JAMAICA'S BAUXITE & ALUMINA INDUSTRY

History of the Industry

The commercial production of aluminium began only in the last decade of the nineteenth century, although the existence of the metal in certain kinds of ores was known by scientists from the beginning of that century. However, until World War II greatly increased the demand for aluminium, little attention was paid to the deposits of bauxite outside Europe and the United States of America, including Jamaica, where geologists had noted the "red ferruginous earth" as far back as 1869, without recognizing its significance.

During the 1940s exploration and development work was carried out in Jamaica, mainly by Alcan, Reynolds and Kaiser.

Jamaican bauxite was not used during the war, but these three North American companies (Alcan, Kaiser and Reynolds) came to the island to survey, acquire reserve lands and set up operations. Reynolds began exporting bauxite from Ocho Rios in June 1952, and Kaiser followed a year later from Port Kaiser on the south coast. Alcan built the first alumina processing plant near its mines at Kirkvine, Manchester, and in early 1952 began shipping alumina from Port Esquivel. This was the beginning of the industry in Jamaica.

Jamaica's Bauxite Resources

Jamaica's bauxite occurs in a series of deposits across the middle of the island, east to west. The largest deposits are in the parishes of St. Ann, Manchester, St. Elizabeth, and Trelawny, with smaller deposits in Clarendon and St. Catherine. The bauxite is found in the highlands, from about 1,000 feet above sea level, and lies in the pockets of the limestone which forms two-thirds of the island's bedrock.

Proven resources presently exceed 2.5 billion tonnes of bauxite, while processable reserves may amount to 1.5 billion tonnes.

Most of Jamaica's bauxite is red or reddish-brown, a peculiarity which indicates the occurrence of iron mineral in the ore. There is no overburden covering the bauxite, as is the case in many other countries. The ore lies on the surface and is relatively easy to mine. The mining laws of Jamaica require the mining companies to strip and stack a minimum of six inches of soil for respreading after a deposit has been mined and reclaimed.

Mining, Nain St. Elizabeth

Markets

Just over one-third of the over 13 to 14 million tonnes of bauxite mined in Jamaica each year is shipped unprocessed to the U.S.A. The rest is processed in four alumina refineries: Windalco operates two refineries at Ewarton, St. Catherine, and Kirkvine, Manchester; Jamalco owns a joint venture at Halse Hall, Clarendon, and Alumina Partners of Jamaica (Alpart), another joint venture, has operations at Nain, St. Elizabeth. The alumina produced is principally exported to Europe and North America. St. Ann Jamaica Bauxite Partners Limited (formerly Kaiser

Jamaica Bauxite Company), located in Discovery Bay, is the only company that ships the raw bauxite ore.

COMPANY	LOCATION	OPERATIONS	OWNERSHIP	CAPACITY
Alumina Partners of Jamaica (Alpart)	Nain, St. Elizabeth	Mining operations in Manchester and St. Elizabeth, refining alumina in Nain, St. Elizabeth, and shipping alumina from Port Kaiser	UC Rusal 65% Hydro Aluminium 35%	1.7 million tonnes (to be expanded to 2 mtpy)
Jamalco	Halse Hall, Clarendon	Mining of bauxite in Manchester; refining alumina at Halse Hall, Clarendon, and shipping of alumina at Rocky Point Port, Clarendon	Alcoa 50% Government of Jamaica 50%. Clarendon Alumina Production (CAP) manages the Government's 50% interest in Jamalco.	Capacity 1.5 million tonnes (being expanded to a maximum of 2.8 mtpy)
St. Ann Bauxite Jamaica Bauxite Partners (SAJBP)	Discovery Bay, St. Ann	SAJBP is the only company in Jamaica that exports the raw bauxite ore, primarily to the Gramercy refinery in Louisiana. It does so from Port Rhoades in Discovery Bay.	Century Aluminum Company and Apollo 49% Government of Jamaica 51%	4.7 million tonnes of bauxite per year.
West Indies Alumina Company (Windalco)	Kirkvine, Manchester, and Ewarton, St. Catherine	Mining and refinery operations in Manchester and St. Catherine Ownership	UC Rusal 93% Gov't of Jamaica 7%	1.3 million tonnes (Kirkvine Works 675,000 and Ewarton Works 625,000 tonnes)

Jamalco, Halse Hall, Clarendon

Economic Contributions

The mining and processing of bauxite continue to be one of the most important sectors of the Jamaican economy, accounting for about 10% of GDP. The industry also represents one of the two largest gross earners of foreign exchange and, apart from other taxes, is the largest single contributor to government revenue. It is a capital-intensive industry and, as a consequence, directly employs only 3,400 workers – down from a high of over 6,900 in 1975 as a result of rationalization and modernization, in spite of significantly higher alumina output.

Development of the Industry

After the first shipment of bauxite from Jamaica in 1952, production increased rapidly, and by 1957 Jamaica had become the leading bauxite producer in the world, with a production capacity of nearly 5 million tonnes of bauxite per year, almost a quarter of all the bauxite mined in the world in that year. Alcan built a second refinery in Jamaica at Ewarton, St. Catherine, in 1959. In 1961, a fourth company, Alcoa, began mining in the island.

The production of alumina also increased, especially after the mid-1960s. By 1968, Alcan had brought the capacity of its two refineries to more than 1 million tonnes a year. In 1969 a new plant was commissioned at Nain, St. Elizabeth, by Alpart, then a consortium of Kaiser, Reynolds and Anaconda, another U.S. company. In 1971, Revere Copper and Brass opened the island's fourth alumina plant at Maggotty, St. Elizabeth. Two years later, Alcoa, which had been shipping unprocessed bauxite since 1963, built the country's fifth refinery, at Halse Hall, Clarendon.

By 1974 Jamaica had become the world's second largest total producer of bauxite and the second largest exporter of alumina. However, no smelters were built in Jamaica, and it is unlikely that any will be, largely because aluminium smelting or reduction requires massive amounts of electrical energy.

In 1971, Australia overtook Jamaica as the leading producer of bauxite, with that country now producing about 60 million tonnes a year, as against Jamaica's 13 million tonnes. At the end of the 1970s, Guinea in West Africa, which had the world's highest grade bauxite, also drew ahead of Jamaica, and is now producing about 18 million tonnes of bauxite a year. Jamaica's share of world bauxite output has therefore fallen from 18.1% in the 1970s to 8.1% of the 180 million tonnes of bauxite produced worldwide in 2005.

Changes in Taxes and Ownership

During the 1970s there were important changes in the ownership of the industry and in its contribution to the Jamaican economy. Although the mineral itself has been owned by the State since colonial times, the companies exploiting it were wholly-owned subsidiaries of North American-based aluminium companies. In the 1970s the Jamaican government purchased 51% of the local operations of Kaiser and Reynolds, 6% of Alcoa, and 7% of Alcan, and repurchased most of the

bauxite reserves lands owned by the companies. In return, the companies were granted long-term mining leases.

In 1974, following dramatic increases in world oil prices, the government of Jamaica increased its earnings from the bauxite/alumina industry by the introduction of a production levy. The levy, in effect, indexes the price of bauxite to the price at which the aluminium companies sell aluminium ingot. Since its inception, the levy has undergone several revisions, in 1979, 1984, and 1988, and since 2002 a tax-only regime is gradually being introduced.

The 1988 levy/tax regime sought to protect Jamaica's revenue base with the maintenance of a fixed levy rate indexed to metal prices which was lower than under earlier regimes, but which was accompanied by a tax on profits at the normal company rate. Another significant aspect of the 1988 regime was that the government had the option to take all the production up to full capacity not utilized by the companies. This ensured the likelihood of full production at all the plants and the possibility of additional alumina accruing to Jamaica.

The fiscal regime is again being adjusted to take account of global developments and the conditions obtaining in the world aluminium industry. In late 2001 the government decided to revise the fiscal regime under which the bauxite industry operates, as part of its efforts to improve the competitiveness of the industry, attract increased investment and expand export earnings.

Alcoa was the first company to benefit under this new arrangement; it is the first company with which an agreement has been concluded because it was the first to meet the criteria for the introduction of the new fiscal arrangements. This led to an agreement which was signed on April 27, 2002, that provides for a 25% expansion of the Jamalco plant, as well as guaranteed tax payments based on the average

annual payments over the previous 5-year period for the 5-year period following the completion of the expansion. It should be noted that the terms of the revised regime will be generally applicable to the other companies operating in Jamaica, once they meet the specified conditions.

Of note too, is that the government has since 1974 set up new agencies to manage its enlarged interest in the industry. The principal of these, the Jamaica Bauxite Institute (JBI), began operating in 1976 to advise on, monitor, and implement policies on all aspects of the industry, as well as to conduct technical and economic research. The Jamaica Bauxite Mining Company (JBM) was set up to hold the assets acquired from entering into partnerships or joint ventures with the companies, and the Bauxite and Alumina Trading Company (BATCO) was established to carry out commercial (trading) activities on behalf of JBM. Clarendon Alumina Production (CAP) was set up in 1985, to hold and manage the government's 50% share of the Jamalco operation with Alcoa.

The Local Bauxite & Alumina Industry

Despite the challenges which the passage of Hurricane Dean presented to the bauxite and alumina industry in 2007, and the significant escalation in the prices of oil and caustic soda, the Jamaica Bauxite Institute reported total bauxite production of 14.6 million tonnes, down 2.0% from the previous year, when the industry recorded 14.9 million tonnes. It is expected that gross revenues will reach US$1.31 billion, 14.4% above 2006.

Alumina output, which accounted for 69% of total bauxite, fell by 3.9% to 3.9 million tonnes. Crude bauxite production was 4.4 million tonnes, a 2% decrease when compared with 2006.

Approximately 108,000 tonnes of alumina production was lost during August when Hurricane Dean caused minor damage to facilities. A post-hurricane assessment showed that physical damage to port facilities and power plants was in the order of US$40.7 million. The most significant destruction (75%) occurred at Jamalco's port at Rocky Point, which required temporary logistical support from WINDALCO. Bauxite operations on the north coast sustained little damage. A cumulative twenty-one days of production was lost at the alumina refineries during the process of orderly shutdown and re-start.

The industry also faced the challenge of rising input costs, particularly for energy and caustic soda, in part reflecting pass through adjustment for a declining US dollar in which prices for these commodities are denominated.

Good weather permitting, and assuming the satisfactory conclusion of labour contracts that expired in December 2007, the production forecast for the calendar year 2008 points to a 9% rate of growth in total bauxite production, to just under 16 million tonnes.

Prospects for the Industry

There are broad structural changes that are operating independently of the will or desire of anyone in Jamaica. They provide the background against which we must chart the development of the country's bauxite/alumina industry. This task is made no easier by the fact that there are a number of additional negatives that may be termed regional or localized. These have to do with the lack of indigenous energy resources; the narrowness of our markets; and, in some instances, the need for modernizing the technology utilized in our local alumina plants.

The future prospects for the industry are now quite favourable, providing efforts are continued to attain a higher level of efficiency. In order to achieve this efficiency in the alumina industry, the following steps are identified as necessary:

1. Fuel efficiency.
2. Caustic soda efficiency: the use of caustic soda has to be improved to the best possible level.
3. Conversion from oil to natural gas: this will reduce energy costs, as well as improve environmental conditions.
4. Expanding the plants and operating them at or near capacity. This will reduce unit production costs, and the 1998 levy/tax regime made provision for full plant capacity utilization and transfer to the new fiscal regime.
5. Keeping all plants technologically up to date.

At present expansion plans are being pursued at all operations, and there is strong optimism for the future.

So long as people need buildings, aeroplanes, automobiles, freight cars, power lines, beverage cans and foil wrap, to take the most obvious examples, so long will the world need aluminium. This does not, of course, guarantee prosperity to any bauxite producer, Jamaica included. Bauxite is a relatively abundant mineral, and there is unceasing struggle for increased production and a bigger market share by all countries producing bauxite. Jamaica will continue to be a front-runner in the bauxite and alumina arena due to its long experience, substantial reserves, good working environment, economic and geographic advantages.