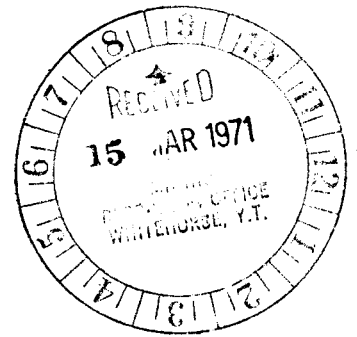


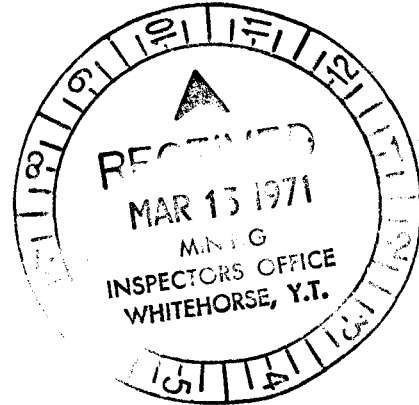
PHELPS DODGE CORPORATION OF CANADA, LIMITED

GEOLOGICAL AND GEOCHEMICAL REPORT
ON THE ALASKITE PROJECT CLAIMS
ED AND ADD GROUPS
CLAIM SHEET 115G8
ROCKSLIDE AND ALASKITE CK. AREA
YUKON TERRITORY



Approximately
Longitude 138°12'W
Latitude 61°29'N

N.T.S. 115G8(E)



Work done during
June 2 - Sept. 1, 1970

By

F. M. Smith

January, 1971

This report has been examined by the Geological Evaluation Unit and is recommended to the Director of Mines and Technical Surveys as representing the Yukon Territory.

31,329-48

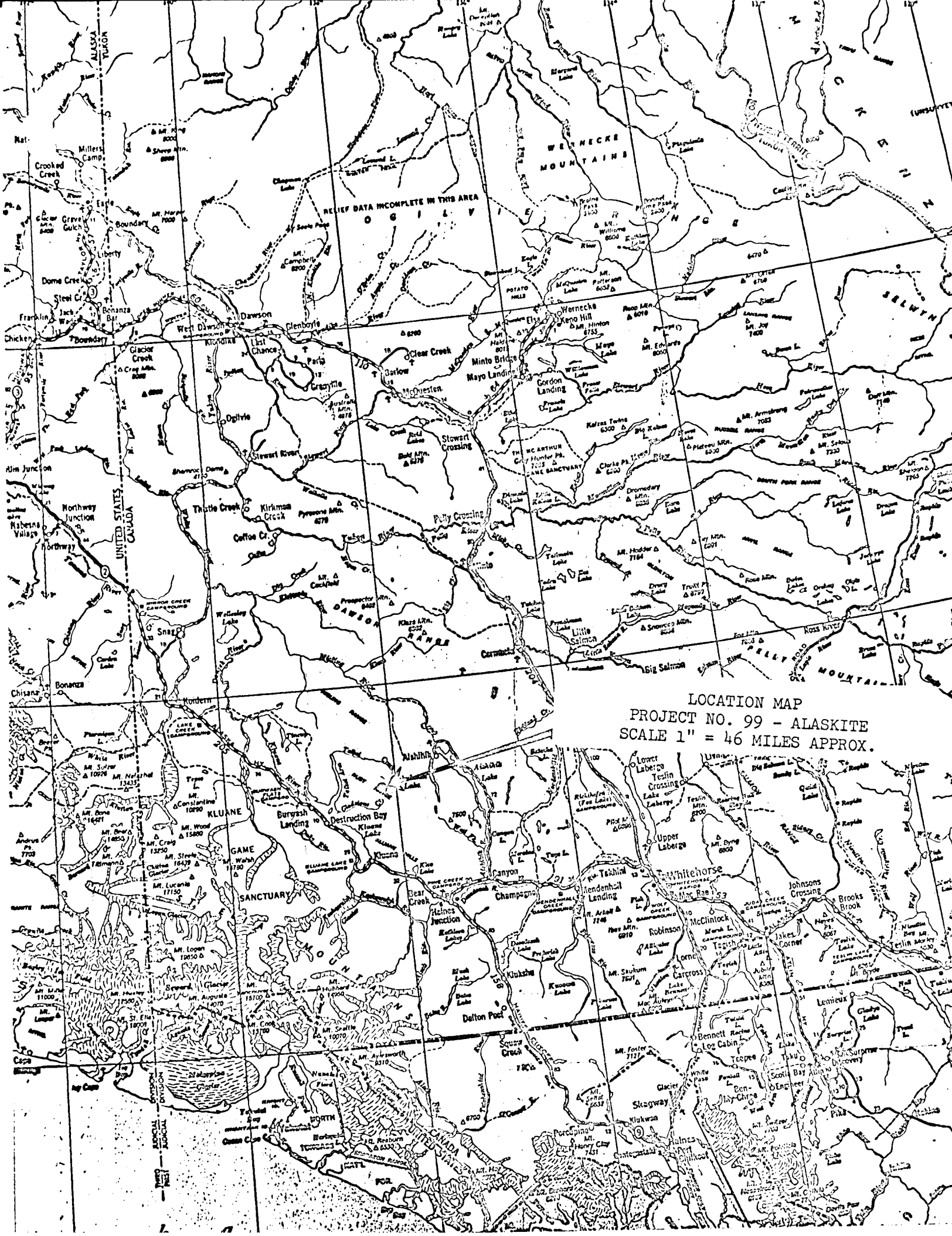
D.B. Craig

Director

Completed under contract work under Section 22 (1) of the Yukon Mining Act.

[Signature]

Commissioner of Yukon Territory



RELIEF DATA INCOMPLETE IN THIS AREA

LOCATION MAP
PROJECT NO. 99 - ALASKITE
SCALE 1" = 46 MILES APPROX.



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ILLUSTRATIONS

Location Map	Facing Title Page
Project 99, Ed and Add Claims	Facing Page 1
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Alaskite Copper Cumulative %	Facing Alaskite Copper
Alaskite Molybdenum	Facing Page 9
Alaskite Molybdenum Cumulative %	Facing Alaskite Moly.

MAPS IN ACCOMPANYING POUCH

Talbot Prospect 17 June/70 ± 1":2000'

Alaskite Project (Kluane Lake) Map 2, 1":400' Geology

Alaskite Project (Kluane Lake) Map 2, 1":400' Geochemistry

Geological and Geochemical Report

Alaskite Project 99

Introduction:

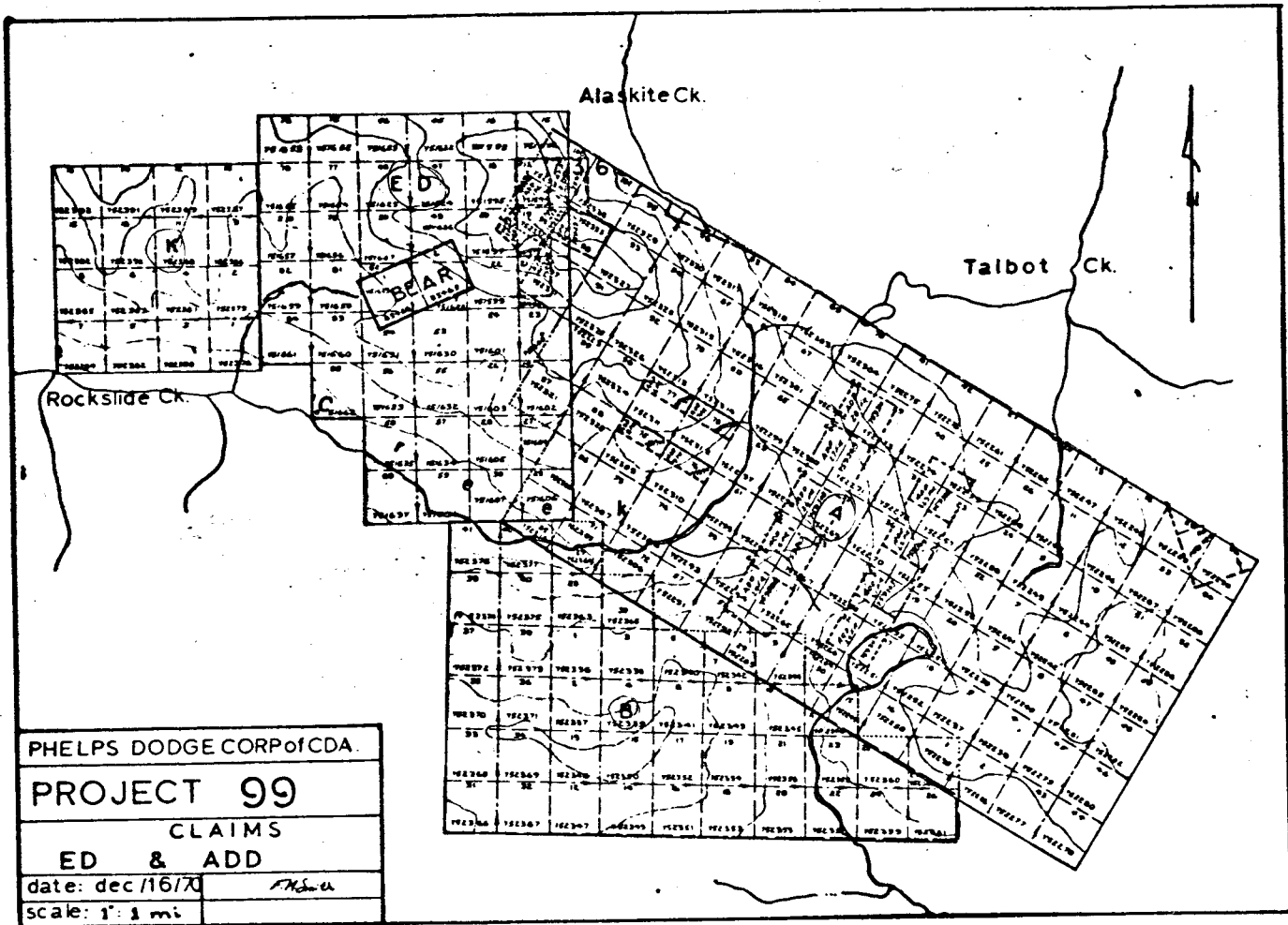
The Ed Claims were staked by a syndicate in an attempt to cover old known mineralization near the headwaters of Alaskite Ck. The southern half of the Ed Gp. were purchased by Phelps Dodge following initial evaluation of the area (see 1":2000' map accompanying report).

In conjunction with another project in the area the Ed claims were sampled and mapped to define preliminary target areas for a geological drilling project. The crew was moved in during early August to carry out detailed geochemical and geological survey. Based on this work a drill was moved into the area from the Aishihik road to drill two geological holes (one on each project area). Due to early winter conditions the proposed drill hole E70-1 was not attempted and work relative to this project area was terminated in early September 1970.

Location and Access:

The Ed claims are located on map area NTS 115G8. They are situated west of the headwaters of Alaskite Ck. and north and west of Rockslide Ck. The center of the region is approximately $61^{\circ}29'N$, $138^{\circ}12'W$ in the east central portion of the Ruby Range.

Access is possible during summer by tracked vehicles from Aishihik Airstrip along a 35 mile route. The trail uses a pass into Talbot (and Alaskite) Ck. from the north tributary of Albert Ck. The only other presently



available access is by helicopter with the closest base (30 miles west) at Burwash Lodge or Airport.

Property:

The Ed claims are recorded in the name of Phelps Dodge Corporation of Canada, Limited. They border on the overlapping A, B and K groups also recorded in the name of Phelps Dodge Corporation of Canada, Limited through a joint venture agreement. The Bear and KL claims have not been located properly on the ground and true location will have to wait for a legal survey.

Physiography and Vegetation:

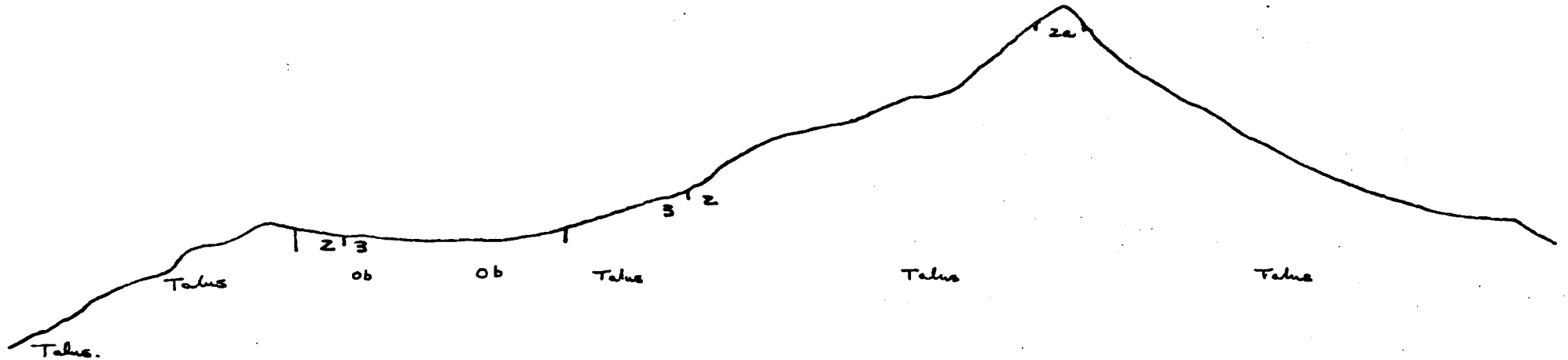
The area is characterized by sharp mountain peaks and high rounded ridges with steep valley walls and fairly flat even stream valleys. Some of the peaks and ridges have been suggested to be unglaciated (Muller - G.S.C. Memoir 340). Most of the valleys are typical of Valley Glacier activity presumably of the Ruby Glaciation period. Plaster Ridge, central to the 'A' and 'B' group has no erratics on its top flat portion and no sign of glacial alteration.

The extremely sparse vegetation is confined to valley floors and the lowest parts of some non-talus area valley walls. There are no trees in the area, occasional clumps of willow, alder and buck-brush are the main vegetation. Grass and moss are ubiquitous in non-talus areas.

Regional Geology:

The Alaskite Project area has been mapped by Muller (G.S.C. Memoir 340) as being predominantly "Alaskite", of Mesozoic and/or Tertiary in age, with some portions of the Ruby Range batholith of

ALASKITE CROSS - SECTION



Scale: horizontal 1" : 1000'
vertical 1" : 100'

"Jurassic or? Cretaceous age."

The Project area is a major height of land for the Ruby Range and there is little evidence of the older Yukon Complex, which is intruded by the Ruby batholith, in all areas including around the Project area. The only sign of this intrusive history is occasional large Xenoliths of crystalline rocks much richer in biotite and hornblende within the granodiorite of the Ruby batholith both north and west of the Ed Group.

Alaskite Project Geology:

Mapping of the Alaskite area was accomplished at the same time as geochemical samples were collected. Geochemical samples were keyed to topographic features on aerial photos and later transferred to topographic maps. Rock samples were collected and sample points marked on the rock face.

From the field work the exact age relationships of the various rock types is not yet discernible. Few contacts have been defined; no systematic sampling on the few outcrops has been attempted to define phase changes within the various intrusives. The following list is in order of major to minor occurrence of the various rock types. A discussion later will explain some of the known age relationships.

- (1) (Map symbol 2a-2b) "Alaskite" (adamellite) to leucocratic granite.
- (2) (Map symbol 3) Granite, medium to fine grained.
- (3) (Map symbol rhy, QF) Acid dikes, shear fillings, various compositions.
- (4) (Map symbol Db An) Basic dikes (diabasic to anorthite).

LEGEND

DIKES

Rhyolitic	Rhy
Andesitic	An
Diabasic	Db
Quartz - Feldspar - Porphyry	QF π

3 Fine - to - medium grained Intrusives

3a - fine grained porphyritic granite (locally rhyolitic)

3b - fine grained granite (locally aplitic)

3c - medium grained phase of 3a and 3b

2 Coarse grained Intrusives

2a - Alaskite (low mafic)

2b - Leucogranite (transition 2a, 2c)

identified as Biotite Quartz Monzonite occasionally










2c - Granite

2d - Porphyry (Granite to Alaskite)

2d₁ - as porphyritic alaskite

1 OLDER Crystalline Rocks

Quartz Diorite

	FAULT		MINERAL FLOAT
	JOINTING		TALUS AREA
	SHEARING		ROCK OUTCROP
	MINERAL SHOWING		TALOUS EDGE
			APPROXIMATE CONTACT

(1) Alaskite

The Alaskite is the predominant rock type in the mapped area. The portion lying north of the Unit 3 Granite is the main area of interest within this group of claims. The southern portion is relatively unmineralized and has little or no gossan associated. The Alaskite is typically of hypidiomorphic coarse granular texture. They are rich in potassic feldspar with quartz, plagioclase and biotite the usual order of major to minor constituents. Hornblende is rare with chlorite, saussurite and sericite the common alteration products of major constituents. No zoning of K-feldspar or sericite-chlorite assemblages has been noted (primarily due to lack of outcroppings).

The Alaskite is a major intrusive and has been tentatively dated by Muller as "Early Tertiary". From thin section work on rocks similar to those near the headwaters of Alaskite Ck. the rock has been described by Dr. Coats as "miarolitic or drusy cavities and mineralogic make up suggest crystallization at high levels in the crust". This is in keeping with Muller's analysis of mode of occurrence and age relationship.

The gossan rich (and apparently mineralized area) within the claims is the main area of interest in the Ed group. The elliptical area is about parallel to the contact of Unit 3 with the Alaskite and borders on the north contact of Unit 3. The center of the gossan zone is about at the crest of the large cirque west of the headwaters of Alaskite Ck.

The gossan zone is characterized by close spaced jointing and random shearing. The mineralization is usually associated with the shearing. The gossan itself is superimposed on a relatively fresh

Alaskite to leucocratic granite. The reddish brown hematite rich stain covers all surface rocks and skree material. Joints and shears are well oxidized usually and heavily stained. The jointing itself is close spaced but tends to random direction changes over very short intervals.

The Alaskite south of Unit 3 is only occasionally sheared and jointing is much wider spaced. There are few gossans in this area and no mineralization was noted in the rocks or shears.

(2) Granite (Unit 3a, b, c):

This unit has been mapped as one later(?) intrusive. The character and composition seem uniform but degree of crystallization varies within the intrusive. The suggestion that the material is later than Alaskite is based on the abundance of rhyolite and granitic dikes within the "Gossan Zone" of the Alaskite. The character of the rhyolite is virtually the same as the fine grained phase (3b). The quartz feldspar porphyry dikes, of which only a very few are plotted because they are too numerous and too small to plot, are virtually identical to the 3a or porphyritic phase of the intrusive.

The intrusive appears to be a long thin batholith trending NW-SE with an irregular contact with the Alaskite both north and south. Contacts are rare due to talus conditions. The rock is relatively fresh, weathers red brown, is not as light in colour (due to pink to red feldspars) as the surrounding Alaskite. Mafics are usually biotite, little hornblende has been noted. No thin section work has been done as yet. All identifications are macroscopic.

(3) Acid Dikes:

The abundance of acidic dikes in the area cannot be properly displayed on the accompanying map. Small dikes from an inch to a few inches are irregular both in extent and attitude. The compositions range from Rhyolitic to Granitic and Quartz Feldspar Porphyry granitic series. Only the regular wider dikes have been plotted. Their source and relation to mineralization is indefinite as yet. A few portions as part of the skree in the cirque west of Alaskite Ck. show disseminated molybdenum and chalcopyrite.

(4) Basic Dikes:

Most of the remaining dikes are diabasic. They are regular and relatively long. Widths cannot be properly shown on the map as few areas are more than two feet wide. Anorthitic dikes also occur especially associated with intense shears.

Mineralization:

The mineralized area within the Alaskite project Ed claims lies entirely within the "gossan" Alaskite about the large cirque between Alaskite Ck. and the top peak in the area. The skrees in the gossan are reddish brown, have occasional rock pieces with visible sulfides on joints and shears and some material with disseminated sulfides.

The minerals noted include splashy rosettes of MoS_2 especially on the north side of the area (next to Alaskite Ck.) and chalcopyrite and pyrrhotite in joints and shears. Some disseminated chalcopyrite has been noted in skree rocks but little has been found in place.

The degree and attitude of shears is not well defined. Little true outcrop occurs within the gossan. The jointing, faulting and shearing results in large frost riven and skree areas but very little fresh outcroppings. The major areas of outcrops are in the extremely steep cirque faces, normally inaccessible except at their base. Jointing can be seen in these faces to be highly disordered, changing direction and attitude over short intervals. Due to the intense oxidation and obvious leaching little is known of the unaltered mineralization in the Alaskite.

A proposed drillhole E71-1 will be drilled from the central portion of the area in a westerly direction.

Geochemistry:

The sampling of the Alaskite area was carried out in two ways. Initially stream and reconnaissance soil geochemistry was used to give a preliminary evaluation. At this time little of the geology was understood and only the "splashy" molybdenum mineralization had been noted.

Silt samples were taken from the active portion of moving water courses especially in eddies or stagnant areas where the silt collected. Soil or grit samples were usually collected in frost boils or sampling below any moss or humus-rich material. The samples were collected in kraft wet strength paper bags, numbered as to traverse sequence and plotted on either aerial photos or 1":1000' topo maps. The control for the topo maps and air photos was by small aneroid barometers carried by sampling crews, checking in at camp at the start and end of the day, and keyed to the height of any one traverse. The data points were then transferred to the final 1":400' topo maps and evaluated.

The samples were analysed at the Barringer Research Limited's Whitehorse Lab for copper and molybdenum. Approximately 477 samples were collected and analysed. The copper was evaluated using hot acid (nitric-perchlorate) extraction and run on a Techtron AA4 unit. The molybdenum was evaluated using the carbonate "salt" fusion, acid digestion and run on the AA4 using the "Loring" procedure. The accuracy of the copper run at the mode (30 ppm Cu) would be less than ± 1.5 ppm Cu and molybdenum at the mode (2 ppm Mo) would be less than ± 0.5 ppm Mo.

Also collected were 57 rock chip samples from frost riven material and virtually "in place" rock. These were assayed by G. Spaulding at the Whitehorse Assay office. They were run for copper and molybdenum. Several grab samples and some silts were assayed or geochemically run for tungsten.

Stream and Reconnaissance Survey:

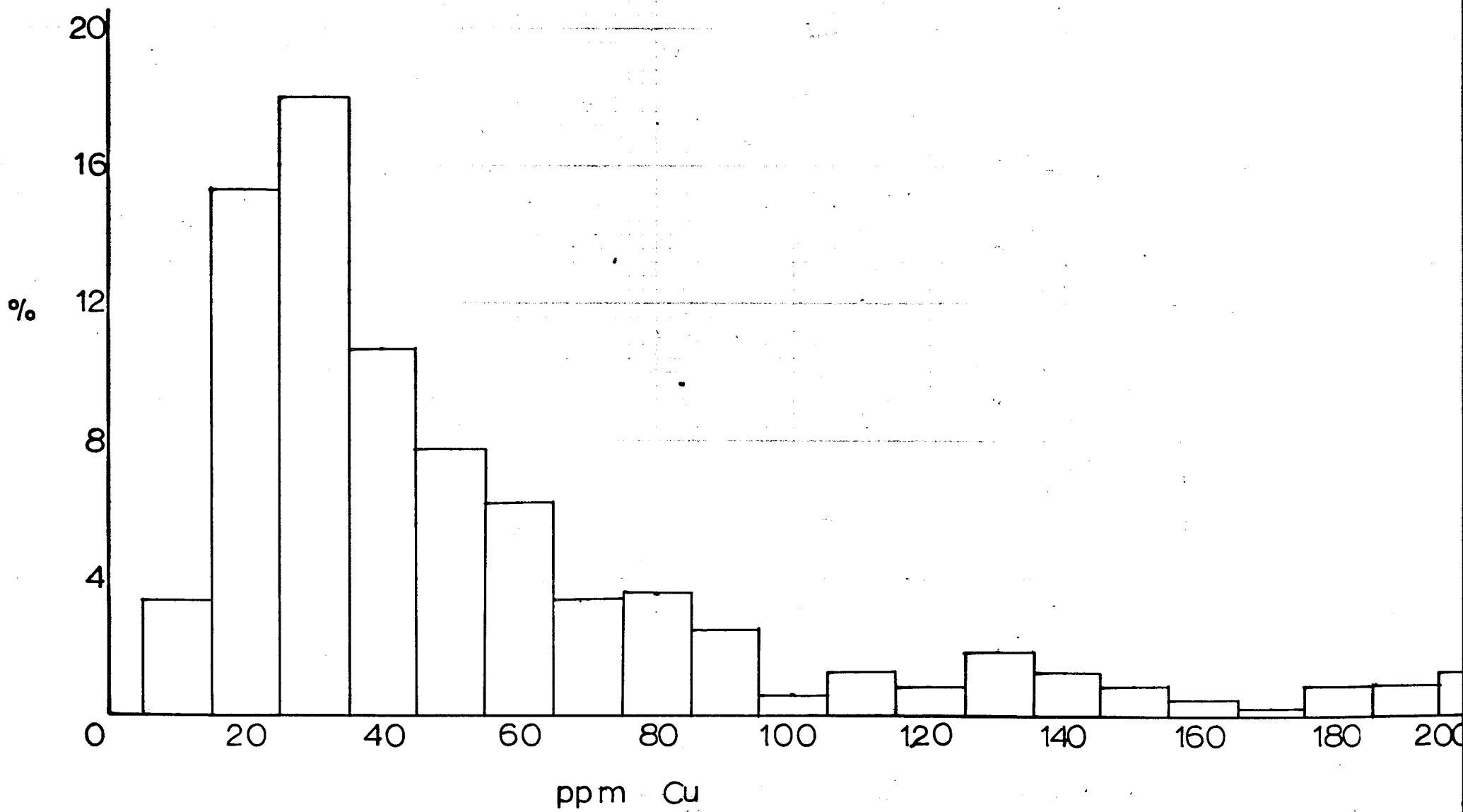
The results of this survey are plotted on the 1" to 2000' map within this report. The geology interpretation has been changed from this initial evaluation and refinements about the exact areas of interest have changed with more detailed information.

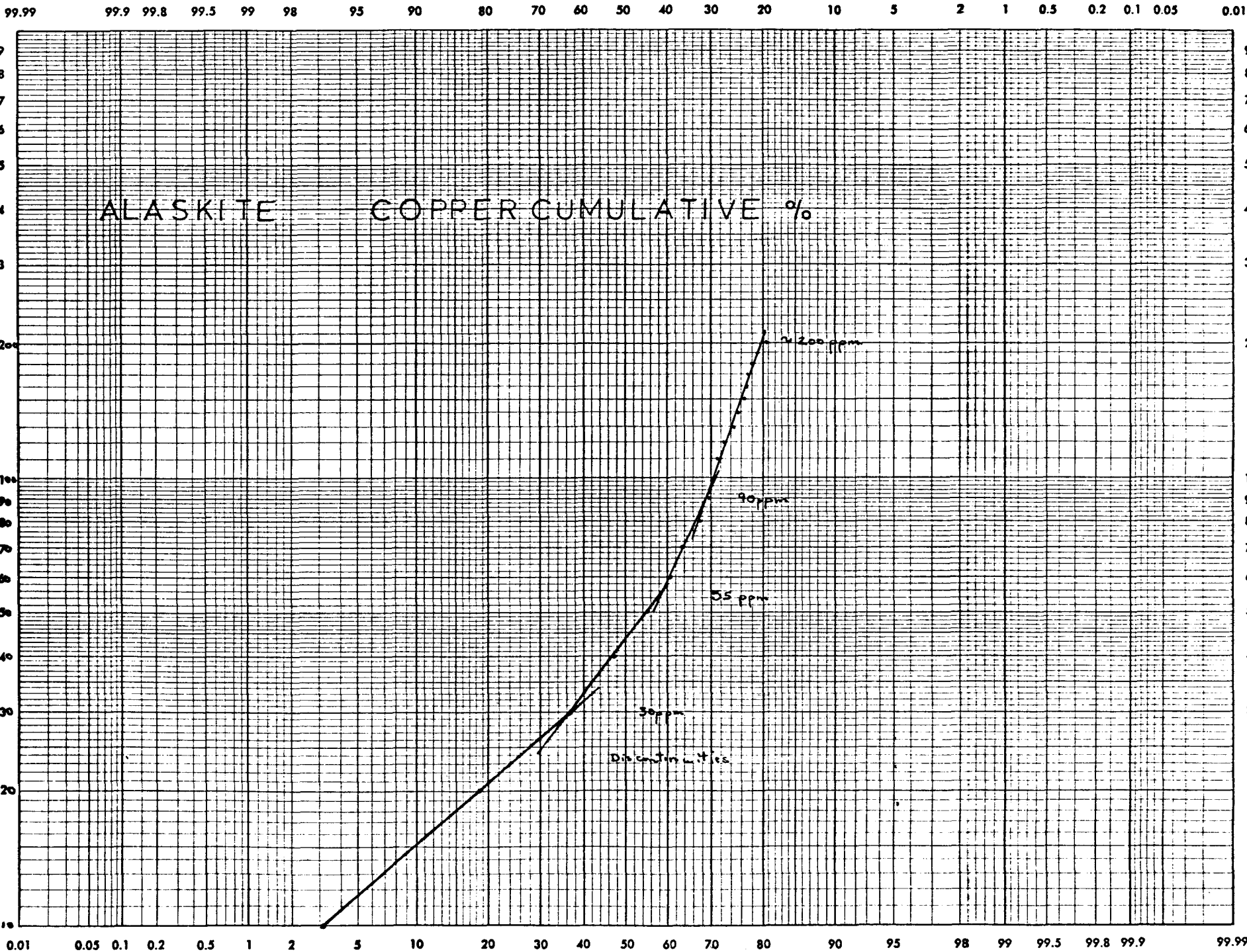
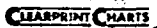
From the sample values, three basic anomalous areas are evident. These are the near headwaters of Talbot Ck., the south side and near headwaters of Rockslide and the west side of the headwaters of Alaskite Ck.

The main problem in evaluation of the geochemical conditions of the area is the influence of leaching of copper mineralization and the mode and degree of transportation of the copper ions.

Mr. J. Barakso (Anaconda American Brass) took readings about June 7/70 of the pH and the Eh of the streams in the area while evaluating their

ALASKITE COPPER





reconnaissance geochemistry survey. The electrical apparatus he used noted an Eh of 8.0 and pH of 2.5. This indicates an extremely acidic environment rich in oxidizing material. From his readings it is evident that copper mineralization is being oxidized and leached rapidly from surface rocks and being transported readily in stream water and silts. Thus high soil and silt values in valleys may be "enhanced" from mineralization in steep valley walls. (This has been suggested to be the cause of high values in the area south of the headwaters of Rockslide Ck.).

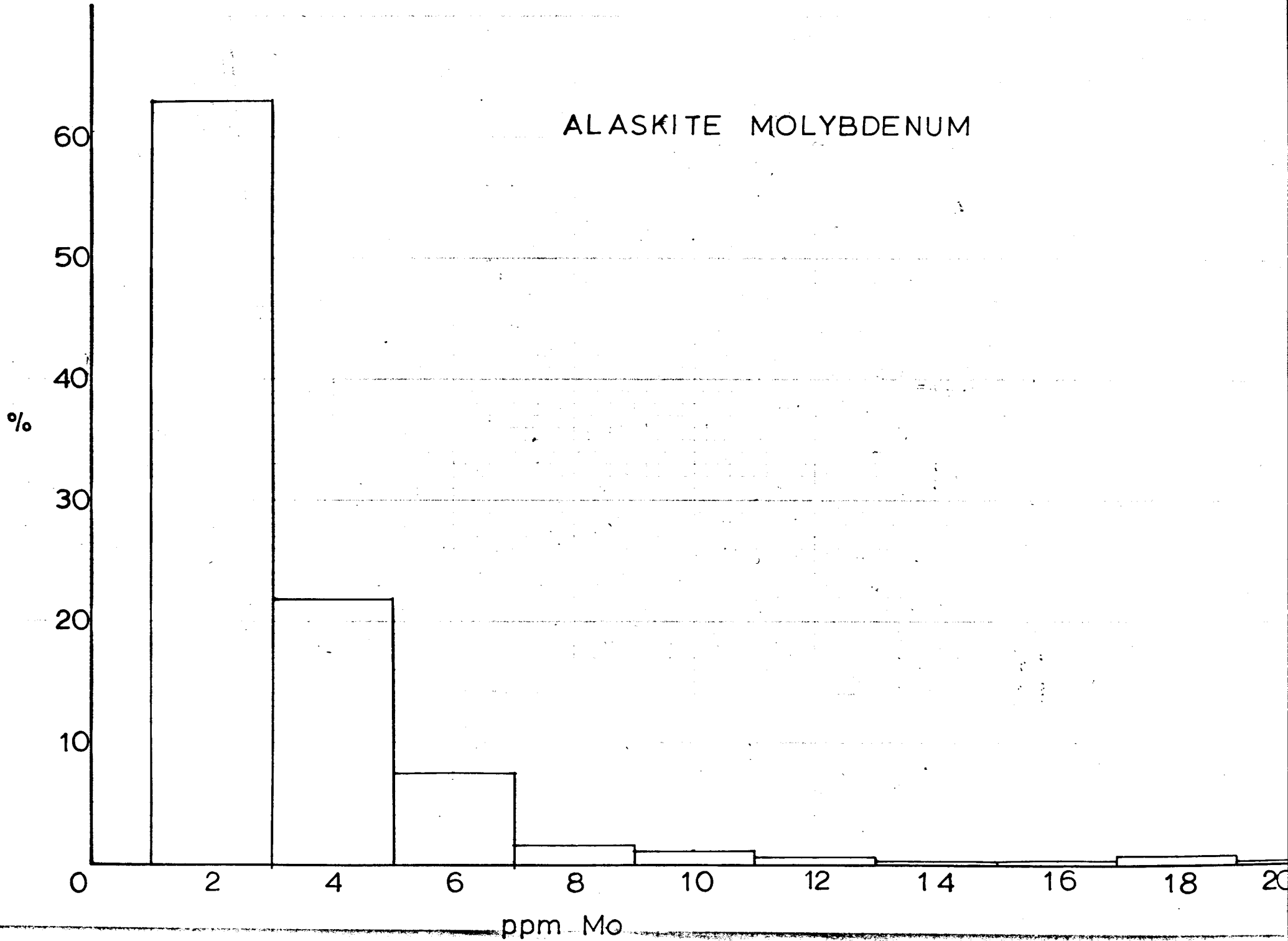
Soil Survey:

Analysis of values

An evaluation of the geochemical results by determination of the mode, average value, character and slope of the histogram of occurrence and the cumulative per cent graph is necessary to explain the geochemical patterns in the area.

The mode or common value for copper is 30 ppm Cu and the average 96 ppm copper. This shows the distribution is positively skewed and a "log-normal" type of distribution. Examining the histogram and cumulative % distribution shows the distribution to be made up of several (probably log-normal) distributions with the largest number of values associated with the lower distribution (with mode 30 ppm Cu). Thus the usual method of determining anomalous condition on the basis of the standard deviation of the values cannot be used as this value is relevant to normal distributions of only one "mode".

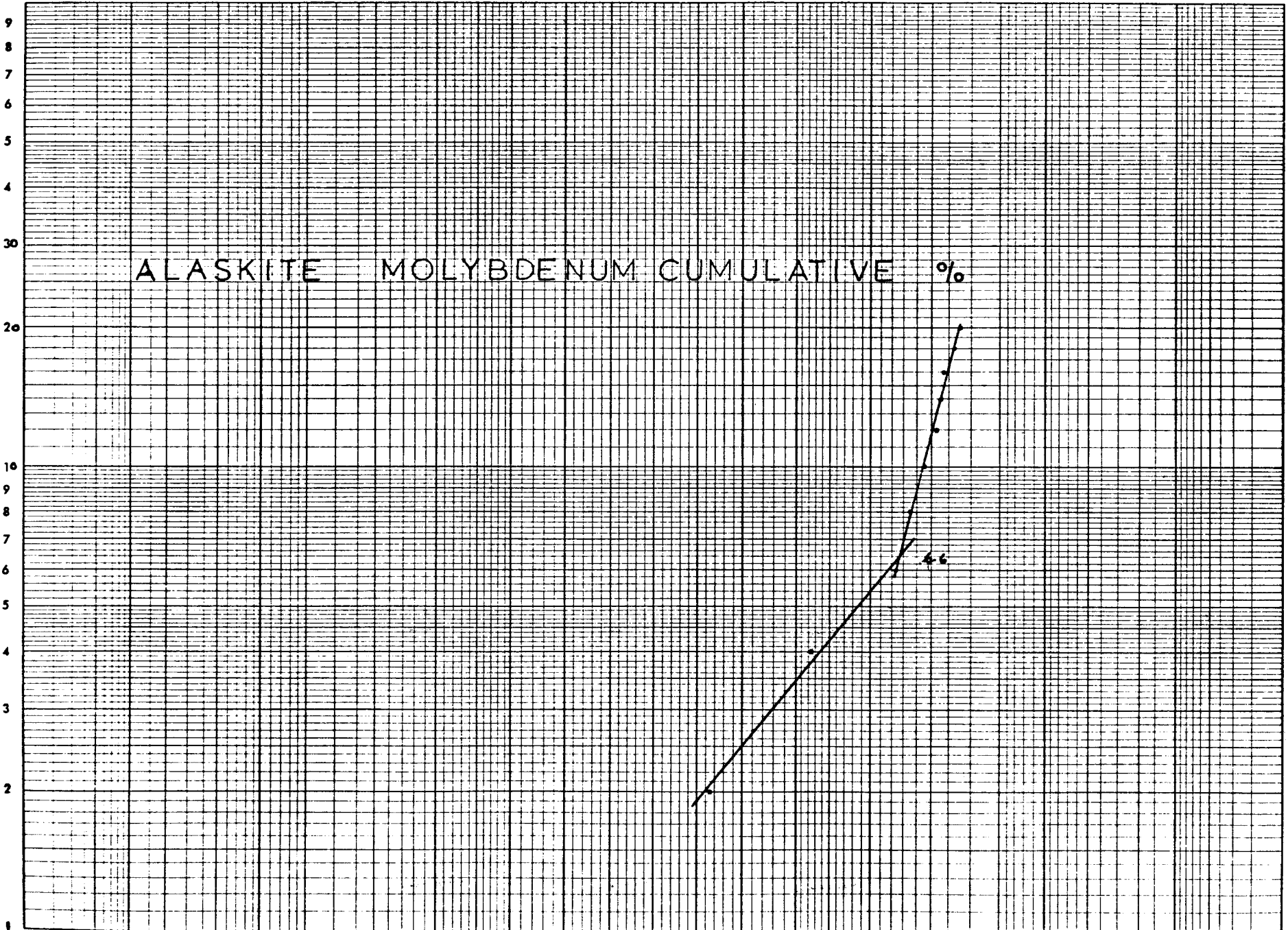
ALASKITE MOLYBDENUM



99.99 99.9 99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1 0.05 0.01

ALASKITE MOLYBDENUM CUMULATIVE %

ppm
Mo



0.01 0.05 0.1 0.2 0.5 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.5 99.8 99.9 99.99

%

The values for determining the relevant divisions amongst the sample values can be obtained from the cumulative % graph. Thus the following values apply for copper ppm's.

or mean	32 ppm Cu
Threshold	55 ppm Cu - 90 ppm Cu
Anomalous background	90 ppm Cu - 200 ppm Cu
Anomalous condition	200 ppm Cu

The molybdenum values show quite a different distribution from the copper. The mode for moly is 2.0 ppm and the mean 3.2 ppm. The values are as a skewed distribution but not as skewed as the copper. The cumulative % distribution and the histogram suggest only two distributions are noticeable in the area and the anomalous one is almost insignificant.

Interpretation:

The main problem of interpretation of the geochemical survey has been noted previously as being "transportability". The copper mineralization in the area is being rapidly leached from surface rocks. The rock chip samples had .03 to .05% Cu and grits had 700 to 2900 ppm Cu (i.e., .07 to .29% Cu). Thus interpretation of the slope areas where grits were collected is very hard. Long talus slopes showed features of extremely anomalous values within the gossan zone but downslope grits (in areas of less to nil gossan) showed close to background readings. Since pyrite and pyrrhotite is a common constituent of any "fresh" rock it must be assumed that lack of copper anomalies downslope is due to the effect of leaching.

The main zone of interest then is any area both rich in gossan and having grits grading +200 ppm Cu. Any samples with values between 55 ppm Cu and 200 ppm Cu are of secondary interest. They show areas of dispersion due to rock creep and/or low level values in the subcrop. Thus only areas within the highly fractured, jointed, sheared and faulted Alaskite having intense gossan could have economic mineralization.

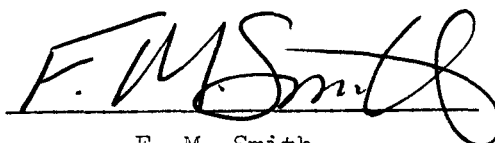
Recommendations and Conclusions:

The center of the large east-facing cirque immediately west of the near headwaters of Alaskite Ck. is the main anomalous area with the Alaskite Project claims. It has an intense gossan, extremely shattered, jointed, sheared and faulted Alaskite with occasional mineralized veins. The geochemistry is extremely anomalous in copper. The molybdenum is not as anomalous and mineralization tends to be in coarse rosettes in large quartz veins.

A drillhole to determine degree of mineralization in the shattered, unoxidized Alaskite is recommended. The drillhole should be spotted in the base of the described cirque, bearing 270° A at -45° .

To define areas of possible sulfide enrichment, an Induced Polarization survey will be required for some of the area. It is recommended that the Valley of Alaskite Ck. be used as an approximate locale for a north-south line and the Valley of Rockslide Ck. be used for an east-west line. The profiles should help in defining shape and extent of areas of interest especially in overburden covered areas.

Respectfully Submitted,



F. M. Smith

APPENDIX I

List of Personnel - Alaskite

LIST OF PERSONNEL - ALASKITE

F. M. Smith (Geologist)
Box 548,
Whitehorse, Y.T.

R. H. Beaton (Geologist)
6749 Fremlin Street,
Vancouver 14, B.C.

J. S. De Latre (Geologist)
1215 Bidwell Street,
Vancouver 5, B.C.

B. J. Vanderkamp (Geologist)
10 - 1190 West 12th Ave.,
Vancouver 9, B.C.

B. D. Jolliffe (Student)
4678 West 3rd,
Vancouver 8, B.C.

L. E. Watt (Student)
4453 Parliament Crescent,
North Vancouver, B.C.

E. A. Williams (Student)
574 St. Giles Road,
West Vancouver, B.C.

APPENDIX II

Certification

Certification

I, F. Marshall Smith of #31 Teslin Road, Riverdale in the city of Whitehorse, in the Yukon Territory, DO HEREBY CERTIFY:

1. That I am a Geologist, acting as Area Geologist for Phelps Dodge Corporation of Canada, Limited, P.O. Box 1043, 106 Main St., Whitehorse, Yukon Territory.
2. That I am a graduate of the University of Toronto where I obtained a Bachelor of Science degree in Honours Geology in 1967.
3. That I am an Associate Member of the Association of Exploration Geochemists, and have practiced my profession as a geologist for the last three (3) years.
4. That I have personally worked on the Alaskite project area, Ed and Add claims, from June 1, 1970 to September 22, 1970, and wrote the summary report during January and February, 1971.
5. Work conducted on the property, in addition to my own, is hereby acknowledged to Mr. J. S. De Latre, Mr. R. H. Beaton, Mr. B. J. Vanderkamp, geologists and the summer crew of Phelps Dodge Corporation of Canada, Limited.
6. That I have no direct or indirect interests in any of the securities held by Phelps Dodge Corporation of Canada, Limited, nor do I expect to receive any.

Dated the 2nd day of March, 1971.



APPENDIX III

Certificate of Expenditure

PHELPS DODGE CORPORATION OF CANADA, LIMITED

904-55 YONGE STREET

TORONTO 215, ONTARIO

NEW YORK OFFICE
300 PARK AVENUE
NEW YORK, N.Y. 10022

January 19th, 1971

VANCOUVER OFFICE
1112 WEST PENDER STREET
VANCOUVER, BRITISH COLUMBIA

Certificate of Expenditure
for Assessment Purposes
for the period July 1st, 1970 to December 31st, 1970

on
Project 99 - Alaskite Creek
Whitehorse Mining District
Yukon Territory

Under Claim Purchase Agreement
dated July 30th, 1970

Company Labour

Geology & Engineering (Field Crews)

Jolliffe, B. D. (July 20-Aug. 25)	\$ 765.93	
Watt, L. E. (July 20-Aug. 20)	700.02	
Williams, E. A. (July 20-Aug. 15)	<u>600.83</u>	\$ 2,066.78

Sampling & Assaying

Whitehorse Assay Office	533.45	
Barringer Research Limited	<u>1,901.50</u>	2,434.95

Transportation

Helicopter - Trans North Turbo Air Ltd.	21,732.83	
- Klondike Helicopters	1,110.23	
- Fuel - White Pass Petroleum Services	<u>1,658.69</u>	24,501.75

Surface Work - Bulldozing - E. Caron	22,326.00	<u>2,326.00</u>
Diamond Drilling Ltd.		\$31,329.48

AFFIDAVIT

I. George W. Stanley - Accountant
residing at Apt. 201 - 100 Coe Hill Dr.
Toronto, Ontario, do solemnly declare
the above to be true and correct.
DECLARED before me at Toronto, Ontario
in the County of York this 19th day of
January 1971.

Certified Correct



A NOTARY PUBLIC IN AND FOR
THE PROVINCE OF ONTARIO.



G. W. Stanley - Accountant

APPENDIX IV

List of Claims

PROJECT 99 - ALASKITE

<u>Claim Name</u>	<u>Grant Number</u>	<u>Expiry Date</u>
ED 15	Y51592	March 12/71
ED 16	Y51593	"
ED 17	Y51594	"
ED 18	Y51595	"
ED 19	Y51596	"
ED 20	Y51597	"
ED 21	Y51598	"
ED 22	Y51599	"
ED 23	Y51600	"
ED 24	Y51601	"
ED 25	Y51602	"
ED 26	Y51603	"
ED 27	Y51604	"
ED 28	Y51605	"
ED 29	Y51606	"
ED 30	Y51607	"
ED 45	Y51622	"
ED 46	Y51623	"
ED 47	Y51624	"
ED 48	Y51625	"
ED 49	Y51626	"
ED 50	Y51627	"
ED 51	Y51628	"
ED 52	Y51629	"
ED 53	Y51630	"
ED 54	Y51631	"
ED 55	Y51632	"
ED 56	Y51633	"
ED 57	Y51634	"
ED 58	Y51635	"
ED 59	Y51636	"
ED 60	Y51637	"
ED 75	Y51652	"
ED 76	Y51653	"
ED 77	Y51654	"
ED 78	Y51655	"
ED 79	Y51656	"
ED 80	Y51657	"
ED 81	Y51658	"
ED 82	Y51659	"
ED 83	Y51660	"
ED 84	Y51661	"
ED 85	Y51662	"

PROJECT 99 - ALASKITE

<u>Claim Name</u>	<u>Grant Number</u>	<u>Expiry Date</u>
Add 1 Fr.	Y59293	Oct. 14/71
Add 2 Fr.	Y59294	"
Add 3 Fr.	Y59295	"
Add 4 Fr.	Y59296	"
Add 5 Fr.	Y59297	"
Add 30 Fr.	Y59311	"

Typed Nov. 3/70 - vh

