

#00018

EXHIBIT "A" TO THE APPLICATION  
OF B.C. YUKON EXPLORATION CO.  
LTD. (N.P.L.), EXECUTED ON

April 21st, 1971.

B.C. YUKON EXPLORATION CO. LTD. (N.P.L.),  
303 - 1035 West Pender Street,  
Vancouver 1, B.C.

APPLICATION

FOR

NORTHERN MINERAL EXPLORATION ASSISTANCE

ON THE

LIME CREEK PROJECT

YUKON TERRITORY

by

John S. Vincent, P.Eng.,  
Consulting Geologist.  
April 19th, 1971.

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LIME CREEK PROJECTPARTICULARS OF PROPOSED PROGRAM OF  
EXPLORATORY WORK TO BE UNDERTAKEN BY  
B.C. YUKON EXPLORATION CO. LTD.(N.P.L.)I INTRODUCTION

In accordance with requirements of Application for Northern Mineral Exploration Assistance, as noted in Section 4, Subsections (a), (b), (c) and (d) of the Regulations, B.C. Yukon Exploration Co. Ltd. (N.P.L.) is herein submitting information required for formal application. Particulars of this application are described below in the order raised in Section 4 of the Regulations.

II DESCRIPTION OF AREA OF PROPOSED EXPLORATORY WORK  
AND HOLDINGS TO WHICH THEY RELATE (4a)1) Introduction

The Lime Creek Property has been located to cover significant molybdenite mineralization in a zone approximately 500 feet wide running through the centre of a granitic intrusive at least 1 mile in diameter. Mineralization has been traced along strike for 2,500 feet where the zone is covered by overburden. There is an estimated 5% exposure in the mineralized area, and Dr. A.C. Skerl expected that the zone should extend to the limits of the granite at either end.

On the recommendations of the late Dr. A.C. Skerl, a soil sampling program followed by trenching and sampling was carried out. The results were encouraging, and further work is required to obtain more geological information, extend the soil sampling, and, in general, define areas of interest more precisely before a diamond drilling program is laid out.

The second stage of the program will consist of preliminary drill evaluation of the anomalous areas developed in Stage 1

2) List of Holdings

The following claims form a contiguous 56 claim group, situated approximately 10 miles southeast of Carcross and 2 miles up Lime Creek from Windy Arm of Tagish Lake, Claim Map 105-D-1 Jubilee Mountain, Whitehorse Mining District, Yukon Territory:

<u>Claim Name</u>	<u>Grant Numbers</u>	<u>Total Claims</u>
B 1-4 inclusive	Y10376-Y10379	4
BOB 1-8 inclusive	Y30329-Y30336	8
G 1-8 inclusive	Y9943 - Y9950	8
J 1-4 inclusive	Y10131-Y10134	4
JOHN 1-8 inclusive	Y25630-Y25637	8
JUNE 1-4 inclusive	Y25644-Y25647	4
ROGER 1-8 inclusive	Y25805-Y25812	8
STRIK 1-4 inclusive	Y9638 - Y9641	4
T 1-8 inclusive	Y10368-Y10375	<u>8</u>
TOTAL.....		<u>56</u> claims

Assessment work has been filed with the Mining Recorder, Whitehorse, and all 56 claims are in good standing until July 15th, 1974 (common expiry date).

### 3) Area of Interest

The area of immediate interest lies across the central portion of the property, and includes the mineralized zone, as exposed, and the possible extensions along strike on either side. The first work will be concentrated on completing the geologic maps and extending the soil sampling program. The anomalous areas will be checked and the claim block west of Lime Creek will be sampled.

An induced polarization survey will be conducted over the property, with particular emphasis and more detailed electrode spacing in areas underlain by geochemical anomalies.

### III DESCRIPTION OF PROPOSED PROGRAM AND ESTIMATE OF PROPOSED EXPENDITURES, BASIS OF ESTIMATE AND PURPOSE OF EXPENDITURES (4b)

The mineralized zone examined and sampled to date constitutes a significant discovery, and it is the purpose of the proposed program to carry out a more detailed evaluation prior to diamond drilling. A considerable potential for the extension of the zone exists beneath the overburden along strike, and these areas must be assessed geophysically and geochemically. Further geological work will be carried out over the intrusive and the surrounding country rock. As this basic work is completed and the mineralized zone more effectively located, preliminary diamond drilling will be undertaken to evaluate the zone.

The personnel involved will consist of a geologist and assistant to complete the geochemical soil sampling and expand the geology. An induced polarization survey will be contracted, as will the diamond drilling. The geologist will remain on the property to supervise and evaluate the drilling.

The planning, supervision and evaluation of the program will be the responsibility of John S. Vincent, P.Eng., Consulting Geologist.

The work will get underway as soon as weather permits and, under normal circumstances, the drilling stage of the program should be underway by mid-August, 1971.

### Cost Estimate

#### Personnel

##### (a) Salaries:

1 Geologist (3 months)		
1 Assistant (2 months)		\$3,000.00

##### (b) Supervision:

Planning, supervision & evaluation	<u>2,000.00</u>	\$ 5,000.00
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#### Geophysical

Induced polarization survey - 20 line miles @ approx. \$400.00		8,000.00
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#### Assaying

Core and soil		2,000.00
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#### Diamond Drilling

4,000 feet BQWL @ \$12.00		48,000.00
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#### Tractor Rental

Estimate (fuel and operator included)		5,000.00
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#### Camp Costs

Cook	\$2,000.00	
400 man days @ \$7.00	2,800.00	
Camp and construction	<u>700.00</u>	5,500.00

#### Transportation

Estimate		10,000.00
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#### Administration

@ 10%		<u>8,350.00</u>
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Total .....		<u><u>\$91,850.00</u></u>
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IV PROPOSED STAGES OF WORK - EXPENDITURE TIMETABLE (4c)

The program, as outlined, will be completed between June 1st and October 31st, 1971, unless abnormal weather conditions prevail. In the event that diamond drilling is late getting underway, it is possible that completion of this phase could be carried over to the 1972 season.

At this date, however, the proposed expenditure timetable will be as follows:

May 1st to July 15th, 1971.	\$26,000.00
July 15th to August 15th, 1971.	10,000.00
August 15th to October 31st, 1971.	<u>55,850.00</u>
Total	<u>\$91,850.00</u>

V ENCLOSED COPIES OF ALL AVAILABLE PRELIMINARY REPORTS AND MAPS (4d)

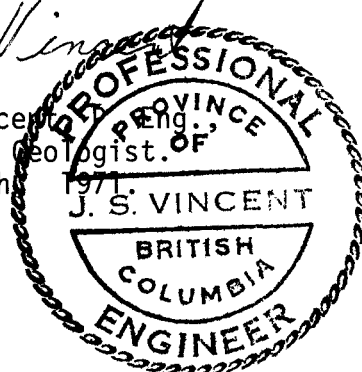
The required copies of available reports and maps are enclosed, and are listed as follows:

1. Summary of Reports by J.S. Vincent, P.Eng., March 2, 1971.
2. Compendium of Reports by R.G. Hilker, P.Eng., December 15, 1970. (9 accompanying maps).
3. Geochemistry Report by F.M. Smith, December 2, 1968.
4. Lime Creek Molybdenite, by Dr. A.C. Skerl, February 8th, 1967.

Respectfully submitted,

*John S. Vincent*

John S. Vincent  
Consulting Geologist  
April 19th 1971



TELEPHONE 224-6257

1758 WESTERN PARKWAY  
VANCOUVER 8, B.C.

6th February 1967

DR. A. C. SKERL  
A.R.S.M., PH.D., F.ENG.  
CONSULTING MINING GEOLOGIST

B.C. - YUKON EXPLORATION LTD.  
ZENE GREEN HOLEDENITE

INTRODUCTION

At the request of Mr. George Malanski, President of B. C. - Yukon Asbestos Company, I inspected this property on the 2nd August 1966.

On my recommendation several shallow diamond drill holes were put down to test part of the showings. The core obtained was shipped to me in Vancouver for inspection and sampling during September and early October 1966.

SITUATION

The property is ten miles northeast of Carcross in the Yukon Territory and two miles up Lino Creek from Windy Arm of English Lake.

It can be reached by boat from Carcross to the north of the creek or by trail plans to the small Stikine Lake at the south end of the property. The lake has an elevation of approximately 2000 feet and the elevations on the property range from 2700 to 2800 feet.

CLAIMS

There are now 20 claims in a compact block as shown on Claim Sheet 205 D-1, Subarea Mountain, Yukon, Department of Northern Affairs. 22 of the claims are on the northeast side of Lino Creek and extend north from Stikine Lake for three miles.

At the time of my visit there were only the four claims:

Block X to A, numbered X 9090 to 91.

Since then the following have been noted and recorded:

G 1 to 8 Y 9249, -47, -48, -49, -50, -51 and -52 respectively  
 J 1 to 4 Y 10131 to 34  
 T 1 to 8 Y 10333 to 75  
 B 1 to 4 Y 10976 to 79

## GEOLOGY

The area is on the Whitehouse Sheet (1 inch to 1/4 miles) of the Geological Survey of Canada.

This map shows a granitic intrusion that is 1 mile in diameter and is overlain by overburden so that it could be up to 1.7 miles across. There is a well-developed trending belt of limestone to the northeast and a zone of cherty Silurian sediments to the southwest. On the north side the granite was found to be in contact with a pyritic hornfels.

## MINERALIZATION

Approximately through the centre of the granite there is a zone about 500 feet wide and striking N 65° E in which molybdenite can be found in quartz stringers and as disseminated crystals up to 1/4" across in the granite columns. The stringers strike at 20°, 65° or 90° east of north with dips of 70° to 90° to the east and south. The largest veinlet is 6 inches wide.

The zone can be traced for about 2500 feet from elevation 2900 feet up the hillside to elevation 3350 beyond which there is only overburden for about one mile.

There are apparently no outcrops where the zone would cross the crest of the south end but it could be present on the other side since granite has been mapped there.

The molybdenite is associated with streaks and patches of red iron oxide that after a persistent search was found to be due, at least in part, to fine

crystals of chalcocite.

Due to the readiness with which molybdenite is removed by weathering there is a surprising amount present in the outcrops. Thus in one case I estimated that there was  $\frac{1}{2}$  lb  $\text{MoS}_2$  over a width of 1 foot.

I guess that not more than 5% of the area of the zone is exposed as outcrops.

The zone almost certainly extends to the limits of the granite at all points and where the conditions could have been favorable to more intense mineralization.

### DRILLING RESULTS

A series of six diamond drill holes were put down during September 1955 to test the mineralization beneath the weathered surface. Because of the problem of pumping the drill water a long way up hill the drilling was restricted to an area about 400 by 300 feet.

The holes were directed at  $-45^\circ$  and averaged only 60 feet long. They were irregularly spaced to take advantage of outcrops to collar in and were drilled on various azimuths.

The X-Ray core was shipped to me in Vancouver for logging and splitting.

The amount of molybdenite encountered was disappointing so that only one hole was assayed. For the first 60 feet it averaged 0.027%  $\text{MoS}_2$  and 0.025% Cu.

All the rock is fresh granite with about 5% biotite. Iron stained spots are plentiful to the depths drilled, averaging one every three feet.

### DISCUSSION

The area drilled is quite limited compared with the zone as a whole since the mineralized outcrops are known as much as 1500 feet to the northeast and to the southwest. The quality of the mineralization however is apparently the same.

Since the rock outcrops probably amount to no more than 5% of the total area worthwhile mineralization may still be present in this zone or elsewhere in the intrusive.

It is therefore proposed that a soil sampling campaign be conducted as follows:  
 Lines should be run along the hillside at N 30° W across the slope, 500 feet apart with stations flagged every 200 feet. Soil samples should be taken at each station from below the surface material, usually at a depth of 6 to 12 inches. In addition, wherever a line crosses a creek or gully a sample should be taken of the silt that has been deposited by the water.

A total of about 1000 samples would be collected. These should be shipped in batches of 200 to a laboratory that specializes in testing soil samples for polybenzide. At first however only the silt samples should be assayed and only the soil samples from the areas of interest indicated by the silt samples.

A map should be built up (scale 1" to 500') showing the positions of all samples and the drainage gullies so that the results can be interpreted.

This survey is expected to take between 6 weeks and 2 months to complete.

#### FURTHER DRILLING

Mr. Molanski reports that the company has purchased the diamond drill that was used on the property in September 1946.

If a suitable source of water can be found some drilling should be done at the east end of the original cone.

Also if the geological examination of the cone showing is sufficiently encouraging some exploration drilling should be tried.

#### EQUIPMENT

The company owns the following items:

1 Doyle Kelly Drill with 200 feet of rods, 1000' hose	2500
1 Fluorite Magnetometer, model H P-1	2000
Camp equipment	500
Total value	5000

## COSTS

The costs for a well organized exploration campaign for two months would be as follows :

## Geology and Geochemistry

Salaries- (geologist, coll. samples, helper)	1000
Transportation	2000
Assaying	2000
Supplies (Food etc)	2000
Cook	500
Consultant	500

## Diamond Drilling for 2 months

Driller and helper	2000
Bits (not)	500
Fuel and oil	300
25 boxes	200
Transportation	700
Power saw, tools	200
Supplies (food etc)	200
Assaying	200
Consultant	500

## Contingencies

## Allowance for a further month of drilling

Total

2000

2000

(\$15,000)

5,000

(\$27,000)

RECOMMENDATIONS

1. Plan on placing the geological and geophysical party on the property by 1st June when the camp should be gone.
2. Arrange for a driller and helper with necessary equipment to be on the property by 15th June.
3. A minimum of \$20,000 should be available to carry out the work.

*A. C. Skerl*

6th February 1967

CERTIFICATE

This is to certify that :

1. I, Augustus C. Sheri, am a resident of Vancouver, B. C. at 2753 West 11<sup>th</sup> Parkway which is also my office.
2. I am a professional engineer licensed in British Columbia and have also worked as a mining geologist for the past 20 years of which the last 13 years have been in British Columbia.
3. My qualifications consist of the degrees of B Sc and Ph D from the University of London, England and of A R S M and D I C from the Royal School of Mines, London, England, all in mining geology.
4. I have no interest nor do I expect to receive any interest directly or indirectly in the properties or securities of B. C. - Yukon Exploration Ltd.
5. This certificate concerns my report on the Lamo Creek Hydroelectric property dated 6th February 1967.
6. I personally examined the property on the 2nd August 1966.
7. The report was written by myself and was based on my own fieldwork and the Whitehorse map sheet of the Geological Survey of Canada.

A. C. Sheri

B.C. YUKON EXPLORATION CO. LTD. (N.P.L.),  
303 - 1035 West Pender Street,  
Vancouver 1, B.C.

SUMMARY OF REPORTS

LIME CREEK PROJECT

YUKON TERRITORY

by

John S. Vincent, P.Eng.,  
Consulting Geologist.

March 2nd, 1971.

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Stage 1	
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ACCOMPANYING MAPS . . . . .	.Attached
Sketch No. 1 - Property Location Sketch, by R.G. Hilker. Scale: 1":50 miles.	
Sketch No. 2 - Location Sketch, Windy Arm Area, by R.G. Hilker. Scale: 1":4 miles.	

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## INTRODUCTION

At the request of Mr. Darrall S. Collins, President of Spartan Explorations Ltd. (N.P.L.), the writer has reviewed a series of reports and maps pertaining to the Lime Mountain Molybdenite Property, Carcross, Yukon Territory, presently owned by the B.C. Yukon Exploration Co. Ltd. (N.P.L.). The purpose of the review was to summarize and compile the pertinent data in the form of a single report suitable for presentation to the British Columbia Securities Commission.

The writer has not had the opportunity to examine the property, and all information has been obtained from data contained in the files of B.C. Yukon Exploration Co. Ltd. The reports studied are listed as:

1. Compendium of Reports, by  
R.G.Hilker, P.Eng.,  
December 15, 1970.  
(9 accompanying maps)
2. Progress Report, by  
R.G.Hilker, P.Eng.,  
August 1 - October 15, 1968  
June 1 - September 12, 1969.
3. Geochemistry Report, by  
F.M.Smith,  
December 2, 1968
4. Two short reports by  
Dr.A.C.Skerl (deceased) dated  
February 1, 1968, and December 14, 1968.

The work to date has been carried out under the direction of Mr.R.G.Hilker, P.Eng., and the writer has discussed the outline and purpose of this report, and the recommended future work and estimated costs with him.

## PROPERTY

The Lime Mountain Molybdenite Property consists of 56 contiguous Yukon Quartz Mineral Claims located on the south side of Windy Arm, Tagish Lake, approximately 4 1/2 miles north of the Yukon-B.C. border at 60°04' of

latitude and 134°27' of longitude. The claims are located in the Whitehorse Mining Division, and are shown on Sheet 105-D-1, Jubilee Mountain. All claims are owned by the B.C. Yukon Exploration Co. Ltd. (N.P.L.), and their particulars as of December 14, 1970, are as follows:

<u>Claim</u>	<u>Grant Number</u>	<u>Expiry Date</u>
Strik 1 - 4 inclusive	Y9638 - 41 inclusive	July 15, 1974
G-1	Y9943	July 15, 1974
G-2	Y9947	"
G-3	Y9944	"
G-4	Y9948	"
G-5	Y9945	"
G-6	Y9949	"
G-7	Y9946	"
G-8	Y9950	"
B 1 - 4 inclusive	Y10376-79 inclusive	"
T 1 - 8 "	Y10368-75 "	"
J 1 - 4 "	Y10131-34 "	"
June 1 - 4 inclusive	Y25644-47 "	"
John 1 - 8 "	Y25630-37 "	"
Roger 1 - 8 "	Y25805-12 "	"
Bob 1 - 8 "	Y30329-36 "	"

The configuration of the claim block is shown on Sketch #3.

#### LOCATION AND ACCESS

The property is 11 air miles southeast of Carcross, and 49 air miles south-southeast of Whitehorse, Sketch #1. Carcross is connected to the Alaska Highway at Mile 866 by approximately 34 miles of all-weather gravel road, and this road has been extended to the Venus Mines property on the northwest side of Windy Arm, Sketch #2.

Rail facilities are available at Carcross, mid-way on the White Pass & Yukon railway between Whitehorse and the tidewater port at Skagway, Alaska.

Access to the property at present is by helicopter, by float plane to Striker Lake at the south end of the property, or by water on Tagish Lake and thence by foot. Heavy equipment can be moved by barge from Carcross, and a tractor road could be constructed from a landing point up to the claim block.

## HISTORY

The earliest work appearing in the records is a property examination by the late Dr. A.C.Skerl, August 3, 1966, in which a limited diamond drilling program was recommended. Six holes were drilled with a dip of  $-45^{\circ}$  and an average depth of 80 feet. The holes were irregularly spaced to take advantage of outcrops, and the drilling was confined to a small area due to a limited water supply. Dr. Skerl reported that the results were generally disappointing, and the best assay returned a value of 0.027%MoS<sub>2</sub> and 0.05% Cu over 60 feet.

Dr. Skerl felt that the drill results were not conclusive and that a significant area on the property remained to be evaluated. A geochemical soil survey to be followed by stripping, trenching, and sampling was recommended.

The results of the soil survey were evaluated by Dr. Skerl, and a significant anomaly approximately 2.5 million square feet in area was outlined. The exposed mineralization occupies a considerably smaller area on the northern extremity of this anomalous area.

Under Mr. Hilker's supervision further geological mapping, trenching, and sampling was carried out during the 1969 season.

## GEOLOGY

Volcanic and sedimentary rocks of the Taku Group, Upper Paleozoic in age, have been intruded by a granitic mass approximately 1 1/2 miles in diameter which belongs to the Coast Range series of intrusives. The volcanic rocks have been mapped as greenstones and pyroclastics, while the sedimentary rocks are shown as limestones and limestone breccias.

### Mineralization:

Molybdenum mineralization was first described in a zone approximately 500 feet wide running through the center of the granite mass on a

strike of N65°E. The zone was traced along strike for 2500 feet. Mineralization within this zone consists of three basic types:

1. Molybdenite in quartz veins and stringers with an average attitude of N68°E/53°S.
2. Rosettes of molybdenite in quartz veins and the granite host rock. This mineralization may occur up to 3 feet on either side of the vein system.
3. Finely disseminated molybdenite in the granite host rock adjacent to the quartz veins.

Thirty-one trenches were blasted and sampled across the various quartz veins, and the following table summarizes Mr. Hilker's results.

<u>Trench</u>	<u>Width</u>	<u>Sample No.</u>	<u>%MoS<sub>2</sub></u>
1	1.0 ft.	3746	0.340%
1	5.0	3803	0.756%
1	4.0	3744	0.163%
2	2.5	3748	0.011%
3	3.0	3802	0.345%
3	5.0	3816	0.790%
4	2.0	3745	0.327%
5	3.0	3801	0.047%
6	no samples		
7	5.0	3742	0.156%
7	3.0	3747	0.023%
8	4.0	3806	0.031%
8	8.0	3820	0.020%
8	2.0	3804	0.016%
9	2.5	3819	0.009%
10	5.0	3818	0.018%
11	0.3 (vein)	3805	1.565%
12	4.0	3826	0.374%
12	8.0	3810	0.004%
13	4.0	3823	0.014%
14	1.0	3808	0.014%
15	3.0	3809	0.057%
16	1.0	3817	0.270%
17	0.6	3749	0.084%
18	1.0	3741	0.688%
19	6.0	3744	0.163%
20	no sample		
21	2.0	3750	0.768%

<u>Trench</u>	<u>Width</u>	<u>Sample No.</u>	<u>%MoS<sub>2</sub></u>
22	0.5 ft.	3821	0.804%
23	1.0	3822	0.340%
24	no sample		
25	4.0	3807	0.010%
26	4.0	3812	0.580%
27	4.0	3813	0.013%
28	5.0	3815	0.004%
29	4.0	3811	0.005%
30	no sample		
31	3.0	3814	0.006%

These sample results show that high grade areas are present, and that molybdenum values occur in the granite host rock adjacent to the quartz veins.

#### CONCLUSIONS & RECOMMENDATIONS

The results of the soil survey define an anomalous area with characteristics similar to the soil anomalies associated with several occurrences elsewhere. The exposed high grade molybdenite mineralization lies across the northern extremity of the anomaly, and it is reasonable to conclude that a much larger area of molybdenite mineralization is present than was known previously.

Further work is recommended as follows:

##### STAGE 1.

1. Extend the geochemical survey to cover the granite stock west of Lime Creek, approximately 5 line miles.
2. Conduct an induced polarization survey over areas of interest. A 3 electrode array should be used with 200 and 400 foot spacings, on lines spaced at 800 foot intervals. Fill-in work can be planned as required.
3. Additional detailed geological mapping is required in the area of the high grade mineralization.

##### STAGE 2.

1. Allow for 3000 ft. of BQ wire line drilling to evaluate the exposed mineralization and the geochemical and geophysical anomalies.

COST ESTIMATE.

STAGE 1.

1.	Geochemical surveying	\$ 1,000.00
2.	Induced Polarization surveying	10,000.00
3.	Geological mapping & supervision	<u>2,000.00</u>
		\$13,000.00

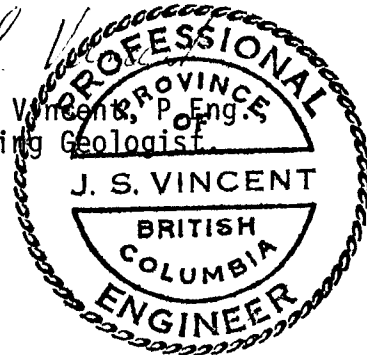
STAGE 2.

1.	3000 ft. of BQL @ \$20.00/ft. all inclusive	\$60,000.00
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Respectfully submitted,

*John S. Vincent*

John S. Vincent, P. Eng.  
Consulting Geologist



CERTIFICATE

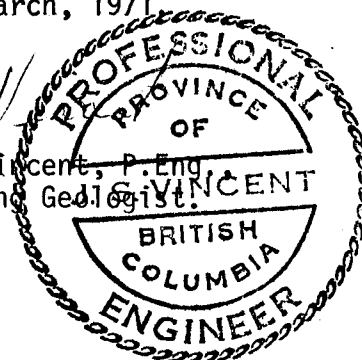
I, John S. Vincent, of 4859 - 12A Avenue, Delta, in the Province of British Columbia, do hereby certify that:

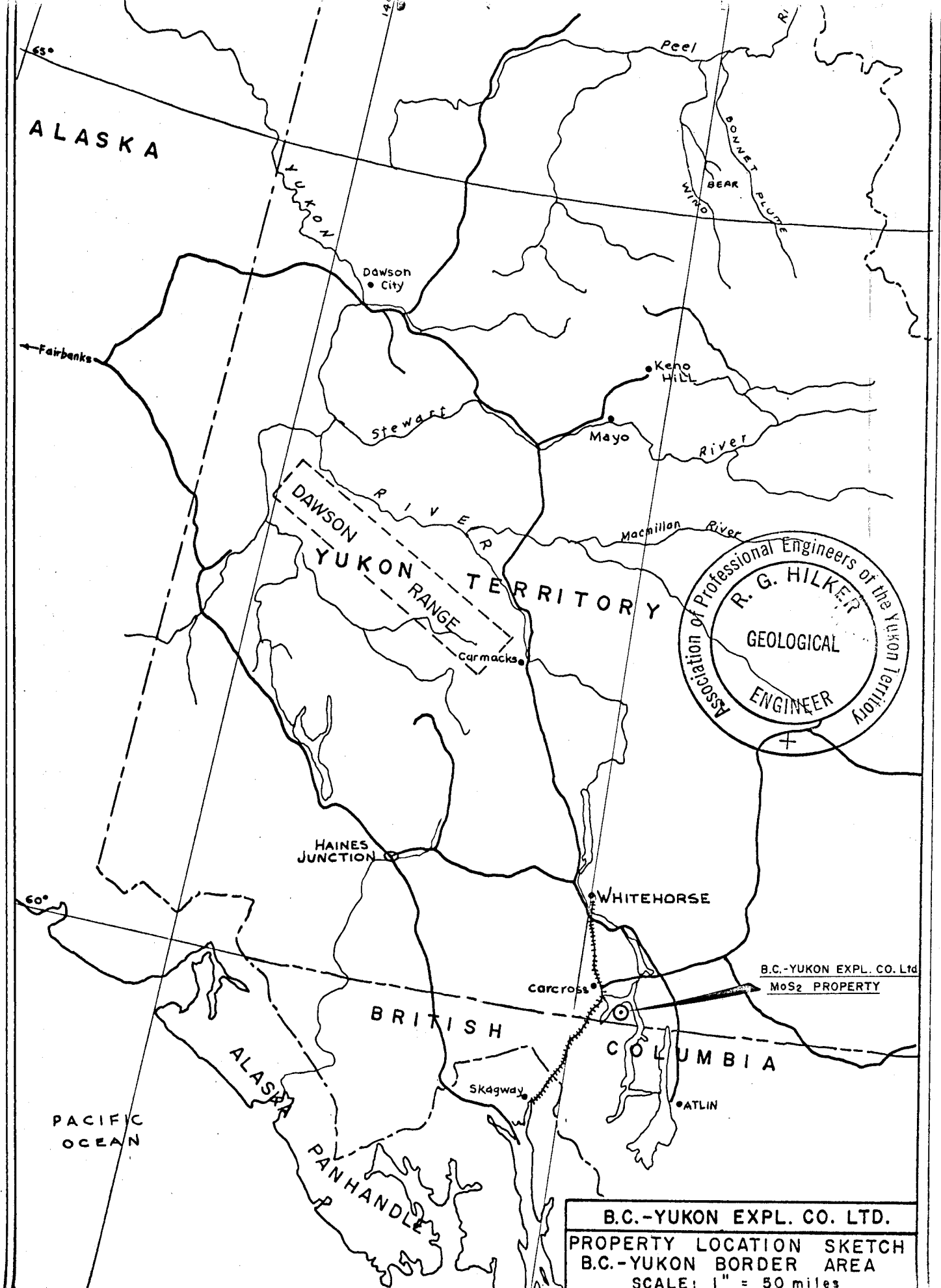
1. I am a consulting mining geologist.
2. I am a graduate of Queen's University, B.Sc., 1959, Geological Sciences, and of McGill University, M.Sc., 1962, Economic Geology.
3. I am a Fellow of the Geological Association of Canada, and a member of the Association of Professional Engineers in the Province of British Columbia.
4. From 1962 until 1969 I was engaged as a mine exploration geologist with the International Nickel Company of Canada Ltd. in Thompson, in the Province of Manitoba, and since 1969 I have practiced my profession as a consulting mining geologist.
5. I have not directly or indirectly received, nor do I expect to receive any interest, direct or indirect, in the property of B.C. Yukon Exploration Co. Ltd. (N.P.L.), or of any affiliate company, save and except that I am the beneficial owner of 3,000 shares of the capital stock of Spartan Explorations Ltd. (N.P.L.).
6. The information on which this report is based was taken from the reports from the files of B.C. Yukon Exploration Co. Ltd. (N.P.L.), as listed in the introduction.

Dated at Vancouver, B.C., this 2nd day of March, 1971

*John S. Vincent*

John S. Vincent, P.Eng.  
Consulting Geologist

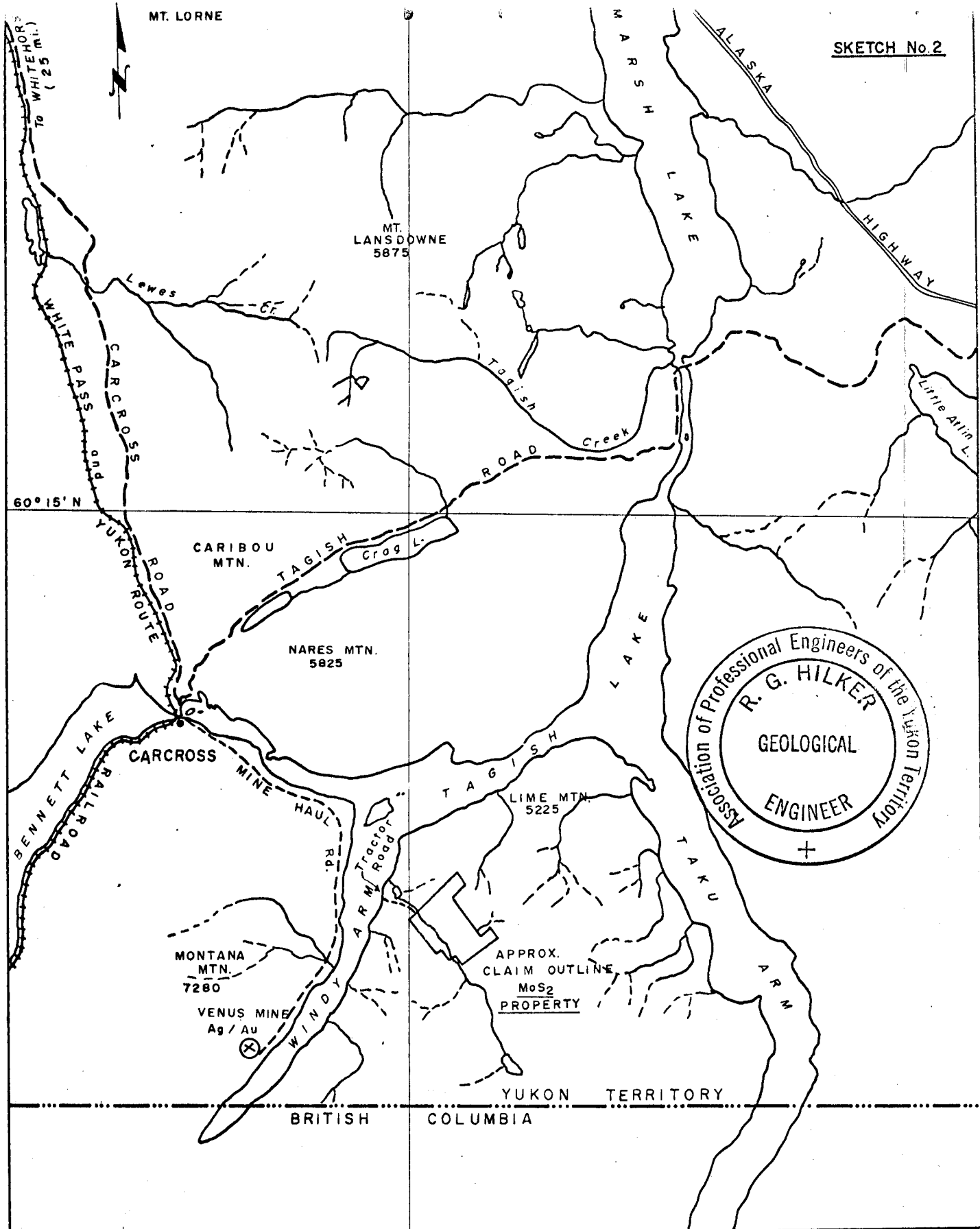




Association of Professional Engineers of the Yukon Territory  
 R. G. HILKER  
 GEOLOGICAL  
 ENGINEER

B.C.-YUKON EXPL. CO. LTD.  
 MoS<sub>2</sub> PROPERTY

**B.C.-YUKON EXPL. CO. LTD.**  
 PROPERTY LOCATION SKETCH  
 B.C.-YUKON BORDER AREA  
 SCALE: 1" = 50 miles



R.G. HILKER LTD.  
 CONSULTING GEOLOGIST  
 WHITEHORSE, Y.T.

B.C.-YUKON EXPLORATION CO. LTD.	
LOCATION SKETCH WINDY ARM AREA	
Date: Dec. 15th/ 1970	Scale: 1" = 4 miles

134° 30' W

EXHIBIT "A" TO THE APPLICATION OF B.C.  
YUKON EXPLORATION CO. LTD. (N.P.L.),  
EXECUTED ON *April 21st*, 1971.

COMPENDIUM OF REPORTS  
B.C.-YUKON  
EXPLORATION CO. LTD. (N.P.L.)  
WINDY ARM -- YUKON TERRITORY  
BY  
R.G. HILKER, P.ENG.  
DECEMBER 15, 1970



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COMPENDIUM OF REPORTS

B.C.-YUKON EXPLORATION COMPANY LTD. (N.P.L.)

WINDY ARM - YUKON TERRITORY PROPERTY

WHITEHORSE, YUKON TERRITORY

DECEMBER 15th, 1970

BY

R.G. HILKER, P.ENG.

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Geology Map - East of Lime Creek, Scale 1" = 400 ft.,  
November 27, 1968.

Magnetics Survey - East of Lime Creek, Scale 1" = 400 ft.,  
November 27, 1968.

Geochemical Molybdenum Plan - East of Lime Creek,  
Scale 1" = 400 ft., November 27, 1968.

Geochemical Copper Plan - East of Lime Creek,  
Scale 1" = 400 ft., November 27, 1968.

Linecutting Plan - East & West of Lime Creek, 1968  
and 1969 - Scale 1" = 400 ft., August 25, 1969.

Trenching Sketch - Adjacent to Line 44+00N, 1968 and 1969,  
Scale 1" = 100 ft.

Geology Map - West of Lime Creek - Scale 1" = 200 ft.,  
August 19, 1969.

Geology Map - East of Lime Creek (geology detail map  
adjacent to Line 44+00N and along the molybdenite  
mineralized zone) - Scale 1" = 50 ft., August 18, 1969.

\* \* \* \* \*

## INTRODUCTION

The B.C.-Yukon Exploration Co. Ltd. (N.P.L.) have by option and ownership 56 contiguous Yukon Quartz Mineral Claims, located on the south side of Windy Arm in the Yukon Territory. The claims are located on Sheet 105-D-1 Jubilee Mountain in the Whitehorse Mining District - Yukon Territory.

The company conducted a short X-Ray drill program in September 1966, surface geological-geophysical and geochemical exploration during the summer of 1968, and geological mapping and trenching during the summer of 1969.

The property contains molybdenite showings in narrow quartz veins ( $\frac{1}{4}$ -inch to a maximum of 6 inches thick) that occur in a Cretaceous granite stock. The granite stock exposed at surface is roughly 4800 feet by 3600 feet in size. The mineralized area, where molybdenite occurs in quartz veins and adjacent granite wall host rock, strikes east-west discontinuously for 20+00 feet and with sporadic showings across a north-south width of 4+00 feet. The granite appears fresh but is highly jointed and fractured and contains some alteration minerals such as sericite and chlorite. The granite is stained a reddish limonitic color due to finely disseminated chalcopyrite and pyrite, that occurs throughout the stock. The reddish staining occurs in patches and covers about 75 percent of the exposed granite.

LOCATION AND ACCESS

The B.C.-Yukon Exploration Co. Ltd. (N.P.L.) claim group is located in the southern Yukon Territory, approximately 4½ miles north of the Yukon and British Columbia border. The claim group is located at latitude 60° 04' and longitude 134° 27' on the south shore of Windy Arm - Tagish Lake. The property is eleven airmiles south-east of Carcross, and forty-nine airmiles south-east of Whitehorse, Y.T.

Carcross is located on the east end of Bennett Lake and is situated on an all-weather gravel road 46 miles south-east of Whitehorse, and 34 miles south-west of Mile 866 of the Alaska Highway. A new bridge has been built at Carcross to cross the narrows between Bennett and Nares Lakes, and services the Venus Mines road. A good gravel road connects Carcross and Venus Mines. The mine is located on the north side of Windy Arm. A possible road route to the B.C.-Yukon Exploration Co. Ltd. (N.P.L.) property would be by an extension of the Venus Mines road to the end of Windy Arm and along the south-east shore of the lake to the molybdenite prospect. The south-east shore of Windy Arm would be difficult road building.

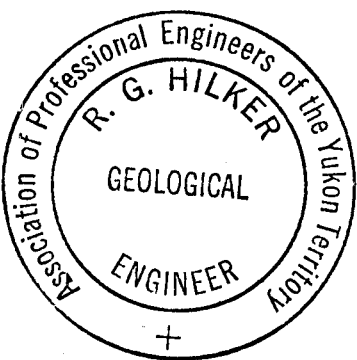
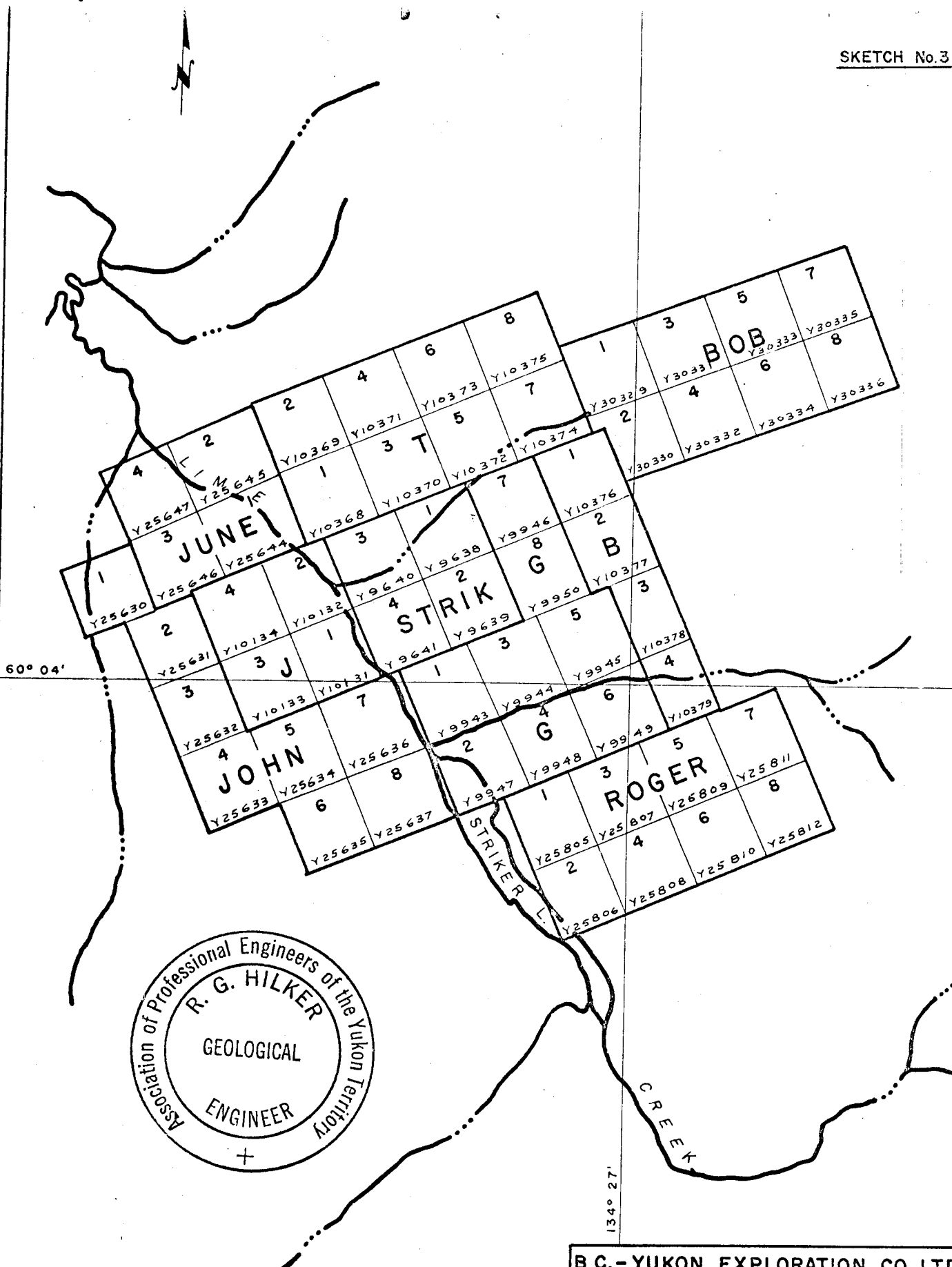
The White Pass & Yukon Route railroad connects the tidewater port of Skagway, Alaska, and Carcross. The railroad is narrow-gauge and is a distance of 54 miles from Skagway to Carcross.

A new road from the property to Venus Mines would be approximately 12 miles long, and the present road from Venus to Carcross is 14½ miles long. Therefore, the property would be 26½ road-miles from Carcross, and 54 railroad miles from a tidewater port.

CLAIMS

The following claim data was searched in the Whitehorse Mining Recorder's Office on December 14, 1970, by R.G. Hilker. Claims are located on Sheet 105-D-1, Jubilee Mountain, Whitehorse Mining Division, Yukon Territory.

<u>CLAIM NAME &amp; NUMBER</u>	<u>GRANT NUMBER</u>	<u>ANNIVERSARY DATE</u>
STRIK 1-4	Y9638 - Y9641	July 15, 1974
G-1	Y9943	July 15, 1974
G-2	Y9947	July 15, 1974
G-3	Y9944	July 15, 1974
G-4	Y9948	July 15, 1974
G-5	Y9945	July 15, 1974
G-6	Y9949	July 15, 1974
G-7	Y9946	July 15, 1974
G-8	Y9950	July 15, 1974
B 1-4	Y10376-Y10379	July 15, 1974
T 1-8	Y10368-Y10375	July 15, 1974
J 1-4	Y10131-Y10134	July 15, 1974
JUNE 1-4	Y25644-Y25647	July 15, 1974
JOHN 1-8	Y25630-Y25637	July 15, 1974
ROGER 1-8	Y25805-Y25812	July 15, 1974
BOB 1-8	Y30329-Y30336	July 15, 1974



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B.C.-YUKON EXPLORATION CO. LTD.  
 CLAIMS SKETCH  
 WINDY ARM AREA  
 Date: Dec. 15th/1970    Scale: 1" = 1/2 mile

PREVIOUS WORK ON PROPERTY

The following described property examination reports, geological-geochemical-geophysical surveys, physical work, assessment work reports and progress reports have been conducted on behalf of B.C.-Yukon Exploration Co. Ltd. (N.P.L.) on the Lime Lake Property, Yukon Territory, since August, 1966, until the present date.

Dr. A.C. Skerl (deceased):- Reports & Property Examination by Dr. A.C. Skerl - Vancouver, B.C.

August 9, 1966. Property examination August 3, 1966, and report recommended a limited diamond drill program.

October 12, 1966. Comments of drill program and brief diamond drill logs and assay results.

December 1, 1966. Brief report on X-Ray diamond drill program on Lime Lake Property.

February 8, 1967. Report on diamond drill results and recommendations for a geology and geochemical survey and a short diamond drill program.

December 14, 1968. Report on geochemical survey and recommended a geochemical survey on the west half of the granite stock, trenching by blasting, geology mapping and drilling five (5) additional holes using a BQ wireline sized drill.

June 27, 1969. Dr. A.C. Skerl died, following an unfortunate flying accident.

Exploration Programs on Property:-

September, 1966. Six X-Ray diamond drill holes, drilled on property during September, 1966.

Summer & Fall, 1968. Supervised by R.G. Hilker from recommendations by Dr. A.C. Skerl.

Exploration work conducted on the claims during the late summer and fall of 1968 was as follows:

1. 27 linemiles slashed on 400 feet spaced grid lines over claim group for surface control and mapping purposes.
2. Geological mapping over grid system and plotting all outcrops on 1" = 200 feet Geology Plan Map.
3. Conducted a magnetics survey over grid system using a Sharpe MF-1 Fluxgate magnetometer.
4. Acquired soil samples at each 100 foot station over the entire grid system, and Whitehorse Assay Office made copper and molybdenum determinations in parts per million.
5. All survey data plotted on plan and geochemical data interpretation.
6. Holes drilled with plugger for trenching in selected areas across the granite plug that was delineated by the geological mapping. Trenches dynamited in some areas but stopped before completion due to snow cover.
7. 8 samples taken from trenches for assaying.

Exploration work conducted on the B.C.-Yukon claims in 1969 was as follows:

1. Slashed 15 miles of line spaced at 400 feet and 100 feet on a continuation of the 1968 linecutting grid.
2. Geological mapping 1" = 200 feet west Lime Creek.
3. Geological mapping 1" = 50 feet adjacent to Line 40+00 N (1968 grid).
4. Blasted trenches in bedrock in 25 locations.
5. Sampled trenches for molybdenite mineralization and rock specimens for petrographic study.
6. Assayed mineralized samples.
7. Applied assessment work to claim group and to a common anniversary date of July 15, 1974.

The following exploration maps have been made for  
B.C.-Yukon Exploration Co. Ltd. (N.P.L.) since 1966:

1. Diamond Drill Location Plan - Scale 1" = 30 ft.,  
October 3, 1966 - Location of X-Ray drill hole.
2. Geology Map - East of Lime Creek, Scale 1" = 200 ft.,  
November 27, 1968.
3. Geology Map - East of Lime Creek, Scale 1" = 400 ft.,  
November 27, 1968.
4. Magnetics Survey - East of Lime Creek, Scale 1" =  
400 ft., November 27, 1968.
5. Geochemical Molybdenum Plan - East of Lime Creek,  
Scale 1" = 400 ft., November 27, 1968.
6. Geochemical Copper Plan - East of Lime Creek, Scale  
1" = 400 ft., November 27, 1968.
7. Linecutting Plan - East & West of Lime Creek 1968  
and 1969, Scale 1" = 400 ft., August 25, 1969.
8. Trenching Sketch - Adjacent to Line 44+00N 1968 &  
1969, Scale 1" = 100 ft.
9. Geology Map - West of Lime Creek - Scale 1" = 200 ft.,  
August 19, 1969.
10. Geology Map - East of Lime Creek (geology detail map  
adjacent to Line 44+00N and along the molybdenite  
mineralized zone) - Scale 1" = 50 ft., August 18, 1969.

GEOLOGY

The B.C.-Yukon Exploration molybdenite prospect is contained within a granite stock that is located to the east of Lime Creek. The granite stock continues to the west side of Lime Creek but is barren of molybdenite mineralization. The molybdenite mineralized zone in the granite, on the east side of Lime Creek, measures roughly 3600 feet east-west and 4800 feet north-south. Molybdenite mineralization occurs near Line 44+00 N along an east-west strike distance of 20+00 feet. Within the 20+00 feet strike distance of molybdenite mineralization, 800 feet is overburden covered, and no molybdenite can be observed in place. Numerous angular boulders and cobbles are contained in the overburden and are heavily mineralized with molybdenite.

The granite is Cretaceous in age, and has been mapped by the Geological Survey of Canada as Coastal Intrusives. The igneous stock contacts with the Taku Group, that is Pennsylvanian and Permian in age, greenstone and volcanic rocks. To the east of the granite stock and at a stratigraphic higher elevation, limestone beds of the Taku Group are exposed.

Two creeks, that drain down slope across the granite stock, strike nearly east-west and appear to be structurally-controlled. The drainage system has a strike similar to the molybdenite mineralized zone that is adjacent to Line 44+00 N.

The mineralized zone is contained on an eastern-rising gentle slope between the elevations of 2700 feet and 4000 feet.

The granite is stained a reddish limonitic color due to finely disseminated chalcopyrite and pyrite. The staining occurs throughout the stock in patches and covers approximately 75 percent of the exposed granite.

The granite stock is jointed and fractured, adjacent to Line 44+00 N and 30+00 W to 10+00 W, and numerous narrow quartz veins ( $\frac{1}{2}$ -2 inches in thickness) cut the granite. One quartz vein observed was a maximum of 6 inches thick. The granite appears to be fresh but in parts, adjacent to the quartz veins, sericite and chlorite occurs.

REFERENCE TO PUBLISHED GEOLOGY

The Windy Arm area of Tagish Lake has been geologically mapped by J.O. Wheeler on Map 1093A - Geology Whitehorse Yukon Territory - Scale 1 inch = 4 miles 1/253,440 and is contained in the Geological Survey of Canada - Memoir 312 - Whitehorse Map-Area, Yukon Territory 1050 - J.O. Wheeler, 1961.

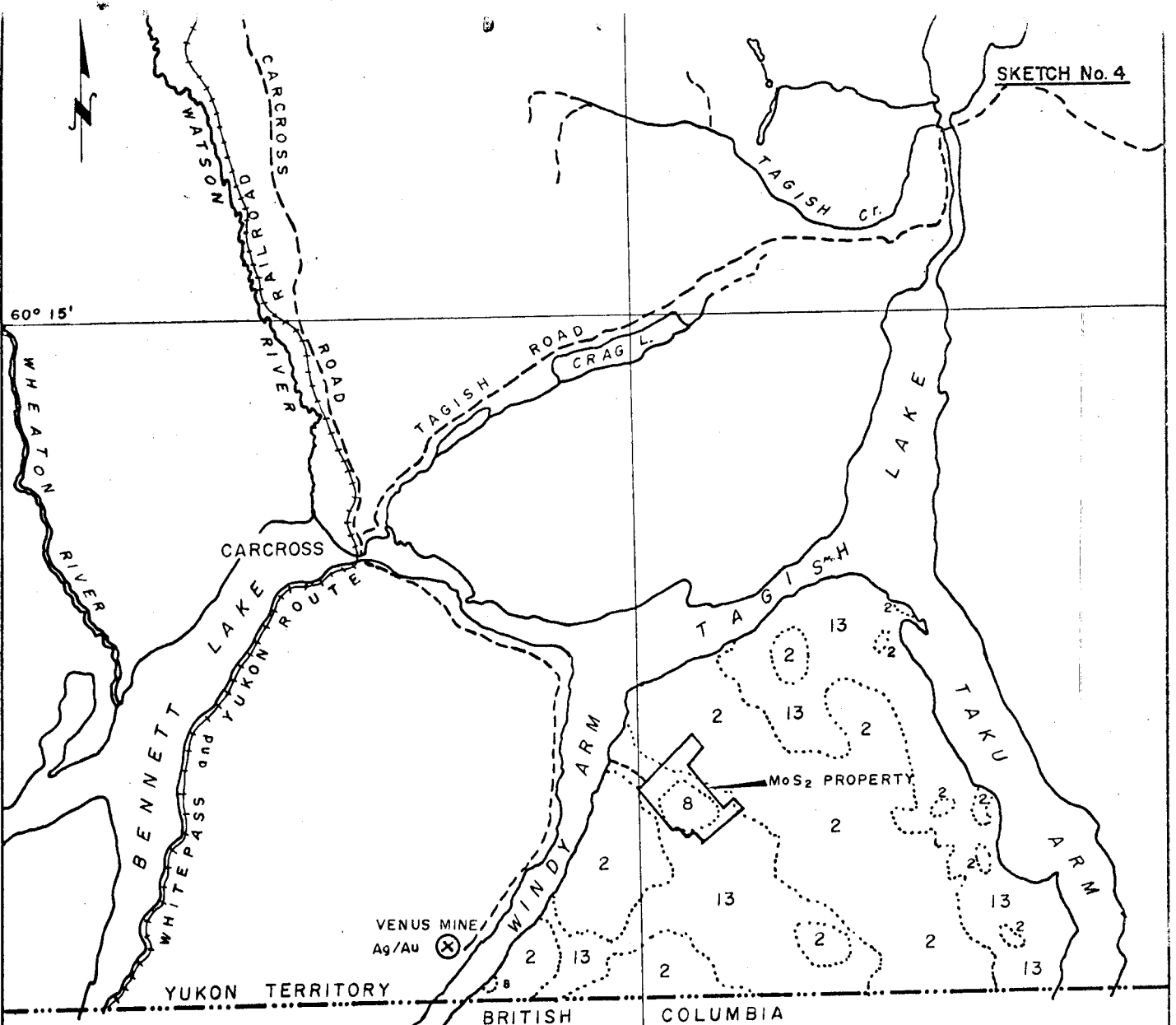
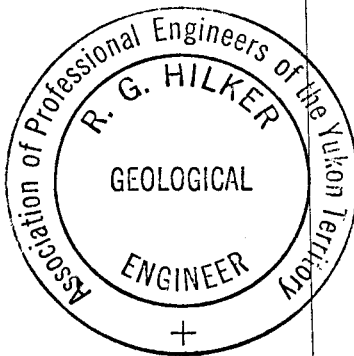


TABLE OF FORMATIONS

- CENOZOIC**  
**QUATERNARY**  
 [13] - ALLUVIUM and GLACIAL DEBRIS
- CRETACEOUS**  
**COASTAL INTRUSIVES**  
 [8] - GRANITE and GRANODIORITE
- PALAEZOIC**  
**PENNSYLVANIAN and PERMIAN**  
**TAKU GROUP**  
 [2] - CHERT, GREENSTONE FLOWS, LIMESTONE and VOLCANICS

LEGEND

- ..... GEOLOGIC BOUNDARY
- ~~~~~ CREEK, RIVER
- ROAD
- + + + + RAILROAD



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 CONSULTING GEOLOGIST  
 WHITEHORSE, Y.T.

B.C.-YUKON EXPLORATION CO. LTD.

GENERAL GEOLOGY  
 WINDY ARM AREA

Date: Dec. 15th/1970      Scale: 1" = 4 miles

03 04 1

TABLE OF FORMATIONS

CENOZOIC

Quaternary

- 13 Alluvium and glacial debris  
Coastal intrusions

Cretaceous

- 8 Granite
- 8a Granodiorite - hornblende, biotite, oligoclase
- 8b Granite - biotite, leucocratic
- 8c Diorite - quartz; biotite, hornblende
- 8e Granodiorite - gneissic, porphyritic
- 8f Granodiorite and granite breccia
- 8g Syenite - hornblende, pegmatite
- 1a Granite - molybdenite; rosettes, stringers, disseminated, quartz veins
- 1b Granite - rusty orange staining due to finely disseminated chalcopyrite and pyrite.

PALAEOZOIC

Pennsylvanian and Permian

Taku Group

- 2 2a chert, 2b greenstone flows and pyroclastic rocks, 2c limestone and limestone breccia, 2d metamorphosed volcanics with serpentine beds.

After J.O. Wheeler - G.S.C. Geology Map 1093A.

ECONOMIC GEOLOGY

Molybdenite mineralization occurs in the following manner in conjunction with quartz veins in the granite stock. As previously mentioned under the GEOLOGY section, the mineralization occurs along a 2000-foot east-west strike distance:

1. Rosettes of molybdenite (¼-to-½ inch diameter) in quartz veins that are 1/8-inch to 2 inches thick. In places the veins pinch and swell with no uniform thickness.
2. Molybdenite mineralization on the walls of the quartz veins and in contact with the host granite rock.
3. Rosettes of molybdenite in the granite host rock. This type of mineralization occurs adjacent to quartz veins and veinlets at a distance from 2-to-3 feet on either side of the vein system.
4. Finely disseminated molybdenite mineralization in the granite host rock adjacent to quartz veins and veinlets. This type of mineralization occurs 1-to-2 feet from quartz veins.

The following strike and dip data was collected during the field season of 1969 on the quartz veins and jointing in the granite host rock that contains the molybdenite mineralization:

1. Quartz Veins

Average Strike - N 68° E  
Dip - 53° S

2. Jointing Data

Average Strike - N 10° E  
Dip - 85° E

The molybdenite mineralization should be probed at depth for continuation from surface to subsurface along the vein system.

TRENCH ASSAY DATA

The following is a brief description of granite and quartz veins collected for assaying from the various trenches that were blasted:

<u>Trench Number &amp; Description</u>	<u>Sample No.</u>	<u>Assay MoS<sub>2</sub></u>
<u>Trench One</u>		
(1-3) - Granite sample represents 1 ft. width footwall side of 4 in. thick, quartz vein #2.	3746	0.340
(1-4) - Granite and Quartz Vein #2 - sample represents 5 ft. of vein system.	3803	0.756
(1-8) - Granite sample represents 4 ft. width of hanging wall side of 4 in. thick quartz vein #2.	3744	0.163
<u>Trench Two</u>		
(2-1) - Granite sample represents 2.5 ft. width of hanging wall side of molybdenite mineralized joint.	3748	0.011
<u>Trench Three</u>		
(3-1) - Granite sample represents 3 ft. width on both sides of a 5 in. wide quartz vein.	3802	0.345
(3a-2) - Granite grab sample across 5 ft. width of shattered rock in trench that contains thin quartz vein.	3816	0.790
<u>Trench Four</u>		
(4-2) - Granite sample represents 2 ft. width on both sides of a 1 in. thick quartz vein.	3745	0.327

Trench Five

(5-1) - Biotite granite - some alteration to kaolin. Sample represents 2 ft. width on foot-wall side and 1 ft. width on hanging wall side of 6 in. thick quartz vein. 3801 0.047

Trench Six

No samples.

Trench Seven

(7A-1) - Granite - disseminated molybdenite and stringers, kaolin, jointed, biotite, sample represents 5 ft. width across stringers and joints. 3742 0.156

(7D-1) - Biotite granite - no visible molybdenite or quartz vein. Samples represent 3 ft. width. 3747 .023

Trench Eight

(8-1) - Granite - sample represents 4 ft. width across three quartz veins 2 in., 1 in. and 1 in. thick. No visible molybdenite and jointed with limonitic staining, pyrite. 3806 0.031

(8a-1) - Biotite granite - granite altered, spotted limonitic weathering, disseminated pyrite, no quartz vein, molybdenite disseminated along joint surfaces and in parts 1/4 to 1/2 in. diameter rosettes. Sample represents 8 ft. width. 3820 0.020

(8b-3) - Granite - biotite, limonite. Sample represents 2 ft. width between two quartz veins - north quartz vein 1 in. thick and no visible molybdenite - south quartz vein 6 in. thick molybdenite rosettes 1/4-1/2 in. diameter. 3804 0.016

Trench Nine

(9-2) - Granite - limonitic stained, jointed. Sample represents 2.5 ft. of hanging wall side of 11 in. thick quartz vein that contains minor molybdenite rosettes 1/2 in. diameter. 3819 0.009

Trench Ten

(10-1) - Granite - limonitic staining, jointed, chlorite alteration at contact with quartz vein and host rock. Sample represents 5 ft. wide sample from a 1 in. thick quartz vein. 3818 0.018

Trench Eleven

(11-1) - Granite - biotite, pyrite, abundant molybdenite 1/16 to 1/4 in. diameter rosettes in sericite schist in quartz vein. Sample across the 3 in. thick quartz vein. 3805 1.565

Trench Twelve

(12-1) - Granite - kaolinized and chloritized, pyrite, limonite, molybdenite 1/8 - 1/4 in. and 1 in. thick. Sample represents 4 ft. width that crosses the vein system. 3826 0.374

(12-2) - Granite, same as at (12-1). Sample represents 8 ft. width on hanging wall side of vein system. 3810 0.004

Trench Thirteen

(13-1) - Granite - Quartz Porphyry - pegmatite in parts to gneissic, limonite stain, quartz, disseminated and 1/8 - 1/4 in. diameter rosettes of molybdenite. Sample represents 4 ft. width perpendicular to 6 in. thick vein on hanging wall side. Some finely disseminated molybdenite in sample. 3823 0.014

(13-2) - Granite - same as in 3824 2.085  
(13-1) across 6 in. thick quartz  
vein. Sample represents 0.5 ft.  
across the vein.

Trench Fourteen

(14-2) - Granite/Quartz Veins - 3808 0.014  
sample taken across a width of  
1 ft. across a quartz vein in  
granite system 8 in. wide.  
Pyrite, limonite stain, sericite,  
in parts molybdenite rosettes  
1/4 - 1 in. in diameter.

Trench Fifteen

(15-2) - Granite - biotite, 3809 0.057  
altered, pyrite, limonite  
stain. Sample represents a  
3 ft. wide section that includes  
three quartz stringers that are  
a total thickness of 1 in.

Trench Sixteen

(16-2) - Granite/Quartz Vein - 3817 0.270  
biotite and altered biotite granite,  
jointed, limonite stain. Rosettes  
of molybdenite 1/8 to 1/4 in.  
diameter in vein. Sample represents  
1 ft. width and includes quartz vein.

Trench Seventeen

(17-1) - Granite - biotite, 3749 0.084  
quartz vein rosettes 1/8 - 1/2  
in. diameter, limonitic stain.  
Sample taken across a 6 in. width,  
in quartz vein and granite.

Trench Eighteen

(18-3) - Granite/Quartz Vein - 3741 0.688  
pyrite, limonitic, vein is  
vuggy, 1/8-1/4 in. quartz vein.  
Sample represents 1 ft. width  
across a 4 in. thick quartz vein.

Trench Nineteen

(19-2) - Granite - pyrite, limonitic, muscovite, quartz stringers and two veins 2 in. and 1 in. thick. Sample represents 6 ft. width taken across the vein stringer system. 3744 0.163

Trench Twenty

No samples.

Trench Twenty-One

(21-1) - Granite - disseminated molybdenite in granite. Sample represents 2 ft. width across granite with quartz stringers with 1/8 - 1/4 in. diameter rosettes of molybdenite. 3750 0.768

(21-4) - Granite - molybdenite in quartz stringers and disseminated in granite host rock. Sample represents 1 ft. width. 3825 0.133

Trench Twenty-Two

(22-1) - Quartz Vein System - 6 in. thick, vuggy quartz, limonitic stained, abundant 1/4 - 1 in. diameter rosettes of molybdenite. Granite-biotite, altered, muscovite - sericite. The granite is altered over about a 4 ft. width. Sample represents 1/2 ft. width across vein system. 3821 0.804

(22-3) - Quartz Vein System - same as at (22-1) but located 4 ft. to north of the first vein system, on the footwall side. 3743 0.255

Trench Twenty-Three

(23-2) - Quartz Vein/Granite - sample represents a 1 ft. width across in 4 in. thick quartz vein in granite host rock. Limonitic stained, sericite, irregularly scattered, 1/4-in. diameter molybdenite rosettes. 3822 0.340

Trench Twenty-Four

No samples.

Trench Twenty-Five

(25-1) - Granite, biotite, limonitic stain on join planes. Sample represents 4 ft. width and crosses one narrow quartz vein. 3807 0.010

Trench Twenty-Six

(26-1) - Granite - jointed, limonitic stained, minor disseminated and ¼-in. rosettes of molybdenite. Sample represents 4 ft. width. 3812 0.580

Trench Twenty-Seven

(27-1) - Granite - highly limonitic stained, jointed. Sample represents 4 ft. width and crosses one quartz vein 1 in. thick. 3813 0.013

Trench Twenty-Eight

(28-81) - Granite - limonitic stained, jointed, minor quartz veins - only one present and ½-in. thick. Sample represents 5 ft. width. No visible molybdenite. 3815 0.004

Trench Twenty-Nine

(29-1) - Granite - minor quartz vein ½-in. thick, no visible molybdenite. Sample represents 4 ft. width. 3811 0.005

Trench Thirty

No samples.

Trench Thirty-One

(31-2) - Granite - limonitic stain, minor molybdenite along joint plane. Sample represents 3 ft. width. 3814 0.006

The molybdenite study shows that  $\text{MoS}_2$  mineralization exists in the granite wallrock up to four feet from the narrow quartz veins. The zone of molybdenite mineralizations occurs mainly between L44+00N and L40+00N and 30+00 and 10+00W (1968 linecutting grid). Molybdenite occurs as rosettes in the quartz veins, disseminated between wallrock and quartz veins, and in the granite host rock. The host rock granite is jointed, contains pyrite and is slightly altered in parts. The zone of mineralization could exist to depth and therefore warrants diamond drilling, using a large-diameter type of core.

The magnetics survey that was conducted on the property, to the east of Lime Creek, in 1968, has indicated very little magnetic relief. No particular magnetic trends were noted and the survey added nothing to the understanding of the molybdenite prospect.

GEOCHEMICAL SURVEY

Summary

During late August and early September, 1968, the B.C.-Yukon Exploration Co. Ltd. (N.P.L.) claim group south of Windy Arm was soil sampled.

From statistical interpretation of the copper and molybdenum, contour intervals were determined and two maps contoured according to the understanding of the significance of the values.

From the contour patterns it becomes evident there are three significant anomalies. The first, Zone A on the molybdenum map, is characterized by a ring halo common to copper-molybdenum porphyry granite stocks, the second, Zone B, is either an alteration due to this stock or a small subordinate stock; the third, Zone C, is important in that it suggests more mineralization further up-slope from Lime Creek.

From the interpretation it is suggested that Zone A be examined by drilling and/or trenching to determine economic potential. Zone B should be further sampled to delineate the shape and significance of this anomaly, and exploration should be carried out further up-slope to determine if other mineralization occurs.

Since Anomaly A is open-sided on the Striker Lake side, it is suggested that more effort be expended by sampling this area as soon as is practical to determine where this anomaly terminates.

The mean for molybdenum was calculated to be 4.0 ppm and the standard deviation 4.8 ppm, and the mean and standard deviation for copper is 30.0 ppm and 61.8 ppm.

Not all areas equal to over 4.0 ppm were contoured. The areas contoured have some significant shape and/or continuation. The areas not contoured appear to be random highs and lows.

#### Interpretation of Anomalies

There appears to be three significant anomalies and a few less significant anomalies shown by the contouring of the copper and molybdenum values.

Anomaly A on the molybdenum map shows a characteristic halo effect common to copper-molybdenum porphyries. This effect is very often noted. It has a richer zone of copper and molybdenum around the edges of the granite stock producing a circular zone of mineralization. The copper anomaly in the same area outlines most of the band of molybdenum anomaly above one standard deviation. But as is noted the copper is not as rich in this area as the molybdenum. This anomaly when compared to the geology map shows a slight downhill shift from the area interpreted as having sub-crop of intrusive.

Anomaly B appears to lie over the extrusive rocks upslope from the intrusive rocks (B). It may be an alteration in the extrusives or, since the molybdenum is quite high in the rocks, that it represents a small stock off-shoot from the stock

down-slope (under Anomaly A).

The third major anomaly, Anomaly C, lies in the upper edge of the map. The main interest in this area is that it is suggested it represents a soluflection off the hill of molybdenum oxides in soil. From the solubility properties of molybdenum and copper it becomes evident in this area that copper is being leached rapidly from the soil and molybdenum is remaining. This occurs under strong acid conditions. In spite of limestone bed-rock in this area, I suggest that because the copper anomalies are much lower and are less significant than the molybdenum, acid soil conditions prevail. Zone C is important in that it may indicate possible mineralization further up-slope.

Proof of the acid soil hypothesis is based on the poor copper values below and along Lines 8400 N. There is shown from the geology work that visible copper float was found but there is no appreciable copper retained in the soil. This copper float may be an expression of the molybdenum soluflection from further up-slope.

Thus, in only one area is there no coincidence of copper and molybdenum anomalies. This latter case has been covered above. As a result, it is suggested that a significant anomaly of copper and molybdenum has been determined by soil survey.

The only other significant point is that the zone of relatively high molybdenum values of which Zone A is a part, is

open-sided on the bottom, or lake and stream side. This means that the other side of this area must be sampled to determine where the large area of anomalous molybdenum values is terminated, i.e., Zone A must be terminated, its boundary must be defined, before the true significance of this area can be realized.

#### Recommendations of Geochemical Survey

##### Zone A

This area has been sufficiently defined and delineated by the present work. The only follow-up that should be done is drilling and/or trenching of the area to determine actual rock mineralization. The only work in this area, of Zone A, is to soil sample to the west of the creek.

##### Zone B

This area should be re-sampled at closer-spaced sampling intervals, i.e., a 50' x 50' grid, to further delineate the boundary and to prove the significance of this anomaly.

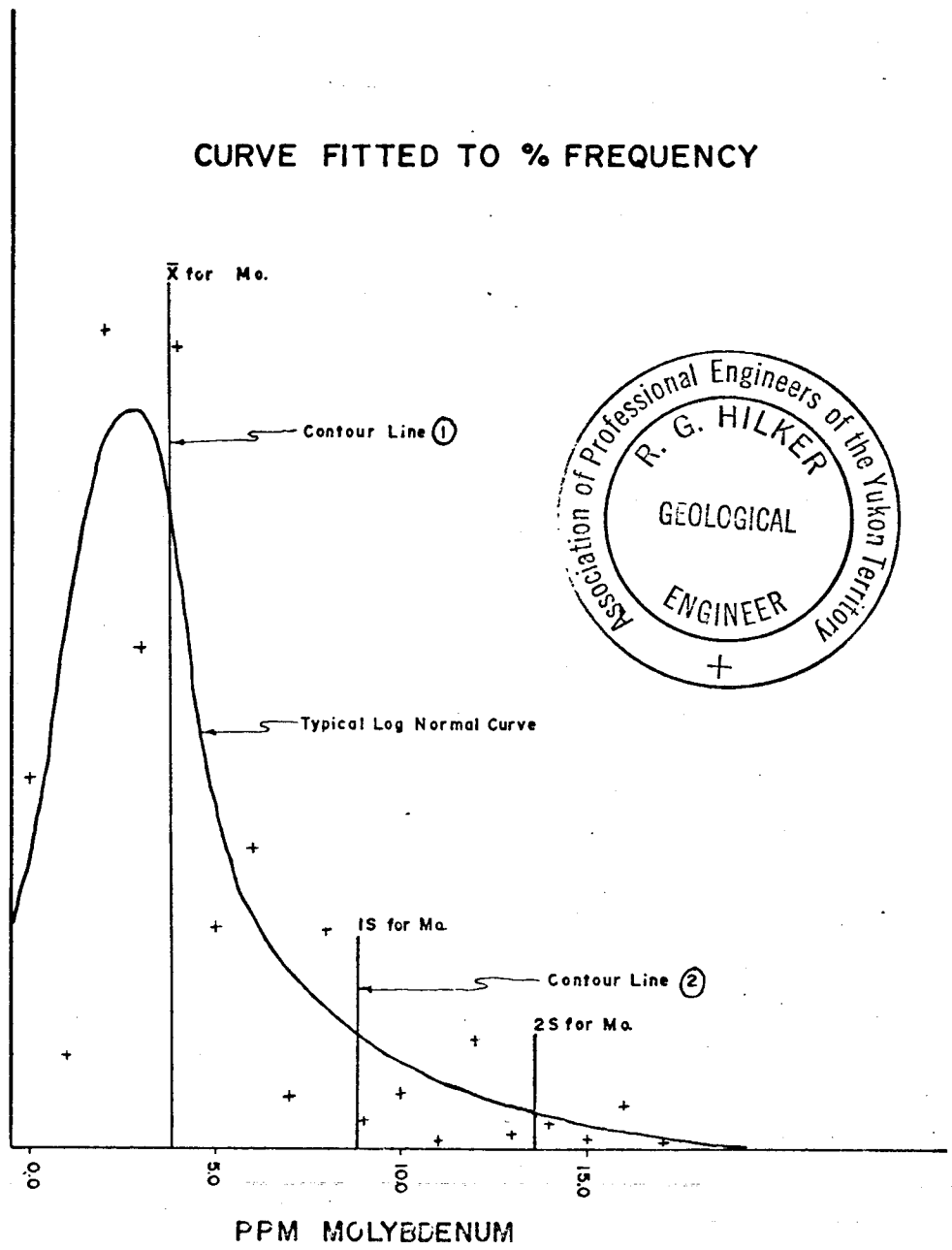
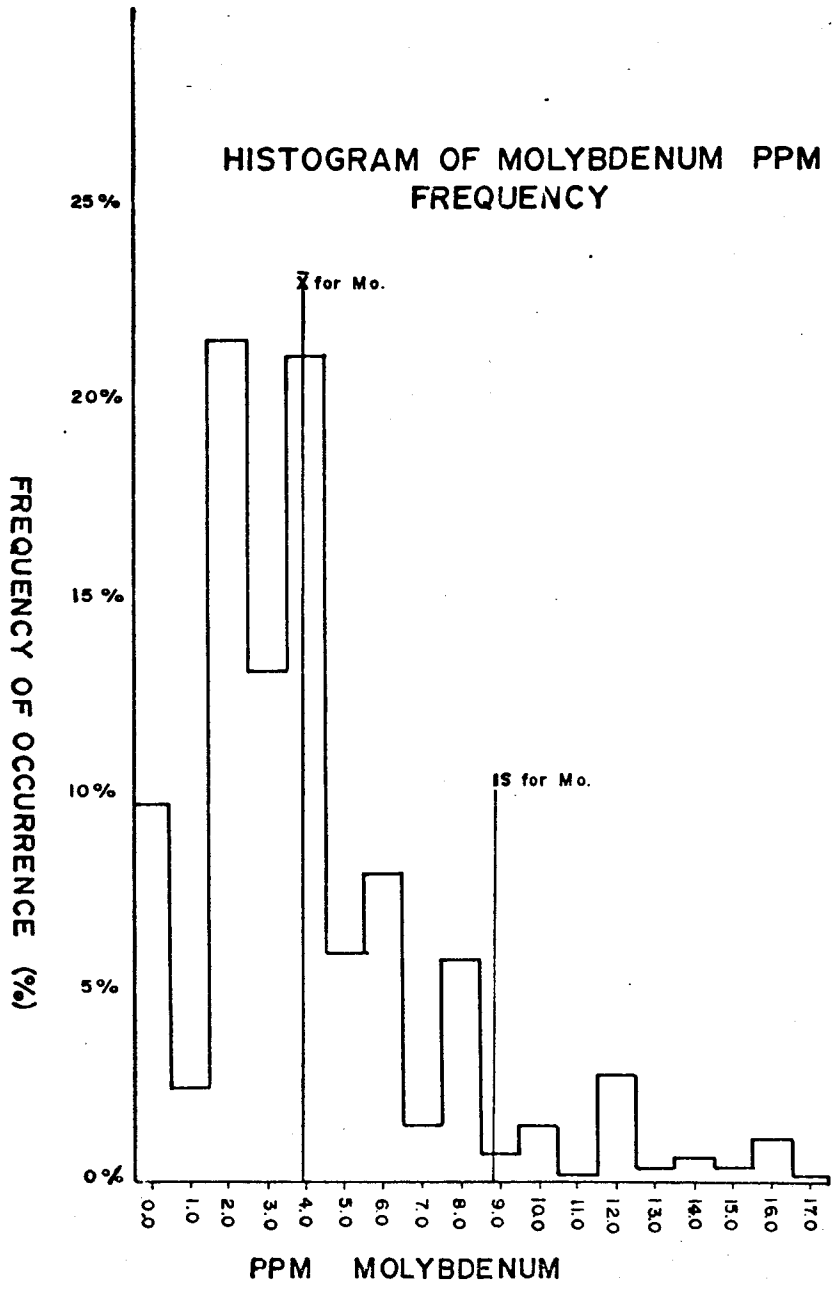
##### Zone C

Exploratory work should be undertaken further up-slope to check if other stocks intrude in this area, with the aim of discovering other mineralized zones.

#### Remaining Small, Possible Anomalies

The other small discontinuous anomalies should be soil sampled on a closer grid pattern, either to reject or to further enlarge their anomalous significance. The grid should be at

least 50' x 50' spacing with the grid lines re-sampled. If further work is undertaken, all of these areas should be double-checked by re-sampling.



CONCLUSIONS

The surface exploration completed to date on the molybdenite prospect located south of Windy Army, has indicated that the granite stock contains a zone of mineralization and three geochemical anomalies.

The geochemical anomalies are located in the granite stock north-east (Zone C), adjacent (Zone A) and south-east (Zone B) of the quartz-vein mineralized zone located along Line 44+00 north of the grid system.

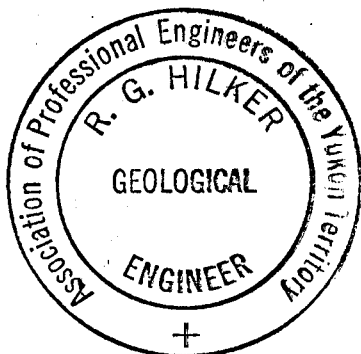
Further exploration on the property should consist of an induced polarization survey across the mineralized zone outlined by the trenching. The induced polarization survey should be conducted using 100-200 and 400 foot spaced electrode stations. Some induced polarization geophysics should be done on Zone B and C geochemical anomalies.

It is recommended that 4000 feet of 8Q Wireline diamond drilling be drilled within the area of the molybdenite mineralized zone. The results of the induced polarization survey should be correlated with all previous surface exploration data, for suitable drill targets.

RECOMMENDATIONS

The B.C.-Yukon Exploration Company Ltd. (N.P.L.)  
Lime Lake, Yukon Territory molybdenite property warrants the  
following surface and diamond drilling program:

Induced Polarization Survey .....	\$ 10,000
(contracted on daily rate)	
Diamond Drilling .....	\$ 75,000
4000 feet AQ Wireline	
@ \$15/ft .....	\$60,000
Tractor Rental and	
Contingencies .....	<u>\$15,000</u>
Transportation to Property .....	\$ 10,000
Fixed Wing .....	\$ 2,500
Helicopter .....	\$ 1,500
Barge .....	<u>\$ 6,000</u>
Camp Costs - cook, groceries, fuel	
and equipment .....	\$ 5,000 ✓
Geological & Engineering Consulting .....	\$ 10,000
Geologist - 2 months .....	\$ 4,000
Geophysical Reports .....	\$ 1,000
Surveying .....	\$ 2,000
Drafting & Reports of	
Drill Data .....	<u>\$ 3,000</u>
TOTAL PROGRAM .....	<u><u>\$110,000</u></u>



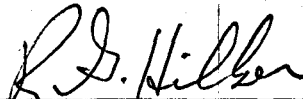
*R. G. Hilker*  
\_\_\_\_\_  
R.G. Hilker, P.Eng.  
Whitehorse, Yukon Territory  
December 15th, 1970

CERTIFICATION

I, ROBERT G. HILKER of #6 Chalet Crescent, Hillcrest, in the City of Whitehorse, in the Yukon Territory, DO HEREBY CERTIFY:

1. THAT I am a Consulting Geologist, with an office located at #8 Northern Metallic Building and postal address P.O. Box 566, in the City of Whitehorse, in the Yukon Territory.
2. THAT I am a graduate of the Michigan Technological University located at Houghton, Michigan, U.S.A., where I obtained a Bachelor of Science degree in Geological Engineering (Exploration Option) in 1962.
3. THAT I am a registered member in good standing of the Association of Professional Engineers of the Yukon Territory.
4. THAT I have practised my profession as an engineer and geologist for the past eight years.
5. THAT I have personally examined the B.C.-Yukon Exploration Co. Ltd. (N.P.L.) claim group, located in the Whitehorse Mining Division of the Yukon Territory, during the field season of 1968 and 1969.

DATED this 15th day of December, A.D. 1970.

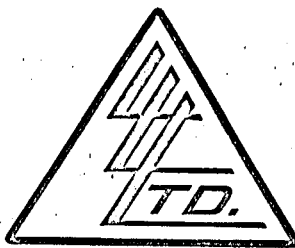


---

R.G. Hilker, P.Eng.

A P P E N D I X

To: B. G. Hilker Limited  
Box 566  
Whitehorse, Yukon Territory  
Mr. F. G. Hilker, P. Eng.



File No. 2304  
Date October 14, 1969  
Samples Grab

Certificate of  
**ASSAY** of  
**LORING LABORATORIES LTD.**

629 BEAVERDAM RD., N.E., CALGARY 67  
PHONE 277-6797

*BC-Yukon*

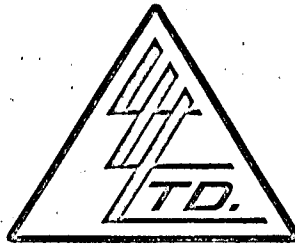
SAMPLE No.	MoS <sub>2</sub> %
3741	.688
3742	.156
3743	.255
3744	.163
3745	.327
3746	.340
3747	.023
3748	.011
3749	.084
3750	.768
3801	.047
3802	.345
3803	.756
3804	.016
3805	1.565
3806	.031
3807	.010
3808	.014
3809	.057
3810	.004
3811	.005
3812	.580
3813	.013
3814	.006
3815	.004
3816	.790
3817	.270
3818	.018
3819	.009
3820	.020

**I** **Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE  
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
Pulps Retained one month  
unless specific arrangements

*C. M. [Signature]*

To: P. G. Hilker Limited  
Box 566  
Whitehorse, Yukon Territory  
Mr. F. G. Hilker, P. Eng.



File No. 2304  
Date October 14, 1969  
Samples Grab

Certificate of  
ASSAY OF  
LORING LABORATORIES LTD.

629 BEAVERDAM RD., N.E., CALGARY 67  
PHONE 277-6797

SAMPLE No.	MoS <sub>2</sub> %
3821	.804
3822	.340
3823	.014
3824	2.085
3825	.133
3826	.374
3827	1.124

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE  
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Refracts Retained one month.  
Pulps Retained one month  
unless specific arrangements  
made.

  
Provincial Assayer of British Columbia

B.C. - YUKON EXPLORATION CO. LTD. (N.P.L.)

GEOCHEMISTRY REPORT

LIME MOUNTAIN AREA

WINDY ARM

YUKON TERRITORY

BY

F. M. SMITH, B.Sc.

WHITEHORSE, Y.T.

December 2, 1968

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Summary

During the last of August and early September the claim group at Lime Mountain was soil sampled by line cutters.

From statistical interpretation of the copper and molybdenum contour intervals were determined and the two maps contoured according to the understanding of the significance of the values.

From the contours pattern it becomes evident there are three significant anomalies. The first, zone A, on the Moly map is characterized by a ring halo common to copper-moly porphyry granite stocks; the second, zone B, is either an alteration due to this stock or a small subordinate stock; the third, zone C, is important in that it suggests more mineralization further up hill on Lime Mountain.

From the interpretation it is suggested that zone A be examined by drilling and/or trenching to determine economic potential. That zone B be further sampled to delineate the shape and significance of this anomaly. That further exploration be carried out further up hill to determine if more mineralization occurs.

Since Anomaly A is open sided on the lake side, it is suggested that more effort be expended by sampling this area as soon as is practical to determine where this anomaly terminates.

## Introduction

Between the 21st of August and September 15th, approximately 1,650 soil samples were taken along cut lines 400' apart, at 100' spacings on the claim group. This group is situated on Lime Mountain, Claim Sheet 105D1, i.e., the Jubilee Mountain sheet.

Samples consisted of borings from below moss using an auger. Samples were collected in kraft bags. Three samplers completed the task.

The only problems evident from the data are as below:

a. The samplers were unfamiliar with the sampling method and procedure and may have accidentally caused erroneous values due to contamination.

b. No effort was taken to determine, pH, water content of soil, local slope, local vegetation, soil composition and colour. All these factors should have been noted, their lack makes the conclusions somewhat qualified due to a lack of control features of the possible anomalies. All these factors are pertinent to understanding the importance of an anomaly. For example, and most importantly, the pH controls the mobility of the molybdenation and cupric ion. If the soil is acidic then moly does not move except by purely mechanical means (soil creep). Copper is effectively leached from the soil. The opposite is in effect in a basic soil. Sometimes soil cover over rocks may have very little to do with subcropping rocks, i.e., the soil over a limestone may<sup>y</sup>be acidic due to its own composition and in spite of local limestone.

### Problems of Interpretation

From a perusal of the data it became evident that there are some possible errors in the values. This is especially noticeable in the rather poor repeatability of any sample site value from double (accidental) sampling. This poor repeatability may be due to many factors some are noted below:

- a. Improper sampling, i.e., non uniformity of sample depth.
- b. Contamination.
- c. Poor assay repeatability.

Because future work is suggested it is recommended that more effort be spent at defining all pertinent parameters (as noted earlier) affecting sample values. This does not require much more time, energy, knowledge or money but leads to a more reliable picture of the sample value relation to the real value at the sample site.

### Interpretation of Analysis

From the values of the two analysis an idea of the significance of unusual or anomalous values must be obtained. That is to say, one must be able to note how anomalous any given value is and what the average value is. This requires some simple but labourous mechanical arithmetic. The average used is the arithmetic mean, i.e., the sum of the values divided by the number of values - as follows:

$\bar{x} = \frac{\sum (\text{PPM})}{N}$  where  $\bar{x}$  is the means,  $\sum$  means to sum all inside the bracket, PPM stands for the values and N the number of values.

Interpretation of Analysis (cont'd)

The next important value is the standard deviation of the sample values from the mean. This is the sample variance of the values. It is a measure of the spread of the values from the mean, as below:

$$S = \sqrt{(\sum (\text{PPM} - \bar{x})^2) / (N-1)}$$
 This "S" then is the standard deviation (variance)

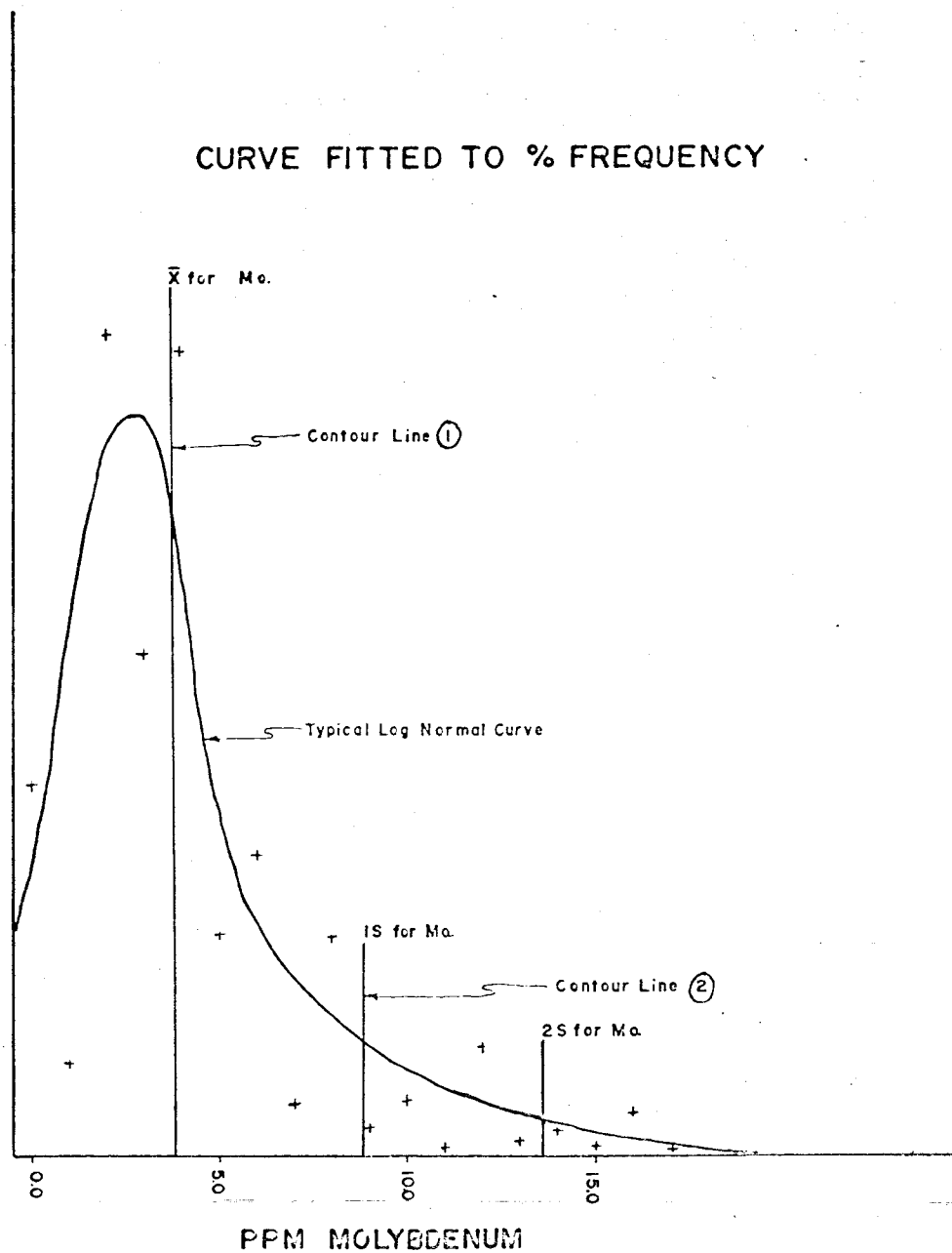
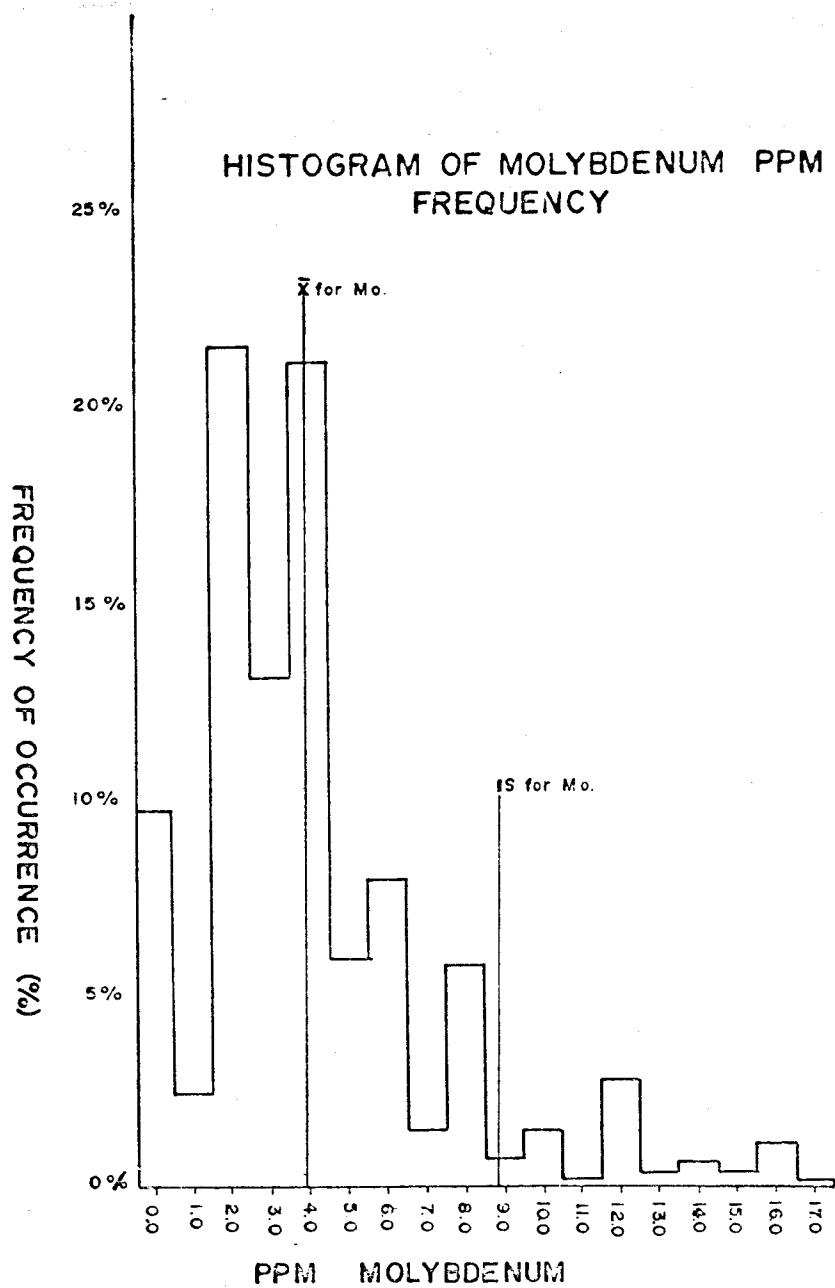
of the sample. These two values must be determined if one is going to attempt to compare the contours on the Copper and Moly map.

If arbitrary contour values are chosen it is similar to using two altimeters both possibly in error to try to compare the altitude of two mountains. You know the mountains are there and they are high but you are not sure which altimeter is showing a measure of the true height.

Thus by converting the contours to the statistics of each sample you can compare the outlines of each contour on the basis of how high it is in relation to the basis (mean) of each sample.

From the plot of the frequency of occurrence of values of Moly (the copper being almost the same) it is possible to note why the contour interval was chosen. The first contour represents the mean; the second contour represents the first standard deviation. If one takes the area under the frequency curve, the mean divides the area in two. The first standard deviation means only about 16% of the area is above this value. The usual meaning to these lines is that the mean differentiates background from potential anomalous areas. The area inside the second line represents probably anomalous values.

There the mean for Moly was 4.0 ppm and the standard deviation is 4.8 ppm. and the mean and standard deviation for copper are 30.0 ppm and 61.8 ppm.



### Interpretation of Analysis (cont'd)

Not all areas equal to over 4.0 ppm were contoured. The areas contoured have some significant shape and/or continuation. The areas not contoured appear to be random highs and lows.

### Interpretation of Anomalies

It is the opinion of the writer that there are three significant and a few possibly significant anomalies shown by the contouring of copper and moly values.

The moly map is the best map for delineation of the anomalous zone, this will be explained later.

Anomaly A, on the Moly map shows a characteristic halo effect common to copper-moly porphyries. This effect is very often noted. It has a richer zone of copper and moly around the edges of a stock producing a circular zone of mineralization. The copper anomaly in the same area outlines most of the band of Moly anomaly above one standard deviation. But as is noted the copper is not as rich in this area as the moly. This anomaly when compared to the geology map shows a slight down-hill shift from the area interpreted as having sub-crop of intrusive.

Anomaly B, appears to lie over the extrusive rocks up hill from the intrusive rocks (8). It may be an alteration in the extrusives or, since the moly is quite high in the rocks that it represents a small stock\*off-shoot from the stock downhill (under anomaly A).

Interpretation of Anomalies (cont'd)

The third major anomaly, C, lies in the upper edge of the map. The main interest in this area is that it is suggested it represents a solufuction off of the hill of moly oxides in soil. From the solubility properties of Moly and Copper it becomes evident in this area that copper is being leached rapidly from the soil and moly is remaing. This occurs under strong acid conditions. In spite of the limestone bedrock I suggest that because the copper anomalies are much lower and less significant than the moly that acid soil conditions prevail and this zone C, thus is important in that it points to possible mineralization further up hill.

Proof of the acid soil hypothesis is based on the poor copper values below and along lines 8400 N. There is shown from the geology work that visible copper float was found but there is no appreciable copper retained in the soil. This copper float may be an expression of the moly solufuction from further up hill.

Thus in only one area is there no coincidence of copper and moly anomalies. This latter case has been covered above. As a result, it is suggested that a significant anomaly of copper and molybdenum has been determined by soil survey.

The only other significant point is that the zone of relative high moly values of which zone A is a part, is open sided on the bottom or lake and stream side. This means that the other side of this area must be sampled to determine where the large area of anomalous moly values is terminated, i.e., Zone A must be terminated, its boundary must be defined before the true significance of this area can be determined.

Recommendations

Zone A

This area has been sufficiently defined and delineated by the present work. The only follow up that should be done is drilling and/or trenching of this area to determine actual rock mineralization. The only work in this area being sampling the other side of the creek to be carried out.

Zone B

This area should be re-done at tighter spaced sampling, i.e., a 50' x 50' grid to tighten down the boundary and significance of this anomaly.

Zone C

Exploratory work should be undertaken further up this hill to see if other stocks intrude in this area with the aim of tying down more mineralized zones.

Remaining Small possibly insignificant anomalies.

The other small discontinuous anomalies should be tight grid sampled to either reject or further enlarge their anomalous significance. This grid should be at least 50' x 50' spacing with the grid lines re-sampled.

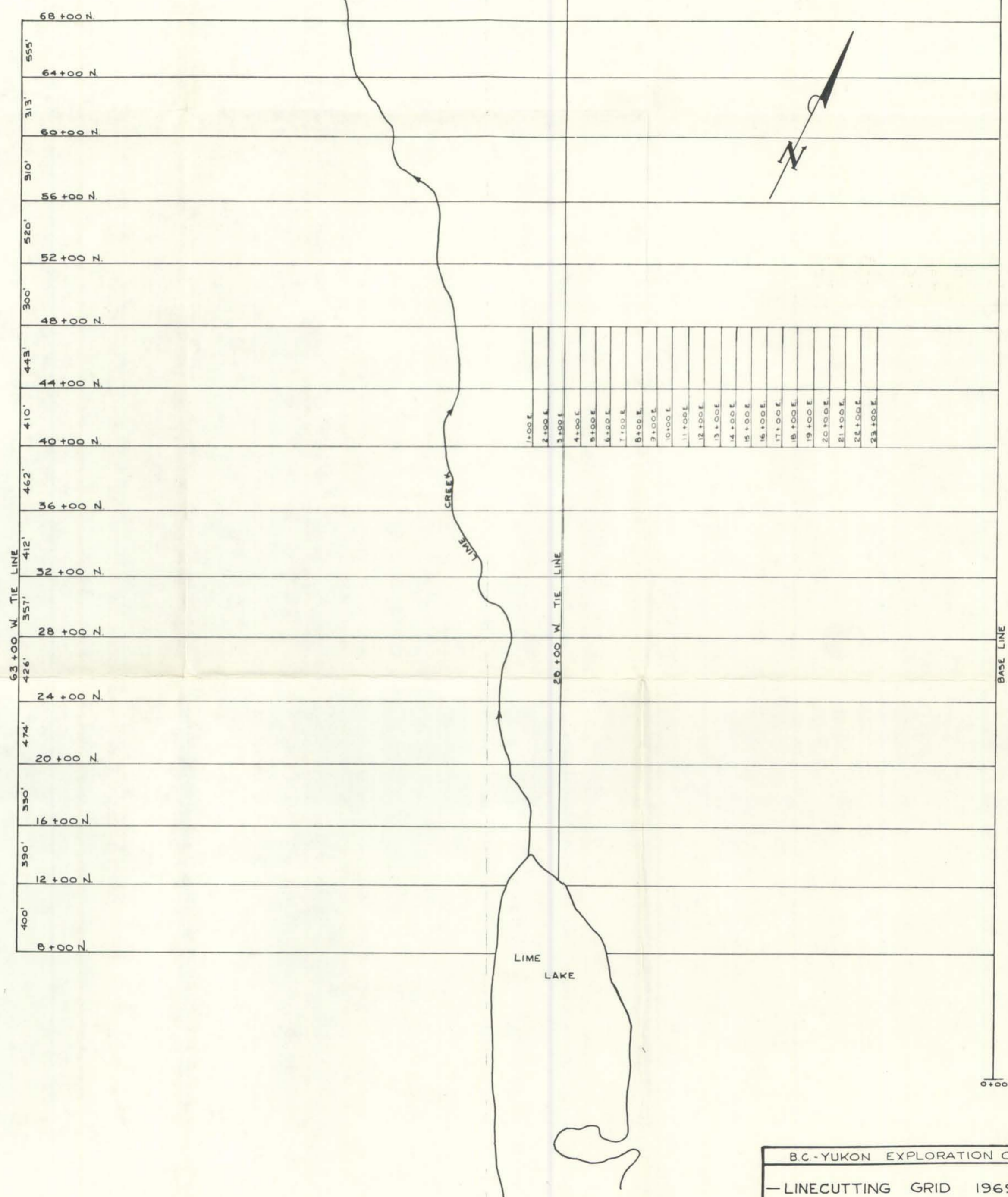
There are too many of these to be listed but if further work is undertaken all these areas should be double checked by re-sampling to check for possible mineralized zones.

AUTHORIZATION

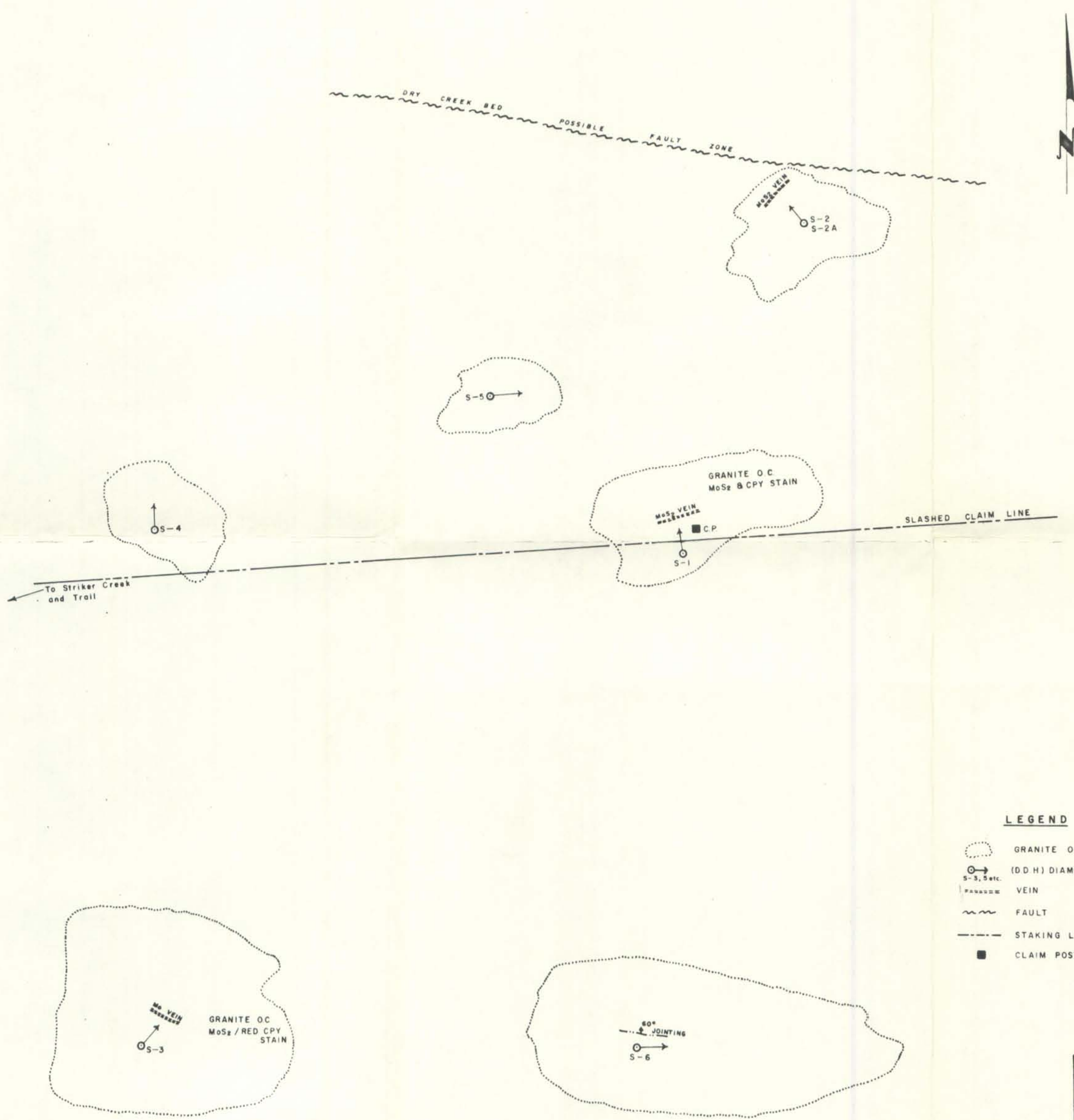
1. I, the undersigned, am a geologist, graduate of the University of Toronto, 1967.
2. I have practised my profession as a geologist in mapping and geochemical exploration for the last four summers.
3. My home address is Box 548, Whitehorse, Yukon Territory.
4. I am familiar with the geology and geochemistry of the Lime Mountain, Area, Windy Arm, Yukon Territory.

F. Marshall Smith

F. Marshall Smith, B. Sc.  
December 2, 1968



BC-YUKON EXPLORATION Co (NPL)	
— LINECUTTING GRID 1969 —	
DRN BY: R.A.C.	APP'D BY: R.G. HILKER
DATE: AUG. 25 /69.	SCALE: 1" = 400'



**LEGEND**

- GRANITE OUTCROP
- (D.D.H.) DIAMOND DRILL HOLE
- VEIN
- FAULT
- STAKING LINE
- CLAIM POST

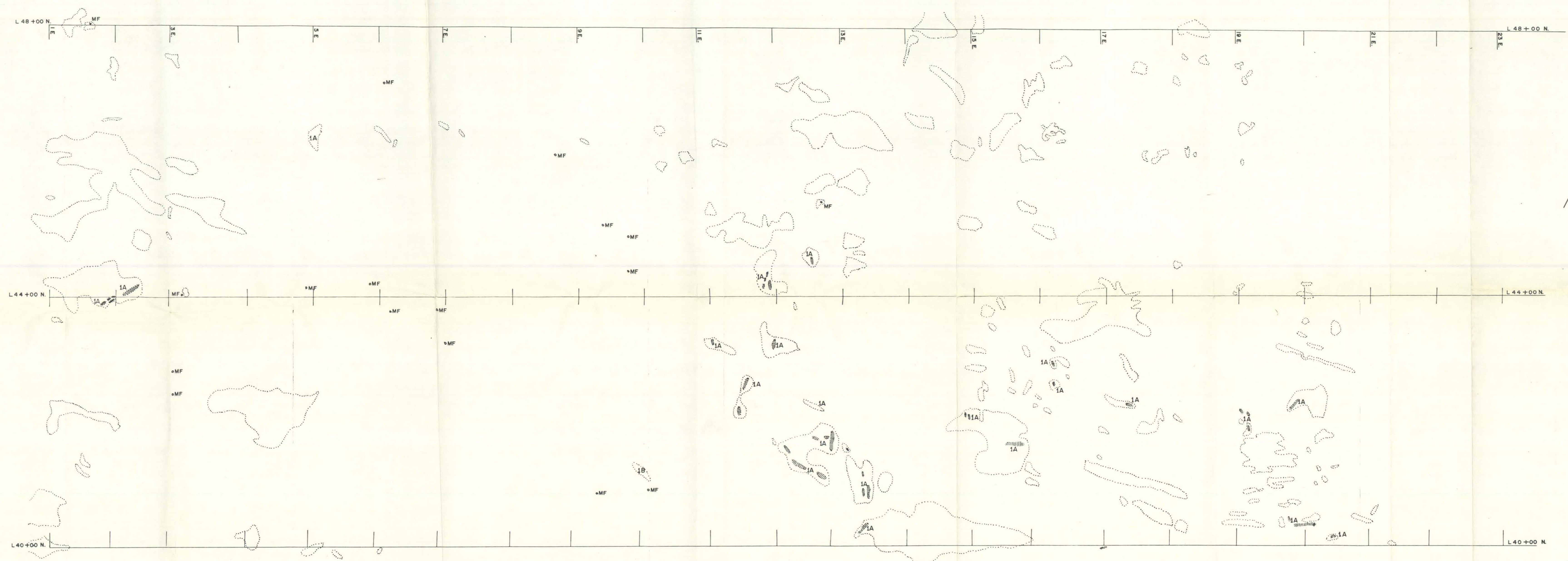
D.D.H. No.	DEPTH	DIP
S-1	84'	45°N
S-2	18'	45°NW
S-2A	78'	50°NW
S-3	80'	45°NE
S-4	77'	45°N
S-5	90'	45°E
S-6	68'	45°E

B.C.-YUKON EXPLORATION CO. LTD.  
 (N.P.L.)

**DIAMOND DRILL HOLE  
 LOCATION PLAN**

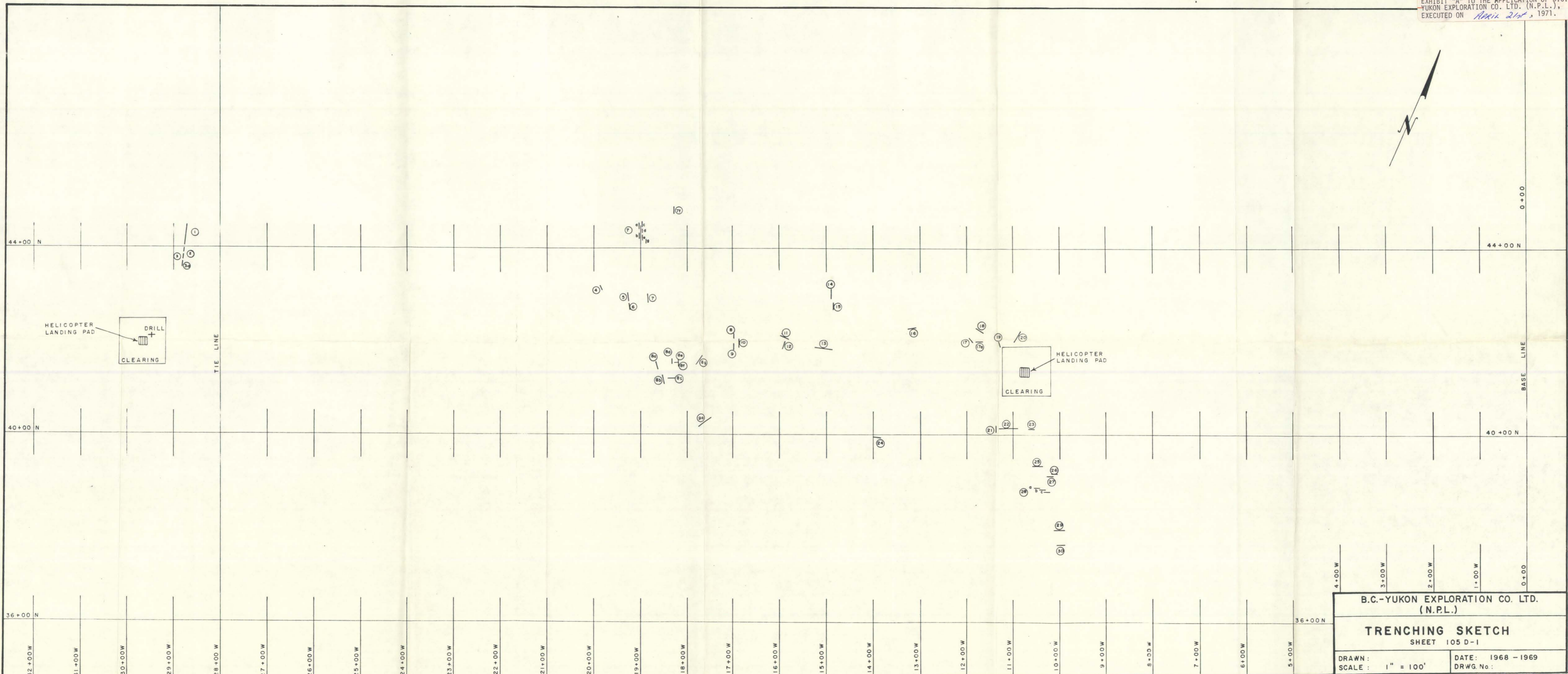
DRAWN: R.G.H.  
 SCALE: 1" = 30'

DATE: Oct. 3/1966  
 DRWG. No.:

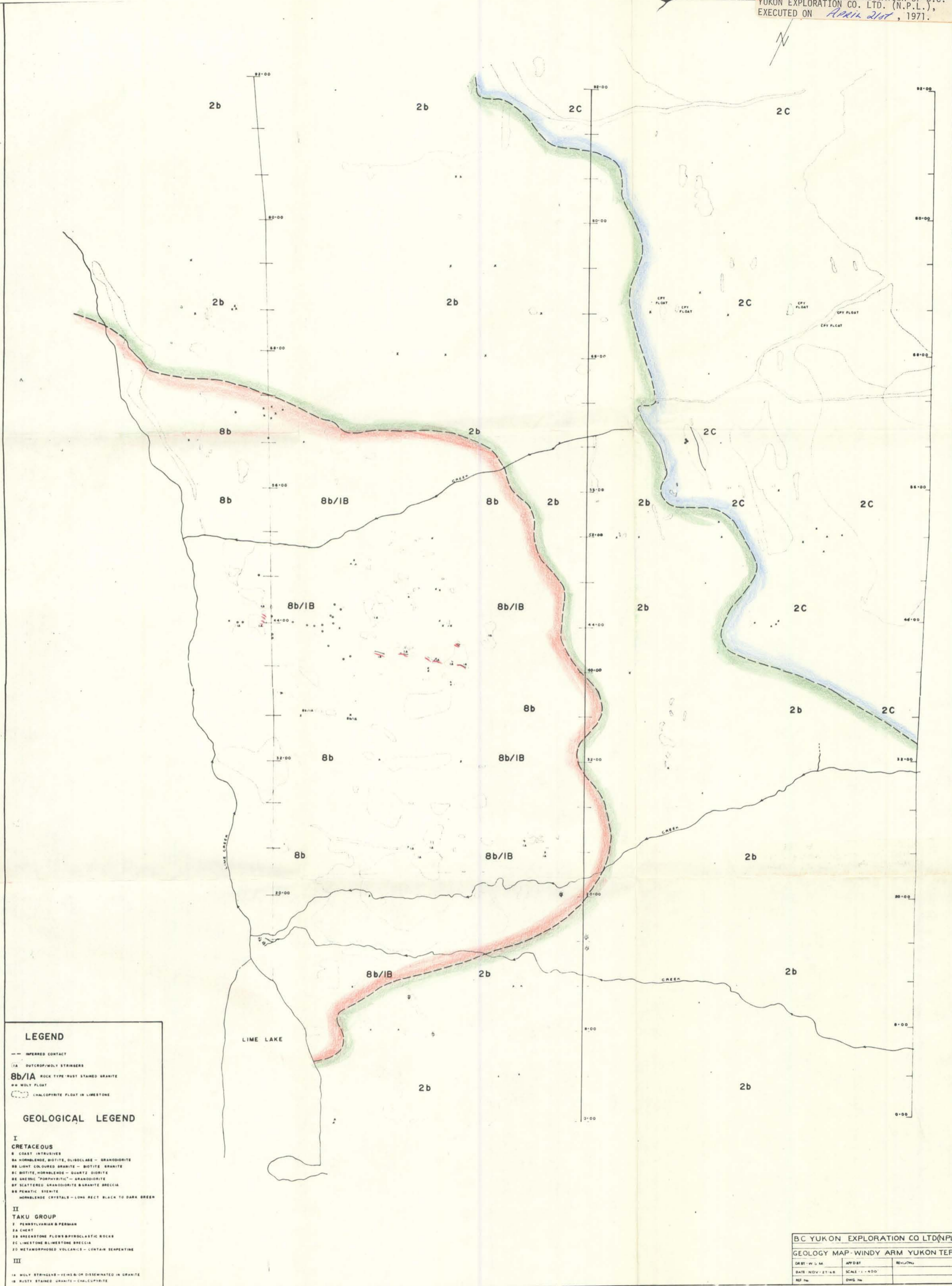


LEGEND  
 1A—MOLYBDENITE MINERALIZATION  
 MF—MOLYBDENITE FLOAT (Angular Boulders)  
 (Cobbles)

R.G. MLKER LTD.  
 CONSULTING GEOLOGIST  
 WHITEHORSE, Y.T.  
 B.C.-YUKON EXPLORATION Co. (NPL)  
 -GEOLOGY MAP-  
 -EAST OF LIME CREEK -  
 DRN. BY: R.A.C.      APP'D. BY: R.G. MLKER  
 DATE: AUGUST 18, 1969.      SCALE: 1" = 500'



4+00 W	3+00 W	2+00 W	1+00 W	0+00
B.C.-YUKON EXPLORATION CO. LTD. (N.P.L.)				
<b>TRENCHING SKETCH</b> SHEET 105 D-1				
DRAWN :		DATE: 1968 - 1969		
SCALE: 1" = 100'		DRWG. No.:		



**LEGEND**

- IMPERFECT CONTACT
- ⊠ OUTCROP/MOLY STRINGERS
- 8b/IA ROCK TYPE - RUSTY STAINED GRANITE
- ⊠ MOLY FLOAT
- ⊠ CHALCOPRYITE FLOAT IN LIMESTONE

**GEOLOGICAL LEGEND**

- I**  
**CRETACEOUS**
- 8 COAST INTRUSIVES
  - 8A HORNBLNDE, BIOTITE, OLIGOCLASE - GRANODIORITE
  - 8B LIGHT COLOURED GRANITE - BIOTITE GRANITE
  - 8C BIOTITE, HORNBLNDE - QUARTZ DIORITE
  - 8E BRECCIC "PORPHYRITIC" - GRANODIORITE
  - 8F SCATTERED GRANODIORITE & GRANITE BRECCIA
  - 8G PERMATIC SYENITE
  - HORNBLNDE CRYSTALS - LONG RECT BLACK TO DARK GREEN
- II**  
**TAKU GROUP**
- 2 PENNSYLVANIAN & PERMIAN
  - 2A CHERT
  - 2B GREENSTONE FLOWS & PYROCLASTIC ROCKS
  - 2C LIMESTONE LIMESTONE BRECCIA
  - 2D METAMORPHOSED VOLCANICS - CONTAIN SERPENTINE
- III**
- IA MOLY STRINGERS - VEINS & OR DISSEMINATED IN GRANITE
  - IB RUSTY STAINED GRANITE - CHALCOPRYITE

BC YUKON EXPLORATION CO LTD (NPL)		
GEOLOGY MAP - WINDY ARM YUKON TER.		
DATE: NOV 27 68	APP'D BY:	REVISED:
SCALE: 1:400	DWG No:	

63+00 W. TIE LINE

28+00 W. T.



68+00 N.

60+00 N.

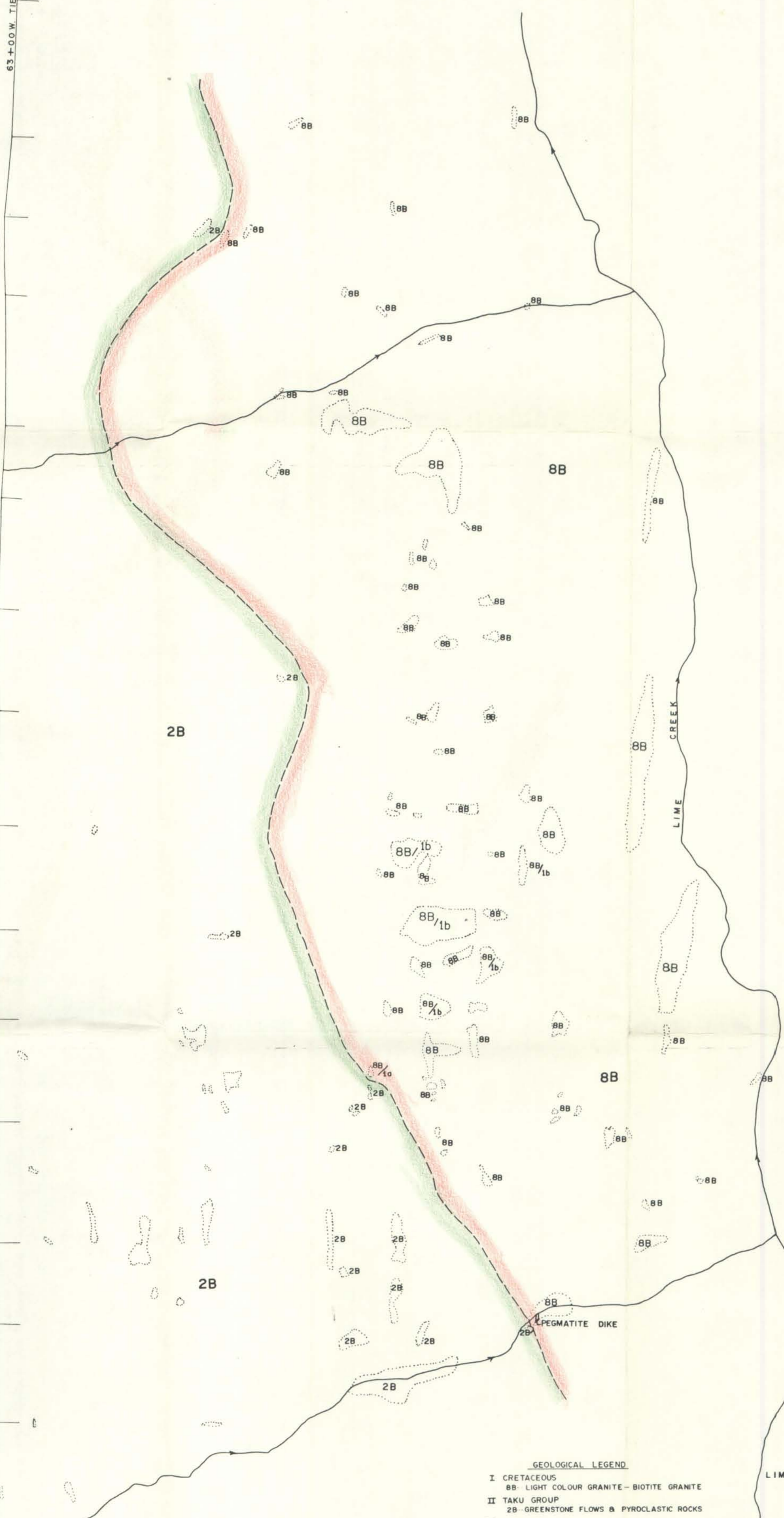
52+00 N.

44+00 N.

36+00 N.

28+00 N.

20+00 N.



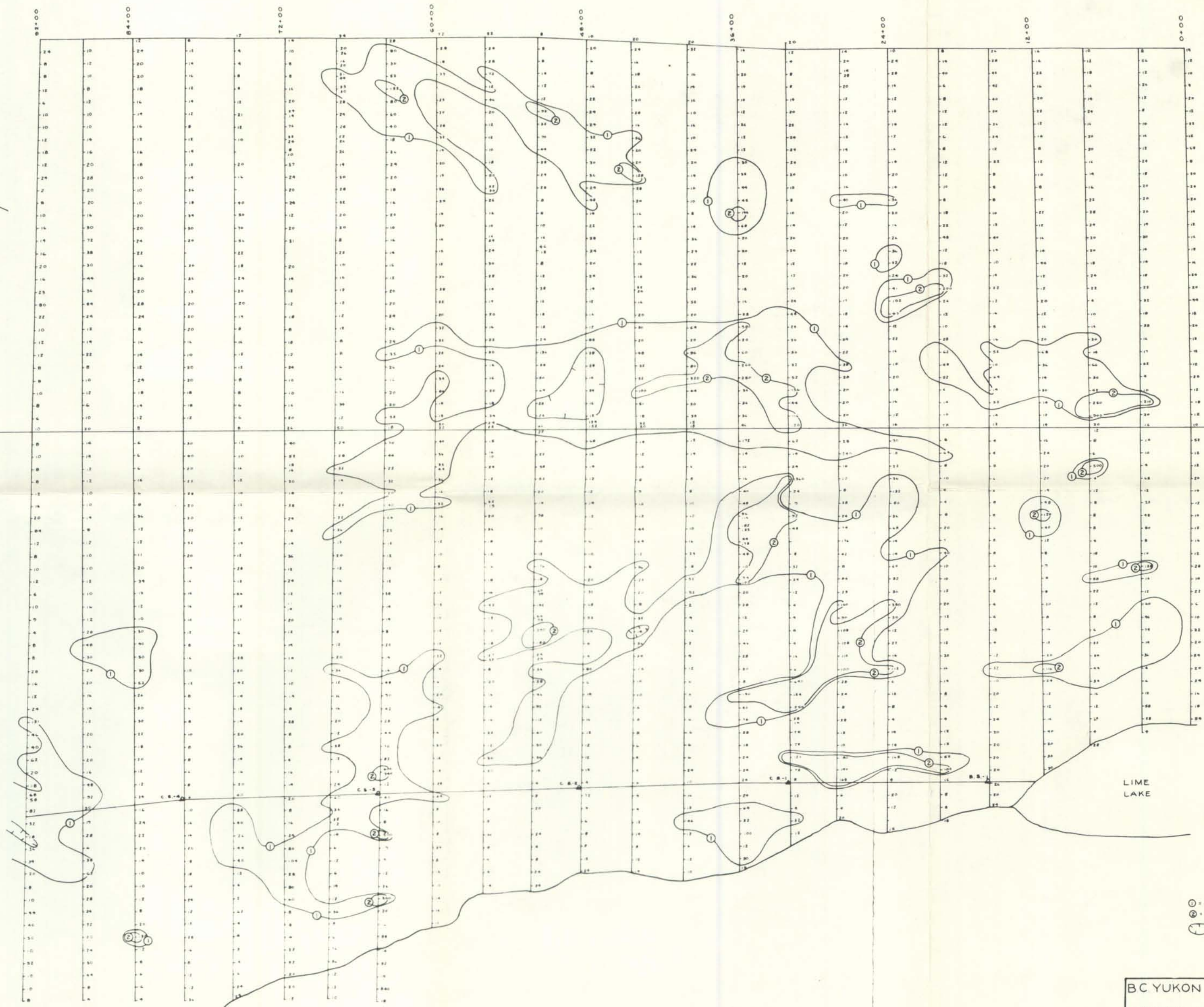
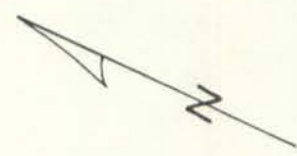
GEOLOGICAL LEGEND

- I CRETACEOUS
- 8B LIGHT COLOUR GRANITE - BIOTITE GRANITE
- II TAKU GROUP
- 2B GREENSTONE FLOWS & PYROCLASTIC ROCKS
- III
- 1a MOLY STRINGERS - VEINS &/OR DISSEMINATED IN GRANITE
- 1b RUSTY STAINED GRANITE - CHALCOPYRITE

LIME LAKE

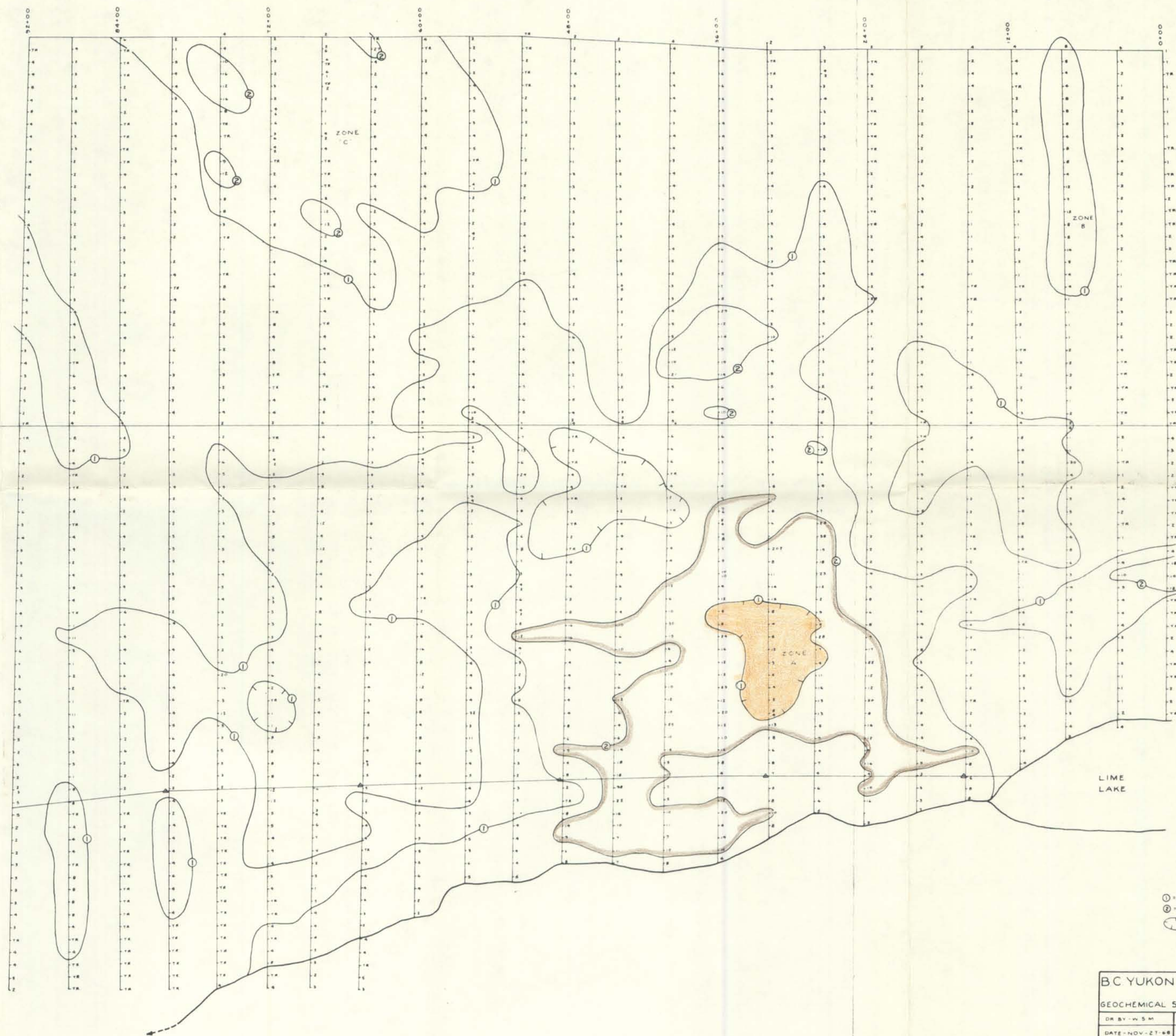
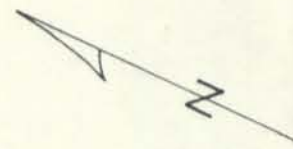
R.G. HILKER LTD.  
 CONSULTING GEOLOGIST  
 WHITEHORSE, Y.T.

BC-YUKON EXPLORATION Co.(NPL)	
<b>GEOLOGY MAP</b>	
<b>WEST OF LIME CREEK</b>	
WINDY ARM AREA Y.T.	
DRN. BY: R.A.C.	APP'D BY: R.G. HILKER
DATE: AUGUST 19, 1969.	SCALE: 1" = 200 ft.



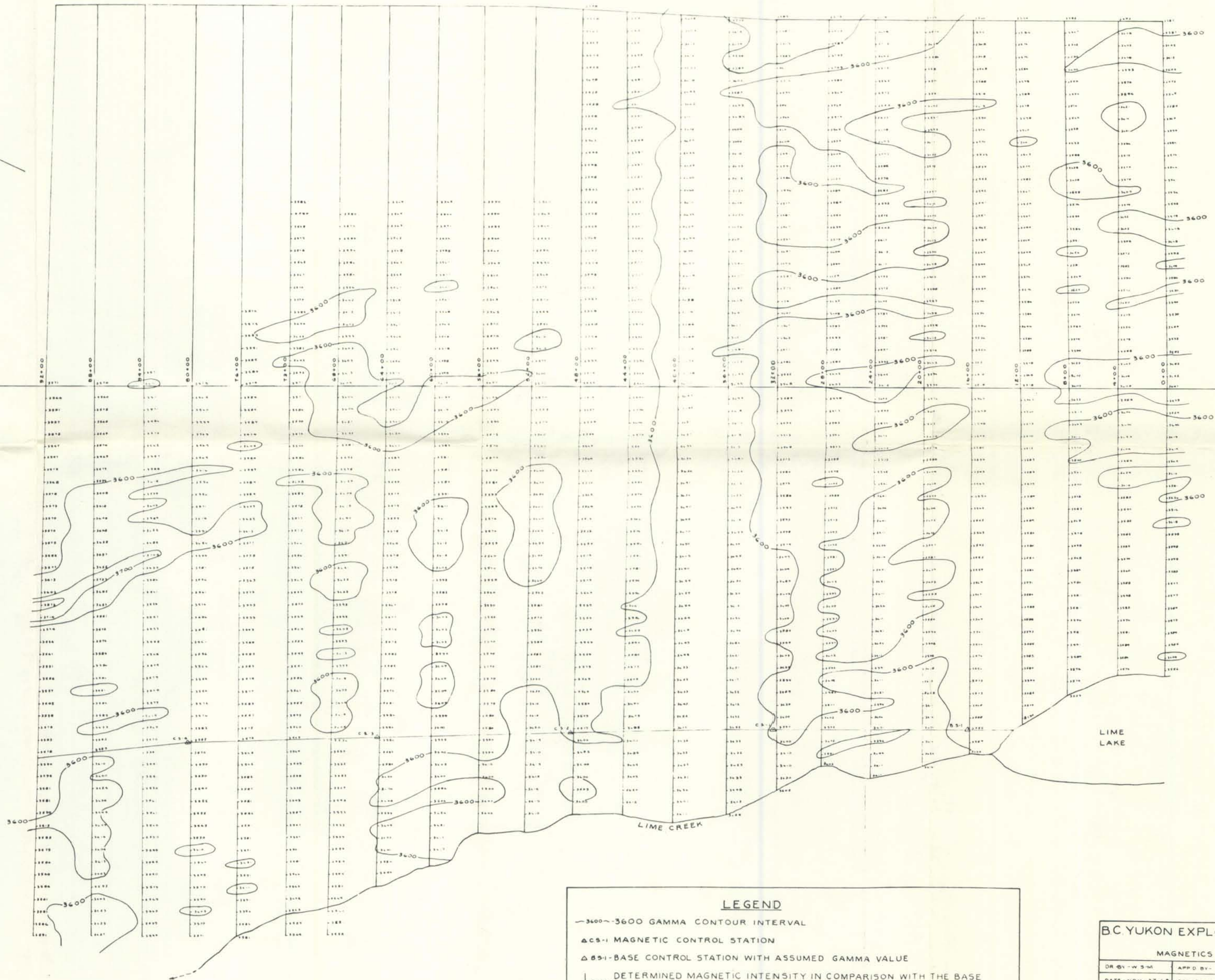
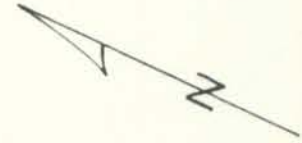
LEGEND  
 ① = 50-918 PPM COPPER  
 ② = >918 PPM COPPER  
 ☉ = DEPRESSION

BC YUKON EXPLORATION CO. LTD. (N.P.L.)		
GEOCHEMICAL SOIL SAMPLE COPPER PPM		
DR BY: W.S.M.	APP'D BY:	REVISIONS
DATE: NOV-27-68	SCALE: 1"=400'	
REF NO	DWG NO	



LEGEND  
 ① = 4-677 PPM ± 41 PPM MOLY  
 ② = 877 PPM ± 877 PPM MOLY  
 ⊕ DEPRESSION

BC YUKON EXPLORATION CO. LTD. (NPL)		
GEOCHEMICAL SOIL SAMPLE MOLYBDENUM PPM		
DR BY - W.S.M.	APPD BY -	REVISIONS
DATE - NOV-27-68	SCALE - 1" = 400'	
REF NO	DWG NO	



**LEGEND**

—3600—3600 GAMMA CONTOUR INTERVAL

▲CS-1 MAGNETIC CONTROL STATION

▲BS-1-BASE CONTROL STATION WITH ASSUMED GAMMA VALUE

—3602— DETERMINED MAGNETIC INTENSITY IN COMPARISON WITH THE BASE CONTROL STATION-VERTICAL COMPONENT OF THE TOTAL MAGNETIC FIELD

BC YUKON EXPLORATION CO LTD. (N.P.L.)		
MAGNETICS SURVEY		
DR BY - W S M	APP'D BY -	REVISIONS
DATE - NOV - 27 - 68	SCALE - 1:400'	
REF NO	DWG NO	