REPORT ON MINERAL LEASE

9925/M Avoca, in the name of J. A. Crisp

Situation and Access

This mineral lease is situated 2½ miles north by road from Avoca, a small town on the Fingal Railway line, 17 miles from Conara Junction, on the Main Line Railway.

From Launceston to Avoca, the distance by railway is 52 miles, and from Hobart 115 miles.

To reach the lease from Avoca, the road to Storeys Creek is followed for about 1½ miles. The remainder of the distance is by an old unformed road through private property. With the exception of two small watercourses to be crossed, requiring short culverts, the route to the Section can be accomplished by ordinary road vehicles. The route from the Avoca railway station is practically level.

The southern boundary of the lease is within four chains of the South Esk River. It is therefore very favourably situated insofar as access to, and position of, available water supply is concerned.

Topography

The general surface of the tin-bearing portion of the leases lies at an altitude of 40 feet above Summer level of the river. The area comprising the leases lies on the western side of the lower termination of a wide valley, extending to the hilly country to the south of the Ben Lomond mountain range. The western portion of the lease has a gentle fall to the east which increases towards the bed of the small creek flowing south-easterly to the river. Beyond the creek, the land surface rises steeply, being the western slope of one of the foothills of the mountain range.

The lease is in bush land, slightly timbered, consisting of peppermint gum trees up to six inches in diameter; the undergrowth is also very light. From the southern to the northern boundary of the lease the difference in altitude is but slight.

Economic Geology

The country rock exposed on the lease consists of normal tin granite of the east coast mountain ranges.

The small creek which flows across the northern portion, thence taking a turn southerly, at some former period took a more direct course to the river. The old channel extends southerly through the centre of the area embraced in the lease. The inclination in the land surface in the direction of the flow of the Creek has been comparatively slight, causing an accumulation of water worn debris carried down from the higher ground to eventually block the channel, altering the course of the creek to the south-east. The drift in the lower portion of the old channel is heavy, consisting of water-worn boulders of quartz, quartzite, sandstone, diabase and granitoid rocks. The individual pieces range from a foot in diameter to fine gravel with which is associated a small quantity of clay.

The deposit of drift extends through the lease for a distance of approximately 18 chains, the width varying from two to four chains. The average depth as indicated by a number of shafts is 8 feet. The underlying rock is granite, and where in contact with the drift is decomposed to a depth of two or three feet. A typical section of the drift disclosed in shaft workings nine feet deep consists of fine surface gravel, 1 ft., gravel and clay, 1 ft., clay, 1 ft. 6 inches, mixed fine and coarse gravel, 4 ft; remainder heavy wash with fine gravel and clay. With the exception of the band of clay, the whole of the material is tin-bearing. The best tin values occur in the heavier wash, adjacent to the bedrock.

On the eastern portion of the lease between the creek and the channel of drift referred to, the granite is covered to an average depth of two feet of tin-bearing fine quartz gravel wash. The general character of the drift material is favourable for working by hydraulic sluicing methods, although compact is free of cemented material. Tin oxide is the only heavy material associated with the drift, occurring in comparatively coarse particles, the average grain size being about 1/20th of an inch, and is of high grade quality of the usual black and resin varieties. The valley beyond the northern boundary of the section rises steeply towards the granite foothills of the mountain range. The disintegration of the tin bearing portions of granite country of the higher ground has no doubt, been the source of the alluvial deposit on the section.

Prospecting and Development

A considerable amount of prospecting work has recently been carried out on the lead of the drift. A number of shafts in two parallel lines having been sunk along its course. These shafts prove the average depth of the deposit to be 8 feet over a distance of 18 chains for an average width of 3 chains. To the SE of the deeper ground is an area of approximately 3 acres of shallow ground. The wash here is of variable depth, averaging about 2 feet.

In the past a considerable area of the surface portion of the shallow ground has been sluiced by storm water when available, there not being sufficient pressure to deal with the more compact drift underlying it. The loose sandy drift at the surface can be readily treated by ground sluicing. It is said that well payable returns resulted from this work.

Estimated Quantities and Values

Assuming that the area carries uniform values between the points tested by shafts, which, as stated, have been sunk along the course of the deposit, and allowing a deduction of 10 per cent for heavy wash in the deeper area, and including the drift on the shallow ground, the total number of cubic yards amounts to 75.503.

Dish prospects washed from samples taken at various points on the area showed a fairly regular distribution of tin. A number of the shafts were partly filled with water, consequently a representative sample could not be obtained from these. Several samples were taken from those shafts which were accessible. The results of these gave an average value of 1.94 lbs. of tin oxide per cubic yard. The general character of the drift is similar where exposed at various points on the area, and the tin values are stated to be regularly

distributed through it. With an average of 1.94 lbs. of tin oxide per cubic yard, the total estimated tin content in the area is 65.4 tons. A sample of the oxide assayed 72.10 per cent of tin.

Method of Working

The area is favourably situated for working by hydraulic sluicing. There are good facilities for the disposal of tailings by gravitation on the lower lying land on the eastern portion of the lease.

An ample supply of water is available from the South Esk River which flows within a few chains of the northern boundary of the lease. The summer level of the river is 40 feet vertically below the general level of the tin bearing area.

In order to provide a full supply of water a power plant and pump will be necessary to raise water from the river under requisite pressure for sluicing. It is considered that eight sluice heads will be sufficient for all requirements.

To raise that quantity and provide sufficient pressure for nozzle work, a power plant capable of an output of 80 brake horse power will be needed.

It is recommended that a crude oil burning engine operating a centrifugal pump either by belt or rope drive would be the most suitable and economical type of plant for the purpose.

A suitable site on solid granite rock foundation for the machinery is available on the bank of the river. Very little in the way of clearing and excavation is needed in the preparation of the foundations. From the proposed machinery site on the river to the point on the lease where it is intended to start sluicing operations the distance is 16 chains, the vertical height being 40 feet above summer level of the river.

Sludge Channel

As stated above good facilities exist for the disposal of tailings on the eastern part of the lease. The South Esk River is within a few chains of the site, and thus pollution of the water of the river will be unavoidable. The course of the river is not a declared sludge channel, and seeing that it flows through an extensive tract of grazing and agricultural land, objection to its pollution will naturally arise from landowners in the vicinity.

Prior to any active steps being taken to start sluicing operations on the lease, the operators will be well advised to ascertain the true position as to their legal right with respect to the pollution of the river with muddy water. To avoid pollution specially arranged settling areas for the catchment of water from sluicing may be constructed, retaining it for a period sufficient to allow most of the suspended material to deposit. Provisions for such a scheme would increase the initial cost of starting operations.

In conclusion I wish to tender my thanks to Messrs. A. T. Anderson and J. Sheppard for assistance and information supplied during the time of my examination of the lease.

(J. B. Scott)
GOVT. MINING ENGINEER.

Department of Mines,
HOBART.

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