SNAKEHEAD PROPERTY

WERNECKE MOUNTAINS

YUKON TY.

Geology and Geochemistry

NTS: 106-C-13, 106-D-16

Oct 1976

A.G. Troup
H.W. Marsh

Claims

Claim Name	Record Numbers	Expiry Date
CORD No. 1-72	Y97639 to Y97710	January 5, 1978

Location

Wernecke Mountains, Yukon Ty.

N.T.S

106-C-13, 106-D-16

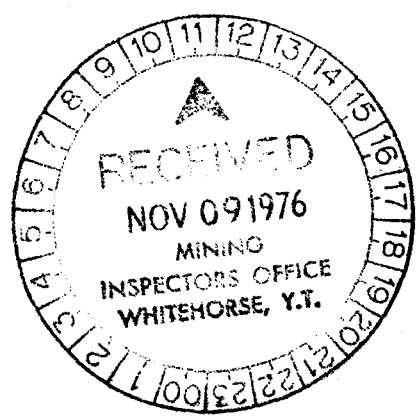
U.T.M.

7193000 mN, 547000 mE, Zone 8

Mayo Mining District

Dates

August 11 to August 16, 1976



This report has been examined by the Geological Evaluation Unit and is recommended to the Central Mining Recorder to be considered as representation work in the amount of

$ 9000.00

Resident Geologist or
~~Resident Mining Engineer~~

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

B.R. BAXTER
Supervising Mining Recorder

Commissioner of Yukon Territory

SNAKEHEAD PROPERTY
WERNECKE MOUNTAINS
YUKON TY.
Geology and Geochemistry

S U M M A R Y

The Snakehead property is a lead-zinc prospect located in the Wernecke Mountains in the Yukon Territory. During the 1976 field season detailed stream sediment sampling, reconnaissance soil sampling, reconnaissance mapping, prospecting and rock chip sampling was carried out over the property.

Extremely anomalous lead and zinc concentrations were found in both stream sediment and soils on the property. Due to extensive skree cover the source of these metals was not determined.

It is recommended that detailed soil sampling and detailed stratigraphic mapping be carried out in order to define targets for diamond drilling.

SNAKEHEAD PROPERTY

WERNECKE MOUNTAINS

YUKON TY.

Geology and Geochemistry

TABLE OF CONTENTS

APPENDIX

TABLES

PHOTOGRAPHS

ILLUSTRATIONS

Drawing No.	Title	Scale
	Location Map	1:31,250
G.C.-8439	Claim Map	1:10,000
G.C.-8440	Geology	1:10,000
G.C.-8441	Silt Sample Location Map	1:10,000
G.C.-8442	Pb and Zn Results in PPM - Silt	1:10,000
G.C.-8443	Cu Results in PPM - Silt	1:10,000
G.C.-8444	Chip Sample Locations	1:10,000
G.C.-8445	Chip Sample Results - Pb, Zn	1:10,000
G.C.-8446	Chip Sample Results - Ag, Cu	1:10,000
G.C.-7391	Soil Sample Location Map	1:5,000
G.C.-7392	Soil Sample Results - Zn	1:5,000
G.C.-7393	Soil Sample Results - Pb	1:5,000
G.C.-7394	Soil Sample Results - Cu, Ag	1:5,000

SNAKEHEAD PROPERTY
WERNECKE MOUNTAINS
YUKON TY.
Geology and Geochemistry

1. INTRODUCTION

From August 11 to August 16, 1976 field work entailing detailed stream sediment sampling, reconnaissance soil sampling, reconnaissance mapping, prospecting and rock chip sampling, was carried out over the Snakehead Property located in the Snakehead Creek area of the Yukon Territory. The purpose of this work was to assess the potential of the property for lead and zinc mineralization.

Field work was carried out by a six man crew working from a camp on Fairchild Lake approximately 19 km (12 miles) northeast of the property. The work was supervised by A.G. Troup a permanent staff member of Rio Tinto Canadian Exploration Ltd.

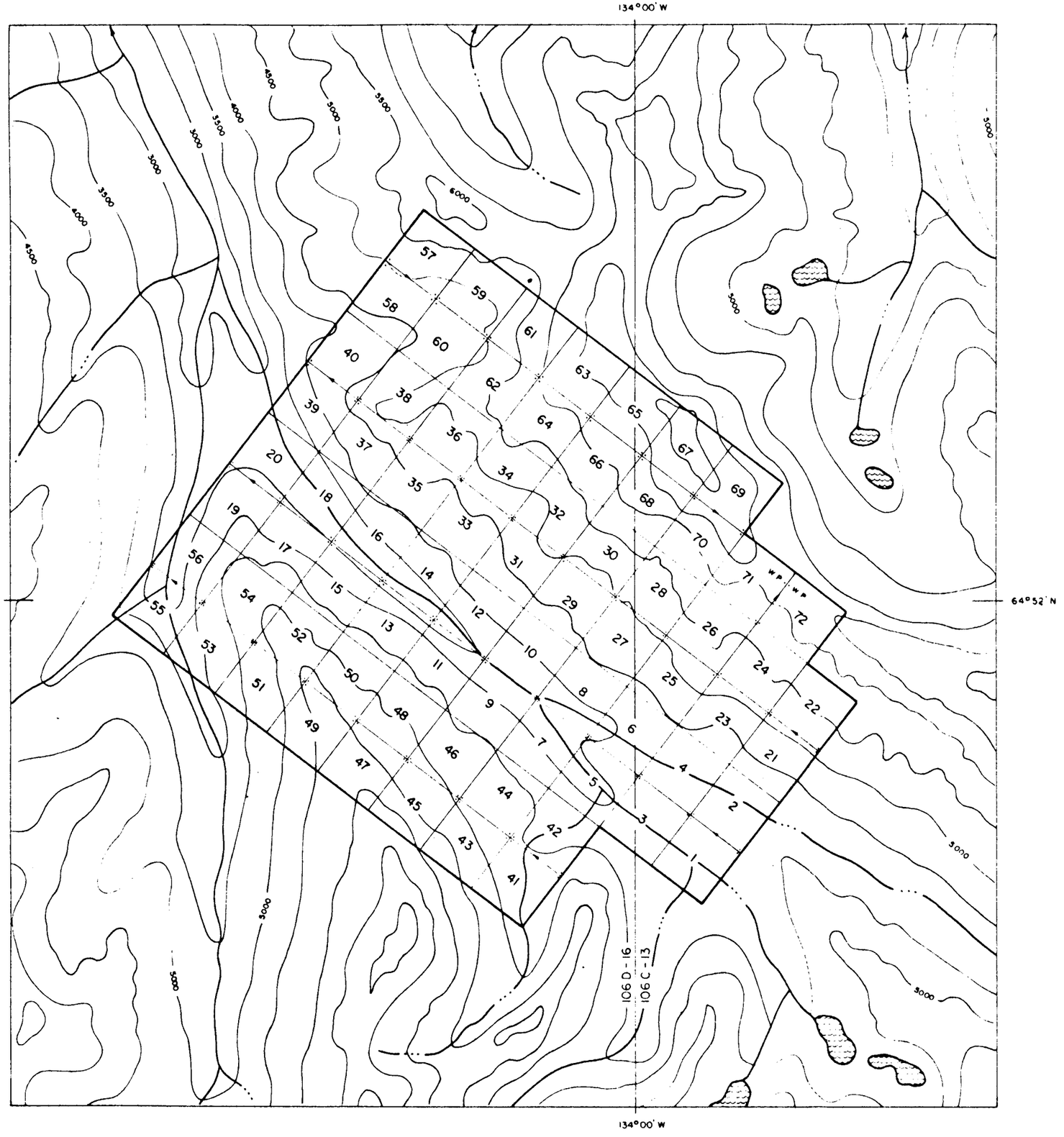
Results of the programme are discussed in the following report.

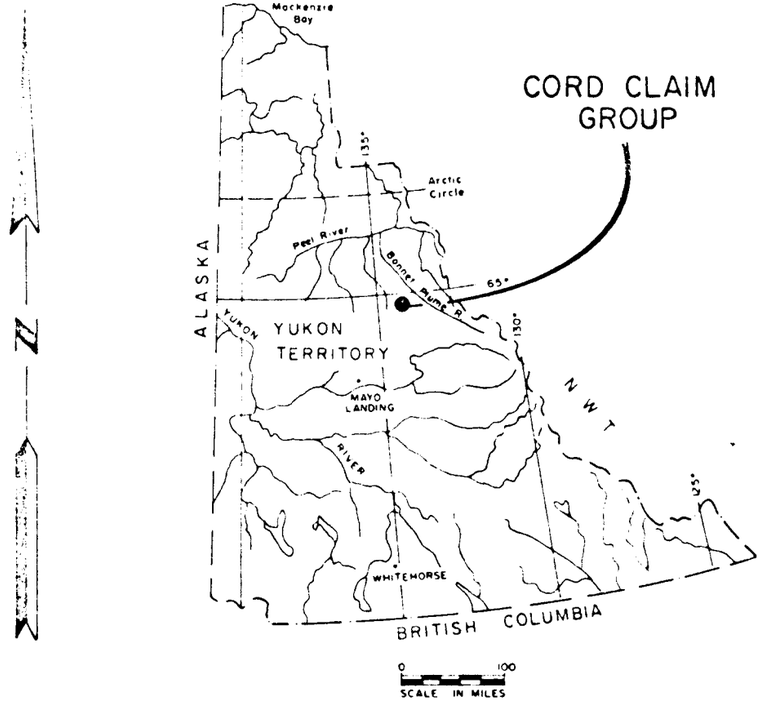
2. LOCATION, ACCESS, and TOPOGRAPHY

The Snakehead property is located near the north east margin of the Wernecke Mountains, approximately 165 km (105 miles) northeast of the community of Mayo. The claims are situated 5 km (3 miles) east of the headwaters of Snakehead Creek and 18 km (11 miles) southwest of Fairchild Lake.

The property is accessible only by helicopter. During the present programme men, equipment, and supplies were moved to Fairchild Lake by float equipped aircraft. A Bell 206 B helicopter was used for local work on the property. Both helicopter and fixed wing type aircraft are available for charter in Mayo.

The claims are wholly above the treeline and encompass rugged mountainous terrain. Slopes are on the order of 40° but locally may be almost vertical. Relief is approximately 1050 m (3500 feet). Rainfall is on the order of 350 mm (14 inches) a year.





NOTES

TAG NUMBERS Y 97639 – Y 97710

TOPOGRAPHIC BASE AFTER DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT MAPS 106C-13 & 106D-16.

MAGNETIC DECLINATION (1975) 34°30' E.

SYMBOLS

- • CLAIM POST LOCATION
- WP WITNESS POST
- —•— DIRECTION OF LOCATION LINE

RIO TINTO CANADIAN EXPLORATION LIMITED

LOCATION PLAN
CORD 1–72 CLAIMS

SNAKEHEAD CREEK AREA, NTS 106C-13 & 106D-16
MAYO MINING DISTRICT, YUKON TERRITORY

CONTOUR INTERVAL 500'

1500 0 1500 3000 4500 6000 7500 9000 10 500

SCALE IN FEET

DEC. 1975

Photo 1 View of the Snakehead Property looking East. (Note snow patch on right side of photo).

Photo 2 View of the Snakehead Property looking North west. Note extensive skree cover. (Snow patch near left side of photo is that seen in Photo 1).

3. PROPERTY AND CLAIM STATUS

The Snakehead property currently consists of 72 claims. The claims, their record numbers, and expiry dates are given in Table I below.

TABLE I
Claim Status

Claim Name	Record Number	Expiry Date
CORD 1 to 72	Y97639 to Y97710	January 5, 1978

4. HISTORY

Attention was drawn to the Snakehead area in 1974. Two stream sediment samples taken from the vicinity of the current Cord claims returned lead values in excess of 500 ppm and zinc values in excess of 1000 ppm.

In 1975 it was learned that other companies were working in the area. The Cord claims were therefore staked to protect the anomaly. Due to other commitments no follow up work was attempted until the 1976 season.

5. REGIONAL GEOLOGY

The area of the property was mapped at a scale of 1:250,000 by the Geological Survey of Canada in 1961 (G.S.C. Memoir 364; L. H. Green, 1972). This work shows the property to straddle the contact between Unit 1 shales and Unit 2 dolomites, both of Helikian age.

Mapping by Rio Tinto in 1976 shows the G.S.C. work to be more or less accurate. The property does overlie Unit 1 and Unit 2 rocks. However, the contact is locally displaced by as much as 2½ km (1½ miles) from that shown on the government map.

6. WORK BY RIO TINTO IN 1976

Field work by Rio Tinto commenced on August 11, 1976 and involved the following work:

(1) detailed stream sediment sampling was carried out over the entire property. These samples were immediately analysed for Total Heavy Metal in a field laboratory set up at Fairchild Lake;

(2) reconnaissance soil sampling was carried out over areas highlighted by field analyses of the stream sediment samples;

(3) reconnaissance mapping was carried out both over and in the vicinity of the property;

(4) a number of rock chip samples were taken from several pyrite bearing beds discovered during the programme.

7. GEOLOGY

Reconnaissance mapping was carried out in conjunction with detailed stream sediment sampling of the property. The purpose of this work was to determine the regional geological setting of both the property and any anomalous areas detected by the sampling programme. Results of this work are shown on accompanying drawing no. G-8440 at a scale of 1:10,000.

The property was found to straddle the contact between the Helikian, Unit 1 shales and the Helikian, Unit 2 dolomites. The units are in fault contact in the vicinity of the property. This is possibly a thrust fault but additional work is needed to confirm this belief. Locally the contact is offset by displacement along minor north west trending faults.

Both Units 1 and 2 have undergone at least two periods of folding. Minor folds with fold axes striking both northeast and northwest are seen at a number of locations on the property.

The two major rock units found on the property are described briefly below.

Unit 1

In the vicinity of the property this unit consists primarily of a thick sequence of black shale and dark grey siltstone. Along the northwest corner of the property a considerable thickness of dark green andesite occurs interbedded with the shales and siltstones.

All of these rocks have been weakly metamorphosed. Locally the shales and siltstones have been altered to pale green to grey phyllite. The rocks have been intensely deformed by both folding and faulting making the tracing of individual beds extremely difficult.

Unit 2

Unit 2 consists of a thick sequence of orange weathering, stromatolitic dolomites. These rocks are interbedded with thin recessive dark brown argillaceous siltstones and black shales. The dolomitic beds are occasionally massive but more often are thinly bedded. The thin bedded units are somewhat recessive and are generally skree covered.

This unit is intensely deformed by both folding and faulting similar to that seen in Unit 1.

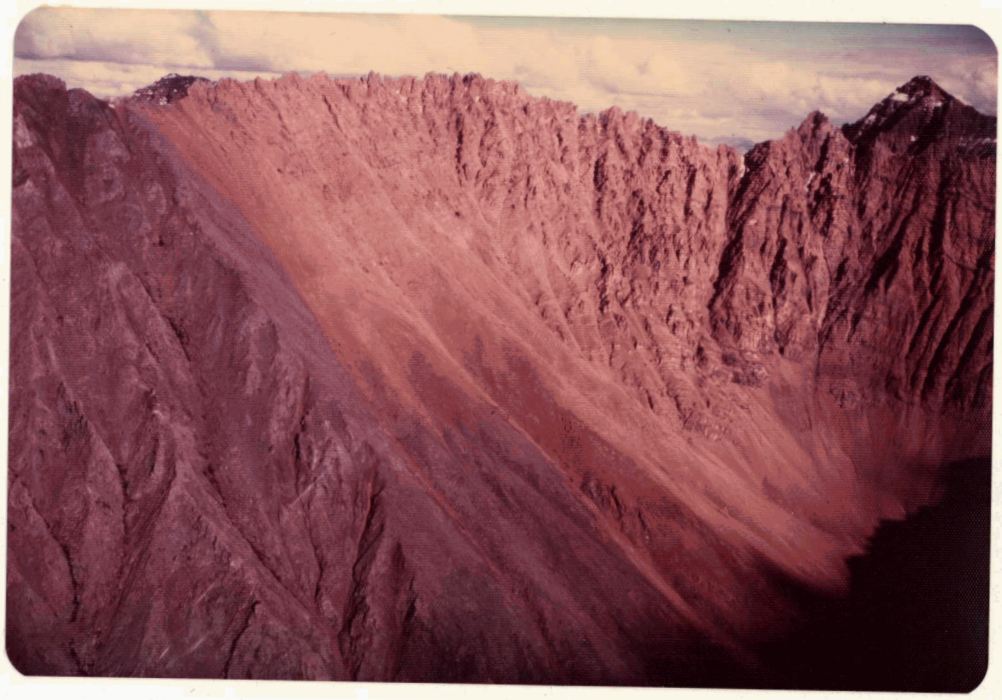


Photo 3 The contact between Unit 1 black shales and Unit 2 orange weathering dolomites. View looking east from the north edge of the property.

Photo 4 Folding and faulting seen on the property.

Photo 5 Stromatolites in Unit 2 dolomites. (Note hand lenses for scale).

Photo 6 Folding in black shale horizons on the property. White patches are melanterite developed over pyrite rich beds.

(Area covered by photograph is approximately 17 m (50 feet) by 10 m (30 feet).)

8. GEOCHEMISTRY

Sampling, Sample Preparation and Analytical Procedure

Detailed stream sediment sampling was carried out to assess the distribution of metal on the property. This work was completed over a three day period and involved the taking of 79 samples. Samples were taken at intervals of 150 m (500 feet) in elevation using altimetres for control. During the programme several pH determinations were made on stream waters using B.D.H. (British Drug House) indicator solution.

Each evening samples were analysed for total heavy metal (THM) content in a field laboratory set up on Fairchild Lake. Prospecting was carried out over those areas highlighted by results of the field analyses. In all cases the anomalous areas were found to be skree covered and no explanation was found for the anomalies.

While prospecting portable THM kits were used to define the source of the anomalies. Several short soil sample lines were then run over the areas defined by the THM indicator solution.

Due to a total lack of soil development 'C' horizon samples consisting entirely of talus fines were taken. Samples were taken at 10 m (30 foot) intervals with the aid of a small entrenching tool.

All samples were placed in Kraft paper envelopes and shipped to the Rio Tinto Laboratory in North Vancouver. Here the samples were oven dried at 60^{o} C. The dried sample was sieved through 80 mesh bolting cloth and the over size material discarded. Analyses was carried out on the minus 80 mesh fraction after digestion with hot concentrated nitric and perchloric acid. Results in ppm for the elements Ag, Co, Cu, Pb, Zn, and Ni were obtained by the company analyst, Mr. E.F. Paski, Jr.

Presentation and Discussion of Results

Stream sediment sample results are given on the accompanying drawings GC-8442 to GC-8443 at a scale of 1:10,000. The pH of stream waters is shown on the sample location map, drawing GC-8441.

Reconnaissance soil sample results are shown on drawings GC-7391 to GC-7394 at a scale of 1:5,000.

Although all samples were analyzed for Ag, Co, Cu, Pb, Zn and Ni only the elements Pb and Zn will be discussed. No significant anomalies are thought to exist for the elements Ag, Co, and Ni. Several very high Cu values are found near the west end of the property. These are thought to be caused by narrow copper bearing tertiary dykes along which several of the streams were observed to flow.

Statistical computations for the elements Pb and Zn were carried out on a number of silt samples collected previously from the area. Samples from the two major units, Unit I and Unit II, were treated separately. These results including mean, standard deviation, threshold and anomalous levels are given in Tables II and III respectively. Due to an insufficient number of samples similar statistical computations could not be carried out on soil samples.

Over half of the stream sediment samples are anomalous for Pb and/or Zn. Anomalous values are found over most of the property but there is a clustering of very high values near the east end of the property. On many of the streams anomalous values occur only below a certain elevation, suggesting a stratigraphic control to the metal source.

Almost all of the soil samples are anomalous for Pb and/or Zn. This is not surprising since the sampling was guided by THM test kits. Zinc values range to 36,500 ppm with 11 samples containing greater than 5,000 ppm. Lead values range to 4,200 ppm with 15 samples containing greater than 1,000 ppm

During the sampling no mineralization was noted in the vicinity of these highly anomalous soils. However, in all cases a considerable quantity of black shale was noted in skree covering these areas. There is thus a possibility that the anomalies are reflecting shale hosted Pb-Zn mineralization.

TABLE II

Significant metal values for stream sediment samples over Unit 1.

Metal	Mean $\bar{x}$	Standard Deviation S	Threshold $\bar{x} + 2S$	Anomalous $\bar{x} + 3S$
Pb	59 ppm	30.7 ppm	120 ppm	151 ppm
Zn	60 ppm	51.3 ppm	163 ppm	214 ppm

Population of 918 samples.

Data on the minus 80 mesh fraction.

Analysis on the AA after digestion with hot Aqua Regia.

TABLE III

Significant metal values for stream sediment samples over Unit 2.

Metal	Mean $\bar{x}$	Standard Deviation S	Threshold $\bar{x} + 2S$	Anomalous $\bar{x} + 3S$
Pb	44 ppm	23.7 ppm	91 ppm	115 ppm
Zn	73 ppm	46 ppm	165 ppm	211 ppm

Population of 593 samples.

Data on the minus 80 mesh fraction.

Analysis on the A.A. after digestion with hot Aqua Regia.

9. MINERALIZATION

No significant Pb or Zn mineralization was observed during the current programme. Locally several narrow quartz veins containing minor amounts of galena and sphalerite were seen. These ranged from hairline to 5 cm in width and were usually found in the vicinity of narrow pyrite rich shale and argillite beds. None were observed in the vicinity of the strong soil anomalies. They are therefore not believed to be the cause of the anomalies.

Several pyrite rich shale and argillite beds were found on the property. These were observed in both Unit 1 and Unit 2. Occasionally narrow sphalerite and galena bearing quartz veinlets were observed associated with these beds. These veinlets seldom extend beyond the pyrite beds and are thus possibly 'sweat outs'.

Immediately west of the property minor amounts of chalcopyrite were observed along narrow Tertiary dykes, of acid to intermediate composition. The mineralization occurs as fracture fillings both in the dykes and in black shales immediately adjacent to the dykes. The mineralization is not believed to be important but is possibly responsible for high copper values obtained in stream samples from this area.

Photo 7 Pyrite beds in Argillaceous horizons in Unit 2. White blotches are melanterite.

10. CHIP SAMPLE RESULTS

Seventeen rock chip samples were taken during the course of the programme. These samples were taken to (1) assess the metal content of suspected host rocks in the vicinity of stream and soil anomalies and;

(2) to test several pyrite rich beds discovered on and in the vicinity of the property.

Wherever possible chip samples were taken perpendicular to bedding. The samples were placed in numbered plastic bags and shipped to Bondar Clegg and Company for assay. The samples were analysed for the four elements Ag, Cu, Pb and Zn.

The assay results and a brief description of each sample are given in Table IV. The results are shown on accompanying drawing GC-8444 to GC-8446 at a scale of 1:10,000.

Only two samples contained significant zinc values. Both were from pyritic beds. They consisted of 7.5% Zn over a 15 cm thickness and 0.94% Zn over a 3.0 m thickness. Of the remaining 15 samples only seven carried greater than 0.1% Zn.

Only one sample carried significant lead values. This sample, a 2.0 m chip sample from a pyritic bed carried 0.18% Pb.

TABLE IV
ASSAY RESULTS

Sample No.	DESCRIPTION	ASSAYS Ag oz/ton	Cu%	Pb%	Zn%
7602340	Chip sample from 15 cm thick pyritic shale bed in Unit 2	0.03	0.01	L0.05	7.50
7602342	2.0 m chip sample from pyritic shale horizon in Unit 1	L0.02	L0.01	L0.05	0.13
7602352	4.0 m chip sample from chalcopyrite bearing black shale adjacent to Andesite dyke	0.05	0.11	L0.05	0.05
7602354	3.0 m chip sample from a pyritic shale horizon in Unit 1	0.02	0.01	0.18	0.26
7602355	2.0 m chip sample taken immediately below Sample 7602354	0.03	L0.01	0.08	0.05
7602586	5.0 m chip sample taken along skree slope over Pb-Zn soil anomaly	0.02	L0.01	L0.05	0.48
7618209	3.0 m chip sample taken across pyritic argillite bed in Unit 1.	0.02	L0.01	L0.05	L0.05
7618210	3.0 m chip sample across pyritic Argillite bed in Unit 1. This sample 1 mm is immediately below and continuous with 7618209	0.02	L0.01	L0.05	0.05
7618211	2.0 m chip sample across pyritic argillite bed in Unit 1	0.02	0.01	L0.05	0.94

TABLE IV (Cont'd)

Sample No.	DESCRIPTION	ASSAYS Ag oz/ton	Cu%	Pb%	Zn%
7618212	4.0 m chip sample across pyritic Argillite bed in Unit 1. This sample is immediately below and continuous with 7618211	L0.02	L0.01	L0.05	L0.05
7618213	1.0 m chip sample across pyritic argillite bed in Unit 1	0.02	0.01	L0.05	0.47
7618214	2.0 m chip sample across pyritic shale bed in Unit 1	0.02	0.01	L0.05	0.42
7618215	1.0 m chip sample across pyritic shale bed in Unit 1. Along strike from 7618214	0.02	0.02	L0.05	0.31
7618216	1.0 m chip sample across pyritic shale bed in Unit 1. Along strike from 7618215	0.02	L0.01	0.05	L0.05
7618217	Random chips of black shale from skree slope over Pb-Zn soil anomaly	0.02	L0.01	0.05	L0.05
7618230	3.0 m chip sample across pyritic black shale bed in Unit 1	0.04	0.01	L0.05	L0.05

('L' denotes less than)

In general, the chip sample results do not appear to explain the soil and stream sediment anomalies. Although several of the samples suggest a high regional background for zinc, none of the sample results explain the strong secondary Pb anomalies. However, the fact that the highest assays for both metals are from pyrite rich shale horizons is important. These results suggest that the property could have potential for stratiform, shale hosted Pb-Zn mineralization.

11. GENERAL DISCUSSIONS

Stream sediment sampling and reconnaissance soil sampling have indicated highly anomalous Pb and Zn concentrations to be present in the secondary media on this property. Due to extensive skree cover the source of the high metal values is not known. It possibly has a stratigraphic control. This possibility is somewhat supported by a single chip sample assay of 7.5% Zn from a 15 cm thick, pyrite rich, shale bed.

Reconnaissance mapping shows the property to straddle the contact between the Helikian, Units 1 and 2 as mapped by Green, 1972. This contact is complicated by both faulting and folding.

Stream and soil anomalies seem to be associated with both units. However, due to the complex nature of the contact this may not be the case. The high values occurring over Unit 2 could in fact be indicating Unit 1 rocks exposed through windows in the overlying unit. This possibility should be investigated.

12. CONCLUSIONS

The results of the present programme lead to the following conclusions:

(1) Extremely high concentrations of lead and zinc are present in both stream sediment and soils over the Snakehead property;

(2) Due to extensive skree cover and the extremely limited nature of the soil sample survey, the source of these metals remains unknown;

(3) There exists a strong association between the highest soil values and black shale horizons. There is thus a possibility that stratiform, shale hosted lead and zinc mineralization could be present on the property.

13. RECOMMENDATIONS

In view of the above conclusions the following work is recommended:

(1) A detailed soil sampling survey should be carried out in order to further define the metal rich areas. Samples should be taken at 20 m intervals along 500 m spaced lines. In anomalous areas the sample interval should be reduced to 10 m and the interline spacing reduced to 250 m.

(2) Detailed stratigraphic mapping should be carried out over the property. This work should attempt to determine (a) the structural complexities of the underlying geology and (b) the relationship between soil anomalies and geology.

(3) Anomalous areas defined by the above work should be tested by diamond drilling.

A. Troup

A.G. Troup
M.Sc.

AGT:rl

Vancouver Office
October 1976

H.W. Marsh
B.Sc., P. Eng.

STATEMENT OF QUALIFICATIONS

A. TROUP

ACADEMIC

1967	B.Sc. Geology	McMaster University, Ontario
1969	M.Sc. Geochemistry	McMaster University, Ontario

PRACTICAL

1969-1976	Rio Tinto Canadian Exploration Limited. Vancouver, B. C.	Geologist involved in all aspects of mineral exploration in B. C.
1968 (Summer)	McMaster University Dept. of Geology Hamilton, Ontario	M.Sc. thesis work. Reconnaissance mapping and geochemical study, Lake Shubenicadia area, Nova Scotia
1967 (Summer)	Canex Aerial Exploration Ltd., Toronto, Ontario	Geologist in charge of detailed mapping and reconnaissance geochemical programme in Gaspe, Quebec.
1966 (Summer)	McMaster University Dept. of Geology Hamilton, Ontario	Summer vacation work. Detailed and reconnaissance mapping in northern Ontario.
1965 (Summer)	International Nickel Co. of Canada Thompson, Manitoba	Summer vacation work. Detailed mapping in the Thompson Area, Manitoba.
1964 (Summer)	Geological Survey of Canada. Ottawa, Ontario	Summer vacation work. Regional geochemical survey in the Keno Hill area, Yukon.

APPENDIX A

LABORATORY REPORT SHEETS

AND

ASSAY CERTIFICATES

OFFICE COPY

RIO TINTO CANADIAN EXPLORATION LIMITED

LABORATORY REPORT

EXTRN [ ] ANDLZ [ ]

SAMPLE TYPE:

- [x] SOIL & STREAM SEDIMENTS
- [ ] ROCK
- [ ] VEGETATION
- [ ] WATER
- [ ] _____

PROJECT 8623 Smithers

DATE REPORTED 31 May '76

SIZE FRACTION -80 mesh

EXTRACTION HNO_3-HCl

ANALYTICAL METHOD H.M.

ANALYST (s) E.F.P

STATISTICAL SUMMARY

(Values for $\bar{x}$ and σ in p.p.m.)

DISTRIBUTION

- [ ] LOG NORMAL
- [ ] NORMAL

ELEMENT	Ag	Cu	Co	Pb	Zn			
Nº SAMPLES	138	138	138	138	138			
MEAN. $\bar{x}$								
STD. DEV. σ								
$\bar{x} + 2\sigma$								

COMMENTS: 0.6 g.

REPORT Nº 76-71

RIO TINTO CANADIAN EXPLORATION LIMITED

LABORATORY REPORT

PARTS PER MILLION

LAB Nº.	SAMPLE Nº. (NMBR)	Ag	Mo	Cu	Co	Pb	Zn			COMMENTS
1	7602323	41	ND	14	45	54	860			
2	4	22	ND	12	51	33	55			
3	5	41	0.3	11	80	93	155			
4	6	22	0.3	9	63	490	3500			
5	7	30	0.2	4	0.3	410	2100			
6	8	31	0.3	9	96	410	1350			
7	9	22	0.1	6	59	440	1350			
8	30	96	1.1	65	270	65	1180			
9	1	97	0.8	72	330	105	650			
10	2	91	0.9	64	290	135	1600			
1	3	61	0.8	39	180	143	1400			
~~2~~	~~STD 3~~	~~24~~	~~0.1~~	~~10~~	~~33~~	~~5~~	~~60~~			
3	4	56	ND	41	59	26	175			
4	5	56	0.3	14	40	85	780			
5	6	17	ND	9	43	40	405			
6	7	19	ND	10	49	0.3	1000			
7	8	5	ND	2	12	8	47			
8	9	6	ND	2	13	10	51			
9	40	12	0.1	4	31	29	3000			
20	41	8	ND	2	20	16	1650			
1	43	13	0.1	6	43	74	220			
~~2~~	~~BLANK~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~			
3	4	33	0.3	19	30	67	144			
4	5	26	0.3	10	48	112	2000			
5	6	26	0.3	10	39	106	2200			
6	7	25	0.3	8	42	127	2900			
7	8	18	0.2	7	31	98	2200			
8	9	25	0.4	8	44	136	2800			
9	50	28	0.4	8	43	121	2700			
30	51	67	2.9	14	38	2500	6400			
1	53	162	0.4	73	1100	28	155			
2	56	79	0.3	12	123	890	5200			
3	57	34	2.5	8	74	1900	36500			
4	58	73	0.7	15	130	1000	2600			
5	7602354	77	0.3	20	97	1250	3400			
6	7610047	72	0.2	52	190	180	1130			
7	8	22	0.1	42	210	730	4500			
8	9	65	0.3	43	130	152	670			
9	50	76	1.2	48	167	320	1770			
40	7610051	49	0.4	37	77	80	320			

REPORT Nº. 76-71

RIO TINTO CANADIAN EXPLORATION LIMITED

LABORATORY REPORT

PARTS PER MILLION

LAB Nº	SAMPLE Nº (NMBR)	Mo	Hg	Co	Cu	Pb	Zn			COMMENTS
41	7610052	36	[illegible]	14	56	120	596			
2	3	39	0.2	15	15	12	66			
3	4	23	ND	13	23	5	33			
4	5	32	ND	5	37	8	37			
5	6	10	ND	2	77	510	3300			
6	7	21	ND	8	110	136	530			
7	8	18	ND	12	45	114	540			
8	9	20	0.1	15	67	39	135			
9	60	28	ND	30	122	16	88			
50	1	41	ND	50	250	16	100			
1	2	55	ND	86	220	37	185			
2	3	19	0.1	11	37	32	132			
~~3~~	~~STD 1~~	~~4~~	~~ND~~	~~5~~	~~14~~	~~27~~	~~970~~			
4	4	51	0.3	61	330	75	340			
5	5	47	ND	41	330	5	35			
6	6	43	ND	58	290	5	42			
7	7610067	56	ND	78	163	8	62			
8	7615403	280	1.1	137	1120	290	1720			
9	04	83	0.5	66	340	60	490			
60	05	155	1.8	98	500	95	610			
1	06	55	0.2	35	80	27	215			
2	07	106	0.4	52	173	40	298			
~~3~~	~~BLANK~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~			
4	08	72	0.6	47	185	39	275			
5	09	66	0.3	36	130	35	240			
6	10	32	0.6	8	57	170 ~~170~~	550			
7	11	21	ND	7	54	88	195			
8	12	18	ND	4	71	430	290			
9	13	14	ND	4	46	280	1320			
70	7615414	18	0.1	5	63	470	230			
1	7616728	36	0.2	5	39	500	1670			
2	9	18	ND	8	32	108	305			
3	30	36	0.3	5	90	340	1480			
4	1	15	ND	6	24	260	650			
5	2	24	0.1	8	48	93	255			
6	3	34	0.4	2	71	350	800			
7	4	33	0.6	14	73	175	1080			
8	5	25	0.4	33	165	1460	1012			
9	6	33	0.2	6	47	1500	1630			
80	7616737	44	ND	9	59	1350	3500			

REPORT Nº 76-71

RIO TINTO CANADIAN EXPLORATION LIMITED

LABORATORY REPORT

PARTS PER MILLION

LAB Nº	SAMPLE Nº (NMBR)	Ni	Ag	Cu	Co	Pb	Zn			COMMENTS
81	7616738	23	0.1	6	41	2300	4500			
2	9	25	0.1	6	56	1380	3200			
3	40	55	0.2	13	86	1350	2400			
4	1	25	0.6	4	43	2500	9200			
5	2	4	ND	1	15	93	~~3100~~	1270		
6	3	8	ND	3	20	105	680			
7	4	7	ND	2	27	129	700			
8	5	22	ND	7	27	32	56			
9	6	20	0.2	6	38	530	1570			
90	7	16	ND	5	23	480	455			
1	8	20	ND	7	22	22	56			
2	9	19	ND	7	33	230	550			
3	50	2	ND	2	18	1130	3000			
~~4~~	~~STD 2~~	~~6~~	~~0.9~~	~~6~~	~~33~~	~~560~~	~~2900~~			
5	1	17	ND	4	30	1020	3000			
6	2	22	0.3	6	40	4200	7500			
7	3	21	0.2	5	38	2700	5200			
8	4	24	0.3	5	51	2400	6400			
9	5	25	0.3	6	195	1380	6000			
100	6	25	0.2	6	53	2300	5200			
1	7	23	0.2	4	45	2600	5300			
2	8	25	0.3	4	36	750	2300			
3	9	15	ND	4	35	139	1430			
~~4~~	~~BLANK~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~	~~ND~~			
5	60	18	ND	6	46	144	1090			
6	1	19	ND	6	47	122	1130			
7	2	21	0.1	5	38	144	240			
8	3	25	0.2	6	56	156	335			
9	4	31	0.1	8	61	157	620			
110	5	23	0.1	6	43	151	325			
1	6	28	0.3	7	54	175	5100			
2	7	23	0.1	6	45	145	2600			
3	8	32	0.1	9	69	118	185			
4	9	32	ND	10	71	94	150			
5	70	33	0.1	11	73	93	155			
6	1	34	0.1	11	71	104	150			
7	2	36	0.1	12	73	95	140			
8	3	32	0.3	9	72	104	145			
9	4	55	0.1	90	610	35	125			
120	7616775	44	0.3	58	260	19	64			

REPORT Nº 76-71

RIO TINTO CANADIAN EXPLORATION LIMITED

LABORATORY REPORT

PARTS PER MILLION

LAB Nº	SAMPLE Nº (NMBR)	Mo	Ag	Co	Cu	Pb	Zn			COMMENTS
121	7616776	52	ND	52	430	17	52			
2	7	49	ND	73	310	9	56			
3	7616778	46	ND	65	330	8	46			
~~4~~	~~7602332~~	~~77~~	~~1.1~~	~~63~~	~~450~~	~~130~~	~~1550~~			
5	7602343	14	ND	7	39	73	220			
6	7602356	73	0.6	18	123	920	5000			
7	7610053	39	0.1	18	77	13	69			
8	7610064	53	0.5	62	320	74	335			
9	7615410	23	0.2	8	56	173	550			
130	7616734	34	0.7	35	75	183	1100			
1	7616745	23	0.1	8	27	31	54			
2	7616756	24	0.2	6	51	2200	5000			
3	7616767	22	0.1	5	45	153	2700			
~~4~~	~~7616778~~	~~45~~	~~ND~~	~~61~~	~~360~~	~~7~~	~~98~~			
5	7618200	169	0.2	138	1500	19	83			
6	01	79	0.1	105	960	16	128			
7	02	86	0.6	122	510	18	70			
8	03	100	0.6	131	580	177	2300			
9	04	44	0.4	26	103	183	1300			
140	05	61	0.4	42	175	126	970			
1	06	53	0.4	36	158	121	910			
2	07	28	ND	25	62	24	24			
3	08	19	0.1	12	11	11	65			
4	18	20	ND	15	23	45	98			
5	19	12	0.4	4	270	360	2700			
6	20	17	ND	8	71	82	900			
7	21	15	ND	10	42	59	380			
8	22	15	ND	9	48	63	335			
9	23	28	0.6	6	79	3000	570			
150	24	20	1.4	2	60	3300	4400			
1	25	16	0.2	3	35	187	680			
2	26	20	0.1	5	67	64	750			
3	27	75	0.7	89	1220	110	1020			
4	28	19	ND	14	48	16	94			
5	7618229	50	0.1	63	410	34	200			
~~6~~	~~BLANK~~	~~1~~	~~ND~~	~~2~~	~~2~~	~~ND~~	~~ND~~			
~~7~~	~~STD 3~~	~~9~~	~~0.1~~	~~12~~	~~50~~	~~5~~	~~56~~			
8										
9										
160										

REPORT Nº 76-71

To: Ri Tinto Canadian Exploration

REPORT No A26 580

PAGE No. 1

DATE: September 1, 1976

BONDAR-CLEGG & COMPANY LTD.

615 - 555 Burrard Street
Vancouver, B.C.
V7X 1M8

CERTIFICATE OF ASSAY

Samples submitted: August 23, 1976
Results completed: September 1, 1976

PROJECT: 8623

I hereby certify that the following are the results of assays made by us upon the herein described ore samples.

MARKED	GOLD		SILVER	Cu	Pb	Zn					TOTAL VALUE PER TON (2000 LBS.)
	Ounces per Ton	Value per Ton	Ounces per Ton	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
7602340			0.03	0.01	L 0.05	7.50					
7602342			L 0.02	L 0.01	L 0.05	0.13					
7602352			0.05	0.11	L 0.05	0.05					
7602354			0.02	0.01	0.18	0.26					
7602355			0.03	L 0.01	0.08	0.05					
7602356			0.02	0.06	L 0.05	L 0.05					
7602586			0.02	L 0.01	L 0.05	0.48					
7618104			L 0.02	L 0.01	L 0.05	0.05					
7618105			0.02	L 0.01	L 0.05	0.05					
7618107			L 0.02	L 0.01	L 0.05	L 0.05					
7618108			L 0.02	L 0.01	L 0.05	L 0.05					
7618209			0.02	L 0.01	L 0.05	L 0.05					
7618210			0.02	L 0.01	L 0.05	0.05					
7618211			0.02	0.01	L 0.05	0.94					
7618212			L 0.02	L 0.01	L 0.05	L 0.05					
7618213			0.02	0.01	L 0.05	0.47					
7618214			0.02	0.01	L 0.05	0.42					
7618215			0.02	0.02	L 0.05	0.31					
7618216			0.02	L 0.01	0.05	L 0.05					
7618217			0.02	L 0.01	L 0.05	0.05					
7618230			0.04	0.01	L 0.05	L 0.05					
7618231			0.02	0.08	L 0.05	L 0.05					

L denotes 'Less than'

Registered Assayer, Province of British Columbia

N

LEGEND

• WP ..... Witness Post

□ ..... Legal Claim Post

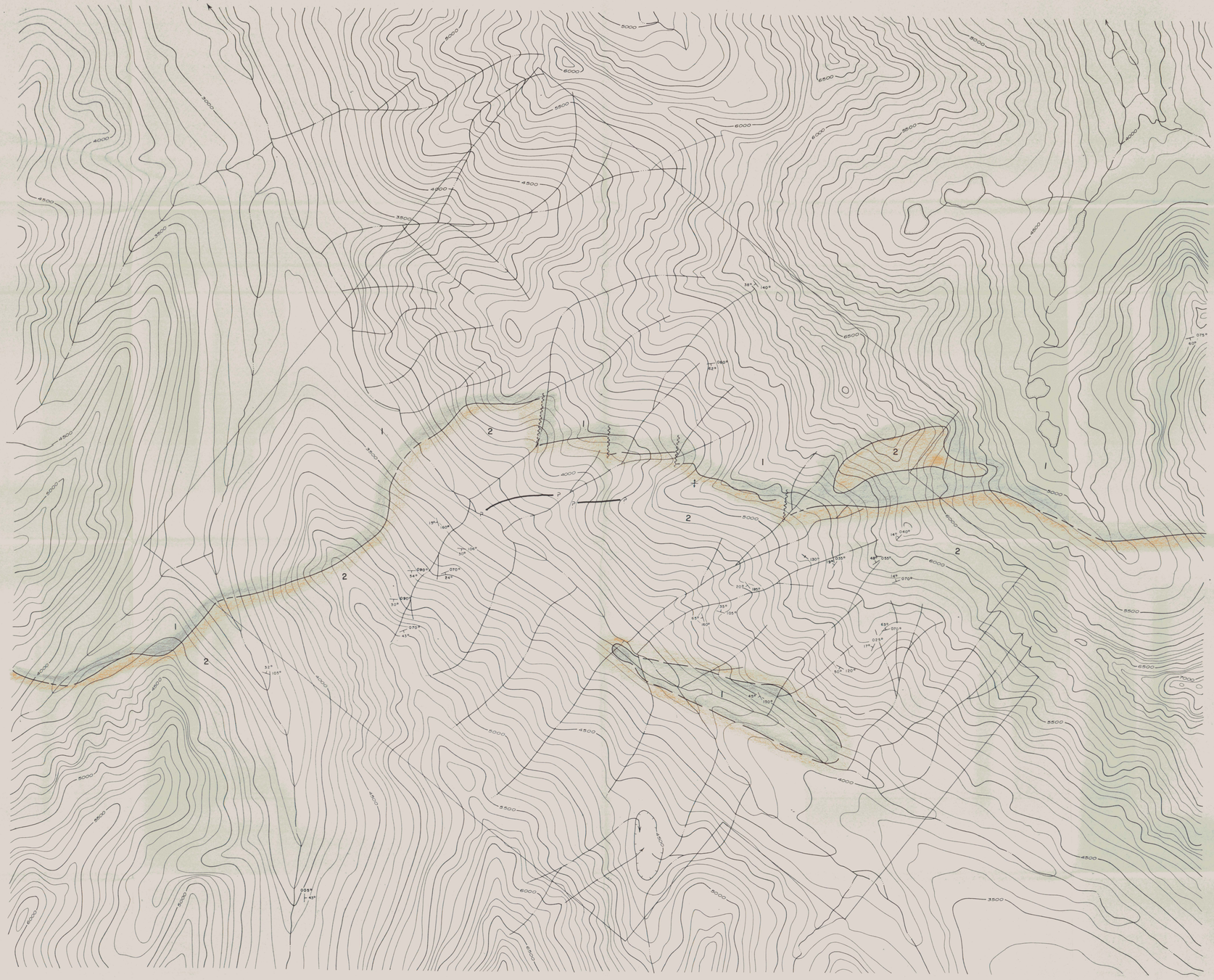
N.T.S. 106-C/13, 106-D/16

SCALE 1:10,000

Metres 200 100 0 200 400 600 Metres

150 50

RIO TINTO CANADIAN EXPLORATION LIMITED		
SNAKEHEAD PROPERTY		
CLAIM MAP		
OCT. 1976	A.T. / y.m.	DWG. G.C. - 8439



LEGEND

HELIKIAN

- Orange Weathering Dolomite – G.S.C. – Unit 2
- Dark Grey Slate and Argillite, Green Phyllite – G.S.C. – Unit 1

SYMBOLS

- Strike and Dip of Bedding
- Trace of Argillite Bed with Pyrite
- Anticlinal Axis
- Geological Contact (defined, assumed)
- Fault

N.T.S 106-C/13, 106-D/16

SCALE 1:10,000

Metres 200 100 0 200 400 600 Metres

150 50

RIO TINTO CANADIAN EXPLORATION LIMITED

SNAKEHEAD PROPERTY

GEOLOGY

OCT. 1976	A.T. / y.m.	DWG. G. - 8440

LEGEND

- 7618207 ····· Sample Location Site
- o 8.0 ····· Ph of Stream

N.T.S 106C/13, 106-D/16

SCALE 1:10,000

Metres 200 100 0 200 400 600 Metres

150 50

RIO TINTO CANADIAN EXPLORATION LIMITED

SNAKEHEAD PROPERTY

SILT
SAMPLE LOCATION SITE
(and Stream Ph)

OCT. 1976 | A.T. / y.m. | DWG. G.C. - 8441

N

LEGEND

510 3300 ····· Pb , Zn Results in p.p.m.

N.T.S 106-C/13 , 106-D/16 .

SCALE 1:10,000

Metres 200 100 0 200 400 600 Metres

150 50

RIO TINTO CANADIAN EXPLORATION LIMITED			
SNAKEHEAD PROPERTY			
GEOCHEMISTRY			
PB , ZN RESULTS IN P.P.M.			
OCT. 1976	A.T. /y.m.	DWG. G.C. - 8442	

N

LEGEND

• 33 ····· Cu Results in p.p.m.

N.T.S. 106-G/13, 106-D/16

SCALE 1:10,000

Metres 200 100 0 200 400 600 Metres

150 50

RIO TINTO CANADIAN EXPLORATION LIMITED

SNAKEHEAD PROPERTY

GEOCHEMISTRY

CU RESULTS IN P.P.M.

OCT. 1976	A.T. / y.m.	DWG. G.C. - 8443

LEGEND

x 7602355 · · · · Chip Sample Location

N.T.S 106-C/13, 106-D/16

SCALE 1:10,000

Metres 200 100 0 200 400 600 Metres

150 50

RIO TINTO CANADIAN EXPLORATION LIMITED

SNAKEHEAD PROPERTY

CHIP SAMPLE LOCATIONS

OCT. 1976 | A.T./y.m. | DWG. G.C.-8444

N

LEGEND .18 x .26 ····· % Pb x % Zn

N.T.S 106-C/13, 106-D/16

SCALE 1:10,000

Metres 200 100 0 200 400 600 Metres

RIO TINTO CANADIAN EXPLORATION LIMITED

SNAKEHEAD PROPERTY

CHIP SAMPLE RESULTS
(PB, ZN)

OCT. 1976 | A.T. / y.m. | DWG. G.C.-8445

RIO TINTO CANADIAN EXPLORATION LIMITED

SNAKEHEAD PROPERTY

CHIP SAMPLE RESULTS
(AG , CU)

OCT. 1976	AT / y.m.	DWG. G.C. -8446

N.T.S. 106-C/13 , 106-D/16

SCALE 1:10,000

Metres 200 100 0 200 400 600 Metres
150 50

LEGEND .01 x .02 ····· Ag OZ/Ton x Cu%

N

N

N.T.S

LEGEND

• 7616750 — Soil Sample Location Number

SCALE 1:5000

Metres 100 50 0 100 200 300 400 Metres

75 25

RIO TINTO CANADIAN EXPLORATION LIMITED

SNAKEHEAD PROPERTY

SOIL SAMPLE LOCATION MAP

OCT. 1976 | A.T. / y.m. | DWG. G.C. - 7391

LEGEND

● 5200 ····· Zn Results in p.p.m.

N.T.S

SCALE 1:5000

Metres 100 50 0 100 200 300 400 Metres

75 25

RIO TINTO CANADIAN EXPLORATION LIMITED		
SNAKEHEAD PROPERTY		
SOIL SAMPLE RESULTS ZN		
OCT. 1976	A.T. / y. m.	DWG. G.C. - 7392

N

LEGEND ● 1130 Pb Results in p.p.m.

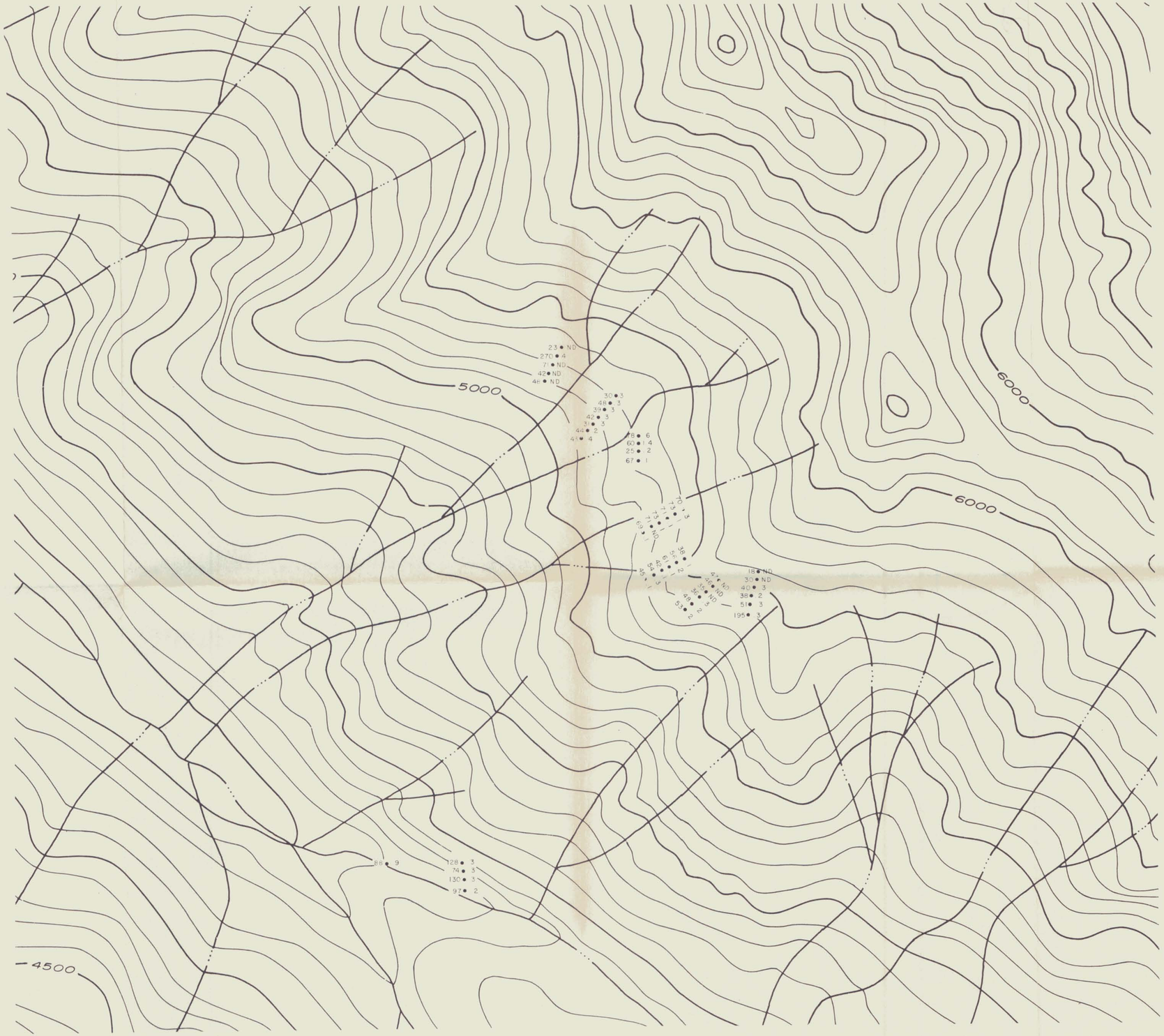
N.T.S

SCALE 1:5000

Metres 100 50 0 100 200 300 400 Metres

75 25

RIO TINTO CANADIAN EXPLORATION LIMITED		
SNAKEHEAD PROPERTY		
SOIL SAMPLE RESULTS PB		
OCT. 1976	A.T. / y. m.	DWG. G.C. - 7393



LEGEND 47 • 3 ····· Cu, Ag Results in p.p.m.

N.T.S

SCALE 1: 5000

Metres 100 50 0 100 200 300 400 Metres

75 25

N

RIO TINTO CANADIAN EXPLORATION LIMITED

SNAKEHEAD PROPERTY

SOIL SAMPLE RESULTS
CU, AG

OCT. 1976 | A.T. / y.m. | DWG. G.C. - 7394