

# THE MINERAL INDUSTRY OF

# NAURU

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The 21-square kilometer island of Nauru was one of three historic phosphate-producing islands of the Pacific. The other two were Banaba, formerly known as Ocean Island, in the Gilbert Islands Group in the Republic of Kiribati, and Makatea in French Polynesia. However, Nauru has been the only producer since 1979, when the reserves on Banaba were depleted. The phosphate deposits on Makatea were last mined in September 1966, when they were depleted.

The affluent Nauruan economy was based on the mining of rich phosphate rock reserves, virtually the island Nation's only natural resource, and the country's gross domestic product has varied accordingly with the world market price of phosphate. The Government-owned Nauru Phosphate Corp. (NPC) mined all of the island's production of phosphate rock from its surface mine on the central plateau in the island's interior. All production was exported.

The NPC was incorporated in 1969 and assumed full control in 1970 of the island's phosphate industry from the British Phosphate Commissioners (BPC), following the island's independence in 1968 from the United Nation's trusteeship under Australia, New Zealand, and the United Kingdom (U.K.). The BPC controlled the phosphate industry on the island from 1919 until 1968.

The phosphate deposits were among the richest in the world, having a consistent content of 84% bone phosphate of lime (BPL) or tricalcium phosphate, equivalent to 38.5% phosphorus pentoxide ( $P_2O_5$ ). Rock treated in the calcination plant has averaged about 89% BPL (40.7%  $P_2O_5$ ) and can be as high as 91% BPL (41.7%  $P_2O_5$ ).

Phosphate rock was mined from deposits interdigitated with evenly spaced dolomitized coral limestone pillars using mechanical extractors with clamshell buckets, leaving the coral as a "forest" of very hardrock pinnacles. The associated coral was cobbled for domestic use as road aggregate.

After overburden was removed by bulldozing, the alluvial phosphate rock was removed from around the coral pinnacles, trucked to a railhead for primary crushing, and reduced to minus 50 millimeters (mm). A narrow-gauge railway using diesel locomotives transported the crushed material to a treatment plant where it was dried before further crushing to minus 12 mm and sold as run-of-mine product.<sup>2</sup> A proportion of the fine material could be upgraded by high-temperature calcination to remove organic carbon and marketed as Nauru Calcined Rock, but the calcination plant sporadically was on standby in response to market demand.<sup>3</sup>

New Zealand and the U.K. agreed early in 1994 to help pay

Australia's 1993 multi-million dollar compensation package to Nauru for environmental damage caused by the mining of the island's phosphate deposits. The compensation, a \$73 million<sup>4</sup> out-of-court settlement, ended Nauru's 3-year-old petition to the International Court of Justice at The Hague, Netherlands, for environmental redress from Australia as the administrator and one of the former partners of the BPC. New Zealand and the U.K. agreed to pay almost \$8.2 million each to help Nauru rehabilitate areas devastated by phosphate mining.<sup>5</sup>

Australia and Nauru signed in May 1994 an agreement for the implementation of a rehabilitation and development program for the mined-out phosphate lands in Nauru during the Global Conference on the Sustainable Development of Small Island Developing States held in Barbados. The first major activity was to be a feasibility and design study to determine the best method of rehabilitating the island's mining-disturbed lands.<sup>6</sup>

Essential elements of the communications and transportation infrastructure included about 27 kilometers (km) of roads, including 21 km with pavement and 6 km of unimproved earth or dirt track. The island's were 3.9 km of NPC-owned railroad track was used to transport phosphate from the central plateau of the island to the processing facilities in Aiwo District on the southwestern coast. There was only one airport, and it had permanent-surface runways 1,220 to 2,439 meters in length. The only port was that in Aiwo District. Nauru had an electric power generating capacity of 14 megawatts and produced power at the approximate level of 5,430 kilowatt hours per capita.<sup>7</sup>

<sup>1</sup>Text prepared July 1995.

<sup>2</sup>Pacific Islands Yearbook (16th ed.). Nauru, ed. by N. and N. Douglas. Angus and Robertson, 1989, p. 346.

<sup>3</sup>Industrial Minerals (London). No. 318, Mar. 1994, p. 60.

<sup>4</sup>Where necessary, values have been converted from Australian dollars (A\$) to U.S. dollars at the rate of \$A1.00=\$US0.68, the approximate rate at date of out-of-court agreement.

<sup>5</sup>Pacific Islands Monthly (Suva, Fiji). V. 64, No. 5, May 1994, p. 7.

<sup>6</sup>South Sea Digest (Sydney). V. 14, No. 5, May 20, 1994, p. 1.

<sup>7</sup>U.S. Central Intelligence Agency, Washington, DC: The World Fact Book 1994, p. 277.

## Other Source of Information

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TABLE 1  
NAURU: PRODUCTION OF PHOSPHATE ROCK 1/ 2/

Commodity 3/	1990	1991	1992	1993	1994
Phosphate rock e/ Estimated.	926	530	747	634 r/	613

1/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits.

2/ Includes data available through July 7, 1995.

3/ In addition to the commodity listed, crude construction materials (common clays, sand and gravel, and stone) are produced, but output is not reported quantitatively, and available general information is inadequate to make reliable estimates of output levels.