CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

GEOLOGY AND GEOCHEMISTRY OF THE ARK CLAIM GROUP

Claims: Ark 1-56
Y62525-Y62580

Claim Sheet No. 105D-12

Lat. 60° 36'
Long. 135° 39'

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of $11,687.94

Resident Geologist ~~or Resident Mining Engineer~~

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

Commissioner of Yukon Territory

By:
J.T. Neelands, B.Sc.
C.F. Gleeson, Ph.D., P.Eng.

Duration of Work:
August 20, 1972 to September 1, 1972

GEOLOGY AND GEOCHEMISTRY OF THE ARK CLAIM GROUP

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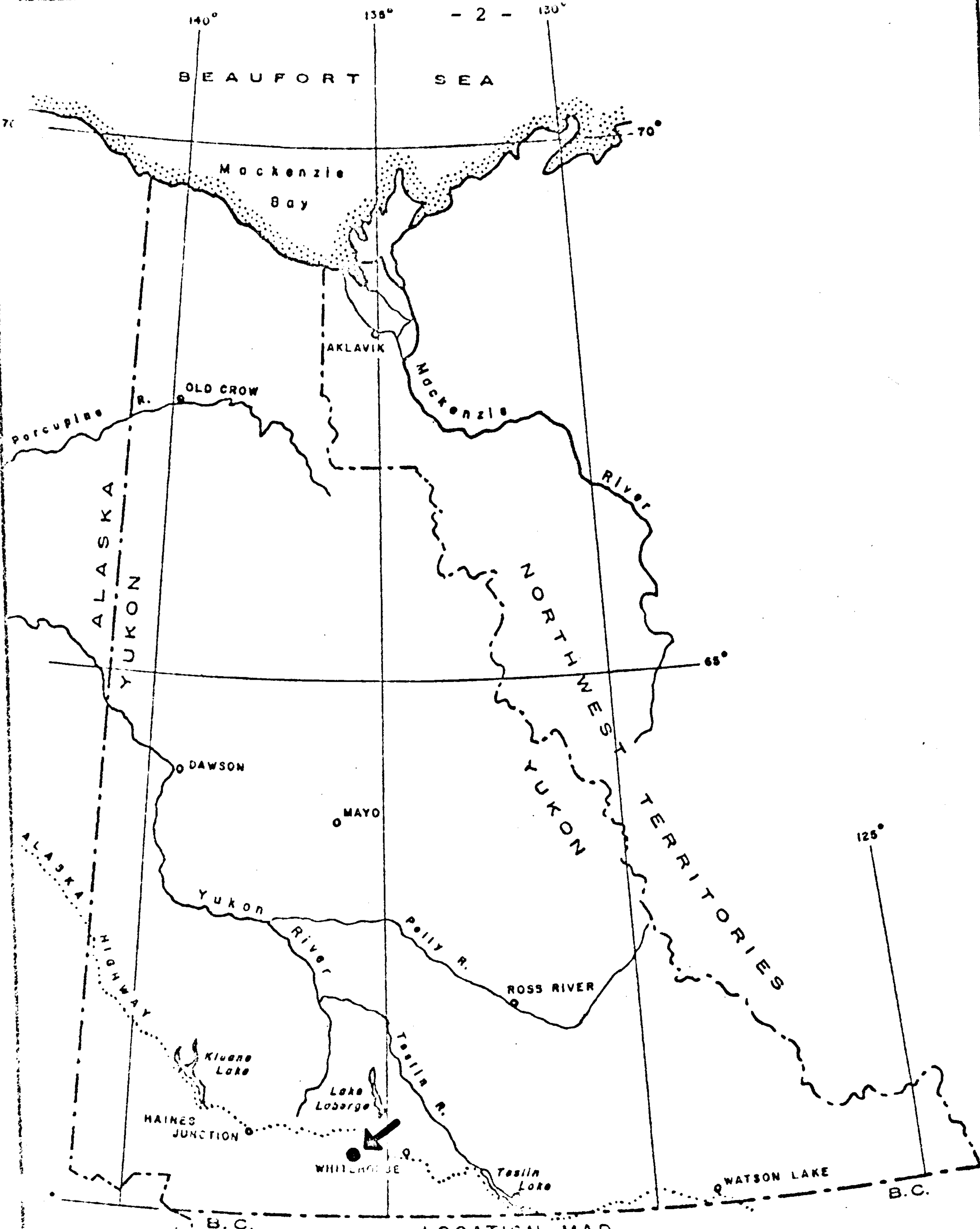
SUMMARY

The Ark claims are underlain chiefly by granodiorite that has been intruded on the south by biotite granite. Swarms of north trending acid and mafic dykes cut the granodiorite. Chlorite and epidote alteration is common in the granodiorite especially in the vicinity of the basaltic dykes.

Molybdenum mineralization has been found in quartz stringers and disseminated through the granodiorite and dykes. High zinc values suggest the presence of sphalerite in the pyrite-bearing portions of the intrusion. Minor chalcopyrite occurs in epidote in a piece of float made up of chloritized porphyry dyke. Magnetite veinlets and stringers cut the granodiorite and finely disseminated magnetite is common in the acid dykes.

A coincident north trending Cu-Zn-Mo anomaly west of the base line between L28S and 120S is not of sufficient intensity so as to be considered significant. It is associated with sub-economic Cu-Zn-Mo mineralization in the dykes, granodiorite and part of the granite.

No further work is recommended at the present. However the claims on the west side of the property should be retained until a more complete understanding of the regional setting is obtained.



LOCATION MAP

ARK CLAIM GROUP

YUKON TERRITORY

Figure 1

July/71

INTRODUCTION

The Ark (1-56) claims were staked as a result of a reconnaissance geochemical program completed during the summer of 1971.

Staking was completed under contract by Harman Management Limited of Whitehorse during September 16 to 17, 1971, and recorded at Whitehorse on September 30, 1971.

This report will describe the geology of the claim area and the results obtained from a geochemical soil survey completed by Canadian Occidental Petroleum Ltd., Minerals Division, the holder of the claims. This work was done to determine the cause of the copper and molybdenum stream sediment anomalies detected in the streams draining the claim area.

LOCATION AND ACCESS

The claim group is located on claim map 105-D-12 in the Whitehorse Mining District. The property is twenty-one miles west-southwest of Whitehorse. Access to the property was by helicopter from Whitehorse. A pack horse trail extends north from the property to the Alaska Highway.

As of October 6, 1971, the only other claim group in the area is the H.L. claim group which is located on the northern edge of map sheet 105-D-12 about ten miles north of the Ark group.

PHYSIOGRAPHY AND VEGETATION

The property is bounded by two steep mountain ridges that trend north. Mount Arkell which rises to an elevation of 7246 feet occurs in the northeast corner. The valley floor, at the base of the mountain, is 6000 feet west of the peak and it has an elevation of 4100 feet. Hence the maximum relative relief on the claim group is 3146 feet. Glacial moraine occurs in the valley and forms a terrace along the east flanking ridge. The terrace is at an elevation of 4300 feet which is 300 feet above the stream. Tag alders occur along Arkell Creek but are replaced by dwarf birch and grass further up slope. About 400 feet above the stream talus slopes are barren of vegetation. Outcrop occurs in most of the streams that flow into the creek and along the top of the ridges. Rock slides occur on both sides of the valley and are washed clean by small streams and rain.

WORK COMPLETED

(a) Staking and Line Cutting

The claims were staked by Harman Management Limited, Whitehorse, and the data pertaining to the location of the claim posts, tags and tag numbers is recorded in Appendix I. Claim numbers are located on the geology map (Figure 2).

The claim area was covered by a picket line grid with lines spaced 800 feet apart and picketed every 100 feet.

The work was completed under contract by Eastern Associates from Whitehorse during June 25 to July 9, 1972. Approximately 21.2 miles of line were cut. Average production per man totalled 0.4 mile per day. Additional information is recorded in the Appendix II of this report.

(b) Geology and Geochemistry

Geology of the area was mapped during the period August 20 to Setpember 1, 1972, by Mr. J.T. Neelands and the sampling for the geochemical survey was completed by Mr. R.R. Cook and W.F. Boyd. Dr. C.F. Gleeson supervised the overall programme.

(c) Names and Addresses of Personnel

Canadian Occidental Petroleum Ltd., Minerals Division

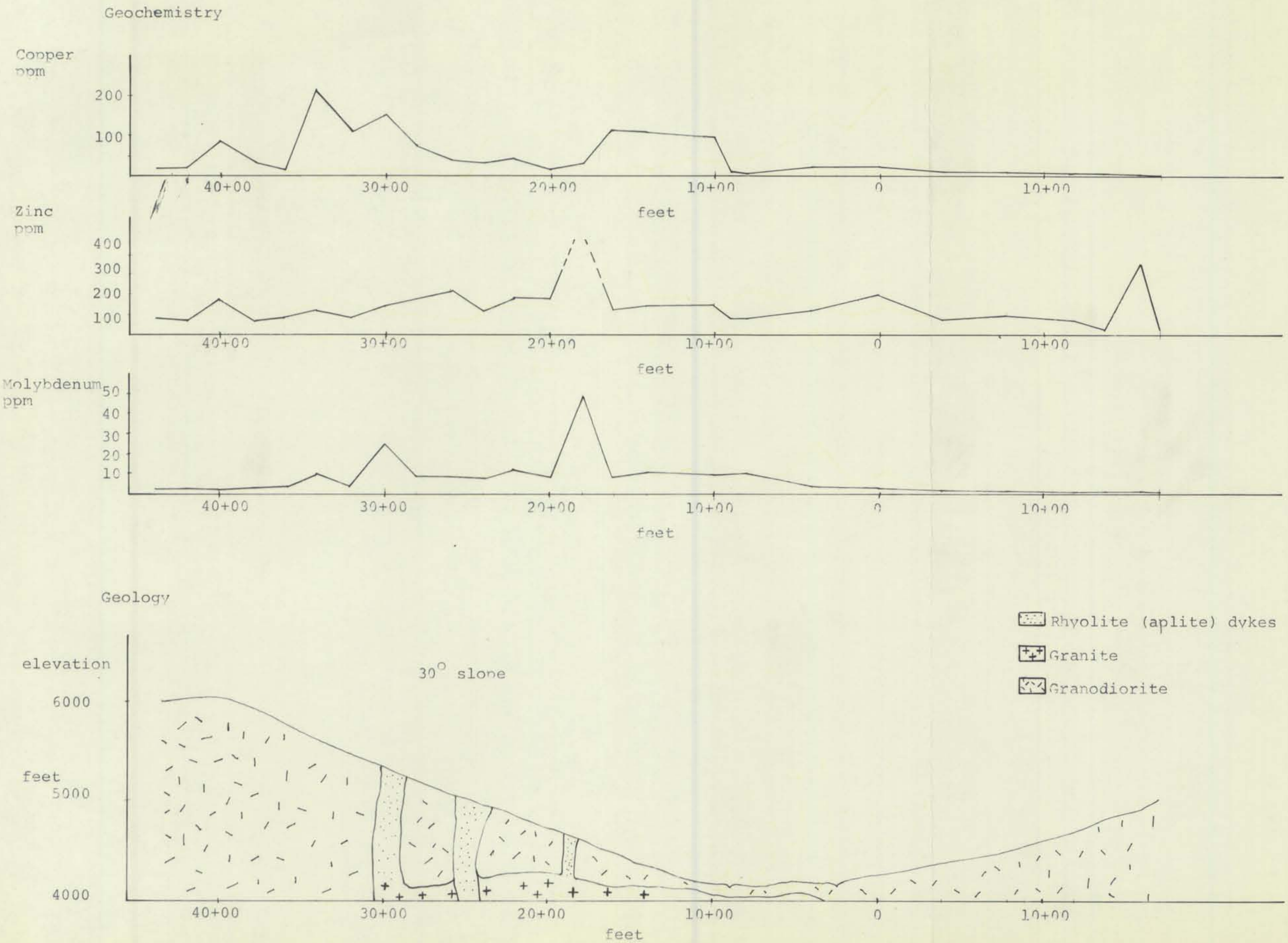
J.T. Neelands	161 Eglinton Ave. E., 801 Toronto 12, Ontario	Geologist
C.F. Gleeson	764 Belfast Road Ottawa, Ontario	Consultant Geologist
R.R. Cook	5 Rollingwood Circle London 72, Ontario	Soil Sampler
W.F. Boyd	247 Old Yonge St. Willowdale, Ontario	Soil Sampler
M. Gartner	812 Steele St. Whitehorse, Y. T.	Cook

Eastern Associates Reg'd

R. Voisine	Whitehorse, Y. T.	Foreman
R. Morin	" "	Linecutter
M. Curry	" "	"
A. Carlick	" "	"

Figure 4

ARK GROUP NTS REF. NO. 104-D-12
Copper, zinc and molybdenum soil profiles relating to geological cross-section
Location: Line 56 south, looking north



GENERAL GEOLOGY

The Ark group is underlain by Mesozoic and Tertiary granitic rocks which have been intruded by acidic and basic dykes. The Mesozoic granodiorite covers a major portion of the property. The Tertiary granite is found only in the southwest part of the property. The dykes trend either northeast or northwest and parallel the jointing. Jointing generally trends north-northeast.

The following table of formations is suggested:

Table of Formations

Era	Period	Rock Type
Cenozoic	Quaternary	Colluvium and glacial till
Mesozoic to Cenozoic	Cretaceous to Tertiary	Rhyolite, porphyritic (quartz and feldspar) rhyolite, porphyritic (feldspar) rhyolite and pyrrhotiferous rhyolite Basalt and porphyritic basalt Biotite granite, miarolitic granite
Mesozoic	Cretaceous	Hornblende-biotite granodiorite

Hornblende-Biotite Granodiorite

Coarse-grained and medium-grained granitic rocks occur within this unit. The coarse-grained granodiorite has large euhedral feldspar crystals which appear altered. Hornblende and biotite are medium-grained and compose approximately 10 and 5 percent respectively of the rock. Magnetite is associated with the mafic minerals. Chlorite occurs secondary to biotite and hornblende and epidote secondary to feldspar. In places lineation and foliation of the biotite and hornblende grains is evident and stringers of epidote are common. Near the contact between the Nisling granite the rock becomes more basic and could be called a quartz diorite. Hornblendite also occurs but it is rare.

Magnetite veins and in places epidote stringers cut the rock and pyrite occurs associated with the mafics, molybdenite occurs as fine-grained disseminated specks.

Biotite Granite

This granite occurs on the southwest corner of the property. The rock weathers a light brown. Dark smoky quartz occurs associated with white feldspar. Biotite and magnetite occur as accessory minerals. Minor epidote occurs as an alteration product of feldspar. Miarolitic texture is present in some specimens.

Rhyolite (aplite), Porphyritic rhyolite, Pyrrhotiferous rhyolite

Both porphyritic rhyolite and rhyolite dykes cut the granodiorite in a northerly direction. Porphyritic rhyolite is a light grey rock with a fine-grained matrix that weathers white. The phenocrysts are made up of remelted quartz crystals that are less than 3 mm long, stubby K-feldspar crystals that measure less than 5 mm in length and laths of hornblende. The abundance of feldspar, quartz and hornblende phenocrysts is approximately 15, 10 and 3 percent respectively. In places no quartz phenocrysts are found and the rock becomes a porphyritic (feldspar) rhyolite.

The rhyolite dykes* are generally fine-grained,

*Note by C.F. Gleeson: these rhyolite dykes should more properly be called aplite dykes.

light grey and aphanitic. They are characterized by the presence of finely disseminated magnetite and they appear to be restricted to the west portion of the claims.

A pyrrhotiferous phase of the rhyolite is present in one outcrop off of the southeast corner of the property about 400 feet south of L112,37E.

Porphyritic Basalt and Basalt

The porphyritic basalt is characterized by randomly orientated feldspar laths that occur in a black aphanitic matrix. Some of the feldspar crystals show signs of having been remelted. Magnetite occurs disseminated and in veins. Specular hematite occurs in altered basaltic dykes. The alteration products are epidote and chlorite. Many of these dykes should be termed feldspar porphyries and possibly some of them are andesitic in composition.

The non-porphyritic basalt is fine-grained and dark grey on the fresh surface and usually a rusty brown on the weathered surface. The rock is slightly to moderately magnetic and it is composed predominantly of fine-grained pyroxene and feldspar.

A basaltic dyke containing 5% pyrite is present 100 feet south of L112,22E.

ROCK GEOCHEMISTRY

One hundred and thirty five rock chip samples were taken from the outcrops and float of the various rock types on the property. The averages of Cu, Zn and Mo in these samples and three composite samples are shown in Table 1. The individual results have been plotted on the geological map.

In some cases insufficient samples were taken to be statistically reliable, however the values for granodiorite are probably representative since they are the averages for 93 samples.

Granodiorite and porphyritic (feldspar) rhyolite have the highest average copper values (8 ppm); basalt and granite have the highest average zinc values (180 and 99 respectively); and pyritiferous rhyolite and basalt have the highest molybdenum values (3 and 2.5 ppm respectively). The results of the composite samples show that basalt is considerably higher in Cu (30 ppm), Zn (254 ppm) and Mo (5 ppm) than the rhyolite or porphyritic basalt.

Though the composite sample contains 30 ppm copper the individual samplesof basalt ran low. An examination of the geochemical values of the rock chips (Appendix III) shows that, in general,more anomalous copper values are found in rhyolite (aplite) dykes than in the granite or granodiorite. However several high values are present in the mafic dykes. The highest value (3200 ppm) is present in a piece of float of altered porphyry composed of black chlorite and stringers of epidote containing about 1% chalcopyrite. Other high copper values (670 ppm and 490 ppm) are present in composite samples of granodiorite and aplite taken on L80S and L88S.

Zinc is high in some of the granodiorite samples (up to 14000 ppm) and in the mafic dykes (maximum of 1000 ppm). A composite sample of weathered fragments (gossan) of granite and aplite containing molybdenite taken near the contact of the granodiorite and granite on L72S contains 490 ppm Cu, 46000 ppm Zn and 860 ppm Mo. Another sample of the same material taken along L88S contains 670 ppm Cu, 710 ppm Zn and 7 ppm Mo.

High values in Mo are frequently found in granodiorite containing pyrite and in places in the acid dykes. One sample of granite (#1571) on L112S,25W contains 131 ppm Mo.

In summary, the majority of the anomalous Cu-Mo values occur in the granodiorite and felsic dykes. however altered mafic dykes (?) may also contain high copper. High zinc predominates in the granodiorite and mafic rocks. Copper-zinc appears to be more closely associated with epidote-chlorite alteration around mafic dykes.

The occurrence of high molybdenum values in all rock types suggests that molybdenum mineralization is structurally and lithologically controlled.

Table 1

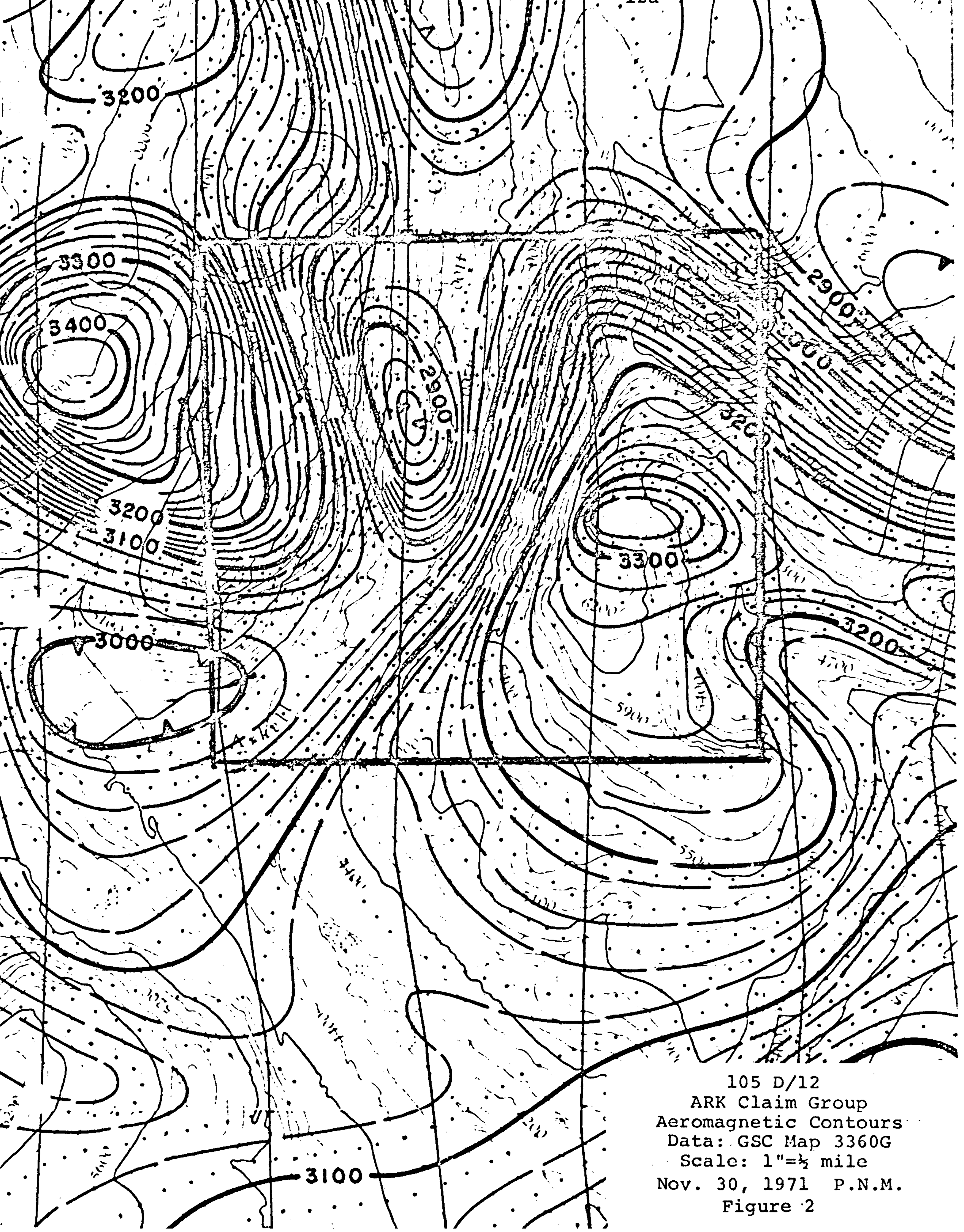
Average Metal Content of Rock Units

Rock Type	No. of Samples	Copper Range	Copper Average	Zinc Range	Zinc Average	Molybdenum Range	Molybdenum Average
		Geochemical Results (ppm)					
Rhyolite	14	2-24	5	18-125	40	1-4	2
Porphyritic (feldspar) Rhyolite	7	2-36	8	44-170	84	1-4	2
Rhyolite (py)	5	4 - 7	6	19-99	54	2-7	4
Basalt	12	2-168	6	33-222	180	1-8	3
Granodiorite	93	3-105	8	10-690	50	1-48	1.5
Granite	4	2-4	3	36-214	99	1-6	2.5
Composite Samples							
Rhyolite			4		73		2
Porphyritic Basalt			2		26		2
Basalt			30		254		5

G.S.C. Aeromagnetic Survey

The contact which occurs in the southwest corner of the property between the more magnetic granodiorite and the biotite granite can be seen on the aeromagnetic map (Figure 2). The contact as mapped appears to follow the 3075 gamma contour. If the magnetic low to the southwest is produced by the biotite granite then the low in the center of the property may also be produced by biotite granite. Wheller, J.O.* has mapped biotite granite northeast of the property which agrees with the above assumption.

*Wheeler, J.O. (1961) Memoir 312, Whitehorse Map - Area Yukon Territory 105D



105 D/12
ARK Claim Group
Aeromagnetic Contours
Data: GSC Map 3360G
Scale: 1"=½ mile
Nov. 30, 1971 P.N.M.
Figure 2

Structural Geology

The majority of the dykes follow north trends, however in the southeast corner of the property a northeast trend predominates.

The granitic rocks are generally well fractured by three sets of north striking joints. One set dips 40-60 degrees east, another dips 50 to 70^{o} west and the third predominant one is vertical. Sheeting frequently occurs on the flanks of the ridges along the inclined joints which are subparallel to the steep mountain slopes. This results in strips of bedrock being laid bare along the streams running down the hill sides. Large fans of talus are heaped up at the bottom of each small stream.

In a small stream 200 feet north of L24S,12W a small vertical fault striking 070T occurs.

Economic Geology, Mineralization

Molybdenite and chalcopyrite are found in minor amounts on the east flank of the west ridge. Chalcopyrite occurs in epidote bands in a black magnetic, chloritized, porphyritic rock. The sample is an angular piece of float found at the bottom of a rock slide. It (No. 1906) contains 3200 ppm copper, 145 ppm zinc and 2 ppm molybdenum. Traces of chalcopyrite may also occur with pyrite in the granodiorite (e.g. #1565 and 1566) and mafic dykes (No. 1580).

Molybdenite occurs in quartz veins, rhyolite (aplite) dykes, disseminated in the granodiorite and along the fracture planes. Crystals and flakes of molybdenite are usually fine and normally they are less than 5 mm in diameter. Much of the molybdenite found occurs near the contact between the granite and granodiorite south of line 72 west. A composite sample of mineralized float containing molybdenite taken in the stream south of line 72S contains 860 ppm molybdenum, 490 ppm copper and 46000 ppm zinc. The sample is biased in its selection and represents the highest values obtainable. Molybdenite also occurs disseminated in rhyolite (aplitic) and feldspar porphyry dykes. The average thickness of the dykes is about 20 feet and most rock chips contained less than 100 ppm molybdenum. One sample of granite (No. 1571) from L112S,27W contains 131 ppm molybdenum..

Hence it is apparent that the granite, granodiorite and felsic dykes have, in places, been enriched in molybdenum. It appears to be praticularly abundant in the vicinity of the granite-granodiorite contact. However the amount seen in surface exposures is not sufficient to be of economic interest.

Alteration (propylitization) is evident in the granodiorite which contains epidote and chlorite. These minerals are particularly abundant in the vicinity of the altered mafic dykes and they may contain small amounts of chalcopyrite. The high geochemical zinc values normally found in these rocks suggests that they also contain traces of sphalerite. Similarly some of the epidote and pyrite-bearing granodiorites contain anomalous amounts of zinc (198-1400 ppm) and they too probably contain sphalerite.

Geological Summary

The property is underlain by a stock of granodiorite which has been intruded by biotite granite (Figure 3). These stocks have been intruded by a series of north trending vertical acid and mafic dykes. Epidote and to a lesser extent chlorite alteration is evident in the granodiorite especially in the vicinity of the mafic dykes. Magnetite veinlets and stringers are common throughout the granodiorite and the felsic dykes are characterized by containing 5 to 20 percent finely disseminated magnetite.

Molybdenite occurs in all rock types but it is most abundant in the granodiorite and felsic dykes in the vicinity of the biotite granite contact. Minor chalcopyrite occurs in the pyrite bearing granodiorite and dykes and up to 1 percent is present in epidote bands in a sample of float of black chloritized feldspar porphyry.

The Cu-Mo mineralized seen on the Ark claims is subeconomic.

SOIL GEOCHEMISTRY

Description of the Property and Soil Horizons

The property has been glaciated by valley glaciation up to an elevation of approximately 4300 feet. At this elevation a moraine terrace occurs along the bottom slope of the east ridge. Most of the area is covered by talus and any soil that was collected is relatively immature. A thin layer of volcanic ash occurs in the valleys where soil development is more pronounced.

Sampling Procedure (Soils and Rocks)

Approximately 1000 samples were taken at a spacing of 200 feet by 800 feet (Figure 6). In general, an attempt was made to sample the B horizon wherever possible. Rock chip samples were taken in lieu of soils where no soils could be obtained. Locations and metal content of rock samples are plotted on the geology map (Figure 5). Rock type, location and metal content of the rock chip samples are presented in Appendix III.

Laboratory Procedures

The soil samples were sent to Bondar-Clegg's laboratory in Whitehorse where they were dried and sieved to minus 80 mesh and every second soil sample was analyzed for copper, zinc and molybdenum. The rock samples were pulverized to -100 mesh and analyzed also. Atomic absorption spectrometry after extraction with a hot solution of $HCl:HNO_3$ was employed to do the analyses.

Histograms have been constructed for Cu, Zn and Mo (Figure 3). Background values are 50 percent of the non-anomalous population and anomalous values are considered to be those in excess of 97.5 percent of the non-anomalous group. The background, anomalous values and range for the soil samples are given below:

	Background Values (ppm)	Anomalous Values (ppm)	Range of Values (ppm)
Copper	13	20	5-210
Zinc	80	140	33-450
Molybdenum	2	7	1-30

ARK Group: Geochemical Soil Histograms for Copper Zinc and Molybdenum

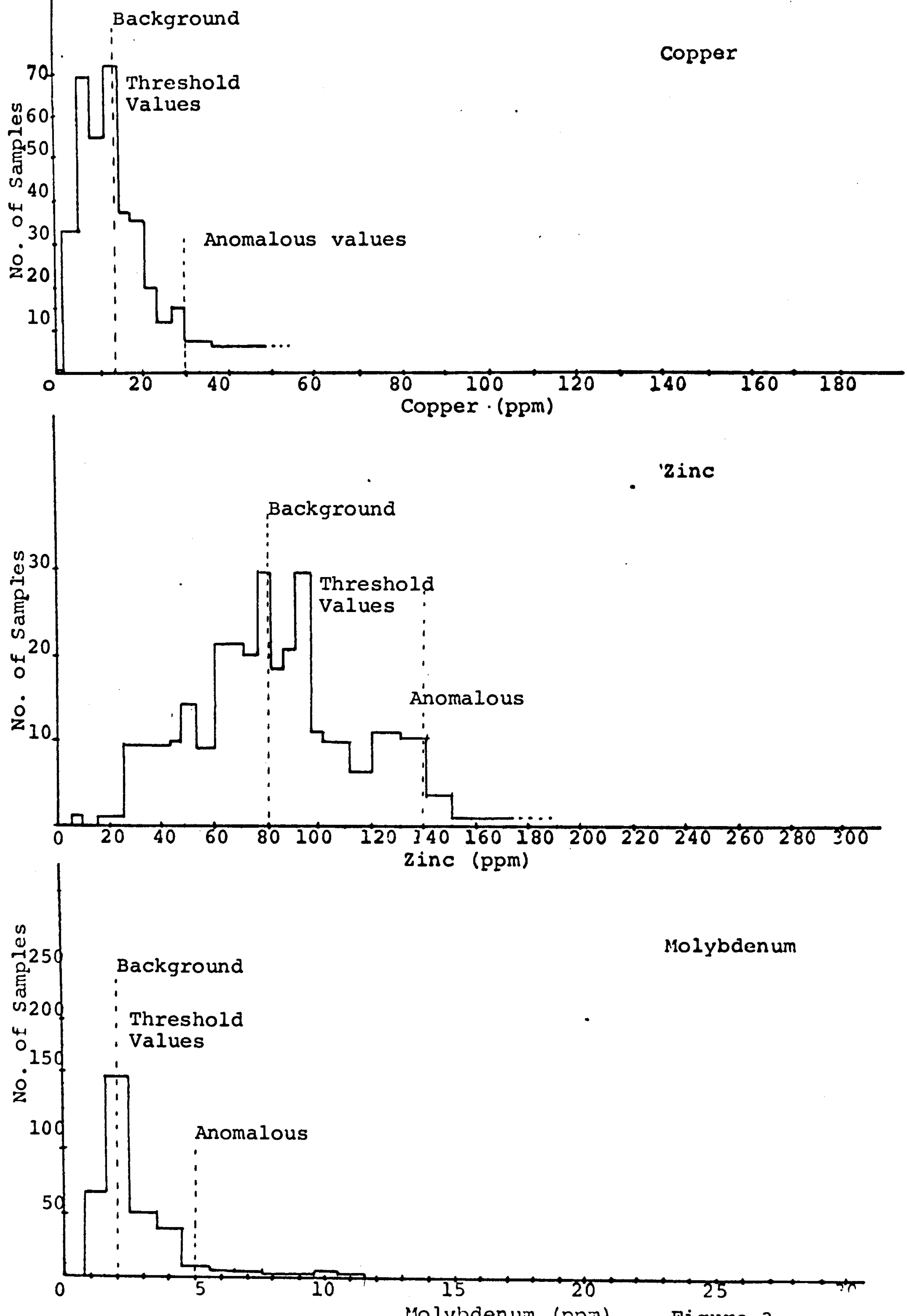


Figure 3

It is evident from the histograms that well defined bimodal distributions are present for Cu and Zn.

Results

Copper

Copper values higher than 30 ppm form a north-south elongated anomaly in the northwest corner of the property. Samples containing more than 100 ppm copper occur on the west side of lines 56S and 48S. The values are 310, 210, 158, 103 and 100 ppm. The area enclosed by the anomalous samples is open to the south. Because of the steep slopes here no soil samples were taken, however there is no evidence of the anomaly on the lines south of this gap.

Values greater than 30 ppm form two geochemical lineaments that trend north. This trend parallels the strike of some of the dykes. From this it may be inferred that the cause of the anomalous values may be due to the dykes that intrude the granodiorite (Figure 4). Since the altered mafic dykes contain high values of copper the cause of the copper values is probably the basaltic dykes. The north end of the 100 ppm contour is in an area underlain by a swarm of mafic dykes.

Zinc

High values of zinc occur along the flank of the west ridge and east of base line 0 between lines 112S and 120S. Values greater than 100 ppm occur west of base line 0 between lines 48S and 96S and east of the base line between lines 112S and 120S. At the latter location the anomaly is open to the south.

The anomalous zinc zones trend north and the west one overlaps, in part, the copper anomaly. Most of the area occupied by this part of the zinc anomaly is underlain by granodiorite and swarms of felsic dykes (rhyolite and aplite) and mafic dykes. The south end of the anomaly extends southward across the granite-granodiorite contact.

The zinc anomaly at the south end of the property east of the base line also appears to be underlain by granodiorite cut by mafic and felsic dykes. The zinc is probably derived from sphalerite in pyritic and epidote-rich phases of the granodiorite, and dykes.

Molybdenum

High values in molybdenum occur predominantly west of the base line between L24S and 96S. A second anomalous lobe runs from L88S, 1W to the south boundary. East of the base line several isolated highs occur.

The 6 ppm contour outlines a north striking geochemical lineament that parallels the strike of the west ridge and dykes. The five highest values are 48, 36, 30, 25 and 23 ppm. Minor amounts of molybdenite have been found in both the acid dykes and in parts of the granodiorite. Also one sample (No. 1571) of granite is high in molybdenum (L112S,25W).

The 6 ppm Mo contour is coincident with the 30 ppm Cu contour and the 140 ppm Zn contour. This suggests a common source for all elements. Cu-Zn-Mo bearing fractures, quartz veins and dykes in the granite and granodiorite are the probable cause of this anomaly.

The south Mo anomaly continues off the claim group and its cause is similar probably to the above.

Copper, Zinc and Molybdenum Soil Profiles Relating to Geological Cross-Section

The cross-section drawn along line 56 illustrates the topography and a relationship between soil values and bed rock. The geological cross-section shows the granite underlying the granodiorite which is suggested in the section dealing with the G.S.C. aeromagnetic survey. The rhyolite dykes may be either the same age as the granite or post-granite intrusion. The peaks on the cross-section are probably due to mineralization in the rhyolite (aplite) dykes. (Figure 4)

Discussion

Anomaly 1

The area enclosed by Anomaly 1 extends southerly mainly along the slope of the west ridge from lines 28S to 120S and continues south off the property. It covers an area of about seven claims. The anomaly is disrupted between lines 104S and 112S by glacial till in the valley. The geochemical values in the soil are probably similar to those values in the bedrock and since the values are not of sufficient magnitude, the anomaly cannot be considered to be significant.

The zone is related to subeconomic Cu, Cu-Zn or

Cu-Zn-Mo mineralization in altered mafic dykes, pyritized and epidotized granodiorite, pyritiferous felsic dykes and granite. Obviously the granodiorite just north of the granite-granodiorite contact has been sufficiently reactive to create a more intense zone of metallic mineralization. However field evidence does not suggest the presence of an economically significant ore body at surface.

RECOMMENDATIONS

It is recommended that the western portion of the claims be retained until an evaluation can be made of the regional setting.

Submitted by:

J.T. Neelands, B.Sc.

REGISTERED PROFESSIONAL ENGINEER
C. F. GLEESON
PROVINCE OF ONTARIO

C.F. Gleeson, Ph.D., P.Eng.

Toronto, Ontario
October 4, 1972

APPENDIX I

Claim Post Information

Ref.No. on Map	Post No.	Claim No.	Tag No.	Staker	Date	Location
A	1	1	Y62525		Sept.16/71	100'N of L120 at 19+00W
	1	2	Y62526		"	"
B	1	3	Y62527	W.Atkinson	"	100'N of L104 at 21+00W
	1	4	Y62528	"	"	"
	2	1	Y62525	"	"	"
	2	2	Y62526	"	"	"
C	1	5	Y62529	"	"	100'S of L88 at 23+00W
	1	6	Y62530	"	"	"
	2	3	Y62527	"	"	"
	2	4	Y62528	"	"	"
D	1	7	Y62531	"	"	100'S of L72 at 25+50W
	1	8	Y62532	"	"	"
	2	5	Y62529	"	"	"
	2	6	Y62530	"	"	"
E	1	9	Y62533	"	"	100'S ofL56 at 27+00W
	1	10	Y62534	"	"	"
	2	7	Y62531	"	"	"
	2	8	Y62532	"	"	"
F	1	11	Y62535	N.Glass	"	400'N of L28 at 28+00W
	1	12	Y62536	"	"	"
	2	9	Y62533	W.Atkinson		"
	2	10	Y62534	"	"	"
G	1	13	Y62537	N.Glass	"	400'N of L30 at 30+00W
	1	14	Y62538	"	"	"
	2	11	Y62535	"	"	"
	2	12	Y62536	"	"	"
H	1	15	Y62539	"	"	100'N of L16 at 31+00N
	1	16	Y62540	"	"	"
	2	13	Y62537	"	"	"
	2	14	Y62538	"	"	"
I	2	15	Y62539	"	"	400'N of L8 at 32+00N
	2	16	Y62540	"	"	"
J	1	17	Y62541	J.Etzel	Sept.17/71	100'S of L112 at 7+00E
K	1	18	Y62542	"	"	500'N of L104 at 6+00E
	2	17	Y62541	"	"	"
L	2	18	Y62542	"	"	400'N of L88 at 5+00E
	2	18	Y62542	"	"	

M	1	20	Y62544	J.Etzel	Sept.17/71	100'N of L72 at
	2	19	Y62543	"	"	3+50E
N	1	21	Y62545	"	"	100'S of L56 at
	2	20	Y62544	"	"	2+00E
O	1	22	Y62546	"	"	BL0,42S
	2	21	Y62545	"	"	"
P	1	23	Y62547	"	"	200'W of B10 at
	2	22	Y62546	"	"	36S
Q	1	24	Y62548	"	"	100'N of L16 at
	2	23	Y62547	"	"	400'W
R	2	24	Y62548	"	"	L0,6+00W
S	1	25	Y62549	F.E.Harman	"	100'S of L112 at
	1	26	Y62550	"	"	24+00E
T	1	27	Y62551	"	"	200'S of L96 at
	1	28	Y62552	"	"	30+00E
	2	25	Y62549	"	"	"
	2	26	Y62550	"	"	"
U	1	29	Y62553	"	"	200'N of L-8 at
	1	30	Y62554	"	"	21E
	2	27	Y62551	"	"	"
	2	28	Y62552	"	"	"
V	1	31	Y62555	"	"	L72,19+50E
	1	32	Y62556	"	"	"
	2	29	Y62553	"	"	"
	2	30	Y62554	"	"	"
W	1	33	Y62557	J.Burnett	"	50'N of L77
	1	34	Y62558	"	"	"
	2	31	Y62555	F.E.Harman	"	"
	2	32	Y62556	"	"	"
X	1	35	Y62559	J.Burnett	"	100'S of L40 at
	1	36	Y62560	"	"	15+50E
	2	33	Y62557	"	"	"
	2	34	Y62558	"	"	"
Y	1	37	Y62561	"	"	400'N of L32 at
	1	38	Y62562	"	"	15+00E
	2	35	Y62559	"	"	"
	2	36	Y62560	"	"	"
Z	1	39	Y62563	"	"	400'N of L16 at
	1	40	Y62564	"	"	13+00E
	2	37	Y62561	"	"	"
	2	38	Y62562	"	"	"
AA	2	39	Y62563	"	"	100'N of L0 at
	2	40	Y62564	"	"	12+50E
AB	1	41	Y62565	A.Harman	"	100'N of L112 at
	1	42	Y62566	"	"	51+50E
AC	1	43	Y62567	"	"	500'N of L96 at
	1	44	Y62568	"	"	50+00E
	2	41	Y62565	"	"	"
	2	42	Y62566	"	"	"

AD	1	45	Y62569	A.Harman	Sept.17/71	50'S of L80 at
	1	46	Y62570	"	"	47+50E
	2	43	Y62567	"	"	"
	2	44	Y62568	"	"	"
AE	1	47	Y62571	"	"	100'S of L64
	1	48	Y62572	"	"	at 46E
	2	45	Y62569	"	"	"
	2	46	Y62570	"	"	"
AF	1	49	Y62573	S.Williams	"	Approx.L48 at
	1	50	Y62574	"	"	45+00E
	2	47	Y62571	A.Harman	"	"
	2	48	Y62572	"	"	"
AG	1	51	Y62575	S.Williams	"	approx.200'S of
	1	52	Y62576	"	"	L32 at 42+00E
	2	49	Y62573	"	"	"
	2	50	Y62574	"	"	"
AH	1	53	Y62577	"	"	approx.400'N of
	1	54	Y62578	"	"	L24 at 39+00E
	2	51	Y62575	"	"	"
	2	52	Y62576	"	"	"
AI	1	55	Y62577	"	"	L8,38+50E
	1	56	Y62578	"	"	"
	2	53	Y62575	"	"	"
	2	54	Y62576	"	"	"
AJ	2	55	Y62577	"	"	400S of L38
	2	56	Y62578	"	"	at 0

APPENDIX II

Line Cutting Information

1) Number of man days requried to cut lines was	60
2) Footage cut as cross lines:	94,900 feet
3) Footage cut as base lines:	17,850 feet
4) Total footage cut (cross lines + base lines)	112,750 feet
5) Average progress per man per day	1,880 feet

6) 100% above timber line
20% tag alders
80% talus

APPENDIX III

Rock Geochemistry

Sample Number	Location	Rock Type and Description	Geochemical Results (ppm) Cu	Zn	Mo
1538	L24S,8W	granodiorite	6	46	2
1539	L32S,6W	hornblende granodiorite	10	20	1
1540	L32S,8W	granodiorite	5	22	1
1542	L40S,10W	"	10	40	2
1543	L40S,8W	"	10	29	1
1544	L40S,6W	"	9	46	1
1456	L56S,15W	rhyolite	12	26	2
1547	L64S,26W	granodiorite	7	19	2
1549	L64S,14W	"	20	47	3
1535	L0,14W	"	14	53	2
1536	L8S,16W	"	7	58	2
1537	L16S,11W	"	4	37	2
1541	L32S,12W	"	4	18	6
1545	L48S,9W	"	4	25	5
1548	L64S,22w	"	4	29	2
1550	L0,6E	"	4	24	1
1551	L0,24E	feld.porphyry	5	170	1
1552	L0,29E	granodiorite	10	72	1
1553	L8S,22E	"	7	29	1
1554	L8S,16E	py,rhyolite	6	19	2
1555	L8S,10E	granodiorite	16	40	1
1556	L8S,8E	"	4	45	1
1557	l8S,2E	"	3	46	1
1558	L24S,18E	"	12	30	1
1559	L24S,22E	"	3	36	2
1560	L16S,17E	"	10	36	2
1561	L56S,4E	"	10	47	2
1562	L56S,14E	"	3	22	2
1563	L56S,16E	"	3	36	2
1564	L56S,17E	"	6	26	1
1565	L48S,14E	granodiorite (py)	118	35	1
1603	L40S,15E	"	4	24	1
1604	L72S,4W	granite (Nisling)	4	69	2
1605	L64S,BL	aplite	3	36	2
1606	L64S,4W	granite (Nisling)	2	36	6
1607	L80S,8W	" "	2	53	2
1608	L80S,2W	" "	2	56	2
1609	L32S,6E	granodiorite	6	29	2
1610	L32S,10E	" (py)	5	54	2
1611	L32S,20E	granodiorite	7	104	2
1612	L32S,26E	" (py)	7	98	4
1613	L32S,28E	granodiorite	4	33	1
1614	L32S,36E	"	7	29	1
1615	L32S,38E	granodiorite with epidote	11	29	1
1637	L32S,42E	granodiorite	5	29	1
1638	L64S,38E	"	8	52	1
1639	L64S,47E	"	4	90	1
1640	L72S,50E	"	2	55	1
1641	L72S,42E	granite (Nisling)	2	78	1

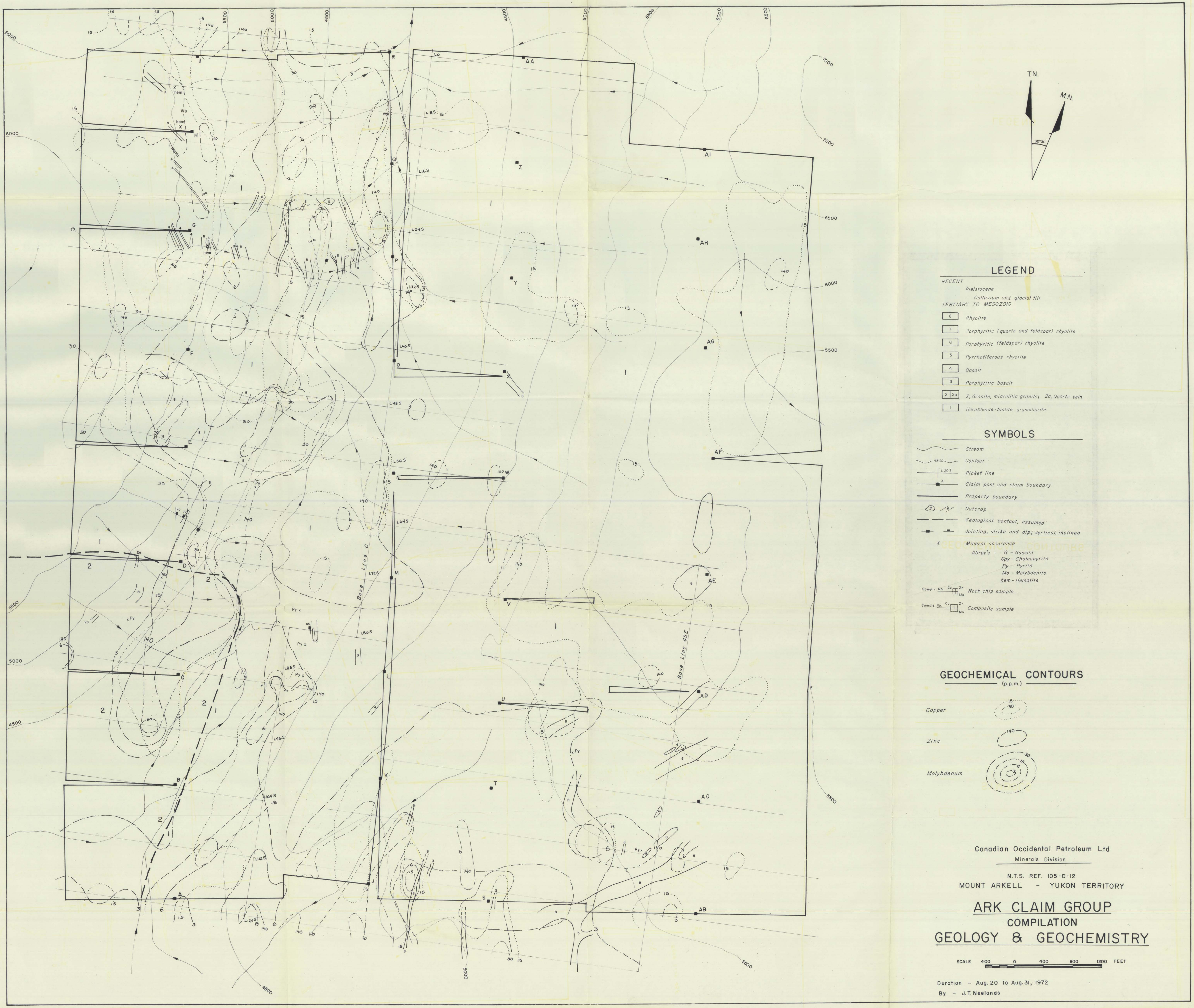
1642	L72S,32E	granite (Nisling)	2	58	1
1643	L74S,34E	granodiorite	3	76	1
1644	L64S,32E	"	4	38	1
1645	L64S,30E	"	4	38	1
1646	L64S,24E	"	6	30	1
1647	L64S,24E	"	2	40	1
1648	L64S,20E	granodiorite spidote	6	690	1
1649	L64S,18E	granodiorite	8	35	1
1650	L64S,16E	"	3	27	1
1651	L72S,8E	"	2	48	2
1652	L72S,12E	granodiorite epidote	2	50	2
1653	L72S,14E	granodiorite	2	36	1
1654	L72S,20E	"	6	10	2
1655	L72S,28E	"	3	71	2
1656	L80S,22E	rhyolite	2	18	1
1657	L80S,32E	granite (Nisling)	4	214	1
1658	L80S,42E	granodiorite	4	47	2
1659	L80S,52E	"	3	144	2
1660	L88S,52E	"	5	80	2
1661	L88S,42E	"	4	47	2
1662	L88S,32E	feld.porphyry	2	91	2
1663	L88S,22E	granodiorite	3	35	1
1664	L88S,12F	"	3	34	1
1665	L56S,18W	"	27	1490	48
1666	L56S,20W	"	15	180	9
1667	L56S,26W	"	39	223	9
1668	L56S,36W	"	17	92	4
1669	L56S,38W	"	30	69	3
1672	L48S,18W	"	13	76	2
1673	L48S,14W	"	12	70	2
1674	L48S,10W	"	8	53	2
1670	L48S,32W	granodiorite (py)	23	120	2
1671	L48S,20W	granite	12	123	3
1693	L32S,20W	granodiorite	15	47	1
1708	L0,16W	feld.porphyry	5	56	2
1709	L0,20W	foliated granodiorite	4	46	1
1710	L0,24W	basalt	2	87	1
1711	L0,25W	basalt (py)	5	59	1
1712	L0,26W	basalt	5	222	1
1713	L0,32W	granodiorite	2	66	1
1714	L0,34W	"	2	98	1
1715	L0,36W	porphyry	2	138	1
1716	L0,38W	granodiorite	2	20	1
1-1727	200'N of L32S 32W	foliated granite with epidote	18	35	1
2-1728	300'N of L32S 32W	basalt dyke	4	81	2
3-1729	250'N of L32S 31W	aplite	2	33	2
4-1730	300'N of L32S 30+50W	basalt	8	152	2
5-1731	300'N of L32S 29+50W	altered diabase (basalt)	2	315	2
13-1985	150'N of L32S 17+40W	basalt +epidote-chloritized granite	37	33	2

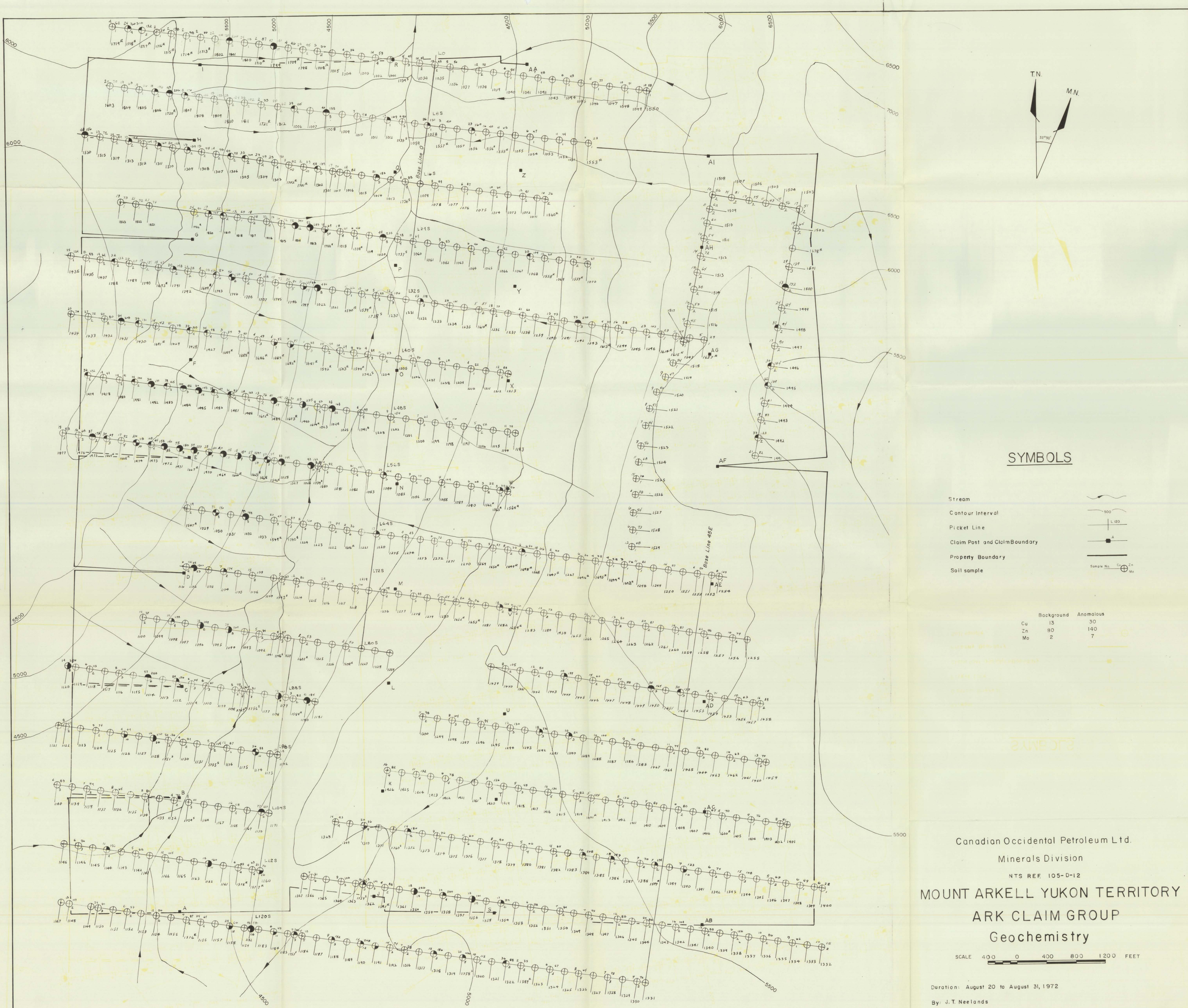
7-1986	260'N of L32S 28+00W	aplite with epidote	8	125	2
8-1987	260'N of L32S 2700W	epidote in foliated granite	24	45	2
9-1988	250'N of L32S	basalt (diabase)py	19	189	8
10-1989	220'N of L32S 23+00W	feld.porphyry	36	50	2
11-1990	120'N of L32S 22+00W	flow rhyolite	4	10	2
12-1991	200'N of L32S 18+50W	foliated granodiorite (py,mo)	4	58	14
14-1992	200'N of L32S 16+10W	rhyolite (aplite)	44	34	2
15-1993	100'N of L32S 14+00W	por.basalt (feld.porph)	8	40	2
16-1994	100'N of L32S 12+50W	rhyolite	1	27	1
17-1995	1+50N of L32S 11+70W	granodiorite	31	46	2
18-1996	200'N of L32S 9+00W	feld.porphyry	4	44	2
1997	200'N of L32S 8+00W	aplite (rhy)	8	63	2
21-1998	550'N of L32S 6+50W	aplite (rhy) py	100	360	8
F4-19-9	270'N of L32S 7+10W	feld.porphyry (py)	25	50	890
FA-2000	270'N of L32S 27+50W	spec hematite in	5	750	20
1b74	L120S,24W	granodiorite	16	198	4
1575	L112S,23W	rhyolite	6	26	2
1579	L112S,17W	rhyolite	24	67	4
1580	L112S,21W	basalt (py)	168	47	2
1581	L104S,19W	rhyolite (py)	7	56	5
1583	BL 9W,112S	rhyolite	4	33	2
1582	L112S,19W	basalt	5	94	2
1590	L112S,62E	granodiorite	2	57	1
1591	L112S,56E	basalt	3	162	2
1592	L112S,50E	granodiorite	4	28	2
1594	L112S,34E	quartz	2	14	1
1595	L112S,24E	granodiorite	2	55	2
1585	L120S,6E	rhyolite	4	32	5
1586	L120S,10E	"	2	94	2
1587	L120S,23E	feld.porphyry	2	39	4
1599	L104S,44E	basalt	7	294	2
1600	L96S,52E	granodiorite	4	70	1
1601	L96S,34E	basalt	5	124	1
1681	L40S,12W	granite basalt	6	88	3
1682	L40S,14W	rhyolite (aplite)	7	77	7
1683	L40S,15W	epidote	2	22	1
1684	L40S,15W	granodiorite (mag.)	9	52	2
1685	L40S,16W	granodiorite (py)	4	52	7
1686	L40S,18W	rhyolite (py & mg)	4	49	3
1687	L40S,19W	rhyolite (mag)	4	32	3
1688	L40S,20W	granodiorite	9	40	1
1690	L40S,27W	Basalt (mafic dyke)	7	111	2

1692	L32S,30W	basalt (mafic Dyke)	3	212	2
1616	L64,16E	granodiorite	2	48	2
1617	L72,8E	granite limonite < 2% py	2	32	2
1618	between L64 & 72,300' above cr.	foliated granodiorite	28	35	2
1619	Composite taken in stream bed near L56 W side	granodiorite	22	49	13
1620	composite taken between L72 & 64	granodiorite (Mo?)	5	700	3
1621	between 80 & 88, 26E	granodiorite (2% py) fractured	3	56	2
1622	between 88 & 96, 28E	" " "	16	70	10
1623	100'N of L104 at 43E	rhyolite <2% py, yellow green mineral	7	29	2
1624	L16,24E,	gossan granite sheared	20	42	1
1625	400' of L64 at 23W	rhyolite	3	20	1
1626	L64,25+00W	"	27	45	1
1627	200'N of L64 at 24W	"	6	44	1
1628	L56,31E	"	62	36	62
1629	200'N of L56 at 29+50W	granodiorite*	12	36	8
1630	stream N of L88S	Composite of sulphides in gran and aplite	670	710	7
1632	stream N of L72	composite of sulphides in aplite and granite	22	115	66
1631	stream N of L80S	" " " "	490	46000	860
1633	L24,21W	rhyolite	22	122	2
1634	100'N of L24 at 17W	"	14	54	2
1635	L24,12W	gossan granodiorite	4	60	13
1636	200'N of L24 at 17W	composite of rhyolite	4	73	2
1901	400'N of L120 at 36E	pyrrhotiferous rhyolite	5	88	2
1902	100'N of L112 at 24E	porphyritic basalt composite	2	26	2
1903	L24,17W	basalt composite	30	254	5
1904	100'N of L16 at 24W	specular hematite in basalt	9	1000	2
1905	400'S of L48 at 29W	feld.porphyry	100	65	3
1906	300'S of L24 at 4W	basalt (?) float ½% Cp,magnetite	3200	145	2

*granodiorite - type specimen

1675	E boundary,0	granodiorite	3	38	1
1676	" " 10N	granodiorite porphyry	16	80	1
1677	" " 20N	granodiorite	5	57	1
1679	" " 26N	feld.porphyry	2	36	1
1680	crossline,10W	granodiorite	3	46	1
1696	E.Ridge line, 10S	"	3	29	1
1697	E ridge line, 20S	"	3	30	1
1698	E ridge line, 28S	"	9	31	1
1699	E ridge line, 40S	"	3	30	1
1700	L16S,14W	"	7	30	1
1701	L16S,36W	"	2	39	ND
1702	L16S,18W	"	9	52	ND
1703	L16S,36W	"	2	30	ND
1100	L80S,30W	"	14	37	2
1101	L72S,25W	"	6	121	4
1102	L72S,24W	granodiorite porphyry	49	1500	23
1566	L80S,20W	granodiorite (py)	105	181	5
1567	L72S,15W	epidote	12	48	1
1568	L88S,28W	basalt	65	51	1
1569	L96S,38W	granodiorite	25	54	1
1570	L104W,26W	quartz diorite	350	20	1
1576	L120S,18W	granodiorite	24	67	4
1577	L112S,10W	"	4	63	4
1578	L112S,12W	porphyritic basalt	6	89	4
1584	L88S,8W	granodiorite porphyry	3	82	2
1571	L112S,25W	granite (nisling)	14	11	131
1572	L112S,27W	rhyolite (py)	9	37	8
1573	L112S,30W	granodiorite (py)	124	14000	11


T.N.
M.N.
32°30'
Base Line 0
Base Line 45E
LEGEND
RECENT
Pleistocene
Colluvium and glacial till
TERTIARY TO MESOZOIC
8 Rhyolite
7 Porphyritic (quartz and feldspar) rhyolite
6 Porphyritic (feldspar) rhyolite
5 Pyrrhotiferous rhyolite
4 Basalt
3 Porphyritic basalt
2 2a 2, Granite, miarolitic granite; 2a, Quartz vein
1 Hornblende-biotite granodiorite
SYMBOLS
Stream
4500 Contour
L 20 S Picket line
A Claim post and claim boundary
Property boundary
Outcrop
Geological contact, assumed
Jointing, strike and dip; vertical, inclined
x Mineral occurence
Abrev's - G - Gossan
Cpy - Chalcopyrite
Py - Pyrite
Mo - Molybdenite
hem - Hematite
Sample No. Cu Zn Mo Rock chip sample
Sample No. Cu Zn Mo Composite sample
GEOCHEMICAL CONTOURS
(p.p.m.)
Copper 15 30
Zinc 140
Molybdenum 30 15 6 3
Canadian Occidental Petroleum Ltd
Minerals Division
N.T.S. REF. 105-D-12
MOUNT ARKELL - YUKON TERRITORY
ARK CLAIM GROUP
COMPILATION
GEOLOGY & GEOCHEMISTRY
SCALE 400 0 400 800 1200 FEET
Duration - Aug. 20 to Aug. 31, 1972
By - J.T. Neelands



T.N.
M.N.
32°30'
Base Line 0
Base Line 45E
SYMBOLS
Stream
Contour Interval
500
Picket Line
L 120
Claim Post and ClaimBoundary
A
Property Boundary
Soil sample
Sample No.
Cu
Zn
Mo
Background
Anomalous
Cu 13 30
Zn 80 140
Mo 2 7
Canadian Occidental Petroleum Ltd.
Minerals Division
NTS REF 105-D-12
MOUNT ARKELL YUKON TERRITORY
ARK CLAIM GROUP
Geochemistry
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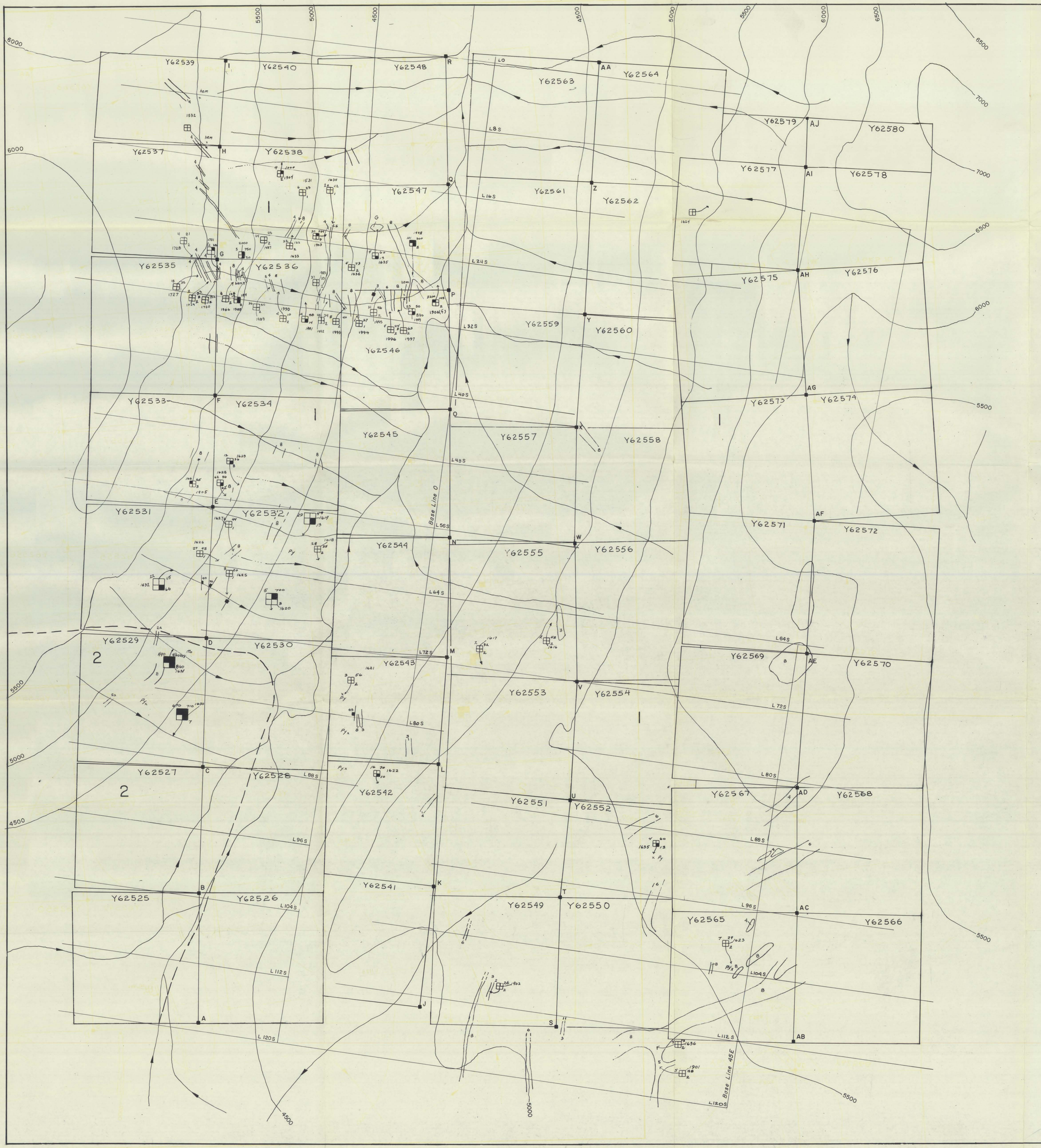

LEGEND

RECENT

Pleistocene

Colluvium and glacial till

TERTIARY TO MESOZOIC

- 8 — *Rhyolite*
- 7 — *Porphyritic (quartz and feldspar) rhyolite*
- 6 — *Porphyritic (feldspar) rhyolite*
- 5 — *Pyrrhotiferous rhyolite*
- 4 — *Basalt*
- 3 — *Porphyritic basalt*
- 2, 2a — *2, Granite, miarolitic granite; 2a, Quartz vein*
- 1 — *Hornblende-biotite granodiorite*

SYMBOLS

Stream

4500 — *Contour*

L 20 S — *Picket line*

A — *Claim post and claim boundary*

Property boundary

3, 8 — *Outcrop*

Geological contact, assumed

Jointing, strike and dip; vertical, inclined

X — *Mineral occurence*

Abrev's - G - Gossan

Cpy - Chalcopyrite

Py - Pyrite

Mo - Molybdenite

hem - Hematite

Sample No. Cu Zn Mo — *Rock chip sample*

Sample No. Cu Zn Mo — *Composite sample*

Canadian Occidental Petroleum Ltd

Minerals Division

N.T.S. REF. 105-D-12

MOUNT ARKELL - YUKON TERRITORY

ARK CLAIM GROUP

GEOLOGY

SCALE 400 0 400 800 1200 FEET

Duration - Aug. 20 to Aug. 31, 1972

By - J.T. Neelands