



2008 Minerals Yearbook

BAHRAIN

THE MINERAL INDUSTRY OF BAHRAIN

By Mowafa Taib

The Kingdom of Bahrain is one of the six nations that make up the Gulf Cooperation Council¹ (GCC); it is an island located between Qatar and Saudi Arabia and is connected to the eastern region of Saudi Arabia by way of a 28-kilometer-long bridge called the King Fahad Causeway. In 2008, Bahrain was the world's 10th ranked producer of aluminum and accounted for 2.2% of world aluminum output. Primary aluminum was sold to downstream aluminum manufacturers in Bahrain and exported to more than 25 countries. Other minerals and mineral-based commodities produced in Bahrain included aggregate, cement, crude petroleum, iron ore pellets, natural gas, nitrogen fertilizer, refined petroleum products, sand, and sulfur (Aluminium Bahrain B.S.C., 2009; Bray, 2009, p. 19).

Minerals in the National Economy

Bahrain's economy grew in 2008 at a rate of 6.3% (at 2000 prices) compared with 8.4% in 2007 despite the fall in oil prices that started in the fourth quarter of 2008. The mining sector, which included the production of natural gas and oil, as well as quarrying activity, accounted for 14% of the gross domestic product (GDP); the manufacturing sector, which included aluminum production, accounted for 16% of the GDP; and the construction sector accounted for 7.3% of the GDP. In 2008, gas and oil revenue increased by 39.9% and non-oil revenue decreased by 0.9% compared with oil and non-oil revenue in 2007, respectively. The value of petroleum products exports, which was 80% of total exports, increased by 27.7% in 2008 compared with that of 2007; and the value of oil imports, which was 50% of total imports, increased by 22.8% in 2008 compared with that of 2007 (Central Bank of Bahrain, 2009b, p. 5; Ministry of Finance, 2009a, b).

The provisional value of Bahrain's total merchandise exports was \$17.3 billion,² of which \$13.8 billion was petroleum products and \$3.5 billion was non-oil merchandise exports. Non-oil exports included base metals, which were mainly aluminum and steel products. The provisional value of Bahrain's total imports was \$14.2 billion, of which \$7.2 billion was oil-related imports and \$7.0 billion was non-oil-related imports (Central Bank of Bahrain, 2009a, p. 7, 10).

Structure of the Mineral Industry

The National Oil and Gas Authority (NOGA) was the Government agency that managed Bahrain's hydrocarbon resources. NOGA was the sole owner of Bahrain Petroleum Co., B.S.C. (Closed) (Bapco), and it held 60% interest in Bahrain Aviation Fueling Co.; 75% interest in Bahrain National Gas Co., B.S.C.; 33% interest in Gulf Petrochemical Industries

¹The Gulf Cooperation Council countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

²Where necessary, values have been converted from Bahraini dinars (BhD) to U.S. dollars (US\$) at the rate of BhD0.376=US\$1.00.

Co. B.S.C. (GPIC); and smaller interests in several companies in the petrochemical sector. Bahrain Mumtalakat Holding Co. (Mumtalakat) (the investment entity of the Government) held 77% interest in Aluminium Bahrain B.S.C. (Alba), which was the Kingdom's oldest non-oil industry; the remaining shares were held by Sabic Industrial Investments Co. Ltd. of Saudi Arabia (20%) and Breton Investments Ltd. of Germany (3%). The proposal to divest up to 40% of Alba through an initial public offering, which was announced in 2007, had not materialized as of yearend 2008 (National Oil and Gas Authority, 2008; Middle East Economic Digest, 2009a). Private and mixed public-private sector companies controlled the cement and pelleted iron ore industries.

In 2008, Gulf United Steel Holding Co. (Foulath) was established in Bahrain as a holding company for investments in the steel industry. It was a joint venture of Gulf Investment Corp., which was owned jointly by the GCC countries (50%); Qatar Steel Co., which was owned by the Government of Qatar (25%); Kharafi Group of Kuwait and National Industries Group of Kuwait (10% each); and Kuwait Foundry Co. (5%) [Middle East Economic Digest, 2008b; Gulf Industrial Investment Co. (E.C.), 2009].

Production

Crude petroleum production from the Bahrain field (also known as the Awali field) continued its downward production trend. In 2008, 12.0 million barrels (Mbbbl) of crude petroleum was produced compared with 12.6 Mbbbl of crude petroleum in 2007, which was a reduction of 4.8%. The Abu Saafa oilfield was an offshore oilfield that was owned jointly by the Governments of Bahrain and Saudi Arabia and was operated by Saudi Arabian Oil Co. (Aramco). In 2008, Bahrain's share of the Abu Saafa oilfield was increased by 127,000 barrels to 54.8 Mbbbl.

Bahrain's gross gas production increased by 6% in 2008 compared with that of 2007 whereas production of dry gas increased by 21%. The volume of aluminum output in 2008 remained virtually the same as in 2007. Petrochemical production increased by 12.5% in 2008 compared with that of 2007, including an 11% increase in methanol output and a 38% increase in nitrogen fertilizer output. Refined oil production was slightly less in 2008 than in 2007. Direct-reduction iron oxide pellets were produced from imported iron ore (primarily from Brazil) by the Gulf Industrial Investment Co. (GIIC's) "merchant" plant at the Hidd Industrial Area and exported to steel plants in India, Indonesia, Iran, Malaysia, Qatar, and Saudi Arabia.

Commodity Review

Metals

Aluminum.—Alba was considered one of the most important companies in the Middle East by Middle East Economic

Digest in 2009. The company, which contributed about 12% of Bahrain's GDP, continued to exceed its rated capacity of 860,000 metric tons per year (t/yr) from five potlines. Alba produced four types of aluminum: standard ingots, and larger T-ingots, billet, and rolling slabs. Alba imported more than 1 million metric tons per year (Mt/yr) of alumina. In February 2008, Alba filed a \$1 billion law suit in U.S. Federal court against Alcoa Inc. of the United States, which supplied Alba with alumina from Alcoa's mines in Western Australia; Alba claimed that Alcoa had been overcharging Alba for alumina for 15 years (Van Voris and Crofts, 2008; Middle East Economic Digest, 2009a, b).

Alba's proposed expansion plan, which included adding a sixth potline to raise production capacity to 1.2 Mt/yr, was put on hold because of the lack of a dedicated source of natural gas to provide power for the new line. (Alba consumed 25% of the total gas used in Bahrain in 2008.) The lack of a dedicated supply of gas as well as a recent decline in revenue remained major impediments to the expansion project's development (Thomson Reuters, 2009a).

Iron and Steel.—Bahrain's imports of steel products had tripled in the period between 2003 and 2006. Bahrain imported only 12,300 t of steel products in 2007, however, which was 4.3% of the 284,900 t that was imported in 2006. GIIC, which was wholly owned by Foulath, produced direct-reduction iron oxide pellets from iron ore that was imported mainly from Brazil at its plant in the Hidd Industrial Area. The production capacity of the Allis-Chalmers (Grate-Kiln) pelletizing plant was 5 Mt/yr (Gulf Industrial Investment Co. (E.C.), 2009; Middle East Economic Digest, 2009d).

United Stainless Steel Co. B.S.C., which was a Foulath subsidiary, produced 100,000 t/yr of steel at its plant in the Hidd Industrial Area. Universal Rolling W.L.L., which was owned by Bahraini and Saudi investors and the Bahrain-based International Investment Bank, moved forward with building the country's first steel reinforcement bar mill at the Hidd Industrial Area. Production was expected to start in 2009 at an annual capacity of 200,000 t of rebar (Steel Guru, 2009; Thomson Reuters, 2009b).

In 2008, a joint venture of GIIC and Yamato Kogyo Co. Ltd. of Japan was formed to build a 1.5-Mt/yr-capacity direct-reduction iron plant at the Hidd Industrial Area. GIIC held 51% interest in this venture, and Yamato held the remaining 49% interest. Foulath planned to build four 7-Mt/yr-capacity iron ore pellet plants; one would be located at the Hidd Industrial Area next to the existing plant operated by GIIC; one would be located at Salalah in Oman as a joint venture with JFE Steel Corp. of Japan; and the remaining two plants would be built at Alexandria and Suez in Egypt. The total (combined) production capacity of Foulath's five plants would be 33 Mt/yr by the year 2012. To secure a stable supply of iron ore, Foulath planned to buy stakes in companies that operate iron ore mines in Australia, Brazil, and Europe. Northland Resources Inc. of Sweden signed a memorandum of understanding with GIIC to supply 250,000 t of iron ore concentrates in 2011, 1.5 Mt in 2012, 2 Mt in 2013, and 3 Mt/yr starting in 2014 to be used in the GIIC pelletizing operations (Arab Steel, 2008; Northland Resources Inc., 2009; Steel Guru, 2009; Thomson Reuters, 2009b).

Industrial Minerals

Cement.—Star Cement Co. W.L.L. of the United Arab Emirates was the sole cement producer in Bahrain from its clinker grinding mill at the Hidd Industrial Area; the mill had a 450,000-t/yr cement production capacity. In 2008, Bahrain's per capita consumption of cement averaged 300 kilograms per year (kg/yr), which was the lowest among the GCC countries and about 13% of the GCC countries' average of 2,345 kg/yr (Middle East Economic Digest, 2009c). The shortage of cement in Bahrain in 2007, which was caused by a breakdown of the cement plant in Saudi Arabia that supplied the Bahrain market, prompted Bahrain to build a new cement plant in the country. Falcon Cement Co., which started building a 370,000-t/yr-capacity cement plant in the Hufaira Industrial Area in January 2007, completed construction and commissioned production by yearend 2008 (Zawya, 2009).

Nitrogen.—In 2008, Bapco produced 473,810 t of ammonia and 661,443 t of urea, which was a 38% and a 13% increase, respectively, compared with output in 2007. The volumes of ammonia and urea production in 2008 were the highest annual production levels ever achieved by Bapco. About 80% of the ammonia produced was used for the production of urea (Gulf Petrochemical Industries Co. B.S.C., 2009, p. 10).

Mineral Fuels

Natural Gas and Petroleum.—Bahrain's proven natural gas reserves as of yearend 2008 were estimated by NOGA to be 2.4 billion cubic meters and were projected to be 2.1 billion cubic meters by 2011. Production from the Bahrain field, which was the location of the first oil discovery in the Gulf in 1932, continued its downward trend (Middle East Economic Digest, 2009e). Bapco and Occidental Petroleum of the United States signed an agreement to develop the Bahrain oilfield, which would double the country's petroleum production to 70,000 barrels per day (bbl/d) from 35,000 bbl/d. During the bidding round in 2007, Occidental Petroleum was also granted exploration rights for offshore Blocks 1, 2, and 4, and PTT Exploration and Production Co. Ltd. of Thailand was chosen for oil and gas exploration in offshore Block 3. In March 2008, Bapco and Exxon Mobil Corp. of the United States signed a partnership agreement that commits ExxonMobil to conduct studies to determine Bahrain's future gas needs and the best methods to meet them, taking into consideration alternative energy and the possibility of importing gas from neighboring countries, including Qatar (Zawya, 2008a).

In April 2008, Foster Wheeler Energy Ltd. (a United Kingdom-based subsidiary of Foster Wheeler Ltd. of the United States) was awarded a contract to expand the production capacity of the liquefied petroleum gas facilities of Bahrain National Gas Co. to 15 million cubic meters per day of gas throughput by 2020. In October 2008, NOGA signed a memorandum of understanding with Hess Corp. of the United States to build a liquefied natural gas import terminal in Bahrain. The project was in the feasibility stage (Zawya, 2008b; Middle East Economic Digest, 2009e).

Bahrain Petroleum's refinery at Sitra, which imported 85% of its crude petroleum from Saudi Arabia by way of two undersea pipelines and one above-ground pipeline, inaugurated a low-sulfur diesel production complex in December 2007 and exported the first shipment of low-sulfur-diesel in May 2008. The company started a second phase of desulfurization that would allow for producing and exporting of ultra-low-sulfur diesel in 2009. In 2008, Bapco began construction of a refinery gas desulfurization plant at a cost of \$150 million; construction was expected to be completed in 2009. The plant would significantly reduce sulfur-containing gases emitted by the refinery and subsequently improve air quality in the area (Bahrain Petroleum Co. B.S.C., 2009). GPIC signed an agreement with Abu Dhabi Future Energy Co. of the United Arab Emirates to set up a carbon-emission-reduction facility, which would arrest carbon dioxide gas from flue gas and reuse it in the production of ammonia, methanol, and urea. This process was expected to cut the quantity of carbon dioxide emissions by 100,000 t as of 2010. GPIC was working with Technimont I.C.B. of Italy and Mitsubishi Heavy Industries Ltd. of Japan on the carbon capturing project; it would be the first petrochemical company in the Gulf region to use such technology (Gulf Petrochemical Industries Co. B.S.C., 2008; Petroleum Economist, 2008).

A joint venture of Bapco and Neste Oil of Finland awarded Samsung Engineering Co. Ltd. of the Republic of Korea a \$314 million contract to conduct the engineering, procurement, and construction of a lube base oil refinery in Sitra. The project was scheduled to be completed in 2011 (Middle East Economic Digest, 2008a).

Outlook

The mineral industry of Bahrain is expected to continue to benefit from the substantial financial resources available for investment from the GCC countries and from the Kingdom's proximity to Iran, Qatar, Saudi Arabia, and the United Arab Emirates. Bahrain plans to increase its gas and oil reserves and resources, upgrade the Sitra petroleum refinery (the country's only petroleum refinery), revamp its petrochemical plants, and strive to be a major aluminum and steel producer in the Gulf region. Future expansion plans by the aluminum industry in the Gulf region in general and in Bahrain in particular are faced with two major challenges—finding a sustainable source of energy that guarantees a long-term supply of natural gas for the aluminum smelters and securing the bauxite supplies needed to sustain high production levels.

References Cited

Aluminium Bahrain B.S.C., 2009, All about Alba: Aluminium Bahrain B.S.C., 11 p. (Accessed July 30, 2009, at <http://www.aluminiumbahrain.com/en/pdf/allaboutalbaFINAL.pdf>.)

Arab Steel, 2008, 4.5 billion dollars of new investment for Gulf Industrial Investment Company: Arab Steel, October 22. (Accessed November 12, 2008, at http://www.arabsteel.info/total/Long_News_Total_e.asp?ID=463.)

Bahrain Petroleum Co. B.S.C., 2009, Annual review 2008: Manama, Bahrain, Bahrain Petroleum Co. B.S.C., 27 p.

Bray, E.L., 2009, Aluminum: U.S. Geological Survey Mineral Commodity Summaries 2009, p. 18-19.

Central Bank of Bahrain, 2009a, Balance of payments report 2008: Manama, Bahrain, Central Bank of Bahrain, 19 p.

Central Bank of Bahrain 2009b, Economic indicators: Manama, Bahrain, Central Bank of Bahrain, March, no. 23, 29 p.

Gulf Industrial Investment Co. (E.C.), 2009, Iron ore pelletizing plant: Manama, Bahrain, Gulf Industrial Investment Co. (E.C.). (Accessed July 27, 2009, at <http://www.giic.com.bh/about/index.asp>.)

Gulf Petrochemical Industries Co. B.S.C., 2008, GPIC signs carbon emission production project with Abu Dhabi Future Energy Company (MASDAR): Gulf Petrochemical Industries Co. B.S.C. press release, July 24, 1 p.

Gulf Petrochemical Industries Co. B.S.C., 2009, Annual report 2008: Gulf Petrochemical Industries Co. B.S.C. (Closed), May 18, 32 p.

Middle East Economist Digest, 2008a, A joint venture of Bahrain Petroleum Company (Bapco) and Finland's Neste Oil is awarding a \$314m deal to build a lube base oil refinery at Sitra to South Korea's Samsung Engineering: Middle East Economic Digest, August 19, v. 52, no. 28, p. 4.

Middle East Economic Digest, 2008b, Foulath invests \$3.4 billion in regional steel projects: Middle East Economic Digest, October 14. (Accessed July 6, 2009, at http://www.meed.com/news/2008/10/foulath_backs_34bn_of_regional_steel_projects.html.)

Middle East Economic Digest, 2009a, Aluminum—Alba puts expansion plans on hold: Middle East Economic Digest, v. 53, no. 2, January 12, p. 8.

Middle East Economic Digest, 2009b, Engines of growth 2009—Alba: Middle East Economic Digest, v. 53, no. 10, March 6, p. 54.

Middle East Economic Digest, 2009c, GCC Cement 2009—Facing up to over-supply: Middle East Economic Digest, May 24. (Accessed July 6, 2009, at http://www.meed.com/insight/briefing/2009/05/gcc_cement_2009_facing_up_to_oversupply.html.)

Middle East Economic Digest, 2009d, Gulf states race to industrialize: Middle East Economic Digest, v. 53, no. 17, April 24, p. 49.

Middle East Economic Digest, 2009e, Manama seeks fresh energy supply: Middle East Economic Digest, v. 53, no. 10, March 6, p. 22.

Ministry of Finance, 2009a, Economic indicators—Main economic indicators for the year 2008: Manama, Bahrain, Ministry of Finance, July 26, 2 p. (Accessed July 27, 2009, at <http://www.mofne.gov.bh/ShowDataFile.asp?rid=864>.)

Ministry of Finance, 2009b, Economic indicators—Summary of main economic indicators: Manama, Bahrain, Ministry of Finance, July 26, 3 p. (Accessed July 27, 2009, at <http://www.mofne.gov.bh/ShowDataFile.asp?rid=1628>.)

National Oil and Gas Authority, 2008, Oil and gas companies: Manama, Bahrain, National Oil and Gas Authority, December 15. (Accessed July 27, 2009, at <http://www.noga.gov.bh/EN/default.asp?pageid=orgchart&mclose=1>.)

Northland Resources Inc., 2009, Northland signs memorandum of understanding with GIIC to supply DR grade pellet feed: Northland Resources Inc. press release, February 5, 3 p.

Petroleum Economist, 2008, News in brief: Petroleum Economist, September, v. 75, no. 9, p. 36.

Steel Guru, 2009, UNIRO rebar mill starts production in Bahrain: Major and Minor Exims Pvt. Ltd., May 13. (Accessed July 23, 2009, at <http://steelguru.com/selectednews/index/2009/005/013/archives.html#94149>.)

Thomson Reuters, 2009a, Bahrain's Alba puts plans to boost capacity on hold: Thomson Reuters, May 11. (Accessed May 12, 2009, at <http://communities.thomsonreuters.com/BaseMetals/302135>.)

Thomson Reuters, 2009b, Northland signs memorandum of understanding with GIIC to supply DR grade pellet feed: Thomson Reuters, February 9. (Accessed July 13, 2009, at <http://www.reuters.com/article/pressRelease/idUS165035+05-Feb-2009+MW20090205>.)

Van Voris, Bob, and Crofts, Dale, 2008, Alcoa is sued for fraud, bribery by Bahrain firm: The Washington Post, February 29. (Accessed March 2, 2010, at <http://www.washingtonpost.com/wp-dyn/content/article/2008/02/28/AR2008022803622.html>.)

Zawya, 2008a, Bahrain-Bapco signs pact with Exxon Mobil: ABQ Zawya Ltd. March 6. (Accessed July 15, 2009, at <http://www.zawya.com/story.cfm/sidZAWYA20080306034738/Bahrain-Bapco-0signs-pact-with-Exxon-Mobil->)

Zawya, 2008b, UK company wins Bana Gas contract: ABQ Zawya Ltd., April 21. (Accessed July 6, 2009, at <http://www.zawya.com/printstory.cfm?storyid=ZAWYA20080421032336&l=032300080421>.)

Zawya, 2009, GCC cement production to outstrip demand: ABQ Zawya Ltd., July 1. (Accessed July 30, 2009, at <http://www.zawya.com/story.cfm/sidZAWYA20090701041549/GCC-Cement-Production-To-Outstrip-Demand->)

TABLE 1
BAHRAIN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2004	2005	2006	2007	2008	
METALS						
Aluminum metal, primary	531,626	750,710	860,435	865,048	871,658	
Iron ore pellets ³	3,716,209	4,044,342	5,000,000 ^e	5,000,000 ^e	5,000,000 ^e	
INDUSTRIAL MINERALS						
Cement	400,000 ^r	400,000 ^r	400,000	400,000	370,000	
Nitrogen, N content of ammonia	311,300	329,745	370,393	343,185	473,810	
Sulfur	71,258	71,963	70,000	72,000 ^e	72,000 ^e	
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	12,130	13,320	13,817	14,376	15,241
Dry	do.	9,194	10,278	10,700	11,100	13,400
Methanol		398,406	375,609	406,600	371,000	410,235
Natural gas plant liquids:						
Propane	thousand 42-gallon barrels	1,032	1,065	1,010	944	949
Butane	do.	981	1,015	970	896	920
Naphtha	do.	1,786	1,783	1,725	1,663	1,699
Petroleum:						
Crude ⁴	do.	76,337 ^r	68,096 ^r	66,908 ^r	67,262 ^r	66,864
Refinery products:						
Liquefied petroleum gas	do.	425	452	400	400 ^e	400 ^e
Gasoline	do.	6,439	7,309	7,200	7,300 ^e	7,300 ^e
Jet fuel	do.	17,268	19,956	19,800	20,000 ^e	20,000 ^e
Kerosene	do.	2,436	1,101	1,000	1,000 ^e	1,000 ^e
Distillate fuel oil	do.	18,210	19,278	19,000	20,000 ^e	20,000 ^e
Residual fuel oil ^e	do.	28,900	29,000	28,500	29,000	29,000
Other ^e	do.	19,000	20,600	20,300	20,200	19,000
Total	do.	92,678 ^r	97,696 ^r	96,500 ^r	97,900 ^r	96,700

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto.

¹Table includes data available through December 31, 2009.

²Granular urea has been produced from locally produced ammonia since 1998. Aggregate, sand, and rock are also produced, but available information is inadequate to make estimates of output. Iron ore was pelleted and exported for use by direct-reduction plants.

³Pellets were produced from imported iron ore.

⁴Includes production from the Bharain and the Abu Saafa fields.

TABLE 2
BAHRAIN: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Aluminum:				
Metal:				
Primary and secondary	Aluminium Bahrain B.S.C. (Alba) (Bahrain Mumtalakat Holding Co., 77%; SABIC Industrial Investments Co. Ltd., 20%; Breton Investments Ltd., 3%)	Smelter at Sitra	860,000 ¹	
Secondary	Bahrain Recycling Plant (private, 100%)	Dross and scrap remelt facilities at Askar	NA	
Rolled products	Gulf Aluminium Rolling Mill Co. B.S.C. (Closed) (Bahrain Mumtalakat Holding Co., 38%; Saudi Basic Industries Corp., 30%; Industrial Bank of Kuwait, 17%; Gulf Investment Corp., 6%; Government of Iraq, 5%; Government of Oman, 2%; Government of Qatar, 2%)	Rolling mill at Sitra	165,000	
Do.	Midal Cables Ltd. (Intersteel W.L.L., 50%, and Saudi Cable Co., 50%)	Rolling mill at Manama	120,000	
Cement				
	Star Cement Co. W.L.L.	Clinker grinding mill at Hidd	450,000	
Do.	Falcon Cement Co.	Hufaira	370,000 ²	
Iron and steel:				
Iron ore, pellets	Gulf United Steel Holding Co. (Foulath) (Gulf Industrial Investment Co., 50%; Qatar Steel Co., 25%; Kharafi Group, 10%; National Industries Group, 10%; and Kuwait Foundry Co., 5%)	Pellet plant at Hidd	5,000,000	
Steel, stainless, rolled	Universal Rolling W.L.L. (Unirol)	Hidd	200,000	
Methanol				
	Gulf Petrochemical Industries Co. B.S.C. (GPIC) [National Oil and Gas Authority (NOGA), 33.3%; Petrochemical Industries Co., 33.3%; Saudi Basic Industries Corp., 33.3%]	Sitra	438,000	
Natural gas:				
Extracted	million cubic meters	Bahrain Petroleum Co., B.S.C. (Closed) (Bapco) (Government)	Bahrain field, Awali	13,900
Liquids:				
Butane	thousand 42-gallon barrels	Bahrain National Gas Co. B.S.C. [National Oil and Gas Authority (NOGA), 75%; Arab Petroleum Investment Corp., 12.5%; Caltex Bahrain, 12.5%]	Natural gas plant at Awali	1,100
Naphtha	do.	do.	do.	1,020
Propane	do.	do.	do.	1,800
Nitrogen:				
Ammonia		Gulf Petrochemical Industries Co. B.S.C. (GPIC) [National Oil and Gas Authority (NOGA), 33.3%; Petrochemical Industries Co., 33.3%; Saudi Basic Industries Corp., 33.3%]	Sitra	438,000
Urea		do.	do.	621,000
Petroleum:				
Synthetic coke		Aluminium Bahrain B.S.C. (Alba) (Bahrain Mumtalakat Holding Co., 77%; SABIC Industrial Investments Co. Ltd., 20%; Breton Investments Ltd., 3%)	do.	600,000
Crude	thousand 42-gallon barrels	Saudi Arabian Oil Co. (Aramco)	Abu Saafa field, offshore	110,000 ³
Do.	do.	Bahrain Petroleum Co., B.S.C. (Closed) (Bapco) [National Oil and Gas Authority (NOGA), 100%]	Bahrain field, Awali	13,800
Refined products	do.	do.	Sitra	95,600 ¹
Sulfur		do.	do.	72,000

Do., do. Ditto. NA Not available.

¹Actual annual output regularly exceeds the facility's nominal production capacity.

²Under construction.

³Production from the field is pumped to Bahrain and subsequently refined and marketed by Bahrain Petroleum Co.

