

THE MINERAL INDUSTRY OF

IRAQ

By Bernadette Michalski

Minerals, particularly petroleum, continued to dominate Iraq's economy in 1995 as it had for decades. Prior to Iraq's invasion of Kuwait in August 1990 which caused the United Nations (UN) to impose economic sanctions, Iraq was one of the world's top 10 oil producers. It was also an important regional producer of cement, sulfur, as well as phosphate and urea (nitrogen) for fertilizers. According to the ranking published in the International Petroleum Encyclopedia, Iraq's crude oil reserves of more than 112 billion barrels (bbl) were the world's next largest after those of Saudi Arabia.

Before 1990, crude oil had typically provided more than 95% of foreign earnings estimated at more than \$12 billion for 1989 and more than 70% of a gross domestic product estimated by the International Monetary Fund at more than \$35 billion for 1989. War damage from the Gulf War and the earlier 1980-88 war with Iran appeared to be substantially repaired. Nevertheless, pending Iraq's full compliance with the UN resolutions, the trade embargo on everything except humanitarian needs remained a severe restriction on the country's mineral production, as well as the entire economy. Industrial production during 1995 was thus mostly limited to satisfying domestic consumption.

The Government controlled all industrial production and foreign trade for many years, although some private ownership was permitted in smaller secondary industries, services, and most of the agricultural sector. Through 1995, as in the past, the economy remained significantly oriented toward supporting large military and internal security forces, and the Government continued its long-standing policy of restricting release of statistical and even general information on industrial activity.

In September 1993, a decree issued by the ruling Revolutionary Command Council authorized partial privatization of the "thousands" of state-owned enterprises under control of the Ministry of Industry and Minerals. The oil sector was affected by earlier events. In 1992, the Government began discussions with foreign companies aimed at production-sharing agreements for direct participation in the planned expansion of the oil sector. Through 1995, these companies were from France, Italy, Russia, and Spain, and possibly other countries. Such discussions were said to be limited to preliminary agreements that could be implemented when UN cease-fire sanctions were removed. Previously, foreign firms could only provide contract services.

Mineral production information was not available from official and reliable sources. However, various press statements generally indicated that outputs had returned to about pre-Gulf War domestic demands. (*See table 1*).

Iraq stepped up its campaign to have the UN embargo removed and received some support, particularly from France and Russia, but the United States and the United Kingdom maintained opposition.

Jordan was permitted by the UN to receive 60,000 barrels per day (bbl/d) of Iraqi crude oil for processing in their Zarqa refinery plus 25,000 bbl/d of refinery products. Jordan, however, reported imports of only 41,000 bbl/d of crude oil and 13,500 bbl/d of petroleum products in 1993. Jordan also was reported to have received about 50,000 metric tons of Iraqi sulfur for phosphate fertilizer production during 1993, and in 1994 industry observers estimated about 200,000 metric tons per year (t/yr) was being sent. Both oil and sulfur were transported by truck.

Discussions on the reopening of the 1,049-kilometer (km) 1.7 million barrels per day (Mbbbl/d) capacity pipeline running from Kirkuk, Iraq, to the port at Yumurtalik, Turkey were underway in support of the limited oil-for-food sales under UN Resolution 986. The UN, under this resolution, would permit the sale of \$2,000 million worth of oil over 6 months with the proceeds going towards the purchase of humanitarian goods as well as UN cost and war reparations. Oil sales are to be monitored by the UN sanctions committee. However, as of the first quarter of 1996 no agreement had been reached as Iraq continued to object to UN restrictions on distribution of the proceeds.

The structure of the mineral industry was not fully defined in available sources, but all mineral commodity production facilities were apparently owned by the Government, except for some small local construction material operations.

Iron and steel facilities were at Khor al Zubair, southwest of Basrah in southern Iraq. Two natural gas-based direct-reduced iron units were listed with design output capacities of 543,000 t/yr and 950,000 t/yr of sponge iron, normally having a content of 90% to 92% iron. Steel facilities were described as including four 70-ton electric arc furnaces.

A uranium mine was reported northeast of Mosul, but no other details were available. Uranium also was recovered from phosphate rock during processing at a fertilizer complex in the west at Al Qaim, but no quantitative data were available.

Cement plants reported in operation totaled either 14 or 15, of which 8 had a kiln capacity of about 2 million metric tons per year (Mt/yr) or more. Most of the plants were spaced at intervals along the Euphrates River from Basrah to the Syrian border. Several plants were in the north near Mosul and Kirkuk.

Ammonia plants were at five locations: three near Basrah in the south, one at Baiji in the middle north on the Tigris River, and one at Al Qaim in the west on the Euphrates River. The nitrogen-content capacities were 110,000 t/yr for one unit near Basrah, 370,000 t/yr at Al Qaim, and 270,000 t/yr at the others.

Phosphate rock was produced from the Akashat open pit mine in the west and, after some beneficiation, was shipped by rail about 140 km northeast to a fertilizer complex at Al Qaim and the other fertilizer plants at Baiji and near Basrah.

Salt was produced from seawater at the north end of the Gulf and from salt lakes in the middle south.

Sulfur was produced from underground deposits at Mishraq, on the west bank of the Tigris River about 50 km south of Mosul in the north. Extraction was through drillholes by the Frasch process of melting with hot water. Sulfur production was improved late in 1993 when a submerged combustion distillation unit was reported to have gone on-stream at the Mishraq Mine. It was aimed at reducing carbon content to 1%. The design was supplied by Freeport Sulphur Co. of the United States prior to the Gulf War. The unit was said to be a key part of the plan to increase Frasch sulfur production capacity to 2 Mt/yr. Additional byproduct sulfur came from processing oil and gas at several locations.

Natural gas produced in Iraq was mostly associated gas, and according to the Government, satisfying the domestic demand for gas required producing oil that exceeded the domestic demand for oil, with the surplus oil being reinjected.

In petroleum, two French companies appeared to have reached an agreement with the Iraq Government to directly

participate in developing large new oilfields in the south after UN sanctions are removed: Elf Aquitaine at Majnoon and Total at Nahr Umr. Additionally, Italy's Agip SpA, Russia's Lukoil, and Spain's Repsol S.A. were pursuing discussions to develop other large fields in the south. Iraq announced that such foreign investment was aimed at helping achieve a crude oil production capacity goal of 6 Mbbl/d by the end of the century.

The Iraqi Minister of Oil reported that total production capacity was about 2.5 Mbbl/d but actual production was about 700,000 bbl/d mostly for domestic consumption. Production from the Khabbaz field, about 30 km west of Kirkuk, commenced in March 1994 at 30,000 bbl/d of oil and 1.25 billion cubic meters per day of natural gas.

Refining capacity was projected to increase by 290,000 bbl/d when a refinery at Babylon, about 125 km south of Baghdad, eventually comes on-stream. According to Government statements, there was more than sufficient capacity to meet domestic needs without the new refinery.

Reserves announced by the Government as of January 1, 1995, included crude oil reserves of 112 billion bbl and gas reserves estimated at 3 trillion cubic meters.

Infrastructure facilities appeared to be reasonably adequate for more populated areas, although electric power shortages continued to be reported during 1995.

The outlook is for increased energy and non-fuel mineral production once the Government conforms to UN cease-fire resolutions and sanctions are removed.

Major Sources of Information

Ministry of Industry

P.O. Box 2075, Baghdad

Ministry of Oil

P.O. Box 6178

Al Mansoor City, Baghdad

Phone: (964) 1 541 0031

TABLE 1
IRAQ: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity 2/	1991	1992	1993	1994	1995
METALS					
Iron and steel: Steel crude	20	100	300	300	300
INDUSTRIAL MINERALS					
Cement, hydraulic	5,000	10,000	12,000	15,000 r/	18,000
Nitrogen, N content of ammonia	40	200	500	500	500
Phosphate rock:					
Beneficiated 3/	400	600	800	1,000	1,000
Phosphorus pentoxide content	120	180	240	300	300
Salt	120	250	300	300	250
Sulfur, elemental:					
Native, Frasch	250	250 r/	250 r/	250 r/	250
Byproduct 4/	50	100	200	225 r/	225
Total	300	350 r/	450 r/	475 r/	475
MINERAL FUELS AND RELATED MATERIALS					
Gas, natural:					
Gross	1,890 r/	2,480 r/	5,000	5,000	5,000
Dry	1,100	1,400	3,000	3,000	3,000
Natural gas plant liquids	3,000	6,000	10,000	10,000	10,000
Petroleum:					
Crude (including lease condensate)	111,300	164,000	186,900	200,000 r/	200,700
Refinery products	100,000	160,000 r/	180,000 r/	200,000 r/	200,000

r/ Revised.

1/ Includes data available through May 1996.

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 tons per ton of finished cement), lime, and construction stone; clay and/or shale for cement (about 0.4 ton per 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.