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REPORT ON THE YMIR GROUP

YMIR. B.C.

E. Livgard, B.Sc., P.Eng.,  
Vancouver, B.C. July, 1975.

## INTRODUCTION

This report is written at the request of Junex Resources Ltd., of Vancouver, B.C.

The writer's associate, J.J. Oberbillig, P. Geol., examined the Ymir claim group on June 29, 1975 with Mr. Murray Zulps.

The No.10 adit was open, however, small rockfalls and sloughs have backed water up in the tunnel to depths of over 4 feet, making an underground examination extremely difficult without adequate preparation. The No.3 adit was visited but the portal was caved. The "Glory Hole" area, at the top of the vertical shaft was examined.

An examination of the vein outcrop on the Ymir - Goodenough boundary was made, and a 20 ft. sample was cut.

This report is based on information obtained from the property examination, plus information compiled from published reports on the area, and some mine files as listed in the references.

SUMMARY

The property of Junex Resources Ltd., consists of seven contiguous Crown granted mineral claims 5 miles from Ymir, 30 miles from Trail, B.C. The property lies on a steep hillside at an elevation of about 4,500 feet. Mineralization was first discovered on the claims about 1895 and before the end of the century a 80 - Stamp mill with a capacity of some 500 tons per day had been constructed. Production continued till 1908. The mine remained idle until the thirties when interest in the Ymir mine revived, " - the possibilities of which are not believed to be by any means exhausted". Small shipments were made to the nearby Goodenough mill and minor development was carried out. In the forties leasors made some shipments of ore directly to smelter. The mine has remained idle since.

The veins are found diagonally cutting argillaceous and quartzitic schist called the Ymir group. Nelson Plutonic rocks are found to the east and andesite and augite porphyry to the west.

The main vein strikes east-northeast, and dips steeply northwest. The mine has been developed on 10 levels, the bottom level being an adit level cross-cutting 2,160 feet from above mill bins to the vein. The vein was strong on this level but contained low grade and small highgrade shoots only. The main ore body above this level had dimensions reported as 500 feet by 500 feet by 10 to 40 feet wide.

The main ore localization agents may have been changes in rock-type cut by the vein causing physical and chemical changes.

These physical changes may also have caused flexures in the fault fissure followed by the vein and provided open spaces on movement along the fault.

Past production amounted to a little over 300,000 tons of ore in the period 1900 to 1907 at a grade of .265 oz Au, 1.0 oz. Ag, and 1.26 % Pb per ton. At present prices this works out to over \$50.- per ton. Relatively small shipments only have been made since that time.

Exploration potential of the property are considered good and comprise some of the following features. The main orebody may have in excess of 100,000 tons remaining in it at unknown grade.

Large sections of the vein remain unexplored above No. 10 level. Much rich float believed to be from a second vein has been found on surface and the source has never been located.

It is recommended that the underground workings be opened up to the maximum extent and all available openings mapped and sampled. Some trenching should also be carried out on surface. The total costs of the work recommended amounts to \$40,000. - .

RECOMMENDATIONStage 1.

Preparation of the underground for examination may be relatively easy due to the fact that the lowest level in the mine, No. 10 is an adit level which drains the mine water. Falls of rock have occurred in the cross-cut to dam up the water behind it to a depth of over four feet.

Pick and shovel and some explosives should be used to clear these obstructions to the side, and drain the water. Some timbering may be necessary. The level should then be mapped and sampled.

On levels No. 2 and No. 3 the portals have caved and should be dug out with a front end loader and timbered. It is assumed that some caving has taken place in the drifts and this could be cleared aside for access. It is doubtful if the drift will be accessible past the main stoping area at least on No. 2 level. The No. 3 level may be open as it was a main haulage level through the main stope and would have been well timbered.

Raises to the east side of the main stope should be rehabilitated and ladders put in. The raise between the bottom level, No. 10, and the bottom of the stope levels (No. 5) should also, if possible, be rehabilitated and ladders put in. All mine openings that can be made accessible should be mapped and sampled.

Trenching should be carried out on surface to the east and west extensions of the vein, the possible faulting of the vein to the west and on the possible location of the "rich float" on surface near the end of the hangingwall cross-cut on No. 2 level described earlier.

The old tailings ponds should be carefully sampled as should old dumps.

Stage 2.

The present information indicates that favourable information will be forthcoming from the work under stage one, but the follow up work that will be required is so indeterminate in scope that no stage 2 work can reasonably be outlined at this time.

ESTIMATED COSTS

Rehabilitation, timbering of crosscuts and drifts 4,000 - 5,000 feet	
Raise timbering and ladders 800 - 1,400 feet	
3 men - 3 months wages	\$12,000
Sampling - 1 man - 2 months	2,000
Mapping - 1 geologist - 1 month	1,500
Accommodation and Food - 360 man days @ \$20 per day	7,200
Front End Loader - 40 hrs. @ \$25.00	1,000
Cat - DC 8 - 40 hrs. @ \$50.00	2,000
Vehicles, supplies and assaying	4,300
Supervision and consulting	4,000
Head Office as applied to the project	2,000
Contingencies	4,000
	<hr/>
Total Cost - Stage One	<u>\$ 40,000</u>

### LOCATION AND ACCESS

The property is situated on Huckleberry Creek a tributary to Ymir Creek 5 miles from Ymir. It is found on map sheet 82F/6E in the Nelson Mining Division.

Ymir is 25 road miles south of Nelson B.C. and 30 road miles from Smelter at Trail B.C. The claim ground and the portals can be reached via an excellent 5 mile dirt road from Ymir.

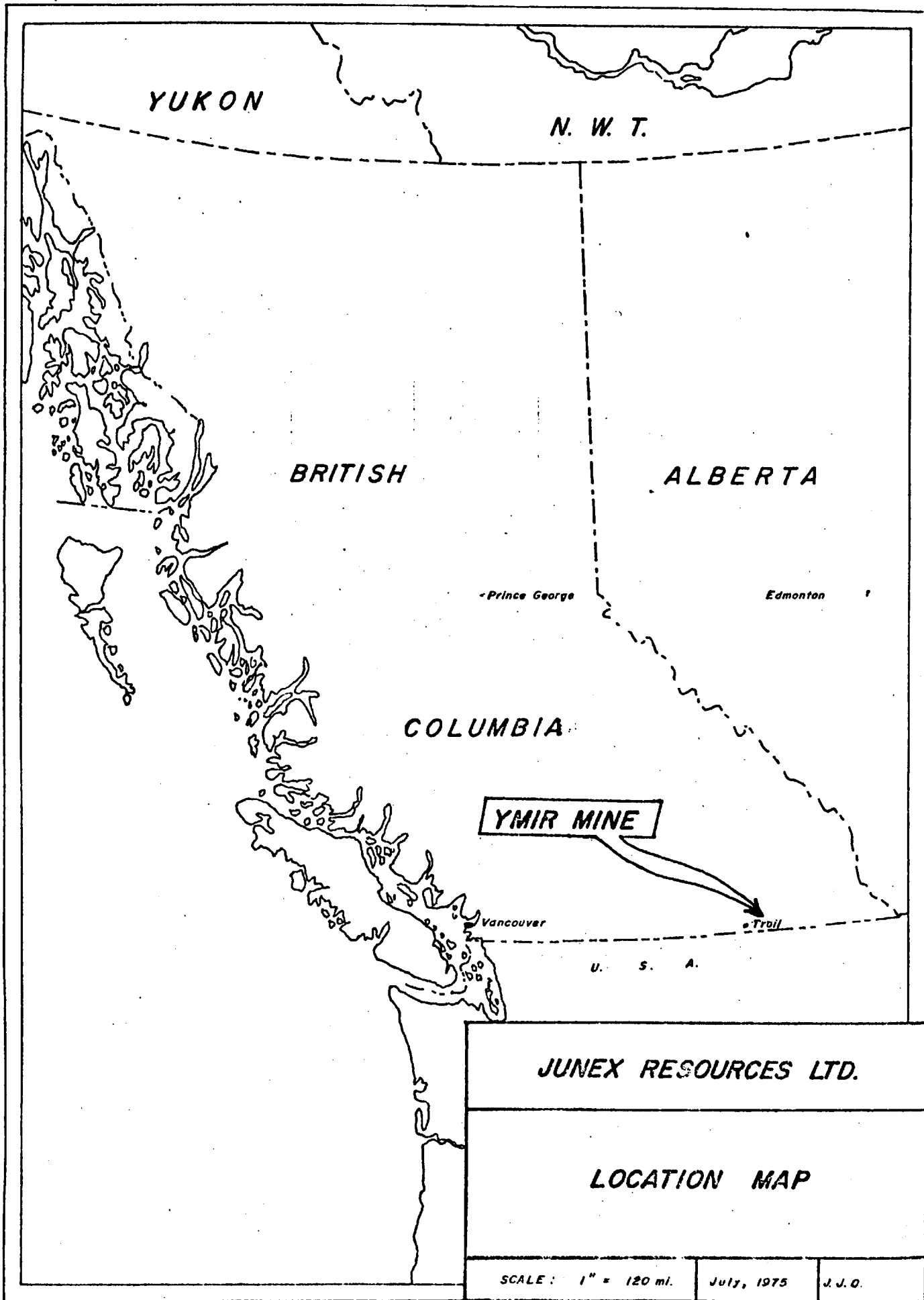
### TOPOGRAPHY

The property covers part of a steep slope on the North side of Huckleberry Creek, which lies at about 3,000 feet elevation. Two miles to the north Mt. Elise reaches an elevation of 6,960 feet. The old mine workings and surface exposures lie between ~~4,000 and 5,000 feet elevation.~~ The bottom crosscut in the mine was collared ~~at about 3,200 feet~~ elevation and intersected the vein at a vertical depth of 1,000 feet. Relatively flat ground is found at the junction of Ymir Creek and Huckelberry Creek.

### CLIMATE

The snow cover in the area is not excessive being about 3-4 feet. The total annual precipitation is around 30 inches. The summer exploration season would extend over 6 months or more without encountering adverse snow conditions. Winter temperatures are not excessively low but may reach below - 20°C for short periods.





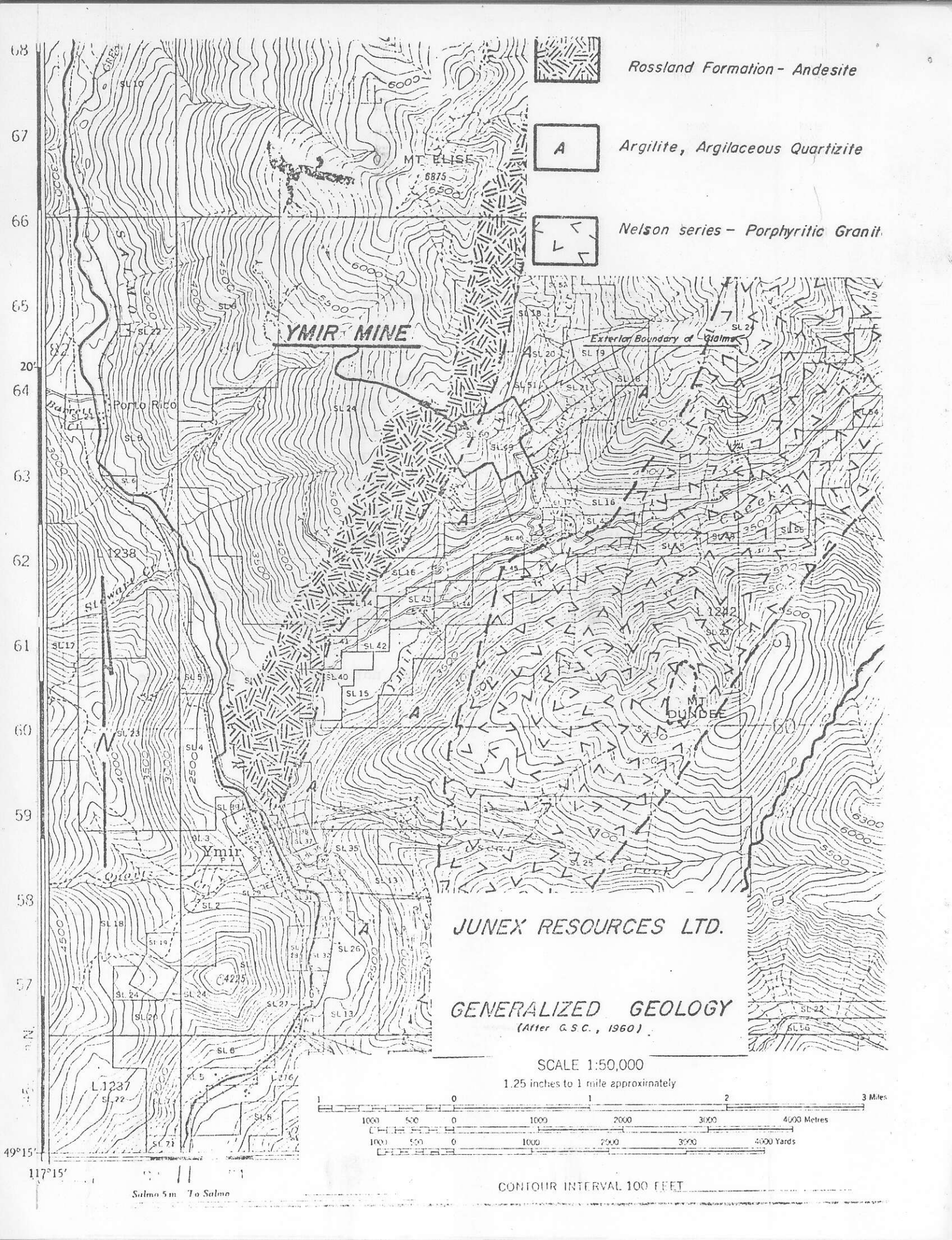
PROPERTY

The claim group comprises the following contiguous Crown granted mineral claims:

Ymir	Lot	1708
ROCKLAND	"	1709
MUGWUMP	"	1710
GOLDEN HORN	"	1711
NORA FRACTION	"	2301
POUNTNEY FR.	"	2302
LAWRENCE FR.	"	2303

The group extends roughly 3,000 feet east-west and 3,000 feet north-south, and covers the old Ymir Mine and adit tunnels.

The ownership of these Crown grants has not been looked into by the writer.



Rosland Formation - Andesite

A Argilite, Argillaceous Quartzite

Nelson series - Porphyritic Granite

YMIR MINE

Exterior Boundary of Salmo

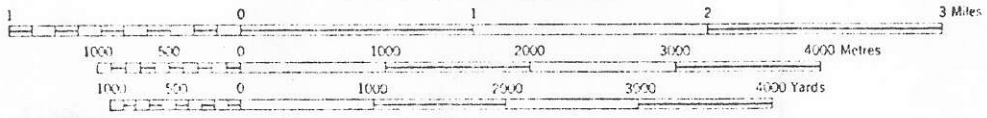
JUNEX RESOURCES LTD.

GENERALIZED GEOLOGY

(After G.S.C., 1960)

SCALE 1:50,000

1.25 inches to 1 mile approximately



CONTOUR INTERVAL 100 FEET

Salmo 5m To Salmo

## HISTORY

The claims in the Ymir group were first staked in 1895 to 1897. A wagon road was constructed from the railroad at Ymir to the mine in 1896.

A compressor plant was installed in 1898 and an 80 - stamp mill was erected in 1898 - 1899. Production started in 1899 and continued to 1908. A total of about 350,000 tons were mined and milled. Mine development was carried out during these years particularly to open the main ore shoot.

During the latter years major development was carried out on No. 10 level. The ore shoot did not extend down to this level. This development was the logical step under the circumstances, but may well have been done in preference to other development on the upper levels which possibly could have been more successful.

The mine was idle up to 1928 when some rehabilitation work was done on #10 level. During 1930 to 1939 occasional minor shipments were made to a new mill at the nearby Goodenough mine and minor development took place. During the period 1940 - 1944 leasors mined and shipped ore directly to smelter at Trail. Since that time no significant work has been done on the property.

## GEOLOGY

### Rock Types:

The district is part of the Nelson range of the Selkirk mountain system.

The main rock types in the mining district are: The Ymir group of metamorphic sediments consisting of argillite, slate, quartzite, andalusite schist, and siliceous marble, considered to be possibly Permian, Triassic, and Lower Jurassic.

The Rossland Formation consisting of andesite, latite, basalt, sills, flows and pyroclastic deposits of augite porphyrite of Lower Jurassic age.

The Nelson Plutonic Rocks of Cretaceous age.

The Ymir metamorphic sediments, or schists go through the centre of the district in a north-northeast direction in a band roughly 2-3 miles wide.

The Rossland formation lies west of this and the Nelson Plutonics east. Tongues of the Nelson granite are extensively inter layered with the Ymir metamorphics.

Mineral deposits are found in all the above rocktypes but the Ymir schists are favoured as host rock. They strike northerly and generally dip steeply west. Strong shearing and crumpling has extensively obscured primary structures. Only minor faulting has been noted.

The Ymir mineral deposits:

The mineral deposits are found in quartz veins which cut the Ymir schist which here strike northeast and dip 70° northwest. This type has been the most productive in the district.

The Quartz veins are fault fissure filling and the main vein strikes about East-north-east and dips 60-70° North. It varies in width from a few feet to 40 feet wide.

Localization of ore is probably caused mainly by changes in the rocks cut by the vein. These changes in rocktype would cause flexures in the fault and on displacement - hanging wall to the east - pinches and swells would occur, the swells providing open spaces for ore deposition. Other localizing agents are intersections with granitic rocks and intersections with fracture zones.

The localizing agents have not been satisfactorily explained at the Ymir. For example: The ore-shoots pitch toward their presumed origin, the Nelson granite, or east, while if a change in rock type was the main or only localizing agent they should pitch west.

The nottom level in the mine No. 10 level, 1,000 feet below surface followed the vein for 1,100 feet to the east. The vein is very strong and well defined but the grade is very low. The position of groundwater level during deposition and the physical and chemical character of the wall rock may also have influenced ore deposition.

If the groundwater at the time of deposition was a factor in localizing deposition the No. 10 level may represent the bottom of the ore. If it was not, then other orebodies may be found at depth.

Mineralogy:

The Gangue mineral is quartz. It has two varieties, massive clear white and fine grained dense blue. The massive white variety is most common.

The ore minerals are auriferous and argentiferous galena, sphalerite, and fine and coarse grained pyrite.

Native gold and silver are found generally in the oxidized zone but native gold is also found in the blue quartz.

Pyrite is the most common sulphide. It is gold bearing particularly in association with galena and sphalerite.

The veins are in many places banded and sometimes exhibit comb and druse structures.

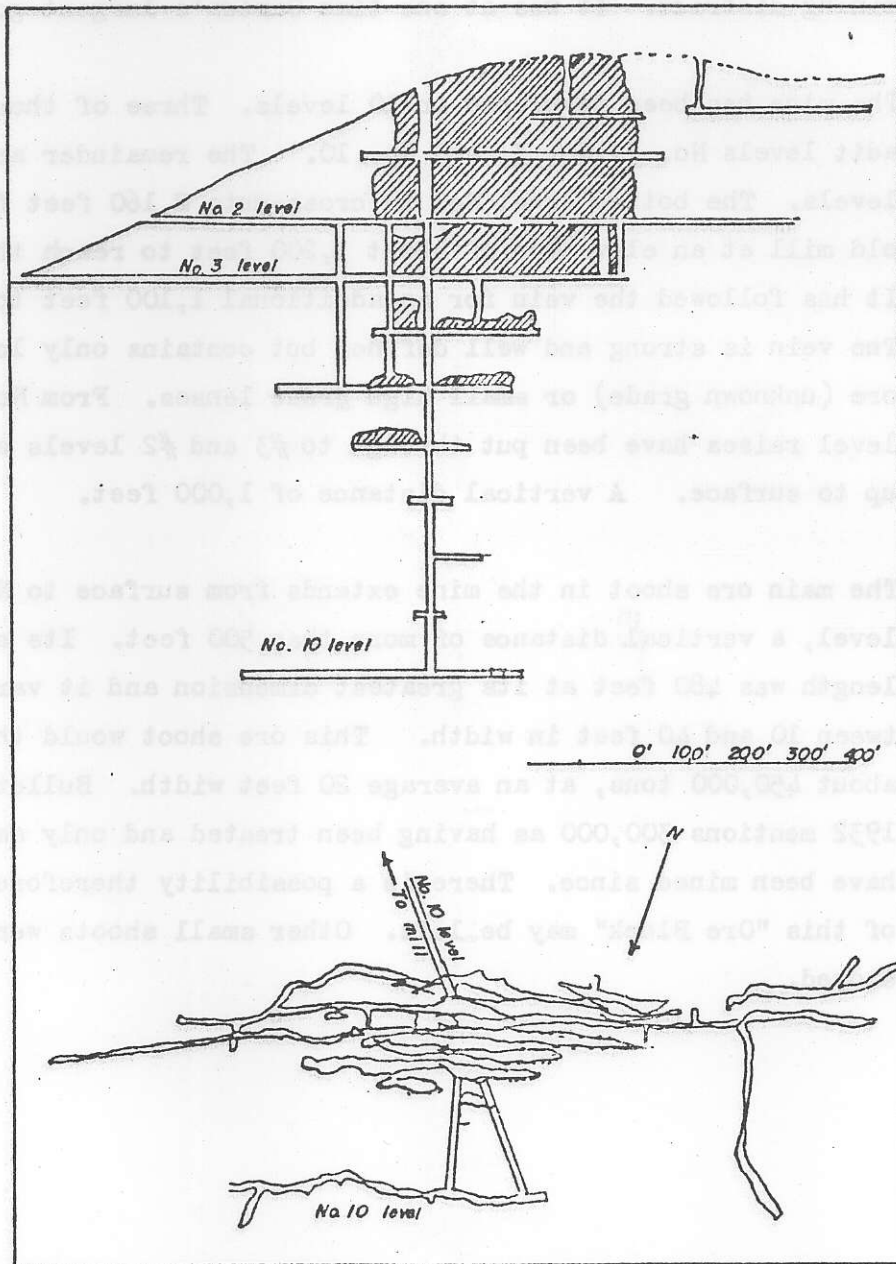
THE YMIR MINE

The Ymir mine has been the largest producing mine in the Ymir mining district. It was at one time Canada's largest gold mine.

The mine has been developed on 10 levels. Three of these are adit levels No. 2, No. 3, and No. 10. The remainder are internal levels. The bottom level No. 10 cross-cuts 2,160 feet from the old mill at an elevation of about 3,200 feet to reach the vein. It has followed the vein for an additional 1,100 feet to the east. The vein is strong and well defined but contains only low grade ore (unknown grade) or small high grade lenses. From No. 10 level raises have been put through to #3 and #2 levels and on up to surface. A vertical distance of 1,000 feet.

The main ore shoot in the mine extends from surface to No. 7 level, a vertical distance of more than 500 feet. Its stope length was 480 feet at its greatest dimension and it varied between 10 and 40 feet in width. This ore shoot would thus contain about 450,000 tons, at an average 20 feet width. Bulletin No. 1, 1932 mentions 300,000 as having been treated and only small amounts have been mined since. There is a possibility therefore that some of this "Ore Block" may be left. Other small shoots were also developed.





PLAN & LONGITUDINAL SECTION OF YMIR MINE

After G.S.C. Mem. 94

TONNAGE AND GRADES PRODUCED

The mine first produced in 1899 and continued to 1906. The writer has mine record for the years 1902 to 1905 inclusive. These records are concentrate shipments only and do not show mill feed grade.

	<u>Dry Tons</u>	<u>Au oz</u>	<u>Grade</u>	<u>Ag og</u>	<u>Grade</u>	<u>Lb Pb</u>	<u>%Pb</u>
1902	3512	3088	.879	38,386	10.9	1,250,000	17.8
1903	3075	2481	.807	35,571	12.2	993,000	16.2
1904	2377	1890	.795	25,017	10.5	634,000	13.3
1905	1822	1209	.665	15,722	8.6	352,000	9.7

A gradually decreasing production should be noted and a decreasing concentrate grade probably due to lower mill heads and increasing pyrite and possibly sphalerite content. In addition to the above concentrates cyanidation gave extra production of gold and silver.

The following information was obtained from G.S.C. Memoir 94.

- 1899 7400 tons of rich carbonate and galena ore were crushed and 46 tons shipped.
- 1900 Production amounted to 42,660 tons giving a yield per ton of \$7.20 in gold and 1.06 oz Ag.
- 1901 The company produced gold bricks valued at \$40,000 per month. Recovered value was about \$9.00 per ton while production cost was from \$3.50 to \$4.00 per ton.
- 1902 The output was about 50,000 tons of ore yielding per ton \$6.69 in gold and \$1.27 in silver and lead.
- 1903 The ore milled amounted to 54,850 tons. Values resulting from milling cyaniding were 11,160 oz gold, 50,060 oz silver and 515 tons of lead " - which with the concentrate brought the total production to something over \$300,000 - ". It appears from the comments above that concentrate shipments are in addition to the above figures.

The writer feels that this is probably an error and that the above figures are total production as indicated by the lead production which approximately corresponds to that given under concentrate shipments - no lead, only silver-gold, would be recovered from the cyanide production.

1904      Output was between 30,000 and 35,000 tons.  
 1905      Output was considerably less than in 1904.  
 1906      The mill was in production off and on  
 1907      Development took place and 1,000 tons was put through the mill.

From the above records the year 1903 is the only one where mill feed grades may be inferred. The recovered values in the milling and cyaniding operation appears to have been .203 oz. gold, 0.9 oz. silver, and 0.91% lead.

In an operation to-day the zinc values would also have been of interest and these appear to be somewhat higher than the lead. If it is assumed that 1% zinc was recoverable and if to-days prices are taken as \$160.-/ oz. Au, \$4.25/oz.Ag, \$0.15/lb Pb, \$0.25/lb Zn. Metals in 1903 production at to-days prices would then amount to \$44. - per ton.

The total production during these years has been recorded as 304,494 tons giving 80,540 oz. Au., 304,342 oz. Ag., and 7,647,223 lbs. Pb., or an average grade of .265 oz. Au., 1.0 oz. Ag., and 1.26% Pb per ton. At to-days prices this would be \$50.34/ton. This could be a very profitable metal content in a reasonably efficient underground mine.

From the Minister of Mines Reports (B.C.) it appears that production from the mine has been minimal since 1907. The nearby Goodenough mine had a 100 T/D mill on the property (1935 - ) and was in production but only small and intermittent shipments of ore were received from the Ymir mine.

Leasor operated at the Ymir during 1940 to 1944. The writer has ore shipment records for the years 1941 - 1943.

The shipments totaled as follows:

	<u>Tons Ore</u>	<u>Oz/Ton Au</u>	<u>Oz/Ton Ag</u>	<u>% Pb</u>	<u>%Zu</u>
1941	1,152	0.295	1.90	2.56	3.44
1942	698	0.198	1.35	1.85	2.53
1943	622	0.085	0.50	0.45	0.76

No further production has been noted.

EXPLORATION POTENTIAL

A total of about 350,000 tons or possibly a little less has been mined from the Ymir mine.

It appears probably that a considerable tonnage of low grade material possibly in excess of 100,000 tons may remain in the mine. This is based on the dimensions of the main mineralized body which may have amounted to more than 450,000 tons and on reports of other low grade material and small high grade shoots. Whether this material is of sufficient grade to be mined to-day is an open question and should be examined. The possibilities for finding further ore on the property are favourable. " - the old Ymir property, the possibilities of which are not believed to be by any means exhausted". (M.M.R. 1928).

The main ore shoot diminishes to the east but the west end may be faulted off, although a vein thought to be the same, but may not be, has been traced on the surface for several thousand feet without finding further ore.

No. 2 level has been drifted out 250 feet past the end of the ore block and a cross-cut extended 800 feet north. At this point broken ground was encountered and some ore drifted and raised on.

On the surface uphill from the "main vein" a large amount of rich float has been found which must have originated in a second vein". (M.M.R. B.C. 1928).

Extensive prospecting over several years has failed to locate this vein.

The float appears to originate about in line with the ore discovered in the crosscut on #2 level (M.M.R. 1928).

The bottom level of the mine, No.10 level, followed the vein easterly for 1,100 feet and encountered only low grade or small high grade lenses although the vein was strong most of the way fading to a stringer at the end of the drift. It is not known if the No.10 level represents a weak level in the vein with further ore potential at depth or a bottoming of ore. Other ore shoots in the district have gone to greater depths.

The exploration potential of the property comprises the following aspects.

1. No.10 drift is reported to contain low grade material of unknown grade.
2. No. 10 level is reported to show small high grade lenses- if the main ore shoot bottomed above the level and only lenses remained, could not the lenses on No.10 level not connect to the main ore shoot lead to other ore shoots at the higher levels.
3. The main ore shoot may have been faulted off to the west and only on No.2 level has drifting and cross cutting been carried out. If the ore is faulted then the extension has not been found.
4. The hanging and footwall sides of the main ore shoot have not been examined.
5. From figures it appears that a considerable amount of mineralized material, probably below No.3 level, with an unknown grade may be left in the mine.

It must be kept in mind that although metal prices today are several times what they were, costs have also multiplied several times. Many have been mistaken in thinking that the old timers always left low grade material.

6. Surface exploration has failed to find the source of much rich float and of the extension of the faulted part of the main ore body if it is in fact faulted.

Maybe modern machinery could be more successful.

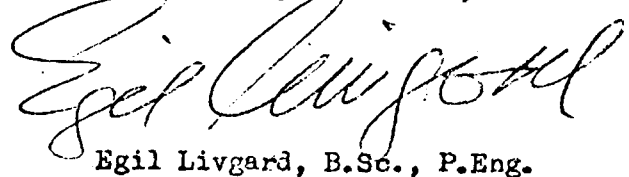
7. The old tailings ponds have given encouraging results in some grab samples and a considerable tonnage of this material is present.

SAMPLES

The following samples were taken by J.J. Oberbillig during the examination on June 29th, 1975.

- No. 267 Composite random grab samle of lower tailings dump. Approximatley 100,000 Tons Au .076, Ag 0.36.
- No. 268 Random grab sample of underground dump material near No. 10 portal quartz vein material with minor limonite staining, galena, sphalerite, and pyrite. Au 0.110, Ag 1.57.
- No. 269 Composite grab sample of smaller tailings dump ( approx. 10,000 tons) Au - .054 Ag 0.31.
- No. 270 20 ft. chip sample accross vein on surface near Ymir - Goodenough boundary Au .182 Ag 1.08.

Respectfully submitted,



Egil Livgard, B.Sc., P.Eng.



## REFERENCES

1. G.S.C. Memoir No. 94  
by C.W. Drisdale, 1917.
2. G.S.C. Memoir No. 302, Nelson Map area, West Half, B.C.  
by H.W. Little, 1960
3. LODE-GOLD Deposits of B.C. Bulletin No.1 1932
4. MINISTER OF MINE REPORTS B.C. 1928, 1934 to 1944 incl.  
1957 to 1969 inclusive.
5. GEOLOGY EXPLORATION AND MINING B.C. 1969 - 1973
6. MINE RECORDS OF CONCENTRATE SHIPMENTS 1902 - 1905  
ORE SETTLEMENT No. 10 YEAR LEASE 1941 - 1943 from  
CONSOLIDATED MINING AND SMELTING CO. OF CANADA LTD.



LIVGARD CONSULTANTS LTD.  
VANCOUVER, B.C.

CERTIFICATE

I, EGIL LIVGARD, of #1990 King Albert Avenue, Coquitlam,  
British Columbia:

1. I am a consulting geological engineer.
2. I am a graduate of the University of British Columbia, B.Sc., 1960, Geological Sciences.
3. I am a Member of the Association of Professional Engineers of the Province of British Columbia.
4. From 1960 to 1970 I was engaged in mining and exploration geology in Canada and Norway for various companies, and since that time I have been a consultant to the Mining Industry in B.C.
5. My report is based on the personal examination of the property by my associate, Mr. J. J. Oberbillig, P. Geol., and on information compiled from published reports on the area and other material as referred to in the report.
6. I have not directly or indirectly received or expect to receive any interest, direct or indirect, in the property of Junex Resources Ltd. or any affiliate, and I do not beneficially own, directly or indirectly, any securities of Junex Resources Ltd. or any affiliate.

DATED at Vancouver, British Columbia, this 12th day of  
August, 1975.



Egil Livgard, B.Sc., P. Eng.  
Vancouver, B.C.

*John J. Oberbillig, II*

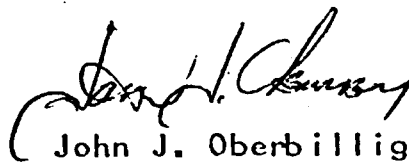
*Registered Professional Geologist*

C E R T I F I C A T E

I, JOHN J. OBERBILLIG, of 1005 - 706 Queens Avenue, New Westminster, British Columbia, state that:

1. I am a Consulting Geologist.
2. I attended Boise State College, Idaho State College, and the University of Nevada, completing my education in Earth Sciences in 1961.
3. I am a member of the Association of Registered Professional Geologists.
4. From 1961 to 1973, I was engaged in mining and exploration geology in the United States, Mexico and Canada for various companies, and since that time I have been a consultant for various companies in British Columbia, Yukon Territory and the western United States.
5. I am a Registered Professional Geologist in the State of Idaho, Number 75.
6. I personally examined the Ymir Mine, Ymir, B.C. on June 29th and June 30th, 1975, and the data included in this report is based on that examination, plus data from published and private reports on the area.
7. I have not directly or indirectly received nor do I expect to receive any interest, direct or indirect, in the property of Junex Resources Ltd. or any affiliate. I do not beneficially own, directly or indirectly, any securities of Junex Resources Ltd. or any affiliate.

DATED at Vancouver, British Columbia, this 13th day of August, 1975.



John J. Oberbillig, P. Geol.  
Vancouver, British Columbia

**MORROW, PARKER, JANSEN, CODY & CO.**

CERTIFIED GENERAL ACCOUNTANTS

1916 WEST BROADWAY, VANCOUVER, B.C. - (604) 736-8911

V6J 1Z2

ROBERT G. MORROW  
DENYSE P. PARKER  
RONALD R. JANSEN  
MORRIS J. CODY  
KATHARINA L. JENSEN  
JANET A. MORROW  
DENISE L. GOSSELINK

To the Shareholders,  
Junex Resources Ltd.

AUDITORS' REPORT

We have examined the balance sheet of Junex Resources Ltd. as at February 28, 1975 and the statements of deficit and source and application of funds for the year then ended. Our examination included a general review of the accounting procedures and such tests of accounting records and other supporting evidence as we considered necessary in the circumstances.

In our opinion these financial statements present fairly the financial position of the company as at February 28, 1975 and the source and application of its funds for the year then ended, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

*Morrow Parker Jansen Cody & Co.*  
Certified General Accountants

Vancouver, B. C.  
March 8, 1975