GEOLOGICAL REPORT
HARRISON GROUP MINERAL CLAIMS
LINDQUIST LAKE, 53°, 127°, S.E.
By
Franc.R.Joubin, Geologist, P.Eng.B.C.
July 3rd to August 22nd, 1950

93E/6W

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GEOLOGICAL REPORT

HARRISON GROUP MINERAL CLAIMS

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INTRODUCTION

The discovery of a tungsten-bearing lode was made on this property in September, 1943 by the Harrison brothers of Wistaria, B.C. They staked six claims to protect this showing.

In July, 1944, the writer, in the course of examining this tungsten showing, discovered gold-bearing telluride veins, located partly on the staked property. Additional ground was staked by the Harrisons and the writer to protect all the known showings.

The outcrop sampling of the gold discoveries suggested that ore of attractive grade extended over a possible length of 1,600 feet and over an average width of 9 feet.

The property was optioned by Pioneer Gold Mines of B.C. Limited who proceeded, during the summer seasons of 1944-5 and 6, to do some surface trenching and diamond drilling. The work is reported by them to have proved up an appreciable tonnage of mineable gold-silver ore in the Main vein structure. The contact zone structure received less intensive attention.

In the fall of 1946, the Pioneer Company was faced with onerous cash payments under the terms of their option, and could secure no revisions or extensions. Consequently their option was allowed to lapse.

Since that date, the owners have, in the course of their annual assessment work, found the Main vein structure to extend an additional 1,000 feet beyond all previously known exposures. This newly opened section is reported to be of ore grade at the points sampled.

During July and August of this year the writer undertook to geologically map the entire property, a project not heretofore undertaken. The results of this study are given in this report and on the accompanying Geological Plan.

METHOD OF WORK

The writer was assisted in the work by Messrs. B.R. and Robt. Harrison, D. Roumieu and F. Corcoran. These men helped in the search for outcrops, in the accompanying survey (by stadia transit and chain and Brunton) and the last-named assisted with the drafting.

The work occupied from July 3rd to August 22nd with two short interruptions.

As the property is almost entirely above timber line and free of undergrowth the location and mapping of outcrops is not difficult. The work was handled by stadia surveys tied in to claim posts. The position of all posts is accurately known since the claims were surveyed by Underhill, Underhill & Fraser, in 1945.

Some detail was surveyed by chain and Brunton compass.

In general, outcrops are sufficiently numerous and large to indicate their distribution. Most of the secondary structures, principally faults, shown in the mapping are marked by creek courses. The details concerning them may be seen in some instances and in other cases must be inferred from the indirect evidence of displaced contacts.

The total cost of this project was $3645.00, distributed as follows:-

Wages (5 men)	$3050.00
Transportation from Burns Lake (nearest rail point) by boat and air	328.00
Cookery supplies	192.00
Work recording fees	75.00
TOTAL	$3645.00

Details of these expenditures are on a separate statement.

It is intended to apply this work as one years assessment credit on the Harrison property of twenty-six claims and four fractions.

PROPERTY AND TITLE

The present Harrison Group consists of the following surveyed 26 claims and 4 fractions recorded as :-

Harrison Nos. 1 to 8 inclusive
Harrison Nos. 12 and 13
Harrison Nos. 21 to 27 inclusive
Harrison Nos. 28, 29 and 30
Telluride Nos. 1 and 2
Telluride Nos. 4 and 5
Telluride Nos. 7 and 8
Telluride Nos. 3 and 6 fractions
Wedge, fraction
A.E. Fraction

Title to the property, through location rights, is held by :

Messrs. C.V. Harrison,
B.R. Harrison
Wm. Harrison. Jr., prospectors of Wistaria, B.C. &
Franc. R. Joubin, Geologist of Toronto, Ont.

LOCATION AND ACCESS

The above-named claims and fractions form a compact group, situated on the north shore of Lindquist Lake, Omineca Mining Division, British Columbia.

The property lies in the Tweedsmuir Park area and also in the Hydro-power Reserve area recently granted to the Aluminum Company of Canada. Neither of these reserve regulations, it is believed, would impose restrictions on mining operations.

Present access to the Harrison property is by one of several alternative routes. These are:

(a) Overland and Water Route via Burns Lake. This route from Burns Lake community on the Canadian National Railroad to the property is about 80 miles in length. The first 30 miles of this distance, from Burns Lake to Wistaria, is by a good gravelled car-road. The next 45 miles is by boat to the west end of Whitesail Lake. This water-route is fair and there are no portages but certain shallow channels limit the boat-load capacity to five tons or less. From the west end of Whitesail Lake to the property it is about

(a) Overland & Water Route via Burns Lake- Contd. four miles. This last four-mile stretch is actually a water-route but two difficult portages make it more practical to use it as an overland route.

(b) Overland and Water Route via Houston. This route, from Houston community on the Canadian National Railroad to the property, is about 80 miles in length. It is identical to Route (a) except that it commences from Houston rather than Burns Lake, thereby eliminating the crossing of Francois Lake by ferry.

(c) Overland Route via Kimsquit. This route, from Kimsquit which is a deep-sea port at the head of Dean Channel, is about 40 miles in length. There is at present a pack-horse trail over much of this distance. It is an all-land route; for at least three-fourths of its distance should present no serious road-building problems.

(d) Air Route. As there is a large lake (Lindquist Lake: ½ by 4 miles in size) bordering the property, it is easily accessible by pontoon-equipped aircraft from an established base. Such a base (Central B.C. Airways) is p resent at Burns Lake, some 80 miles distant.

The best present routes into the property are by air, Route (d) or Route (a) by road and water.

It is estimated that freight costs to the property from the railroad should be approximately $60.00per ton.

If the present detailed surveys of the Aluminum Company of Canada result in a decision to develop the hydro-electric power resources of this area, it is intended to ultimately flood Route (a) up to an elevation of 3,000 feet. This would create a single navigable sheet of water from the present highway to the property's south boundary. Such a development would make transportation to the Harrison property a relatively simple matter.

PHYSICAL FEATURES

Water - There is an ample supply of water for all major requirements in Lindquist Lake which is two square miles in area. Small creeks on the property provide limited sources of water for domestic, mining and drilling requirements.

Timber- There is an ample supply of excellent timber on the property, along the north-east shore of Lindquist Lake, between elevations of 3,000 and 3,500 feet. It includes spruce, balsam and some fir and cedar.

Power - There are two excellent hydro-electric power sites within four miles of the property but their development may now be restricted. The Aluminum Company of Canada is surveying the immediate area, including Lindquist Lake, for the purpose of major power development. If this project materialises, there should be an adundant source of local hydro-electric power.

Climate - The property is situated on the east flank of the Coast Range mountains so it enjoys some shelter from the heavy precipitation of the coast. Snowfall is heavy during the winter and the lakes freeze to a depth of one foot or more. The summer is moderate with a mixture of bright clear days, dull days and some fog. The elevation, between 3,000 and 5,500 feet, is one of quite rugged relief. The timber-line is around 3,500 feet.

Accommodation - There is a log-cabin and tent accommodation on the property suitable for a crew of 20 men. This camp is completely equipped with furnishings and tools to accommodate a crew of20.

GENERAL GEOLOGY

INTRODUCTION The Harrison property is situated near the east flank of the Coast Range Batholith. This is a geological environment similar to that of the Bralorne and Pioneer Mines to the south and to the Premier, Torbrit and Polaris Taku Mines to the north. These five mines are among the most important and profitable gold-silver mines of British Columbia, their aggregate dividend payments totalling about fifty million dollars to date.

REFERENCES The general area of the Harrison property has been mapped and reported upon in the following publications :-

Eutsuk Lake Area - Geol. Surv. Can.Sum.Rept. 1925, Pt.A.
Whitesail-Tahtsa Lakes Area-Geol.Surv.Can.Sum.Rept.1924.Pt.A.
Eutsuk Lake District-Geol.Surv.Can.Sum.Rept.1920.Pt.A.
Tahtsa-Morice Area-Geol.Surv.Can.Map 367 A-1936.
Ann, Rept.B.C.Min.of Mines for 1916-19-26-27.
Trans.Roy.Soc. of Canada Vol.41 sect.4.1947.
Whitesail Lake Area, S.Holland. B.C.Dept.of Mines,1945.

The area of the Harrison property is currently being re-mapped in detail by the Geological Survey of Canada.

Rock Types & Structures The area of the Harrison property, near the eastern flank of the Coast Range Batholith, is underlain by Hazelton Group volcanics and sediments of probable Jurassic age. These bedded rocks are cut by diorite and quartz diorite masses which are now sheared to a shreddy texture. The dioritic rock is in turn cut by fresh-looking, pink-coloured, in places pegmatitic, granite.

The above rock assemblage is much faulted with measurable horizontal offsets up to eight hundred feet or more.

The mineral deposits of the area include zones of sphalerite-galena-pyrrhotite mineralization inthe sediments and

tuffs; quartz veins containing gold and silver values in the diorite sediments and granite and some scheelite bearing lime silicate zones in the sediments.

Rock Types The rock types present on the Harrison property and their distribution are shown on the accompanying Geological Plan of Property.

The oldest rocks present appear to be the slaty sediments of the Hazelton Group. These rocks are now moderately folded. Their thickness is unknown.

The slaty sediments are overlain by a greenstone band about 200 feet in true thickness. The original thickness of this member is unknown as it now appears truncated by a strike fault. The greenstone is probably a tuff. Locally this greenstone, and more particularly a ~~lining~~ limy band between it and the slates, is altered to an epidote and garnet rich zone which contains scheelite in noteworthy amounts.

Separated from the above rocks by a large fault zone, some one hundred and fifty feet in width, is the intrusive complex which underlies the property.

The intrusives consist of an older diorite, now sheared to a shreddy texture and of grey-green colour, which is in turn cut by a younger, massive pink coloured granite of medium to pegmatitic texture.

All of the above rocks are cut by narrow dark coloured dykes of basic compositions.

Structure The main structural details of the above rock types are shown on the accompanying Geological Plan of Property. It will be seen that most geological contacts trend in a general east-west direction.

The slaty sediments and greenstone (tuffs) strike about east-west and dip from 30 to 40 degrees to south; the main fault zone on the property has an approximate east-west strike and dip of about 60 degrees to south; the structures occupied by the gold-bearing quartz veins have a roughly east-west strike and dip from 20 to 50 degrees to north, while even the diorite and granite contact shows the same approximate east-west orientation.

The secondary structure of main interest on the property is a fault zone about 150 feet in width and now traced for about 4500 feet along strike. This is a strike structure and the only evidence for calling it a fault is that it cuts the dip of the sediments at a 30 degree angle and it shows much intense shearing of the contained material.

The main Fault zone consists of crenulated, silver-coloured, sericitic schist interbanded with dyke-like lenses of quartz believed to be zones of silicification. Some of the quartz masses are mineralized and contain important gold and silver values. In general this structure separates the sediments and greenstone from the diorite. At its present western extremity, however, it appears to be splitting and "slicing into" the greenstone. At its present eastern extremity the Fault zone appears to have swung into the granite seemingly as if it had sliced into and across the diorite which normally forms its south or hangingwall.

Apparently later than the main Fault zone, since horizontal offsetting of it is apparent, is a system of north-trending "cross" faults. The movement in general has been right-handed with horizontal offsets rarely exceeding 100 feet. The largest of these faults, along the east boundary of the property, shows a left-hand movement and apparent offset of about 800 feet.

MINERAL SHOWINGS

The original tungsten lode which attracted first attention to this area has not been developed, so no detailed data is yet available concerning it. The outcrop is in a zone of the sediments, now altered to lime-silicate. The mineralization is present as scheelite. Seven samples taken indicated the tungstic oxide content of the zone to range from 2 to 14 pounds per ton.

The gold-silver veins are of two types. One type is of the Main vein type, the other the Fault zone type. Only the Main vein type outcrops and is shown on the accompanying Geological Plan of Property.

Main Vein Of the Main vein type, only the seemingly more important one has been explored. This exploration consisted of surface trenching and diamond drilling. The Main vein on which work was done has an east-west strike and a dip from 20 to 45 degrees to north. This vein is in diorite. It varies from three to twenty feet in width with an average of nine feet. A total vein length of about 1,640 feet has been explored to date of which 1,403 feet is of marginal or ore grade. An additional 1,000 feet of unexplored length is indicated by recent surface trenching.

The Main vein structure is cut and offset by a system of sub-parallel north to north-westerly trenching right-hands faults. Most fault offsets are less than 100 feet, but one is known to measure about 200 feet.

MINERAL SHOWINGS - Contd. Page 2.

The Main vein structure dips into the Fault zone structure at depths of about 200 feet. The nature of the junction is not known; some drilling suggests that it either reverses in dip to follow the Fault zone or is terminated by it.

Fault Zone This zone is about 150 feet in width. It strikes east-west and dips about 60 degrees south. It consists of parallel bands of silicified rock resembling dykes and locally called "aplite", separated by bands of sericitic schist. Along the contacts of the "aplite" and schist there is a system of sub-parallel gold-silver veins and stringer zones.

The Fault Zone vein material, as in the Main vein material, consists of quartz mineralized with galena, sphalerite, pyrite with gold and silver bearing tellurides. The Fault zone veins have been only partially investigated by drilling over a strike length of 900 feet and to vertical depth of 250 feet. Sixteen drill holes have explored this block. Thirteen of these holes returned one or more ore intersections. The Fault zone veins appear to be parallel and at least two or three appear important. Widths of individual veins vary from one to six feet with an average of three feet. Stringer zones are locally from thirteen to fifteen feet wide. Gold and Silver values are higher than in the Main vein but no average grade can yet be estimated with confidence.

ORE POSSIBILITIES

The ore possibilities of the tungsten showings are not yet known.

Main vein The ore picture on the Main vein is indicated below in a tabulation of exploration results from the Pioneer Company's diamond drilling :-

ORE POSSIBILITIES - Contd.

Section.	Length ft.	Av. Width ft.	Ozs. gold p.t.	Ozs. Sil. p.t.	$ Values pt (1)	Tonnage Estim.
1.A	50.0 plus	3.0	0.16	1.6	7.30	------
1.B	25.0 "	4.3	0.22	1.6	9.72	------
2.	160.0 "	4.0	0.15	2.0	7.28	------*
3.**	150.0 "	7.5	0.23	3.6	11.56	15,000 (150
4.	270.0 "	7.8	0.30	5.6	15.75	29,450 (150
5.A	80.0 "	19.0	0.18	4.3	10.16	8,700 (50)
5.B	270.0 "	10.7	0.29	8.2	17.32	23,600 (142
6.	128.0 "	6.0	0.19	7.3	12.80	3,200 (50)
7.	90.0 "	17.0	0.07	2.5	4.58	------
8.	90.0 "	10.0	0.21	9.2	14.99	9,000 (?)
9.	90.0 "	7.0	0.16	9.0	12.91	------
	1403.0					88,950

(1) Gold at $38.50 per oz, and silver at $0.75 an oz.
* Indicates depth to which drilling is done and tonnage calculated.
** Ore sections are underlined.

The above data indicates that of 1,640 feet of vein length explored, 988 feet is ore (plus $10.00 across plus 6.0 feet), 90 feet is ore on surface but has not been drilled for tonnage estimate, 325 feet is of marginal grade (shoots ranging from $4.58 over 17.0 feet to $9.72 over 4.3 feet) while 237 feet is definitely sub-commercial. It is to be noted that ore calculations are made only for those blocks drilled and for depths from 50 to 150 feet. It is to be noted that all ore blocks are "open" on one or both ends for additional length. No data is yet available for the additional 1,000 feet of length partially exposed.

The above data indicates a probable tonnage of 88,950 tons of weighted average grade of $14.73 over average width of 9.77 feet.

Fault zone No ore estimates can be undertaken for the veins in this structure until more work has been done. Present drill results indicate two ore-shoots of good grade. One shoot is known to exceed 280 feet in length and 160 feet in depth, with depth and both ends "open". Another shoot is indicated to have a depth of 250 feet, still

"open", and to be unknown length.

The ore possibilities of the Fault Zone are considered to be excellent. No structural reasons are evident to prevent the veins and values in this zone to go to an appreciable depth. Only 30% of the known length of this structure has been explored to date.

CONCLUSIONS

1. The Harrison property has most physical features in its favour; timber, water and hydro-electric power sources are available. The rugged topography allows for expeditious, relatively cheap mine development by adit entries. Accessibility is a temporary problem but not an insurmountable one. The property is equipped with summer camp accommodation and tools for immediate resumption of work.

2. The Harrison property is underlain by rock types and fault structures similar to those present in the principal gold-silver mines of the Coast Range Batholith area of British Columbia.

3. Diamond Drilling to date, exploring probably 30% of the favourable sectionsof the Main vein structure, indicate the presence of about 90,000 tons of gold-silver ore. Diamond drilling to date, exploring probably 15% of the Fault Zone structure, indicates at least two ore-shoots of important size and grade. The possibilities of the tungsten deposits remain unknown.

4. The Harrison property may be regarded as an exceptional prospect with excellent chances of making a mine. Additional diamond drilling and underground work are necessary to better appraise the production possibilities.

RECOMMENDATIONS

1. It is recommended that not less than 5,000 feet of diamond drilling be undertaken as a pre-requisite to underground work. One-half of this drilling would explore the additional 1,000 feet of Main vein recently discovered. One half of this drilling would test the Fault zone veins for length, and more particularly, for depth.

2. It is recommended that, based on the results of the past drilling, and drilling proposed, a site for an adit crosscut be chosen and prepared for a winter program of underground development.

EXPENDITURE ESTIMATE

It is estimated that the work recommended will cost $50,000.00.

Respectfully submitted,

Franc. Joubin,
Mining Geologist and P.Eng.
Ont. and B.C.

510-100 Adelaide St.W.
Toronto, Ont.

August 23rd, 1950.

MAGNETIC VARIATION 27°

SCALE: 1 INCH = 300 FEET

TELLURIDE N°7

TELLURIDE N°8

TELLURIDE N°2

TELLURIDE N°1

TELLURIDE N°4

TELLURIDE N°5

TELLURIDE N°6 FRAC.

TELLURIDE N°3 FRAC.

HARRISON N° 7

HARRISON N° 8

HARRISON N°3

HARRISON N°4

HARRISON N°2

HARRISON N°1

HARRISON N°5 (THEODOLITE N°1)

HARRISON N°6

HARRISON N°1A

HARRISON N°1C

HARRISON N°13

HARRISON N°21

HARRISON N°22

HARRISON N°23

HARRISON N°25

HARRISON N°26

HARRISON N°27

HARRISON N°28

HARRISON N°29

WEDGE PR.

CAMP

TRAIL

WHITESAIL LK. 4.5 MILES

NORTH 13080

NORTH 13000

NORTH 10080

NORTH 7000

EAST 15000

EAST 13500

3000' CONTOUR

AREA OF NUMEROUS LARGE OUTCROPS

LINDQUIST LAKE

LEGEND

Vein quartz	1
Skarn bed (local scheelite)	6
Basic dyke (diabase)	2
Silicified zone ("aplite")	3
Granite	4
Diorite - Qtz. diorite	5
Greenstone (Tuffaceous Seds)	6
Sediments (mainly slate)	7
Fault	
Strike and dip	
Bedding	
Outcrops	
Correlation of outcrops	

HARRISON GROUP
LINDQUIST LAKE B.C.
GEOLOGICAL PLAN
SCALE 1" - 300'

TO ACCOMPANY REPORT BY F. JOUBIN - AUG. 1950

MAGNETIC NORTH

MAGNETIC VARIATION 27°

SCALE: 1 INCH = 300 FEET

TELLURIDE Nº7

TELLURIDE Nº8

TELLURIDE Nº2

TELLURIDE Nº1

TELLURIDE Nº4

TELLURIDE Nº5

HARRISON Nº1

HARRISON Nº2

HARRISON Nº3

HARRISON Nº4

HARRISON Nº5 (TWEEDSMUIR No1)

HARRISON Nº6

HARRISON Nº7

HARRISON Nº8

HARRISON Nº12

HARRISON Nº13

HARRISON Nº21

HARRISON Nº22

HARRISON Nº23

HARRISON Nº24

HARRISON Nº25

HARRISON Nº26

HARRISON Nº27

HARRISON Nº28

HARRISON Nº29

HARRISON Nº30

WEDGE FR

CAMP

WHITE BAIT 3.3 MILES

TELLURIDE Nº6 FRAC

AREA OF NUMEROUS LARGE OUTCROPS

3000' CONTOUR

NORTH 13080

NORTH 10800

NORTH 7000

EAST 10500

EAST 13000

LINDQUIST LAKE

LEGEND

Vein quartz	1
Skarn bed (local scheelite)	2
Basic dyke (diabase)	2
Silicified zone ("aplite")	3
Granite	4
Diorite-Qtz. diorite	5
Greenstone (Tuffaceous Seds)	6
Sediments (mainly slate)	7
Fault	
Strike and dip	
Bedding	
Outcrops	
Correlation of outcrops	

HARRISON GROUP
LINDQUIST LAKE B.C.
GEOLOGICAL PLAN
SCALE 1"-300'
TO ACCOMPANY REPORT BY F. JOUBIN-AUG. 1950