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The Fraser River Beach Sands, Naracoopa, King Island, Tasmania

by

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DEPARTMENT OF SUPPLY & SHIPPING.

Mineral Resources Survey.

THE FRASER RIVER BEACH SANDS, NARACOOPA, KING ISLAND, TASMANIA.

Report No. 1942/33.

This brief report is based partly upon the following typewritten reports obtained from the Tasmanian Mines Department and partly on a short visit to the deposit.

1. Report on the Black Sand Deposit, Fraser River, King Island, by J. B. Scott, State Mining Engineer, 31/1/27.

2. Supplementary Report on the Black Sand Deposit, Fraser River, King Island, by J. B. Scott, State Mining Engineer, 16/7/28.

3. Report on examination and boring of alluvial deposits at Fraser Beach Terrace, King Island, by F. Blake, Assistant Government Geologist, 17/3/29.

To the north of Naracoopa, at the mouth of the Fraser River, an elevated beach of recent origin extends northerly for some four miles. At the southern end it has a width of 130 to 200 feet. The elevated beach is sand-covered and attains a height of 4 to 6 feet above sea level. On its landward side it abuts against a steep slope rising some 20 to 30 feet above the beach, and representing a former shore-line.

From the surface to a depth of about 2 feet, the sand is white, but as depth is attained it becomes grey, due to the presence of ilmenite. At a depth ranging from 4 to 6 feet there is a layer of lightly cemented dark-brown to black sand ranging in thickness from 2 to 3 feet. The cemented sand is underlain by a small thickness of loose sand which in turn overlies gravels resting on a clay bottom probably representing weathered slate. The brown to black sand contains much ilmenite and also zircon, quartz sand and cassiterite as well as a very small amount of gold.

In 1905 the deposit was worked for a short period by the British Flag Prospecting & Mining Syndicate N.L. with the object of recovering the cassiterite. Some 1584 cubic yards of material were excavated and 866 yards were passed over the concentrating tables for the production of 5.5 tons of cassiterite and 1.65 oz. of gold.

During 1932-3, the sands were worked for the recovery of the ilmenite for the manufacture of titanium white paint.

During the past two years the deposit has been worked on a very small scale for the recovery of cassiterite.

In 1929 the deposit was tested by a boring campaign conducted by the Mines Department of Tasmania. The landward portion of the elevated beach was tested by bore holes along a length of 30 chains and over an average width of 50 feet. Thirteen lines of holes were bored at intervals of approximately 165 feet, the lines containing 1, 2 or 3 holes and the total number of holes being 24. This campaign proved that the average content of cassiterite was 3.59 lb. per cubic yard and that the average content of titanium oxide was 1515 lb. per cubic yard. The average thickness in the bore holes was 8.7 feet and there was an average thickness of 1.2 feet of the upper portion of the deposit not included in the boring.

The above figure of 3.59 lb. of cassiterite per cubic yard refers to the content of the deposit as bored, i.e. with a thickness of 8.7 feet. The dark-brown to black sand forms only a

portion of the deposit and must contain a considerably higher content of cassiterite than the average of the deposit. In the present workings the operator states that only the ground with a cassiterite content greater than 20 lb. per cubic yard is treated on the concentrating table, and that the ground being treated ranges from 20 to 40 lb. of cassiterite per cubic yard. Mr. J. B. Scott stated that the average of a number of samples assayed in the Mines Department Laboratory was 0.5% of metallic tin - this would correspond to at least 20 lb. per cubic yard and the exact figure would depend upon the specific gravity of the sand.

The amount of cassiterite contained in the portion of the beach that was bored would be approximately 50 tons. If the deposit were an ordinary alluvial one, the greater part of the cassiterite could be recovered by ordinary sluicing methods. As the deposit includes many heavy minerals, ordinary sluicing methods would not be satisfactory for the concentration of the cassiterite, and mechanical methods such as screening, classifying, & tabling would be necessary. Under such conditions the lower grade parts of the deposits could not be profitably worked and working would, therefore, be restricted to the richer portions of the deposit. The richer portion of the deposit is apparently restricted to the southern portion of the beach, but no estimate can be given of the amount of ground available for treatment and the amount of cassiterite likely to be obtained. The latter would, however, be only a fraction of that which it is estimated is contained in the 30 chains of the beach bored.

At present the deposit is being worked by one man. The richest of the brown to black sand is dug out during the dry portion of the year and is treated during the remainder of the year. It is stated that up to 2 cubic yards per day can be treated on the one concentrating table in use. This amount would yield 40 to 80 lb. of cassiterite dependent upon the grade (20 to 40 lb. per cubic yard), of the sand treated. It was stated that about 4½ tons of cassiterite were obtained during the past two years.

On the concentrating table, the product coming off adjacent to the cassiterite concentrate consists mainly of zircon. It is probable that this zircon is not sufficiently free from other minerals to represent a marketable product, but could possibly be improved so as to become marketable. If additional production of zircon is desired in Australia, it would be possible to obtain a quantity by the treatment of this deposit for at least cassiterite and zircon.

Ilmenite on the concentrating table passes off in the tailings along with the quartz sand. It would, however, be possible to recover the ilmenite by an electro-magnetic separator and such concentration was carried out during the 1932-3 period of working. It is obvious, therefore, that this deposit could contribute to the production of ilmenite if further supplies were required in Australia.

As far as the tests described in the reports by Messrs. Scott and Blake are concerned, it would appear that the deposit contains little, if any, rutile.

CANBERRA, 9/12/42.

ASSISTANT DIRECTOR.