THE MINERAL INDUSTRY OF

OMAN

By Bernadette Michalski

Petroleum and natural gas continued to underwrite Oman's developing economy in 1995, which provided more than 85% of Government revenues. Commercially viable mineral ventures included the mining of chromite, the mining and refining of copper with gold and silver as byproducts, the manufacture of cement, and the production of crushed and dimension stone and sand and gravel. The main industrial facilities also included a petroleum refinery and natural gas processing plants. The mineral industry accounted for about one-half of the gross domestic product, estimated at nearly $12 billion[1] by the Omani Development Council.

Oman, which is not a member of Organization of Petroleum Exporting Countries (OPEC), plays a prominent role in the Independent Petroleum Exporting Countries group, often acting as a liaison between that group and OPEC. The Sultanate of Oman has on several occasions cut oil production in support of OPEC. In the first quarter of 1994, Oman announced a 5% production cut from 800,000 barrels per day (bbl/d) to 760,000 bbl/d to help bolster world prices.

The Government had engaged in several international ventures to diversify and broaden its hydrocarbon revenue base. These include the Government's participation in the Caspian Pipeline Consortium, which will transport crude oil from the Tengiz Field in Kazakstan to the Black Sea; an Omani natural gas liquefaction project to supply growing Asian markets; construction of an undersea pipeline capable of delivering 50 million cubic meters per day (Mm^3/d) of Omani natural gas to India's west coast industries; the construction of two 120,000-bbl/d petroleum refineries in partnership with India's Hindustan Petroleum Co. and Baharat Oil Co.; and the construction of a 130,000-bbl/d refinery in Thailand in partnership with Caltex and the Petroleum Authority of Thailand for which Oman was to provide 60% of crude oil throughput.

Crude oil production increased to record levels as development activity and enhanced recovery operations continued. In spite of first quarter cutbacks, crude oil production averaged about 851,000 bbl/d in 1995. Less than 10% of the crude oil production was refined in Oman. One-half of the resulting product yield was absorbed by the domestic market. Surplus refined products, mostly fuel oil, were exported.

Chromite production, entirely destined for export markets, was hampered by diminished prices. Copper ore output was reduced, largely because of declining grade at the older surface mines and difficult conditions at the underground Aarja Mine. The smelter and refinery operated by the Oman Mining Co. supplemented domestic copper production with imported concentrates for toll and custom smelting. *(See table 1.)*

Oman exported more than 90% of its crude oil production in 1995. Both the heavier crudes of the south and the lighter crudes of the north are gathered and blended into the Omani Export Blend. The bulk of Oman's petroleum exports were destined for Asia. Japan alone received more than one-third of the Oman's petroleum exports. Other importers, by order of magnitude, included Korea, Singapore, China, Thailand, and India. The United States imported 8.1 million barrels (Mbbl) of crude and unfinished oils in 1995.

The Petroleum and Mineral Law of Oman, effective since January 1, 1975, governed all mineral activities. The royalty tax rate was fixed by a 1976 decree at 20% of the value of production. The Government maintained a majority interest in most companies; however, foreign partnerships were encouraged. The Oman Chromite Co. has limited government participation with major equities held by private interests.

In recent years, Oman's copper ore production was extracted from several operations near Sohar. The blended ore from all mines was beneficiated to yield a concentrate that was processed at the smelter and refinery. Copper cathodes, the bulk of which were processed from imported concentrates to more fully utilize the refining capacity, were exported from the Port of Majis, about 17 kilometers (km) northwest of Sohar.

About 7 Mm^3/d of natural gas was produced from the Yibal Field, while the Fahud and Sayh Nuhaydah Fields each accounted for almost 1 Mm^3/d. The Bukha natural gasfield started production at yearend 1993 at the initial rate of 5,600 bbl/d of natural gas liquids and 1.1 Mm^3/d of dry natural gas. Natural gas from this field will be transported by underwater pipeline to the Khor Khwair plant in Ras Al Khaimah, one of the United Arab Emirates, for processing.

The collection and processing of natural gas in Oman was networked to three plants: the Fahud gas processing plant, the 2.2-Mm^3/d-capacity Sayh Nuhaydah gas treatment plant, and the 16.6 Mm^3/d-capacity Yibal gas processing plant. The Government Gas System received more than one-third of production, which was primarily used as fuel for electric power generation. It was also piped to the Sultan Qaboos University, and connecting lines extend up the Batinah Coast to Sohar at the site of the copper refinery. The Government Gas System included a pipeline that carried gas from Yibal to the Ghubrah desalinization and powerplant and to the

Rusayl Industrial Estate, near Muscat. A pipeline also extends south from Sayh Nuhaydah to Zufar, transported gas for use in the southern oilfields. Field operations, including reinjection, absorbed about one-half of the natural gas produced. Less than 10% was flared or lost in transmission.

The Government, reserving a majority equity position of 51% in Oman Liquefied Natural Gas LLC, a joint venture including Royal Dutch Shell, 34%; Total, 6%; Mitsubishi and Mitsui each 3%; Partex, 2% and Itochu, 1%. is responsible for natural gas liquefaction, shipping, and marketing. The group's proposed $9 billion natural gas liquefaction project was expected to yield 6.6 million metric tons (Mt) of liquefied natural gas (LNG) annually with a proposed startup date in the year 2000. The LNG plant site is to be at Bimmah, 150 km southeast of Muscat.

The Petroleum Development Oman Co. accounted for more than 95% of the Nation's total petroleum production. The company operated more than 1,600 crude oil production wells from 72 producing fields, which were linked to 40 gathering stations.

The Omani-sponsored Caspian Pipeline Consortium awarded contracts to build a pipeline system linking the Caspian and Black Seas. The 750-km-long pipeline was expected to carry oil from Kazakstan, Azerbaijan, and Russia, terminating at the port of Novorossiysk on the west coast of the Black Sea. Initial capacity was expected to be 300,000 bbl/d, rising eventually to 1.5 Mbbl/d. Azerbaijan, Kazakstan, Oman, and Russia had an equal interest in the consortium. The Omani Government took a 20% interest in a 120,000-bbl/d refinery to be constructed in Rayong, Thailand. The new refinery was expected to accept Omani crude for processing.

The Ministry of Petroleum and Minerals had reported proven copper ore reserves at 8 Mt and proven chromite ore reserves at 1.6 Mt. Recoverable petroleum reserves were estimated by the Ministry of Petroleum and Minerals at 5.2 billion barrels. Reportedly, at least an additional 1.5 billion bbls could be recovered through steam soak, polymer and steam flooding, hot-water injection and/or electromagnetic heating of the reservoirs. Recoverable reserves of natural gas were reported at 700 billion cubic meters (m^3), most of which was nonassociated natural gas.

Petroleum and natural gas pipelines totaled more than 1,600 km. The bulk of crude oil production was serviced by the central pipeline running from the Dhiab Field in the south to the Mina al-Fahal export terminal near Muscat.

An agreement was signed with the Kuwait Fund for Arab Economic Development for $20.4 million to help finance an expansion of the Port of Mina Qaboos at an estimated cost of $65 million. The port's annual capacity was to be expanded from 1.6 Mt to 2.6 Mt.

Projects augmenting the central electric grid generating capacity and extending the power network were in various stages of implementation. Expansion work at Oman's largest power station, was completed in 1995, including the installation of two additional 125-megawatt-capacity natural gas turbines.

Foreign workers made up about 65% of Oman's labor force of 422,000. The Government had introduced legislation to minimize dependence on expatriate workers. The legislation banned expatriates from taking a range of jobs in an attempt to create job opportunities for nationals. Jobs now restricted only to Omanis included mechanical equipment operation.

The Sultanate of Oman had enjoyed a stable economy sustained by hydrocarbon revenues for more than a decade, and the economy was expected to continue in this vein. Improving technology augmented reserves that continued to outpace reservoir withdrawals, affording a substantial economic base for at least the next 17 years at the current rate of production. Increasing overseas investments should help place Oman in a more secure position when its own petroleum reserves are depleted.

The formation of the Oman Chromite Co., 15% state-owned, 45% allocated to local companies, and the remainder floated on the stock exchange, reflected the Government's interest in encouraging private involvement in major mineral industries.

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[1]Values were converted from Omani rial (RO) to U.S. dollars at the rate of RO.385=US$1.00.

Major Sources of Information

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TABLE 1
OMAN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1991	1992	1993	1994	1995 e/
Cement, hydraulic	thousand tons	995	970	1,000	1,200 r/	1,400
Chromite, gross weight		--	1,760	10,236	6,166	5,300
Copper:						
Mine output, Cu content		13,500 r/	13,600	12,000 e/	6,500	--
Metal:						
Smelter		12,200	15,000	27,700 2/	31,200 r/ 3/	34,200 3/
Refinery		11,413	16,236	20,539 4/	24,194 r/ 3/	33,900 3/
Gas, natural:						
Gross	million cubic meters	5,300	5,300	5,400	6,000 r/ e/	6,000
Dry	do.	3,030	3,110	3,150	3,200 e/	3,200
Gold	kilograms	58	94	90	137 r/	532 5/
Natural gas liquids	thousand 42-gallon barrels	2,200	2,300	2,300	2,300	2,300
Petroleum:						
Crude	do.	258,500	270,800	283,240 r/	293,800	310,600
Refinery products:						
Gasoline	do.	4,080	4,440	4,500	4,600 e/	4,600
Jet fuel	do.	2,380	2,370	2,500	2,500 e/	2,500
Kerosene	do.	85	80	90	90 e/	90
Distillate fuel oil	do.	4,570	4,580	4,600	4,800 e/	4,800
Residual fuel oil	do.	11,300	12,100	12,500	12,500 e/	12,500
Other	do.	800	850	900	900 e/	900
Total	do.	23,215	24,420	25,090	25,390 e/	25,390
Sand and gravel	thousand tons	5,900	6,540	6,500	6,500 e/	6,500
Silver	kilograms	2,830	3,205	3,300	3,000 r/ e/	3,000
Stone:						
Marble	thousand tons	35	54	76	70	145
Other	do.	2,000	1,960	1,930	2,000 e/	2,000
Sulfur e/		40,000	40,000	40,000	40,000	35,000

e/ Estimated. r/ Revised.

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

2/ Includes 17,800 metric tons of anode as toll/custom output.

3/ Reported figure. Includes toll/custom output.

4/ Includes 12,600 metric tons of cathode as toll/custom output.

5/ Reported figure.