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TINTINA SILVER MINES LIMITED

Yukon Territory

REPORT

OF

UNDERGROUND WORK

CARRIED ON

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BY

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INTRODUCTION

With the finding of high grade silver-lead-zinc zones on the present Tintina property in June 1961 some 302 claims were staked in the following two months. The discovery area was mapped and sampled before snow conditions ended further operations. A decision was reached that fall to go underground with an adit.

A winter road from Teslin was cut through to the property over which all the heavy machinery was trucked. On January 31st, 1962 the portal was collared. On July 25th, 1962 the mining crews were called off and a week later the diamond drill crews were removed.

SUMMARY AND CONCLUSIONS

With three ore zones as its objective - #5, #6 and #8 - an adit was driven in on the 5390 ft. level of the property. The main drive, #101 crosscut, bore directly for the #8 ore zone. The 102 crosscut was diverted off the main drive towards the #5 and #6. None of the objectives were achieved in underground mining. A possible ore section 125 feet in length and 4 ft. - 5 ft. in width was delineated by mining and drilling methods. This is the 5A structure. In all a total of 1831.6 feet of underground excavation was carried out.

Underground diamond drilling showed the surface ore section to be apparently flat and not carrying down to any great depth. The #8 zone was weakly picked up some 100 feet below its surface outcropping. The #5 zone carried down to at least 30 feet below its exposure but not to the adit level. The #6 zone was not encountered in the drilling.

In surface drilling the area around the 1, 2 and 3 zones showed up in the limited drilling as pockets of ore within close proximity to the capping slates. Values were mostly in the zinc mineral.

Drilling at the uppermost end of the cirque in the vicinity of the #7 zone and the quartz veins gave opposing results. The #7 vein was not picked up at depth. Several of the quartz veins gave encouraging assays.

In retrospect it would appear that insufficient information had been obtained concerning the mine area before underground operations were ordered. What was considered as a relatively straight forward geology has developed into a complex structural problem. The formations are known to lie flatter than originally presumed. Folding appears to play a greater role than was originally thought. The ore structures are in a lens form not a vein style.

The structural control of the ore zones has not been satisfactorily demonstrated. The opportunity to drift out, raise, stope or in any manner p rsue the ore zones and thus more closely examine their geological nature did not present itself.

The writer cannot visualize so much mineralization being confined to within 20 or 30 feet of the property's surface. If the ore structures are lenses, as they presently appear, then it would appear proper that other lenses at other horizons should be present.

As ore zones have only been observed within the limestone beds, other than for the #8, this favourable formation should in future work be given more intensive examination. The argillites and black slates, showing an apparent absence of mineralization on surface or underground, can be eliminated. If underground work at a later date is considered, the writer would recommend drifting out any limestone contacts followed by an intensive underground drill program at regularly spaced intervals.

The 5A zone should be drifted out with a raise or two put through to surface.

The east-west trending quartz veins in the argillite at the south end of the cirque are worthy of further surface investigation, possibly by diamond drilling. If these results are encouraging, the 102 crosscut can be extended south into this area.

The contact sulphides of the 1, 2 and 3 ore zone areas should be further investigated by vertical drill holes through the saltes to the limestone.

The #9 zone lying in the limey phyllites is in a good position for surface drilling. The results here might yield further clues for the deciphering of the #8.

In all, although the initial investigation of the property had discouraging results, there is reason to suppose that further work might lead to clarification and thence to mine production.

LOCATION AND ACCESS

The Tintina ground is located in the St. Cyr mountain range on the headwaters of the Liard River. It is reached only by air transportation, being 110 mines north-west of Watson Lake and 130 miles north-east of Whitehorse. There is a 3500 foot length air strip six miles south of the camp for wheel and ski aircraft while float planes use Mud Lake 4½ miles west of the property.

The property consists of the following claims:

Eagle Group	1 to 130 inclusive
Ram Group	1 to 104 inclusive
It Group	1 to 36 inclusive
El Group	1 to 32 inclusive

This made up a total of 302 claims all acquired by Tintina Silver Mines Limited. These claims are located on Canada Department of Northern Affairs and National Resources Claim Map 105-G-3.

REGIONAL GEOLOGY

The geology of the area is distinctively divided by a strong linear, the Tintina Fault. This structure appears to be the extension of the Rocky Mountain trough extending northwards into the Yukon Plateau area. In the area under consideration a marked difference in rock strata appears on opposing sides of the fault.

To the north of this north-west trending linear the formations are well metamorphosed but appear to be relatively undisturbed by earth movements. South of the fault the formations become more complex with warping and thrusting a more common feature.

Granitic plugs and minor batholiths lay within close proximity to the fault while their more basic counterparts appear only occassionally on the north side.

The formations consist of Paleozic sediments and extrusives with the granitic intrusives being classified as of Mesozoic age.

The only known geological literature of the area is obtained from Geological Survey of Canada Map 8-1960, Finlayson Lake, Yukon Territory.

LOCAL GEOLOGY

The mine area lies within a cirque at an elevation of 5300-5500 feet. The formations enclosed within this area are sediments of Middle and Lower Cambrian age. In the latter group may be classified the graphitic slates, limestones and argillites. The calcareous slate, or phyllite, is recorded by government geologists as of the Middle Cambrian era. Intrusives within the area consist of lamprophyre and diorite dykes. A granodiorite plug is some 6000 feet to t he northwest of the adit.

The general trend of the local formations is northwest in compliance with the regional trend. On surface the formations appear to lie conformably upon one another and to some extent this was born out underground. The surface contacts show a normal continuity broken by a few faults. In sub surface work, this continuity was, in some cases, irregular as proven by some of the underground borings.

Bedding, of great importance at Tintina, is obscured in many cases by the schistosity. Where observed, it has shown the beds to be relatively flat.

Folding and doming are other structural features of the mine area. The latter effect is quite noticeable in the 1, 2 and 3 ore zones. Here a relatively flat limestone dome dips away gently under the slates and argillites.

Faulting is arrived at from the stratigraphical offsetting observed on surface. In underground operations several mud seams and strongly altered faults were encountered. In one particular instant an ore zone (5A) was completely cut off by a strong break. Faulting of some magnitude was encountered in the workings at the limestone-graphitic slate contact.

The underground workings appear to lie within the central and right limb of an anticline overturned to the north.

A description of the formations as seen on surface and underground follows.

Limestone: In the adit this formation was of a light grey colour, cut throughout by calcite-quartz stringers, soft, carried little or no scattered sulphides, and in places showed a rough banding effect. This banding occurred through a carbonatization of the schistocity planes.

On the surface two types of limestone are mapped. The adit limestone weathers an orange colour whereas the other, not encountered underground, has no distinctive weathering colour. In drilling this latter formation, the only outstanding differences are that the colour is more of a grayish-green and the formation is slightly more siliceous than the adit limestone. Other than for these minor variations, the possibility of the two being the same formation can be entertained.

No bedding was recognized underground and few instances were noted on surface. Where seen the weathered bedding planes were quite flat.

A most distinctive feature of the limestone underground is the prefuseness of the calcite veins and stringers. These array themselves in every direction and at all angles across the headings. Only a few are weakly mineralized with pyrite.

The competent limestone tends to fracture readily and many of these slips are calcite filled. Mapping shows the greater percentage of these fractures to run on a bearing roughly parallel to the strike of the formation. A few weak shear zones were intersected in drifting through the limestone but these were of a short length.

The limestone serves as the host rock for most of the sulphide zones.

<u>Argillite</u>: This formation is slightly harder than the limestones and normally a shade darker in colour. It is of a fine grained texture showing a rough salt-and-pepper pyrite effect. Thin seams of pyrite are not uncommon. It is more siliceous having no reaction to hydrochloric acid other than in the vicinity of the limestone contact.

Generally the argillite is fairly massive with only occassional quartz-carbonate veins aligning along the fracture planes. Locally, however, the veins appear in clusters of four and five contained within a narrow width of 10 - 15 feet. These structures are normally mineralized with pyrite and pyrrhotite in varying amounts. In the underground operation no sulphides other than those noted were observed but surface drilling in the argillite to the south of the workings revealed quartz veins with sphalerite, tetrahedrite and lesser amounts of galena. Gold and silver values are also associated with these narrow veins. In this vicinity the veins are more evenly spaced.

Bedding is poorly visible as a rule. However, in certain locations highly contorted laminations were noticed.

Graphitic Slates: These are black, carbonaceous slates that on surface show a well-developed schistosity. Bedding is again poorly discernible and often highly contorted. Underground this structural feature was never identified. However, the formations when drifted against the strike broke in a blocky or jagged style, often necessitating in more schistose areas, a timbering operation. There appears to be two well developed cleavage planes almost at right angles to one another.

The only mineralization associated with these black slates is pyrite. The iron sulphide appears as round blebs scattered through the formation, as a coating on many cleavage planes and as irregular narrow seams.

Carbonate veining is not too prevalent but tends to increase near the phyllite contact.

Calcareous Slates: Often called limey phyllites, these formations are similar in identity to the graphitic variety. They are dark grey to black, highly schistose and often associated with quartz-carbonate veining.

Unlike the graphitic slates, they are devoid of diagenetic sulphides.

Surface bedding has been identified but unfortunately in the mining operation this formation was only entered for a short length over which distance no bedding planes were noticed.

Lamprophyre Dykes: These intrusives are fairly numerous and range in all sizes. They are a dark brown, fine grained, highly micaceous type. Their contacts are sharp with few fingers into the host rock. They are post-mineral.

UNDERGROUND OPERATIONS

As originally laid out the adit had three primary targets - #5 zone, #6 and #8 zones.

The 8 zone was to be reached by a straight drive, the 101 crosscut. The 5 zone would be handled by another crosscut, the 102, angled off from the adit drive. The