries (FERTIL) continued to expand fertilizer exports. FERTIL proposed to increase its annual ammonia production capacity by 25%, to 500,000 t/yr, and urea production capacity by 15%, to 600,000 t/yr. Smaller fertilizer plants included a 219,000-t/yr plant at Ajman and the 6,000-t/yr Union Kemira plant at Jebel Ali, Dubai. Abu Dhabi National Oil Co.'s (ADNOC) subsidiary, National Chlorine Industries, produced caustic soda, chlorine, and salt at its plant in Umm Al-Nar. Expansion was underway at Fujairah Cement Industries in Dibba, Fujairah, and at the Ras al-Khaimah Co. for White Cement and Construction Material in Khor Kywair, Ras al-Khaimah.

<sup>1</sup>Includes the following seven Emirates: Abu Dhabi, Ajman, Dubai, Fujairah, Ras al-Khaimah, Sharjah, and Umm al-Qaywayn.

<sup>2</sup>Where necessary, values have been converted from Emirian dirhams (Dh) to U.S. dollars at the rate of Dh3.67=US\$1.00.

The Government encouraged the expansion of hydrocarbon production capacity to ensure its participation in future world markets. The UAE increased sustainable crude petroleum production capacity from 2.3 Mbbl/d in 1991 to 2.46 Mbbl/d in 1996. Natural gas production capacity was expanded from 3.5 million to 4.8 million cubic meters per day (Mm<sup>3</sup>/d). Rapidly expanding electricity consumption and restrictions on oil production by OPEC quotas have prompted ADNOC to expand natural gas output by modernizing onshore and offshore gas extraction and distribution systems. 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 project for ADNOC will further development of the Thamama B, C, and F sour gas reservoirs. A projected natural gas flow of 42 Mm<sup>3</sup>/d was to be treated to recover condensate and sulfur.

The Abu Dhabi Gas Liquefaction Co. supplies Tokyo Electric Power Co. with 50 million barrels per year of LNG under a contract extending to 2019.

Domestic and international oil companies' investment in increased 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 permitted to produce at higher rates than the onshore Abu Dhabi concessions.

Exploration continued in the UAE with Dubai Petroleum Co. conducting marine seismic surveys adjacent to its offshore Fateh Field.

The Abu Dhabi Co. for Onshore Oil Operations procured four additional wellhead platforms and associated facilities for the offshore Umm Al-Anbar Field.

The Ruwais petroleum refinery was undergoing expansion and modernization. The project includes increasing distillation capacity by 335,000 bbl/d to 455,000 through the installation of a second 135,000-bbl/d crude distillation unit and a 200,000-bbl/d condensate distillation unit. Hydrocracking capacity was scheduled to be expanded from 27,000 to 73,000 bbl/d.

The UAE had proven petroleum reserves of 98 billion barrels as of January 1, 1996. Proven natural gas reserves were 6.12 trillion cubic meters. Most of the UAE's hydrocarbon reserves were in Abu Dhabi, the venue for 94% of petroleum reserves and 92% of natural gas reserves (Arab Petroleum Research Center, 1997).

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

The UAE 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, Mubarrak, and Zirku Island in Abu Dhabi, Fateh in Dubai, and Mubarak in Sharjah.

Privatization, expanding economic interests, and Government support should encourage growth for the mineral industry. Revenues from mineral fuels continued to be reinvested in diversification projects and downstream processing. The country's port facilities and merchandising capabilities were expected to attract additional precious metal and stone companies further expanding trans-shipment commerce. Favorable crude oil prices will be critical in implementing the nation's development programs particularly as large-scale investments will be needed early in the next century to boost power and water outputs necessary to support planned development.

## References Cited

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Energy Information Administration, 1997, Petroleum supply annual—1996: Washington, D.C.: Government Printing Office, vol. 2, 599 p.

## Major Sources of Information

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

(Metric tons unless otherwise specified)

Commodity 2/	1992	1993	1994	1995	1996 e/
Aluminum, metal, primary ingot	244,605	242,264	246,890	239,900	250,500 3/
Cement, hydraulic e/ 4/ thousand tons	3,800 3/	4,000	5,000	6,000	6,000
Chromite, gross weight	1,000	19,000 r/	55,000 r/	37,000 r/	56,000
Fertilizer materials:					
Ammonia:					
Gross weight	332,000	372,000	347,500	441,000	445,000
N content	275,000	305,600	286,500	362,700	365,000
Urea:					
Gross weight e/	506,000	520,000	540,000	540,000	540,000
N content	236,000	243,000	250,000 e/	250,000 e/	250,000
Gas, natural:					
Gross million cubic meters	30,130	31,630	32,000	40,000 e/	47,000
Dry do.	22,170	22,930	23,000	30,000 e/	40,000
Gypsum e/ thousand tons	95	95	95	90	90
Lime e/ do.	45	45	45	50	50
Natural gas plant liquids e/ thousand 42-gallon barrels	52,500	58,000	80,000	100,000	110,000
Petroleum:					
Crude do.	836,000	800,000	792,000	800,500	831,000 3/
Refinery products:					
Gasoline do.	10,770	11,132 r/	11,970 r/	12,738 r/	13,000
Kerosene do.	9,200	9,700 r/	10,110 r/	21,243 r/	11,000
Distillate fuels do.	19,565	19,890 r/	21,681 r/	24,345 r/	25,000
Residual fuels do.	18,940	19,856 r/	21,863 r/	12,995 r/	20,000
Other do.	10,800	10,100 r/	10,475 r/	12,665 r/	13,000
Total do.	69,275	70,678 r/	76,099 r/	83,986 r/	82,000
Sulfur, byproduct: e/					
From petroleum refining	20,000	24,000	24,500	26,000 r/	26,000
From natural gas processing	200,000	225,000	225,500	230,500	233,000
Total	220,000 3/	249,000 3/	250,000	256,500 r/	259,000

e/ Estimated. r/ Revised.

1/ Table includes data available through Dec. 31, 1997.

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

3/ Reported figure.

4/ Includes white cement.