

# BAHRAIN, KUWAIT, OMAN, QATAR, THE UNITED ARAB EMIRATES, AND YEMEN

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Revenues associated with the production and processing of crude oil and natural gas form an integral segment of the economies of the countries of the Arabian Peninsula. Metals and industrial mineral exploration and mining were of more interest in the eastern areas of the Peninsula (Oman, United Arab Emirates, and Yemen). Mineral-processing facilities, however, have become standard features on the peninsula given the availability of low-cost energy. The increased interest in the use of natural gas as a fuel or petrochemical feedstock has focused the region on monetizing its gas production, much of which formerly had been flared or reinjected. In 2001, crude oil production quotas imposed by the Organization of the Petroleum Exporting Countries (OPEC) resulted in reduced oil and associated natural gas output for OPEC members and increased the economic attractiveness of production from nonassociated gasfields.

Numerous new mineral-based endeavors, plant expansions, and supporting infrastructure projects were proposed for the region. These included aluminum smelters; cement factories; liquefied natural gas (LNG) plants; natural gas-to-liquids facilities; regional natural gas pipelines; nitrogen fertilizer (ammonia and urea) plants; petroleum refineries; steel rolling mills, especially for concrete reinforcing bar (rebar); and units to recover sulfur from sour crude or natural gas.

## BAHRAIN

Aluminum and petroleum dominated Bahrain's mineral economy. Bahraini exports of crude oil and refined petroleum products, which were valued at about \$3.7 billion<sup>1</sup> in 2001, accounted for about 67% of Bahrain's total export earnings of \$5.5 billion (Bahrain Monetary Agency, 2002). In 2001, other mineral exports were valued at almost \$1.1 billion. These included aluminum and aluminum-alloy unwrought metal and semimanufactures, such as bars, foil, plates, rods, and wire (\$797 million), agglomerated iron ores (\$175 million), and urea (\$48 million) (Kingdom of Bahrain, 2002§<sup>2</sup>). With a more-diversified economy than many of its Gulf region neighbors, Bahrain was viewed as having successfully weathered the downturn in international oil prices during 2001. The real gross domestic product (GDP) increased by an estimated 5% in 2001 compared with that of 2000 (Australian Department of Foreign Affairs & Trade, 2002§).

Aluminium Bahrain B.S.C. (ALBA) completed a 450,000-metric-ton-per-year (t/yr)-capacity coke-calcining plant, and the

Board of Directors approved the addition of a fifth aluminum potline (Aluminium Bahrain B.S.C., 2002§). Construction of the \$1.7 billion potline project was anticipated to start in late 2002 and was estimated to take 3 years. The new potline would expand ALBA's nominal capacity to 750,000 t/yr from about 500,000 t/yr (Aluminium Bahrain B.S.C., 2001a§). ALBA also began a 2-year campaign to increase amperage on potline 4 to 330 kiloamperes (kA) from 320 kA. The program to tweak potline amperage would increase the plant's aluminum production capacity by an estimated 11,000 t/yr (Aluminium Bahrain B.S.C., 2001b§).

General background information on the oil and gas sector is available in the October 2001 edition of the Bahrain Country Analysis Brief at URL <http://www.eia.doe.gov/emeu/cabs/bahrain.html>.

## KUWAIT

Kuwait's economy revolved around the production and refining of crude oil. In 2001, the petroleum and natural gas sector contributed about 58% of the GDP and 86% of Government revenue. The GDP was estimated to have declined to \$32.8 billion<sup>3</sup> in 2001 compared with \$35.9 billion in 2000 in conjunction with the decline in international oil prices (Central Bank of Kuwait, 2002§). Kuwait was the world's 14th leading oil producer (U.S. Energy Information Administration, undated§).

In 2001, total exports were valued at \$16.1 billion, of which oil exports accounted for about \$15 billion and manufactured fertilizer exports accounted for \$75 million. In 2000, total exports were valued at \$19.5 billion, of which oil exports accounted for \$18.2 billion and manufactured fertilizer exports accounted for about \$64 million. Total imports in 2001 were estimated to be \$7.7 billion (Central Bank of Kuwait, 2002§).

In November, United Steel Industrial Co. began test runs at its new 300,000-t/yr-capacity rebar mill. The plant was designed to produce 8- to 40-millimeter rebar. Steel for the plant will be imported from Iran, and rebar output should supplant imported rebar sourced primarily from Turkey (Metal Bulletin, 2001c). Kuwait Metal Collecting and Shredding Co. K.S.C. (closed) and Al Oula Iron Co. proposed to invest \$3.3 million to set up an iron casting and molding plant in Kuwait. Military vehicle debris (wrecked armored personnel carriers, tanks, trucks, and other vehicles) remaining from the 1991 Gulf war was sold as scrap for about \$1.5 million. Removal and export of the scrap was expected to take up to 3 years.

<sup>1</sup>Where necessary, values have been converted from Bahraini dinars (BhD) to U.S. dollars (US\$) at the rate of BhD0.377=US\$1.00.

<sup>2</sup>References that include a section twist (§) are found in the Internet References Cited section.

<sup>3</sup>Where necessary, values have been converted from Kuwaiti dinars (KD) to U.S. dollars (US\$) at the average exchange rate of KD0.307=US\$1.00.

As part of the ongoing national privatization program, the Government's Kuwait Investment Authority announced that it would sell its 32.4% interest in Kuwait Cement Co. in September. The reaction of international financial markets to the events of September 11, however, resulted in the indefinite postponement of the divestment. At yearend, construction was completed and testing was underway at Kuwait Cement's 1.8-million-metric-ton-per-year (Mt/yr)-capacity grey cement kiln in Shuaiba (Orient Consulting Center, undated b§). Gulf Glass Manufacturing Co. K.S.C. proposed to increase its production capacity to 50,000 t/yr of glass bottles from 35,000 t/yr. About 58% of the company's output was exported (Orient Consulting Center, [undated]a§). In 2000, the Government's Petrochemical Industries Co. (PIC) sold the Salt and Chlorine Factory to Al Ahlia Investment Co. K.S.C. (closed) of Kuwait for \$35.3 million.

PIC awarded an \$87 million contract to build a 1,500-metric-ton-per-day (t/d)-capacity urea granulation facility at its Plant B urea establishment at Shuaiba. The granulation unit will replace the existing prill tower. Work continued on the \$70 million expansion of line 1 at the Plant A urea facility to 1,750 t/d from 1,100 t/d. PIC proposed to increase the ammonia plant's line 2 capacity to 880 t/d from 800 t/d and to construct a 2,000-t/d methanol plant (Middle East Economic Digest, 2001e; t, p. 36).

In July, initial contracts were awarded for the \$330 million restoration of the Mina al-Ahmadi oil refinery. Repair of the damage caused by the June 2000 explosion at the refinery was expected to take an additional year. Kuwait National Petroleum Co. K.S.C. also proposed to expand the capacity of its three refineries to between 1.2 million and 1.5 million barrels per day and to build a new 200,000- to 300,000-barrel-per-day (bbl/d) refinery. The 4-year expansion project was estimated to cost about \$2.3 billion. The lower priority new refinery undertaking was projected to start up in 8 to 10 years and to cost about \$800 million (Middle East Economic Digest, 2001d, q).

Kuwait Oil Co. K.S.C. proposed the construction of an 8.5-million-barrel tank farm at Mina al-Ahmadi and an associated offshore loading buoy array. Preliminary estimates indicated the 4-year project would cost around \$900 million (Middle East Economic Digest, 2001a).

The Government proposed to substitute cleaner burning natural gas for the fuel oil that fired the country's power stations. Kuwaiti natural gas supply, however, was associated with crude oil production that was subject to OPEC production quotas. To ensure an adequate gas supply for the power stations and the country's growing petrochemical industry, the Government entered into negotiations to purchase natural gas from Iran and Qatar. A 23- to 40-million-cubic-meter-per-day-capacity pipeline from Qatar was estimated to cost \$500 million (McDowall, 2001). The Government also was evaluating the development of the offshore Dorra gasfield in the partitioned neutral zone (PNZ).

During 2001, Arabian Oil Co. Ltd. (AOC) vigorously pursued negotiations with the Government to renew its rights in the offshore Kuwaiti portion of the PNZ. AOC had lost its concession in the Saudi Arabian section of the PNZ in 2000. AOC's existing exploration and production agreement on the Kuwaiti side of the PNZ will expire in January 2003.

## OMAN

Petroleum and natural gas accounted for 74% of Government

revenue. The Omani GDP rose slightly to about \$20 billion<sup>4</sup> in 2001 compared with \$19.7 billion in 2000. The average price received for Omani oil slipped to \$23 per barrel from \$26.71 per barrel in 2000. Oil and gas output was supplemented by the production of chromite, gold, gypsum, salt, sand and gravel, silver, and dimension stone; the smelting and refining of imported copper ore; and the manufacturing of cement.

In 2001, National Mining Co. of Oman acquired the rights to explore on block 1 near Sohar. By yearend, National Mining had identified near-surface mineralization that included about 3 million metric tons (Mt) of ore grading 2% copper, and 200,000 metric tons of ore grading 5 grams per metric ton (g/t) gold on the Shinas and the Hatta prospects. The Japanese International Cooperation Agency continued its evaluation of deep-seated copper and gold resources in the Yangul region where the Ghuazain and the Hayl As-Safil deposits were described as containing 14 Mt of low-grade copper (Madhavan, 2002§).

The Government anticipated an additional \$8 billion investment in local projects that would use the country's natural gas as feedstock or fuel. Projects under negotiation or in the design phase included a natural-gas-powered aluminum smelter at Sohar proposed to come online in 2004, the construction of a 2,000-t/d ammonia plant and a 3,500-t/d urea plant at Sohar, the construction of an ammonia and granulated urea facility at Sur, a 5,000-t/d methanol plant at Sohar that was slated to begin operations in 2004, and a 75,000-bbl/d oil refinery at Sohar (Bulk Materials International, 2000; Middle East Economic Digest, 2001p; t, p. 36).

Oman Liquefied Natural Gas LLC (Oman LNG) processed about 70% of the marketed natural gas in Oman at its LNG plant at Qalhat. To ensure sufficient gas supply, the Government was attempting to reduce the flaring of natural gas and to get the gas to market. A number of gas pipeline projects, which included a 305-kilometer (km) pipeline that would connect the Fahud Field to Sohar and a 700-km line that would link the Saih Nihadya Field to Salalah (Port Raysut) were underway (Stell, 2000). National gas supply could be augmented by two gas discoveries (the Kauther and the Khazzan prospects) drilled in 2001 by Petroleum Development Oman LLC (PDO). Oman LNG's anticipated challenge to acquire enough gas to fulfill its export contracts was alleviated in 2001 when LNG deliveries to Dabhol Power Co. in India (1.6 Mt/yr scheduled to begin in November) were initially postponed owing to a dispute between the Maharashtra State Electricity Board and Enron Corp. of the United States, which had significant equity interest in Dabhol, and subsequently because of Enron's bankruptcy.

The output of PDO accounted for about 94% of the crude oil produced in Oman; the remainder was produced by international oil companies. The country's proven oil reserves were estimated to be 5.6 billion barrels and, according to the Ministry of Petroleum and Gas, natural gas reserves were estimated to range between 740 and 960 billion cubic meters (Middle East Economic Digest, 2001j; U.S. Energy Information Administration, 2001a§; Middle East Newline, 2002§).

## QATAR

Much of the Qatari economy was based on the production of

<sup>4</sup>Where necessary, values have been converted from Omani rials (OR) to U.S. dollars (US\$) at the average exchange rate of OR0.381=US\$1.00 for 2001 and OR0.385=US\$1.00 for 2000.

crude oil, natural gas, petrochemicals, and refined petroleum products. In response to the decline in international oil prices, the Qatari GDP was estimated to have declined to \$16.2 billion<sup>5</sup> compared with the revised figure of \$16.5 billion in 2000. Oil and natural gas accounted for 56% of the GDP in 2001 compared with a revised 58% in 2000 (Qatar Central Bank, 2002§).

In 2001, the Government settled border demarcation issues with Bahrain and Saudi Arabia, and state-owned Qatar General Petroleum Corp. was renamed Qatar Petroleum (QP).

Bahrain Aluminium Extrusion Co. proposed a 7,000-t/yr aluminum extrusion plant in Qatar (Metal Bulletin, 2001b). QP contracted out the construction of a \$68.5 million facility at the port of Mesaieed to handle imported crushed stone (Middle East Economic Digest, 2001b).

A number of natural-gas-related projects were underway in 2001. Qatar Fertiliser Co. Ltd. initiated the \$535 million expansion of its fertilizer complex in Mesaieed, which would increase its ammonia production capacity by about 730,000 t/yr and urea output capacity by about 1.2 Mt/yr. The new capacity was expected to be onstream by 2004 (Norsk Hydro ASA, 2001).

Natural gas export projects that were to move natural gas from Qatar's North Field to Kuwait, Oman, and the United Arab Emirates showed significant progress. The Dolphin project (estimated to cost about \$3.5 billion) initially included plans for the TotalFinaElf Group to produce up to 57 million cubic meters per day for Dolphin Energy Ltd. from an assigned area in the North Field and for Enron to manage a 350-km offshore pipeline from Ras Laffan, Qatar, to Taweelah, United Arab Emirates. In May, Enron Corp. sold its interest in the project to the United Arab Emirates Offsets Group. Exxon Mobil Corp. (ExxonMobil) was to manage the proposed 590-km Qatar-Kuwait offshore natural gas pipeline to Al Zour, Kuwait. Both gas pipelines were expected to be transporting gas by 2005 (Middle East Economic Digest, 2001h, r).

Qatar Liquefied Gas Co. (Qatargas) proposed a \$200 million modification program for its production process. The debottlenecking was expected to raise the company's LNG capacity to 9.2 Mt/yr by 2004. In 2001, Qatargas's three LNG trains at Ras Laffan produced about 7.7 Mt/yr; the plant's design capacity was 6 Mt/yr (Middle East Economic Digest, 2001n).

In March, Ras Laffan Liquefied Natural Gas Co. II (RasGas II) was formed by QP (70% equity interest) and ExxonMobil (30%). RasGas II awarded the contract for its LNG Train 3 project, which included offshore North Field natural-gas-production facilities, pipelines, and a 4.4-Mt/yr-capacity liquefaction train at Ras Laffan. Commercial production from Train 3 was expected to be available in 2004. RasGas II also was evaluating the construction of a proposed 4.8-Mt/yr-capacity LNG train (Train 4) (Middle East Economic Digest, 2001c, k).

Four gas-to-liquids (GTL) projects were under consideration. A joint venture of QP (51% equity interest) and Sasol Synfuels International Ltd. (49%) agreed to proceed with a 24,000-bbl/d diesel fuel, 9,000-bbl/d naphtha, and 1,000-bbl/d liquefied petroleum gas facility to be built in Ras Laffan. The \$800 million GTL project was expected to start up in 2005 (Qatar

Petroleum, 2001). QP and ExxonMobil initiated a feasibility study for an 80,000-bbl/d GTL plant proposed for Ras Laffan by 2006 (Middle East Economic Digest, 2001s). QP and Shell International Gas were evaluating a 75,000- to 110,000-bbl/d GTL plant, and Ivanhoe Energy Inc. proposed a 185,000-bbl/d GTL plant (Asia Chemical News, 2002b; Ivanhoe Energy Inc., 2002).

## UNITED ARAB EMIRATES

Oil and natural gas revenues formed a significant segment of the diversified economy of the United Arab Emirates<sup>6</sup> (UAE). In addition to the hydrocarbon industry, the UAE had thriving finance, manufacturing, tourism, and trade industries. In 2001, a number of GDP series were reported. The Ministry of Petroleum and Mineral Resources estimated that GDP was about \$64 billion<sup>7</sup> compared with \$66 billion in 2000. The Ministry of Planning estimated that the GDP was about \$68 billion in 2001 compared with \$71 billion in 2000 and that crude oil accounted for 28% of GDP in 2001 compared with 34% of the GDP in 2000 (Emirates News Agency, 2002§; Shuaa Capital P.S.C., 2002§).

Abu Dhabi, which dominated the petroleum industry of the UAE, accounted for about 85% of the country's hydrocarbon production. Crude oil production from Dubai, which was used as a benchmark crude oil for daily (spot market) Middle East crude oil sales contracts, continued to decline. In November, Platts (a subsidiary of the McGraw-Hill Companies, Inc.) modified its Dubai benchmark by allowing crude oil from Oman to be substituted for Dubai crude for physical delivery and derivatives contracts.

Other minerals and mineral commodities produced in the UAE included aluminum and steel from Dubai; ammonia from Abu Dhabi; cement manufactured in Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al-Khaimah, and Sharjah; and chromite mined in Fujairah. All mineral resources were controlled by the individual emirates and loosely administered by the Federal Government.

Dubai Aluminium Co. (Dubal) proposed a 170,000-t/yr expansion of its 536,000-t/yr plant capacity. Dubal's "Kestral" expansion project included the refurbishment of the three potlines that were commissioned in 1979 with modern reduction cells, the addition of cells to the potlines, and the renovation of the powerplant and carbon plant (Mining Journal, 2001; Dubai Aluminium Co. Ltd., 2002). Initial production from the expansion could be onstream by late 2003; the entire project should be completed by 2006. The 400,000-t/yr "Heron" expansion proposal remained under evaluation (Metal Bulletin, 2000).

A 40,000-t/yr-capacity aluminum foil rolling mill was proposed for Jebel Ali, Dubai. The \$110 million plant was scheduled to be online in 2004. The proposed new foil plant will replace two previously proposed aluminum rolling mills in Dubai—the Emirates Aluminium Co. \$160 million, 60,000-t/yr plant and the \$180 million, 22,400-t/yr Aluminium Gulf Co. mill (Middle East Economic Digest, 2001i).

Dubai Cable Co. Ltd. (Ducab) was expanding its Jebel Ali

<sup>6</sup>Comprises the following: Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al-Khaimah, Sharjah, and Umm al-Qaywayn.

<sup>7</sup>Where necessary, values have been converted from United Arab Emirate dirham (AED) to U.S. dollars (US\$) at the rate of AED3.67=US\$1.00 for 2000 and 2001.

<sup>5</sup>Where necessary, values have been converted from Qatari Rials to U.S. dollars at the average exchange rate of QR3.63=US\$1.00 for 2001.

copper cable factory. Operating the new plant at capacity will require about 35,000 t/yr of copper compared with recent demand of about 24,500 t/yr (Middle East Economic Digest, 2001g). In 2001, General Industries Corp. acquired the 30% of Ducab that had been held by Balfour Beatty plc of the United Kingdom.

The UAE was a notable international gold trading center. In 2001, the Gold and Diamond Park, which was a jewelry manufacturing free-trade zone in Dubai, was opened. Gold refining was carried out by Emirates Gold LLC's 50-t/yr refinery in Dubai and the Ary Group's 30-t/yr refinery in Sharjah (Gulf Industry, 2002§). A new free-trade zone dedicated to the gold trade was proposed for Dubai.

In 2001, construction of the Emirates Iron and Steel Factory's \$82 million rebar rolling mill, 35 km south of Abu Dhabi, was completed. The 500,000-t/yr-design-capacity plant was expected to start production in 2002 at a rate of about 250,000 t/yr. At yearend, General Industries Corp. proposed a \$30 million expansion of Emirates Iron and Steel Factory into the production of wire rod and light sections (Ministry of Information and Culture, 2001a§). Construction of Ahli Steel Co.'s 450,000-t/yr-capacity steel plant and rebar rolling mill stalled because of financing difficulties (Metal Bulletin, 2001a).

Kemira Fertiliser Co. began urea production at its \$14 million 30,000-t/yr-capacity plant in the Jebel Ali free zone, Dubai, in March (Middle East Economic Digest, 2001i). Also in Jebel Ali, construction continued on the \$180 million 400,000-t/yr urea and 226,000-t/yr ammonia plant of the SPIC Fertilisers and Chemicals (a joint venture of Southern Petrochemical Industries Corp. of India and the local Emirates Trading Agency) (Middle East Economic Digest, 2001f). Proposed industrial mineral projects in the UAE included a \$130 million 1.6-Mt/yr petroleum coke facility in Dubai, an \$80 million 120-km liquid sulfur pipeline in Abu Dhabi from the onshore Habshan gas plant to Ruwais, and a \$179 million 50,000-t/yr titanium dioxide facility in Dubai (Asia Chemical News, 2001, 2002a; Middle East Economic Digest, 2001o; Ministry of Information and Culture, 2001b§).

General background information on the oil and gas sector is available from the U.S. Energy Information Administration (2001b§).

## YEMEN

Crude oil production has been a significant segment of the Yemeni economy since the mid-1990s. Oil and gas production accounted for an estimated 30.2% of the \$9.1 billion<sup>8</sup> GDP in 2001 compared with 36.5% of the \$9.3 billion GDP in 2000. Crude oil refining accounted for about 2.5% of the GDP; this was down from about 3% of the GDP in the mid-1990s. The contribution of mining and quarrying to the GDP also has dropped in the past few years. In 2001, mining accounted for about 0.15% of the GDP (Central Bank of Yemen, 2001§).

In 2001, the evaluation of Al-Jabail zinc deposit by ZincOx Resources plc of the United Kingdom indicated resources of 9.4 Mt of oxide ore with an average grade of 10.8% zinc, 2.3% lead, and 76.8 g/t silver (Metal Bulletin, 2002). Cantex Mine Development Corp. continued sampling across the Wadi Qutabah massive sulfide deposit about 23 km north of the

Suwar deposit. Both deposits were covered by Cantex's Northwest Yemen exploration license. Cantex continued to seek a joint-venture partner to fund additional exploration and development of the deposits.

Privatization of the state-owned General Corp. for Cement Production and Marketing, which operated cement plants at Amran, Bajil, and Taiz, was postponed. It subsequently proposed an expansion of the clinker production capacity of the Amran plant to 1.7 Mt/yr from 520,000 t/yr (Middle East Economic Digest, 2001m).

A review of the oil and gas sector of Yemen during 2001 is available from the U.S. Energy Information Administration (2002§).

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<sup>8</sup>Where necessary, values have been converted from Yemeni rials (YR) to U.S. dollars (US\$) at the exchange rate of YR168.69=US\$1.00 for 2001.

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TABLE 1  
BAHRAIN, KUWAIT, OMAN, QATAR, THE UNITED ARAB EMIRATES, AND YEMEN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1997	1998 e/	1999 e/	2000 e/	2001 e/
<b>BAHRAIN 2/</b>					
Aluminum, smelter output, primary metal	489,847	501,308 3/	502,663 3/	509,038 3/	510,000
Cement	171,854	230,422	156,100 3/	88,806 3/	88,700 3/
Gas, natural:					
Gross million cubic meters	10,625	11,120	11,470 3/	11,500	12,100
Dry do.	8,000	8,500	8,789 3/	8,966 3/	9,285 3/
Methanol	447,969	384,111 3/	421,946 3/	370,000 3/	412,122 3/
Natural gas plant liquids:					
Propane thousand 42-gallon barrels	1,213	1,192 3/	1,144 3/	1,055 3/	1,058 3/
Butane do.	1,048	1,024 3/	1,005 3/	955 3/	968 3/
Naphtha do.	1,716	1,661 3/	1,683 3/	1,626 3/	1,598 3/
Nitrogen, N content of ammonia	355,900	335,900 3/	369,500 3/	349,900 3/	372,000 3/
Petroleum:					
Crude thousand 42-gallon barrels	14,159	13,750	13,670 3/	13,766 3/	13,656 3/
Refinery products: e/					
Liquefied petroleum gas do.	300 e/	300 e/	335 3/	346 3/	353 3/
Gasoline do.	7,377 3/	6,344 3/	6,756 3/	7,090 3/	6,182 3/
Jet fuel do.	6,500	9,125 3/	9,520	9,450	15,497 3/
Kerosene do.	17,501 3/	8,030 3/	9,000	9,000	2,777 3/
Distillate fuel oil do.	32,074 3/	31,591 3/	30,000	21,278 r/ 3/	17,188 3/
Residual fuel oil do.	20,800 e/	19,719 3/	22,066 3/	29,000	25,000
Other do.	19,700 e/	19,700	16,700	16,500	17,000
Total do.	104,000	94,800	94,400	92,700	84,000
Sulfur	66,334	66,500	66,500	61,590 3/	67,480 3/
<b>KUWAIT 4/</b>					
Cement e/	2,000,000	1,345,000 r/	1,435,000 r/	1,540,000 r/	1,600,000
Lime, hydrated and quicklime e/	40,000	40,000	40,000	40,000	40,000
Natural gas: 5/					
Gross million cubic meters	10,870	11,100	10,144 3/	11,000	10,900
Dry do.	9,250	9,500	8,688 3/	9,600 r/	9,500
Natural gas liquids e/ thousand 42-gallon barrels	37,000	37,000	38,000	41,100 r/	44,300
Nitrogen:					
N content of ammonia	432,000	452,300 3/	396,800 3/	409,500 3/	420,000
N content of urea	348,500	361,300 3/	330,900 3/	287,600 3/	290,000
Petroleum:					
Crude 5/ thousand 42-gallon barrels	760,295	761,025 3/	708,000	766,000 r/	745,000
Refinery products:					
Gasoline, motor do.	15,475	17,520 3/	17,000	10,000	10,000
Kerosene do.	49,303	51,470 3/	50,000	35,000	30,000
Distillate fuel oil do.	96,754	91,980 3/	92,000	75,000 r/	70,000
Residual fuel oil do.	82,270	75,550 3/	72,000	60,000 r/	60,000
Other do.	58,882	86,870 3/	80,000	70,000 r/	70,000
Total do.	302,684	323,390	311,000	250,000 r/	240,000
Salt	100,000 e/	100,000	100,000	100,000	100,000
Sulfur:					
Elemental, petroleum byproduct	625,000 r/	650,000 r/	639,000 r/	512,000 r/	524,000
Sulfuric acid e/	10,000	10,000	10,000	100,000 r/	150,000
<b>OMAN</b>					
Cement, hydraulic	1,264,000	1,333,000 r/ 3/	1,217,000 r/ 3/	1,238,063 r/ 3/	1,369,570 3/
Chromite, gross weight	18,000	28,684 3/	26,004 3/	15,110 3/	30,100 3/
Copper, metal					
Smelter	22,800	24,400 3/	16,818 3/	23,790 3/	24,220 3/
Refinery	23,600	22,700	17,171 3/	24,281 3/	24,000
Gas, natural:					
Gross million cubic meters	10,202 r/ 3/	10,396 r/ 3/	11,567 r/ 3/	15,496 r/ 3/	17,200
Dry do.	7,879 r/ 3/	7,784 r/ 3/	8,056 r/ 3/	12,020 r/ 3/	13,400
Gold kilograms	577	891 r/ 3/	884 r/ 3/	1,029 r/ 3/	1,000
Gypsum	113,600	189,507 r/ 3/	180,129 3/	131,909 3/	30,000 3/
Natural gas liquids e/ thousand 42-gallon barrels	3,800	4,000	6,000	6,000	6,000

See footnotes at end of table.

TABLE 1--Continued  
 BAHRAIN, KUWAIT, OMAN, QATAR, THE UNITED ARAB EMIRATES, AND YEMEN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1997	1998 e/	1999 e/	2000 e/	2001 e/	
OMAN--Continued						
Petroleum:						
Crude	thousand 42-gallon barrels	329,960	328,500 3/	328,100 3/	340,000 r/	352,000
Refinery products:						
Liquefied petroleum gas	do.	316 r/	395 r/ 3/	423 r/ 3/	350	250
Gasoline	thousand 42-gallon barrels	4,082 r/	5,224 r/ 3/	4,711 r/ 3/	4,857 r/ 3/	3,400
Jet fuel and kerosene	do.	1,038 r/	1,127 r/ 3/	1,457 r/ 3/	1,643 r/ 3/	1,200
Distillate fuel oil	do.	4,854 r/	6,029 r/ 3/	6,297 r/ 3/	6,363 r/ 3/	4,500
Residual fuel oil	do.	12,669 r/	14,950 r/ 3/	14,900 r/ 3/	14,800 r/ 3/	10,400
Other e/	do.	794 r/	947 r/ 3/	908 r/ 3/	641 r/ 3/	400
Total e/	do.	23,437	28,277 r/	28,273 r/	28,304 r/	20,200
Sand and gravel		9,800,000	9,800,000	15,681,951 3/	22,448,254 3/	23,000,000
Silver	kilograms	3,471 r/	4,692 r/ 3/	3,366 r/ 3/	4,894 r/ 3/	3,153 3/
Stone:						
Marble		169,000	115,748 r/ 3/	188,545 3/	147,686 3/	156,000 3/
Other		1,992,000	2,381,143 r/ 3/	3,813,821 3/	3,537,216 3/	3,294,000 3/
Sulfur e/		30,000	30,000	30,000	30,000	30,000
QATAR 6/						
Cement, hydraulic		692,000	986,000 r/	1,025,000 3/	1,050,000	1,050,000
Gas, natural:						
Gross	million cubic meters	24,210	26,200	32,000	33,656 r/ 3/	37,132 6/
Dry	do.	17,270	19,540 3/	24,000	26,141 r/ 3/	27,738 3/
Iron and steel, metal:						
Direct-reduced iron		570,000	706,000 3/	670,000	620,962 r/ 3/	733,549 3/
Steel, crude		616,000	646,000 3/	629,000	743,615 r/ 3/	907,608 3/
Semimanufactures:						
Billet		608,000	637,000 3/	600,000 r/	728,780 r/ 3/	891,117 3/
Bars		596,000	597,000 3/	600,000	579,525 r/ 3/	713,500 3/
Natural gas liquids	thousand 42-gallon barrels	50,000 r/	50,000 r/	49,000 r/	24,126 r/ 3/	26,726 3/
Nitrogen:						
N content of ammonia		942,500	1,127,300 3/	1,129,600 3/	1,097,000 3/	1,159,118 3/
N content of urea		670,000	767,000 3/	757,000 3/	770,761 r/ 3/	779,388 3/
Petroleum:						
Crude	thousand 42-gallon barrels	236,885	254,040 3/	232,000	231,000 r/ 3/	237,000 3/
Refinery products:						
Gasoline	do.	4,380	5,100	5,400	4,521 r/ 3/	4,948 3/
Kerosene	do.	3,285	3,300	3,900	2,997 r/ 3/	3,911 3/
Distillate fuel oil	do.	5,110	5,100	4,900	4,490 r/ 3/	3,824 3/
Residual fuel oil	do.	6,205	6,900	6,750	6,264 r/ 3/	4,492 3/
Other	do.	5,840	2,200	1,600	736 r/ 3/	514 3/
Total	do.	24,820	22,600	22,600 r/	19,008 r/	17,689
Stone, limestone e/		900,000	900,000	900,000	900,000	900,000
Sulfur e/		73,000	146,000	155,000	190,868 r/ 3/	220,824 3/
UNITED ARAB EMIRATES 7/						
Aluminum, primary		381,000	352,000	440,000	470,000	500,000
Cement, hydraulic e/		6,330,000 r/	7,066,000 r/ 3/	7,069,000 r/ 3/	6,100,000	6,100,000
Chromite, gross weight		61,000	76,886 3/	60,000	30,000 r/	10,000
Gas, natural:						
Gross	million cubic meters	48,500	48,980 3/	50,200 3/	52,000	54,000
Dry	do.	36,310	37,070 3/	38,500	39,800 r/	41,300
Gypsum e/		90,000	90,000	90,000	90,000	90,000
Lime e/		50,000	50,000	50,000	50,000	50,000
Natural gas plant liquids e/	thousand 42-gallon barrels	80,000 r/	80,000 r/	80,000 r/	80,000 r/	80,000
Nitrogen:						
N content of ammonia		372,500	331,000 3/	380,200 3/	348,400 3/	350,000
N content of urea		303,520	259,000	271,500 3/	243,400 3/	244,000

See footnotes at end of table.

TABLE 1--Continued  
BAHRAIN, KUWAIT, OMAN, QATAR, THE UNITED ARAB EMIRATES, AND YEMEN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1997	1998 e/	1999 e/	2000 e/	2001 e/	
UNITED ARAB EMIRATES--Continued						
Petroleum:						
Crude	thousand 42-gallon barrels	845,340	880,000	756,000	815,000 r/	790,000
Refinery products:						
Gasoline	do.	12,812	13,100	12,800	13,000	13,000
Kerosene	do.	24,419	21,200	21,000	21,000	21,000
Distillate fuels	do.	27,521	24,500	24,400	25,000	25,000
Residual fuels	do.	17,812	13,500	12,300	12,500	12,500
Other	do.	26,061	19,700	10,700	11,000	11,000
Total	do.	108,625	92,000	81,200	82,500 r/	82,500
Steel e/		70,000	70,000	70,000	70,000	70,000
Sulfur, byproduct of petroleum refining and natural gas processing e/		967,000 3/	967,000 3/	1,089,000 3/	1,122,000 r/ 3/	1,400,000
YEMEN						
Cement		1,235,000	1,201,404 3/	1,453,787 3/	1,400,000	1,400,000
Gypsum		101,000	102,000 3/	103,000 3/	100,000	100,000
Marble	thousand square meters	84	86 3/	88 3/	86	86
Natural gas: e/						
Gross 8/	million cubic meters	13,500	15,000	16,000	18,000	18,000
Liquids	thousand 42-gallon barrels	1,800	2,000	2,200	2,400	2,400
Petroleum:						
Crude	do.	125,560	138,600 3/	149,000	167,000	165,000
Refinery products:						
Gasoline	do.	8,803	9,100 3/	9,100	9,100	9,100
Kerosene	do.	4,073	3,700 3/	3,700	3,700	3,700
Distillate fuel oil	do.	10,530	6,900 3/	6,900	6,900	6,900
Residual fuel oil e/	do.	10,300	10,600	10,600	10,600	10,600
Other e/	do.	2,000	3,700 3/	3,700	3,700	3,700
Total	do.	35,706	34,000 3/	34,000	34,000	34,000
Salt		136,000	147,000 3/	149,000 3/	150,000	150,000
Stone, dimension	thousand cubic meters	2,485	2,497 3/	2,547 3/	2,500	2,600

e/ Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. r/ Revised.

1/ Table includes data available through September 2002.

2/ In addition, iron ore was pelleted and exported for use by direct reduction plants. Pellets were produced from imported iron ore. Production was, in million metric tons: 1997--3.23; 1998--1.9; 1999--2.7; and 2000--3.7. Since 1998, granular urea has been produced from locally produced ammonia.

3/ Reported figure.

4/ In addition to commodities listed, caustic soda, chlorine, clays, clay products, and sand and gravel are produced, but available information is inadequate to make estimates of output.

5/ Includes Kuwait's share of production from the partitioned zone.

6/ In addition to commodities listed, clays, gypsum, and sand and gravel for construction purposes and methanol are produced, but available information is inadequate to make estimates of output.

7/ 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 information is inadequate to make estimates of output.

8/ Most produced associated natural gas was stripped of liquids and reinjected.



TABLE 2  
BAHRAIN, KUWAIT, OMAN, QATAR, AND YEMEN: STRUCTURE OF THE MINERAL INDUSTRIES IN 2001

(Capacity in metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>BAHRAIN</b>				
Aluminum		Aluminium Bahrain B.S.C. (Government)	Smelter at Sitra	510,000
Do.		Gulf Aluminium Rolling Mill B.S.C. (Closed) (Government of Bahrain, 38%; Saudi Basic Industries Corp., 30%; Industrial Bank of Kuwait, 17%; Gulf Investment Corp. of Kuwait, 6%; Government of Iraq, 5%; Government of Oman, 2%; Government of Qatar, 2%)	Rolling mill at Sitra	120,000
Ammonia		Gulf Petrochemical Industries Co. (Government of Bahrain, Petrochemical Industries Co. of Kuwait, and Saudi Basic Industries Corp.)	Sitra	450,000
Cement		Hundai Cement Factory	Clinker mills at Muharraq	438,000
Iron ore, pellets		Gulf Industrial Investment Co. (Gulf Investment Corp. of Kuwait and Rio Doce International Finance Ltd.)	Pellet plant at Al-Hidd	4,000,000
Methanol		Gulf Petrochemical Industries Co. (Government of Bahrain, Petrochemical Industries Co. of Kuwait, and Saudi Basic Industries Corp.)	Sitra	365,000
Natural gas 1/	million cubic meters	Bahrain National Gas Co. B.S.C. (Government, 75%; Caltex Trading and Transport Co. of Bahrain, 12.5%; Arab Petroleum Investments Corp. of Saudi Arabia, 12.5%)	Awali Field	12,000
Natural gas liquids 2/	million barrels	do.	Gas processing trains at Awali and Jabal al-Dukhan	4
Petroleum, crude	barrels per day	Bahrain Petroleum Co., B.S.C. (closed) (Government)	Awali Field	38,000
Petroleum products	do.	do.	Refinery at Sitra	248,900
Sulfur 3/		do.	Sitra	69,000
Urea		Gulf Petrochemical Industries Co. (Government of Bahrain, Petrochemical Industries Co. of Kuwait, and Saudi Basic Industries Corp.)	do.	620,000
<b>KUWAIT</b>				
Ammonia		Petrochemical Industries Co. (Kuwait Petroleum Co.)	Plant B, Shuaiba	657,000 4/
Cement		Kuwait Cement Co. (Kuwait Investment Authority, 32.3%)	Kilns and mills at Shuaiba	1,800,000 5/
Coke, petroleum		Kuwait National Petroleum Co. K.S.C. (Kuwait Petroleum Co.)	Mina Abdulla refinery	890,000
Natural gas 1/	million cubic meters	All oil production operations produce some natural gas	Various fields	11,000
Natural gas liquids	barrels	Kuwait Oil Co. K.S.C. (Kuwait Petroleum Co.)	LPG processing trains at Mina Al-Ahmadi and fractionation plant at Shuaiba	38,000,000
Petroleum, crude	barrels per day	Kuwait Oil Co. K.S.C.	Abdali, Abdiliyah, Bahra, Burgan, Dhafir, Kashman, Magwa, Minagish, Ratga, Riqah, Sabiyah, and Umm Gudair Fields	2,000,000
Do.	do.	Saudi Arabian Texaco Inc. (ChevronTexaco Corp.)	South Fuwaris and South Umm Gudair Fields, partitioned neutral zone	250,000 6/
Do.	do.	Kuwait Oil Co. K.S.C. and Saudi Arabian Texaco Inc.	Wafra Field, partitioned neutral zone	(6/)
Do.	do.	Arabian Oil Co., Ltd. (consortium includes Kuwait Petroleum Co., Government of Saudi Arabia, Tokyo Electric Power Co., Inc., and Kansai Electric Power Co., Inc.)	Hout-Ratawi Field, offshore partitioned neutral zone	280,000 7/
Do.	do.	Al-Khafji Joint Operations [Arabian Oil Co., Ltd. and Aramco Gulf Operations Co. (Saudi Arabian Oil Co.)]	Khafji Field, offshore partitioned neutral zone	(7/)
Petroleum products	do.	Kuwait National Petroleum Co. K.S.C. (Kuwait Petroleum Co.)	Refinery at Mina al-Ahmadi	300,000 8/
Do.	do.	do.	Refinery at Mina Abdulla	255,000
Do.	do.	do.	Refinery at Shuaiba	199,000
Salt		Salt and Chlorine Factory (Al Ahlia Investment Co.)	Shuwaikh	NA
Do.		do.	Shuaiba	NA
Steel		United Steel Industrial Co. (National Iranian Steel Co., 49% and Kuwaiti investors, 51%).	Reinforcing bar rolling mill	300,000 9/
Sulfur		Kuwait National Petroleum Co. K.S.C.	Mina Abudulla, Mina al-Ahmadi, and Shuaiba.	1,320,000
Urea		Petrochemical Industries Co.	Plants A and B, Shuaiba	400,000 10/

See footnotes at end of table.

TABLE 2--Continued  
BAHRAIN, KUWAIT, OMAN, QATAR, AND YEMEN: STRUCTURE OF THE MINERAL INDUSTRIES IN 2001

(Capacity in metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>OMAN</b>				
Cement		Oman Cement Co.	Kilns and mills at Rusayl	1,200,000
Do.		Raysut Cement Co.	Kilns and mills at Salalah	750,000
Chromite		Oman Chromite Co.	Mine at the Ghashabi-2 deposit.	29,000
Copper		Oman Mining Co. LLC	Smelter and refinery near Sohar.	24,400
Gold	kilograms	do.	Rakah near Yankul	2,100
Marble		Omani Marble Co. LLC [Omar Zawawi Establishment]	Quarries at Ibri	NA
Natural gas	cubic meters	Petroleum Development Oman LLC [Government of Oman, 60%; Royal Dutch/Shell Group, 34%; POHOL (TotalFinaElf Group), 4%; and Partex Corp., 2%]	About 97 fields including Al Noor, Barik, Burhaan, Fahud Northwest, Lekwair, Maramul, Mukhaizna, Nimr, Rima, Saih-Nihayda, Saih-Rawl, and Yibal	3,300,000,000
Natural gas, liquefied		Oman Liquefied Natural Gas LLC	Two LNG trains at Qalhat	6,600,000
Petroleum, crude	barrels per day	Petroleum Development Oman LLC [Government of Oman, 60%; Royal Dutch/Shell Group, 34%; POHOL (TotalFinaElf Group), 4%; and Partex Corp., 2%]	About 97 fields including Al Noor, Burhaan, Fahud Northwest, Lekwair, Marmul, Mukhaizna, Nimr, Rima, and Yibal	840,000
Do.	do.	Occidental Oman Inc. (Occidental Petroleum Corp.), 65%; and Fortum (E&P) B.V. (Fortum Oil and Gas Oy of Finland) 11/	Safah Field, block 9	21,500
Do.	do.	Japex Oman Ltd. and Japex Aswad Ltd. (Japan Petroleum Exploration Co., Ltd. of Japan)	Block 5	9,000
Do.	do.	Novus Bukha Ltd. [Novus Petroleum Ltd. Of Australia, 40%; LG International Corp. of Korea, 30%; Eagle Energy Ltd. of Oman (Heritage Oil Corp. of Canada)]	Bukha Field, block 8	3,500
Do.	do.	Petrogas LLC (MB Petroleum Services LLC of Oman)	Block 7	2,000
Petroleum products	do.	Oman Refinery Co.	Mina Al-Fahal	85,000
Silver	kilograms	Oman Mining Co. LLC	Rakah near Yankul	300
<b>QATAR</b>				
Ammonia		Qatar Fertilizer Co. Ltd. (Qatar Petroleum, 75%; Norsk Hydro ASA, 25%)	QAFCO I, Mesaieed	416,000
Do.		do.	QAFCO II, Mesaieed	420,000
Do.		do.	QAFCO III, Mesaieed	548,000
Do.		do.	QAFCO IV, Mesaieed	730,000 9/
Cement		Qatar National Cement Co.	Kilns and mills at Umm Bab	908,000
Do.		Al-Jabor Cement Industries Co.	Clinker grinding mill at Doha	165,000
Clay		Qatar Clay Bricks Co.	NA	10,000
Iron, direct reduced		Qatar Steel Co. Ltd. (Government, 100%)	Mesaieed	730,000
Lime		Qatar National Cement Co.	Kilns at Umm Bab	NA
Methanol		Qatar Fuel Additives Co. Ltd. (Qatar Petroleum, 50%; Chinese Petroleum Corp. of Taiwan, 20%; Lee Chang Yung Chemical Industrial Corp. of Taiwan, 15%; International Octane Ltd., 15%).	Mesaieed	825,000
Natural gas	cubic meters per day	Qatar Petroleum	North Field, offshore	11,300,000
Do.	do.	Qatar Liquefied Gas Co. [Qatar Petroleum, 65%; TotalFinaElf Group, 20%; Mobil Qatargas Inc. (Exxon Mobil Corp.), 10%; Marubeni Corp. of Japan, 2.5%; Mitsui & Co. Ltd. of Japan, 2.5%]	do.	40,000,000
Do.	do.	Ras Laffan Liquefield Natural Gas Co. Ltd. (Qatar Petroleum, 63%; Mobil QM Gas Inc, 25%; Korea Gas Corp., 5%; Itochu Corp., 4%; Nissho Iwai Co., 3%).	do.	28,000,000
Do.	do.	Qatar Petroleum	Dukhan Field, onshore	9,600,000
Natural gas, liquefied		Qatar Liquefied Gas Co. (Qatar Petroleum, 65%; TotalFinaElf Group, 10%; Mobil Qatargas Inc. (Exxon Mobil Corp.), 10%; Marubeni Corp. of Japan, 7.5%; Mitsui & Co. Ltd. of Japan, 7.5%)	Three trains at Ras Laffan	7,700,000
Do.		Ras Laffan Liquefield Natural Gas Co. Ltd. (Qatar Petroleum, 63%; Mobil QM Gas Inc, 25%; Korea Gas Corp., 5%; Itochu Corp., 4%; Nissho Iwai Co., 3%)	Two trains at Ras Laffan	6,600,000

See footnotes at end of table.

TABLE 2--Continued  
BAHRAIN, KUWAIT, OMAN, QATAR, AND YEMEN: STRUCTURE OF THE MINERAL INDUSTRIES IN 2001

(Capacity in metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
QATAR--Continued				
Natural gas liquids	barrels	Qatar Liquefied Gas Co.	Ras Laffan	20,000,000
Do.	do.	Ras Laffan Liquefield Natural Gas Co. Ltd.	do.	16,000,000
Do.	do.	Qatar Petroleum	NGL-1, NGL-2, and NGL-3 at Mesaieed	15,000,000
Do.	do.	do.	NGL-4 at Mesaieed	27,000,000 9/
Petroleum, crude	do.	do.	Dukhan Field, onshore	120,000,000
Do.	do.	Maersk Oil Qatar A.S. (Maersk Olie og Gas A.S.)	Al Shaheen Field, offshore	45,000,000
Do.	do.	Occidental Petroleum of Qatar Ltd.	Idd Al Shargi North Dome	40,000,000
Do.	do.	Qatar Petroleum	Bul Hanine, offshore	25,000,000
Do.	do.	do.	Maydan Mahzam, offshore	18,000,000
Do.	do.	Elf Petroleum Qatar (TotalFinaElf Group), 55%; and Agip Qatar B.V. (Eni Group), 45%	Al Khaleej, offshore	11,000,000
Do.	do.	Occidental Petroleum of Qatar Ltd.	Idd Al Shargi South Dome	7,500,000
Do.	do.	BP plc (operator), 27.5%; Anadarko Petroleum Corp., 65%; Preussag Energie GmbH, 7.5% 12/	Al Rayyan, offshore	4,500,000
Petroleum products	do.	Qatar Petroleum	Mesaieed	24,000,000
Steel		Qatar Steel Co. Ltd. (Government, 100%)	Plant at Mesaieed	920,000 13/
Do.		do.	Rolling mill at Mesaieed	609,000
Sulfur		Qatar Petrochemical Co. Ltd. (Qatar Petroleum, 80%; Atofina, the Chemicals branch of the TotalFinaElf Group of France, 10%; and Enichem of the ENI Group of Italy, 10%)	Umm Said	70,000
Do.		Ras Laffan LNG Co.	Ras Laffan	55,000
Do.		Qatar Liquefied Gas Co. Ltd.	do.	45,000
Do.		Qatar Petroleum	Mesaieed	95,000
Urea		Qatar Fertilizer Co. Ltd. (Qatar Petroleum, 75%; Norsk Hydro ASA, 25%)	QAFCO I, Mesaieed	447,000
Do.		do.	QAFCO II, Mesaieed	511,000
Do.		do.	QAFCO III, Mesaieed	730,000
Do.		do.	QAFCO IV, Mesaieed	1,200,000 9/
YEMEN				
Cement		Amran Cement Factory (Yemen Cement Manufacturing and Marketing Co., 100%)	Kilns and mills at Amran	520,000
Do.		Bajil Cement Factory (Yemen Cement Manufacturing and Marketing Co., 100%)	Kilns and mills at Bajil	262,000
Do.		Al Barh Cement Factory (Yemen Cement Manufacturing and Marketing Co., 100%)	Kilns and mills at Taiz	480,000
Gypsum		NA	Near Salif	70,000
Natural gas 1/	million cubic meters	Yemen Exploration and Production Co., (operator) [Yemen Hunt Oil Co., 51%, (Hunt Oil Co. of the United States) and Exxon Yemen, Inc., 49% (Exxon Mobil Corp. of the United States)]	Primarily associated gas from the Marib/Jawf and Jannah licenses, including the Alif, Al-Raja, Al-Sa'idah, and Jabal Barat Fields	16,000
Natural gas liquids	million barrels	do.	Primarily from gas associated with the Marib/Jawf licenses	NA
Petroleum, crude	barrels per day	Nexen Inc. of Canada, 52% (operator); Occidental Peninsula II, Inc. of St. Kitts & Nevis; and Consolidated Contractors International Ltd. of Greece	Block 14, Masila license, including the Camaal, Hejjah, Sunah, and Tawila Fields	215,000
Do.	do.	Yemen Exploration and Production Co., (operator) [Yemen Hunt Oil Co., 51%, (Hunt Oil Co. of the United States) and Exxon Yemen, Inc., 49%, (Exxon Mobil Corp. of the United States)]	Block 18, Marib/Jawf license, including the Al-Shura, Al-Wihdah, Asad al-Kamil, Azal, Jabal Nuqum, Jabal Ras, Raydan, Saif Ben The-Yazen, Saharah, Suquatrah, and Wadi Bana Fields	129,000 14/
Do.	do.	Yemen Exploration and Production Co., 75.5% (operator) (Yemen Hunt Oil Co., 51% and Exxon Yemen, Inc., 49%), and Yukong consortia, 24.5% (SK Corp., 65%; Sam Wham Corp., 15%; Korean Petroleum Development Corp., 10%; Hyundai Corp., 10%)	Block 18, Marib/Jawf license, Alif Field	(14/)
Do.	do.	Jannah Hunt Oil Co., 15% (operator); Kuwait Foreign Petroleum Exploration Co., 20%; The Yemen Company, 20%; Exxon Yemen Inc., 15%; Russian interests, 15%; TotalFinalElf Group, 15%	Block 5, Jannah concession--Al-Nasr, Dhab, and Halewah Fields	75,000

See footnotes at end of table.

TABLE 2--Continued  
BAHRAIN, KUWAIT, OMAN, QATAR, AND YEMEN: STRUCTURE OF THE MINERAL INDUSTRIES IN 2001

(Capacity in metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
YEMEN--Continued.				
Petroleum, crude--Continued: barrels per day		TotalFinaElf Group, 28.6% (operator); Complex Petroleum Holdings, 28.6%; Kuwait Foreign Petroleum Exploration Co., 14.3%; and Occidental Petroleum Corp., 28.6%	East Shabwa concession, block 10, including the Atuf North-West, Khair, and Wadi Taribah Fields	31,000
Do.	do.	Dove Energy Ltd. of Great Britain, 24.45% (operator); DNO International Yemen, 24.45%; MOE Oil & Gas, 16.10%; Petrolin Trading Ltd., 10%; and The Yemen Co., 25%	Block 53, Sharyoof Field	20,000
Do.	do.	DNO International Yemen (DNO ASA of Norway), 38.95% (operator); Ansan Wikfs Hadramaut Ltd., 42.93%; TG Holdings Yemen Inc. (TransGlobe Energy Corp. of Canada), 13.81%; and The Yemen Oil Co. (Government), 5%	Block 32, Tansour Field	8,200
Petroleum products	do.	Aden Refinery Co. (Government)	Refinery at Aden	70,000
Do.	do.	Yemen Refining and Marketing Co., 75.5% (Yemen Hunt Oil Co. and Exxon Mobil Corp.), and Yukong Group, 24.5%	Topping plant at Marib	10,000
Salt		Salt Refining and Packing Factory (Government)	Rock salt quarries near Salif	NA
Do.		Aden Salt Factory (Government)	Evaporation ponds at Aden	NA
Stone		Various local companies	Basalt and tuff quarries in the Dhamar, the Sana'a, and the Taiz areas; limestone from Wadi Marek and Mayana	NA

NA Not available.

1/ Associated gas.

2/ Processing train natural gas input capacity was 8 million cubic meters per day. Output includes butane, isobutane, naphtha, and propane.

3/ Byproduct of oil and gas processing.

4/ Lines II and IV only. Line III (292,000-metric-ton-per-year-capacity) was idle.

5/ A 345,000-metric-ton-per-year capacity expansion program was nearly complete at yearend.

6/ Includes production from the Wafra Field.

7/ Includes production from the Hout-Ratawi Field.

8/ About 100,000-barrel-per-day refining capacity was out of commission because of a June 2000 explosion and fire. The damage was under repair.

9/ Under construction.

10/ Expansion of plant's urea capacity to 639,000 metric tons was underway in 2001.

11/ The effective date of the sale of Fortum (E&P) B.V.'s interest in Block 9 to Mitsui & Co. Ltd. and Mitsui Oil Exploation Co. Ltd. was December 31, 2001.

12/ Prior to May 1, 2001, BP plc was known as BP Amoco plc. Gulfstream Resources Canada Ltd. and its 65% equity interest in block 12 (which included the Al Rayyan Field) was purchased by Anadarko Petroleum Corp. in August 2001.

13/ Capacity expansion to 50,000,000 barrels per year was underway in 2001.

14/ Production from the Alif Field reported with other block 18 Maarib/Jawf license fields.