

## THE MINERAL INDUSTRY OF

# SURINAME

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In 1998, Suriname had a population of about 0.5 million in a 163,000-square-kilometer area. Suriname's economy was based largely on bauxite, the main source of alumina and aluminum, which accounted for almost 70% of the country's exports of \$568 million and about 15% of its estimated gross domestic product of \$2.65 billion<sup>1</sup> in 1998 (Alibux and Mackenzie, 1998a, p. 3; Hall, 1999, p. 1A). The Netherlands, Norway, and the United States were the principal markets for Suriname's exports. Trade between the United States and Suriname amounted to \$289 million (\$88 million of exports and \$201 million of imports to and from the United States, respectively) (Hall, 1999, p. 1A). The principal mineral export of Suriname remained aluminum, which was produced at a rate of 2,400 metric tons per month (Hall, 1999, p. 14A). Bauxite mining, alumina refining, and aluminum smelting continued to be the principal industrial activities of the country, which ranked among the top 10 bauxite world producers with a production of some 4 million metric tons per year (Mt/yr). Reserves have been estimated to be 575 million metric tons (Mt) (Harris, 1998, p. 2). During the period from 1993 through 1997, Suriname accounted for 8% of U.S. alumina imports and ranked third behind Australia (70%) and Jamaica (9%) (Plunkert, 1999).

In recent years, the Government's policies have been aimed at maintaining an open-market economy to attract foreign investment and to reduce its role in an effort to allow the formation of the private sector. This policy has involved privatization and joint-venture projects, especially in the natural resources sector and in particular in the mining sector with a strong bauxite industry and promising diamond, kaolin, and gold exploration prospects (Wijdenbosch, 1998).

The Government launched a 4-year program aimed at keeping inflation low and maintaining a stable currency and operating on a balanced budget to attain sustainable economic development (Wijdenbosch, 1998). Government regulations decreased substantially, the corporate income tax rate was reduced to 38% from 50% in 1994, and tariff rates for imports, in general, decreased significantly through a sliding scale mechanism. The Government approved a Standard Mineral Agreement (SMA), which allows production and sale of minerals at world market prices without restriction, access to foreign exchange at open-market rates, provisions for a tax deduction on reinvestment, and guarantees for the repatriation of capital and profits. SMA's benefits included a royalty rate reduction to 2.25%, nominal license fees for exploration and production, and exemptions for mineral rights holders from

import duties on equipment used for mining, milling, and future expansions. Expenditures on prospecting, exploration, and other preproduction costs can be written off during the first 5 years of operations (Radhakishun, 1997, p. 2-4; Alibux and Mackenzie, 1998a, p. 3).

Under Suriname's current mining law, four types of mining titles, which cover diamond, gold, and other minerals, can be issued. These mining titles were reconnaissance rights for up to 200,000 hectares (ha) for a maximum of 3 years; exploration rights for up to 40,000 ha for a maximum of 7 years; exploitation rights for up to 10,000 ha for 25 years; and small mining rights for alluvial or shallow mining (Ministry of Natural Resources, 1997, p. 4). Multiple applications may allow a corporation to hold a larger area following successful prospecting or exploration for purposes of additional exploration or mine development. Exploration and production titles can be transferred to other qualified parties having the ability to obtain environmentally sound modern mining technology and to establish a competitive mineral industry. Bauxite and alumina continued to dominate the industry's annual output. Gold produced by small placer miners south and east of the South Benzdorp area was sold to the Government. Gold, dimension stone, petroleum, and sand production were expected to increase in the near term. (*See table 1.*)

Suriname's privately owned multinational companies mined bauxite and processed alumina and aluminum. The two principal operators in this industry were Billiton Maatschappij Suriname N.V. (BMSNV) of the Netherlands and Suriname Aluminum Co. (Suralco), a subsidiary of the Aluminum Co. of America (Alcoa) of the United States. The Paramam plant, a medium-sized bauxite refinery and aluminum smelter 25 kilometers (km) south of Paramaribo, was jointly owned by Suralco (55%) and BMSNV (45%). Paramam produced about 1.6 Mt/yr of alumina, and its smelter produced 28,800 metric tons (t) of aluminum, which has a capacity of 32,000 metric tons per year (t/yr) (Harris, 1998, p. 2).

Suralco's bauxite minable reserves at the Moengo Mines were being depleted and will be largely replaced by the Coermotibo Mine with an annual capacity of 2 Mt/yr and reported reserves to produce about 4 Mt/yr of bauxite into the next decade (Harris, 1998, p. 2).

Acaribo Mine, a joint-venture of Suralco (76%) and BMSNV (24%), produced 1 Mt/yr of bauxite; its minable reserves, however, were expected to be depleted soon, then bauxite production will come from the Lelydorp III deposit, which has reserves of 19.5 Mt grading about 53% Al<sub>2</sub>O<sub>3</sub> and will produce 2 Mt/yr of ore until 2006. A \$1.4 million feasibility study was

<sup>1</sup>Where necessary, values have been converted from Surinamese Guilders (Sfl.) to U.S. dollars at the rate of Sfl1.7850=US\$1.00.

conducted on the Bakkuis bauxite project in southwestern Suriname by BMSNV and Alcoa, which led to the discovery of new reserves estimated to be 400 Mt of bauxite ore (Alibux and Mackenzie, 1998a, p. 3; Harris, 1998, p. 2).

Gold concessions were negotiated with Grasshopper Aluminum Company N.V. (Grassalco), a state-owned mining company. Recently, several gold explorations have taken place. Grassalco and Canarc Resources of Canada entered into a joint venture to explore and develop a mine in the Benzdorp region. Currently, the Gross Rosebel gold property, 80 km south of Paramaribo, was the most advanced gold exploration and development in Suriname. Golden Star Resources Ltd. (GSRL) of the United States (50%) and Cambior Inc. of Canada (50%), announced Gross Rosebel's updated proven and probable reserves amounting to 49 Mt grading 1.6 grams per metric ton of gold. Suriname is believed to have abundant gold reserves (Alibux and Mackenzie, 1998a, p. 3; Golden Star Resources Ltd., 1998). Tax issues, Government approvals, foreign investment insurance, and the relocation of Nieuw Koffiekamp (a small village on the concession), however, still must be resolved. The expected gold production is about 8 t/yr. The initial target for the feasibility study contemplated mining reserves that contained 62.2 t of gold and using a plant with a milling production capacity of from 12,000 to 16,000 metric tons per day of ore (Cambior Inc., 1997).

Canarc at Sara Kreek is a small placer mine operation where gold nuggets and dust were recovered by sluicing of alluvial gravels from several creeks on the property. Last year, gold production at the Sara Kreek area tripled to a record 218 kilograms (kg) (6,993 ounces). The 1998 production target was 310 kg (10,000 ounces), eventually increasing to 470 kilograms per year (15,000 ounces per year) (Harris, 1998, p. 2).

Gold vein mineralization occurs in the Precambrian Paramaka Formation of Suriname. Gold placers were also worked by garimpeiros (small-scale independent miners) in the Benzdorp area; their estimated gold production could amount to 0.3 t/yr. The Surinamese Government, however, indicated that the country's unrecorded gold production was estimated to be about 1 t/yr (Ministry of Natural Resources, 1997, p. 3).

Grassalco was currently planning to export dimension-stone in the near future. With concessions of 1,600 ha, their granites have excellent tile and block production potential (Alibux and Mackenzie, 1998a, p. 3).

Recent petroleum discoveries have led the Government to believe that there might be significant deposits of crude oil in Suriname. Foreign companies, such as the Royal Dutch/Shell of the Netherlands, were negotiating with the Government to explore the Tambaredjo area where more than 1 billion barrels of additional crude oil were discovered. The state-owned oil company Staatsolie Maatschappij Suriname N.V. reported that 10,500 barrels per day (bbl/d) of crude oil were produced from the Tambaredjo and the Borneo fields west of Paramaribo. Staatsolie was expected to increase crude oil output to about 40,000 bbl/d with an investment of \$200 million (Alibux and Mackenzie, 1998b, p. 3). Some 40% of the crude was exported and most of the remainder was used in the bauxite, alumina, and aluminum industries. Staatsolie continued with the construction of a 55-km pipeline from the Catharina Sophia

field at Tambaredjo to the Suriname River export terminal at Tout Lui Faut, 5 km south of Paramaribo. The Tout Lui Faut Canal was proposed as the site of the Staatsolie refinery. Staatsolie reported that the Tambaredjo and the Borneo fields had a total of proven reserves of 25 million barrels (Mbbbl), with an additional 40 Mbbbl as probable reserves (Harris, 1998, p. 2).

In the near future, Suralco and BMSNV will continue to control the bauxite mining industry, with GSRL, Cambior, KWG Resources, and Canarc involved in gold exploration. Staatsolie will continue to be involved in the development and production of petroleum. (*See table 2.*)

Suriname's mineral potential seemed promising. Because mineral rights continued to be vested in the State, exploration rights will be granted by the Government. The primary mineral produced was bauxite, but deposits of other minerals, such as, gold, nickel, platinum, and tin may attract further exploration. There are also a number of future prospects for diamond, dimension-stone, kaolin, and silica. The prospects for the Surinamese economy also improved because of its strong bauxite-alumina-aluminum industries and the Government's commitment to creating an environment that will attract private investment. Foreign investors, particularly from Canada, the Netherlands, Norway, and the United States, were giving closer attention to the gold deposits, diamond prospects, and significant deposits of crude oil in Suriname.

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## Major Sources of Information

Geologisch Mijnbouwkundige Dienst  
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### **Major Publications**

Engineering & Mining Journal, Latinomineria, Revista Oficial, Information Sources, G&T International (BVI) Ltd., Cutlass Building, Wickham's Cay, Road Town, Tortola, British Virgin Islands, bimonthly.

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TABLE 1  
SURINAME: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/

(Thousand metric tons unless otherwise specified)

Commodity	1994	1995	1996	1997	1998
<b>Aluminum:</b>					
Bauxite, gross weight	3,772 2/	3,530 2/	3,695 r/ 2/	3,877 r/ 2/	4,000
Alumina	1,497 2/	1,589 2/	1,600 2/	1,600	1,600
Metal, primary	27 2/	28 2/	32 2/	32	29 2/
Cement, hydraulic	50	50	50	50	50
Clays, common	20	20	20	20	20
Gold, mine output, Au content kilograms	300	300	300	300	300
Petroleum, crude thousand 42-gallon barrels	1,500	1,500	1,825 2/	2,000	3,832 2/
<b>Sand and gravel:</b>					
Gravel	35	35	35	35	35
Sand, common	160	160	160	160	160
Stone, crushed and broken	50	50	50	50	50

r/ Revised.

1/ Includes data available through March 1999.

2/ Reported figure.

TABLE 2  
SURINAME: STRUCTURE OF THE MINERAL INDUSTRY IN 1998

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Alumina	Suriname Aluminum Co. (Suralco) [Alcoa, USA, 55%; and Billiton Maatschappij Suriname N.V. (BMSNV), 45%]	Refinery at Paranam, District of Para	2,000
Aluminum	Suralco, 55%, BMSNV, 45%	Smelter at Paranam, District of Para	50
Bauxite	do.	Mines at Accaribo, Coermotibo, and Lelydorp III, District of Marowijne	4,000
do.	Suralco, 76%; BMSNV, 24%	Accaribo Mine, District of Para	1,000
Cement	Vensur N.V. (private, 100%)	Paramaribo, District of Para	60
Gold	No major operating companies	South and east Suriname	NA
Petroleum	Staatsolie Maatschappij Suriname N.V. (Government, 100%)	Tambaredjo, District of Saramacca	1,825 1/

NA Not available.

1/ 42-gallon barrels per year.