6545

[redacted]

Part 1

BARKERVILLE PROJECT - 1977

CUNNINGHAM CREEK CLAIMS

N.T.S. 93 A 14

OCTOBER 1977

R.V. Longe (Geochemistry)
G.D. Hodgson (Geology)
J. McCance (Geophysics)

The Cunningham Creek Claims Include:

- Roundtop Claims
- Coast Interior Option
- Miller Option
- Thomson Option

BARKERVILLE PROJECT - 1977
Cunningham Creek Claims

SUMMARY

Work in 1976 led to recognition of an eight-km belt of shales, phyllites, and limestones in the vicinity of Roundtop Mountain containing conformable bodies of galena, pyrite, sphalerite and barite. One hundred and forty one M.G.S. units and two-post claims now known collectively as the "Cunningham Creek Claims", were subsequently staked or optioned by Riocanex.

During 1977, approximately half these claims were covered by soil geochemical sampling. Geophysical orientation traverses were carried out with Maxmin and Double Dipole EM, SP meter and Magnetometer. A backhoe was used to dig 1.6 km of trench across geochemical anomalies and sulphide showings. Two diamond drill holes, totalling 94m were directed at a coincident geochemical and geophysical anomaly.

Geochemical soil sampling outlined several linear lead and zinc anomalies. No geophysical methods proved effective in detecting known sulphide occurrences. One new low grade sulphide[1] showing was uncovered by trenching. Reopening of an old trench, part of which had been sampled in 1976, lead to the discovery of 14.5 metres of 5.98% combined lead and zinc with 2.09 oz/ton of silver.[2] Neither drill hole intersected lead or zinc sulphides.

1. Line 1400 N, 350 E
2. Al.1 and Al.2 zones

TABLE OF CONTENTS

PAGE

LIST OF TABLES

APPENDICES

LIST OF ILLUSTRATIONS

Maps and Sections at Scale 1:10,000

Maps at 1:5,000 Scale

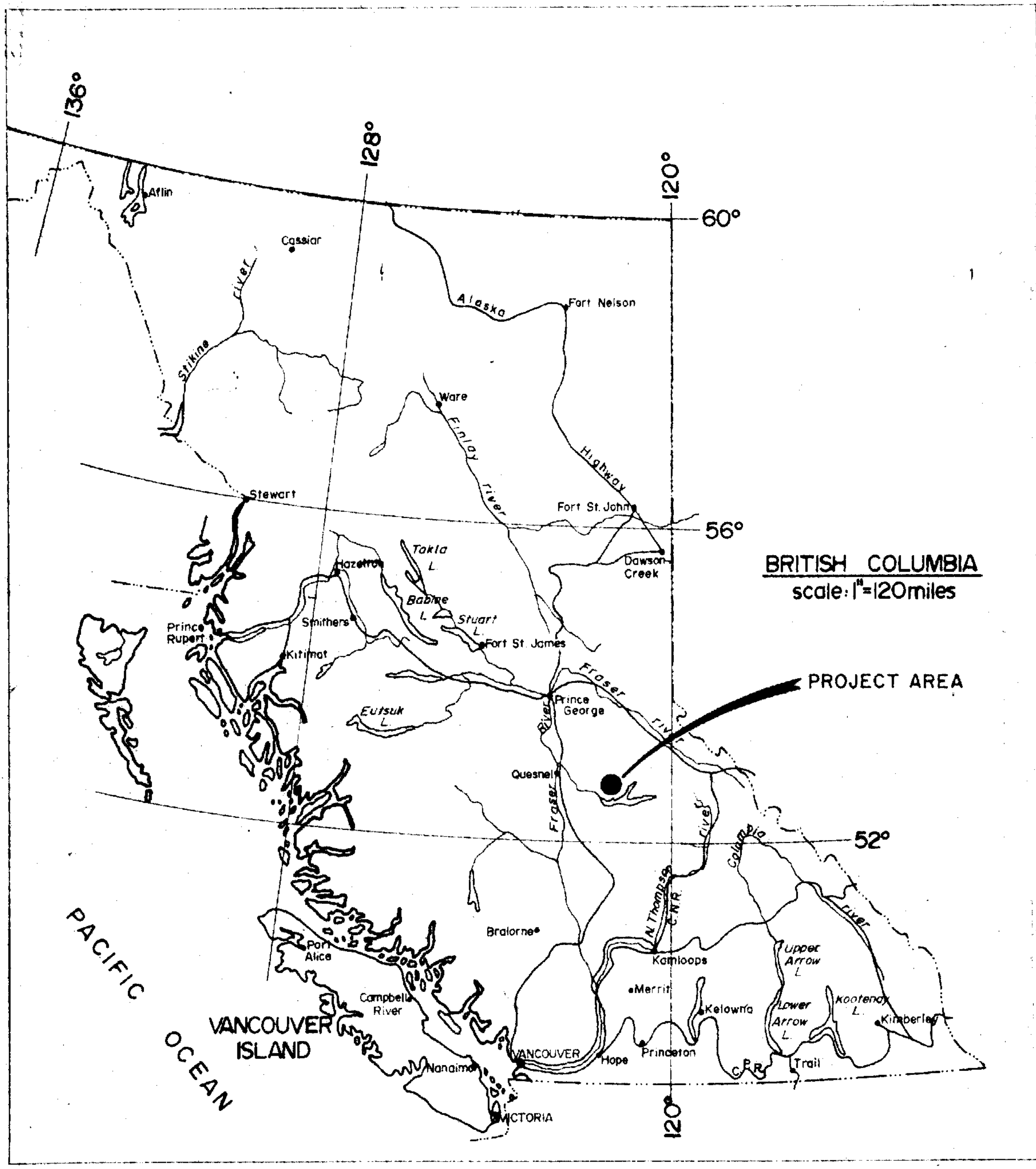
Location
In Report

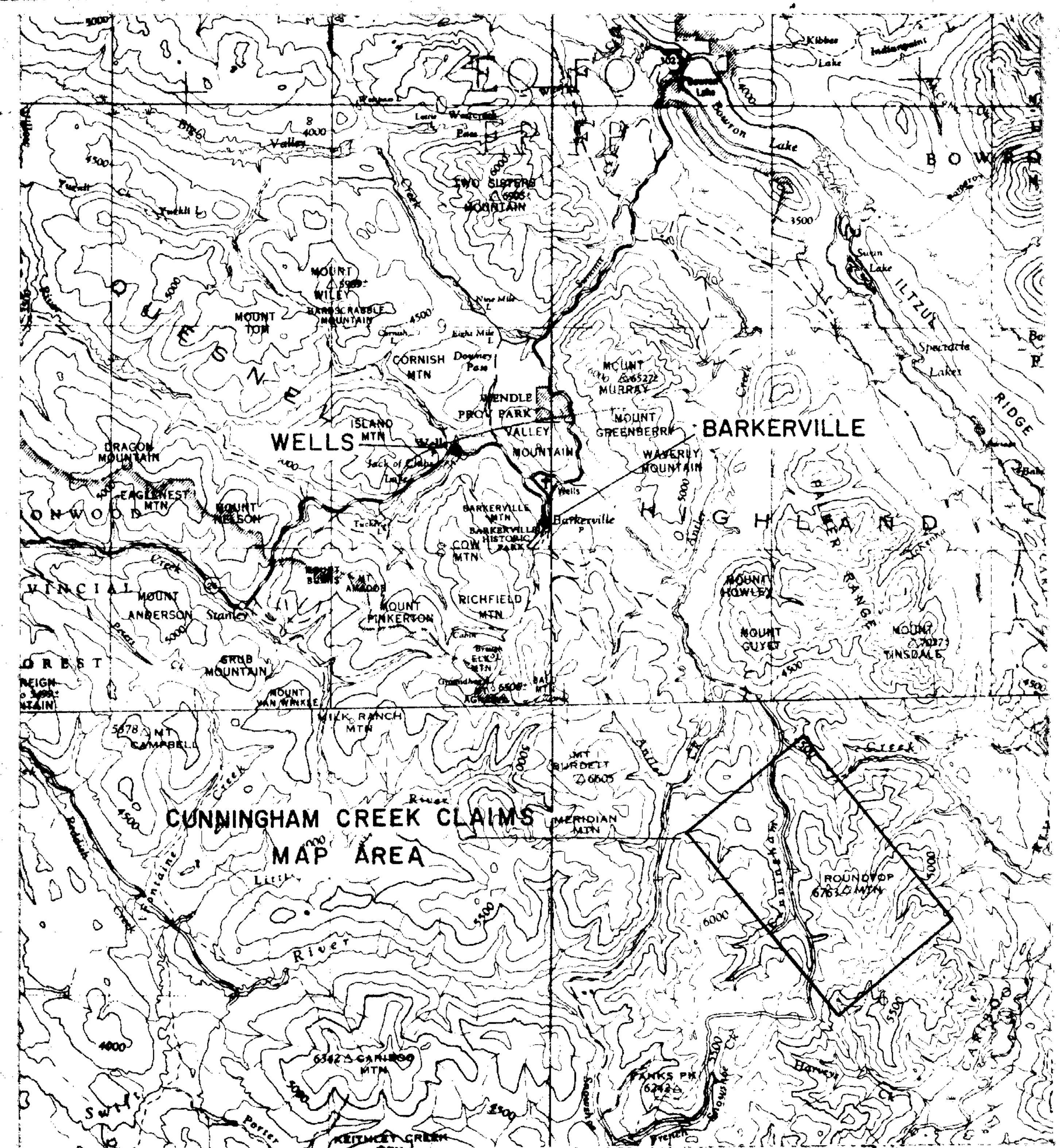
Profiles of Geochemistry, Geology and Geophysics at 1:5,000 Scale:

The following maps, because they contain raw data with little or no interpretation, are in Volume II with the Appendicies.

Maps at 1:5,000 Scale:

Field Maps at 1:500 Scale





SCALE 1:250000

Miles 4 0 4 8 12 Miles

Kilometres 6 0 6 12 16 Kilometres

RIO TINTO CANADIAN EXPLORATION LTD.

BARKERVILLE PROJECT

LOCATION MAP

FIGURE 1

JAN. 77	R.V.L. /y.m.	DWG. L.-6450

1. INTRODUCTION

During 1975, information that galena was abundant among the heavy minerals found in placer concentrates of the Barkerville gold camp suggested the possibility of finding strata-related lead-zinc bodies among the black shales of the area. A pilot stream-sampling project undertaken that year indicated the Midas Formation, a black shale unit of unknown age, also known as "Isaac", to be anomalously rich in base metals. Further, the vicinity of Roundtop Mountain was shown by the same programme to be a source of lead and zinc. Although work in 1976, did not uncover the source of the more pronounced stream geochemical anomalies, it did establish the presence of conformable bodies of lead and zinc in shales and limestones. These conformable bodies were uniformly small but most were poorly exposed and not delimited. Geochemical sampling the same year confirmed soil geochemical anomalies outlined by Coast Interior Ventures Ltd. in 1971.

The sulphide showings, and the geochemical anomalies led at the end of the 1976 field season to staking of the Roundtop claims and optioning of those belonging to Coast Interior Ventures Ltd., Miller, and Thomson.

The 1977 programme, described in this report, had three main objectives: to determine by trenching, the sources of the geochemical anomalies established by Coast Interior, to determine what geophysical methods would be effective for detecting sulphides of the types exposed in the showings, and to cover with soil geochemistry the greater part of the claims not already sampled.

The programme included: 2475 geochemical soil samples covering most of the Roundtop claims, geophysical orientation surveys with Maxmin and Double Dipole EM, SP meter and magnetometer, trenching of geochemical anomalies (most of them established previously by Coast Interior Ventures) and two diamond drill holes.

Sections 6 (Sulphide Showings) and 7 (Geology) were written by G.D. Hodgson, Section 11 (Geophysics) by J. McCance, the remainder of the report by R.V. Longe.

2. LOCATION AND ACCESS

The Cunningham Creek claims lie in central British Columbia, 80 km east of Quesnel, 150 km southeast of Prince George and 26 km southeast of Wells. (Figure 1) Access to Wells, and the restored village of Barkerville 10 km to the south, is by paved road from Quesnel. Barkerville and Roundtop Mountain are connected by a logging road and an old mining road which, when dry can be used by pickup trucks. Light planes can land on an airstrip between Wells and Barkerville. Helicopters can land in natural and artificail clearings within the Cunningham Creek claims.

NTS:

93 A 14

3. HISTORY AND PREVIOUS WORK

The valley between Roundtop Mountain and Nugget Mountain has been the scene of gold mining from placer operations since 1885. Gold mining from quartz veins began in the vicinity of the Cariboo Hudson mine at the head of Peters Gulch 1922. Minor quantities of scheelite have been produced from conformable bodies in the neighbourhood of the Cariboo Hudson mine.

Base metal exploration has been confined to work by Coast Interior Ventures Ltd. between 1971 and 1974. Coast Interior's programme was directed mainly at high grade silver-gold quartz veins and was therefore less than fully effective as a search for base metals. Because the silver-gold bearing quartz veins contained galena, lead values in soil samples were used as a guide to such veins. Coast Interior's soil geochemistry covered 130 line km and approximately 60 % of the current claims. Their programme also included an I.P. survey and approximately 1,000 metres of diamond drilling. This drilling was aimed mainly at finding extensions to mineralized quartz veins.

The Coast Interior geochemical survey developed 11 anomalies labelled A to K (Figures and). Of these Anomaly C was tested by trenching and diamond drilling and was found to be due, in part at least, to a mineralized quartz vein. Anomaly B was investigated by geophysics and diamond drilling but the source of the anomaly was not found. The south end of Anomaly A was partially investigated by extensive trenching and bodies of limestone-bearing galena were exposed. A twelfth anomaly (named X) was identified by Riocanex and confirmed during 1976 from geochemical data provided by Coast Interior.

In more recent years (1973-76) Resourcex of Calgary have carried out extensive soil sampling on some of the Crown Grants south of Roundtop Mountain. J. Hajek, under contract to Kerr Addison Ltd., has sampled rocks in the area with the intention of finding large-tonnage gold deposits.

In 1976 Riocanex collected sufficient check samples to confirm the presence of the Coast Interior soil anomalies. In addition the known sulphide showings were examined and sampled.

4. WORK PERFORMED BY RIOCANEX IN 1977

.1 Geochemical Soil Sampling

2475 soil samples were collected at an interval of 25 metres on lines 200 metres apart. The greater part of the soil sampling was on the Roundtop claims. A slight overlap with the Coast Interior survey of 1971 (Pb and Cu only) allowed meshing of the two surveys. At the time of writing samples collected by Riocanex have been analysed for lead, zinc, and copper. Analysis for other elements, notably barium, is planned.

.2 Geophysics

Orientation lines were run over sulphide showings and geochemical anomalies with the following instruments: "Maxmin" horizontal loop EM, Double Dipole EM "Minigun", Self-potential meter, and magnetometer. 11.6 km of line were covered by geophysical methods.

.3 Trenching

A total of 1.6 km of trench were excavated with a 24 inch backhoe mounted on a 450 John Deer Crawler. Timber that had to be cut for trenching was limbed and bucked in accordance with forestry regulations.

.4 Drilling

A total of 94.2 metres of NQ core was drilled in two holes on line 1400 north. The core remains at the site.

.5 Geological Mapping

55 man days were spent in geological mapping at 1 to 5000 scale. In addition all trenches were mapped at 1 to 500 scale.

.6 Rock Sampling

A total of 29 chip samples and 15 grab samples were collected. Those with visible galena in sphalerite were sent for assay; the remainder for analysis by atomic absorption.

.7 Persons Responsible

R.V. Longe supervised the project. G.D. Hodgson was party chief and carried out geological mapping. D. Sexsmith carried out the greater part of the geological survey. J. McCance provided the geophysical comment and interpretation.

.8 Contractors

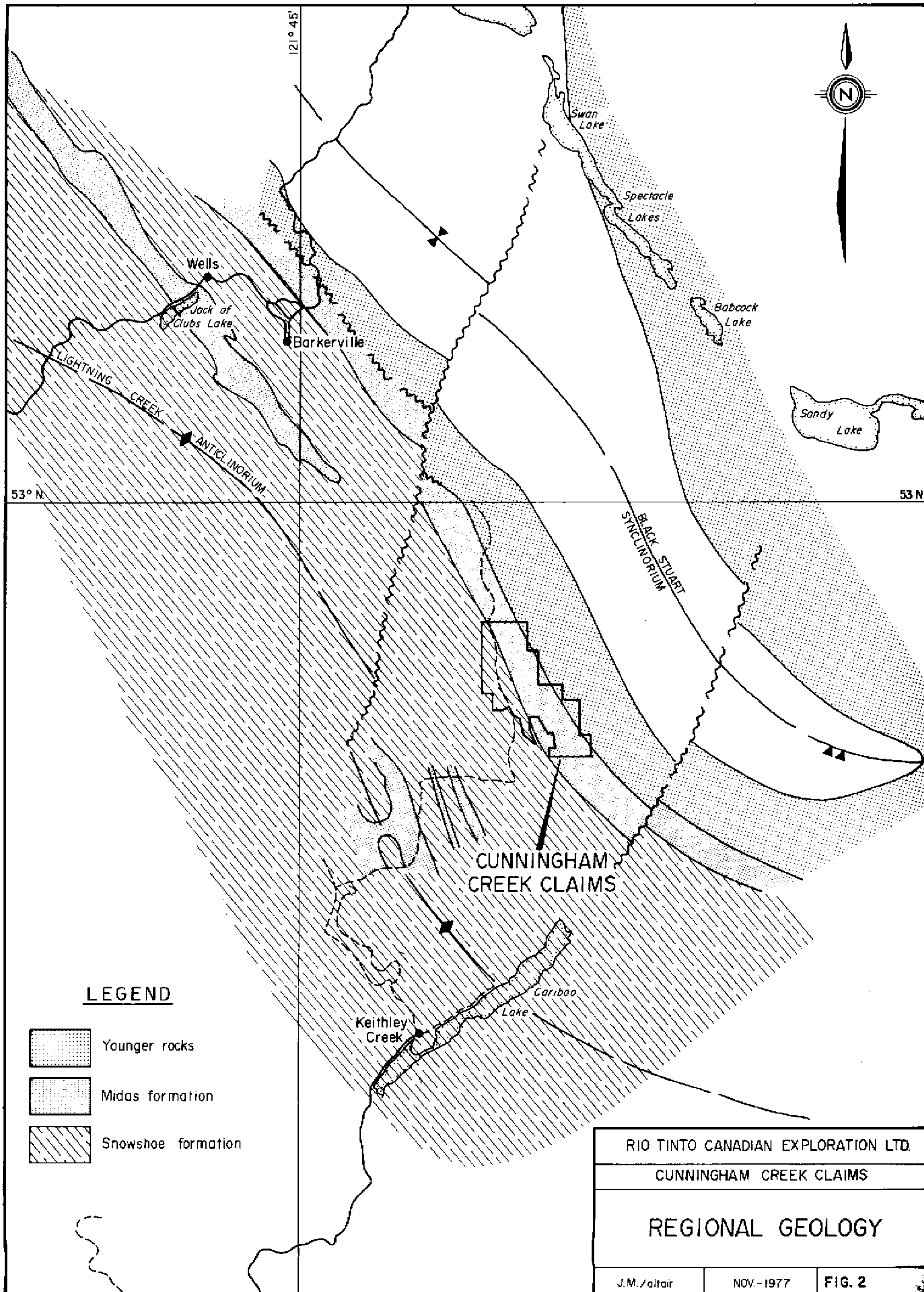
Line cutting and camp construction was by Donegal Developments. Trenching was by Stan Brewer, owner and operator of a 450 John Deer Crawler mounted backhoe. Drilling was by Coates Drilling Ltd.

5. REGIONAL GEOLOGY (Figure 2)

Two adjacent belts, one of black shales the other of phyllites and schists, trend NNW-SSE through Wells, Barkerville, and Roundtop Mountain. These two formations have been mapped by Holland (1954), and by Sutherland Brown (1957, 1963), both of the B.C. Department of Mines, and more recently by Campbell, et al, (1973), of the Geological Survey of Canada in the course of a regional programme.

The Department of Mines refers to the black shale unit as the "Midas" formation and to the overlying (supposedly younger) phyllites and schists as the "Snowshoe". Both are placed in the Paleozoic. To the G.S.C. both formations are Proterozoic and the black shale unit (termed "Isaac") is younger than the neighbouring ("Kasa") schists.

Mapping by Riocanex in 1977 has made only a start on resolving the question of the relative ages of the Midas (Isaac) and the Snowshoe (Kasa) formations. Rather than one being older than the other, the most satisfactory solution at present has the two formations co-eval but of different facies. This explanation has the merit of explaining the similarity of the limestones in the Midas and Snowshoe and of attributing the lead and zinc-bearing beds in each formation to a single stratigraphic level.



RIO TINTO CANADIAN EXPLORATION LTD.		
CUNNINGHAM CREEK CLAIMS		
REGIONAL GEOLOGY		
J.M./altair	NOV.-1977	FIG. 2

6. SULPHIDE SHOWINGS (Figure 6)

by G.D. Hodgson

This chapter contains descriptions of conformable lead-zinc showings on ground held or optioned by Riocanex. At this stage the showings on the Miller Option (Al.1; Al.2; Al.3; A2) are the most important. A 14.5 m section across the Al averages 5.98% combined lead and zinc, with 2.09 oz/ton Ag. Mineralization is associated with carbonate units in a sequence of largely chloritic and micaceous phyllitic rocks. These rocks are part of the Snowshoe* Formation.

The XI4, Evening, Vic, Beamish and Slide Showings all occur within the Midas* Formation which comprises phyllites and siltstones but also important graphitic shale and carbonate members. The X14 showing is exposed in a trench west of Roundtop Mountain. Here again the mineralization occurs in a limestone unit. The Evening, Beamish, Vic and Slide Showings are located near Cunningham Creek 3 - 4 km north of the X14. Black shales act as the host rock to the Evening and Beamish Showings but the Vic and Slide Showings occur in interbedded limestones.

*See discussion in section 7.3

.1 A1 Showings (Figure 3)

Bedded galena is exposed in a bulldozer trench put in by Coast Interior parallel to the contours of a steep easterly-facing slope. By 1976 a large part of the cut had sloughed in concealing all but a bed of galena-bearing limestone, 0.6 m thick, known as the "A1.1" Showing.

In 1977, 70 m of the trench was cleaned up using a bulldozer-mounted backhoe. More mineralization was exposed both south of the A1.1, where a 6.9 m band (the "A1.2") of orange weathering rock averages 8.39% combined Pb and Zn; 2.60 oz/ton Ag, and north, where half metre width (the "A1.3") of coarse galena blebs assays 19.4% Pb and 9.9 oz/ton Ag.

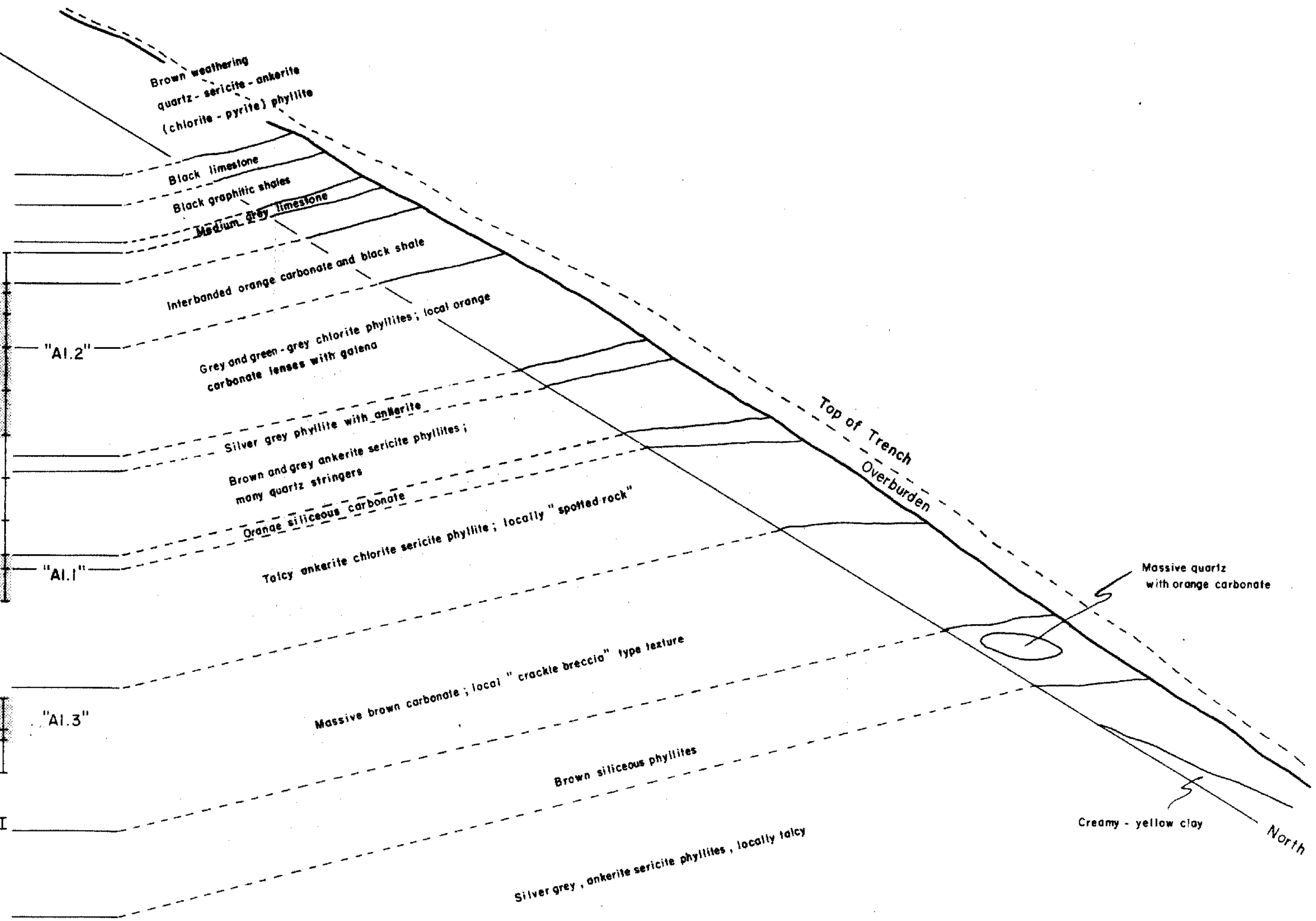
A1.1: Mineralization comprises coarsely crystalline galena in an orange-weathering limonitic carbonate bed. A true-width sample across 0.6 m assayed 30.91% Pb; 8.50% Zn; and 17.70 oz/ton Ag. Mineralization is confined to the unit whose highly siliceous nature suggests it could originally have been a limey sand. The brown weathering ankerite-sericite phyllites above and below the bed are barren.

A1.2: The A1.2 mineralization occurs structurally above the A1.1 zone. At the A1.2 zone thinly interbedded back shales and orange-weathering silty carbonates are the host rocks of disseminated coarse-grained galena. Sphalerite was not identified in the field, but zinc assay results are significant. The best mineralization includes 1 m of 14.65% Pb; 15.60% Zn; 8.78 oz/ton Ag.

A 14.5 m true-width section that includes the A1.1, A1.2 and the waste rock between them averages 3.60%Pb; 2.38% Zn; 2.09 oz/ton Ag.

	Width true m.	Pb %	Zn oz/ton	Ag oz/ton	Au	Sample	Zone
Not sampled: apparently barren							
	1.5	0.02	0.14	0.08	0.003	202247	
2.9m a 7.37 % Pb; 7.25% Zn; 4.37 oz/ton Ag (202248–202250); 6.9m a 4.48% Pb; 3.91% Zn; 2.60 oz/ton Ag (202248–202270)	0.5	4.20	4.13	2.17	0.005	202248	"A1.2"
	1.0	14.65	16.60	8.78	0.020	202249	"A1.2"
	1.4	3.30	2.40	2.00	0.006	202250	"A1.2"
	2.0	2.39	1.52	1.30	0.005	202271	"A1.2"
	2.0	2.38	1.47	1.32	0.005	202270	"A1.2"
	2.0	0.14	0.35	0.09	0.002	202269	
	2.0	0.05	0.12	0.09	0.004	202268	
	1.5	0.07	0.10	0.07	0.002	202254	
2.1m a 9.88% Pb; 3.04% Zn; 5.67 oz/ton Ag	0.6	30.71	8.50	17.70	0.040	202255	"A1.1"
	1.5	1.55	0.86	0.86	0.005	202256	"A1.1"
Not sampled: apparently barren							
2 m a 5.61% Pb; 1.54% Zn; 3.03 oz/ton Ag	1.5	1.02	1.26	0.73	0.004	202257	"A1.3"
	0.5	19.38	0.50	9.94	0.008	202258	"A1.3"
	1.5	0.91	0.47	0.48	0.003	202259	
	0.5	0.55	0.37	0.28	0.001	202261	
Not sampled: apparently barren							

(a)



(b)

(a) · · · · · · True width section with assays

(b) · · · · · · Geology of west wall of trench

N. T. S.

SCALE 1:25

Metres 0 0.5 1 1.5 2 Metres

RIO TINTO CANADIAN EXPLORATION LTD.

CUNNINGHAM CK. CLAIMS : MILLER OPTION

A1 TRENCH

G.D.H./y.m. D.W.G. G-6475	NOV. 1977	FIG. 3

A1.3: Coarse, disseminated galena occurs in a massive silty carbonate unit. A 0.5 m wide sample assayed 19.38% Pb; 0.50% Zn; 9.94 oz/ton Ag.

.2 A2 Showing

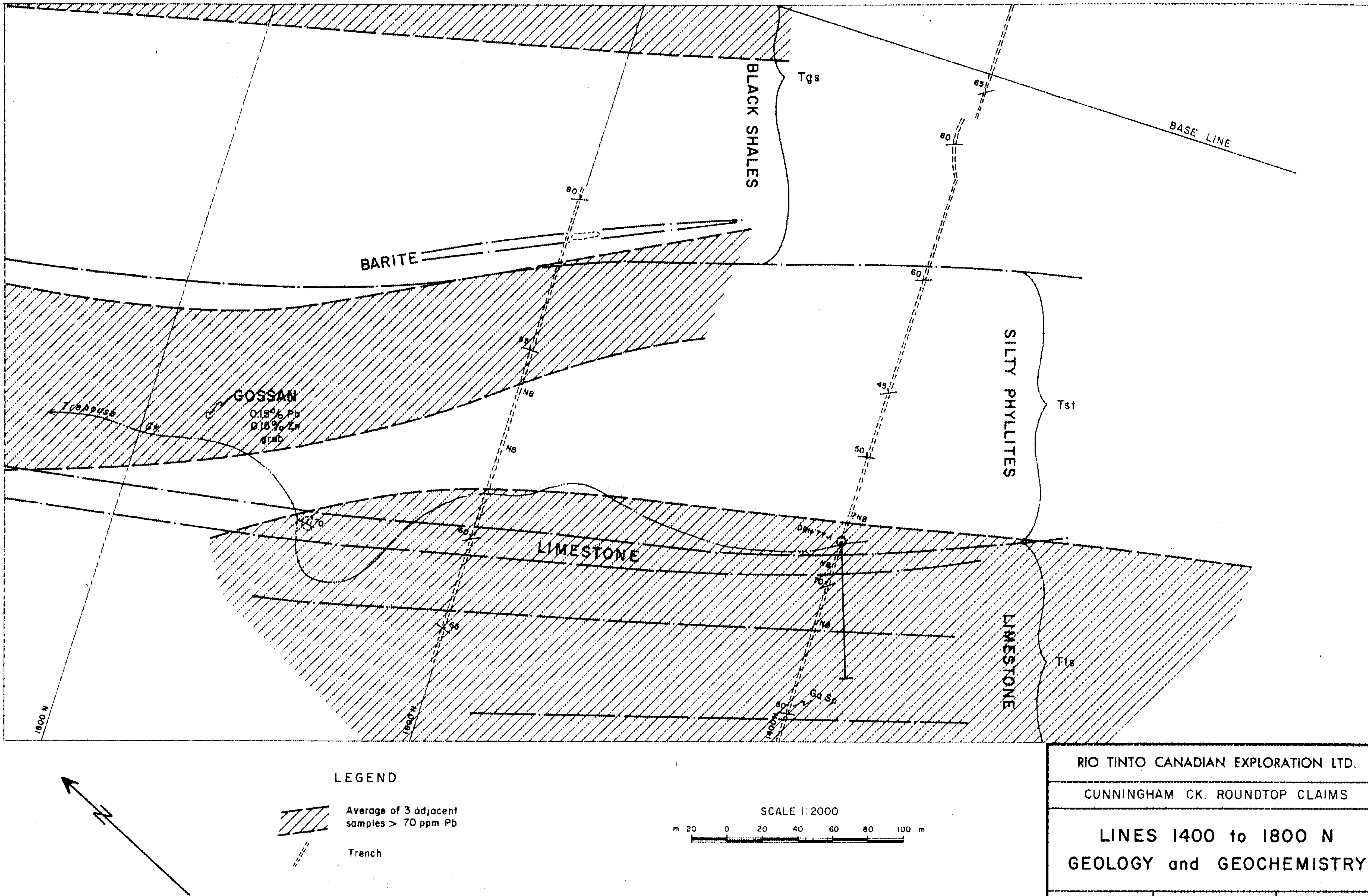
B. Miller (vendor of the Miller Option) exposed a galena-bearing limestone by hand trenching in 1976. The trench was enlarged by backhoe operations in 1977. The galena occurs as large coarse grained blebs scattered throughout the limestone, which is cut by 0.5 m wide quartz vein. Grades from samples taken in 1976 across a true width of 3 m averaged 18% Pb; 4.2% Zn; 7.8 oz/ton Ag.*

This showing is approximately on strike with the A1 showing. The limestone resembles the A1.3 carbonate, but Pb/Zn ratios suggest it may be the strike continuation of the A1.1.

.3 X14 Showing

Low grade disseminated sphalerite and galena occur in one of several black limestone units exposed in the Line 1400 N trench at 355 m W. (Fig.) A grab sample was assayed and found to contain 0.31% Pb; and 0.70% Zn. This mineralization, however, does not explain the occurrence of the extensive 'X' soil geochemical anomaly, the greater part of which lies uphill from the showing. The anomalous belt is an order of magnitude greater than that which overlies the A1 and A2 Showings. It lies parallel to the underlying lithologies and appears to have an origin in the silts and black shales above the limestone units.

*Riocanex report: "Barkerville Project 1976"



RIO TINTO CANADIAN EXPLORATION LTD.

CUNNINGHAM CK. ROUNDTOP CLAIMS

LINES 1400 to 1800 N GEOLOGY and GEOCHEMISTRY

G.D.H./a.b. DWG. G-6481	NOV. 1977	FIG. 4

The anomaly was trenched but not everywhere was bedrock reached. Unfortunately the upslope part of the anomaly underlay this part of the trench. Drilling was therefore necessary to test the unexposed bedrock. As a steep bank precluded a suitable location for collaring a drill hole only part of the unexposed bedrock was subsequently drilled, and this was unsuccessful in cutting mineralization. Note that a rust-coloured gossan outcrops in the hillside about 350 m north of the 1400 N Line trench, and approximately on strike with the part of the trench that overlies unexposed bedrock. Bedded barite occurs within the black shales on 1600 N Line. (Figure 4)

.4 Evening Showing

Black cherty shales are host to a conformable sulphide horizon of dark massive sphalerite and galena. A 40 cm chip sample across the mineralization assayed 0.99% Pb; 3.25% Zn; 0.23 oz/ton Ag. The showing was originally exposed in a small hand trench from which a sample taken in 1976 assayed 17% Zn but this appears to be erroneously high. The newly exposed rocks comprise chiefly limestones and limy shales that dip steeply to the northeast. The Showing lies along the trend of a geochemical anomaly in lead and zinc.

.5 Vic Showing

Massive, fine-grained galena and sphalerite occur in a conformable body of variable width that can be traced along strike for 20 m. Two samples, taken across a 0.5 m width, assayed as follows.

#202212	3.30% Pb	3.65% Zn	0.41 oz/ton Ag	30cm
#202213	13.10% Pb	7.60% Zn	1.72 oz/ton Ag	20cm

Mineralization occurs along a siliceous unit within a 10 m wide grey banded limestone. The limestone comprises part of a sequence of pyritic and locally cherty, black graphitic shales that dip vertically or steeply northeastwards. A cherty-looking dolomite outcrops adjacent to the sulphide horizon.

.6 Beamish Showing

Galena, sphalerite and chalcopyrite can be found in debris from a series of small blast pits. These pits occur 75 m south of the Vic Showing in black graphitic shales that host numerous thin conformable pyrite stringers. Quartz occurs as concordant and discordant veinlets, the former commonly displaying "pinch and swell" features. In outcrop the foliation is irregular (small scale folds plunge gently northwestwards, parallel to one apparent cleavage bedding intersection measurement), but generally strike direction remains constant with near vertical dips similar to those at the Vic Showing.

.7 Slide Showing

The Slide Showing is unexplored. It outcrops on the edge of a small landslide scar, and comprises disseminated low grade sphalerite (one grab sample assayed 0.61% Pb; 3.65% Zn; and 0.28 oz/ton Ag). The Showing is approximately along strike with the Beamish. Host rock appears to be a rusty weathering massive silty carbonate. The nearby landslide has exposed black graphitic shales.

7. GEOLOGY OF CUNNINGHAM CREEK CLAIMS

by G.D. Hodgson

(Figures 7, 8)

.1 General Statement

The rocks in the Barkerville area are generally poorly exposed, and the rocks underlying Riocanex ground are no exception. Structure is complex and a unique solution is not possible from the limited data available. The major geological accounts of the area have been by Holland (1954) and Sutherland Brown (1957, 1963) of the B.C. Department of Mines, and by Campbell, Mountjoy and Young (1973) of the Geological Survey of Canada. However, these two groups of workers disagree as to the geology of the area now of interest to Riocanex.

Within the part of Cunningham Creek valley lying west of Roundtop Mountain the predominant rocks are chloritic phyllites and sandstones with subordinate interbedded carbonate units. East of the creek a large proportion of the rocks comprise black shales and siltstones and also interbedded carbonates. Holland (1954) and Sutherland Brown (1957) mapped the rocks on the east side of the creek as Midas Fm. Figure 9a is a diagrammatic geological cross section of the Cunningham Creek valley in which a B.C. Department of Mines structural interpretation has been superimposed onto the lithologies mapped by the writer. Note that the rocks between Roundtop Mountain and Cunningham Creek are overturned. The B.C. Department of Mines, believing the Midas Fm. to be older than the Snowshoe, placed the rocks within the Ordovician.

Figure 9b is a similar section, but in this a GSC structural interpretation has been superimposed. In the Wells - Barkerville area NW of Roundtop Mountain, Campbell, et al (1973) mapped Kaza (i.e. Snowshoe) and Isaac (i.e. Midas) Fms. Extrapolating along strike southeastwards, from Barkerville, the GSC would have mapped the phyllites, black shales and limestones east of Cunningham Creek as Isaac Fm. and the rocks on the west side of the valley as the Snowshoe facies of the Kaza Gp. Their interpretation has the sequence the right way up, with the black shales (Isaac) younger than the rocks on the west side. The GSC regarded the rocks as Windermere in age.

Detailed mapping of the Cunningham Creek claims by Riocanex has not confirmed the findings of either Holland and Sutherland Brown or Campbell and his colleagues. However, it must be emphasized that the writer did not have an opportunity for regional geological reconnaissance and that mapping was confined to ground held directly or under option by Riocanex.

It is now felt that the Snowshoe-Midas/Kaza-Isaac distinction is inadequate and does not explain the similarity of the limestones in the Midas and Snowshoe Fms. nor the apparent continuity of mineralization on either side of Cunningham Creek. A tentative model is proposed in which (i) the rocks on either side of the creek are of similar ages, (ii) the sulphide bearing beds in each formation belong to a single stratigraphic level, (iii) the differences in lithology merely represent facies variations.

.2 Lithologies

Five main rock types were recognized during mapping. These are (i) quartzites; (ii) siltstones and sandstones that are commonly fissile but are locally fairly massive; (iii) black graphitic shales; (iv) chlorite sericite phyllites; (v) various carbonates. These have been grouped into 19 units which are listed in Table I The order is not significant; and later in this chapter their correlation is discussed.

TABLE I

Geologic Units and Symbols

Geological Unit	Map Symbol
Roundtop Mountain Quartzites	Rqt
Roundtop Mountain Phyllites	Rpt
Roundtop Mountain Sandstones	Rst
Trehouse Creek Graphitic Shales	Tgs
Trehouse Creek Siltstones	Tst
Trehouse Creek Limestones	Tls
Trehouse Creek Phyllites	Tph
Craze Creek Limestones	Cls
Craze Creek Graphitic Shales	Cgs
Craze Creek Phyllites	Cph
Bralco Ridge Phyllites	Bph
Bralco Ridge Limestones	Bls
Peters Gulch Sandstones	Pst
Peters Gulch Limestones	Pls
Peters Gulch Phyllites	Pph
First Mountain Carbonates	Fls
First Mountain Phyllites	Fph
Vic Sandstones	Vst
Vic Graphitic Shales	Vgs

Roundtop Mountain Quartzites (Rqt)

Outcropping on Roundtop Mountain and Middle Mountain, this sub unit is typically a light coloured, massive to thickly bedded, quartzite. Milky-white rounded quartz sand particles are cemented by quartz. Grain size is uniform and bedding is not obvious. Locally it is intensely veined by quartz.

Roundtop Mountain Phyllites (Rph)

Underlying the Roundtop Mountain Quartzites are silver-grey phyllites interbedded with brown-black shales and sandstone intercalations.

Rountop Mountain Sandstones (Rst)

These rocks comprise a sequence of grey and brown bedded sandstones and siltstones which locally display cross-bedding. Elsewhere, they show graded bedding. A light-coloured quartzite similar to the Roundtop Mountain Quartzites above, outcrops on the ridge S. of Roundtop.

Trehouse Creek Graphitic Shales (Tgs)

Recessive black pyritiferous graphitic shales underly the Roundtop Mountain units. Locally, the rocks are cherty and these bands are shot through with quartz stringers. Porous orange sandy carbonate horizons occur throughout the unit and from place to place may amount to as much as 40% of the rock. Discontinuous, white, bedded barite may outcrop near the base of the shales.

Trehouse Creek Siltstones (Tst)

This division comprises brown-weathering, pyritiferous siltstones. They are locally phyllitic but elsewhere are more thickly bedded. These rocks are poorly exposed in the trenches on lines 1400 N and 1600 N. A gossan outcrops about 150 m N of the 1600 N trench - on strike with this unit. Its relationship to these siltstones is as yet unclear.

Trehouse Creek Limestones (Tls)

This includes at least three major bands of dark grey to black fine grained limestone interbedded with ankerite-sericite phyllites, black shales and brown-weathering siltstones. The limestone bands are commonly finely banded and streaked with concordant calcite veinlets. Elsewhere they are more massive and may display crackle beccia type textures. Locally, a thin limestone conglomerate or breccia is evident. Pyrite horizons up to 2 or 3 cm wide are associated with shale and sandstone intercalations. Low grade disseminated sulphide mineralization (X14 Showing) is associated with the base of the central major limestone band.

Trehouse Creek Phyllites (Tph)

This unit is poorly exposed. Recessive chloritic phyllites lie between Trehouse Creek Limestones and the Craze Creek Limestones. Green chloritic phyllites and a green-brown porous sandstone are exposed in the new road near the headwaters of Craze Creek.

Craze Creek Limestones (Cls)

As with the Trehouse Creek Limestone Unit, this includes three major bands of mostly finely banded, fine-grained dark grey to black limestone in a pile of predominantly black shales and chloritic phyllites. The black shales, and thin beds of black limestone, are exposed in the trench over the so-called 'F anomaly'.

Craze Creek Graphitic Shales (Cgs)

Grey to black graphitic shales outcrop in the bull-dozer road on the ridge between Penny Creek and Craze Creek. Silty intercalations are common, and thin porous orange-weathering limonitic partings are locally important. The rocks are faulted in the Penny Creek valley, but can be seen again in the ridge above the Bralco cabin.

Craze Creek Phyllites (Cph)

These rocks form a central unit within the Craze Creek graphitic shales. They comprise a variable collection dominated by green chloritic phyllites, but also including silver-grey ankerite phyllites, silty layers and coarse-grained grits. A discontinuous black and white fine-grained limestone also occurs. This subunit has been correlated the similar clastic rocks near the mouth of Trehouse Creek but it does not appear to outcrop in the Bralco ridge.

Bralco Ridge Phyllites (Bph)

This division is named from rocks exposed in the road near the Bralco cabin. Best exposures, however, are along Penny Creek, below the black Craze Creek shale unit. Typically the rocks are green, grey and brown chlorite-sericite-ankerite phyllites with local brown silty intercalations. The Craze Creek phyllites appear to grade laterally into the structurally uppermost part of the Bralco phyllites. Over the same distance, the lower Craze Creek shales become thinner and lens out south of Penny Creek.

Bralco Ridge Limestones (Bls)

Outcropping in the area of the Bralco cabin, this unit acts as the host to zinc mineralization. These fine-grained rocks include black calcareous shales, black massive-looking limestones, brown limonitic carbonates and black and white finely-banded limestones. Black graphitic shales occur between limestone bands. The package appears to pinch out northwards and limestones are not exposed along Penny Creek.

Peters Gulch Sandstones (Pst)

This division comprises a variety of brown and green weathering ankeritic pyritiferous siltstones and sandstones, and whereas some of these clastics are massive and essentially unfoliated, others are fissile and phyllitic in character. Fine grained chloritic shale intercalations are common and some of these appear to be relatively extensive. The rocks are exposed in the lower parts of Penny Creek and Peters Gulch, and also in the road immediately east of the Cariboo Hudson Mine.

Peters Gulch Limestones (Pls)

These limestones include grey, finely-banded rocks and shaly limestones. They outcrop in Peters Gulch downstream from its junction with Pearce Gulch and in the road north of the Cariboo Hudson Mine. The limestones act as a host to the mineralization of the Ten Dollar Showings.

Peters Gulch Phyllites (Pph)

Interbanded green, yellow and brown weathering pyritiferous chlorite-sericite phyllites, grey and black shales and minor siltstones are included in this subunit. The rocks are typically ankerite-rich. They are exposed along Peters Gulch, near its junction with Pearce Gulch.

First Mountain Carbonates (Fls)

These rocks comprise a package of interbanded silver-grey calcareous phyllites, green chloritic phyllites, black shales, foliated siltstones, sandstones and grits, and various carbonate beds. These carbonates include massive blotchy-textured limestones, fine grained, finely laminated grey and white limestones, and bedded orange-weathering porous sandy carbonates. None of these carbonate units appears to be more than about 3 or 4 m wide, but in the area of the 'A' Showings the package of calcareous rocks is about 100 m thick. A detailed stratigraphy has yet to be established, but the conformable sulphide mineralization in several sandy carbonates appears to be centrally placed in the sub unit. A tentative correlation has been made between these rocks and the Peters Gulch limestones.

First Mountain Phyllites (Fph)

This division includes all rocks lying structurally above and below the calcareous sub unit Fls on First Mountain. A pile of largely chloritic and sericitic phyllites includes a thin black shale near the top of the First Mountain Carbonates, several thin limestone beds, and brown siltstones exposed in the trench on line 38 N.

Vic Sandstones (Vst)

Thickly-bedded sandstones outcrop immediately south of the Cunningham Creek bridge. Nearby float displays good graded-bedding and primary bottom structures, but these features have not been observed in the rocks in place. The rocks display some similarities to the Roundtop Mountain Sandstone unit, but mapping is incomplete and a positive correlation can not be made.

Vic Graphitic Shales (Vgs)

Black pyritiferous graphitic shales outcrop along Cunningham Creek south of the Vic Sandstones. The rocks are cherty in part, and locally, thin carbonates are exposed. (Fine-grained, finely-banded, grey and white limestone are mineralized at the Vic Showing. The host rock to the Slide Showing mineralization is a brown-weathering, massive silty carbonate.) If the Vic Sandstones are equivalent to the Roundtop Mountain Sandstones, the underlying Vic Graphic Shales would then be the same unit as the Trehouse Creek Graphitic Shales sub unit.

.3 Discussion

Holland (1954) abandoned the stratigraphy of previous workers. He set up a new stratigraphy which Sutherland Brown (1957, 1963) extended north to the Antler Creek area and east to the Cariboo R. area. Description of the various rock units are summarized in Table II.

The B.C. Department of Mines established that the rocks of the Cariboo Gp. are most intricately folded. The structures trend northwestwards and there is a marked parallelism of bedding and foliation. On a regional scale Holland mapped three major fold axes trending northwestwards through the area. A central major syncline, the Snowshoe Synclinorium, with an overturned axial surface dipping to the northeast, is flanked on the southwest by an anticlinal structure that runs through Yanks Peak. On the northeast is the Cunningham Anticlinorium whose axis lies east of Roundtop Mountain, and like the Snowshoe Synclinorium, the Cunningham Anticlinorium is overturned with its axial surface dipping to the northeast (Fig (i)).

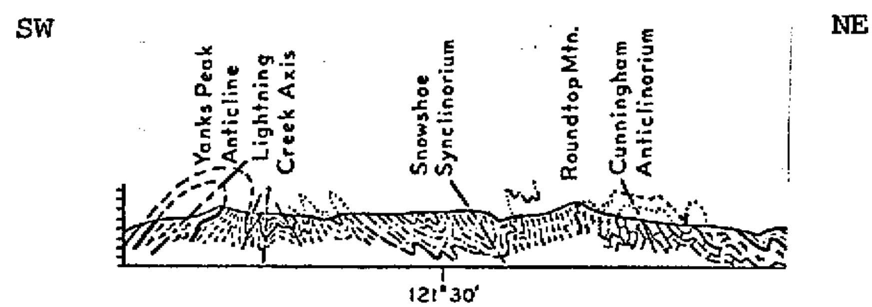


Fig. 5 Relationship of major structural features in the vicinity of Yanks Peak and Roundtop Mountain. (from Sutherland Brown (1957) Fig. 14)

TABLE II

Age	Unit	Lithology	Thickness (m) Holland	Thickness (m) S. Brown
Ordovician(?)	Snowshoe Formation	Grey to brown micaceous quartzite grey, brown, and green phyllite; impure limestone.	155	300+
		Conformable or slightly unconformable contact.		
	Midas Formation	Black to dark grey phyllite, metasilt-stone and some dark limestone.	150	300+
		Conformable contact.		
	Yank's Peak Quartzite	Grey to white, dense pure quartzite; rare limestone.	15-60	0-365+
		Conformable with Yanks Peak or Midas Formations.		
Early and (?) Middle Cambrian	Yankee Belle Formation	Brown to green phyllite, metasiltstone; brown fine quartzite; minor limestone.	150-275	300-460
		Conformable contact.		
	Cunningham Limestone	Grey massive limestone; grey to buff pelletal limestone, dolomite, minor phyllite.	120+	460-900
		Interfingering and conformable contact.		
	Isaac Formation	Grey phyllite and calcareous phyllite and limestone.		300-760
		Conformable contact.		
Windermere (Hadrynian)	Kaza Group	Gritty feldspathic micaceous quartzites and green schists.		360+

MAJOR STRATIGRAPHIC UNITS

from Sutherland Brown, 1963

More recently, the GSC have mapped the area northeast of Roundtop Mountain (Campbell, et al, 1973) and the area southeast of the Cariboo River (eg Campbell and Campbell, 1970; Mansy and Campbell, 1970). Using their observations from the Eastern Cariboo, they have revised the stratigraphy of Holland and Sutherland Brown. Their revision is based on the recognition of a second, archaeocyathid-bearing carbonate unit distinct from the Cunningham Limestone. They correlated this second unit with the Lower Cambrian Mural Fm. of the Rockies. They also found that the position of the Snowshoe Fm. above the Midas Fm. was incompatible with their own observations, and concluded that the Snowshoe is in fact a facies variation within the Kaza Gp - and therefore older than the Isaac Fm. Lastly, they redefined Holland's "Midas Fm.", remapped part of the Midas as Isaac Fm., and elsewhere introduced the Black Stuart Fm. to include black shales that had been mapped as Midas, but which they regarded as Lower Devonian in age (Mansy and Campbell, 1970). See Table III.

Some confusion has arisen because the GSC have chosen to use Holland's formational names defined by Holland in the Yank's Peak area for units the GSC workers believe better exposed elsewhere.

Riocanex originally favoured Holland's interpretation because of his detailed mapping and intimate knowledge of the mineral working in the Yank's Peak - Roundtop Mountain area, but reservations are now held. For example, on the western slopes of Roundtop Mountain a 1000-1500 m wide band of Midas is shown on Holland's map. On Yank's Peak the Midas has a surface expression of about 1000 m across, yet east of the Peak no less than four bands of Midas rocks were mapped none of which exceeds 350 m in width, and each of which represents the hinge area of an overturned anticline. This coincidence is difficult to accept and in cross section Holland must show fold styles typical of highly deformed gneiss terrains. He rather summarily dismissed "way-up" evidence, which, though rarely observed in these rocks is nevertheless a useful indicator of structure.

TABLE III

Age		Unit		Lithology	Thickness (m)
	UPPER & LOWER CAMBRIAN	CARIBOO GROUP	DOME CREEK FORMATION	Shale, siltstone, argillite minor limestone.	1200+
			Gradational contact		
	LOWER CAMBRIAN		MURAL FM.	Limestone, dolostone, shale, minor siltstone.	150 - 600+
			Conformable contact		
PALEOZOIC AND PROTEROZOIC	LOWER CAMBRIAN AND HADRYNIAN		MIDAS FM.	Shale, siltstone, minor sandstone	90 - 300+
			Conformable contact		
			YANKS PEAK FM.	Grey, white, pink quartzite, minor silty shale	0 - 580
			Gradational contact		
PROTEROZOIC	HADRYNIAN (WINDERMERE)		YANKEE BELLE FORMATION	Interbedded shale, siltstone limestone, minor sandstone and dolostone	275 - 910
			Gradational to disconformable contact (?)		
			CUNNINGHAM FORMATION	Limestone, minor grey shale; dolostone near Rocky Mountain Trench	?60 - 550
			Gradational contact.		
			ISAAC FM.	Grey to black phyllite and shale, minor, siltstone, sandstone and limestone.	?910 - 1520
			Gradational contact.		
		KAZA GROUP (incl. SNOWSHOE FORMATION)		Alternating units of feldspathic grit and grey phyllite or schist: minor limestone and conglomerate	3600+
			Base not exposed		

MAJOR STRATIGRAPHIC UNITS

from Campbell et al, 1973

Campbell, et al, recognized two major NW - SE trending structures in the Barkerville area, namely the Lightning Creek Anticlinorium, which corresponds to Holland's Yank's Peak Anticline, and the Black Stuart Synclinorium, which incorporates Sutherland Brown's (1963) Slide Mountain Trough (see Fig. 2). The Cariboo Gp., as defined by the GSC, outcrops along the SW side of the Black Stuart Synclinorium. Significant in the GSC interpretation is the inference of a strike-fault separating the band of (GSC) Isaac Fm. on the SW side from the remainder of the Cariboo Gp. on the NE. It was necessary to remap as Isaac parts of what Holland and Sutherland Brown mapped as Midas Fm., but the fault's presence had to be inferred in order to account for the occurrence of only one of their two carbonate units. Tentatively, they mapped this unit as the Mural Fm., admitting that "the distinction [between it and the Cunningham Fm.] is difficult and doubts remain" (Campbell, et al, 1973, p. 78).

With regard to the Lightning Creek Anticlinorium, Campbell, et al, suggest that because its internal structure is not well understood and stratigraphic relationships are unclear it should be termed an antiform rather than a true anticline. Further, they report that foliation is arched across the structure and the subparallel axial surfaces of the minor folds are arched in a similar manner. This is in contrast to axial-plane cleavage of the rocks flanking the structure on the NE side.

As mentioned above, the published two fold division of Snowshoe-Midas / Kaza-Isaac has been abondoned, and a new model is proposed to explain certain differences in rock type on the one hand and certain similarities on the other. Mapping is incomplete and it is emphasized the model is tentative.

Mapping indicated that not everywhere do rocks and cleavage dip to the northeast as they do on the west-facing slopes of Roundtop Mountain. On the east-facing slopes of First Mountain dip averages about 50° SW, with cleavage still approximately parallel to bedding. In the lower parts of the Cunningham Creek valley both cleavage and bedding are steeply dipping or vertical. Because the cleavage is thought to be axial planar (B.C. Department of Mines and GSC agree), the simplest explanation for the change in dip of cleavage involves a cleavage fan across a major antiform. On Roundtop Mountain where exposure is reasonably good, tight to open folds are typical. The writer believes these smaller structures reflect the shape of larger ones, so the favoured model comprises a few large tight to open folds with small scale parasitic folds in limbs and hinge areas.

Fig. 9c is a diagrammatic section across the property. It correlates the Trehouse Creek Limestones (Tls) with the Craze Creek Limestones (Cls) around an anticline with a steeply NE-dipping fold axial surface. Near the 'B' Anomaly, relatively coarse grained clastic beds within the Craze Creek Phyllites (Cph) are correlated around a syncline that has a nearly vertical fold axial surface. Black shales with anomalous barium in soils*((ba) in Fig. 9c) confirm this correlation: thus the Trehouse Creek Graphitic Shales (Tgs) are the same as the upper and lower Craze Creek units (Cgs). Although the Trehouse Creek Siltstones (Tst) apparently have no equivalent on the overturned limb between the anticline and the syncline, the section implies that it is approximately equivalent to the Bralco Phyllites (Bph) and the Peters Gulch Sandstones (Pst). This is significant in that the Bralco Limestone (Bls) can be correlated with the Craze Creek Limestone because the Bralco Limestone lies on strike with the Bralco Phyllites.

---

*1976 Data not listed in this report.

Thin black shale beds occur within and above the First Mountain Carbonates (Fls). Because the black shales are very much thinner than on the east side of Cunningham Creek they are interpreted as being merely the thin edge of the shale basin. Thus, the First Mountain Carbonate unit is equivalent to the Bralco, Craze Creek and Trehouse Creek Limestone units. Elsewhere, the black shales of the Vic Graphitic Shales (Vgs) are correlated with the Trehouse Creek Graphitic Shales because the Vic Sandstones (Vst) are very like the Roundtop Mountain Sandstones (Rst).

Table IV summarizes the above model.

TABLE IV

Tentative Stratigraphic Correlations (See also Figure 9c)

First Mountain	Roundtop Mountain 'B' Anomaly	Roundtop Mountain 'X' Anomaly	Vic
			?
		Rqt	?
	Cgs (middle)	Rph	
	Cph+Cst	Rst	Vst
	Cgs (lower+upper)	*Tgs	*Vgs
Fph (minor gs)		Tst	
*Fls	(*Bls) Cls	*Tls	
Fph (+st)	*Bph+Pst	Tph	

*Units containing Pb-Zn occurrences or appearing on the basis of soil geochemistry to be metalliferous.

Figures 9 d and 9 e are further attempts at correlating the various map units.

8. GEOCHEMISTRY

2,475 soil samples were collected at 25 metre intervals on Lines 200 metres apart. Samples were collected from the B horizon unless it was absent in which case material was collected from the C horizon. At the time of writing (Nov.1977) samples have been analysed for lead, zinc and copper. Further analysis is planned.

.1 Analytical Methods

Analysis were carried out by E. Paski at the Riocanex laboratory in North Vancouver. Samples were dried at 110°C and analysis performed on the minus 80 mesh screened fraction. 0.6 grams of sample with 2 ml of HNO_3 were heated for ½ hour at 95°C, cooled and with 1.0 ml HCL, heated for a further 1.5 hours at 95°C, and diluted to 12 ml with a $AlCl_3$ solution. Analysis was by atomic absorption.

.2 Coverage

Ground west of the area covered by the Riocanex 1977 survey was sampled in 1971 by Coast Interior Ventures Ltd. The Coast Interior Ventures survey was at 100 foot intervals on lines 400 feet apart. Samples were analysed for lead and copper but not for zinc. The Coast Interior Ventures results are expressed in Figures 10 and 16-18 contours at 105 ppm Pb and 70 ppm Pb. On the basis of check sampling in 1976 it is believed that location for location, Coast Interior Ventures results have a generally higher value than those of Riocanex. This disparity may be attributed to Coast Interior Ventures using an auger while Riocanex used a shovel, for sample collection.

.3 Rolling Mean

For the purposes of outlining geochemical anomalies which are geologically meaningful, a three-point rolling mean was plotted on each line of the Riocanex survey and where the resulting values exceeded 70 ppm Pb, or 120 ppm Zn they were considered anomalous. These threshold values were chosen because they provide a degree of continuity from line to line, and thereby show the trend of the metalliferous beds. (Figures 10 and 16-18)

.4 <u>Significance of Geochemical Anomalies</u>

The extent to which these metal-rich beds may contain sulphides of lead and zinc is not known, but a comparison with geochemical values over sulphide zones is instructive. The following data is from sampling by Coast Interior in 1971 on their line 12 N, across what is now known as the "A2" showing.

ppm Pb in soils

	Single station values	3-point rolling mean
(upslope)	39	
	24	51
	92	126
A2 Showing	262	144
	79	145
	95	79
	64	139
	259	146
	116	143
	56	74
(downslope)	51	

At no point does the 3-point mean exceed 150 ppm Pb on a line which contains 3.0 m of 18% Pb (the A2 Showing). The 3-point mean exceeds 150 ppm Pb at 15 locations (Appendix 7) on the Riocanex grid. Yet not all zones having high geochemical response overlie lead and zinc in bedrock: Drilling in 1977 showed at least one of these anomalies (line 14 N, 300 W) lies not over a sulphide zone but in a zone of secondary concentration. High geochemical values alone are not therefore considered a good guide to significant concentrations of galena and sphalerite in bedrock.

.5 Frequency Distributions

Lead, zinc and copper fall into near-perfect log normal distributions: Cumulative plots suggest anomalous values are in excess of 155 ppm Pb and (although there is little evidence of a second population) 400 ppm Zn. Locations with values in excess of the above are not considered particularly significant, these high values being probably due more to features of secondary dispension than to quantities of lead and zinc in bedrock. Locations where these values are exceeded are nevertheless shown in Figures 10 and 16-18.

.6 Geochemical Trends and Stratigraphy (Overlay Figusres 8 & 10)

The geochemical trends indicate clearly that certain stratigraphic units are more metalliferous than others. The Trehouse Limestone and the Craze Creek Limestone (possibly equivalent to one another) appear to be sources of lead and zinc. Likewise, the Trehouse Graphitic Shales and the Vic Graphitic Shales (on strike with one another and probably the same bed) are sources of both lead and zinc as are locally the Bralco Limestones which contain the Bralco Zinc Showing. Two units (the Trehouse Sandstones and the Trehouse Limestones), mapped as a single unit on the Simlock Creek sheet, appear to be a source of zinc but not for lead. The First Mountain Limestones on the Craze Creek sheet is a source for lead and, presumably (no zinc values are available) for zinc.

.7 Trench Sampling

The floor of all but three trenches was sampled at five metre intervals by filling geochemical envelopes with whatever clay and/or rock rubble was present. In most trenches (see Figures 19-29) this technique succeeded in narrowing down the anomaly. The most pronounced geochemical anomaly of the Riocanex survey (line 1400 N, 350 W) was explored by trenching and drilling. The floor of the trench was sampled (see Fig. 21) and found to be highly anomalous in both lead and zinc. Drilling, however showed the underlying rocks to be barren of both lead and zinc and thereby demonstrated that the anomaly must have been transported. Nevertheless, further targets remain on the line and it is expected that the technique (trenching of geochemical anomalies and resampling the floor of the trench) will be the basis of drill target selection in 1978.

.8 Conclusions

Geochemical soil sampling effectively outlines metalliferous beds, but it is not a suitable tool for selecting that part of the bed containing significant base metal sulphides in bedrock.

9. TRENCHING

A John Deer 450-C bulldozer equipped with backhoe and front end loader was used to dig 10 trenches with an aggregate length of 1625 m. Trenching is a satisfactory method of exposing bedrock where overburden is not too thick or the topography too steep. The method is useful for preliminary exploration of geochemical anomalies. In most cases however, it must be followed first by resampling the floor of the trench, and then by drilling those parts of the trench which did not reach bedrock.

For a location of trenches see Figure 11. For field plans at 1:500 scale see Figures 39-48.

.1 Al Trench

Length 70 metres, 0 metres backfilled

This trench was put in by Coast Interior Ventures in 1971. In 1976 Riocanex sampled the high grade, conformable galena-bearing carbonate referred to then as the "Al" zone. In 1977 this trench was cleaned by backhoe and an additional two zones the "Al.2" and "Al.3" were exposed. For section of trench and assay values see Figure 3 . Much of the trench is in gossanous material, a feature which adds to the uncertainty of sampling.

.2 The A2 Trench

Length 10 metres, 0 metres backfilled.

The A2 trench is on the site of the A2 Showing which was exposed last year by a hand dug trench. The attempt in 1977 to expose futher mineralization and surrounding rock with the backhoe was not successful because of steep slopes and a very irregular bedrock surface. (no figure)

.3 Trench on Line 32 North (Figure 24)

Length 250 metres, 0 metres backfilled.

This trench, located on Line 32 N across the upslope boundary of the A anomaly was directed at exposing extensions of the sulphide mineralization exposed in the A1 and A2 trenches. No sulphide mineralization apart from galena in a quartz vein was exposed. Nor was the orange weathering carbonate which forms the host to galena and sphalerite in the A1 and A2 trenches intersected except in very minor quartzites at the upper end of the trench. At a grid position 1875 - 1900 metres west the topography was too steep for completion of trenching. Conceivably, but improbably, the carbonate unit and sulphides are present at this location. (Figure 24)

.4 Trench on Line 38 North (Figure 26)

Length 620 metres, 470 metres backfilled.

As with the trench on Line 32 N this trench was put in across the upslope boundary of the A geochemical anomaly. No sulphide mineralization or carbonate was intersected. At the north end of the trench overburden was more than 5 metres deep and bedrock could not be reached. It is now thought likely that the carbonate unit and base metal mineralization exists upslope from the upper end of the trench. Reasons for believing this are first, geological mapping (much aided by the trench itself), second, the presence of clay at the upper end of the trench with 67 ppm Pb (sample 7719659) and third, the presence of an SP response which bears some resemblance to one over the A2 Showing (Figure 29).

.5 <u>Trench on Line 1400 North</u> (Figure 21)

Length 620 metres, 470 metres backfilled.

This trench exposed a sequence of rocks from the Trehouse Graphitic Shales at the east end, to the Trehouse Silty Phyllites at the west. The trench was put in to cross the X lead-zinc anomaly and a number of conductors detected by the Maxmin EM survey. The most pronounced conductors turned out to be due to graphite in shales. One showing of low grade lead-zinc mineralization was exposed at 350 metres west of the base line. At the upslope boundary of the X anomaly, where the source was thought likely to lie, bedrock was not reached. The floor of the trench was sampled at five metre intervals, the anomaly confirmed, and to some extent narrowed down. The zone of very high readings was drilled (see section 10) but, apart form pyritiferous limestone, no sulphides were found. Steep topography prevented the drill site from being as far up-slope as would have been desirable.

.6 <u>Trench on Line 1600 North</u> (Figure 22)

Length 280 metres, 190 metres backfilled.

Like the trench on Line 1400 N this was dug to expose the source of the X lead-zinc anomaly. Over 100 m of the trench failed to reach bedrock including the part where the source of the anomaly was most likely. Bedded barite was exposed at 155 metres west of the baseline.

.7 <u>F Anomaly Trench</u>

Length 80 metres, 0 metres backfilled.

This trench was designed to expose the source of the "F" lead-zinc anomaly. Steep topography prevented it being dug at the preferred direction. The orientation of the trench was too close to strike to provide a reasonable chance of intersecting a bedded source. The rocks exposed have aided in mapping. Further, trench floor sampling which yeilded high values at the top of the trench suggest the source may be up hill.

.8 <u>B Anomaly Trench</u>

Length 60 metres, 0 metres backfilled.

Galena-bearing quartz veins are known to exist in the area. Values of lead and zinc in samples from the trench floor would be adequately explained by such quartz veins. However the origin of the B anomaly (greater than 105 ppm lead in soils) is unlikely to be the same as the origin of the only moderate lead values in the B anomaly trench.

.9 <u>Trench over Evening Showing</u>

Length 30 metres, 30 metres backfilled.

This trench was dug over the Evening Showing. No further sulphides were exposed although bedrock was not reached everywhere. This was the first trench dug and the technique on sampling trench floors at five metre intervals had not at the time been adopted.

.10 <u>Trench on the Vic North Geophysical Anomaly</u>

Length 50 metres, 50 metres backfilled.

This trench was dug over an SP anomaly between 125 and 150 metres north of the Vic Showing. No sulphides were exposed. Rocks were black shales and grey brown sandstones of the Midas Formations. The SP anomaly (Figure 28) is attributable to graphite.

10. DRILLING

Two holes with an aggregate depth of 94.2 m were drilled from the same location at 275 W on line 1400 N to find the source of lead and zinc in clay in the bottom of the trench west of grid point 250 W, and to test a coincident EM anomaly. A preferred location would have been 25 metres further east because this would have tested the eastern most extremity of the anomaly over part of the trench where bedrock was unexposed. However, steep topography precluded siting the drill immediately to the east. A set up at 225 metres west of the base line would have been possible but that would have neccessitated a longer hole and a larger drill programme.

The drilling (logs are in Appendix 3) failed to intersect any rocks to which the geochemical anomaly could be attributed. Recovery, however, at 75%, was poor.

At present, the most likely location of a source for the geochemical anomaly in soils and on the trench floor lies in steep ground a few metres east of where these two drill holes were collared. A gossan outcrops 300 metres to the north of this point at this same break in topographical slope and at possibly the same stratigraphic horizon.

On the X Anomaly, targets which now need testing are:

1. The part of the trench where bedrock is unexposed at 250 m W to 275 m W on Line 1400 N. For reasons of topography a drill setup for testing this target will have to be at 225 m W.
2. The gossanous zone is at 1750 N.
3. On Line 1600, the part of the trench west of the bedded barite and upslope of the geochemical anomaly where bedrock is not exposed.

11. GEOPHYSICS

by J. McCance

.1 Introduction

In July 1977, Riocanex personnel completed a series of geophysical tests across a number of mineralized showings and geochemical anomalies located of four properties collectively known as the Barkerville project. This work was intended to identify characteristic geophysical responses, if any, associated with these known zones of interest such that trenching or a combination of geophysical techniques could be employed to explain the origin of the geochemical anomalies and as a means of further evaluating the potential for conformable bodies of galena, spalerite and pyrite beneath relatively thin but consistent cover material. Nine test lines were surveyed with one or more of the following methods: electromagnetics; self potential; magnetics. Although gravity and seismic techniques were suggested, traverses using these methods were not completed during this phase of geophysical tests.

The particular techniques selected for a given traverse line were chosen after a field evaluation of results obtained from two orientation traverses across the "VIC" and "A2" showings, (Figures 27 to 37). Geologically, these showings are located in the Midas and Snowshoe Formations respectively. The "VIC" showing consists of massive fine-grained galena and sphalerite occurring as a conformable body associated with a quartzitic lens in black, graphitic, pyritic shales. The "A2" showing consists of a galena bearing limestone body exposed in a trench. Within this latter showing the galena occurs as large coarse-grained blebs scattered throughout a limestone unit, itself cut by quartz veins. Horizontal-loop and double dipole electromagnetics, magnetics and self-potential methods were used over each showing and, as a consequence, horizontal loop electromagnetics using variable frequencies and coil separations and self-potential traverses were selected for surveying within areas underlain by Midas Formation rocks while magnetics and self-potential techniques were used on lines over areas underlain by units of the Snowshoe Formation.

A more complete geological description of the rocks of both the Midas and Snowshoe Formations is located elsewhere in this report

.2 Methods and Equipment

.2.1 Horizontal Loop Electromagnetics: The MaxMin II system was used. Lines 200N, 1400N, 1600N, 1800N and 400 N were surveyed. A coil separation of 150 metres was maintained throughout all traverses with a station interval of 25 metres. In addition, the orientation traverse line over the "VIC" showing was re-surveyed using a coil separation of 50 metres. Measurements of the in-phase and quadrature components of the secondary field were observed at both 444 Hz and 1777 Hz.

The lines surveyed during this test work were secant chained to ensure clean in-phase data and to minimize errors resulting from coil mis-alignments and variations in separation in the steep terrain typical of the property. A by-product of the secant chaining was the production of a detailed topographic profile for each traverse line.

Readily available poster, discussion papers and reports prepared by J.E. Betz, geophysical con-sultant, should be referred to for additional case histories and model studies involving the MaxMin II system.

.2.2 Double Dipole Electromagnetics: The Apex double-dipole EM system manufactured by Apex Parametrics Ltd., Toronto, Canada was used. Described by the manufacturer as a light weight ground equivalent of a helicopter-borne EM system this unit consists of two ferrite core antennae "coils" mounted on a 5 foot mahogany 'boom'. The coil axis are set 55° from the horizontal for zero coupling and to minimize overburden response. Measurements of the in-phase and quadrature components of the secondary field were taken at one operating frequency of 5000 Hz.

Lines 1200N, 1400N, 1600N, 1800N, 3200N, 3500N and 3800N were surveyed using a basic station interval of 25 metres with an increased number of stations observed where data from the previously completed HEM survey indicated a strong but banded conductor. A traverse was also completed over the "A2" showing to determine if the narrow sulphide zones in this showing were "conductive" and, if so, whether similar zones be recognized along this conductive trend.

Instrument "drift", termed excessive by the geophysical operator and as much as 100 ppm in-phase within one hour, required the application of diurnal corrections with frequent base ties and numerous modifications of the in-phase and quadrature compensation adjustments at the zero station or on neutral ground before the start of each traverse. The drift is believed associated with temperature changes and severe moisture problems, the result of significant rainfall during these surveys. These conditions and the "newness" of the unit probably resulted in a progressive warping of the wooden frame creating a significant misalignment of the "coils". Although instrument resolution is considered as 3 per cent of the full scale at each of the 5 sensitivity scales; ± 100 ppm, ± 300 ppm, ± 1000 ppm, ± 3000 ppm and ± 10,000 ppm; and check traverses on 1400N and 3200N over major anomalies indicated good repeatability, the overall accuracy of these survey results is considered significantly less than the instrument resolution of 3 percent of full scale.

.2.3 Self-Potential: Two Geophysical Engineering SP units were used on alternate days to complete traverses over sections of lines 1400N, 1600N, 1800N and 4000N after orientation traverses were completed across the "VIC" and "A2" showings. Two porous ceramic pots filled with a copper sulphate solution were used as non-polarizing electrodes. These "pot" electrodes were placed in damp, root and pebble free earth to provide stable ground contact conditions. Calibration of the system was completed at an initial or primary "base" station on each traverse line by "planting" both pots in contact with each other and zeroing the meter. One of the pots remained undisturbed at this base station while the leading pot was moved between successive survey stations along the line of traverse. All potential differences were recorded as millivolts. A standard 25 metre station interval was used except in areas of large potential gradients, where the station interval was reduced. Where the length of the traverse exceeded the quantity of wire available (about 300m), the leading pot at the last survey station was left undisturbed as a new base station while the wire and the original base station pot were recovered. The survey was then continued from the new base station. Data for stations within this interval were corrected by adding or subtracting the observed potential difference between the original and new bases. No attempt was made to tie data to a common base for all survey lines, consequently only relative changes along individual lines are significant and millivolt values may vary from line to line throughout the area surveyed.

.2.4 Magnetic: The instrument used for the magnetometer traverses was a Phoenix MV-2 fluxgate magnetometer. Requiring only "bull's-eye" levelling this unit has a sensitivity of 20 gammas per scale division and a reading accuracy of 10 gammas on the most sensitive scale. On all other scales reading accuracy can be maintained at 1% of full scale. Five switch-selctable scales are available which allow the observer to monitor an overall range of relative vertical field magnetic values of ± 100,000 gammas.

The instrument was initially adjusted to the most sensitive scale at a station along the "A2" orientation traverse. Readings were taken nominally every 25 metres except where anomalous conditions were encountered in which case intermediate stations were read. Overall magnetic coverage was restricted to geochemical targets within the Snowshoe Formation with only lines 3200N, 3800N, and 4000N traversed during this test work. Daily instrument drift was monitored by completing closed loops to a base station located on each traverse line. The time interval between base checks was kept within one and one-half hours throughout all traverses. Because of access difficulties between lines, no attempt was made to establish a common datum for all magnetic values with the single exception that a common base was used for all observations on line 3200N and line 3800N. Drift connections were applied by a linear distribution of any observed variations over the time between base checks.

.3 Presentation of Results

All geophysical results are presented as profiles at a scale of 1:5,000. For each traverse line pertinent geological, geochemical, and topographic information has also been added for correlation purposes. Where additional coil separations were used during horizontal-loop electromagnetic traverses the in-phase and quadrature data are presented as separate profiles. Figures 19to 29. present all available geophysical test data for each line traversed. Symbols, scales and relevant units are explained in the legend of each figure.

.4 Discussion of Survey Results

Only empirical ovservations have been made from these variable data sets. These observations are discussed below:

.4.1 Electromagnetics: Results from the orientation traverse across the "A2" showing reflect the lack of any significant conductivity-thickness parameter associated with this showing. Two additional double-dipole traverses indicated some response here interpreted to be associated with weak conductivity and a change in magnetic permeability associated with the showing.

Orientation results over the "VIC" and "BEAMISH" showings indicate the presence of a highly conductive and complex zone believed to coincide with pyritiferous and graphitic shale horizons within the Midas Formation. A significant increase in resolution is obtained from the 50 metre coil separation data. Four separate horizons of conductivity are interpreted from this latter data at 125N, 75N, 00 and 75S. These latter two graphitic, pyritic horizons are occupied by the "VIC" and "BEAMISH" sulphide showings. Additionaly anomalous conditions at 450S on this line remain incompletely covered.

EM results from lines 200N, 1400N, 1600N, and 1800N indicate that at least three strong, complexly conductive horizons have been delineated. Horizon 1 extends generally from line 1800N, 750W to line 1400N, 800W and is indicated near 900W on line 200N. This horizon shows in-phase, quadrature ratios of 2.5 to 1 and appears to parallel the axis of the Y-F-C geochemical anomalies. Direct coincidence is evident on line 200N. Horizon extends from line 1800N, 600W to line 1400N, 400W and is somewhat weaker than horizon 1 (maximum ratio 1.8:1). This EM horizon parallels the zone X geochemical anomaly with both the EM and geochemical anomalies being much weaker on line 1800N. Horizon 3 extends from line 1800N to line 1400N at 100W. It contains the strongest EM anomalies ovserved with a maximum in-phase, quadrature ratio of 3.5 to 1. This horizon does not correlate with any known geochemical target and at present remains incompletely defined. These latter two horizons are not recognized on line 200N because of insufficient geophysical coverage. These broad anomalies are believed to correlate with graphitic, pyritic zones, within the phyllites and shales of the Midas Formation. Double-dipole results generally confirm the presence of conductive horizons 1 and 3 with a significant increase in resolution but conductive horizon 2 is only observed as a weak anomaly on line 1400N.

Results from line 400N indicate four conductive zones centred at 850W, 650W, 450W and 150W. These zones appear vey similar to the previously recognized horizons although geochemical anomalies are not pronounced. Graphitic horizons are again indicated.

Double-dipole results from line 3200N and 3800N indicate strong isolated anomalies coincident with magnetic anomalies. The electromagnetic results suggest an increase in magnetic permeability and do not necessarily indicate a conductor on these lines. Similar results from line 3500N may reflect local variations in magnetic content within Snowshoe Formation rocks. However, results from line 1200N indicate two conductors from 600W to 650W and 850W to 900W. The former conductor coincides with weakly anomalous Pb and Zn in soils and may indicate a sulphide source.

.4.2 Self-Potential: Complex weathering, groundwater flow patterns and oxidation phenomena have contributed to a confusing set of SP results. Data from the "A2" orientation traverse indicate a very weak SP positive anomaly of +15MV correlates directly with the "A2" showing locale. A stronger anomaly of +40MV directly correlates with a strong spike in the magnetic data at 075E. No other SP features are apparent from the "A2" traverse although zinc and lead sulphides are known in the "A2" showing. Similar orientation results from the "VIC" showing indicate that two pronounced SP "datums" exist with values near 0, south of 075S abruptly changing to values generally above +350MV. The "BEAMISH" showing is located at this point. Sections of this positive datum have amplitude spikes to +690MV with the "VIC" showing seemingly coincident with a +480MV peak. The siting of a "base" station position within the conductive graphitic shales of the Midas Formation is suggested as an explanation for this positive shift in SP datum. A lithological change at the "BEAMISH" showing is noted.

The SP results on line 3200N are very similar to those of the "A2" orientation traverse. The +50MV SP anomaly at 1825W appears to correlate with a strong magnetic feature. Weak SP anomalies are also located at 1625W and 1550W on line 3200N.

On line 3800N no SP response is associated with the magnetic horizon at 1950W. However, a change in SP datum occurs at 1725W and suggests a change in rock type may be associated with the up-slope limit of the zone A geochemical anomaly. The pronounced negative SP anomaly of - 300MV amplitude coincides with the location of graphitic shales within the Midas Formation. The abrupt change in SP datum is believed to correlate with the boundary between Snowshoe Formation rocks and the more graphitic units of the Midas Formation.

Results from line 4000N indicate three major, multiple conductive horizons exist within this section of the Midas Formation. SP anomalies at 650W, 375W and 175W are interpreted as indicating black graphitic units within the Midas Formation. The weaker anomaly at 375W within a generally positive SP background may be of further interest.

Additional SP observations on lines 1400N, 1600N and 1800N present a confusing pattern of strongly positive, weakly negative SP responses that are not well understood. Anomalous responses that are not well understood. Anomalous responses are indicated at 1150W and between 700W and 800W, 150W to 350W and east from 125W on line 1400N. These anomalies are repetitive on lines 1600N and 1800N and generally appear to reflect the more graphitic horizons of the Midas Formation.

.4.3 Magnetics: The data from the initial orientation traverses showed little anomalous response apart from isolated "spiky" features within the Snowshoe Formation. Traverse results over the "A2" showing indicate a local background of 430 gammas and a directly related magnetic anomaly of 50 gammas. A spike anomaly of 370 gammas amplitude occurs at 075E along this traverse and is suspected to have a shallow source. A narrow magnetic seam within the sericitic phyllites is inferred as the probable source for this anomaly. Other 50 gamma and 100 gamma anomalies are recognizable west and up-slope from the "A2" showing but sources are unknown. East from the 075E anomaly the magnetic profile is very flat. A lithological boundary, possibly a fault, appears to be associated with this 075E anomaly.

Results over the "VIC" and "BEAMISH" showings indicate that the graphitic shales within the Midas Formation are nonanomalous magnetically but appear to be flanked by 200 to 300 gamma anomalies located at 300N, 200N, 250S and 375S along this traverse. Magnetite seams are interpreted to lie along contacts between the silty phyllites and pyritieferous shales and to lie within a magnetically anomalous grey limestone unit at 375S. A weak magnetic anomaly at 250S exists within the black graphitic shales and remains unexplained.
Magnetic profiles on line 3200N and line 3800N show features similar to those described near the "A2" showing. On line 3200N a magnetic spike anomaly of 800 gammas at 1825W indicates a near surface source within the zone A geochemical anomaly. On line 3800N at 1950W a similar magnetic feature of 200 gammas indicates a similar but deeper target. All values east from these anomalies show little variation above a bakground value of 300 gammas. Minor exceptions constituting 50 gamma and 100 gamma anomalies can be identified on line 3200N.

The magnetic profile for line 4000N south of the "EVENING" showing and within the Midas Formation again shows limited magnetic relief. The decrease in apparent background amplitude near 600W on this line may reflect an increasing depth of cover downslope towards Cunningham Creek.

.5 <u>Conclusions</u>

Six geophysical traverses across the Midas Formation, spaced at iregular intervals, detected several discrete zones of strong conductivity extending southeast from the area of the "VIC" and "BEAMISH" showings for at least five kilometres. Black, graphitic and pyritic shale units provide an explanation for these responses from multiple banded sources. It would appear from the geochemical results that one or more of these graphitic formational horizons may be rich in Pb and Zn. Even indirect geophysical mapping of these host horizons should prove an effective and efficient method of compiling information on width of potential sources and depth of burial.

SP data from these traverses appears to indicate conductive areas within the Midas Formation. However, although SP results near the "EVENING" showing (L400N) correlate directly with the EM responses such direct correlations do not always exist. This lack of correlation can be explained by the numerous non-conductive sources of the SP phenomena. Under the consistently rainy conditions encountered during these surveys, fluctuations in water table and ground water flow might provide an SP anomaly. Changes associated with redox reactions in other than sulphide minerals or graphite, for instance the sericitic phyllites, and a variable depth of weathering and overburden throughout the area might also appear as anomalous SP responses. Even with this multiplicity of sources, however, it is concluded that these SP results have been capable of delineating broad resistivity zones that appear correlatable with different rock units but do not consistently reflect graphitic horizons within the Midas or sulphide concentrations.

Double-dipole results provide a more sensitive faster mapping tool with a significant increase in resolution within conductive horizons. In areas of magnetic formations, the guadrature component also allows discrimination between conductivity and magnetic permeability variations. However, a significant drift error was evident in these survey results. This drift, believed related to the rainy conditions during survey, required a great amount of patience and extra effort from the geophysical operator on site and further use of this unit is not recommended.

Magnetics, SP and Double-dipole results appear to be useful in delineating a unique magnetic, conductive horizon trending northwest and generally upslope from the "A" geochemical anomaly. Although not clearly evideh from the orientation traverse over the "A2" showing, detailed electromagnetic traversing and magnetic surveys may be capable of recognizing this horizon which could host an extension to the A zone mineralization.

It is concluded that no distinct sulphide zones were located. However, graphitic horizons associatied with sulphides within the Midas Formation produce conductive generaly non-magnetic responses while the mineralized quartz vein zones recognized within the Snowshoe Formation appear associated with a magnetic and somewhat conductive horizon. The next phase of exploration should involve geophysics to explore poddy conformable sulphide lenses along recognized to graphitic horizons.

.6 Recommendations

It is recommended that additional geophysical surveys be completed to improve sulphide target resolution within the broad graphitic horizons recognized from these test traverses.

Within the Midas Formation, short coil separation EM surveys using the shootback method and VLF-EM surveys should be systematically employed so as to completely cross-section the Midas Formation as it is currently mapped.

Within the Snowshoe Formation short coil separation EM surveys, VLF inductive resistivity surveys and magnetic surveys should be completed along a northwest trend from the "A" showing.

No further use of SP surveys is recommended. VLF inductive resistivity techniques should be substituted when necessary to identify lithologic boundaries.

In the area of showings, and in a less systematic manner, a gravity survey should be completed to establish the size of recognized sulphide zones and the existence of significant sulphide lenses within the graphitic horizons of the Midas Formation.

12. CLAIMS

The Cunningham Creek Claims consisted, at the end of October 1977, of 143 2-post claims and M.G.S. units held directly or under option by Riocanex. See Figures 6 & 12.

Holdings at present are:

Claims owned by Riocanex:
Ten: totalling 86 units.

Claims held under option from Coast Interior Ventures Ltd.:
40 two-post claims.

Claims held under option from R.J. Miller:
13 two-post claims.

Claims held under option from W.E. Thomson:
4 two-post claims.

For description on claims see Table V.

TABLE V

DESCRIPTION OF CLAIMS

Owned by Riocanex:

CLAIM NAME	RECORD NUMBER	NUMBER OF UNITS ON 2-POST CLAIMS	DATE RECORDED	ASSESSMENT DUE DATE
PENNY	255	6	10 Sep 76	10 Sep 79
CRAZE	256	10	10 Sep 76	10 Sep 79
TREE	259	12	17 Sep 76	10 Sep 79
BOOZE	275	12	08 Nov 76	08 Nov 79
MID	278	16	08 Nov 76	08 Nov 79
SIM	279	8	08 Nov 76	08 Nov 79
WEE	280	2	08 Nov 76	08 Nov 79
NUG	276	12	08 Nov 76	08 Nov 79
LEAF	277	4	08 Nov 76	08 Nov 79
LOST	476	4	29 Aug 77	29 Aug 78

Owned by R.J. Miller:

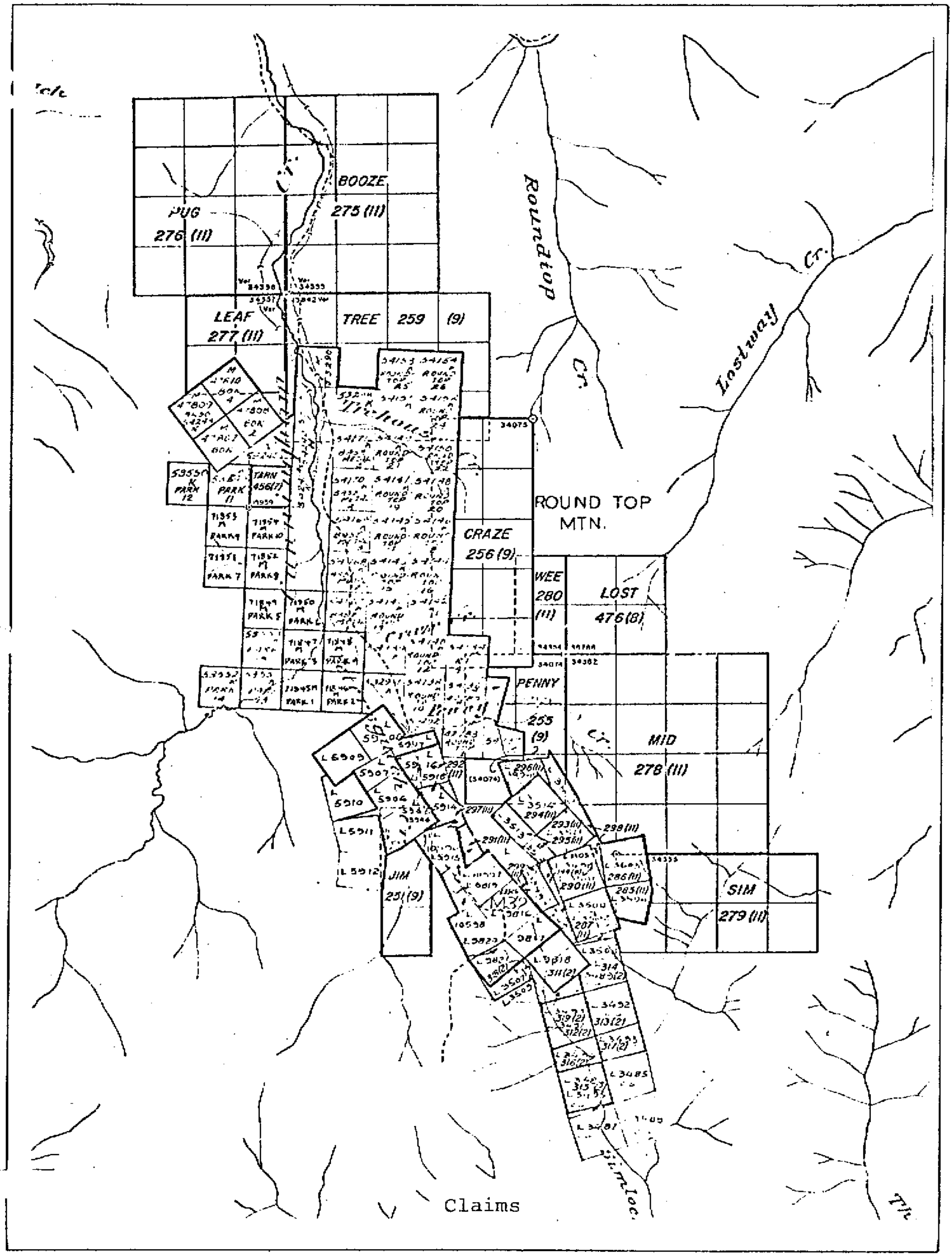
CLAIM NAME	RECORD NUMBER	NUMBER OF UNITS ON 2-POST CLAIMS	DATE RECORDED	ASSESSMENT DUE DATE
PARK 11,12	53549-50	2	27 Aug 69	27 Aug 78
PARK 1-10	71845-54	10	27 Sep 74	27 Sep 77
TARM	456	1	20 Jul 77	20 Jul 78

Owned by W.E. Thomson:

CLAIM NAME	RECORD NUMBER	NUMBER OF UNITS 2-POST CLAIMS	DATE RECORDED	ASSESSMENT DUE DATE
BON 1-4	47807-10	4	30 Sep 68	30 Sep 80

Owned by Coast Interior Ventures Ltd.:

CLAIM NAME	RECORD NUMBER	NUMBER OF UNITS 2-POST CLAIMS	DATE RECORDED	ASSESSMENT DUE DATE
PARK 13,14,15	53551-53	3	27 Aug 69	27 Aug 79
ROUNDTOP 1	42783	1	20 Jun 67	20 Jun 79
" 3	42785	3	20 Jun 67	20 Jun 79
" 10-26	54138-54	17	25 Aug 69	25 Aug 79
" 27 (Frl) " 28 (Frl)	53291-92	1	30 Aug 69	30 Aug 79
RT 41,42,43,44	54134-37	4	15 Sep 69	15 Sep 79
BASE METAL 1-5	54167-71	5	25 Aug 69	25 Aug 79
" " 6,7	53289-90	2	30 Aug 69	30 Aug 79
" " 8,9,10	54241-43	3	14 Oct 69	14 Oct 79
BON FRACTION	54240	1	14 Oct 69	14 Oct 79
SILVER MTN. 2	53288	1		30 Aug 79



Scale 1:50,000

Figure 6

13. CONCLUSIONS

1. The Cunningham Creek Claims cover a 9 km belt of shales, schists, and limestone which contain at least minor occurrences of conformable lead-zinc sulphide mineralization.

2. One occurrence (the A1 zone) is of potentially economic grade and width, but it has yet to be proved to have any on-strike or down-dip continuity.

3. The close association of graphitic shales, limestone, conformable bodies of galena and spalerite, bedded barite, and an apparent facies boundary, are typical of "shale-hosted barite - lead - zinc deposits".

4. The Midas and Snowshoe Formations appear to be time-equivalent, though of separate facies.

5. The stratigraphic succession is repeated by tight folds plunging gently to the northwest with axial surfaces dipping steeply to the northeast.

6. It seems possible that all the significant conformable lead-zinc showings now fall in the same time-stratigraphic unit.

7. Geochemical soil sampling effectively outlines metal-rich stratigraphic units but cannot be used as a reliable tool for distinguishing between bedrock with high background values, bedrock with significant quantities of lead and zinc, and barren bedrock overlain by transported geochemical anomalies.

8. No geophysical method proved to be effective for detecting sulphide zones. However, Maxmin, Double Dipole EM, and SP can be used for mapping bedrock trends.

REFERENCES

HOLLAND, S.S., 1947;
Canyon Cariboo Gold Mines Ltd.,
in Minister of Mines, B. C. Ann Dept. pp. 114-115.

HOLLAND, S.S., 1954;
Geology of the Yanks Peak - Roundtop Mountain Area, Cariboo District, British Columbia;
B.C. Dept. of Mines. Bull. 34.

SUTHERLAND BROWN, A., 1957;
Geology of the Antler Creek Area, Cariboo District, British Columbia;
B.C. Dept. of Mines. Bull. 38.

SUTHERLAND BROWN, A., 1963.
Geology of the Cariboo River Area, British Columbia;
B.C. Dept of Mines. Bull. 47.

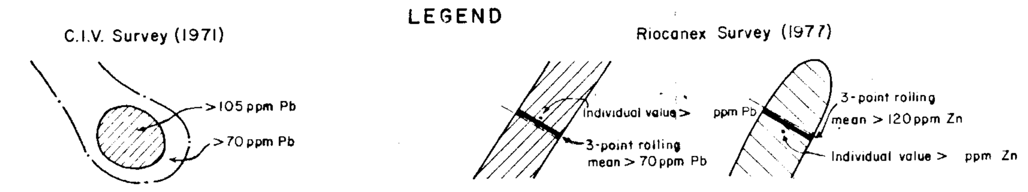
CAMPBELL, K.V., and CAMPBELL, R.B., 1970;
Quesnel Lake Map-Area, British Columbia (93A)
in Rept. of Activities, GSC, pap 70-1(A),pp.32-35.

CAMPBELL, R.B., MOUNTJOY, E.W., and YOUNG, F.G., 1973;
Geology of McBride Map-Area, British Columbia;
GSC Pap. 72-35.

MANSY, J.L., and CAMPBELL, R.B, 1970'
Statigraphy and structure of the Black Stuart Synclinorium, Quesnel Lake Map-Area, British Columbia (93A);
in Rept. of Activities, GCS Pap 70-1 (A)
pp. 38-41.

RIOCANEX REPORT
Barkerville Project 1976 Vols. 1 & 2

LEGEND



N.T.S

SCALE 1:10,000

METRES 200 100 0 200 400 600 800 METRES

Part 1
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545

RIO TINTO CANADIAN EXPLORATION LIMITED

CUNNINGHAM CREEK – ROUNDTOP CLAIMS

1/2 GEOCHEMICAL ANOMALIES LEAD AND ZINC ①

DRAWN G.D.H./altair
DWG. G-8469
NOV. - 1977
FIG. 10

———— Observed position of flagged lines

- - - - - - - Interpolated position of flagged lines

N.B. Positions of lines represent best estimates determined by plotting from enlarged air photographs. Error due to photographic distortion may have been incorporated.

▬ TRENCH

N.T.S. 93A14

SCALE 1:10,000

METRES 200 100 0 200 400 600 800 METRES

RIO TINTO CANADIAN EXPLORATION LIMITED

CUNNINGHAM CREEK CLAIMS

1/2 LOCATION OF TRENCHES (2)

DRAWN G.D.H./altair

DWG G-8468

NOV. - 1977

FIG. 11

LEGEND

Observed position of flagged lines

Interpolated position of flagged lines

N.B. Positions of lines represent best estimates determined by plotting from enlarged air photographs. Error due to photographic distortion may have been incorporated.

CLAIMS HELD BY RIOCANEX

- Directly
- By option from Coast Interior Ventures Ltd.
- By option from B. Miller
- By option from W. J. Thomson
- Internal claim boundary

N.T.S. 93A14

SCALE 1:10,000

METRES 200 100 0 200 400 600 800 METRES

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545 Part 1

RIO TINTO CANADIAN EXPLORATION LIMITED

1/2 CUNNINGHAM CREEK CLAIMS (3)

CLAIMS OWNED OR OPTIONED BY RIOCANEX OCTOBER 1977

R.L./a.b. DWG. C-8464	OCT. 1977	FIGURE: 12

Plotting limit
JAWBONE HILL
NUGGET MTN.
VICTORIAN CREEK
Vgs
Vst
LEWISTOWN FAULT
CUNNINGHAM
Fph
Fph
EXPLANATION
Rgt Roundtop Mtn. Quartzites
Rph Roundtop Mtn Phyllites
Rst Roundtop Mtn Sandstones
Tgs Trehouse Ck Graphitic Shales
Tst Trehouse Ck. Siltstones
Tls Trehouse Ck. Limestones
Tph Trehouse Ck Phyllites
Cls Craze Ck Limestones
Cgs Craze Ck Graphitic Shales
Cph Craze Ck Phyllites
Bph Bralco Ridge Phyllites
Bls Bralco Ridge Limestone
Pst Peters Gulch Sandstones
Pls Peters Gulch Limestones
Pph Peters Gulch Phyllites
Fls First Mtn Carbonates
Fph First Mtn Phyllites
Vst Vic Sandstones
Vgs Vic Graphic Shales
GRID NORTH
TRUE NORTH
30°
1°24'
qt Quartzite and related coarse grained clastic rocks
st Siltstones and associated sandstones, usually phyllitic
gs Graphitic shale, with minor carbonate, siltstone, barite
ls Phyllitic rocks with common carbonate units
ph Largely phyllitics, with subordinate coarse clastics and limestones
Mafic dyke rocks
Foliation
Bedding - tops known
Bedding - tops unknown
Small-scale fold axis
Foliation / bedding intersection
Fault, with downthrow side
Geological boundaries, approximate
Geological boundaries, assumed
Antiform
Synform
Antiform with Overturned fold axial surface
Synform with Overturned fold axial surface
For outcrops and station locations see Geology maps at 1:5,000 scale
VICTORIA CK
CRAZE CK
SIMLOCK CK
N.T.S. 93-A-14
SCALE 1:5000
METRES 10 5 0 10 20 30 40 METRES
Part 1
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545
1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (4)
CUNNINGHAM CK. CLAIMS - VICTORIAN CREEK
GEOLOGY: INTERPRETATION
G.D.H. /altair
DWG. G-8587-3
NOV. - 1977
FIG. 13


Plotting limit
Fph
Fls
Fph
Cls
Cgs
Tph
Tls
Tst
Tgs
Pph
Pst
Rst
Rgt
Rph
Cph
Cgs
TREHOUSE
CREEK
ROUNDTOP
CREEK
CUNNINGHAM
MILLER
CRAZE
CREEK
PENNY
CREEK
EXPLANATION
Rgt Roundtop Mtn. Quartzites
Rph Roundtop Mtn Phyllites
Rst Roundtop Mtn Sandstones
Tgs Trehouse Ck Graphitic Shales
Tst Trehouse Ck. Siltstones
Tls Trehouse Ck. Limestones
Tph Trehouse Ck Phyllites
Cls Craze Ck Limestones
Cgs Craze Ck Graphitic Shales
Cph Craze Ck Phyllites
Bph Bralco Ridge Phyllites
Bls Bralco Ridge Limestone
Pst Peters Gulch Sandstones
Pls Peters Gulch Limestones
Pph Peters Gulch Phyllites
Fls First Mtn. Carbonates
Fph First Mtn Phyllites
Vst Vic Sandstones
Vgs Vic Graphic Shales
GRID NORTH
TRUE NORTH
30°
1° 24'
qt Quartzite and related coarse grained clastic rocks
st Siltstones and associated sandstones, usually phyllitic
gs Graphitic shale, with minor carbonate, siltstone, barite
ls Phyllitic rocks with common carbonate units
ph Largely phyllitics, with subordinate coarse clastics and limestones
Mafic dyke rocks
Foliation
Bedding - tops known
Bedding - tops unknown
Small-scale fold axis
Foliation / bedding intersection
Fault, with downthrow side
Geological boundaries, approximate
Geological boundaries, assumed
Antiform
Synform
Antiform with Overturned fold axial surface
Synform with Overturned fold axial surface
For outcrops and station locations see Geology maps at 1:5,000 scale
VICTORIA CK
CRAZE CK
SIMLOCK CK
N.T.S 93-A-14
SCALE 1:5000
METRES 10 5 0 10 20 30 40 METRES
Part 1
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545
1/2
RIO TINTO CANADIAN EXPLORATION LIMITED
5
CUNNINGHAM CK. CLAIMS-CRAZE CREEK
GEOLOGY: INTERPRETATION
G.D.H. /altair
DWG. G-8587-2
NOV.-1977
14


Plotting limit
PETERS
GULCH
SIMLOCK
CREEK
BOCANEX
Bph
Pst
Tph
Tst
Tgs
Cgs
Rst
Rph
Rgt
5500
6000
EXPLANATION
Rgt Roundtop Mtn Quartzites
Rph Roundtop Mtn Phyllites
Rst Roundtop Mtn Sandstones
Tgs Trehouse Ck Graphitic Shales
Tst Trehouse Ck. Siltstones
Tls Trehouse Ck. Limestones
Tph Trehouse Ck Phyllites
Cls Craze Ck Limestones
Cgs Craze Ck Graphitic Shales
Cph Craze Ck Phyllites
Bph Bralco Ridge Phyllites
Bls Bralco Ridge Limestone
Pst Peters Gulch Sandstones
Pls Peters Gulch Limestones
Pph Peters Gulch Phyllites
Fls First Mtn Carbonates
Fph First Mtn Phyllites
Vst Vic Sandstones
Vgs Vic Graphic Shales
GRID NORTH
TRUE NORTH
30°
1° 24'
qt Quartzite and related coarse grained clastic rocks
st Siltstones and associated sandstones, usually phyllitic
gs Graphitic shale, with minor carbonate, siltstone, barite
ls Phyllitic rocks with common carbonate units
ph Largely phyllitics, with subordinate coarse clastics and limestones
Mafic dyke rocks
Foliation
Bedding - tops known
Bedding - tops unknown
Small-scale fold axis
Foliation/bedding intersection
Fault, with downthrow side
Geological boundaries, approximate
Geological boundaries, assumed
Antiform
Synform
Antiform with Overturned fold axial surface
Synform with Overturned fold axial surface
For outcrops and station locations see Geology maps at 1:5,000 scale
VICTORIA CK
CRAZE CK
SIMLOCK CK
N.T.S 93-A-14
SCALE 1:5000
METRES 10 5 0 10 20 30 40 METRES
MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
No 6545
1/2
RIO TINTO CANADIAN EXPLORATION LIMITED
6
CUNNINGHAM CK. CLAIMS - SIMLOCK CREEK
GEOLOGY: INTERPRETATION
G.D.H./altair
DWG. G-8587-1
NOV.-1977
FIG. 15

TRUE NORTH
GRID NORTH
30°
1°24'

LEGEND

——— Observed position of lines

— — — Interpolated position of lines

N.B. Positions of lines represent best estimates determined by plotting from enlarged air photographs. Errors due to photographic distortion may have been incorporated.

C.I.V. Survey (1971)

> 105 ppm Pb

> 70 ppm Pb

Data on zinc not available

Riocanex Survey (1977)

Individual value > 125 ppm Pb

3-point rolling mean > 70 ppm Pb

3-point rolling mean > 120 ppm Zn

Individual value > 400 ppm Zn

VICTORIA CK.

CRAZE CK.

SIMLOCK CK.

N.T.S 93-A-14

Part I

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545

SCALE 1:5000

METRES 10 5 0 10 20 30 40 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (7)

ROUNDTOP MOUNTAIN - VICTORIAN CREEK

GEOCHEMICAL ANOMALIES
LEAD AND ZINC

R.L./a.b. DWG. G.C.-8458	NOV. 1977	FIGURE 16

Observed position of lines
interpolated position of lines

N.B. Positions of lines represent best estimates determined by plotting from enlarged air photographs. Errors due to photographic distortion may have been incorporated.

C.I.V. Survey (1971)
> 105 ppm Pb
> 70 ppm Pb
Data on zinc not available

Riocanex Survey (1977)
Individual value > 125 ppm Pb
3-point rolling mean > 70 ppm Pb
3-point rolling mean > 120 ppm Zn
Individual value > 400 ppm Zn

VICTORIA CK.
CRAZE CK.
SIMLOCK CK.

N.T.S 93-A-14

Part 1

SCALE 1:5000
METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (8)

ROUNDTOP MOUNTAIN - CRAZE CREEK

GEOCHEMICAL ANOMALIES
LEAD AND ZINC

R.L./a.b. DWG.G.C.-8459	NOV. 1977	FIGURE 17

TRUE NORTH
GRID NORTH
30°
1° 24'

LEGEND

——— Observed position of lines

— — — Interpolated position of lines

N.B. Positions of lines represent best estimates determined by plotting from enlarged air photographs. Errors due to photographic distortion may have been incorporated.

C.I.V. Survey (1971)

> 105 ppm Pb

> 70 ppm Pb

Data on zinc not available

Riocanex Survey (1977)

Individual value > 125 ppm Pb

3-point rolling mean > 70 ppm Pb

3-point rolling mean > 120 ppm Zn

Individual value > 400 ppm Zn

VICTORIA CK
CRAZE CK
SIMLOCK CK

N.T.S 93-A-14

Part 1

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO 6545

SCALE 1: 5600

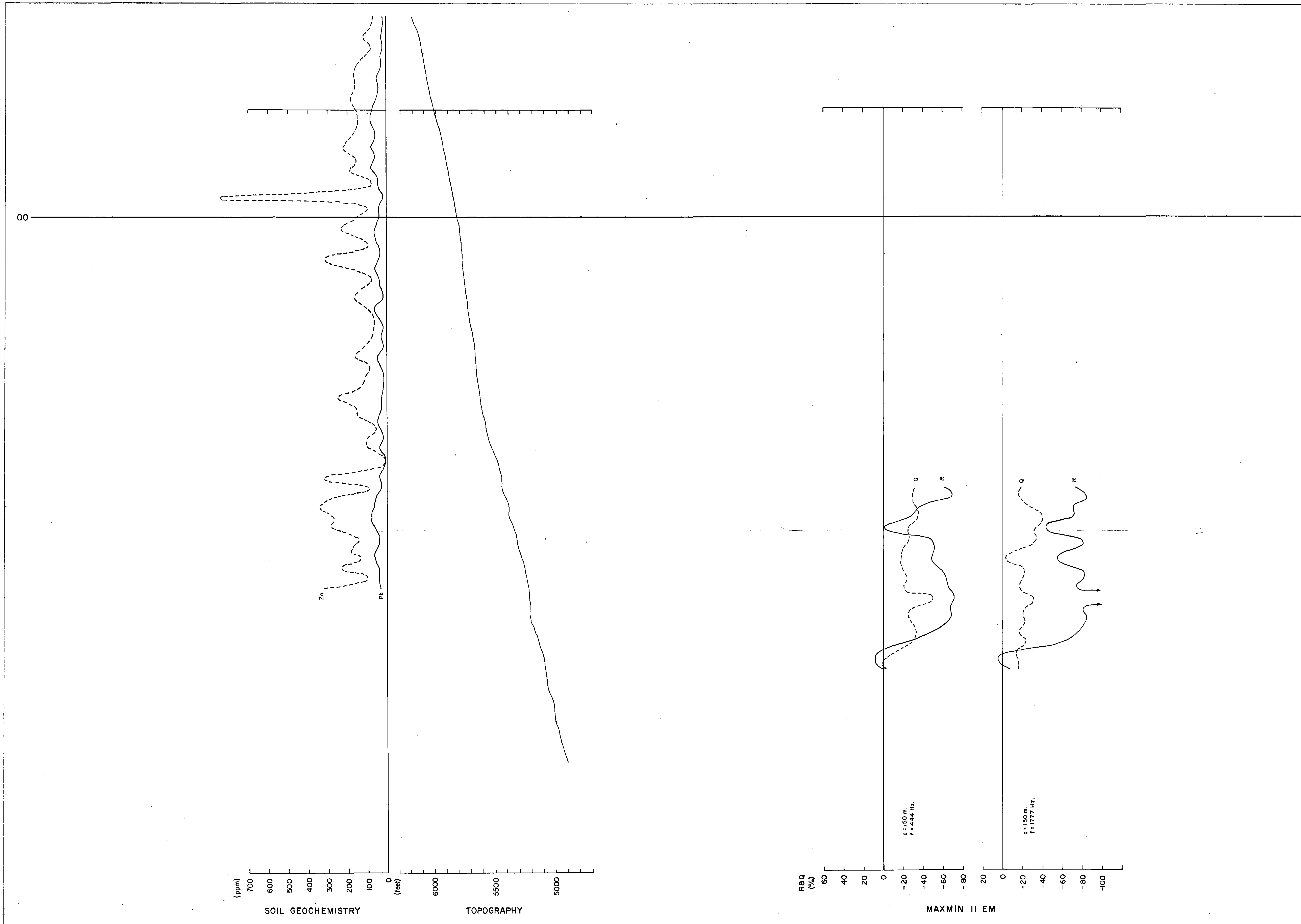
METRES 10 5 0 10 20 30 40 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (9)

ROUNDTOP MOUNTAIN - SIMLOCK CREEK

GEOCHEMICAL ANOMALIES
LEAD AND ZINC

R.L./a.b. DWG. G.C.-8460	NOV. 1977	FIGURE 18



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545
Part 1

N. T. S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (10)

CUNNINGHAM CK: ROUNDTOP CLAIMS C.I.V. OPTION

LINE 200 N

PROFILES: GEOCHEMISTRY, GEOPHYSICS

R.W. / a.b. DWG. G-7485	OCT. 1977	FIGURE: 19

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545 Part 1

N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (11)

CUNNINGHAM CK: ROUNDTOP CLAIMS C.I.V. OPTION

LINE 1200 N

PROFILES: GEOCHEMISTRY, GEOPHYSICS

R.W. / a.b. DWG. G-7488	OCT. 1977	FIGURE: 20

N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

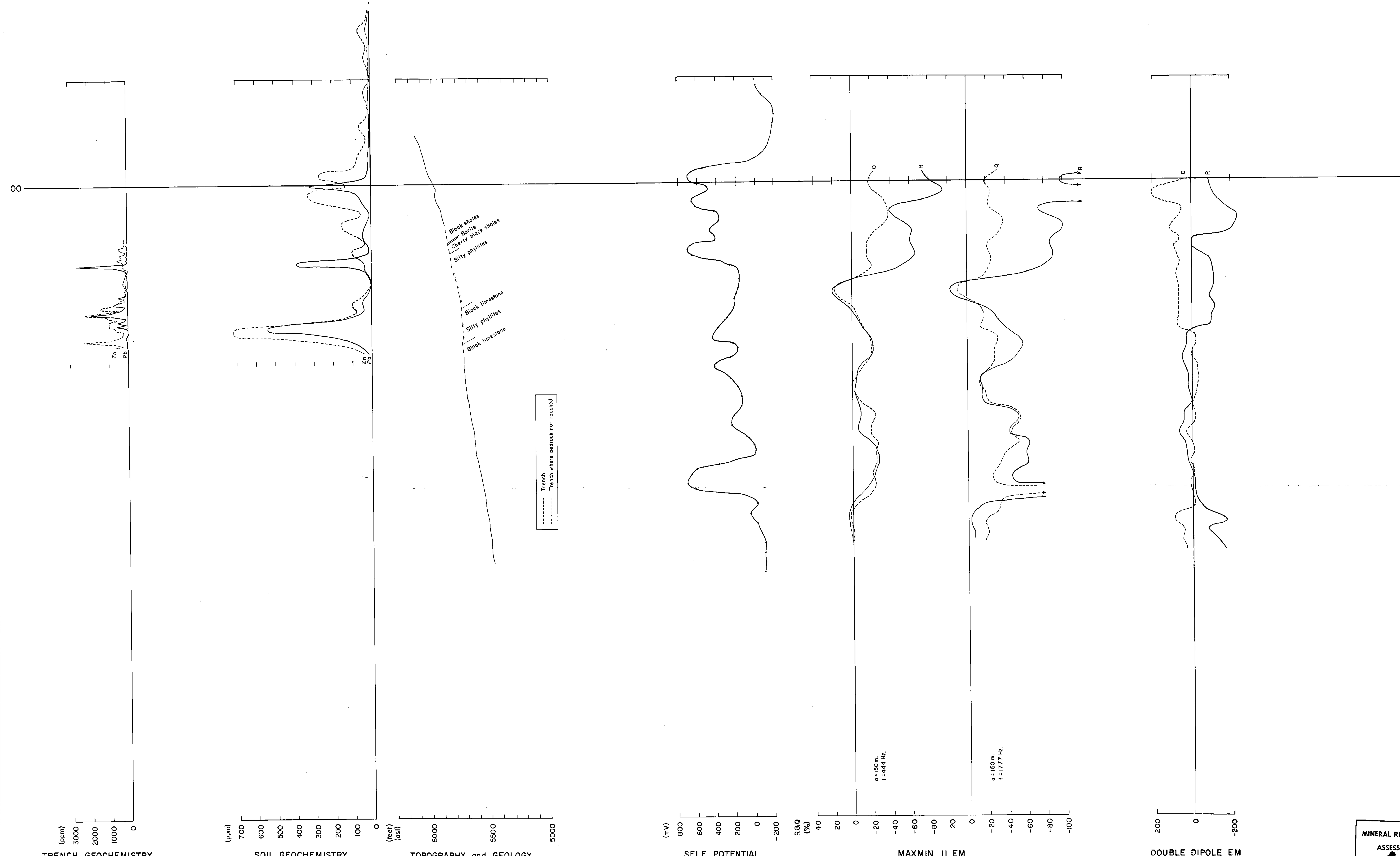
1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (12)

CUNNINGHAM CK: ROUNDTOP CLAIMS C.I.V. OPTION

LINE 1400 N

PROFILES: GEOCHEMISTRY, GEOLOGY, GEOPHYSICS

R.W. / a.b. DWG. G-7482	OCT. 1977	FIGURE: 21



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545 Part 1

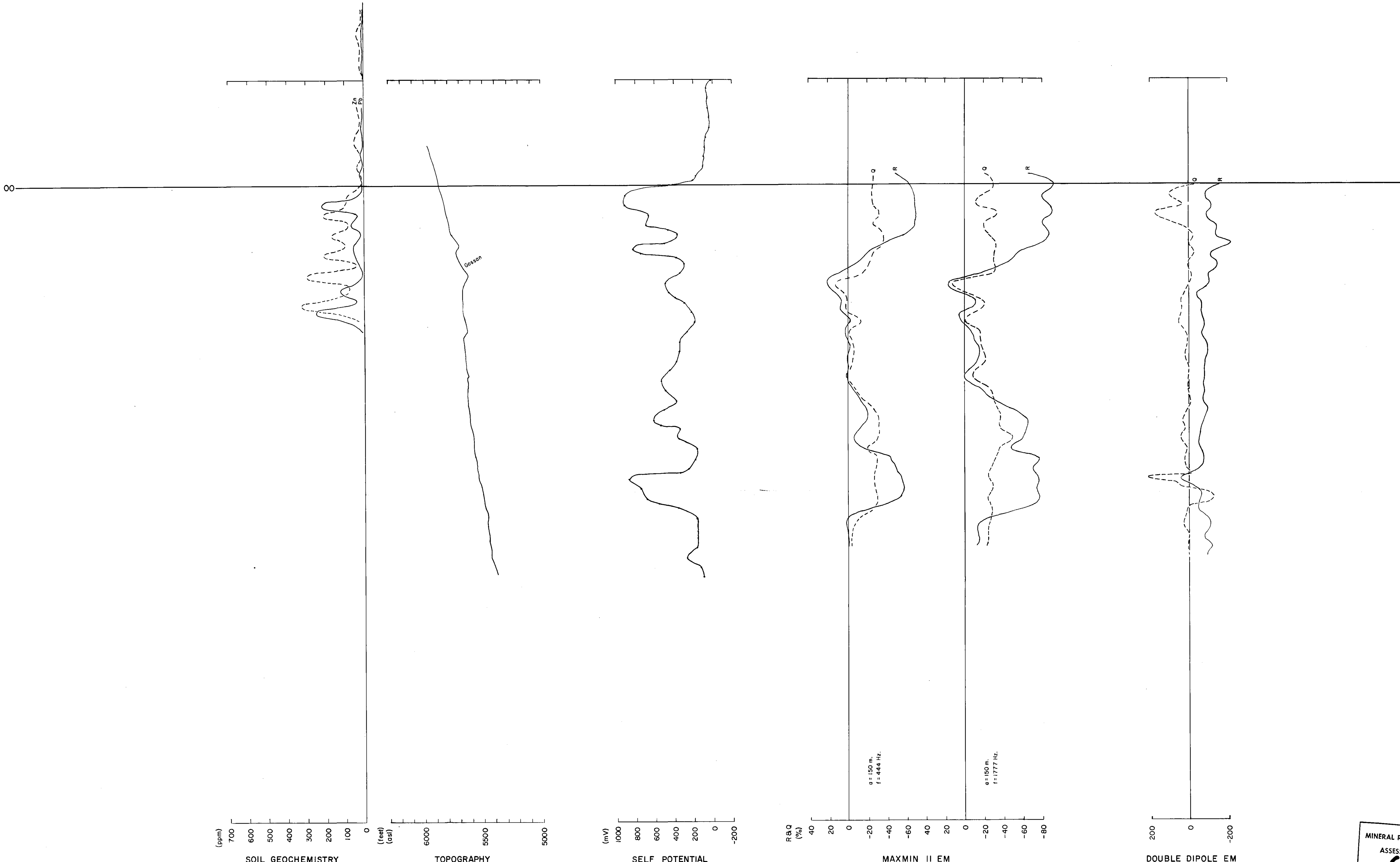
N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (13)		
CUNNINGHAM CK: ROUNDTOP CLAIMS C.I.V. OPTION		
LINE 1600 N PROFILES: GEOCHEMISTRY, GEOLOGY, GEOPHYSICS		
R.W. / a.b. DWG. G-7483	OCT. 1977	FIGURE: 22



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545
Part 1

N. T. S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CAÑADIAN EXPLORATION LIMITED (14)

CUNNINGHAM CK: ROUNDTOP CLAIMS C.I.V. OPTION

LINE 1800 N

PROFILES: GEOCHEMISTRY, GEOPHYSICS

R.W. / a.b. DWG G-7484	OCT. 1977	FIGURE: 23

Part 1

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545

N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

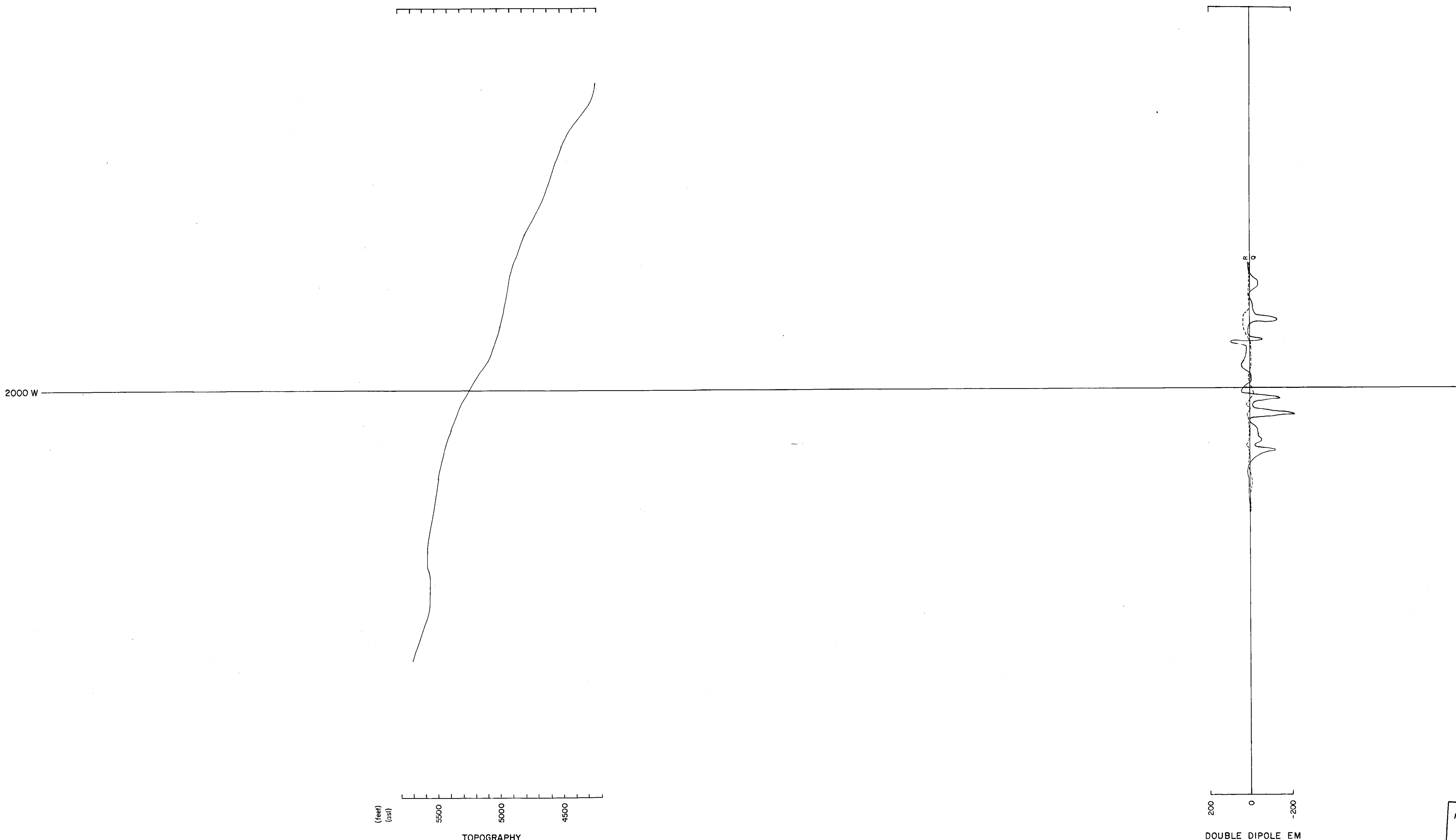
1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (15)

CUNNINGHAM CK: MILLER OPTION C.I.V. OPTION

LINE 3200 N

PROFILES: GEOCHEMISTRY, GEOLOGY, GEOPHYSICS

R.W. / a.b. DWG. G-7489	OCT. 1977	FIGURE: 24



N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (16)

CUNNINGHAM CK: THOMSON OPTION

LINE 3500 N

PROFILES: GEOPHYSICS

R.W. / a.b. DWG. G-7486	OCT. 1977	FIGURE: 25

(a) B.C. Dept. of Mines Interpretation (after Holland (1954) and Sutherland Brown (1957)

(b) G.S.C. Interpretation (after Campbell et al (1973)

(c) Preferred Interpretation

(d) } Other Interpretation
(e) }

SCALE 1:10,000

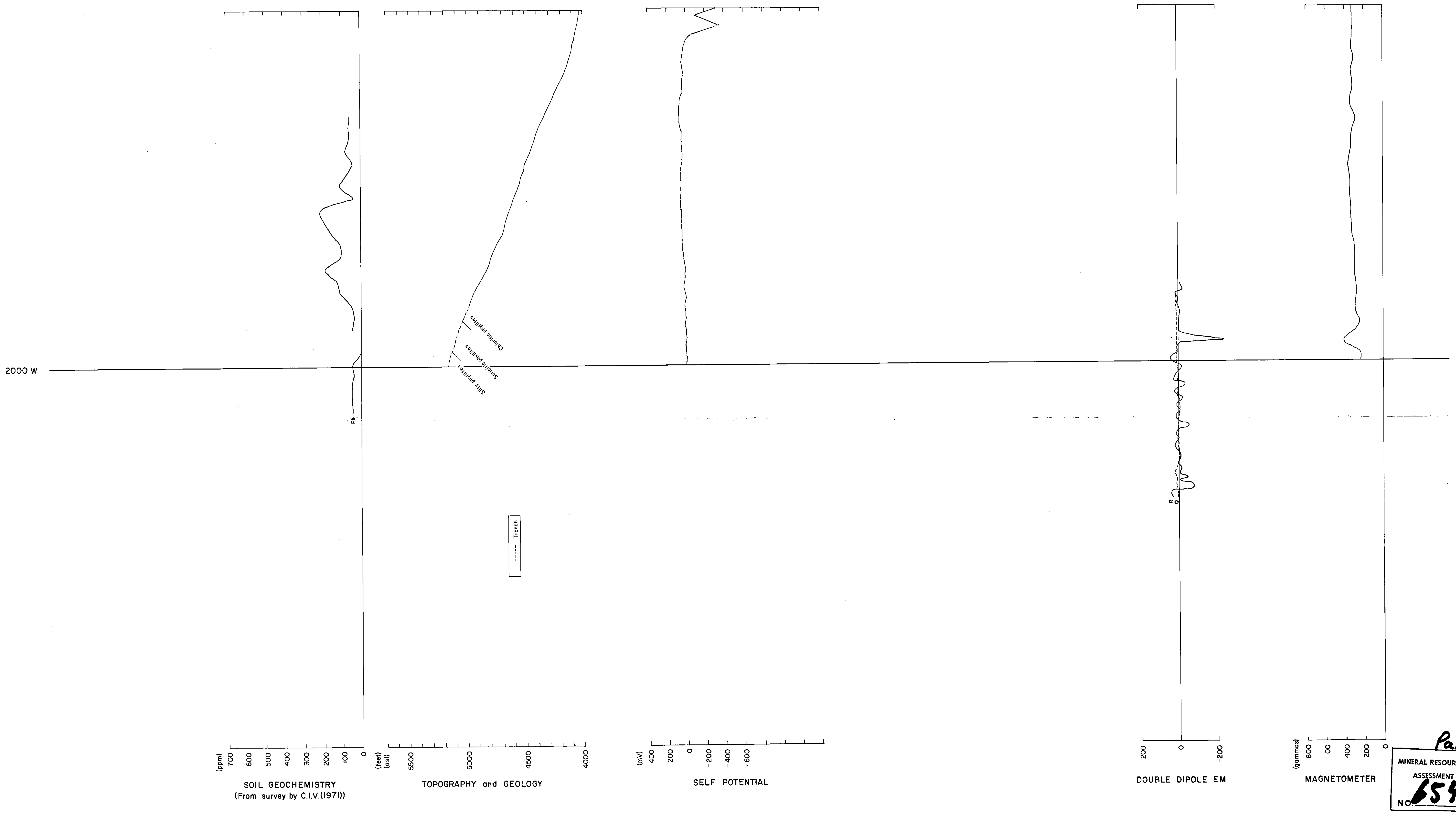
METRES 200 100 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (17)

CUNNINGHAM CREEK – ROUNDTOP CLAIMS

DIAGRAMMATIC GEOLOGICAL CROSS SECTIONS

DRAWN G.D.H.		
DWG G-7493	NOV-1977	FIGURE: 9



Part 1

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545

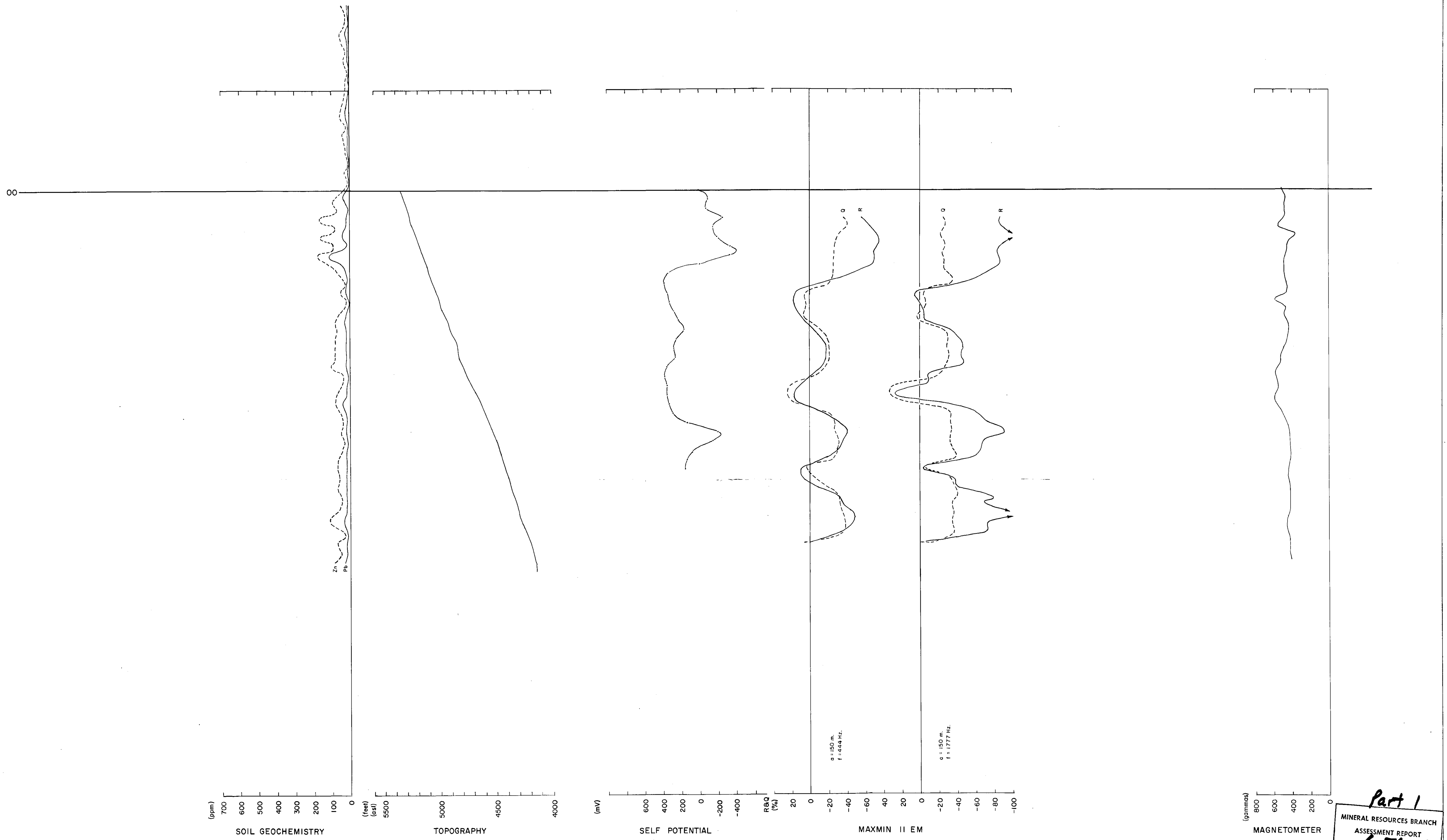
N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (18)		
CUNNINGHAM CK: ROUNDTOP CLAIMS THOMSON OPTION		
LINE 3800 N PROFILES: GEOCHEMISTRY, GEOLOGY, GEOPHYSICS		
R.W. / a.b. DWG. G-7490	OCT. 1977	FIGURE: 26



Part 1

N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (19)

CUNNINGHAM CK: ROUNDTOP CLAIMS

LINE 4000 N

PROFILES: GEOCHEMISTRY, GEOPHYSICS

R.W. / a.b. DWG. G-7487	OCT. 1977	FIGURE: 27

SLIDE SHOWING

202245 Grab 0.61% Pb 3.65% Zn 0.28 oz/ton Ag

VIC SHOWING

202212	0.3 m.	3.30% Pb	3.65% Zn	0.41 oz/ton Ag
202213	0.2 m.	13.10% Pb	7.60% Zn	1.72 oz/to Ag

EVENING SHOWING

202242	1.5 m.	0.11 % Pb	0.32 % Zn	0.06 oz/ton Ag
202243	0.4 m.	0.99	3.25	0.23
202244	1.5	0.04	0.13	0.02

A2 SHOWING

7613426.0	1.0 m.	1.29 % Pb	1.90 % Zn	0.66 oz/ton Ag
7613426.1	1.5	0.19	0.13	0.18
7613426.2	1.0	0.08	0.05	0.02
7613520.0	1.0	19.85	13.90	8.6
7613520.1	1.0	10.15	1.30	4.6
7613520.2	1.0	27.05	1.05	11.5
7613520.3	0.8	18.50	0.85	8.1
7613522	1.5	36.00	3.20	14.3

A1 SHOWINGS

202247	1.5 m	0.02% Pb	0.14 % Zn	0.08 oz/ton Ag	0.003 oz/ton Au	
202248	0.5	4.20	4.13	2.17	0.005	6.9 m. "A1.2"
202249	1.0	14.65	15.60	8.78	0.020	
202250	1.4	3.30	2.40	2.00	0.006	
202271	2.0	2.39	1.52	1.30	0.005	
202270	2.0	2.38	1.47	1.32	0.005	14.5 m. a 3.60% Pb 2.38 % Zn 2.09 oz/ton Ag
202269	2.0	0.14	0.35	0.09	0.002	
202268	2.0	0.05	0.12	0.09	0.004	
202254	1.5	0.07	0.10	0.07	0.002	
202255	0.6	30.71	8.50	17.70	0.040	2.1 m. "A1.1"
202256	1.5	1.55	0.86	0.86	0.005	
202257	1.5	1.02	1.26	0.73	0.004	2.0 m. "A2.3"
202258	0.5	19.38	0.50	9.94	0.006	
202259	1.5	0.91	0.47	0.48	0.003	
202261	0.5	0.55	0.37	0.28	<0.001	

X 14 SHOWING

202226 Grab 0.31 % Pb 0.70 % Zn 0.04 oz/ton Ag <0.002 oz/ton Au

SYMBOLS FOR LITHOLOGIC UNITS

Rqt	Roundtop Mtn. Quartzites	Bph	Bralco Ridge Phyllites
Rph	Roundtop Mtn. Phyllites	Bls	Bralco Ridge Limestone
Rst	Roundtop Mtn. Sandstones	Pst	Peters Gulch Sandstones
Tgs	Trehouse Ck. Graphitic Shales	Pls	Peters Gulch Limestones
Tst	Trehouse Ck. Siltstones	Pph	Peters Gulch Phyllites
Tls	Trehouse Ck. Limestones	Fls	First Mtn. Carbonates
Tph	Trehouse Ck. Phyllites	Fph	First Mtn. Phyllites
Cls	Craze Ck. Limestones	Vst	Vic Sandstones
Cgs	Craze Ck. Graphitic Shales	Vgs	Vic Graphic Shales
Cph	Craze Ck. Phyllites		

For complete Geology, see Figure

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545 Part 1

——— Observed position of flagged lines
- - - - - Interpolated position of flagged lines

N.B. Positions of lines represent best estimates determined by plotting from enlarged air photographs. Error due to photographic distortion may have been incorporated.

- 65 Foliation
- 30 Bedding – tops known
- 40 Bedding – tops unknown
- 15 Small-scale fold axis
- 5 Foliation/bedding intersection
- Fault, with downthrow side

- Geological boundaries, approximate
- Geological boundaries, assumed
- Antiform
- Synform
- Antiform with Overturned fold axial surface
- Synform with Overturned fold axial surface

For outcrops and station locations see Geology maps at 1:5,000 scale

N.T.S. 93A14

SCALE 1:10,000

METRES 200 100 0 200 400 600 800 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (20)

CUNNINGHAM CREEK CLAIMS

SULPHIDE SHOWINGS

G.D.H./altair DWG. G-8471	Nov. 1977	FIG. 7

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545
Part 1

N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

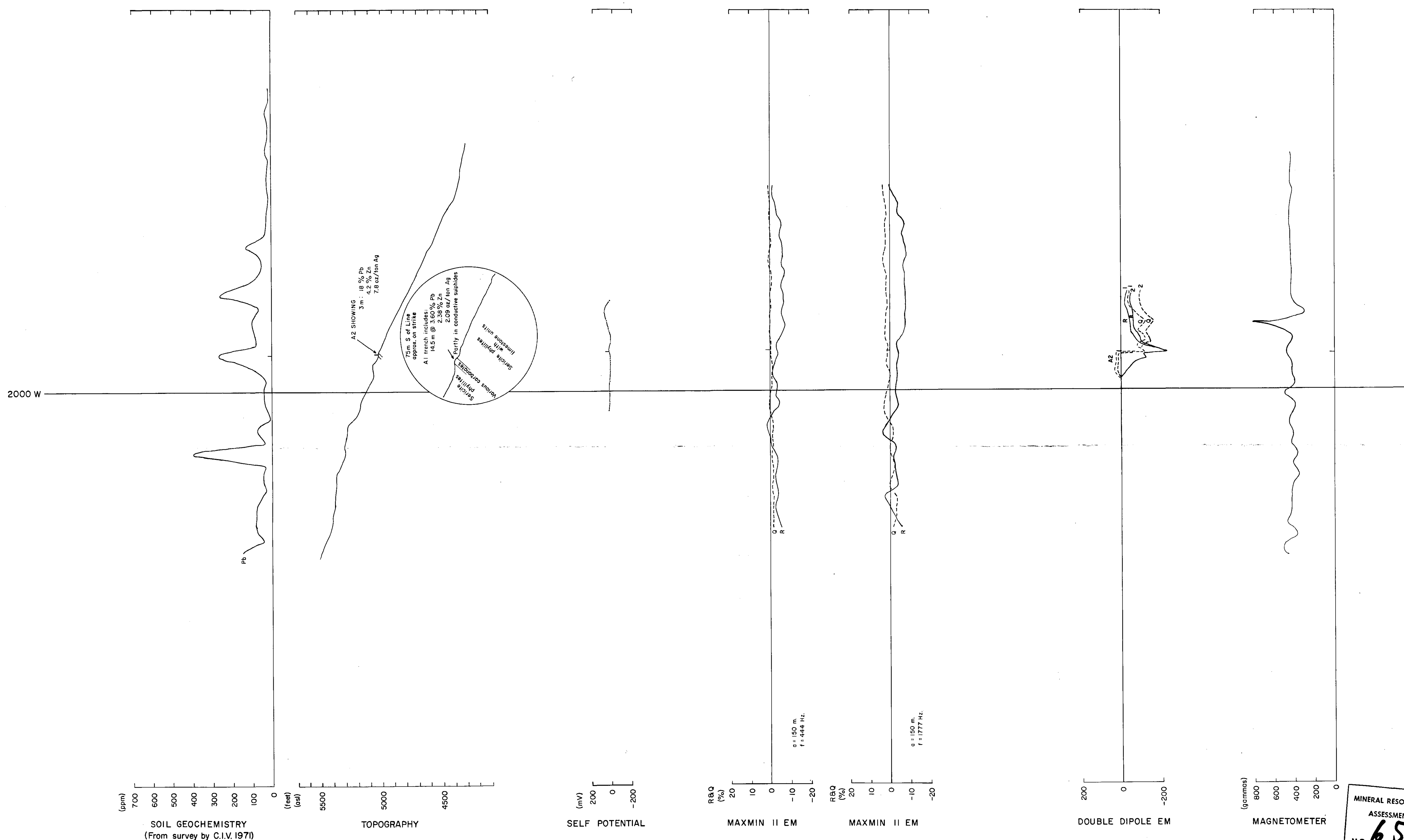
METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (21)

CUNNINGHAM CK: ROUNDTOP CLAIMS

VIC SHOWING
PROFILES: GEOLOGY, GEOPHYSICS

R.W. / a.b. DWG. G-7481	OCT. 1977	FIGURE: 28



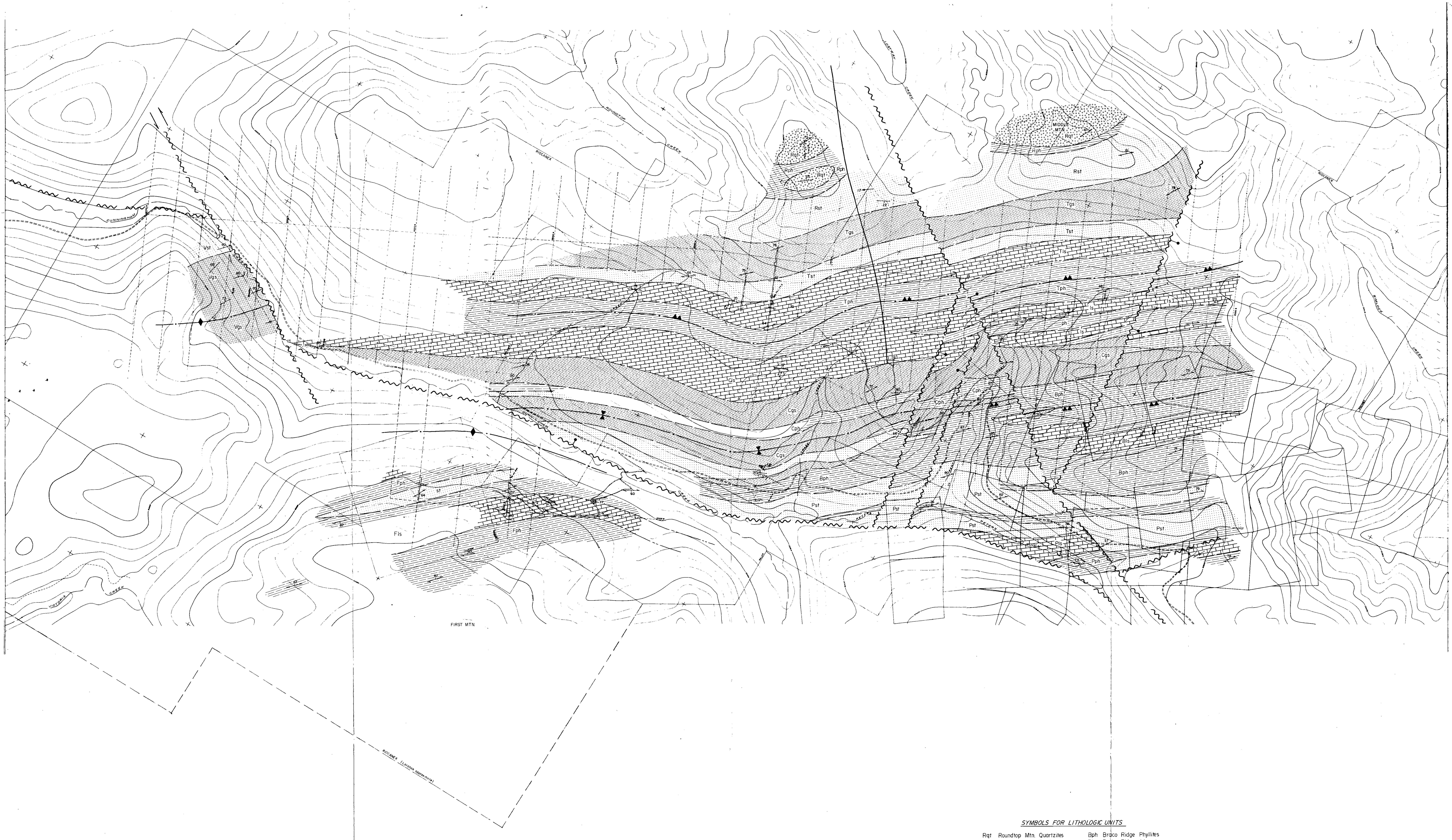
N.T.S. 93-A-14

SCALE 1:5000

FEET 500 250 0 500 1000 1500 FEET

METRES 100 50 0 100 200 300 400 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (22)		
CUNNINGHAM CK: MILLER OPTION / C.I.V. OPTION		
A2 SHOWING PROFILES: GEOCHEMISTRY, GEOPHYSICS		
R.W. / a.b. DWG. G-7491	OCT. 1977	FIGURE: 29



SYMBOLS FOR LITHOLOGIC UNITS

Rqt	Roundtop Mtn. Quartzites
Rph	Roundtop Mtn. Phyllites
Rst	Roundtop Mtn. Sandstones
Tgs	Trehouse Ck. Graphitic Shales
Tst	Trehouse Ck. Siltstones
Tls	Trehouse Ck. Limestones
Tph	Trehouse Ck. Phyllites
Cls	Craze Ck. Limestones
Cgs	Craze Ck. Graphitic Shales
Cph	Craze Ck. Phyllites
Bph	Bralco Ridge Phyllites
Bls	Bralco Ridge Limestone
Pst	Peters Gulch Sandstones
Pls	Peters Gulch Limestones
Pph	Peters Gulch Phyllites
Fls	First Mtn. Carbonates
Fph	First Mtn. Phyllites
Vst	Vic Sandstones
Vgs	Vic Graphic Shales

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6545
Part I

Observed position of flagged lines
Interpolated position of flagged lines

N.B. Positions of lines represent best estimates determined by plotting from enlarged air photographs. Error due to photographic distortion may have been incorporated.

qt — Quartzite and related coarse grained clastic rocks
st — Siltstones and associated sandstones; usually phyllitic
gs — Graphitic shale, with minor carbonate, siltstone, barite
ls — Phyllitic rocks with common carbonate units
ph — Largely phyllitics, with subordinate coarse clastics and limestones
Mafic dyke rocks

65 — Foliation
30 — Bedding - tops known
40 — Bedding - tops unknown
15 — Small-scale fold axis
5 — Foliation / bedding intersection
Fault, with downthrow side

Geological boundaries, approximate
Geological boundaries, assumed
Antiform
Synform
Antiform with Overturned fold axial surface
Synform with Overturned fold axial surface

For outcrops and station locations see Geology maps at 1:5,000 scale

N.T.S 93A14

SCALE 1:10,000

METRES 200 100 0 200 400 600 800 METRES

1/2 RIO TINTO CANADIAN EXPLORATION LIMITED (23)

CUNNINGHAM CREEK CLAIMS

GEOLOGY : INTERPRETATION

(To accompany Fig A)

G.D.H./altair DWG. G-8470	Nov. 1977	FIG. 8