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PRELIMINARY GEOLOGICAL REPORT AND RECOMMENDATIONS
ON THE
MT. SHOOBIDGE - FENTON DISTRICT
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Introduction.

The Mt. Shoobridge District is situated on the Stuart Highway, 52 miles north-west of Pine Creek and about 34 miles from the new Government Tin and Gold Treatment Plant at Mt. Wells. The Fenton gossan lodes are located about 10 miles south from the Shoobridge greisen lodes.

During the later part of 1963, a geological and geochemical survey was carried out over the Fenton gossans and over the Shoobridge tin lodes. The Phillips Greets Copper prospect was partially covered by a self potential survey. The results of this survey will be discussed in a separate paragraph.

Detailed geological mapping at Shoobridge delineated two almost parallel mineralized zones, consisting of stanniferous greisen lodes and cuprous quartz blooms. The intermittent length of mineralization exceeds 10,000 ft. and much lode may remain obscured by alluvial cover in this low lying country.

It is difficult to reliably sample the numerous workings which date back as far as 1887. Tin mineralization is coarse grained cassiterite in a matrix of qtz-felspar and muscovite. Distribution of cassiterite throughout the matrix is sporadic and size varies from outcrop to outcrop.

At Shoobridge the pipe like greisen structures are not unlike similar outcrops encountered in the Herberton tin field. Width and length of some of these mineralized outcrops are suggestive of large quantities of low to medium grade tin ore easily exploitable by open cut mining.

Access Mt. Shoobridge Mine.

The locus of the tin bearing area is located in low lying country about 1 ½ miles south of the 102 mile main road peg. Access is by 1 ½ miles of rough bush track which could be made into a reasonable road with little expense.

Climate, Water Supply, Timber Supply.

Climate in the district is similar to the prevailing climate of the Darwin area. The annual rainfall amounts to about 50" and the wet season may last from the beginning of January to the end of April.

There are no permanent streams in the area and this lack is responsible for the scarcity of surface water during the dry season. A moderate supply for drilling and general use could be drawn from Greenant Creek at the 100 mile main road peg.

History.

The Mt. Shoobridge Mine, also known as the old Co. Mine is situated about 1 ½ miles south-east of the mount and was first held by the Palmerston Copper Mining Co. Limited. Tin was first found on the property by G.L. Barret in 1882, who first pegged out the
ground. Mr. V.L. Solomon and J. Snadden became the holders of it, and sunk a shaft to a depth of 30 ft., besides doing some shallow surface work. These small workings produced 11 tons of tin oxide. Mr. Solomon sold the property to the Mt. Shoobridge mining Company, who have done a considerable amount of work. The main or No. 1 Shaft was sunk to 180 ft. Drives have been driven from different levels north and south. The upper or No. 1 Level has been driven about 130 ft. south and to the north 40 ft.

At the 100' Level a drive south has been driven a distance of 136 ft. and north 53 ft. No. 2 Shaft has been sunk to a depth of 60 ft. No. 3, 20 ft. and No. 4, to a depth of 58 ft. The lodes in the bottom levels are regular in their formation, their strike is 340° with a dip to the west.

Barrets Lode.

This Lode is situated about 1½ miles south-east of Mt. Shoobridge Mine. It was found by Barret in 1862. The tin is found in a large greisen dyke, which strikes 340° with an apparent dip to the west. The company did very little towards developing their property, and after sinking a number of shallow pits on different parts of the ground they abandoned it. S.V. Parkes, Mine Inspector, wrote in 1891: I am of opinion that it would be hard to find a better show of tin in any part of Australia.

Phillips Greets Copper Mine.

According to the Chief Warden's records, this mine was discovered by a prospector named Holland in 1901. Holland took 10 tons of good ore and abandoned the show in 1902.

Phillip Greet took it up in 1903, from which date the following has been the output:

1903 - 3 tons, 1904 - 24 tons, 1905 - 36 tons, 1906 - 65 tons, 1907 - 136 tons, 1908 - 66 tons, 1909 4 tons, 1910 - 14 tons, 1911 abandoned.

The output of ore all bagged and shipped away and therefore exceeding 25 - 30%, has been about 356 tons.

In 1907 the mine was worked at its maximum depth, a drive of about 70 ft. north being put in at the 140 ft. level, a Cornish lift and a 6 h.p. vertical boiler placed in 1906 being used to cope with the water.

Fenton's Prospect.

These large gossan outcrops were brought to our attention by officers of the B.M.R. group in Darwin. This virgin ground is located about 6 miles south from the Mt. Shoobridge Tin Mine, and only small trial parcels of lead, tin, copper and wolfram were won. During the later part of 1963 our Company carried out a geochemical sampling campaign of which the results are still pending.

General Geology.

Plan SD 52 - 8 4 mile series produced by the B.M.R. shows the major geological features.

The Shoobridge greisen dykes occur in the lower proterozoic Golden Dyke formation which is part of the Godparla group of rocks. The Shoobridge and Barret's tin lodes are emplaced in a zone of weakness adjacent to the regional Shoobridge Fault system.

The country rocks between the parallel running low ridges outcrop poorly and much structure remains hidden below scree covers. The predominant rocks in the vicinity of the lodes are, qtz.
siltstone, pyritic carbonaceous siltstone in places slumped and brecciated, dolomite, modular and bedded chert and silicified dolomitic slump breccia.

The regional strike of strata is north-west and dips varies from 60° west to vertical.

The greisen injections occupy ancient fissures and their strike is between 340° - 360° NW. Dips are uncertain but it can be assumed that the greisen dykes dip steeply west.

In the Shoobridge area ore bodies occur in three groups.

(1) The Mt. Shoobridge Mine about 1½ miles south-east of the Mount.

(2) Barrets lode situated about 1½ miles south-east of Mt. Shoobridge Mine.

(3) Phillips Greets Copper Mine situated 1½ miles east of Barrets Lode.

The Lodes are located near the fringes of a small body of Fenton granite (biotite granite). Distance to the granite from the ore occurrences is about 4 miles.

The gossan bodies of the Fenton area occupy the western contact of a body of Fenton granite and sediments of the lower protorozoic Barrel Creek formation. The gossan bodies form part of a major fault, striking 350° which created the truncated cones of Plateau Point and Mt. Shoobridge. Dip of the gossans is near vertical.

The regional strike of the Barrel Creek formation is 10 - 20° NW with steep dips to the west. The rocks in the vicinity of the gossans are chiefly calcareous graywackes and banded shales.

Description of the Lodes.

The Mount Shoobridge Lode.

This mineralized belt has been mapped geologically in detail at 100 ft. to the inch. These lodes which have been worked in such a slip shod manner by Chinese that it is impossible to say much about the underground structure, and owing to heaps of rejects on the surface very little can be said of the outcrops. As mentioned before it is practically impossible to reliably sample these old workings. Production records are unavailable.

The mineralized belt of country consists of quartz - siltstone intruded by greisen dykes and pegmatite. The tin is contained in pegmatitic greisen dykes and lenses. Such occurrences are usually of a sporadic nature, at best even if the dykes are fairly continuous the ore is usually confined to pipes and lenses.

The strike of the lodes on the surface is irregular and varies from 330° to 360° NW. Dip of lodes is to the west and nearly vertical. It is doubtful if it is the same Lode as that which Barret was working, but I have no doubt it is in the same belt.

As far as we could ascertain, the workings at the mine consists of one main shaft sunk to a depth of 180 ft. and three subsidiary shallow shafts. The depth of these workings is unknown but probably will not exceed 60 ft. The levels in this mine are not accessible.
Barret's Lode.

George Barret's Tin Lode is situated about 1½ miles southeast of Mt. Shoobridge Mine. The tin is found in a large greisen dyke, which strikes 340° Mag., with an apparent dip to the west.

Tin occurs as clusters of cassiterite disseminated throughout the host rock. As at the Mt. Shoobridge Lode, tin occurrences are usually of a sporadic nature and even if the dykes are fairly continuous the ore is confined to pipes and lenses.

A considerable amount of surface work has been done and the rejects on the surface makes it difficult to reliably sample the prospect.

Phillips Greets Copper Mine.

This mine lies about 1½ miles east of Barret's Tin Mine, near Mt. Shoobridge.

The lode is a true fissure striking 190° and dipping west at about 65°. A large number of shafts have been sunk on it to water level, and a few below water level. A very large quantity of ore must have been removed from the mine, as evidenced by the dumps, which are among the largest seen at any copper mine in the top end excepting Mt. Ellison. The ore has been completely removed by overhead stoping so that the lode is to-day practically a trench. It has been worked for a length of 1,000 ft. The width of the lode appears to have ranged from one to three ft. The footwall is a bleached aluminous schist, the hanging wall a ferruginous mica schist. The country strikes N.N.W. and dips W.S.W. at 50° and over.

The lode outcrop at the north end is a gossans banded secondary quartzite with crumpled mica schist walls.

There should be payable quantities of sulphides below the existing workings, since the main reason for the abandonment of the mine was the incapacity of a small inferior 5 inch. pump to lift the water to the surface.

Fenton's Prospect.

These large gossan bodies are located about 6 miles south of the Shoobridge Mine. The lode is a true fissure striking 350° and dipping west at about 85°. The gossan appears to be capping over large qtz. pyrite bodies emplaced into the fissure. The country rocks to the west of the Fenton granite belong to the lower protzonic Barrel Creek formation. The predominant rock types qtz. greywackes and banded carbonaceous shales.

Mineralization throughout the lodes consist of finely disseminated pyrite, chalcopyrite, lead, tin, wolfram and minor tantalite. Length of mineralization is in excess of 15,000 ft. Apparently this area has never been properly prospected and only a few costeans and pits have been observed.

RECOMMENDATIONS.

Investigation of the area revealed the presence of numerous interesting lodes, structures and gossans and because of their proximity to main roads and railways, deserve much closer examination.

The area is ideally suited for wagon and diamond drilling and this work should be commenced as soon as possible.

Additional geophysical traversing is warranted in the Phillips Greets area.
In case a substantial ore reserve could be proven the greisen dykes at Shoobridge and the gossans at Fenton could be readily mined by open cutting.

To test the area the following work is warranted.

**Mt. Shoobridge Lode.**

(a) The lode should be initially wagon drilled at 200 - 400 ft. intervals. Total wagon drilling 2,000 ft.

(b) To test the ore shoot below the existing working a diamond drill hole should be drilled at -55° to intersect the ore shoot about 300 vertical ft. below the surface. Total diamond drilling 450 ft.

**Barrett's Lode.**

(a) Wagon drill the outcrop at 200 - 400 ft. intervals. Total wagon drilling 2,000 ft.

(b) The large and kind looking greisen dykes at Barrets should be tested by diamond drilling. 3 diamond drill holes designed to cut the lodes at about 200 ft. are needed. Length of holes, 2 about 500 ft and one about 350 ft. drilled at -50°. Total diamond drilling 1350 ft.

**Phillips Greet's Lode.**

(a) The central section of the lode should be wagon drilled at 200 - 400 ft. intervals. Total wagon drilling about 2,000 ft.

(b) To test the downward extension of the copper shoot, one diamond drill hole drilled at -50° is needed. Depth of intersection about 250 ft.

**Fenton's Prospect.**

Work in this area depends upon results of our geochemical survey.

Total Wagon Drilling all prospects 6,000 ft.
Total diamond drilling all prospects 1,800 ft.

Signed: E. Larsen, Chief Geologist.