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GEOLOGICAL REPORT ON THE
STARBIRD MINES LTD.
PORTLAND CANAL AREA
BRITISH COLUMBIA

BY

A. C. A. HOWE INTERNATIONAL LTD.

A. C. A. Howe, P.Eng.

W. G. Timmins, Geologist

Vancouver, B.C.

Report No. 91

October 6, 1967

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SUMMARY

The property consists of three Crown granted mineral claims located south of Glacier Creek about $2\frac{1}{2}$ miles north of the Town of Stewart, British Columbia.

Three tunnels with connecting raises, and several stoped areas exist in the underground workings on the Little Joe claim.

An aerial tramway transported material to a 50 ton mill in operation in 1910.

The main vein is a quartz-filled fissure occurring in argillites. The vein is reported to be traced for at least 3000 feet. 

Mineralization occurs as pyrite, minor argentite, galena and sphalerite in pods, lenses and streaks.

A preliminary program of exploration consisting of surface geology, underground mapping and sampling and diamond drilling is recommended at an estimated cost of \$18,590.00.

INTRODUCTION

This report is written for Starbird Mines Ltd., on their property near Stewart, British Columbia, following an examination performed by W. G. Timmins, on September 17th and 18th, 1967, and is based on that examination and information from Minister of Mines reports.

Three adits and several open cuts exist on the Little Joe claim. A considerable amount of stoping has been carried out between the number 1 and 2 adits. The portals of the number 2 and 3 adits are partially caved and the number 3 adit has several feet of water, however, the number 2 level was examined by crawling down through the stopes from the upper number 1 adit.

The two lower portals could easily be cleaned out and rehabilitated.

PROPERTY

The property consists of three Crown granted mineral claims listed below:

<u>Name of claim</u>	<u>Lot</u>
Gypsy	416
Little Joe	873
Lucky Seven	874

Several other claims have been staked on behalf of the Company.

LOCATION AND ACCESS

The claims are located to the south of Glacier Creek about one mile east of the Bear River and $2\frac{1}{2}$ miles north of the Town of Stewart.

Access is best served by helicopter from Stewart, however, a pack trail from the road at the Bear River is in good repair.

Stewart may be reached daily by Pacific Western Airlines from Prince Rupert and is serviced weekly by Northland Navigation ship.

TOPOGRAPHY

The old workings are at an elevation of about 2,400 feet above sea level and nearly 2,000 feet above Glacier Creek. The topography in the vicinity of the claims is steep, rugged and heavily forested.

HISTORY AND PREVIOUS WORK

A considerable amount of work was done during the early part of the century and particularly 1907 to 1914.

Three tunnels with connecting raises were driven and several areas were stoped. Several small open cuts and test pits were sunk.

By 1910, a 50 ton mill had been built at the Bear River and was in operation on a small basis. The ore was conveyed from the mine workings to the mill by means of an aerial tramway. Power was supplied by means of a plant utilizing water from Glacier Creek. All necessary buildings had been erected.

No buildings or equipment are now usable and in most cases no longer exist. The tramway has collapsed.

REGIONAL GEOLOGY

Ref: G. Hanson, G.S.C. Memoir 159, 1929
McConnell, G.S.C. Memoir 32

The area north of Stewart, B.C. is underlain mainly by volcanics and sedimentary rocks of the Bear River and Bitter Creek Formations. The

granitic rocks of the late Mesozoic Coast Range Batholiths are in contact with these Mesozoic rocks to the west.

The Bear River Formation described by McConnell consists of volcanic breccias, tuffs and intermediate flows with interbedded argillites and limestone. Dikes of quartz diorite composition up to 150 feet wide intrude this formation. Lamprophyre dikes also occur in the area. The early Mesozoic Bitter Creek Formation which underlies the property consists primarily of a sedimentary sequence, mainly argillites, tuffs and small beds of limestone which are intruded by porphyry dikes of Mesozoic Age.

ECONOMIC GEOLOGY

The main vein occurs as a quartz-filled fissure in argillite, has a northerly strike and is gently dipping about 30° to the west and has been developed on three levels by adits, raises and stopes. In places, the quartz contains inclusions of country rock giving the vein a brecciated appearance. In close proximity to the vein are two acid dikes which may have some bearing on deposition of mineralization.

*According to
plans etc. about
20°
dip
with the*

The vein reportedly has been traced by test pits and cuts in both directions for at least three thousand feet.

Mineralization occurs as pyrite carrying gold values, minor argentite, galena and sphalerite.

Pods and streaks of massive pyrite with minor amounts of galena were observed in the dumps and portions of the workings that were examined.

The Minister of Mines report of 1910 reports the following assays.

	<u>Au. oz./ton</u>	<u>Ag. oz./ton</u>	<u>Pb. %</u>
Average assay from No. 1 Tunnel	0.25	14.6	5.8
High grade samples No. 1 Tunnel	0.98	293.1	0.82
Upper open cut 359 feet east of No. 1 Tunnel across 8.0 feet	0.15	3.0	2.4

A description of the mine workings and ore zone is given in the Minister of Mines report of 1910. The following is an excerpt from that report:

"Mine. - The mine workings are at an elevation of about 2,400 feet above sea-level, and consist of three tunnels with connecting raises, as shown on accompanying plan.

The lowest, or No. 3 tunnel, is the working tunnel, the tramway there going directly to the bunkers at the upper terminal of the aerial tramway. This tunnel, in October, 1910, was in about 500 feet and follows in on the vein which is mineralized all the way; but what is considered pay-ore was only struck at about 100 feet in, from which point it apparently continues to the face, although the tunnel in a couple of places seems, in the driving, to have run away from the ore. From this level a raise has been put up to the No. 2 tunnel, and this acts as an ore-chute from the upper levels.

The No. 2 tunnel is about 55 feet vertically higher than No. 3, the vein dipping at an angle of about 30 degrees and was in about 200 feet, with a raise being put up to the No. 1 tunnel, and which, in October, was almost through. At about 25 feet in from the portal the tunnel entered on pay-ore, in which it has continued to the face.

The No. 1 tunnel is about 40 feet higher than No. 2, and has been

driven about 180 feet and developing pay-ore for its entire length, the face being in such ore. At one point in the driving the tunnel was deflected to the right and ran out of the ore-shoot, but, upon being brought back to the original course, picked up the ore again.

Above the No. 1 tunnel several open-cuts, sunk on the outcrop, have disclosed pay-ore, indicating that this ore-shoot continues for at least 350 feet to the south of the portal of No. 1 tunnel. The development work on this ore-shoot, as stated, would seem to indicate an ore-shoot at least 350 feet long, developed below the outcrops, along the plane of the vein for a distance of about 400 feet; the thickness of the pay-ore has been estimated by the management as averaging about 5 feet, this figure being, in the opinion of the writer, under the mark, rather than over it. Should the ore-shoot prove to be as long in the tunnels as the open cuts directly above them seem to indicate, this would argue an amount of ore from present development sufficient to keep the present mill busy for three years. The faces of all the tunnels were found to be in ore which was apparently richer than the average of the ore shoot.

The monthly average assay for September of the face of No. 2 tunnel is reported as being: Gold \$5.20; silver 61 oz.; lead 2.5 per cent; and of face of No. 3 tunnel, about, gold \$4.00; silver 15 oz.; lead 4 per cent. These values vary from month to month, and are quoted merely as an indication of the grade of ore met with".

Conditions at the time of examination did not allow proper sampling of the remainder of the veins exposed in the workings visited. No. 3 adit was inaccessible.

Five character samples of the better mineralized material were

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Figures ??

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24.1
4.1

Conditions at the time of examination did not allow proper sampling of the remainder of the veins exposed in the workings visited. No. 3 adit was inaccessible.

Five character samples of the better mineralized material were

taken and sent for assay, the results of which are tabulated below:

<u>Sample No.</u>	<u>Description</u>	<u>Assay</u>	
		Au.	Ag.
0387	Heavy pyrite in quartz - grab sample from dump No. 1 adit	0.04	3.5
0388	Rusty vein No. 1 adit - chip sample - contains massive pyrite and minor specks galena across 2.0'	0.06	3.0
0389	Scattered pyrite, vein material - grab sample No. 2 dump	0.01	0.2
0390	Heavy pyrite, minor galena - grab sample No. 1 dump	0.12	6.5
0391	Massive pyrite - grab sample No. 2 dump	0.16	13.1

Sketches of the workings and claims are enclosed at the rear of this report.

CONCLUSIONS AND RECOMMENDATIONS

A considerable amount of work was done on the property during the early part of the century and some ore was processed by a mill which had been erected on the property.

Though no shipment records are available, results of assays and millheads recorded in past Minister of Mines reports indicate some ore grade material.

The main vein is reported to have been traced at least three thousand feet, and is well mineralized with sulphides in pods, lenses and streaks.

It is recommended that a preliminary program of work be carried out over the claims to establish continuity of vein widths in the area of

the workings and along extensions, as well as to determine the possibility of ore grades present over a sufficient area to warrant a large work program. Exploration should also be carried out to investigate for off-shoots of the vein, and other veins in the area.


The work program should consist of the following:

1. Geological mapping and prospecting.
2. Rehabilitation of No. 1 and 2 portals.
3. Mapping and sampling of all underground workings.
4. Diamond drilling by means of short vertical holes above and below the workings.
5. Further work would be dependent on results obtained by the above.

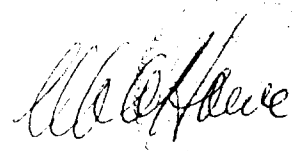
ESTIMATED COST OF PRELIMINARY PROGRAM

1. Geological mapping and prospecting	\$ 500.00
2. Rehabilitation of portals	1000.00
3. Mapping and sampling of workings	2000.00
4. Diamond drilling - est. 1000 ft. at \$10.00/ft.	10000.00
5. Transportation, helicopter, camps, etc.	3000.00
6. Supervision, engineering, etc.	2000.00
7. Contingency at 20%	<u>3700.00</u>
Total estimated cost	<u><u>\$22200.00</u></u>

Respectfully submitted,
A. C. A. HOWE INTERNATIONAL LTD.



W. G. Timmins, Geologist



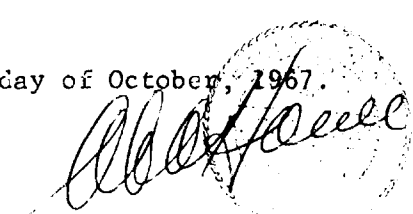
A. C. A. Howe, P.Eng.

CERTIFICATE

I, A. C. A. Howe, of the City of Toronto, in the County of York, Province of Ontario, hereby certify that:

1. I am a Mining Engineer with offices at 826-159 Bay Street, Toronto, Ontario and 401-543 Granville Street, Vancouver, B.C.
2. I am a graduate of London University, England, B.Sc. in 1949.
3. I am a member of the Associations of Professional Engineers of Ontario and British Columbia.
4. I have no interest, direct or indirect, in either the property or securities of Starbird Mines Ltd., nor do I expect to receive any such interest.
5. This report was written by W. G. Timmins, Geologist, of A. C. A. Howe International Ltd., Vancouver, B.C. whose work is well known to me, and is based on Government maps and publications, also a personal visit to the property by him.

DATED at Toronto, Ontario, this 4th day of October, 1967.

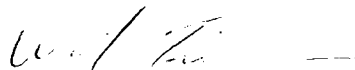

A. C. A. Howe, P.E. ~~1967~~ Date October 20, 1968

CERTIFICATE

I, W. G. Timmins, of 1899 Appin Road, of the City of North Vancouver, Province of British Columbia, hereby certify that:

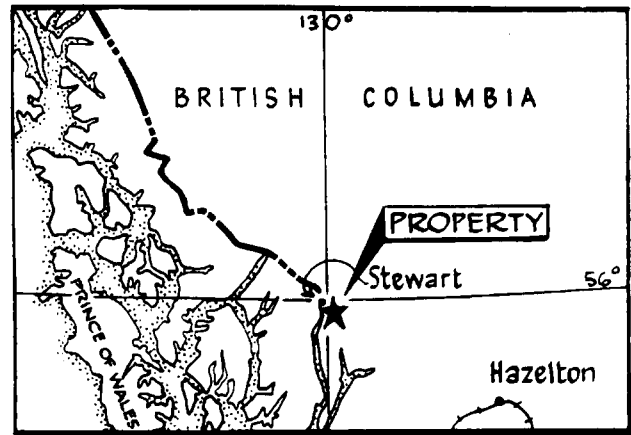
1. I am employed as Geologist by A. C. A. Howe International Ltd., Geological & Mining Consultants with offices at 401-543 Granville Street, Vancouver, B.C.
2. I am a graduate of the Provincial Institute of Mining, Haileybury, Ontario and have attended Michigan Technological University, Houghton, Michigan.
3. I have successfully completed examinations for admission to the Association of Professional Engineers of British Columbia and application for membership in that body is currently pending.
4. I have no interest, direct or indirect, in the property or securities of Starbird Mines Ltd., nor do I expect to receive any such interest.
5. This report is based on Government maps and publications and a personal examination of the property between the dates of September 17th and September 18th, 1967.

DATED at Vancouver, B.C. this 6th day of October, 1967.



W. G. Timmins, Geologist.

KEY MAP



JURASSIC

- 4 Augite porphyrite, augite syenite, gabbro.
- 2 BEAR RIVER FORMATION
tuff, breccia, lavas, argillite
- 1 BITTER CREEK FORMATION
argillite, quartzite, limestone
tuff, lava.

Source: CGS No 215A

MESOZOIC

2/1

Big Gulch Cr.

2

JOHN
32803

L.416
GYPSY
C.G.

JULES
32804

L.873
LITTLE JOE
C.G.

L.874
LUCKY
SEVEN
C.G.

KITTEN
32805

CAT
32806

FRANK
4

32807

VIC
32808

ED
32809

774332

BETH
32810

774240

ALICE
32811

ANN
32812

774333

RON
32813

774336

DORA
32814

774335

Adit Working

Albany Cr.

MAP 3T 269 M

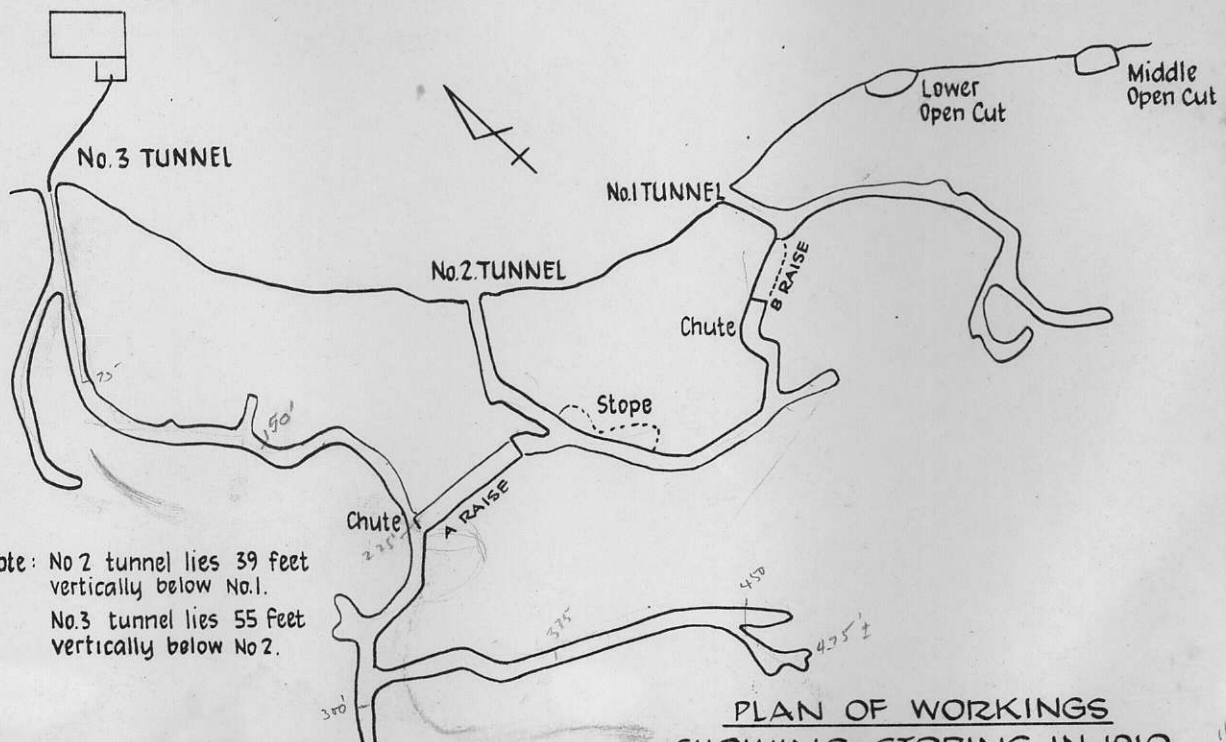
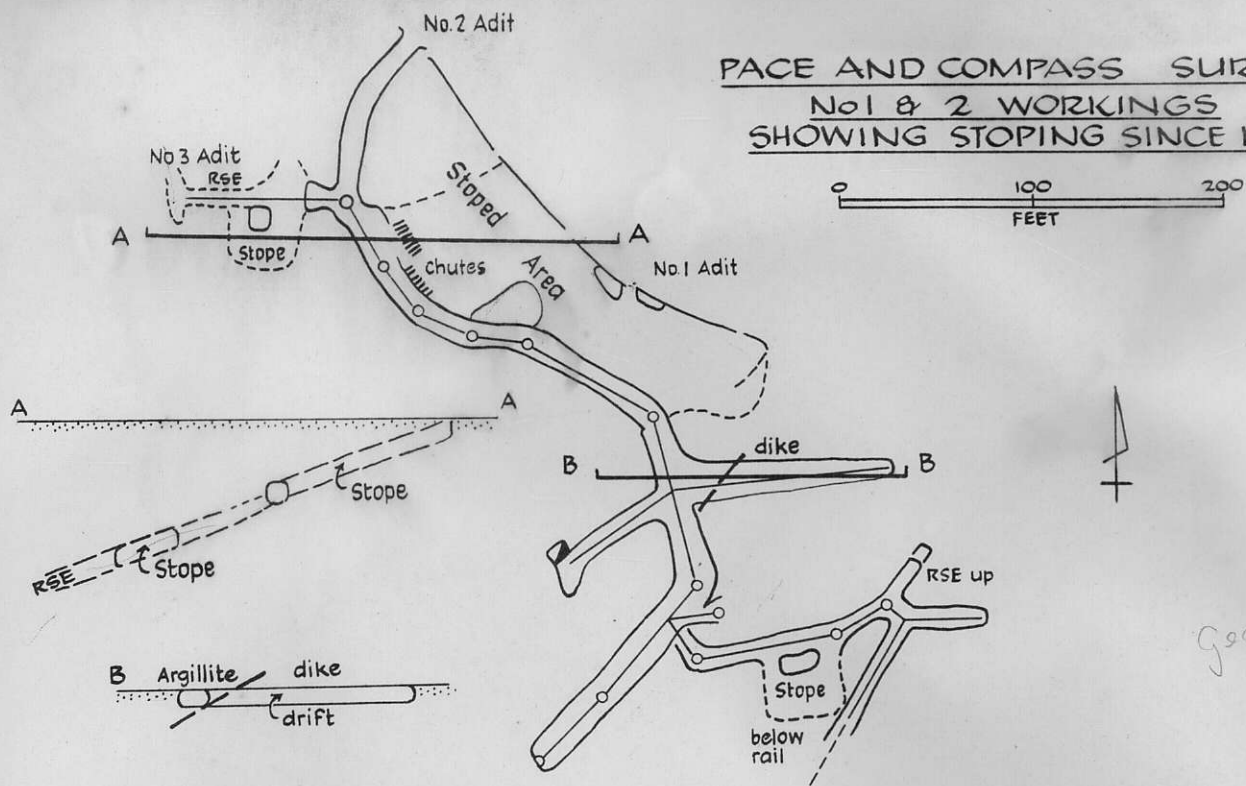
Claims Location map and Geology

STARBIRD MINES LTD.

STEWART AREA - BRITISH COLUMBIA.

FACE AND COMPASS SURVEY

No 1 & 2 WORKINGS
SHOWING STOPING SINCE 1910



PLAN OF WORKINGS
SHOWING STOPING IN 1910

After Plan by B.C. Bureau of Mines

SCALE 0 100 FEET

STARBIRD MINES LTD.

STEWART AREA ~ BRITISH COLUMBIA

A.C.A. HOWE INTERNATIONAL LTD.