

THE MINERAL INDUSTRY OF

SAUDI ARABIA

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In 1998, the Kingdom of Saudi Arabia, the world's largest producer of crude oil, accounted for about 12.5% of the total world output, a slight decrease from 12.7% in 1997 and 12.9% in 1996. In recent years, the Kingdom has achieved a diversity in its mineral industry through the development of gold mining operations and value-added cement, fertilizer, petrochemical, and steel manufacturing facilities, but petroleum accounted for nearly 85% of export earnings, about 70% of Government revenues, and about 36% of the gross domestic product (GDP) (Arab Petroleum Research Center, 1999, p. 352). In 1998, the Saudi Arabian GDP was estimated to be \$128.9 billion,² down from \$146.5 billion in 1997 (World Bank, 2000, Saudi Arabia—Country tables, accessed April 14, 2000, via URL <http://www.worldbank.org/data/countrydata/countrydata.html>).

Production

In 1998, the average production of crude oil, including the Saudi Arabian share of production from the Partitioned Zone shared with Kuwait, was 8.33 million barrels per day (Mbbbl/d) (Arab Petroleum Research Center, 1999, p. 360). Petroleum production capacity was increased to 10.8 Mbbbl/d in 1998 when production from the Shaybah Field began. Output has been averaging more than 8 Mbbbl/d in recent years in accordance with the quota assigned by the Organization of the Petroleum Exporting Countries (OPEC). Saudi Arabia also produced cement, dimension stone, ferroalloys, fertilizers, gold, salt, and concentrates that contain copper, lead, silver, and zinc. Steel was produced from scrap and imported iron ore pellets.

Structure of the Mineral Industry

All minerals, including petroleum and natural gas, were owned by the Government. The Deputy Ministry for Mineral Resources (DMMR), with the cooperation of the U.S. Geological Survey (USGS) and the Bureau de Recherches Géologiques et Minières of France, has been exploring and assessing the mineral resources of the Kingdom for more than 30 years. The DMMR has catalogued approximately 1,300 precious metal occurrences and 1,200 base metal sites. Existing exploitation was predominantly controlled by state-owned organizations; the DMMR, however, had identified an initial group of about 64 potentially economic mineral projects and had begun to promote the development of these mining projects to private investors (U.S.-Saudi Arabian Business Council,

April 3, 2000, The Saudi Arabian economy, accessed April 26, 2000, at URL <http://www.us-saudi-business.org/economy.htm>; Permanent Mission of Saudi Arabia to the United Nations, [undated], Natural resources development in Saudi Arabia, accessed April 26, 2000, at URL <http://www.un.int/saudiarabia/ch7-6pln.htm>).

The state-owned Saudi Arabian Mining Co. (Ma'aden) was engaged in mineral exploration and mining activities in Saudi Arabia. In 1998, the Government-owned Saudi Arabian Oil Co. (Saudi Aramco) was the only company authorized to engage in oil and gas exploration and development within Saudi Arabia. Arabian Oil Co. and Saudi Arabian Texaco Inc. operated in the Partitioned Zone. Many industrial projects, including petrochemical processing and petroleum refining, were joint ventures between Saudi firms and foreign partners. In September 1998, the Government requested proposals for natural gas development in an address to U.S. oil companies. The invitation was extended to other international companies in December (Middle East Economic Digest, 1999a).

Commodity Review

In 1998, the Ministry of Petroleum and Mineral Resources announced that exploration licenses were available for the Az Zabirah bauxite deposit, the Jabal Sayid copper deposit, and the Wadi Sawawin iron ore deposit (Mining Journal, 1998a, b, d). The Ministry authorized the Metal Mining Agency of Japan and the Japanese International Cooperation Agency to explore for copper at Umm al-Damar in the western part of Saudi Arabia (Mining Journal, 1998c).

Metals

Gold.—Gold was recovered from the high-grade Mahd Adh Dhahab underground mine, which is 270 kilometers (km) northeast of Jiddah, and at the Sukhaybirat open pit mine, which is about 480 km northwest of Riyadh. The Saudi Company for Precious Metals, Ltd., operated the Sukhaybirat Mine, which produced 2.75 metric tons (t) of gold in 1998 compared with 1.94 t in 1997 and 2.65 t in 1996 (Northern Miner, 1999).

In 1998, Ma'aden secured mining licenses for the Al-Amar and the Al-Hajjar gold prospects. Reserves were estimated to be 2.7 million metric tons (Mt) grading 12 grams per metric ton (g/t) gold at Al-Amar and 4.2 Mt at a grade of 2.6 g/t gold at Al-Hajjar (Mining Journal, 1998d).

Iron and Steel.— Saudi Iron and Steel Co. (Hadeed) continued its expansion program. The 850,000-metric-ton-per-year-capacity flat steel rolling mill was expected to be in

¹Deceased.

²Where necessary, values have been converted from Saudi riyals (SRIs) to U.S. dollars at the rate of SRIs3.750=US\$1.00.

commercial operation in early 1999 (Metal Bulletin, 1998). Also in 1999, production from the newly built 1.1-million-metric-ton-per-year (Mt/yr)-capacity HYL-process direct-reduced iron (DRI) plant was expected to supplement output from Hadeed's three Midrex-process DRI plants (New Steel, March 1999, 17.5 million tons of HYL-process DRI, accessed April 20, 2000, at URL <http://www.newsteel.com/features/NS9903f6.htm>).

Zinc.—The mining license for the Al-Masane polymetallic deposit in southwestern Saudi Arabia was held by Arabian Shield Co. for Mining Industries, which was a joint venture of Arabian Shield Development Co. of the United States and Al Mashreq Co. for Mining Investments of Saudi Arabia. In 1998, Arabian Shield solicited and received bids for construction of the ore treatment plant and underground mine development; construction, however, was postponed because of a drop in metal prices (Middle East Economic Digest, 1998b; Arabian Shield Development Co., November 16, 1999, press release, accessed November 16, 1999, at URL http://biz.yahoo.com/pnews/991116/tx_arabian_1.html).

Industrial Minerals

In 1998, Tabuk Cement Co. commissioned a new 1.2-Mt/yr-capacity cement plant at Tabuk. The proposed 1,500-metric-ton-per-day "off-gas" technology ammonia project for United Jubail Fertiliser Co., which was a subsidiary of Saudi Basic Industries Corp. of Saudi Arabia, was postponed along with a number of petrochemical plants owing to the Kingdom's economic crisis associated with low petroleum prices (Middle East Economic Digest, 1998b, 1999b).

Mineral Fuels

Natural Gas.—The Kingdom's Master gas system had the capacity to transport 164 million cubic meters per day (Mm³/d) of natural gas. The processing plants at Berri, Shedgum, and Uthmaniya, however, had a capacity of only 113 Mm³/d. Saudi Aramco continued construction of a \$2 billion, 40-Mm³/d gas processing plant at Hawiyah (Middle East Economic Digest, 1998e, 1999a).

Petroleum.—Production.—In 1998, Saudi Arabia maintained an average production level of 8.33 Mbbbl/d, which included output from the Partitioned Zone where production was shared with Kuwait. Much of the exported petroleum consisted of higher valued crude oil blends—Arabian Light (34° API gravity), Arabian Extra Light (38° API gravity), and Arabian Super Light (50.4° API gravity)—to maximize revenues while operating within the production quota allotted by OPEC. In 1998, the OPEC quota allotted to Saudi Arabia was 8.76 Mbbbl/d. Because oil prices remained low in 1998, Saudi Arabia negotiated a production restraint agreement with other petroleum-exporting nations in March 1998 that resulted in a 600,000-barrel-per-day (bbl/d) cut in Saudi production (Arab Petroleum Research Center, 1999, p. 352; Middle East Economic Digest, 1999a).

In southeast Saudi Arabia, the Shaybah Field came on-stream

in 1998 at about 250,000 bbl/d. The new field's designed capacity was 500,000 bbl/d of crude oil and 25 Mm³/d of natural gas, and the field has reserves of 14 billion barrels of 41.6° API gravity crude oil (Arab Petroleum Research Center, 1999, p. 259, 361; Energy Information Administration, January 2000, Country analysis briefs—Saudi Arabia, accessed April 24, 2000, at URL <http://www.eia.doe.gov/emeu/cabs/saudi.html>). In the Partitioned Zone, Saudi Arabian Texaco and Kuwait Oil Co. announced that the Humma No. 4 well tested oil (Texaco, Inc., October 5, 1998, Saudi Arabian Texaco and Kuwait Oil Company announce discovery in Partitioned Neutral Zone, accessed April 26, 2000, at URL http://144.5.4.28/shared/pr/1998pr/pr10_5.html).

Refining.—The combined capacity of eight refineries, which included the 30,000-bbl/d Al-Khafji refinery in the Partitioned Zone, was about 1.7 Mbbbl/d (Energy Information Administration, January 2000, Country analysis briefs—Saudi Arabia, accessed April 24, 2000, at URL <http://www.eia.doe.gov/emeu/cabs/saudi.html>). In 1998, the \$1.5 billion upgrading and expansion that was completed at Saudi Aramco's Ras Tanura refinery increased capacity to 300,000 bbl/d. A fire at the refinery in October 1998 resulted in a temporary reduction of output (Arab Petroleum Research Center, 1999, p. 352, 364). The proposed \$1.8 billion upgrading of the Rabigh refinery was canceled in October 1998 owing to reduced availability of funding from Saudi Aramco because of the drop in international oil prices (Arab Petroleum Research Center, 1999, p. 352).

Reserves

Saudi Arabia has the world's largest known concentration of petroleum, which represented more than 26% of total proven world reserves. Proven oil reserves are 261.5 billion barrels, which included 2.5 billion barrels contained in the Saudi Arabian share of reserves in the Partitioned Zone. Saudi Arabia had a reserve-to-production ratio sufficient to last about 86 years at current (1998) production levels. The bulk of the Kingdom's reserves were contained in a few massive fields in the northeast. These included, in order of decreasing reserves, Ghawar, the world's largest onshore field; Safaniya, the world's largest offshore field; Abqaiq; Shaybah; Berri; Manifa; Zuluf; Abu Saafa; and Khursaniya (Arab Petroleum Research Center, 1999, p. 359).

Natural gas reserves were reported by Saudi Aramco to be 5.88 trillion cubic meters, which included 99 billion cubic meters in the Partitioned Zone. Most of the Kingdom's reserves were in the form of associated gas contained in the country's oilfields. Ghawar Field accounted for approximately 35% of the total gas reserves.

Infrastructure

Electric power generation and distribution are conducted by the regional authorities of the Saudi Consolidated Electric Companies, which operated powerplants with a combined installed capacity of more than 20,000 megawatts (MW). In 1998, consolidation of the regional electricity companies into the newly formed Saudi Electricity Co. was proposed. Additional power-generation capacity (2,750 MW) was under the authority of Saline Water Conversion Corp., which operated

seawater-desalination plants (Arab Petroleum Research Center, 1999, p. 380-382; Middle East Economic Digest, 1998d).

Extensive port and harbor facilities served Al-Jubayl, which is on the east coast with access to the Arabian Gulf, and Yanbu, which is on the west coast with access to the Red Sea.

Outlook

Saudi Aramco intends to maintain its crude oil capacity of approximately 10.8 Mbb/d. Less-profitable fields have been shut in as new producing fields come on-stream. Revenue increases can be anticipated through cutting back on the sale of heavier crude oil in favor of the lighter premium crudes from fields south of Riyadh.

Because most of the national income is dependent upon markets outside the Kingdom, the economy remains vulnerable to cyclical and sudden changes in volume and pattern of worldwide trade in crude and refined petroleum and petrochemicals. Direct investment in foreign refining, marketing, and distribution operations provided some stability in the face of market fluctuations.

Saudi Arabia has adopted an integrated view toward the best use of natural resources and has proposed development of the natural gas reserves to satisfy the escalating demand for electricity in the Kingdom. During the next 25 years, as much as \$140 billion in investments will be required to meet domestic power requirements (Wall Street Journal, 1997). Development of additional precious metal and industrial mineral operations will help diversify the Kingdom's mineral economy. The economy has progressed rapidly, and the standard of living has improved significantly. Dependence on petroleum revenues continued, but industry and agriculture now account for a larger share of economic activity.

References Cited

- Arab Petroleum Research Center, 1999, Saudi Arabia, *in* Arab oil & gas directory: Arab Petroleum Research Center, 640 p.
- Metal Bulletin, 1998, Hadeed II produces its first slabs: Metal Bulletin, no. 8333, December 7, p. 28.
- Middle East Economic Digest, 1997, The rich seams of Arabia's mines: Middle East Economic Digest, v. 41, no. 51, December 19, p. 3.
- 1998a, Bids invited for Al-Masane mining project: Middle East Economic Digest, v. 42, no. 39, September 25, p. 28.
- 1998b, Revised bids in for Jubail ammonia project: Middle East Economic Digest, v. 42, no. 39, September 25, p. 28.
- 1998c, Saudi Arabia—Power sector restructured, tariffs raised: Middle East Economic Digest, v. 42, no. 50, December 11, p. 17.
- 1998d, Special report Saudi Arabia—Saudi Aramco—Oil and gas: Middle East Economic Digest, v. 42, no. 24, June 12, p. 45.
- 1999a, Special report oil & gas—Saudi Arabia: Middle East Economic Digest, v. 43, no. 3, January 22, p. 16.

- 1999b, Special report construction—Saudi Arabia: Middle East Economic Digest, v. 43, no. 30, July 30, p. 18-19.
- Mining Journal, 1998a, Advertisement: Mining Journal [London], v. 330, no. 8481, May 22, p. 401.
- 1998b, Advertisement: Mining Journal [London], v. 330, no. 8485, June 19, p. 474.
- 1998c, Japan to explore in Saudi Arabia: Mining Journal [London], v. 331, no. 8489, July 17, p. 40.
- 1998d, Saudi expects iron ore investment: Mining Journal [London], v. 331, no. 8492, August 7, p. 103.
- 1998e, Saudi gold output to double . . . : Mining Journal [London], v. 331, no. 8490, July 24, p. 59.
- Northern Miner, 1999, Boliden sells stake in Saudi mine: Northern Miner, December 20, p. 20.
- Wall Street Journal, 1997, Saudi Arabia: Wall Street Journal, October 20, p. A12.

Major Sources of Information

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Publications

- Kingdom of Saudi Arabia, Ministry of Finance and National Economy, Central Department of Statistics, Statistical Yearbook, annual.
- Saudi Arabian Monetary Agency, Research and Statistics Department, Statistical Summary, annual.
- Kingdom of Saudi Arabia, Directorate General of Mineral Resources, Atlas of Industrial Minerals, Jiddah, 1993.
- Kingdom of Saudi Arabia, Directorate General of Mineral Resources, Mineral Resources of Saudi Arabia, Jiddah, 1994.

TABLE 1
SAUDI ARABIA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity 2/	1994	1995	1996	1997	1998 e/
METALS					
Ore, mine output:					
Gross weight 3/	900,000 e/	1,400,000 e/	1,569,205	1,600,000 e/	1,700,000
Copper content of concentrate and bullion 4/	917	925 e/	834 e/	703	1,000
Gold content of concentrate and bullion 3/ 4/ kilograms	7,630 e/	8,080	7,530	7,260	9,000
Lead content of concentrate e/ 4/	50	50	50	50	60
Silver content of concentrate and bullion 3/ 4/ kilograms	16,990	16,900 e/	16,608	17,200	20,000
Zinc content of concentrate e/ 4/	500	500	500	619	650
Iron and steel:					
Direct-reduced iron thousand tons	2,111	2,129	2,300	2,110	2,270
Steel, crude do.	2,411 e/	2,451	2,683	2,539	2,400
Ferroalloys	--	--	20,000 e/	83,000 e/	83,000
INDUSTRIAL MINERALS					
Barite	5,000	6,000	8,000 e/	8,000 e/	8,000
Cement, hydraulic thousand tons	16,000	15,773	16,437	15,400 4/	14,000
Gypsum, crude	375,000	370,000	362,589	365,000 e/	330,000
Lime e/	160,000	175,000	180,000	180,000	200,000
Nitrogen:					
N content of ammonia thousand tons	1,340	1,327	1,386	1,405	1,400
N content of urea do.	994	980	1,010	930	930
Pozzolan	NA	NA	144,000 e/	145,000 e/	145,000
Salt	60,000	90,000	90,000 e/	90,000 e/	90,000
Sodium hydroxide	NA	NA	450,000	450,000 e/	400,000
Sulfur, byproduct from petroleum refining e/ thousand tons	2,300	2,400	2,300	2,400	2,300
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural: 5/					
Gross million cubic meters	68,000 e/	73,900	77,700	81,900 r/	83,000
Dry do.	37,700 e/	38,030	41,340	45,300 r/	46,100
Natural gas liquids: e/					
Propane thousand 42-gallon barrels	120,500	147,500	147,000	150,000	150,000
Butane do.	56,600	60,000	60,000	65,000	65,000
Natural gasoline and other do.	45,000	48,000	47,400	48,900	48,900
Total do.	222,100	255,500	254,400	263,900 6/	263,900
Petroleum:					
Crude do.	2,970,000	3,004,300	2,999,550	3,080,235	3,041,000
Refinery products:					
Liquefied petroleum gases do.	13,000 e/	11,315	12,000 e/	12,000 e/	13,000
Gasoline do.	92,800	85,000	94,462	90,200 r/	90,000
Jet fuel do.	30,000 e/	21,900	23,000	21,000 r/	21,000
Kerosene do.	36,450 e/	36,865	40,875	40,000 r/	40,000
Distillate fuel oil do.	169,800	172,280	191,990	192,000 e/	192,000
Residual fuel oil do.	156,640	167,200	180,565	165,000 r/	165,000
Unspecified do.	73,900 e/	73,400	68,000	58,000 r/	60,000
Total do.	572,590 e/	567,960	610,892	578,200 r/	581,000

e/ Estimated. r/ Revised. NA Not available.

1/ Table includes data available through April 21, 2000.

2/ In addition to commodities listed, the following were probably produced, but information is inadequate to estimate output: aggregates, clays, granite, limestone, marble, and silica sand.

3/ Production from Mahd Adh Dhahab and Sukhaybirat gold operations.

4/ Mahd Adh Dhahab produces a bulk flotation concentrate containing copper, gold, lead, silver, and zinc and a crude bullion containing copper, gold, and silver.

5/ Includes Saudi Arabian one-half share of production in the Saudi Arabia-Kuwait Partitioned Zone.

6/ Reported figure.

TABLE 2
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY IN 1998

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of facilities	Annual capacity	
Cement	Saudi Consolidated Cement Co. (Government, majority shareholder)	Ayn Dar, 75 kilometers southwest of Dammam	1,875	
Do.	do.	Al Hufuf	1,800	
Do.	Arabian Cement Co. Ltd. (Government, 100%)	Rabigh	2,000	
Do.	Southern Province Cement Co. (Government, 100%)	Suq Al Ahad, 10 kilometers northeast of Jizan	2,500	
Do.	do.	Bishah, 550 kilometers southeast of Jiddah	1,300	
Do.	Yanbu Cement Co. (Government, 100%)	Yanbu	1,500	
Do.	Yamama Cement Co. (Government, 100%)	Riyadh	3,000	
Do.	Qasim Cement Co. (Government, 100%)	Buraydah	1,400	
Do.	Tabuk Cement Co. (Government, 100%)	Tabuk	1,200	
Ferroalloys	Gulf Ferroalloys Co. (SABAYEK) (United Gulf Industries Corp., 26%; SABIC, 15%; Demetal Aussenhandelsgesellschaft, 7%)	Al Jubayl	105	
Fertilizer:				
Urea	Al Jubayl Fertilizer Co. (SAMAD) (SABIC, 50%; Taiwan Fertilizer Corp., 50%)	do.	632	
Ammonia	do.	do.	300	
Urea	National Chemical Fertilizer Co. (IBN AL BAYTAR) (SABIC, 50%; SAFCO, 50%)	do.	500	
Ammonia, liquified	do.	do.	500	
NPK	do.	do.	500	
TSP	do.	do.	200	
DAP	do.	do.	100	
Urea	Saudi Arabian Fertilizer Co. (SAFCO), (SABIC, 41%; Saudi Arabian private interests, 59%)	Dammam	330	
Ammonia	do.	do.	200	
Sulfuric acid	do.	do.	100	
Ammonia	do.	Al Jubayl	500	
Granular urea	do.	do.	600	
Gold:				
Ore	Mahd Adh Dhahab Mining Company (Ma'aden, 100%)	Mahd Adh Dhahab, 270 kilometers northeast of Jiddah	180	
Metal	kilograms	do.	5,000	
Ore	The Saudi Company for Precious Metals, Ltd. (SCPM) (Ma'aden, 50%; Boliden International Mining, 50%)	Sukhaybirat, 480 kilometers northwest of Riyadh	1,300	
Metal	kilograms	do.	2,800	
Refinery	metric tons	Dahab Company Ltd. (Saudi private interests, 51%; Thomson-C.S.F., 49%)	Jiddah	110
Natural gas	million cubic meters	Saudi Aramco (Government, 100%)	All oilfields, Eastern Province	60,000
Do.	do.	do.	Khuff Zone, Eastern Province	20,150
Do.	do.	do.	Abqaiq Gas Cap, Eastern Province	4,600
Natural gas liquids 1/	million barrels	do.	Shedgum, 150 kilometers southwest of Dammam	60
Do.	do.	do.	Uthmaniya, 30 kilometers west of Al Hufuf	120
Do.	do.	do.	Berri, 15 kilometers north of Al Jubayl	25
Do.	do.	do.	Ju'aymah, 33 kilometers northwest of Ras Tanura	110
Do.	do.	do.	Yanbu	110
Petrochemicals:				
Ethylene	Saudi Petrochemical Co. (SADAF) (SABIC, 50%; Pecten Saudi Arabia, 50%)	Al Jubayl	970	
Ethylene dichloride	do.	do.	560	
Styrene	do.	do.	360	
Ethanol	do.	do.	300	
Methyl-tertiary-butyl-ether (MTBE) and Ethyl-tertiary-butyl-ether	do.	do.	700	
Sodium hydroxide	do.	do.	450	

See footnotes at end of table.

TABLE 2--Continued
SAUDI ARABIA: STRUCTURE OF THE MINERAL INDUSTRY IN 1998

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of facilities	Annual capacity	
Petrochemicals--Continued:				
Methanol	National Methanol Co. (Ibn Sina) (SABIC, 50%; Celanese Arabian, 25%; Texan Eastern Arabian, 25%)	Al Jubayl	900	
Methyl-tertiary-butyl-ether (MTBE)	do.	do.	700	
Methanol	Saudi Methanol Co. (Ar Razi) (SABIC, 50%; Japan Saudi Arabia Methanol Co., 50%)	do.	2,130	
Ethylene glycol	Eastern Petrochemical Co. (SHARQ) (SABIC, 50%; Saudi Petroleum Development Corp., 50%)	do.	450	
Linear low density polyethylene	do.	do.	660	
Ethylene-1 and 2	Arabian Petrochemical Co. (Petrokemya) (SABIC, 100%)	do.	1,150	
Butene-1	do.	do.	100	
Polystyrene	do.	do.	135	
Propylene	do.	do.	300	
Butadiene	do.	do.	100	
Benzene	do.	do.	70	
HAO polyethylene	Al Jubayl Petrochemical Co. (Kemya) (SABIC, 50%; Exxon Chemical Arabia, Inc., 50%)	do.	170	
High density polyethylene	do.	do.	170	
Linear low density polyethylene	do.	do.	600	
Methyl-tertiary-butyl-ether (MTBE)	Saudi European Petrochemical Co. (Ibn Zahr) (SABIC, 70%; Ecofuel, 10%; Neste Oy, 10%; Arab Petroleum Investments Corp., 10%)	do.	1,400	
Polypropylene	do.	do.	800	
Ethylene	Saudi Yanbu Petrochemical Co., (YANPET) (SABIC, 50%; Mobil Oil Corp, 50%)	Yanbu	500	
Ethylene glycol	do.	do.	220	
Polyethylene	do.	do.	96	
Petroleum, crude	million barrels	Saudi Aramco (Government, 100%)	Eastern Province, Najd Region, and offshore	3,942
Do.	do.	Arabian Oil Co., (AOC), (Japan Petroleum Trading Co., 80%; Kuwait, 10%; Saudi Arabia, 10%)	Khafji 2/	110
Do.	do.	do.	Al Hout 2/	10
Do.	do.	Saudi Arabian Texaco Inc.	Wafra, South Fawaris, South Umm Gudair 2/	50
Petroleum products		Saudi Aramco (Government, 100%)	Ras Tanura	110
Do	do.	Rabigh Petroleum Refining Co. (Saudi Aramco, 100%)	Rabigh	119
Do	do.	Jubail Petroleum Refining Co. (Saudi Aramco, 50%; Shell, 50%)	Al Jubayl	110
Do.	do.	Yanbu Petroleum Refining Co. (Saudi Aramco, 50%; Mobil, 50%)	Yanbu	127
Do.	do.	Saudi Aramco (Government, 100%)	do.	69
Do	do.	Jiddah Oil Refinery Co. (Saudi Aramco, 100%)	Jiddah	38
Do.	do.	Riyadh Oil Refinery Co. (Saudi Aramco, 100%)	Riyadh	50
Do.	do.	Arabian Oil Co. (Japan Petroleum Trading Co., 80%; Kuwait, 10%; Saudi Arabia, 10%)	Al Khafji	11
Steel		Saudi Iron and Steel Co. (Hadeed) (SABIC, 95%)	Al Jubayl	2,700
Do.		Jiddah Steel Rolling Mill (Sulb) (Government, 100%)	Jiddah	245
Titanium dioxide		The National Titanium Dioxide Co. (Cristal) (Shairco for Trading and Contracting, 25%; National Industrialization Co., 24%; Gulf Investment Corp., 24%; Kerr-McGee Chemical Corp., 25%; private individuals, 2%)	Yanbu	52
Zinc		Arabian Shield Company for Mining Industries (Arabian Shield Development Co., 50%; Al Mashreq Company for Mining Investments, 50%)	Al Masdane	(3/)

1/ Natural gas is pumped through the Master Gas System to processing plants at Berri, Shedgum, and Uthmaniya where natural gas liquids are separated and sent by pipeline to fractionation plants at Ju'aymah and Yanbu.

2/ Partitioned Zone where production is shared between Saudi Arabia and Kuwait.

3/ Company holds a 30-year lease on 44 square kilometers with minable reserves of 7.2 million metric tons of ore containing copper, gold, silver, and zinc.