1982

GEOLOGICAL and GEOCHEMICAL REPORT

on the

TOOT CLAIM GROUP

Whitehorse Mining District

by

J. A. McFaull,
Project Geologist,
United Keno Hill Mines Ltd.,
409 Black Street,
Whitehorse, Yukon
Y1A 2N2

DATED: August 31st, 1982

N.T.S. Sheet 115I-8
Latitude: 62° 18'N
Longitude: 136° 29'W
Dates: June 14 to July 14, 1982

091085

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 9,250 —

P. Watson

for Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

TABLE of CONTENTS

FIGURES:

MAPS in POCKET:

SUMMARY and CONCLUSIONS:-

The TOOT Claim Group covers a major 1400 meter long Dighem^{II} anomaly and a 250 m x 50 m mineralized zone, 2000 m along strike and northwest of the geophysics anomaly, in a host rock of non to weakly foliated, feldspar porphyry Klotassin granodiorite. A 7000 meter long air photo lineation is coincident with both the geological and geophysical anomalies.

A sub-parallel striking cupriferrous quartz vein occurs approximately 900 meters to the west, outside the existing claim boundary and several spot geochem anomalies occur near this showing and are open to the west and northwest.

In conclusion, it would appear that a major linear structure, striking NW for 7000 meters through the TOOT Claim Group and beyond to the NW, is geophysically and geologically anomalous. A sub-parallel, copper bearing structure may exist 900 meters to the west as shown by geochemistry and a copper bearing quartz vein.

RECOMMENDATIONS:-

(1) It is recommended that geochemical sampling be extended around the quartz vein showing (Area B).

(2) It is recommended that an attempt be made to test the Dighem^{II} anomaly by cat trenching or drilling, as this structure is known to be copper bearing on the east side of TOOT Lake, only 2000 meters to the north west.

(3) Extend the claim group to cover Area B if geochem follow-up results warrant it.

INTRODUCTION:-

The TOOT Claim Group was staked in June and July, 1982. TOOT 1 to 10 inclusive were staked to cover a series of 1981 Dighem[II] airborne geophysical anomalies lying in a linear trend over a 1400 meter strike length. The claim group was expanded to 18 claims when malachite staining was discovered on the east shore of the lake and on strike with the Dighem[II] anomaly.

Between May 29th and July 14th, two, 2 man crews conducted geological and geochemical work on the claim group and adjacent ground.

LOCATION and ACCESS:-

The TOOT Claim Group lies approximately 195 Km (121 miles) north northwest of Whitehorse and 6 Km (3 miles) south of Yukon Crossing (Figure 1). It is located on NTS Map Sheet 115I-7 & 8 at latitude 62° 18'N and longitude 136° 29'W.

PROPERTY:-

The TOOT Claim Group consists of 18 contiguous full claims (Figure 2) as follows:-

CLAIM NAME	GRANT NO.	EXPIRES	LOCATION	N. T. SHEET
TOOT 1	YA74681	22 June 1983	Crossing Creek	115I-8
TOOT 2	YA74682	"	"	"
TOOT 3	YA74683	"	"	"
TOOT 4	YA74684	"	"	"
TOOT 5	YA74685	"	"	"
TOOT 6	YA74686	"	"	"
TOOT 7	YA74687	"	"	"
TOOT 8	YA74688	"	"	"
TOOT 9	YA74689	"	"	"
TOOT 10	YA74690	"	"	"
TOOT 11	YA74697	6 July 1983	"	"
TOOT 12	YA74698	"	"	"
TOOT 13	YA74699	"	"	"
TOOT 14	YA74700	"	"	"
TOOT 15	YA74701	"	"	"
TOOT 16	YA74702	"	"	115I-7
TOOT 17	YA74703	"	"	115I-8
TOOT 18	YA74704	"	"	115I-7

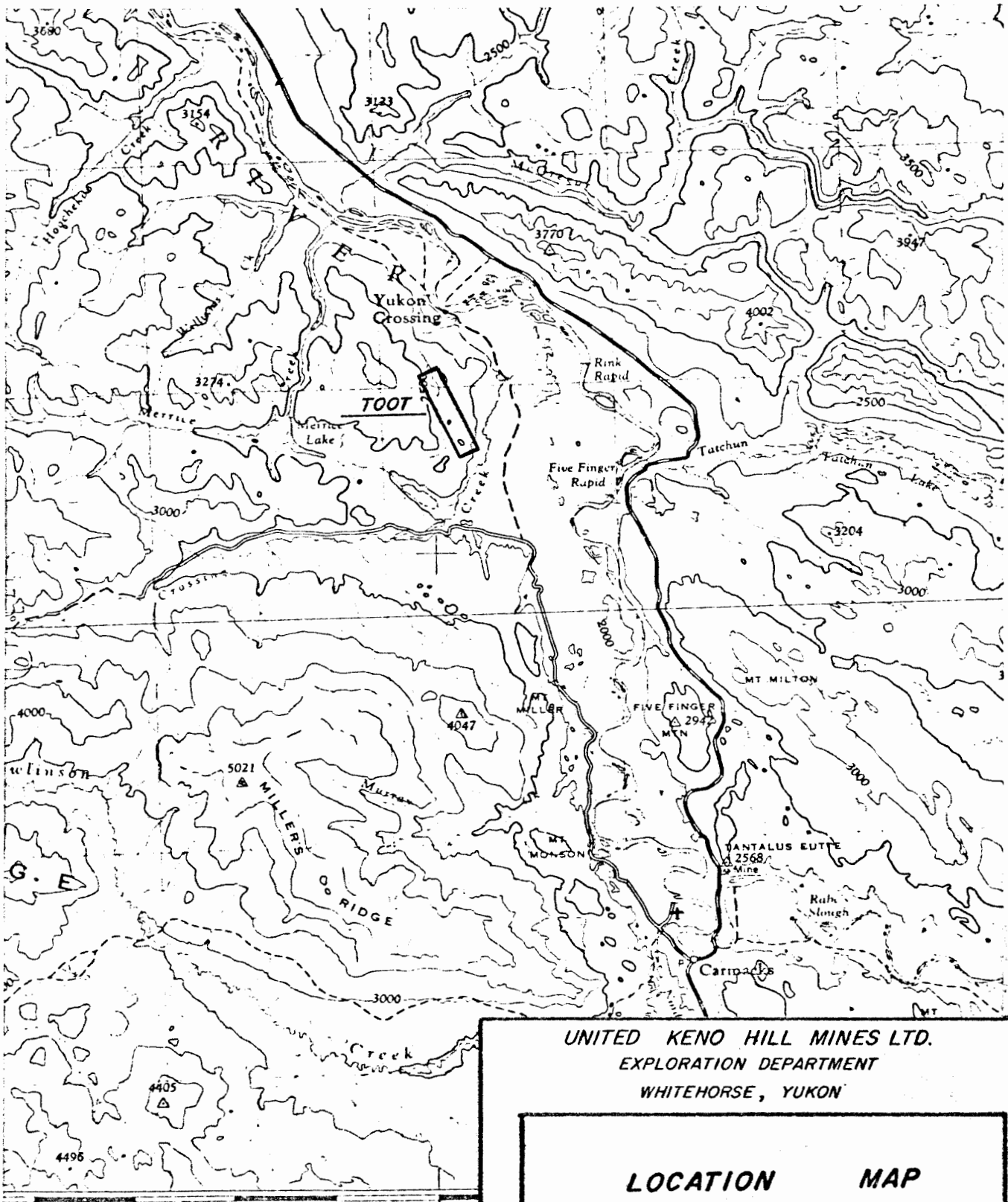


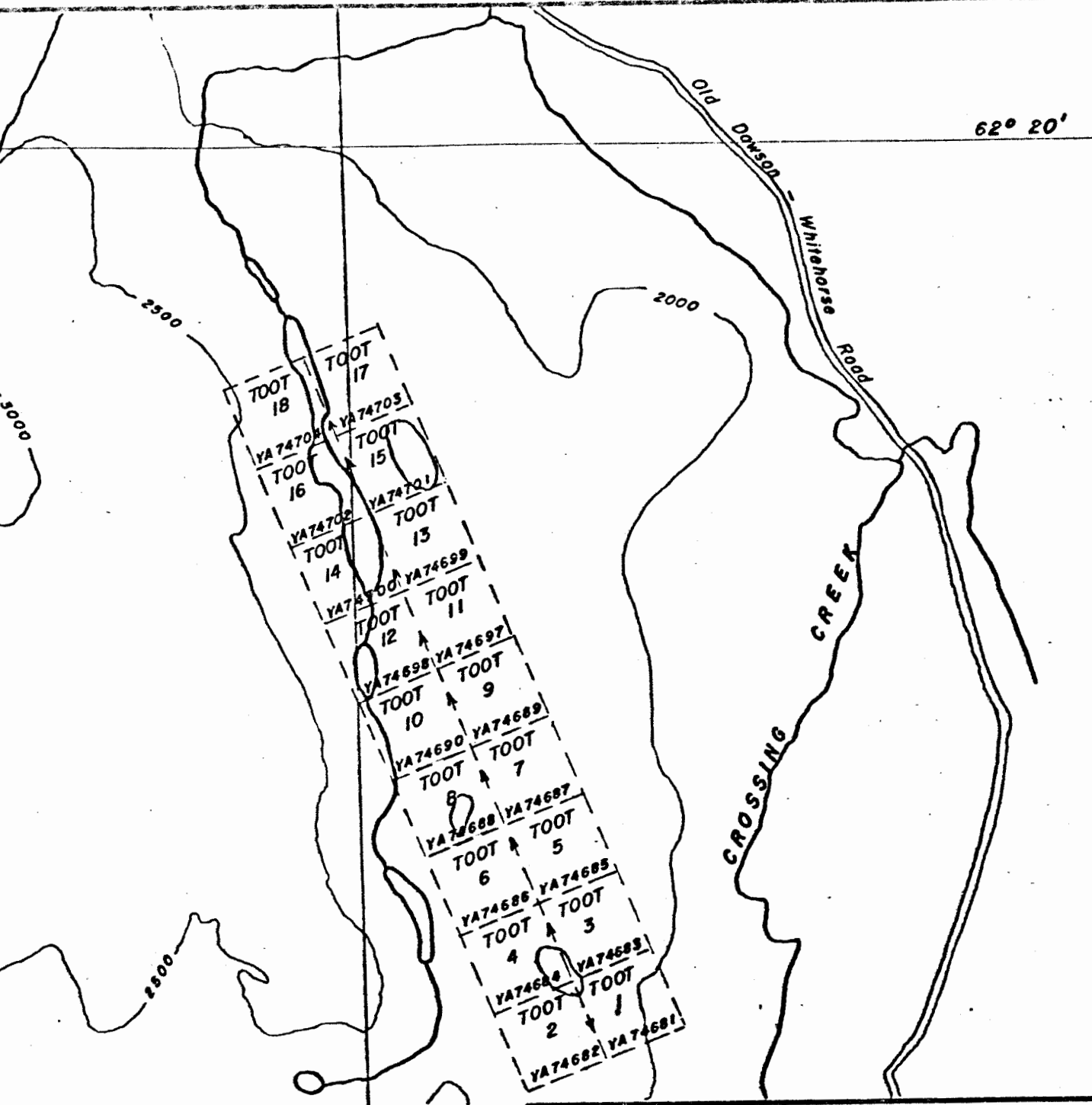
FIGURE - 1

UNITED KENO HILL MINES LTD.
EXPLORATION DEPARTMENT
WHITEHORSE, YUKON

LOCATION MAP

TOOT CLAIM GROUP

1 : 250,000



UNITED KENO HILL MINES LTD.
EXPLORATION DEPARTMENT
WHITEHORSE — YUKON

TOOT CLAIM GROUP

Mining District	WHITEHORSE
N.T.S. Sheet No.	115I-8
Scale	1 inch = 1/2 mile
Drawn by R. E. V.	Date 07 June 62

PHYSIOGRAPHY:-

The TOOT Claim Group lies in a semi mountainous area with elevations in the general area ranging from 2,000 to 2,500 feet.

Hills and ridges are well rounded. Out crop is very sparse and is generally restricted to ridge tops and steep slopes. Glaciofluvial or fluvial material is common in low lying areas and over most of the Property. South facing and south westerly facing slopes are grass covered with sparse to dense poplar growth.

Northerly and easterly facing slopes are covered by a moss layer with black spruce. Perma frost is present throughout the year and within several feet of the surface on northerly slopes.

The claim group is dissected by a pronounced valley with a small lake and ponds. A portion of this valley may reflect a fault trace.

GEOLOGY

REGIONAL GEOLOGY:-

The TOOT Claim Group is located near the south-east end of the Klotassin Batholith. The eastern boundary of the claim group is close to a contact between Trgdm and volcanics of unit Trvb.

LOCAL GEOLOGY:-

(a) Description of Units -

Klotassin Granodiorite - Trgdm - A crystalline, equigranular fine to medium grained non-foliated biotite hornblende pyroxene granodiorite. Small areas of weakly foliated granodiorite trending SE/75° SW were noted in the vicinity of a Dighem[II] anomaly and an on strike air photo lineation. Mafics comprise 20-25% of the rock. Feldspar phenocrysts to 30mm in length occur in widespread porphyritic sections. Traces of magnetite and small red crystals (sphene?) were noted.

Dykes of pink-white feldspar-quartz pegmatite and pinkish-beige aplite occur infrequently. Widths seldom exceed 6". A dyke of pinkish, cryptocrystalline, quartz porphyry felsite in a topographic depression that may be related to an air photo lineation also occurs within the granodiorite.

The contact between the granodiorite and Trvb volcanics is a sharp contact occuring over a short distance. The granodiorite appears to have intruded the Trvb along fractures - enveloping xenoliths of Trvb in the process, and contact metamorphosing the Trvb, producing a slaty cleavage near the contact.

Trvb - Volcanics - A dark greenish black, fine grained rock with weak to moderate foliation or cleavage with one area of strong foliation along the contact with the granodiorite.

At the contact, a well developed slaty cleavage has formed, probably due to contact metamorphism. In addition, feldspar phenocrysts in this area are smeared out giving a mylonitic appearance.

Occassional porphyroblasts of pyroxene were also noted in this unit.

In places the unit is well jointed and cut by quartz and carbonate veinlets. [redacted]. A few small outcrops of fine grained purple andesite with 1mm feldspar phenocrysts and reddish-grey breccia with clasts ±12mm in diameter of fine grained whitish and buff material.

Hornblendite - Jkdi - A coarse grained, mafic rich (±70%) rock composed of hornblende crystals in a matrix of white feldspar and minor biotite. This rock is intruded(?) into granodiorite, forming a plug 100-200 meters in diameter.

(b) Structure -

There is insufficient outcrop in this area to form any overall picture of the structure. From the scant information available it would appear the general trends of major structures is NW-SE (from Dighem^{II} anomalies, air photo lineations, topographic features, etc.). The dominant structure of interest in the TOOT area is a linear feature striking approximately 340° as outlined, from its southend, by Dighem^{II} anomalies 504B, 503D, 502A, 501D, 500A, 499 A & B and 498C. This feature is co-incident with an air photo lineation which can be traced to the northwest for 7000 meters. This lineation is co-incident with the main showing on TOOT Lake and with Dighem^{II} anomalies 480B and 474B to the northwest. Both the air photo lineation and the showing are co-incident with a major valley containing several small lakes, which may represent a major structure.

(c) Alteration -

The majority of the rock in this area is fresh and has undergone no alteration. Small haloes of potassic and propylitic alteration can be seen around slickensided fractures in the granodiorite in a few areas. Epidote veinlets fill fractures in a few places within the granodiorite.

(d) Mineralization -

An area approximately 250m x 50m on the east shore of TOOT Lake contains malachite in fractures and narrow (±40mm), biotite rich, foliated schlieren zones within weakly to non-foliated granodiorite.

This zone strikes NW and is steeply dipping. It is on strike and 2000 meters northwest of the Dighem^{II} anomaly and both are joined by the coincident air photo lineation. Geochem response in the area was weak and the mineralization is probably weak and erratic in nature. It is conceivable that it is a peripheral zone to a more strongly mineralized structure beneath TOOT Lake.

A white quartz vein in weakly foliated, medium grained pyroxene granodiorite and attendant fractures carry malachite, pyrite and bornite as patches and blebs up to 0.5" in diameter. The vein attitude is 140°/75SW and it is 3-4" wide. It is located approximately 800 meters west of TOOT Lake. Geochem results over the vein were weak but values in excess of 100 ppm Cu to 435 ppm Cu were obtained further west in the area.

GEOCHEMICAL SURVEY

GENERAL:-

A claim reconnaissance type soil sample survey was conducted by a two (2) man crew.

The blazed claim location line (340°) was used as a baseline. Samples were collected at 30m intervals at 200m line spacings. The sample lines were run employing topofil chain and silva compass. Mattocks were used in digging the samples.

A number of samples were collected outside the claim block. Of the 1,273 samples collected some 661 were taken from the claims.

All samples were analyzed for copper and a number of random lines passing over the DIGHEM^{II} airborne geophysical anomalies were analyzed for silver, lead and zinc.

RESULTS:-

196 soil samples were collected from a number of lines passing over a linear DIGHEM^{II} airborne anomaly. All samples were analyzed for silver, lead and zinc.

Silver -

The highest result was 0.3 ppm Silver. No anomalous silver was detected over the airborne anomaly.

Lead -

The highest result returned 40 ppm Lead. No anomalous lead was detected over the airborne anomaly.

Zinc -

The highest result returned 94 ppm Zinc. No anomalous zinc was detected over the airborne anomaly.

Copper -

A total of 661 samples from the claim group were analyzed for copper. An additional 612 samples were taken from reconnaissance lines outside the claim group.

As can be seen from the histogram (Figure 3) only 4.4% of the samples ran over 50 ppm Copper. One sample taken over known copper mineralization (malachite) returned a high value of 3,540 ppm.

Aside from Area A at the north end of the claim group where malachite mineralization is known, several single point anomalies over 50 ppm were detected on the claim group. The highest of these results was 120 ppm.

AREA A:-

This area along the east side of the lake was sampled on a detailed close grid to examine the strength of copper mineralization.

The results were not as strong as one would expect over malachite staining. It is therefore concluded that the mineralization is probably erratic and weak. It is suspected that trace copper occurs adjacent to a major fault structure which passes through the middle of the claim group and is probably reflected also by the DIGHEM^{II} airborne anomaly.

With the exception of Area B, outside of the claim group, a number of low order erratic anomalies were detected. A few of these anomalies are believed to reflect some areas of volcanic rocks.

TOOT CLAIM GROUP

Histogram of Copper results for 1,273 Soil Samples

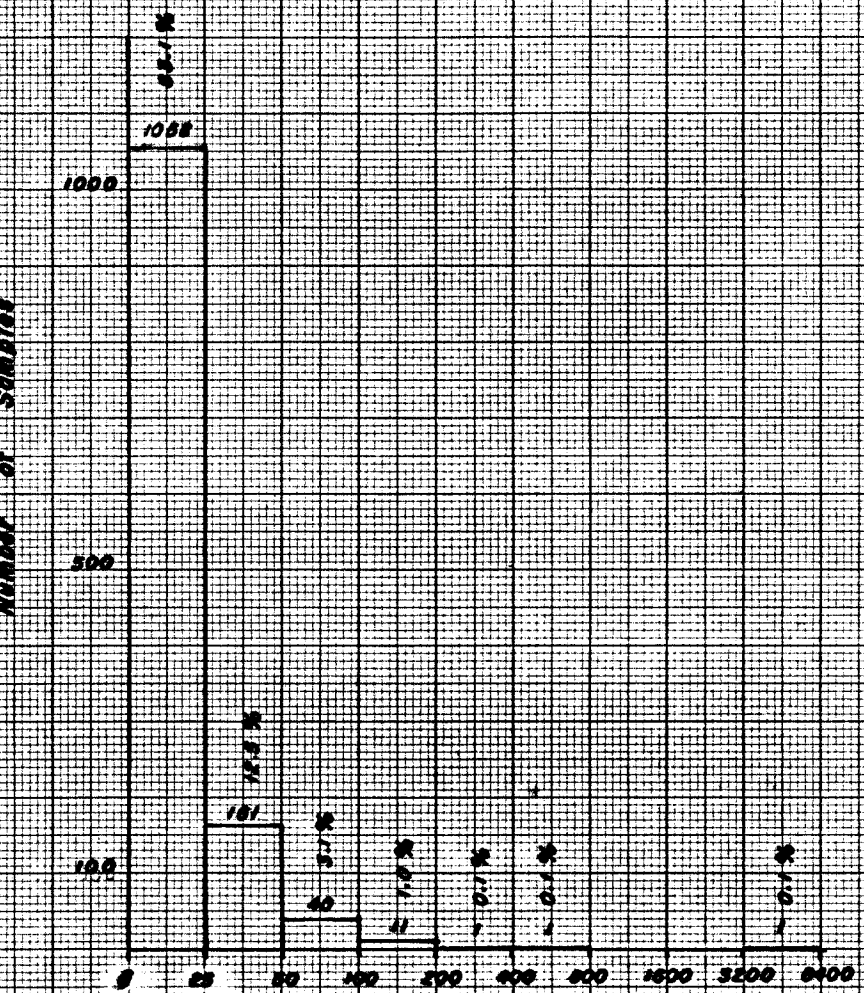


FIGURE - 3

TOOT CLAIM GROUP

Histogram of Silver, Lead, Zinc results for 196 Soil Samples

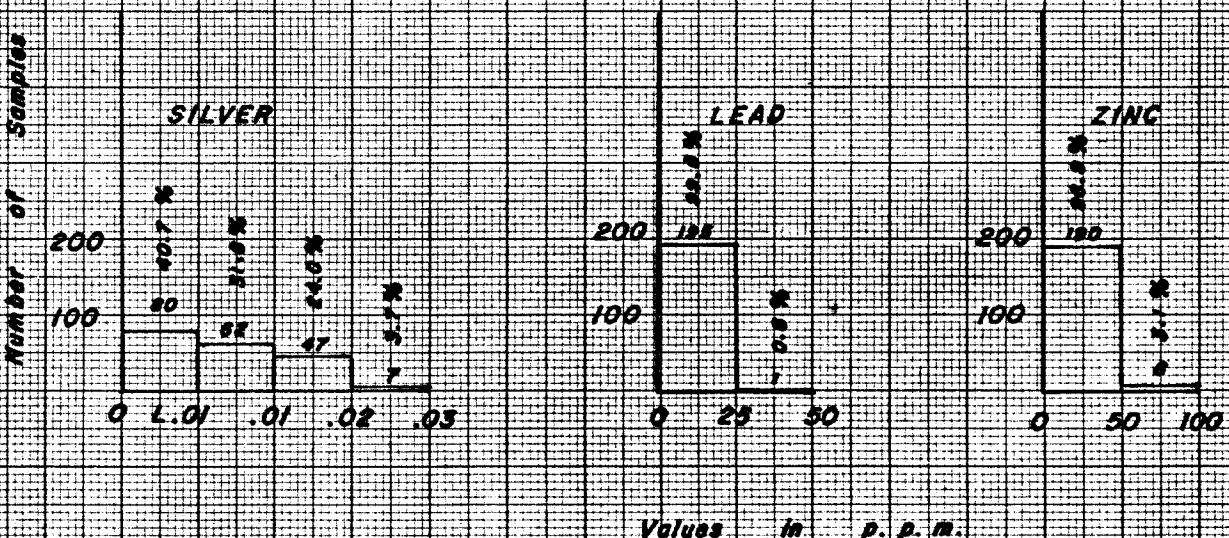


FIGURE - 4

GEOPHYSICS:-

An airborne electromagnetic (Dighem^{II}) and magnetometer survey was flown over the TOOT Claims and was part of a large survey by United Keno Hill Mines Ltd. in the Minto Area. This survey was contracted to Dighem Limited of Toronto during May and June, 1981.

Data from the survey was plotted on 1:15,000 scale maps. Maps were prepared for electromagnetic, resistivity, magnetics and enhanced magnetics for each area. Those maps (Sheet C-4) are included in a separate report entitled "Dighem^{II} Survey of Carmacks Area, Yukon".

An attractive near-surface EM/resistivity anomaly over a 2 Km strike length and detected on 9 flight lines was indicated. This linear feature occurring in Klotassin Batholith was considered a strong exploration target.

REFERENCES:-

Bostock, H. S., 1906 - Memoir 189, Carmacks District.

Templeman-Kluit, D. J., 1974 - Compilation Map of Carmacks Area, 115I, G.S.C. Open File 200.

Templeman-Kluit, D. J., 1976 - The Yukon Crystalline Terrane: Enigma in the Canadian Cordillera, G.S.A. Bulletin V87, p. 1343 - 1357, September, 1976.

Fraser, D. C., 1981 - DIGHEM^{II} SURVEY of Carmacks Area for United Keno Hill Mines Limited by Dighem Limited, September 30, 1981 - U.K.H.M. files.

APPENDIX A

PROJECT COST FOR TOOT CLAIM GROUP

GENERAL:		
Salaries and wages for map and report preparation	$1,474.00	$1,474.00
GEOLOGICAL:		
Company Labour	3,685.00	
Equipment and Supplies	9.00	
	3,694.00	3,694.00
GEOCHEMICAL:		
Company Labour	1,820.00	
Contract Analysis	2,086.00	
	3,906.00	3,096.00
ASSAYING:		
Contract Analysis	90.00	90.00
CAMP OPERATION:		
Food	1,428.00	
Fuel	9.00	
	1,437.00	1,437.00
AIRCRAFT:		
Helicopter Charter including fuel	3,413.00	3,413.00
	TOTAL	$14,014.00

APPENDIX B

PERSONNEL EMPLOYED

GEOLOGICAL MAPPING by:-

J. A. McFaull,
409 Black Street,
Whitehorse, Yukon

T. W. Canam,
P. O. Box 569,
Pictou, Nova Scotia

GEOCHEMICAL SAMPLING by:-

Ian Spooner,
104 Cliff Crescent,
Kingston, Ontario
K7M 1A8

Stephem McGibbon,
520 Frontenac Street - Apartment #1,
Kingston, Ontario
K7L 4M1

GEOCHEMICAL ANALYSIS and ASSAYING by:-

Bondar-Clegg and Company Ltd.,
136B Industrial Road,
Whitehorse, Yukon
Y1A 4X1

HELICOPTER SUPPORT by:-

Dean Cameron,
Base Manager,
Trns North Air,
Carmacks, Yukon

SUPERVISED by:-

R. E. VanTassell,
Exploration Manager,
United Keno Hill Mines Ltd.,
409 Black Street,
Whitehorse, Yukon Y1A 2N2

ASSAY RESULT FORM

DATE			Tag No.	Location and Description	ASSAY RESULTS								
D	Mo.	Yr.			Au oz/ton	Ag oz/ton	Pb %	Zn %	Cu %	Mo %	W %		
7	06	82	6929	1TW3S Vein Material	.002	.05	.01	.02	.01			Grab	
7	06	82	6930	1TW6S qtz vein in pyroxene granodiorite Toot Lake	.002	.05			0.63			Grab	
4	06	82	6931	7JM1S malachite in biotite schlieren - east side Toot Lake	.002	.09			0.63			Grab	

APPENDIX C

APPENDIX D

STATEMENT OF QUALIFICATIONS

I, Robert E. VanTassell, of Whitehorse, Yukon Territory, do hereby certify that:

1. I am a geologist, residing at 13 Koidern Avenue, Whitehorse, Yukon Territory.

2. I have received a B. A. in Geology in 1958 from Mount Allison University.

3. I have attained the status of Fellow in the Geological Association of Canada and am also a member of the Association of Exploration Geochemists.

4. I have been actively engaged in the mineral exploration field since 1956.

5. I am presently employed as Exploration Manager with United Keno Hill Mines Limited.

6. I have supervised and am aware of the work and costs described in this report.

Robert E. VanTassell

Robert E. VanTassell

Dated at Whitehorse

this 9th day of September 1982

LEGEND

GEOLOGY

eTCv		Carmacks Group Volcanics
TR		UPPER TRIASSIC
	Pgdm	Granodiorite, porphyritic
	px gdm	Granodiorite, pyroxenite
TRvb		Triassic basalt
PPub		Paleozoic diorite
	peg	Pegmatite
	ap	Aplite
	epi	Epidote
	c	Limestone

Foliation : vertical, inclined	
Jointing : vertical, inclined	
Fault : defined, assumed	
Geological control point, with sample	
Dighem Survey Points, anomalous	

GEOCHEMISTRY

TOPOGRAPHY

6907000	1000 m UTM Grid system from 1:50,000 Scale Map
	Note: Grid North is actually 358°30'
2500	Elevation contours in feet
	Creeks
	Lakes, Ponds, Sloughs
	Claim posts (2,4)
	Claim boundary
	Heliport, Campsite

UNITED KENO HILL MINES LTD.

EXPLORATION DEPARTMENT WHITEHORSE, Y. T.

TOOT CLAIM GROUP

N.T.S. SHEETS 115-I-7/8

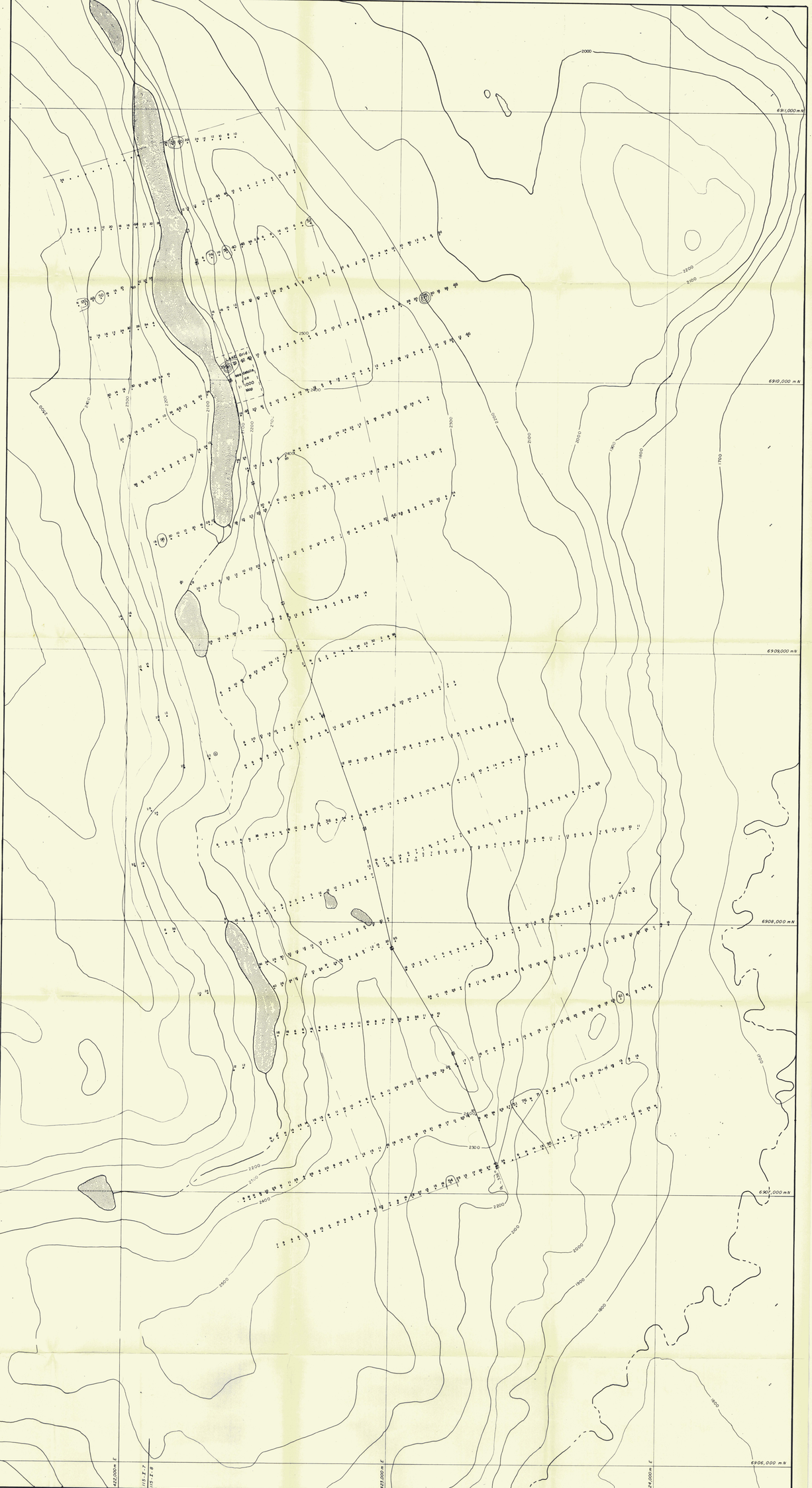
GEOLOGY

METER 100 0 100 200 300 400 500

SCALE = 1:5000

091085

NO.	Revision	Date	by	NO.	Revision	Date	by	Drawn by J.H.P.	DWG.
								Date 17.06/82	No.



LEGEND

GEOCHEMISTRY

- Sample Location with results in p.p.m.
- Sample Location, no samples taken

Contour Intervals

- 0 - 49
- 50 - 99
- 100 - 199
- 200 - 399
- 400 +

TOPOGRAPHY

- 1000 m UTM Grid system from 1:50,000 Scale Map
  Note: Grid North is actually 358°30'
- Elevation contours in feet
- Creeks
- Lakes, Ponds, Sloughs
- Claim posts (2,4)
- Claim boundary
- Heliport, Campsite

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EXPLORATION DEPARTMENT WHITEHORSE, Y. T.

TOOT CLAIM GROUP

091085

N.T.S. SHEETS 115 - I - 7/8

GEOCHEMISTRY

COPPER PLOT in p.p.m

METER
100 0 100 200 300 400 500

SCALE = 1:5000

NO.	Revision	Date	by	NO.	Revision	Date	by	Drawn by J.H.P.	DWG.
								Date 17.06/82	No.

420,000m E
421,000m E
422,000m E
423,000m E
424,000m E
115-I-7
115-I-8
YUKON 1/4
Whitehorse - Dawson Road (Hwy 2)
6913,000 m N
6912,000 m N
6911,000 m N
6910,000 m N
6909,000 m N
6908,000 m N
6907,000 m N
6906,000 m N

LEGEND

GEOLOGY

GEOCHEMISTRY

- Sample Location with results in p.p.m.
- Sample Location, no Sample taken

TOPOGRAPHY

- 6907000 — 1000 m UTM Grid system from 1:50,000 Scale Map
  Note: Grid North is actually 358°30'
- 2500 — Elevation contours in feet
- Creeks
- Lakes, Ponds, Sloughs
- Claim posts (2,4)
- Claim boundary
- Heliport, Campsite

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EXPLORATION DEPARTMENT WHITEHORSE, Y. T.

TOOT CLAIM GROUP

N.T.S. SHEETS 115-I-7/8

GEOCHEMISTRY

LEAD PLOT in p.p.m.

METER 100 0 100 200 300 400 500

SCALE = 1:5000

091085

NO.	Revision Date	by	NO.	Revision Date	by	Drawn by J.H.P	DWG.
						Date 17.06/82	No.

LEGEND

GEOLOGY

GEOCHEMISTRY

- Sample Location with results in p.p.m
- Sample Location no Sample taken

TOPOGRAPHY

- 6907000 — 1000 m UTM Grid system from 1:50,000 Scale Map
  Note: Grid North is actually 358°30'
- 2500 — Elevation contours in feet
- Creeks
- Lakes, Ponds, Sloughs
- Claim posts (2,4)
- Claim boundary
- Heliport, Campsite

UNITED KENO HILL MINES LTD.

EXPLORATION DEPARTMENT WHITEHORSE, Y.T.

TOOT CLAIM GROUP

N.T.S. SHEETS 115-I-7/8

GEOCHEMISTRY

SILVER PLOT in p.p.m.

METER 100 0 100 200 300 400 500

SCALE = 1:5000

091085

NO.	Revision	Date	by	NO.	Revision	Date	by

Drawn by J.H.P. DWG.

Date 17.06/82 No.

420,000m E
421,000m E
422,000m E
423,000m E
424,000m E
115-I-7
115-I-8
TUYON X-ING
Whitehorse - Dawson Road (dirt)
6913,000 m N
6912,000 m N
6911,000 m N
6910,000 m N
6909,000 m N
6908,000 m N
6907,000 m N
6906,000 m N

LEGEND

GEOLOGY

GEOCHEMISTRY

- Sample Location with results in p.p.m.
- Sample Location, no Sample taken

TOPOGRAPHY

- 1000 m UTM Grid system from 1:50,000 Scale Map
  Note: Grid North is actually 358°30'
- Elevation contours in feet
- Creeks
- Lakes, Ponds, Sloughs
- Claim posts (2,4)
- Claim boundary
- Heliport, Campsite

UNITED KENO HILL MINES LTD.

EXPLORATION DEPARTMENT WHITEHORSE, Y. T.

TOOT CLAIM GROUP

N.T.S. SHEETS 115-I-7/8

GEOCHEMISTRY

ZINC PLOT in p.p.m.

METER
100 0 100 200 300 400 500

SCALE = 1:5000

091085

NO.	Revision Date	by	NO.	Revision Date	by	Drawn by J.H.P.	DWG.
						Date 17.06/82	No.