

THE MINERAL INDUSTRY OF

IRAQ

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Mineral production)) principally cement, hydrocarbons, iron and steel, phosphate rock, salt, and sulfur)) was, for the most part, limited to satisfying domestic consumption as a result of the United Nation's (U.N.) trade embargo imposed on Iraq after the 1990 invasion of Kuwait. (See table 1.) In mid-December 1996, crude oil exports authorized under the Oil for Humanitarian Aid Agreement (U.N. Resolution 986) were initiated, thus permitting the sale of Iraqi crude oil, valued at \$2 billion, during a 6-month period divided into two 90-day segments. Iraq interrupted oil exports in May 1997, and although the U.N. Security Council passed a new resolution on June 8 allowing the plan to continue and repeating the same formula, exports did not resume immediately. The first segment of the second phase of Resolution 986 was in effect between June 8 and September 5, but Iraq refused to resume exports until a dispute involving the U.N. aid distribution plan was resolved. When the second phase of the Agreement finally did get underway in mid-August, only 3 weeks remained in which to take full advantage of the \$1 billion export limit in the first segment of the second phase. Therefore, the division into two 90-day segments was waived by the Security Council for the second phase only; this allowed Iraq to realize the maximum \$2 billion in exports. A third phase of the Agreement was approved by the U.N. and began on December 5, 1997. As in the first phase, the Agreement authorized Iraq to sell up to \$2 billion worth of crude oil during a 6-month period divided into two 90-day segments during each of which no more than \$1 billion can be sold. Because crude oil export limits were set by value, weakening prices in 1997 resulted in increased export volumes. (See table 2.) More than one-half of Iraq's crude oil exports were transported through Turkey via the Kirkuk-to-Ceyhan pipeline. Because the pipeline's outlet is to the Mediterranean Sea, most of crude oil delivered to Ceyhan, Turkey, was destined for Europe. The remaining crude oil exports were delivered to the port of Mina al-Bakr on the Arabian Gulf en route to Africa, Asia, Brazil, and the United States. Under Resolution 986, 55 cents of every crude oil export dollar was spent for food and medicine, 35 cents was awarded to the Kuwaiti reparations fund, and the remainder supported the expenses of the U.N. weapons inspectors. In addition to the oil exports permitted under the U.N. Humanitarian Aid Program, Iraq also supplied about 90,000 barrels per day (bbl/d) of crude oil and products to Jordan under U.N. approval. Crude oil was shipped by truck via a 1,000-kilometer desert highway between Baghdad and Amman.

The output of associated natural gas production paralleled crude oil production, increasing gross output by 1.0 billion cubic meters in 1997. About 20% of natural gas output was flared owing to the lack of gas processing facilities. Of the remaining production,

about one-third was used in power generation, one-third, by the oil sector, and one-third by other industries. The Turkish Government entered into an agreement with Iraq to build a 10-billion-cubic-meter-per-year (m^3/yr)-capacity natural gas pipeline to Ceyhan from five northeastern fields—Anfal with reserves of 49.9 billion cubic meters; Chemchemal, 61.7 billion cubic meters; Jaria-Pika, 26.3 billion cubic meters; Khashm al-Ahmar, 39.9 billion cubic meters; and Mansuriyah, 92.8 billion cubic meters of natural gas reserves. The project is estimated to cost \$2.77 billion and will take 2 to 3 years to complete if and when the U.N. sanctions are lifted.

At least 40 international petroleum companies from about 20 countries were actively seeking production-sharing and development contracts with Iraq. France's Total, SA, was negotiating a production-sharing agreement valued at about \$3.5 billion for the projected 450,000-bbl/d-capacity Bin Umar Field and a development contract for the Nahr Umar Field. Elf Aquitaine, Inc., also of France, plans to develop the shut-in Majnoun Field with a production capacity of 400,000 bbl/d from reserves of 6 billion barrels. Agip of Italy and Repsol of Spain entered into negotiations to develop the Nassiriyah Field (Petroleum Economist, 1998). In March 1997, Iraqi and Russian Government officials signed a contract to develop the West Qurna Field. Projected cost is \$5 billion to exploit the field's reserves of 7 to 8 billion barrels. Projected production is 600,000 bbl/d for 23 years; total estimated revenue is approximately \$70 billion based on current prices. As in most of Iraq's production-sharing agreements, all appraisal and development costs are borne by the contractor to be recovered from an agreed share of production and the remaining output, to be split between the Government and the contractor in agreed proportions. India's Oil and Natural Gas Commission and Reliance Industries will develop a 14,000-square-kilometer block that is estimated to have reserves of 4 billion barrels. The block includes the Al-Halfaya Field and is expected to have the capacity to produce 220,000 bbl/d of 28° API gravity oil. The China National Petroleum Corp. (CNPC) has a production-sharing agreement to develop the Ahdab Field, which has estimated reserves of 1.4 billion barrels and a projected production capacity of 80,000 bbl/d for a 26-year period. Field development is expected to take 4 years. CNPC is expected to analyze seismic data already collected by Iraq while hoping for U.N. sanctions to be lifted (Oil & Gas Journal, 1997).

The Iraqi Ministry of Oil places total proven crude oil reserves at 112 billion barrels and natural gas reserves at 3.36 trillion cubic meters (Arab Oil and Gas Research Center, 1998).

U.N. sanctions have weighed heavily on Iraq, and although limited crude oil exports were realized during the year, the need remains for repairs and refurbishment of the petroleum export

network if exports are to increase. The near-term outlook for the oil market will depend on the expected economic growth, as well as the decisions of oil producers, particularly members of the Organization of Petroleum Exporting Countries. With the exception of limited oil exports in 1997, the U.N. trade embargo, which has remained in place for 7 years, has severely restricted Iraq's economy, particularly the mineral sector, which is largely dependent upon foreign capital, equipment, and replacement parts. Should there be a return to normal trade relations, Iraqi oil authorities have given priority to the rehabilitation of existing production facilities, followed by development of already discovered giant fields, and finally the exploration of new acreage

in the western desert. Iraq ultimately plans to develop its crude oil production capacity to 6 Mbbl/d. Iraq expects to achieve this goal within 7 years after the U.N. sanctions are lifted.

References Cited

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- Oil & Gas Journal, 1997, Iraq building E&R project list for post-U.N. sanction period: Oil & Gas Journal, v. 95, no. 15, April 14, p.19-24.
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TABLE 1
IRAQ: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity 2/	1993	1994	1995	1996	1997
METALS					
Iron and steel, steel crude	300	300	300	300	300
INDUSTRIAL MINERALS					
Cement, hydraulic	2,000	2,000	2,108 r/ 3/	2,100	2,500
Nitrogen, N content of ammonia	500	500	500	500	500
Phosphate rock:					
Beneficiated 3/	800	1,000	1,000	1,000	1,000
Phosphorus pentoxide content	240	300	300	300	300
Salt	300	300	250	250	250
Sulfur, elemental:					
Native, Frasch	250	250	250	250	250
Byproduct 4/	200	225	225	225	225
Total	450	475	475	475	475
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural:					
Gross million cubic meters	5,000 r/	5,000 r/	5,000 r/	5,000 r/ 3/	7,000
Dry do.	3,000 r/	3,000 r/	3,000 r/	3,000 r/ 3/	3,000
Natural gas plant liquids thousand 42-gallon barrels	10,000	10,000	10,000	10,000	
Petroleum:					
Crude (including lease condensate) do.	187,000 3/	200,000 3/	205,000 3/	213,000 3/	433,000 3/
Refinery products do.	160,000	160,000	190,000 r/	190,000 r/	200,000

r/ Revised.

1/ Includes data available through September 15, 1998.

2/ In addition to commodities listed, the following also were produced but information is inadequate to reliably estimate output: gypsum for cement, plaster, mortar and other products; limestone for cement (about 1.3 metric tons per metric ton of finished cement), lime, and construction stone; clay and/or shale for cement (about 0.4 metric ton per metric ton of finished cement); other construction materials (e.g., clays for brick and tile, sand and gravel, stone); uranium and fluorine compounds from phosphate rock processing; industrial sand for foundry use and glass manufacture; and clays for ceramics and refractories.

3/ Estimated to contain 30% phosphorous pentoxide.

4/ Presumably from petroleum and natural gas processing.

TABLE 2
IRAQ: CRUDE OIL DESTINATIONS 1997

(Million barrels)

Type crude oil	Europe	United States	Far East	South Africa	Total	Percentage of total
Basrah light, 34.4 API°	--	64.0	34.8	6.4	105.2	43.3
Kirkuk, 37 API°	130.0	7.7	--	--	137.7	56.7
Total	130.0	71.7	34.8	6.4	243.0 1/	100.0
Percent	53.5	29.5	14.3	2.6	100	

1/ Data are rounded to three significant digits; may not add to totals shown.