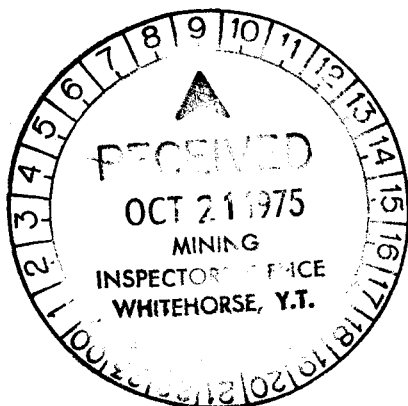


GEOLOGICAL and GEOCHEMICAL REPORT
on the
SURETHING (1-3 incl) and JACKALOO (1-8 incl)
MINERAL CLAIMS, MT. McLEERY AREA
WATSON LAKE MINING DISTRICT

by

R. J. Joy and
R. E. VanTassell,
United Keno Hill Mines Ltd.,
Exploration Department,
Whitehorse, Y. T.



N.T.S. Sheet 105C-8
Latitude 60°20'N
Longitude 132° 01'W
Date: July 29th- August 27,
1975

Dated: October 3, 1975

090006

This report has been examined by the Geological Exploration Unit and is recommended to the Commission to be authorized as representation work in the amount of

3,500.00

D.B. Craig
Geologist or
Mining Engineer

Classified as representation work under Section 53 (4) of the Quartz Mining Act.

B.R. Baxter
Supervising Mining Recorder
Commissioner of Yukon Territory

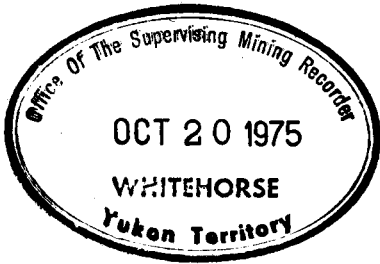


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Detailed Geology	1" = 400'	Envelop 1
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Molybdenum Plot	1" = 400'	Envelop 3

FIGURES:

Fig. 1	Location Map	1" - 40 miles
Fig. 2	Claim Map	1" = 1/2 mile

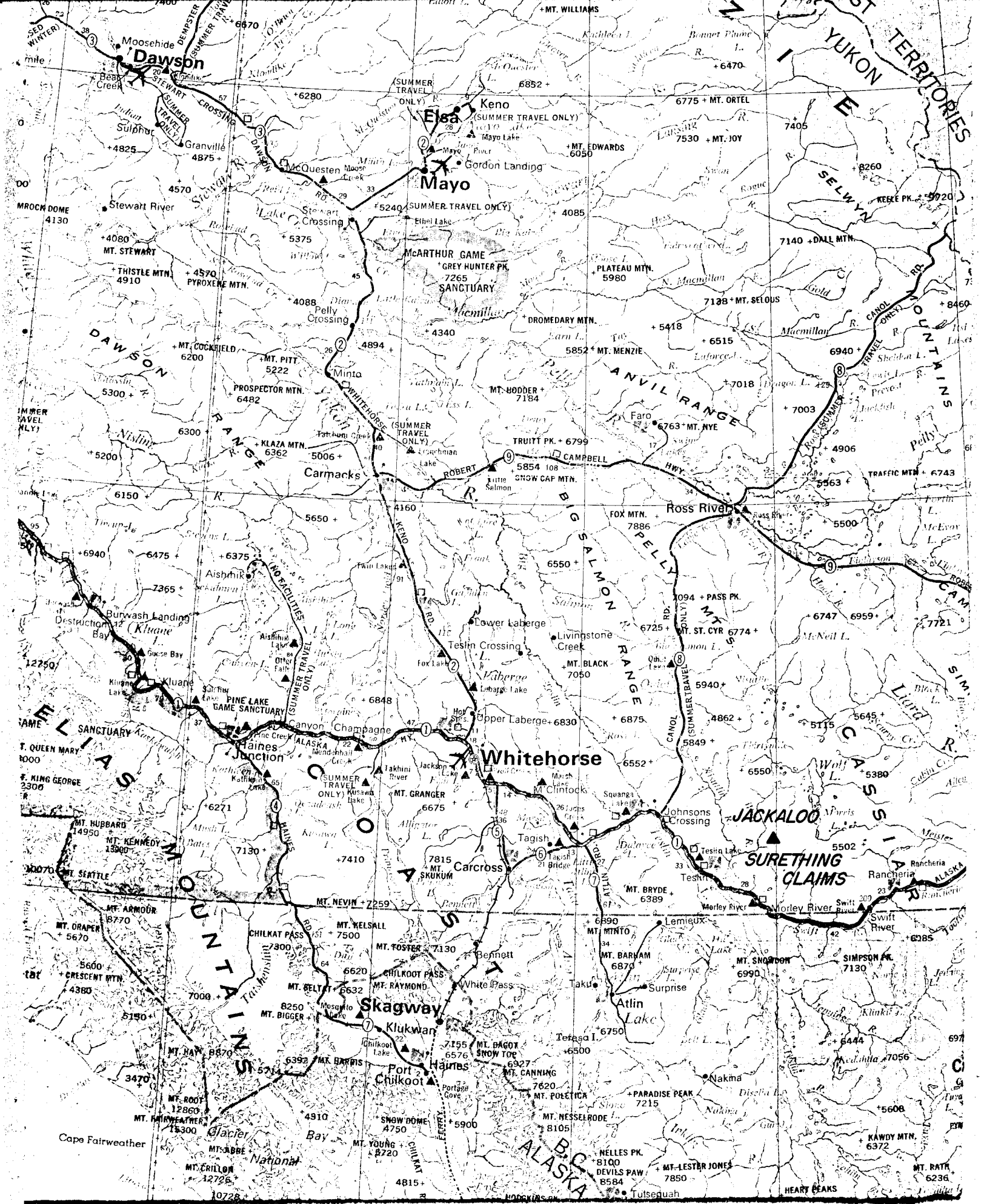


Fig 1

INTRODUCTION:-

Following the examination of the Surething and Jackaloo Mineral Claims in late June, an exploration option agreement was negotiated between United Keno Hill Mines Ltd. and the owners of the claims, Mr. R. J. Fleming and Mrs. J. Leary,

Further examination of the mineralized occurrences was conducted by a United Keno Exploration crew of 2 to 5 men during the period July 29th to August 27th.

This work consisted of geological mapping and soil sampling.

Access, camp moves and supply were made employing a Hiller 12E helicopter for a total of 24.0 hours.

A. PROPERTY -

The property (Fig.2) consists of 11 claims as follows:

<u>Claim</u>	<u>Grant Nos.</u>	<u>Recording Date</u>	<u>Expiry Date</u>
Jackaloo 1	Y83196	August 15/74	August 15/80
Jackaloo 2	Y83197	August 15/74	August 15/80
Jackaloo 3	Y83198	August 15/74	August 15/80
Jackaloo 4	Y83199	August 15/74	August 15/80
Jackaloo 5	Y83200	August 15/74	August 15/80
Jackaloo 6	Y83201	August 15/74	August 15/80
Jackaloo 7	Y83202	August 15/74	August 15/80
Jackaloo 8	Y83203	August 15/74	August 15/80
Surething 1	Y83289	August 12/74	August 12/80
Surething 2	Y83190	August 12/74	August 12/80
Surething 3	Y83191	August 12/74	August 12/80

B. LOCATION and ACCESS -

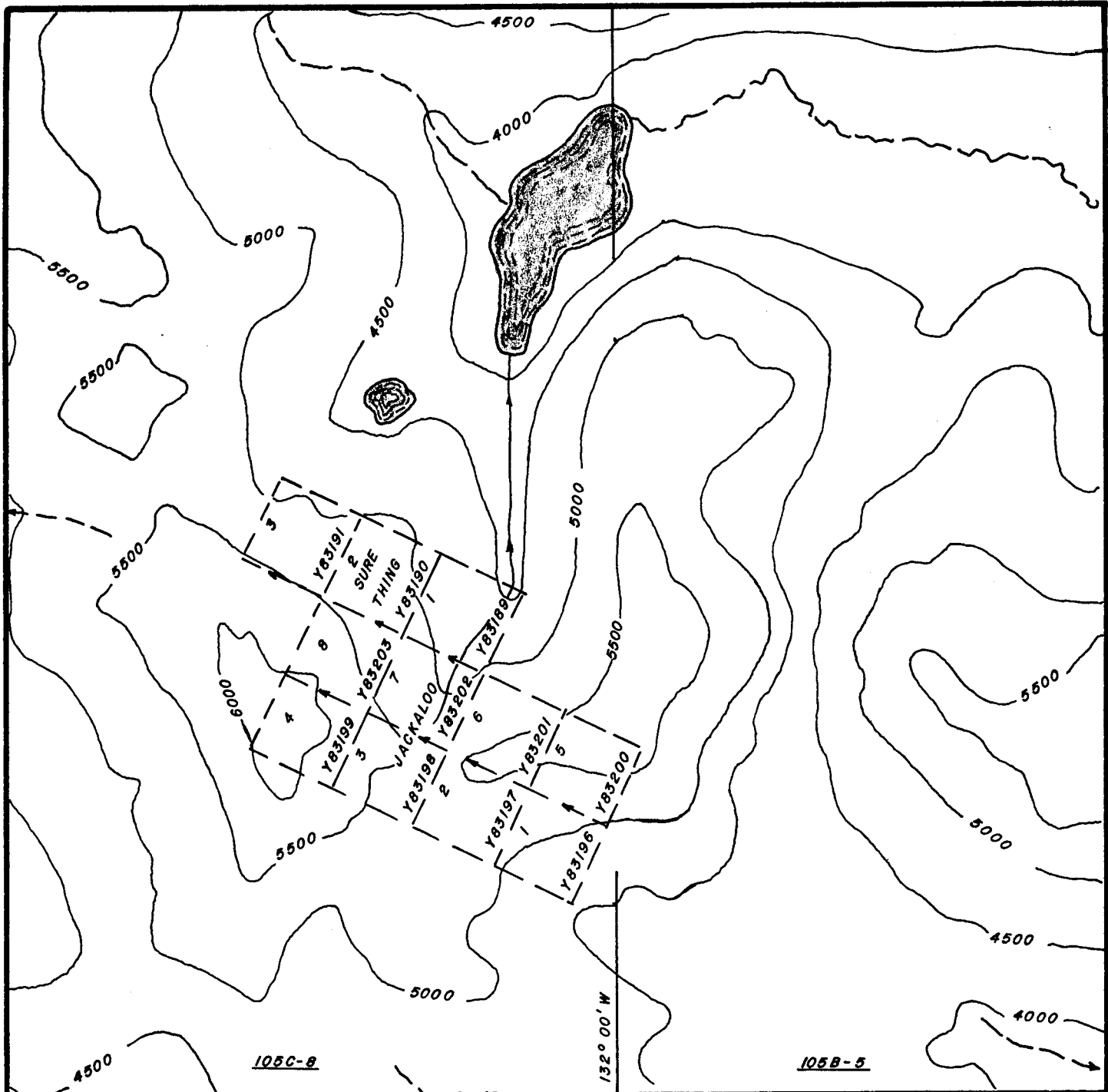
The claims cover Mt. McCleery in the Englishmans Range approximately 26.5 miles east-northeast of Teslin (Fig.1). These claims lie 107 miles east southeast of Whitehorse, latitude 60°20'N and 132°01'W, NTS Sheet 105C-8.

The property lies approximately 27 miles from the Alaska Highway. A winter tote trail lies 10 miles west.

Access is by helicopter.

C. TOPOGRAPHY -

The property lies on the western flank of the Englishmans Range. This is mountainous terrain with precipitous northeast facing cirques (Photo 1) and knife edge ridges. Patches of snow



UNITED KENO HILL MINES LTD. EXPLORATION DEPARTMENT WHITEHORSE — YUKON	
JACKALOO and SURE THING CLAIMS	
Mining District	Watson Lake
N.T.S. Sheet No.	105 C - 8
Scale	1 inch = 1/2 mile
Drawn by	R. E. V.
Date	7 / 7 / 75

and ice remain throughout the summer.

There is about 2,000 feet relief with elevations in the 4,500 to 6,386 foot range.

The property is entirely above treeline with only alpine grasses present.

D. HISTORY -

No mineral occurrences were reported in the immediate area prior to May 1975.

The area had been previously staked but the claims were never recorded.

The Archer-Cathro Mineral Inventory reports a silver lead vein occurrence 6.5 miles west northwest of the claim group. The mineralization was reported to occur in a shear zone which cuts Mississippian or earlier quartzite.

11 GEOLOGICAL SURVEY:-

A. GENERAL -

Both the Wolf Lake (1058) and Teslin (105C) Map Sheets have been mapped by the Geological Survey of Canada on a scale of 1 inch to 4 miles and published as Maps 10-1960 and 1125A respectively.

The Englishmans Range is underlain by intrusives of the Hake batholith. This northwest trending batholith is approximately 20 miles long and 9 miles wide. It consists of biotite leuc-quartz monzonite, granite and granodiorite.

It is flanked by Paleozoic sediments and metamorphics of Mississippian or earlier age.

'The distribution and attitude of exposed limestone around Mt. McCleery outline a shallow syncline, but the stratified rocks of the Englishmans Range are excessively faulted and the structure are complex' (Mulligan).

B. DETAILED-

1. Description of Units-

Unit 1 - This unit comprises white-buff to light grey weathering, apparently non-fossiliferous limestone, tremolitic marble and dolomite. Tremolite veinlets (up to 4 cm. wide) cut the coarse grained marble. Small quartz tremolite skarn zones(1a) have been observed.

Southwest of the small tarn a number of near parallel quartz veins (330° dipping moderate SW) from 10 to 45 cm thick cut the limestone.

Small lenses or infolded patches (Photo 2) of argillaceous and cherty rocks are contained within this limestone.

The limestone is underlain by argillaceous quartzite (Photo 3). Small scale folding is pronounced in the 1-1.2 metre thick contact zone. This sequence comprises thin bedded argillites and limestone.

Unit 2 - This unit comprises dense, light to dark grey argillaceous quartzite. The amount of argillaceous material varies. It contains lenses of brecciated light and dark green argillite (2b) (Photo 4). The lighter component is probably epidote rich in places.

Some massive white finely banded quartzite is interbedded with the argillaceous varieties.

These rocks contain small irregular shaped pods and lenses of epidote and garnet. Also, irregular dark stringers and tiny magnetite segregations were observed.

A narrow section of dark varicolored chert (2b) bands is included southwest of the skarn.

At the rim of the cirque (around SW 3N C1 #7) a small lense? of quartz pebble conglomerate was observed.

Unit 3 - These are light colored to rusty weathering cherty to quartzitic and phyllitic rocks. The rusty weathering is due to oxidation of pyrrhotite which is present in most areas.

Unit 3a consists of pale green chert with interbedded limestone bands or lenses. In outcrop on the south wall of the main cirque, narrow limestone beds have been flattened and broken into rods or boudins.

Unit 4 - This unit is composed of greenish to purplish grey, faintly mottled rather distinctive rocks. They are very fine, hard massive rocks, without diagnostic structures but commonly streaky and fragmental looking. Tiny dark mafic stringers cut the rock with varied orientations. These rocks may have originated as tuffs, tuffaceous greywackes or flows.

Unit 5 - These rocks are dark to light grey argillites and phyllites. The argillaceous rocks are generally fissile with phyllitic structure only exceptionally developed.

In a few places the argillite and phyllites contain minor specular hematite. The hematite is commonly associated with narrow epidote rich bands.

The argillaceous rocks vary to very fine black carbonaceous shale on the south side of the rim of the main cirque.

Intrusive -

The intrusive consists of pink and grey weathering, coarse grained to porphyritic biotite granite or granodiorite. Smoky quartz is abundant and small cavities contain quartz and tourmaline(?).

In the porphyritic varieties, feldspar crystals up to 5 cm long are not uncommon. The smoky quartz crystals are also large in a medium grained granitic matrix.

The contact with sedimentary rocks (Photo 6) is steep to vertical and sharp. Some reduction in grain size is evident in a few places with minor hornfels.

A few boulders of medium grained leuco-quartz monzonite were observed. Biotite accounts for about 1 percent of these rocks.

2. Structure and Metamorphism -

The structure is quite complex in this area. The sediments are broken into a complex of fault slices along the fringe of the granite batholith.

The limestone appears to wrap around the argillites and quartzites and outline a southeast trending tilted syncline.

The argillites and argillaceous quartzite dip gently to moderately (15° to 40°) west or southwest on the property.

Small drag folds observed in the argillite and limestone (Photo 3) may indicate another period of folding with a south west trend.

Narrow limestone beds in the cherty rocks were flattened and broken into rods or boudons.

Only some of the rocks have been metamorphosed, and only to a low phyllite grade. Contact effects of the granitic batholith are limited to minor hornfels, skarn in adjacent limestone and spotted slates among the argillites.

3. Mineralization -

The copper minerals observed comprise chalcopyrite, bornite, malachite and trace azurite. Other sulphides and oxides include pyrrhotite, pyrite, magnetite and specular hematite.

Traces of jasper and fluorite were also noted. The fluorite was associated with a narrow quartz vein. The jasper, as small pods in the argillaceous quartzite (chert bands).

The bornite and chalcopyrite are present as minor fracture fillings and other related occurrences. A few prominent, steeply dipping, northeast trending fractures which contain copper mineralization were observed. In all cases the main mineralization occurred as lenses at irregular intervals along these tension fractures, in smaller intersecting fractures, or as blebs in the adjacent rock (Photo 5).

In a few places where these fractures intersected a limy horizon a bornite-chalcopyrite-epidote-garnet skarn zone (about .5 metres long) was developed. Assay values from this material range up to 7 percent copper (VanTassell, July 1975). Malachite is abundant on rock surfaces in these areas.

Traces of chalcopyrite and minor pyrite were observed in the argillaceous quartzite. It usually occurs as tiny blebs along narrow (less than 3 mm) quartz or calcite filled fractures. This material returned an assay value of 0.16 percent copper. Some mineralization was also observed on fractures without quartz or calcite.

A few specks of bornite, chalcopyrite and malachite were observed to occur in a few narrow quartz veins in limestone (or marble) and quartz-tremolite skarn.

Pyrite occurs as fracture fillings and minor disseminations.

Pyrrhotite is abundant in this area. It occurs as small massive pods, disseminations, and fracture fillings. The light weathering (Unit 3) rock is particularly rich in pyrrhotite. It was observed to occur in most rocks in this area.

Magnetite occurs as small wavy lenses, streaks (10 cm x 1 cm), and pods in the argillaceous rocks. These appear to be segregations. In places, minor quartz accompanies the magnetite. A few narrow lenses of epidote-magnetite-garnet skarn were observed.

Specular hematite occurs in the argillites and phyllites. It is usually associated with narrow epidote altered bands and veinlets. Traces were observed with a few quartz veins in the phyllitic rocks.

4. Alteration -

There does not appear to be any alteration associated with the copper mineralization.

Epidote occurs along minor northeast and southeast trending fractures. It also occurs as small pods, lenses and discontinuous bands in the argillites and phyllites.

111 GEOCHEMICAL SURVEY:-

A. GENERAL -

The eleven claims were sampled at 100 foot intervals along 300 foot spaced lines. In addition, three contour lines were sampled at 100 foot intervals.

A total of 1,026 samples were taken and analyzed for copper. Two hundred eighty three of these were also analyzed for molybdenum.

Some areas of the property are covered by talus and soil is poorly developed. In these areas small isolated patches have developed on the scree.

Elsewhere, the soil is a few inches thick with a thin organic layer and grass cover.

B. LAB PROCEDURES -

The initial laboratory techniques and methods were setup and supervised by Dr. Ivor L. Elliott, Chief Geochemist, Falconbridge Nickel Mines Limited, Vancouver, B.C.

(i) Copper Analysis - The samples were dried in a gas-fired hot air drier and then hand screened through 80 mesh nylon screens.

1 gram of sample was weighed into a calibrated pyrex test tube and boiled for one hour with 10 mls. of 10% nitric acid. After cooling the volume was restored to 10 mls to compensate for evaporation loss. The sample was then filtered through Whatman No. 1 Filter Papers. The filtrate was aspirated into the atomic absorption unit and the copper concentration was read at the appropriate wave length.

(ii) Molybdenum Analysis - The samples were dried and screened as above.

0.25 grams of the -80 mesh fraction were taken and fused with an alkaline flux. This fusion was dissolved in demineralized water. An aliquot of this solution was taken for analysis. Molybdenum was determined by forming the colored dithiol complex which was green at temperatures below 30°C. the colored complexes were visually assessed against standards prepared in a similar way.

C. INTERPRETATION of RESULTS -

(a) Copper results -

The results are rather low order but three anomalous areas are worthy of note.

The central northeast trending anomaly with values at 1 to 3 times background. The maximum value is 780 ppm. This anomaly apparently reflects a fracture zone and topographic effects. The small area containing the most anomalous values reflect the bornite and chalcopyrite mineralization as fracture fillings and small skarns.

The fairly large area of 1-2 background values inside the main cirque reflect traces of copper mineralization in the argillaceous rocks.

The second anomaly is in the northwest part of the claim group (Surething No.3). The highest value is 820 ppm with relatively little buildup and represents a mineralized fracture. In the extreme northwest the anomaly with values from 160 to 410 was caused by minute fractures containing minor copper.

The third anomaly (south of creek on Jackaloo No. 6) has a peak value of 635 ppm. This reflects the mineralized fracture immediately up slope from the sample point.

The massive limestone, marble and dolomite have very low response (6-20 ppm) when compared to the argillaceous rocks.

(b) Molybdenum results -

Generally, samples analyzed for molybdenum returned values of 1 ppm. However, a few returned values in the 2 to 5 ppm range.

There does not appear to be any direct correlation between copper and molybdenum values. The highest molybdenum values generally coincide with moderate copper values but not all high copper values have a molybdenum response.

IV SUMMARY and CONCLUSIONS:-

The property consists of eleven contiguous claims.

These claims are entirely above treeline with only apline grasses present.

There is about 2,000 feet of relief with elevations ranging from 4,500 to 6,386 feet.

The property covers an area of Mississippian sediments adjacent to the Hake batholith.

Rocks observed consist of limestone, marble, dolomite, skarn, chert, argillaceous quartzite, argillite, phyllite and granite to granodiorite porphyry.

Copper mineralization as chalcopyrite and bornite occur as minor pods or lenses along tension fractures in minor intersecting fractures or in small skarn zones.

Traces of copper mineralization occur in the argillaceous rocks.

Other sulphides observed were pyrrhotite and pyrite as fracture fillings and disseminations.

Other minerals noted comprise magnetite (segregations and skarns), specular hematite (with epidote in argillites, and associated with quartz veins), fluorite (in quartz veins), and jasper.

A total of 1,026 soil samples were taken and analyzed for copper. Two hundred eighty three (283) were also analyzed for molybdenum.

Generally, geochemical anomalies are correlative with observed areas of copper mineralization. The low geochemical response also reflects minor and insignificant copper mineralization. No anomalous molybdenum values were returned.

V RECOMMENDATIONS:-

It is recommended that no further work be done on the property, and that the option agreement be terminated.

VI SELECTED BIBLIOGRAPHY:-

Map 10-1960 105B Geological Survey of Canada
Mulligan, R., 1963 - Geology of Teslin Map Area(105C);
Geological Survey of Canada Memoir 326.

VanTassell, R.E., July 1975: Report on Jackaloo (1 to 8 incl)
and Surthing (1 to 3 incl) Mineral Claims
Teslin Area, Yukon

APPENDIX A

SUMMARY of WORK

1. GEOLOGICAL SURVEY:

July 29th to August 27th: Two man crew mapped the property

2. GEOCHEMICAL SURVEY:

July 29th to August 20th: A three man crew collected 1,026 soil samples. These samples were analyzed for copper by Falconbridge Nickel Mines, Geochemical Laboratory in Vancouver. 283 of the samples were also analyzed for molybdenum.

APPENDIX B

WORK COSTS FOR SURETHING and JACKALOO CLAIM GROUPS

A. LABOUR:

29 days	Project Geologist at	\$1270/mo.	\$1227.67
29 days	Assistant at	\$ 750/mo.	725.00
23 days	Prospector/sampler at	\$30.00/day	690.00
46 days	2 samplers at	\$650/mo	<u>996.67</u>
			\$3639.34

B. GEOCHEMICAL:

1,026	Soil samples for copper @ 1.50 each	\$1539.00
283	Soil samples for molybdenum @ 1.00 each	<u>283.00</u>
		\$1822.00

C. AIRCRAFT SUPPORT:

24.0 hours of Hiller 12E Time at	\$160/hr	\$3840.00
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TOTAL	\$9301.34
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Note: The above costs do not include food, camp equipment, supervision, office overhead, or map and report preparation.

A F F I D A V I T

I, Robert E. Van Tassell, of Whitehorse, in the Yukon Territory,
Exploration Superintendent, do solemnly declare:

1.

That I am duly appointed agent of United Keno Hill Mines Limited,
and except where otherwise stated have a personal knowledge of the
facts and matters herein, and swear to the value of work contained
in Appendix B .

And I make this solemn declaration conscientiously believing it to
be true and knowing that it is of the same force and effect as if
made under oath and by virtue of the Canada Evidence Act.

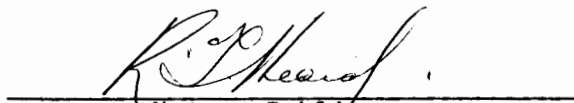
Declared before me at

WhiteHorse, in

The Yukon Territory,

this 16th day of

October 19 75.



Notary Public

APPENDIX C

PERSONNEL EMPLOYED

GEOLOGICAL MAPPING PERFORMED by:

Mr. Richard J. Joy,
United Keno Hill Mines Ltd.,
Exploration Department,
Whitehorse, Yukon

ASSISTED by:

Mr. Andre Ouellette,
2416 Brookhurst Rd.,
Mississauga, Ontario

GEOCHEMICAL SAMPLING by:

Mr. Robert J. Bath,
1710 8th Street,
Manhattan Beach, California
90266

Mr. John Blakeman,
Box 43,
Pincher Creek, Alberta

Mr. Daniel McBride,
249 Queen Street,
Kingston, Ontario

GEOCHEMICAL ANALYSIS by:

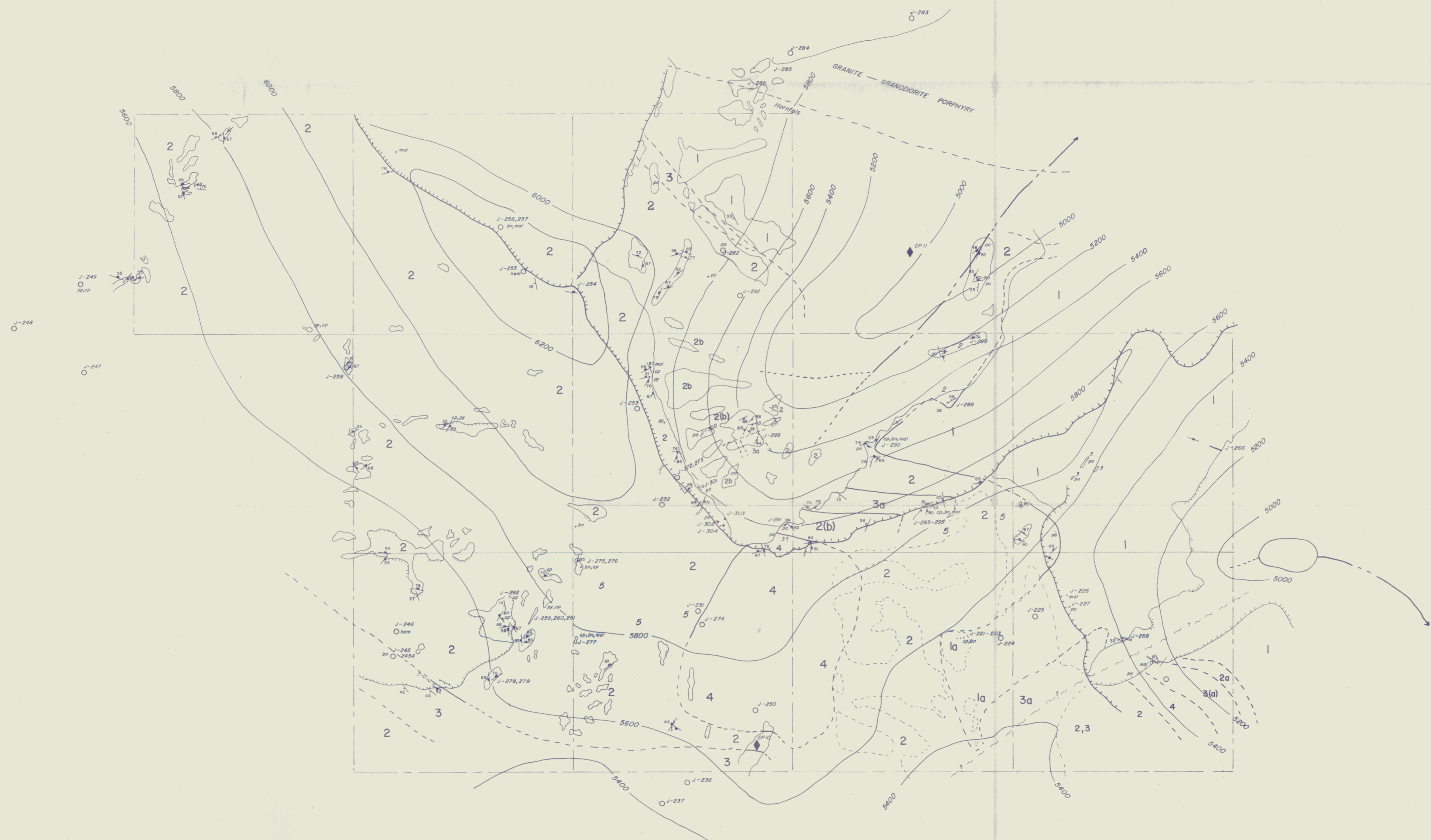
Falconbridge Nickel Mines Ltd.,
Geochemical Laboratory,
1314 West 71st Ave.,
Vancouver 14, B.C.

ASSAY DETERMINATIONS by:

Whitehorse Assay Office,
P. O. Box 346,
Whitehorse, Yukon

HELICOPTER SUPPORT by:

Yukon Air Ltd. - Rotor Division,
Hangar "A",
Whitehorse Airport,
Whitehorse, Yukon



- 5 Dark to light grey argillites and phyllites
- 4 Greenish grey to purple, mottled, massive rock, possibly tuffaceous sediments
- 3 Light colored cherty and phyllitic rocks; 3a, contains narrow limestone or argillaceous limestone bands
- 2 Dark argillaceous quartzite; 2a, dark varicolored chert bands; 2b, light and dark green argillaceous rocks
- 1 Massive limestone; 1a, contains quartz veins and quartz-tremolite skarn
- Granite to granodiorite porphyry

- Contact (defined, assumed)
- - - Fault (? assumed)
- Dyke
- ↘ Bedding or parting (inclined)
- ↙ Cleavage or foliation (inclined)
- ↖ Joints (inclined, vertical)
- J-234 Rock specimen location with number
- peg pegmatite
- cp chalcopyrite
- bn barnite
- mal malachite
- py pyrite
- po pyrrhotite
- hem hematite

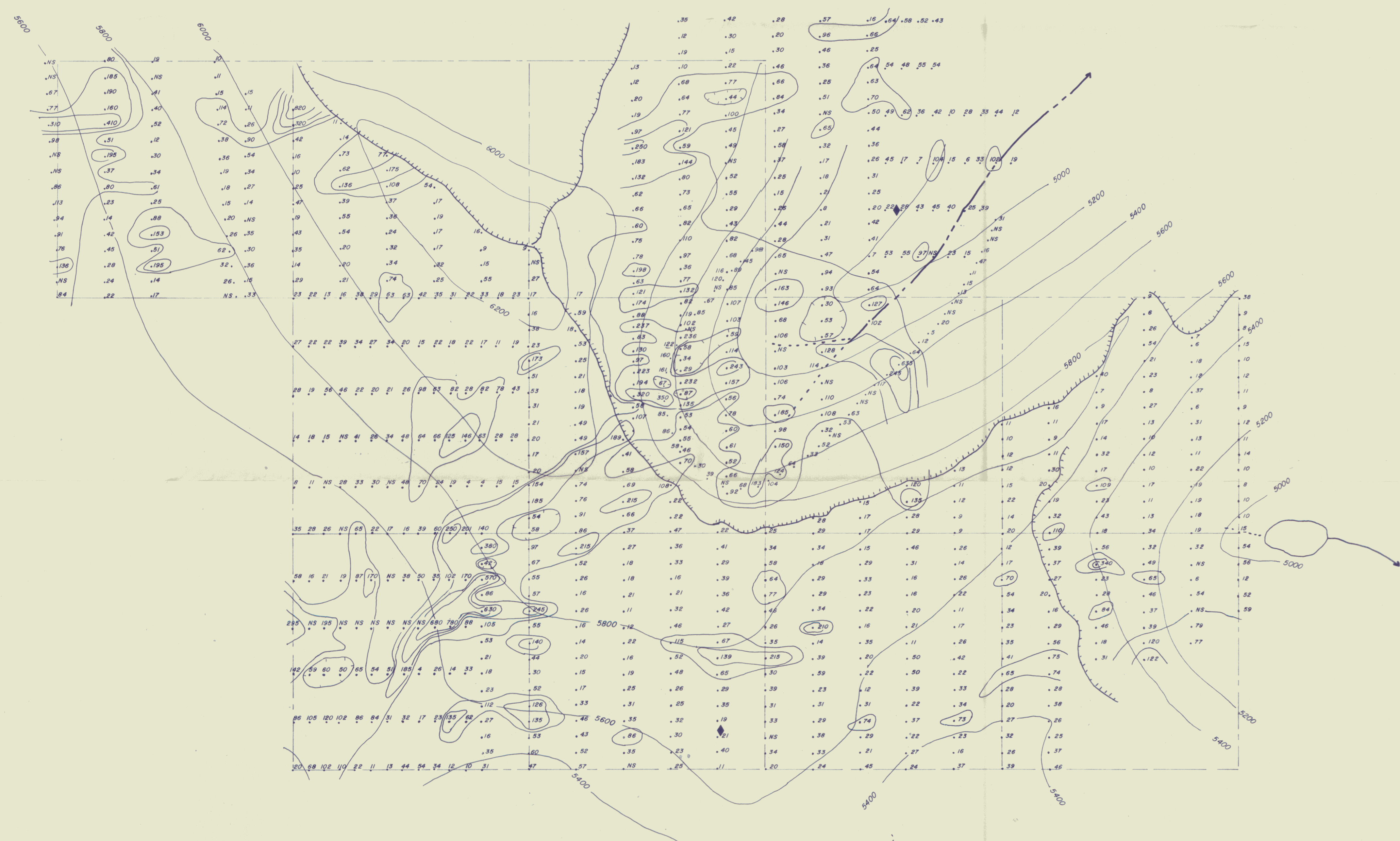
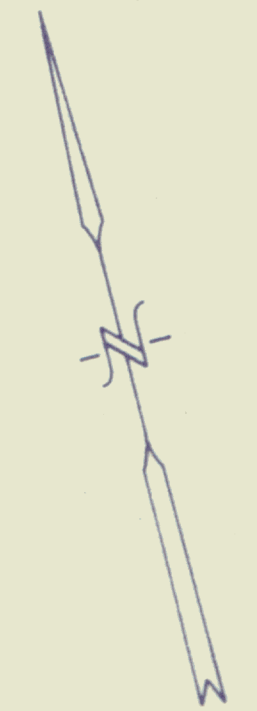
- Outcrop
- Boulders
- Rim of cirque
- Cliff
- ◆ Campsite

UNITED KENO HILL MINES LTD.
EXPLORATION DEPARTMENT WHITEHORSE, Y.T.
JACKALOO—SURETHING
N.T.S. SHEET 105-C-8

GEOLOGY



No.	Revision	Date	By	No.	Revision	Date	By	Drawn By	R.J.	DWG. No.
1		22 / 9 / 75	RJ							
								Date	26/8/75	



- 0 - 60
- 61 - 120
- 121 - 240
- 241 - 480
- 481 - 960

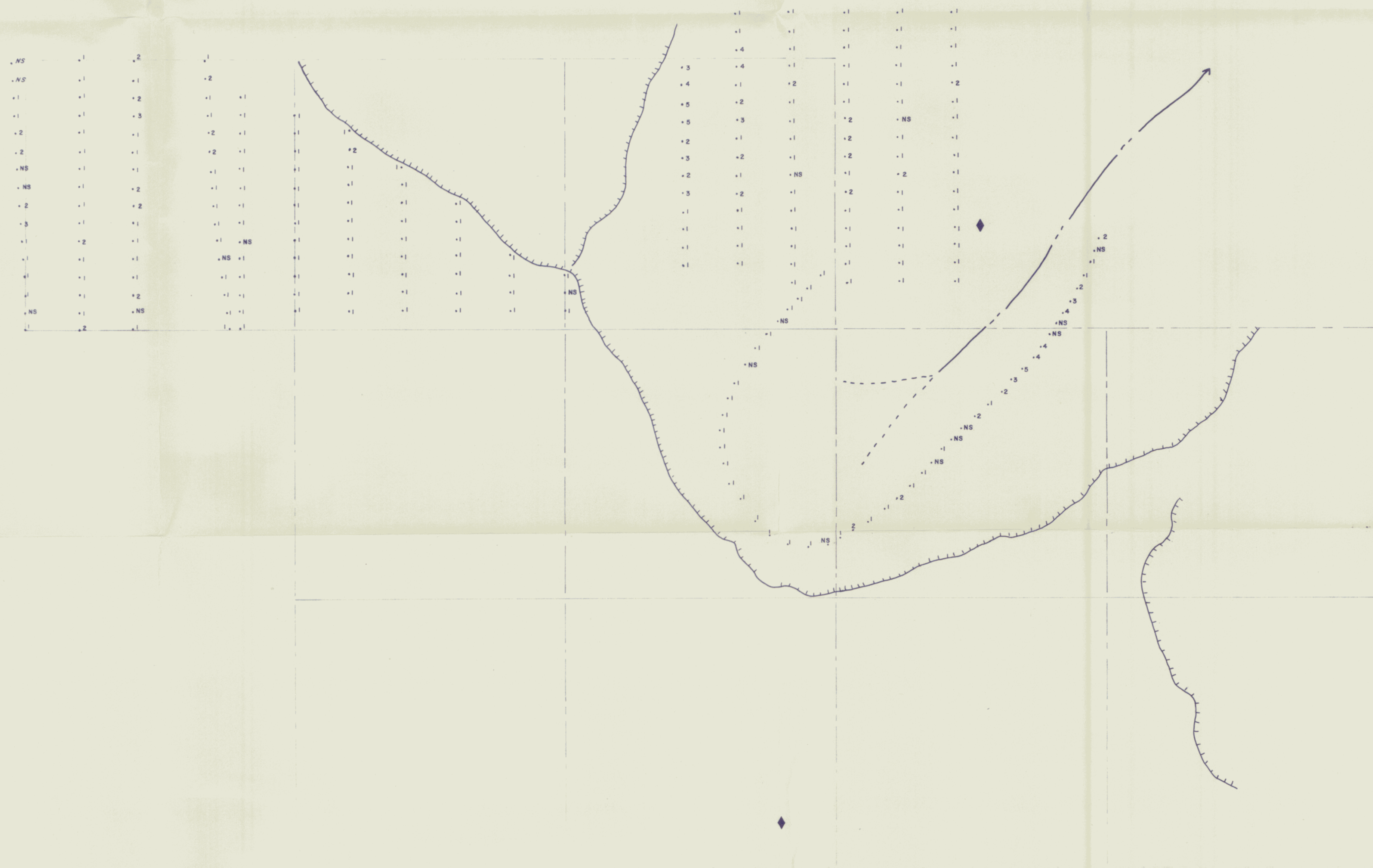
- CREEK
- CLAIM LOCATION LINE
- CAMPSITE
- SAMPLE LOCATION WITH COPPER IN P.P.M.





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JACKALOO-SURETHING
N.T.S. SHEET 105-C-8

COPPER PLOT



No.	Revision	Date	By	Scale	Revision	Date	By	Drawn By	DWG No.
1		22/9/75	RJ						



 CREEK
 CLAIM LOCATION LINE
 CAMPSITE
 SAMPLE LOCATION WITH MOLYBDENUM IN P.P.M.

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 EXPLORATION DEPARTMENT WHITEHORSE, Y.T.
JACKALOO—SURETHING
 N.T.S. SHEET 105-C-8

MOLYBDENUM PLOT



No.	Revision	Date	By	Drawn By	R.J.	DWG. No.
1		22 / 9 / 75	RJ			26/8/75