

REPORT ON HALEY'S LEASE MINE, POIMENA.Location and Access:

The Haley's Lease Mine is situated immediately to the west of Poimena, a township on the summit of Blue Tier, in north-eastern Tasmania. The only means of access is by metalled road from Lottah. This road is two and a half miles in length, but has a poor surface and very steep grades.

Lottah is connected by good motor roads with the remainder of the State, and the State Railways at Herrick and St. Marys, and also with the port of St. Helens on the east coast.

Leases:

The mine is included in the mineral sections 3920/M and 9278/M, of 20 acres each, and charted in the name of B. Griffin.

A tailings easement 1732/W is held through the latter section and as far as a tributary of Seven-Mile Creek.

Geology:

Except where covered by shallow depths of alluvial deposits of Recent and perhaps slightly older age, the whole of the leases are occupied by granite. The granite forms part of the batholith of north-eastern Tasmania, and is regarded as being of Devonian age. It is a porphyritic type and consists of phenocrystals of felspar (plagio-clase) in a coarse-grained matrix of quartz, plagioclase and biotite. Certain other types of granitic rocks and altered granite occur in association with the tin-bearing formations and will be described below.

Economic Geology:

The above two mineral sections form a tract of country 29 chains in length in a north and south direction. Through the central portion of this tract a band of tin-bearing formations extends in the same direction. The band is one to three chains wide and has a bearing of 350° to 355° . The junctions with the normal porphyritic granite are generally sharp and regular when viewed as a whole, but numerous local irregularities occur, causing variations in the width of the band. The junctions generally have a vertical dip, as would be expected from the elongated form of the band. In some places however, the dip of the junction is apparently flat, and it would appear that the formation enlarges in depth.

The tin-bearing formation varies considerably in nature from place to place. The greater part however, is a medium, even-grained aplitic type consisting of soft felspar (partly or wholly altered) and mica, with possibly quartz. This aplitec type is generally soft but this may be partly due to surface weathering and the rock may be harder at depth. The mica is generally the white variety (either muscovite or gilbertite) but

dark mica (presumably biotite) is also present, and often both micas are present in the rock.

Another type contains quartz in a greenish groundmass, the colour being due probably to a greenish mica.

Veins of pegmatite, graphic granite, aplite and greisen are associated with the above. The pegmatite and graphic granite consist of orthoclase and quartz. The greisen veins are generally of the quartz greisen type with very little mica, but mica greisen also occurs to a limited extent.

The whole of the above formation with the possible exception of the pegmatite and graphic granite appears to be tin-bearing, although the actual content varies from place to place. The tin ore is cassiterite (oxide of tin). The cassiterite is generally fine in grain and cannot be detected by the naked eye. In some of the greisen veins the ore is coarser in grain and is easily visible. The cassiterite is unaccompanied by metallic and gangue minerals other than those referred to above.

Two origins have been ascribed to these tin-bearing formations viz. introduction as a dyke or dykes, and due to alteration of the granite by vapours and/or solutions. The latter is the more probable origin, and it is presumed that, during or immediately after the consolidation of the granite, tin-bearing solutions and/or vapours traversed part of the granite and formed the formations discussed above, and introduced the cassiterite during this process.

History:

The tin-bearing formation was found in the early Eighties, if not before. It was probably found while treating the alluvial deposits which must have existed along the gullies. On account of its soft nature in some places it was probably also broken and sluiced.

The Haley Tin Mining Co. N.L. was formed in 1893 to work the deposit but ceased operations during 1884 or 1885. An adit was driven for approximately 300 feet being partly in the formation and partly in the enclosing granite. Two open cuts were worked and the broken material was trucked through the adit and branches to the battery. The battery was situated about 20 chains to the north-west. It is stated that 300 tons were broken weekly and yielded approximately 30 bags of tin ore. The late W.H. Twelvetrees states that the company's accounts showed that the ore yielded 0.648% tin oxide assaying 68.8% to 73% metallic tin. Apparently the capital of the company was exhausted through the above operations which therefore ceased.

Later the property was held by individual miners who treated the softer parts of the formations by sluicing.

Present and Future Operations:

At present Mr. B. Griffin is working the alluvial and detrital material on the southern part of lease 3420/M by sluicing methods. Water is derived from a dam near the southern boundary of the above section, which collects from the small creek flowing

northerly at that point. Appreciable areas of such deposits must remain which can be treated in this manner.

Mr. A.W. Loone is considering the question of mining the material and treating it in a small battery. The success of such operations depends upon many factors some of which are discussed below.

Grade of Ore:

In order that the ore can be properly treated it must contain sufficient recoverable tin ore to pay for all the necessary mining, treatment etc.

According to the statements with regard to the workings of the old company, it would appear that the grade of ore treated was from 0.5% to 0.65% tin ore, or say 0.35% to 0.45% metallic tin. It is not to be assumed of course that the whole of the formation contains these amounts of ore. Indeed dish prospects prove that the tin content is often considerably less than these figures.

With operations on the scale contemplated it is probable that ore containing at least 0.25% to 0.3% would be required to ensure payable operations with tin at its present price of £300. per ton. Past workings show that some parts of the formation contain such percentages, while it is known that all the formation does not.

It is evident therefore that one factor entering into profitable operation of the mine is the location of the parts of the formation containing over say 0.3% metallic tin. This can only be accomplished by active prospecting and developmental work.

Mining:

The material could be readily and economically mined by open cuts similar to those existing. The small quantity, say 150 to 250 tons per week required for the small plant would be easily mined in this fashion.

The drainage of the workings might present some difficulty. The present method by adit would enable the drainage to be cheaply effected, but would mean that open-cutting could be carried out to shallow depths of 30 feet approximately. When working below this depth or commencing open-cuts from the surface without any adit, it would be necessary to install pumping appliances.

Treatment Plant:

The plant would probably include rock-breaker, 10-head stamp battery., 2 Wilfley tables and accessory appliances. Some of the ore might be sufficiently soft to break up without the use of a rock-breaker, but this part of the plant would be necessary for the harder parts of the ore. Such a plant would treat 150 to 250 tons of ore per 24 hours.

Power and Fuel:

Under the circumstances existing at Poimena, it is probable that a portable steam boiler and engine would be the type of power plant used. The fuel would be wood which could be obtained within reasonable distance of

the mine. The plant would require to be of 30 to 45 h.p. for the above plant.

Water Supply:

The small dam on the property might furnish sufficient water for the treatment plant during the wetter parts of the year, but it is doubtful if it would be sufficient during the drier times. The drainage water from the mine workings could be used to augment this supply. Further supplies would have to be obtained by conservation and pumping from localities lower down the creeks.

Conclusions:

The general features of the mine and possible treatment of the ore have been discussed above. While the remaining alluvial and detrital deposits may be easily treated on a small scale, the future of the mine really depends upon the treatment of the lode material there.

It is considered that for the small treatment plant which it is contemplated to erect, it will be necessary to mine ore containing at least 0.3% metallic tin with the price of tin at £300 per ton. The essential preliminary operations should therefore be devoted to the location and definition of these areas, or of such of them to provide an ore reserve to justify the installation of the treatment plant.

The question of operating the mine on a much larger scale would perhaps reduce the grade of ore which could be profitably treated, but such an enterprise could only be undertaken by a strong financial company.

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