THE MINERAL INDUSTRY OF

NAMIBIA

By George J. Coakley

The mineral industry of Namibia provided about 11% of the country's $3.2 billion[1] gross domestic product in 1996 and annually contributes to approximately 50% of the value of total exports earnings. The industry is dominated by three established mining companies namely: Namdeb Diamond Corp. (Pty.) Ltd., Rossing Uranium Ltd., and Tsumeb Corp. Ltd., with the Government's proactive policies encouraging new entrants in copper, diamonds, natural gas, and zinc.

Encouraged by a favorable investment environment and the supporting technical resource assessment work of the Geological Survey of Namibia, over 60 companies were actively exploring in 1996 (Mining Journal, 1997). A number of Australian and Canadian companies, predominately exploring for diamonds and gold, augmented local prospecting activities. During the year, 488 nonexclusive prospecting licenses, 53 exclusive prospecting licenses, and 2 mining licenses were issued by the Government. The Chamber of Mines membership reported exploration expenditures of over $25 million in 1996. Marine diamond exploration was maintained in high gear with Namibian Minerals Corp. (Namco) and Ocean Diamond Mining Holdings (ODM) most active and expected to move into production in 1997. The often acerbic relationship, which was developed between land owners, prospecting companies, and individuals was finally legally addressed in 1996 by the formation of the Minerals Ancillary Commission which produced several successful solutions on a number of issues.

Government Policies and Programs

The basic mining law is the Minerals (Prospecting and Mining) Act, No. 33 of 1992, which took effect on April 1, 1994. It provided for a standard licensing regime with special provisions to promote investment by foreign and domestic enterprises in minerals exploration and extraction. An accompanying Mining (Taxation) Act set forth revised fiscal provisions for the industry. The main innovation was a provision for royalty payments by producers to the Government. The Chamber of Mines of Namibia outlined the mining tax environment in a late 1995 promotional publication (Chamber of Mines of Namibia, 1995).

With regard to mining activities, excluding petroleum and diamond mines, the Minerals Act allows all exploration expenditures incurred before the startup of mining to be written off in the first year of production and subsequent exploration expenditures in the year incurred. In the case of development expenditures, however, the new act stipulated that only one-third could be written off in the year incurred and one-third in each of the two ensuing years. The new progressive tax rates applicable to nondiamond and nonpetroleum mining companies vary from 25% to 55%, with most companies' rates ranging from 25% to 40%.

The system of taxation on diamond mining consisted of three separate taxes: income, diamond profits, and diamond export duties. The latter has now been replaced by a 10% royalty. The overall income tax on diamond mining companies is levied at the rate of 55% of taxable income, plus a surcharge of 10% on the market value of diamonds shipped and sold. The Income Tax Act provides that this 10% surcharge paid as diamond profits tax be credited against the income tax payable by diamond mines.

The fiscal regime for oil exploration companies consists of three principal elements: an income tax and an Additional Profits Tax (APT), both levied in terms of the Petroleum (Taxation) Act, No. 3 of 1991; and a royalty, levied in terms of the Petroleum (Exploration and Production) Act, No. 2 of 1991. With respect to the income tax, the applicable tax rate is 42% of taxable income. The APT is a tax on profits above a level necessary to earn a reasonable rate of return on investment. A three-tiered incremental APT scheme is provided in this legislation. The first-tier APT rate is at 25% when the net rate of return reaches 15%. The second- and third-tier incremental APT rates are negotiated between the Government and the oil company. As in the case of the petroleum income tax, the APT is applied on a license or contract area basis. This means that expenditures incurred on different oilfields within the same license can be deducted from the revenues generated not only by a particular oilfield but from any and all others in the license area, thereby reducing the negative financial impact of any unsuccessful drilling programs. The Petroleum (Exploration and Production) Act, No. 2 of 1991, provides that the holder of a production license for petroleum is required to pay to the State Revenue Fund a royalty of 12.5% of the market value of petroleum produced. However, the act provides that the Minister of Mines and Energy may, in concurrence with the Minister of Finance, remit wholly or partly any payable royalty, or defer payment of any such royalty with the intention to assist any marginal oilfield development.

The Foreign Investment Act of 1990 offers prospective investors a package of incentives, such as repatriation of profits, security of title and tenure, availability of foreign exchange,

[1] Where necessary, values have been converted from the Namibian dollar (ND) to U.S. dollars at the rate of N$4.6=US$1.00 for 1996 and N$3.63= US$1.00 for 1995.

international arbitration, and fair compensation in case of expropriation.

The Ministry of Mines and Energy is responsible for making and enforcing policies related to minerals and energy. Within the ministry and attached to the Permanent Secretary are the Diamond Board, the Mining Advisory Board, and the National Energy Council, all of which have Government and private-sector representation. The Namibia Petroleum Co. and the Namibia Electricity Development Co. also are part of the ministry. The four main directorates in the ministry are the Geological Survey, Mining, Energy, and Administration and Finance. The three main functions of the Mining Directorate are evaluating and controlling mineral license applications; ensuring adequate safety standards in mining operations; and collecting, analyzing, and disseminating production statistics. An Ancillary Rights Commisssion was set up by the Ministry to handle dispute arbitration.

The Government also is empowered to review exploration licenses issued under the previous mining law to determine if the holders of the licenses are actually conducting exploration activities. If the Government determines that insufficient work is being done, it can revoke the license and make an award to someone else. That review was expected to free up considerable land area for exploration, previously locked up by the practice of "ringfencing" of claims.

Environmental Issues

As one of the major sectors of the economy, the mining industry plays an active role in funding conservation awareness and environmental education programs. Some of Namibia's mines are located in or close to one of the world's oldest deserts, the Namib, which is host to a number of extremely rare species of plant and animal life. This unique habitat is one of Namibia's most valuable tourist assets and the ecosystem are closely monitored by the local and international scientific and conservation communities. The competition for limited water resources between human and industrial use will remain an ongoing environmental concern for the country.

In addition to the desert, Namibia possesses several "wetland" areas of international repute, particularly the Etosha Salt Pan, the Okavango/Caprivi region, and in the vicinity of the Walvis Bay lagoon and Sandwich Harbor and the Orange River environs. The fragile nature of these desert and wetland ecosystems must be taken into account during the consideration of any infrastructure projects such as resource trade oriented railroads or pipelines between Walvis Bay and northeast Namibia and Botswana. Comprehensive studies have been undertaken to assess the effects of marine mining operations with respect to these areas and, in particular, the changes in tidal patterns caused by the disposal of offshore fines. In addition, work is being carried out to assess the extent of any interaction between marine mining activities and the local fishing (mainly lobster) and mariculture (oyster and mussel production) industries and to provide information which will assist these industries to develop and coexist with minimal adverse effects upon each other.

Production and Trade

The production statistics in table 1 were compiled mostly from the Namibia Ministry of Mines and Energy response to the U.S. Geological Survey's annual minerals questionnaire and from Chamber of Mines and company reports. Production of mineral commodities generally declined in Namibia in 1996, compared with 1995 output. Gold, diamond, uranium, and zinc production showed slight improvement, while declines in copper mine and copper and lead smelter production were attributed to strike activity at Tsumeb. Lithium minerals and semiprecious stones were generally lower in 1996.

The latest available trade data showed that ores and minerals accounted for 51.2% of the value of total exports of $1.43 billion in 1995, compared to 49.4% of the value of total exports of $1.34 billion in 1994 (Africa Trade and Business Bulletin, 1998). Diamond was the major mineral export valued at $485 million in 1995, followed by gold at $70 million, combined lead-zinc-silver exports at $36 million and all others, including uranium, valued at $113 million. Available breakouts on 1994 total imports of $1.4 billion showed that mineral fuels and lubricants accounted for $144 million and metals and metal products, $72 million.

In general, relations between the Mineworkers Union of Namibia (MUN) and the various corporate members of the Chamber of Mines were cordial with annual wage negotiations conducted in an expeditious manner. Various agreements between the MUN and Chamber members were signed, including an Occupational Health and Safety agreement, and in the case of Namdeb, a Localization and Succession Planning Agreement. The most important dispute occurred between the MUN and Tsumeb Corp. Ltd., resulting in a strike action from August 22 to October 5. Finally, the intervention of the Prime Minister's office resolved the dispute.

The Chamber of Mines during 1996, consists of 56 company representatives, compared with 47 members in 1995. The majority of mining companies in Namibia were owned privately, whereas Government participation in mining remained limited as shown in table 2.

Commodity Review

Metals

Antimony.—The Tsumeb smelter plant reported production of 16 tons of sodium antimonate, containing approximately 47% antimony.

Copper.—A major strike action against the Tsumeb Corp. Ltd. late in 1996 contributed to declines of more than 30% in copper mine and smelter production compared with 1995. The 6-week strike action by MUN, fought over wage increases, was settled in early October when MUN agreed to a 10.5% wage increase (Mining Journal, 1996b). Flooding of the mines and the seizing up of the smelter during the strike closure led to over $5 million in damages that was subsequently recovered by insurance (Metal Bulletin, 1996b; U.S. Embassy, Windhoek,

Namibia, 1996). After 95 years of continuous mining, the world famous Tsumeb Mine ceased copper production in 1996. During its lifetime, the mine produced 29 million metric tons (Mt) of ore grading about 5% copper, 15% lead, 150 grams per ton silver, and up to 2% zinc (Mining Journal, 1997). During the year the company also opened its new, small, high grade, Khusib copper-silver-lead mine to supplement Kombat and Ojithase copper concentrate feed to the reopened Tsumeb copper smelter. Commissioning of a new tailings retreatment project was also delayed by the strike.

In other copper developments, Namibia-Australian Exploration (Namaust) announced plans to establish a small open pit mine at its newly discovered copper deposit near Kobos, 50 kilometers (km) southwest of Rehoboth. Namaust reported resources of 138,000 metric tons (t) grading 1.1% copper. The Australian firm, Great Fitzroy Mines (20%) and their American joint-venture partner, Namibia Copper Mines (80%) began a bankable feasibility study, to be completed by January 1997, aimed at bringing the Haib porphyry copper deposit into production by mid-1998. The Haib deposit has a reported minable resource of 300 Mt of 0.41% copper and a lower grade resource of nearly 1 billion tons averaging 0.19% copper. Project costs are estimated at $600 million to develop the mine and associated solvent extraction/electrowinning facilities. Annual production capacity is expected to be 85,000 t of copper, 311 kilograms of gold and 357 t of molybdenum (Metal Bulletin, 1996a; Mining Journal, 1996a).

Gold.—In 1996, gold production decreased by some 16% from 1995. Erongo Mining and Exploration Co. Ltd.'s Navachab gold mine produced 1,863 kg, accounting for 87% of the national total during 1996. The ore treatment plant at Navachab was to be upgraded during 1997 to increase throughput to 1.3 million metric tons per year (Mt/yr).

Lead and Zinc.— In 1996, lead and zinc was produced by two companies, Tsumeb and the reconstituted owners of the Rosh Pinah Mine, Imcor Tin (Pty.) Ltd. Tsumeb produced 26,636 t of lead concentrates and 8,588 t of refined lead. The commissioning of the new 30,000 metric tons per year (t/yr) Ausmelt smelter was delayed by the industrial strike action at Tsumeb in 1996 and was scheduled to commence operation in early 1997. The environmentally cleaner Ausmelt technology from Australia will replace Tsumeb's sinter plant and blast furnace technology.

Rosh Pinah mine/mill output included 69,689 t of zinc concentrate containing 35,873 t of zinc metal and 28,211 t of lead concentrates containing 12,416 t of lead metal and 12.4 t of silver. Rosh Pinah went through a major corporate restructuring during 1996 with Iscor Ltd. of South Africa buying out the minority partner Moly Copper Mining and Exploration Co. of Namibia and shifting the operating company from its subsidiary, Imcor Zinc (Pty.) Ltd. to Imcor Tin (Pty.) Ltd. Iscor then sold a 100% interest in Imcor Tin to the Australian company Western Metals Ltd. Minority shares in Western Metals are held by Iscor (27%) and Padaeng Industry of Thailand (20%). Western Metals was examining the potential to expand capacity at Rosh Pinah from 600,000 t/yr of ore to 1 Mt/yr for an investment of $30 million (Mining Journal, 1996c; Iscor Ltd., 1996).

In a potentially major sectoral development, Reunion Mining of the United Kingdom, acquired an option to earn a 60% interest in the Scorpion zinc deposit, 20 km north of the Rosh Pinah Mine, from the Anglo American subsidiary, Erongo Mining and Exploration Co. Ltd. by spending at least $1 million and committing to develop a mine. Resources are estimated at 8.3 Mt grading 10.9% zinc. Prefeasibility studies suggested that the ore was amenable to sulfuric acid leaching and electrowinning. The final feasibility study was expected in the first quarter 1997 (Reunion Mining, 1996; African Mining, 1996).

Manganese.—Production of manganese from Otjosondu Mine, 160 km northeast of Windhoek was 7.2% less than the 1995 output. Privately owned Purity Manganese in order to produce a more marketable product introduced selective mining during the year. The operation consisting of surface mining, followed by crushing, screening, and jigging recovers a marketable product of 45% manganese with a 0.035% of phosphorous content. Most of the manganese product was exported.

Uranium.—Responding to a rise in the long stagnant uranium market, Rossing Uranium Ltd., increased production of uranium oxide by over 20% to 2,890 in 1996. However, this still left the mine operating at only about 60% of capacity. Rossing, owned 68.6% by RTZ Corp. plc., planned to spend $10 million to rehabilitate the mine during 1996 and 1997. The 3-year refurbishment of the metallurgical plant, including the Continuous Ion Exchange plant was completed by the end of 1995. The company reported current ore reserves of 105,000 t of uranium oxide (Rossing Uranium Ltd., 1996). According to the Uranium Institute, Rossing was the fourth largest producing uranium mine in the world in 1996.

Industrial Minerals

Diamond.—Production of diamonds in Namibia increased by nearly 3% in 1996 to 1.42 million carats. Namdeb Diamond Corp. accounted for 1.36 million carats of this output, all from onshore mining near the mouth of the Orange River.

De Beers Marine (DBM), a subsidiary of the South African-based De Beers Consolidated Mines, handled offshore marine mining for Namdeb, accounting for 30% of Namdeb diamond production in 1996. DBM developed new generation of undersea mining equipment, to mine lower-grade deposits economically. DBM's floating treatment plant with a 3,500-ton-per-hour capacity was tested during the year and the company planned to commission it in 1997. Namdeb's dredging project, which was to be commissioned in January 1997, incurred capital expenditure of $43 million in 1996. Also during the year, De Beers announced plans to establish a diamond cutting and polishing plant at Okahandja. Capital cost was estimated at $12 million and the plant was scheduled for

operation in early 1998.

In early February 1996, Namco, a United Kingdom-based firm listed on the Vancouver and Namibian stock exchanges, announced plans to start commercial mining of diamonds in early 1997, following favorable bulk sampling results on its Hottentots Bay and Luderitz Bay marine concessions. The result of bulk samplings were not published. A third marine diamond miner, ODM was also expected to move from exploration to the production phase in 1997. For the fiscal year ending March 1997, ODM produced 57,000 carats from two offshore vessels while evaluating concessions within the 3 mile limit offshore from Luderitz (Mbendi, 1997a).

Fluorspar.—In 1996, Okorusu Fluorspar (Pty) Ltd. experienced a further decline in fluorspar production of 32,285 t compared with 36,889 t in 1995. The problem of excess silica in the new ore body was not resolved during the year. Exploration work continued in the permit area for a mineralogically suitable acid grade fluorspar. A new heavy media separation plant was purchased at the end of 1996 and was to be commissioned by February 1997. This new equipment may resolve the silica problem. The Ministry of Mines and Energy approved the company receiving a European Community, Sysmin, soft loan of $1.4 million to assist in removing 1.2 Mt of overburden needed to reactivate the "A" pit at Okorusu. Okorusu Fluorspar (Pty.) Ltd.'s major customer for acid grade fluorspar, Solvay, was negotiating to acquire an equity interest in the mine during 1996.

Salt.—Production of salt, industrial and refined, decreased in 1996, compared with 1995. The main reason for the decrease was the lack of a West African market, which was the major purchaser. Domestic sales of coarse salt were predominantly directed to the agricultural market which was plagued by the persistent drought during 1996. Sales of refined salt maintained a steady increase during the year and some 1,715 t were sold in 1996 as compared with 1,670 t in 1995.

Although there was tremendous potential for expansion of Namibian salt production, the industry is limited to extremely competitive pricing by other producers and is heavily influenced by transportation costs.

Mineral Fuels

Namibia has held two licensing rounds in 1991 and 1994 to attract companies to explore the petroleum and natural gas potential of the country. Exploration to-date has identified four main offshore gas basins: (1) Namibe Basin, in the north, extending to Walvis Ridge, (2) Walvis Basin, (3) Luderitz Basin which covers an area from Walvis Basin to Luderitz and (4) Orange Basin, which extends to the south to South Africa's border.

The most promising field is the Kudu Block, which was originally discovered by Chevron in 1973. The Kudu Block is now held by Shell Exploration and Production BV of the Netherlands (75%), Texaco Namibia Resources of the United States (15%), and Energy Africa of South Africa (10%). Estimates by Namibia's national electricity company, NamPower, formerly Swawek, indicated that this field contained reserves of 85 billion cubic meters of low-sulfur natural gas and could achieve gas flow rates in excess of 2.1 million cubic meters per day. Intensive seismic studies indicate the potential for up to 283 billion cubic meters, sufficient to power a 2,000-megawatt powerplant for more than a century (U.S. Embassy, Pretoria, South Africa, 1996). Other reports indicate that Shell and the Kudu Field's other operators feel that these reserve estimates may be too optimistic and that Kudu recoverable gas reserves are more in the order of 56 billion cubic meters (Mbendi, 1997b). Namibia was targeting three outlets for the Kudu natural gas: the South African market; power generation; and steel, metallurgical, fertilizer, and petrochemical facilities probably at Walvis Bay. These considerations by Namibia parallel options being considered by Mozambique for development of the Pande natural gas field.

Other companies actively exploring for hydrocarbons in Namibia include: Chevron Overseas (Namibia) Ltd. (75%) and Energy Africa (25%) in Block 2815; Norsk Hydro (40%), Statoil (30%), and Saga (30%), all of Norway, in Block 1911; Sasol Ltd. of South Africa in Block 2012; and a joint venture between Canadian Ranger Oil (operators), Hardy Oil and Gas, and Amerada Hess in Block 2212.

Reserves

Other than individual company reserve data reported in the above commodity discussions, an accounting of economic mineral reserves of the major producing mines in Namibia was not available for this review. An on-line discussion of the reserve and resource potential of mineral investment opportunities in Namibia is presented in project profiles by the Ministry of Mines and Energy (Ministry of Mines and Energy, 1997).

Infrastructure

Namibia has two principal ports, Walvis Bay and Luderitz. Walvis Bay has container and bulk mineral-handling facilities and oil storage tanks. More than 1 Mt/yr of freight is handled at Walvis Bay, compared with 50,000 t/yr at Luderitz. Since the March 1994 return of Walvis Bay from South Africa, the Government has established the port as a free trade zone or Export Processing Zone (EPZ) and expects Walvis Bay to become an important commercial gateway for the southern African region. Namibia has a well-developed and maintained road transport system, with a railway network that links the principal centers of population to the coast and to South Africa. The country has about 40,000 km of roads, of which about 4,500 km is surfaced. A principal north-south axial road links southern Angola with South Africa, and east-west routes connects the coastal ports of Walvis Bay, Swakopmund, and Luderitz with South Africa and Botswana, respectively. The 2,400-km-long rail network is operated by TransNamib. The rail fleet consists of 100 diesel-electric locomotives and 2,400 railcars. Namibia's railways carry about 2 Mt/yr of freight.

Electricity throughout the country is provided by NamPower, the national power utility. Principal power stations include the 120-megawatt (MW) Van Eck coal burning plant in Windhoek and the 240 MW Ruacana hydroelectric station on the Kunene River. The NamPower network interconnects with South Africa's power grid. Consideration was being given by NamPower to building one or two more major gas powered electric powerplants to meet the country's future power needs and to reduce costly power imports.

Outlook

With the final depletion and closure of the world famous Tsumeb copper-lead-zinc mine in 1996, there was some concern that the long tradition of mining in Namibia was waning. However, a reopening of the traditional diamond regions in the south to exploration for other commodities and the renewed interest in offshore and mainland mineral exploration opportunities by foreign investors has given hope for a new generation of mineral and energy projects in Namibia. Proposed new diamond, copper, and zinc mines, and the potential for new value added manufacturing or metal processing industries supported by the Kudu natural gas development should keep the mineral sector a central part of the economy of Namibia for the foreseeable future. In the longer run, greater development of regional transportation infrastructure in northern Namibia, including the Caprivi Strip could see Walvis Bay become a significant export route for new mineral developments in Angola and in the landlocked countries of Botswana and Zambia. With a climate that is among the driest in the world, Namibia will continue to deal with a lack of water resources as a constraint on development.

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Major Sources of Information

Association of Prospectors and Miners of Namibia
P.O. Box 5059
Windhoek, Namibia
Telephone: (264) 61 34978
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The Chamber of Mines of Namibia
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Fax: (264) 61 222-638

Geological Survey of Namibia
Private Bag 2168
45 Robert Mugabe Ave.
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Telephone: (264) 61 208-5111
Fax: (264) 61 249-146
Internet: http://www.gsn.gov.na/survey.htm

Ministry of Mines and Energy
Private Bag 13297
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Telephone: (264) 61 226-571
Fax: (264) 61 238-643

Ministry of Trade and Industry
Private Bag 13340
Windhoek, Namibia
Telephone: (264) 61 229-933
Fax: (264) 61 220-227
Government Internet site: http://www.republicofnamibia.com

Namibia National Small Miners Association
P.O. Box 7289
Windhoek, Namibia
Telephone: (264) 61 31088
Fax: (264) 61 31188

Major Publications

Chamber of Mines of Namibia, Annual Report.

Geological Survey of Namibia, 1992. The Mineral Resources of Namibia, 598 p.

TABLE 1
NAMIBIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity		1992	1993	1994	1995	1996
METALS						
Antimony, sodium antimonate (47% Sb):						
Gross weight		11 r/	13 r/	29	--	16
Sb content		5 r/	6 r/	14	--	8 e/
Arsenic, white, 99% arsenic trioxide		2,460	2,290	2,775 r/	1,661	1,302
Beryl concentrate		10 e/	15	--	--	--
Cadmium metal, refined		33	13	19	15 e/	14
Cesium, pollucite, gross weight e/		5	5	5	-- r/	--
Columbium and tantalum: Tantalite concentrate: e/						
Gross weight	kilograms	200	--	--	--	--
Cb content	do.	30	--	--	--	--
Ta content	do.	30	--	--	112 3/	--
Copper:						
Mine output, concentrate (29% to 30% Cu):						
Gross weight		115,000	110,000	97,900	81,646 r/	57,005
Cu content		31,300	29,500	28,400	22,530 r/	14,904
Metal, blister 4/		37,500	34,800	30,100	29,799 r/	20,705
Gold	kilograms	2,030	1,953	2,445	2,394 r/	2,145
Lead:						
Mine output, concentrate (30% to 32% Pb):						
Gross weight		49,600	36,400	43,800	57,105	58,197
Pb content		15,000 e/	11,600	13,000 e/	16,084	15,349
Metal, refined, primary 4/		31,700	31,200	23,800	26,752	18,849
Manganese: Mine output, concentrate (44% Mn):						
Gross weight		--	--	--	95,385	88,573
Mn content		--	--	--	43,004	39,687
Silver: Mine output, Ag content of concentrate	kilograms	89,000	72,000	62,000 r/	69,000 r/	42,352
Tin: Mine output, concentrate (61% to 67% Sn):						
Gross weight		18	6	6 e/	--	--
Sn content		11	4	4 e/	2	--
Uranium, U_3O_8 content of concentrate		1,958 r/	1,980 r/	2,235 r/	2,366 r/	2,890
Zinc: Mine output, concentrate (49% to 53% Zn):						
Gross weight		68,571 r/	34,557 r/	64,568 r/	59,290	66,106
Zn content		36,100	17,624 r/	33,400	30,209	33,955
INDUSTRIAL MINERALS						
Diamond:						
Gem e/	thousand carats	1,520	1,120	1,312 3/	1,382 3/	1,420
Industrial e/	do.	30	20	--	--	--
Total 5/	do.	1,549 r/	1,141 r/	1,312	1,382	1,420 e/
Fluorspar, concentrate, acid grade (97% CaF_2)		37,680 r/	43,466 r/	52,226 r/	36,889 r/	32,285
Graphite e/		200	--	--	--	--
Gypsum e/		-- r/	-- r/	-- r/	-- r/	--
Lithium minerals:						
Amblygonite		5	5	5 e/	3	155
Lepidolite		93	87	90 e/	106	355
Petalite		1,060	647	650 e/	2,502	1,571
Total		1,158	739	745 e/	2,611	2,081
Salt 6/		120,835 r/	132,585 r/	356,965 r/	303,986 r/	381,670
Semiprecious stones:						
Agate		40 r/	102	175 r/	115	150
Amethyst		8,575 r/	100	338 r/	5 r/	19
Chrysocolla	kilograms	6,480	6,500 e/	6,500 e/	--	--
Dioptase	do.	35	50 e/	50 e/	--	--
Quartz, crystal e/		50	50	50	--	15
Rose quartz		124	166	170	200	190
Sodalite		100 e/	354	1,143 r/	465	383
Tourmaline	kilograms	638	600 e/	600 e/	--	--
Stone, sand and gravel:						
Granite		7,313 r/	2,952 r/	11,585 r/	4,518	5,218
Marble		-- r/	13,359 r/	12,061 r/	16,935	10,525
Quartz e/		100	339 3/	350	--	--

See footnotes at end of table.

TABLE 1--Continued
NAMIBIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1992	1993	1994	1995	1996
INDUSTRIAL MINERALS--Continued					
Sulfur, pyrite concentrate:					
Gross weight (49% to 51% S)	164,190 r/	113,703 r/	121,634 r/	103,140	90,735
S content	80,900	56,900	60,000 e/	51,330	45,338
Wollastonite	416 r/	824	1,309 r/	967	2,860

e/ Estimated. r/ Revised.
1/ Estimated data are rounded to three significant digits.
2/ Table includes data available through Feb. 26, 1998.
3/ Reported figure.
4/ Includes products of imported concentrate.
5/ Data may not add to totals shown because of independent rounding.
6/ The increase in 1994 is due to production from Walvis Bay previously included under South Africa.

TABLE 2
NAMIBIA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Copper	Tsumeb Corp. Ltd. (Gold Fields Namibia Ltd., 66%)	Tsumeb and Khusib Springs mines Tsumeb smelter	15,500 copper in concentrate, 58,000 blister copper.
Do.	do.	Kombat, 50 kilometers south of Tsumeb	12,000 copper in concentrate.
Do.	Otjihase Mine (Tsumeb Corp. Ltd., 70% JCI Ltd., 30%)	Otjihase, near Tsumeb	16,500 copper in concentrate.
Diamond thousand carats	Namdeb Diamond Corp. (Pty.) Ltd. (De Beers Centenary AG, 50%; Government, 50%)	Mines near Oranjemund; Elizabeth Bay Mine, 25 kilometers south of Luderitz; and marine operations.	1,600.
Do. do.	Namibian Minerals Corp.	Marine operations offshore Luderitz and Hottentots Bay	750.
Do. do.	Ocean Diamond Mining	Marine operations offshore Luderitz	60.
Fluorspar	Okorusu Fluorspar (Pty.) Ltd. (Iscor Ltd., 26%; Okorusu Holdings)	Okorusu, 48 kilometers north of Otjiwarongo	50,000, 98% calcium fluoride.
Gold	Erongo Mining and Exploration Co. Ltd. (Anglo American Corp.57.5%, Inmet Mining Corp. 20%; Randgold Ltd., 10%)	Navachab Mine near Karibib	2 gold.
Lithium	SWA Lithium Mines (Pty.) Ltd. (Kloeckner; Matramco)	30 kilometers south of Karibib	1,500 concentrate.
Manganese	Purity Manganese (Namibia) Ltd. (private, 100%)	Otjosondu, 160 kilometers north-east of Windhoek	100,000 ore with 45% manganese content.
Salt	Salt and Chemicals (Pty.) Ltd. (Sentrachem, 100% ?)	Walvis Bay	350,000.
Do.	Salt Company (Pty.) Ltd. (private, 100%)	Swakopmund	150,000.
Stone cubic meters	Karibib Mining and Construction Co. (Namibia) Ltd. (private, 100%)	Marble quarry at Karibib Granite quarry	2,500. 600.
Uranium	Rossing Uranium Ltd. (RTZ Corp. plc, 68.6%; Industrial Development Corp. of South Africa ; Government of Iran; Rio Algom, Canada)	Rossing, 30 kilometers east of Swakopmund	5,000 uranium oxide.
Zinc	ImcorTin (Pty.) Ltd. (Western Metals Ltd., 100%; of which Iscor Ltd. holds 27% and Padaeng Industry 20%.)	Rosh Pinah Mine, 80 kilometers northeast of Oranjemund	40,000.