

THE MINERAL INDUSTRY OF JORDAN

By Bernadette Michalski

The major mineral commodities produced in Jordan were bulk phosphate rock, phosphatic fertilizers, potash, and limestone. Jordan ranked within the top five in global phosphate rock production and was a major world producer of potash. Jordan's population for 1995 was 4.1 million. The gross domestic product (GDP) was reported at \$6,345 million¹, or a 6% growth rate in 1995. Inflation was held at 3.0% to 3.5%.

The Provisional Law of Natural Resources 37 of 1966, amended, was the basic mining law of Jordan. The law permitted private Jordanian or foreign national ownership of a mine or quarry with the provision that mine management be Jordanian.

Along with phosphate rock, finished fertilizers, and potash, Jordan produced significant amounts of other industrial minerals, such as calcium carbonate, dolomite, building stone, and aggregates. Jordan was also a significant regional cement producer. (*See table 1.*)

Revenues for Jordanian bulk phosphate and fertilizer exports typically account for almost one-third of the nation's total export revenues. The Government reported that total Jordanian exports were valued at \$1,635 million, with total imports valued at \$3,410 million in 1995. The Jordan Cement Factories Co. reported 887,023 tons of cement exported in 1994, mostly to Saudi Arabia and Yemen. Jordan imported most of its petroleum requirements from Iraq under a series of agreements which has been renewed annually since 1991 with the approval of the United Nations' Sanctions Committee. During this period, imports of crude oil ranged from 40,000 barrels per day (bbl/d) to 60,000 bbl/d and petroleum products between 17,000 bbl/d and 25,000 bbl/d. All deliveries were made by truck.

The Jordan Natural Resources Authority (NRA) was the Government agency responsible for all activities related to the exploration and development of minerals and mineral fuels. The exploitation of the major mineral commodities of Jordan—cement, kaolin, phosphates, potash, and rock wool—were all controlled by parastatals. Aggregates, basalt, calcium carbonate, dimensional stone, glass sand, and natural sand were produced by private-sector firms.

The Arab Gypsum Manufacturing Co. (AGMO) was established in 1994 as a private share holding company. Major investors include Jordan Phosphate Mines Co., Jordan Investment Corp., Jordan Cement Factories, the Industrial

Development Bank, and the Public Mining Co. AGMO plans to construct a 15,000 metric tons per year (t/yr) gypsum plaster plant. Most of the Nation's 8,000-t/yr requirement was imported from neighboring Arab states.

The Jordan Phosphate Mines Co., a company wholly owned by the Jordanian Government, has attempted to increase its global market share of phosphate and derivative products through aggressive marketing and third-party trading. The development of the phosphate reserves at the Ash Shidiya Mine, when fully completed, was expected to result in the latter mine replacing the existing Al-Hasa Mine and the mine at Wadi Al Abyad. This was expected to take place by the year 2000.

Potash was produced by the Arab Potash Co. (APC) from brines at its Dead Sea facility. Since 1985, APC had sustained potash production at levels greater than 90% of design capacity, which was 1.8 million metric tons per year (Mt/yr). Additionally, for 1995 APC was considering upgrading its carnallite crystallization pond to increase the surface area for evaporation. Australia's Neumann Equipment Ltd. was to supply APC with a new \$2 million bucketwheel suction dredge to mine salt from shallow excavation ponds in the Dead Sea and was to supervise the shipping, assembly, and commissioning of the dredge at the Dead Sea site. Jordanian Industrial Dead Sea Minerals Co. had been created at yearend 1994 to set up pilot studies for the harvesting of bromine and non-potash minerals from the Dead Sea.

The NRA estimated Jordanian phosphate rock reserves at 1 billion tons. Potash was obtained primarily from Dead Sea brines. The World Bank estimated that of the dissolved solids contained in the Dead Sea, 33 billion tons was sodium chloride and magnesium chloride and about 2 billion tons was potassium chloride.

Jordan's infrastructure was sufficient for current mining operations. Railroads within Jordan consisted of 619 kilometers (km) of 1.05-meter-gauge single track. Crude oil pipelines within the country totaled 209 km. Primary export terminals were at the Port of Aqaba, where potash storage capacity was about 160,000 metric tons (t). The Jordanian Government was considering construction of a \$300 million liquefied natural gas (LNG) terminal in Aqaba. The proposed Aqaba terminal will receive about 2.5 million metric tons (Mt) of LNG annually from Enron's planned liquefaction

plant in Qatar.

Various projects to improve the mining industry infrastructure, including a possible new oil refinery and fertilizer plant in Aqaba along with a more aggressive petroleum exploration program, indicated the Government's willingness to improve that sector of the economy. The NRA claimed that 60,000 square kilometers of Jordan had been unexplored for economic minerals or mineral fuels. Jordan's apparent lack of domestic energy sources, mainly hydrocarbons, was expected to continue to stress the nation's balance of trade owing to fuel importation costs.

¹Where necessary, values have been converted from Jordanian dinars (JD) to U.S. dollars at the rate of JD0.70=US\$1.00.

Major Source of Information

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TABLE 1
JORDAN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1991	1992	1993	1994	1995 e/
Cement, hydraulic thousand tons	3,160	3,130	6,400 r/	6,400 r/ e/	6,400
Clays	46,200	34,446	47,174	47,200 e/	47,200
Gypsum	55,300	83,038	194,981	193,000 r/ e/	190,000
Iron and steel, steel, crude e/	30,000 r/	30,000 r/	30,000 r/	30,000 r/	30,000
Lime	4,600	7,120	7,270	7,270 e/	7,275
Petroleum:					
Crude 2/ thousand 42-gallon barrels	125 r/	16 r/	11 r/	-- r/	--
Refinery products:					
Liquefied petroleum gas do.	1,100	1,300 r/	1,500 r/	1,500 r/ e/	1,500
Gasoline do.	3,000 r/	3,895 r/	4,100 r/	4,130 r/ e/	4,500
Jet fuel do.	1,100 r/	1,650 r/	1,600 r/	1,600 r/ e/	1,700
Kerosene do.	1,500	2,350 r/	2,300 r/	2,350 r/ e/	2,350
Distillate fuel oil do.	4,800 r/	5,610 r/	5,500	5,500 e/	6,000
Residual fuel oil do.	4,970 r/	5,625 r/	5,240 r/	5,200 r/ e/	5,600
Other do.	2,100	2,400 r/	2,350 r/	2,200 r/ e/	2,200
Total do.	18,570 r/	22,830 r/	22,590 r/	22,480 r/ e/	23,850
Phosphate:					
Mine output:					
Gross weight thousand tons	4,461 r/	4,296	4,222 r/	4,218	4,983 3/
P2O5 content do.	1,472 r/	1,418 r/	1,393 r/	1,399	1,655 3/
Phosphatic fertilizers	602,100 r/	553,600 r/	469,900 r/	749,700 r/	775,000
Potash:					
Crude salts thousand tons	1,451 r/	1,261 r/	1,511 r/	1,550 r/	1,600
K2O equivalent do.	870 r/	756 r/	822	930 r/	1,060
Salt	57,000	56,000	26,000	26,000 e/	25,000
Stone:					
Limestone	136,000 e/	115,397	5,336	5,340 e/	5,340
Marble	180,000	200,000	112,000	112,000 e/	112,000

e/ Estimated. r/ Revised.

1/ Table includes data available through May 15, 1996.

2/ The Hamza Field was closed in mid-1993.

3/ Reported figure.