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BORING ON SCOTIA - LOCHABER TIN LEADS

GREAT NORTHERN PLAIN, GLADSTONE DISTRICT

General Statement

During the years 1935 to 1944 an extensive prospecting campaign was carried out by the Department of Mines on tin bearing deep leads at the Great Northern Plain near Gladstone.

Using two power boring plants, 855 holes were sunk to an average depth of 91 feet and aggregated 78,153 feet of boring in a linear distance of three miles.

The leads had been indicated previously by scout boring at several periods in the past and also in the workings of the Scotia and Lochaber alluvial mines.

Situation and Access

Gladstone is a small tin mining centre in North-Eastern Tasmania. It is situated in Ringarooma River valley about 10 miles upstream from the mouth. The township is reached within 14 miles by road from the North-Eastern Railway terminus at Herrick.

The Great Northern Plain commences on the northern side of Ringarooma River from Gladstone, and extends north-westerly towards Ringarooma Bay. Access to the area from the township is gained by way of Cape Portland road for 1¾ miles and then westerly along an un-made road which crosses the plain.

Topography

The area is drained by Ringarooma River, following a winding course, in a general north-western direction from Gladstone to Ringarooma Bay in Bass Strait. Great Northern Plain, skirting the river above the right bank, is an open undulating tract of country moderately dissected by several short streams. The Ringarooma River at Gladstone is 134 feet above sea level and the area bored rises to a height of 290 feet in the southern part and again falls to 140 feet towards the north-west.

In the latter locality indeterminate drainage is prevelant where swampy conditions occur in the vicinity of Stinking Creek.

A branch of the Mt. Cameron Water Race (Govt.) passes from east to west through the southern part of the area.

Geology

Silurian - The bedrocks in the locality consist of a thickly bedded series of slates and quartzites referred to the Mathinna Group of Silurian age. Along the Great Northern Plain these rocks are covered by Tertiary alluvial deposits, but they outcrop

in adjacent areas along Cape Portland road to the east, Ringarooma River in the south and on the hills north of Stinking Creek.

Tertiary - The alluvial deposits underlying Great Northern Plain were formed in Lower Tertiary times after the establishment of an early drainage system. Stream gravels, containing tin ore were deposited in narrow valleys along the ancient water courses. A period of land subsidence followed and these gravels were buried beneath a considerable thickness of other sediments deposited by the streams, and a system of deep leads formed. Towards the end of the period of depression the land surface was very little above sea level and this subsidence caused an invasion by the sea, to form a large estuary. The later stream sediments together with the contained tin were largely redistributed by the estuary waters and intermixed with sea sand in the final stage.

Tracing the Leads

Plans - The accompanying plans and sections have been drawn to illustrate the following features:-

(1) Overall plan of the area bored - Scale 5 chains to 1 inch.

(a) Surface contours at 10 feet vertical intervals.

(b) Position of numbered bores shown as coloured circles.

(c) Various colours indicate average tin content of individual bores in oz. per cubic yard of 70% concentrate, viz., - Red, over 8 oz., Green, 4 - 8 oz., Yellow, 2 - 4 oz., Blue, under 2 oz., Brown, trace.

(d) Position of Lead gutters, traced with red lines.

(2) Ten detail sheets - Scale 1 chain to 1 inch.

(a) Surface and sub-surface contours at 10 feet vertical intervals.

(b) General values of bores indicated by coloured circles, similar to the overall plan.

(c) Bore numbers, surface levels, depth to bedrock and average tin content shown for each hole.

(d) Outline of selected areas along lead gutters over which the tin content of the ground was computed.

(3) Six section sheets.

(a) Sections through a large number of bores indicate in different colours the various types of sediment passed through from surface to bedrock.

(b) Average tin values for entire bores are given.

(c) The positions within the holes and the values of the greater tin concentrations are indicated.

Scotia Lead - This lead has been traced northerly in a system of close boring, from the vicinity of the old Scotia workings, over a length of 54 chains. For ½ a mile further to the north-west limited scout boring has not been sufficient to define the old channel, but it has again been traced for a length of 15 chains before it junctions with Lochaber Lead to the south of abandoned Mineral Section 9706/M.

Lochaber Lead - The general line of this lead is indicated by irregularly spaced lines of boring commencing 25 chains north-west of the old Lochaber Mine. From here the lead courses westerly for 49 chains to join the Scotia Lead.

Scoloch Lead - This is the northerly continuation of the combined Scotia and Lochaber Leads and is traced by the boring, and shown by sub-surface contours on the detail plans, over a length of 105 chains.

For a further distance of 95 chains to the north-west irregularly spaced lines of bores, carrying some tin values, suggest the probable continuation of the lead in that direction.

Economic Value of the Leads

The tin content of possible economic value is confined to narrow gutters ranging in width from 1½ chains to 4 chains. The richer concentrations are contained in basal beds, from 10 to 30 feet in thickness, overlying the slate and sandstone bedrock. Only a little tin occurs in the upper 50 - 80 feet of the deposit.

The basal beds consist of gravels and coarse grits while the superincumbent material, extending to surface, is largely composed of siliceous sands and grits, intermixed with lesser quantities of clay.

The average depth of sediments along the gutters is 110 feet and, with the exception of a thin cemented zone occurring near the surface in a few places, the deposit as a whole is unconsolidated.

Over the total area tested, a length of 4 miles of lead has been indicated by the boring. At several localities, where close boring has been undertaken, it has been possible to tabulate data in relation to six blocks of ground covering portions of the narrow gutters, along an aggregate length of 1⅝ miles.

In calculating the volume and value of the ground the blocks were considered as having vertical sides and no allowance was made for any batter which would be required in mining the deposit.

The outline of the blocks and particulars of individual bore holes are shown on the accompanying detail plans, but the following table represents the overall results of these areas.

BLOCK NO.	NO. OF HOLES	TOTAL DEPTHS FT.	AREA SQ. YARDS	AVERAGE DEPTH FT.	VOLUME CUBIC YARDS	TIN OXIDE OZ. PER CUBIC YARD	TIN OXIDE 70% CONCENTRATE TONS		WIDTH MIN. CHAINS	WIDTH MAX. CHAINS
1	25	2,199	10,745	88.00	315,000	7.04	61.87		1.5	4
2	46	4,723	16,940	102.67	579,687	7.30	118.07		1.5	3.5
3	25	3,017	34,364	120.68	1,384,525	9.00	347.68		1.5	3
4	10	1,052	7,260	105.20	258,964	10.48	75.72		1.75	2
5	57	6,744	31,944	118.31	1,259,871	6.68	234.82		1.5	3
6	22	2,574	15,004	117.01	585,156	6.95	113.47		1.5	2
TOTAL RESULTS 1 - 6 INCLUSIVE	185	20,309	116,257	109.78	4,383,203	7.78	951.63			

Conclusion

Resulting from this boring campaign tin bearing deep leads have been traced over the major part of 4 miles in length. The richer tin concentrations are confined to narrow gutters ranging from 1½ to 4 chains wide and occur in the bottom 30 feet of sediments, which average 110 feet in thickness.

Of the total length of partly tested leads about 1/3 has proved to contain 4,383,203 cubic yards of alluvial material averaging 7.78 oz. of tin oxide per cubic yard, equivalent to 951.63 tons of 70% tin oxide concentrate.

Sgd. F. Blake

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