

5274

Geological and Geochemical Report

INEL CLAIM GROUPS

Liard Mining Division

Lat. $56^{\circ} 37'$ Long. $130^{\circ} 57'$

Map 104B

104B/11E
&W

Claim: Inel 7-72
Owner: Skyline Explorations Ltd., Vancouver, B.C.
Operator: Ecstall Mining Ltd., Vancouver, B.C.
Report by: A. L'Orsa

November, 1974

Department of Vancouver, B.C.
Mines and Geology Resources
MINERAL REPORT
NO. 5274 MAP

INEL PROSPECT

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SUMMARY

The Inel prospect is located at approximately 4,600 feet above sea level, in a cirque along the east side of Bronson Glacier, five miles south of the lower Iskut River, Liard Mining Division, B.C.

Small amounts of chalcopyrite and molybdenite occur associated with sericite, quartz and pyrite in an elongated feldspar porphyry intrusion which cuts argillaceous and minor volcanic rocks of Mesozoic age. The prospect represents a hydrothermal system of the porphyry copper type.

INEL PROSPECT

INTRODUCTION

The Inel prospect is covered by 66 mineral claims optioned from Skyline Explorations Ltd., Vancouver, B. C. and sixteen claims staked by Ecstall Mining Ltd. Work was done on these claims and elsewhere in the headwaters area of Bronson Glacier during the period 5 - 28 July, 1974, continuing a program initiated by Texasgulf Inc. in 1973.

Diamond drilling scheduled for 1974 was cancelled when it was determined that the prospect is not a volcanogenic massive sulphide type as was suspected earlier (Gifford, 1973).

I was ably assisted in the field by L. A. McJannett for the full period and by E. W. Medley and Perry McClosky part time.

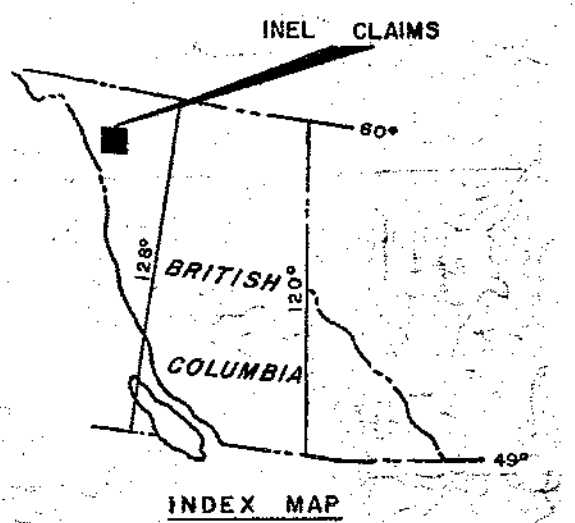
Rock exposures are very scattered in the critical Inel cirque area, particularly in July, at which time much of the snow has not melted. However, there were sufficient outcrops for a good reconnaissance examination.

LOCATION AND ACCESS

The prospect is centered at approximately lat. $56^{\circ} 37' N$ and long. $130^{\circ} 57\frac{1}{2}' W$, above the east side of Bronson Glacier, about $6\frac{1}{4}$ miles southeast of the confluence of Bronson Creek and the Iskut River. The area of present interest on the claims ranges in elevation from 4,260 feet to 5,300 feet. This area is situated in a shallow cirque within which bedrock is mostly covered by snow, talus and moraines.

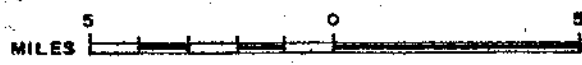
The region is mountainous, with numerous glaciers. Nearby peaks exceed 7,000 feet in elevation.

Access was by helicopter from Kinaskan Lake and from airstrips at Bob Quinn Lake and Snippaker Creek.



★ INEL PROSPECT

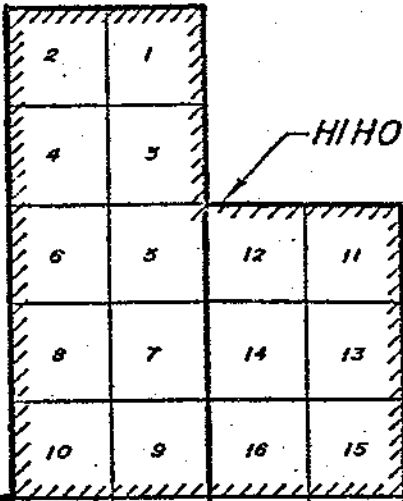
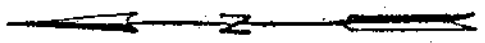
5274
MAP 1



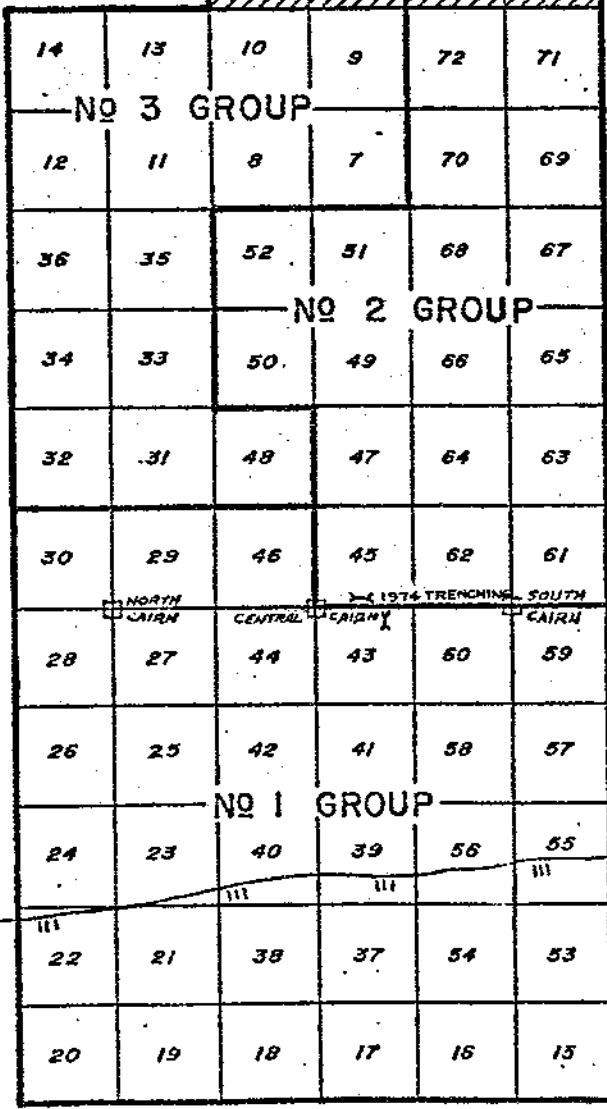
TEXASGULF INC.

INEL PROSPECT

MAP 104 B 1:250,000



HIHO CLAIMS



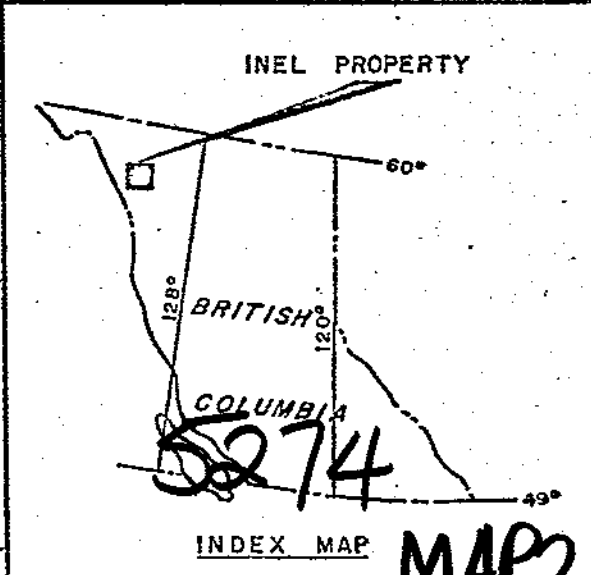
NO 3 GROUP

NO 2 GROUP

NO 1 GROUP

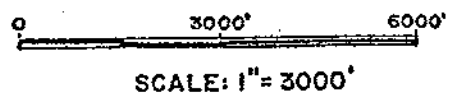
INEL CLAIMS

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5274 MAP #2



Bronson Glacier

Fig. 1



TEXASGULF INC.		
CLAIM MAP		
INEL PROPERTY		
LIARD M.D., B.C.		
WORK BY	DRAWN BY	DATE
A.O. BIRKELAND	L. BELL	NOVEMBER, 73

HISTORY AND DEVELOPMENT

A rusty shovel with its handle long since rotted away was found beside an old prospect pit in the cirque near Texasgulf's lower 1974 trenches. Nothing more is known of this early work, but Kerr (1930) reports that there was a trail to the head of Bronson Creek valley in 1929.

Mineralization was rediscovered in the cirque by Cominco Ltd. in 1965. The prospect was subsequently staked by R. G. Gifford for Skyline Explorations Ltd., N.P.L. and the claims were optioned to Ecstall Mining Ltd. after preliminary examination by Texasgulf crews in 1971 and 1972 (Gifford, 1972). Detailed mapping and trenching were completed in 1973 (Birkeland, 1973).

In 1974 a re-evaluation of the prospect was undertaken and twelve small trenches and pits were excavated with the removal of approximately 34 cubic yards of rock and talus.

GEOLOGICAL SETTING

The Inel prospect lies in the southern part of an extensive area of Middle Triassic and older sedimentary rocks, bounded on the west and south by granitic rocks of the Coast Intrusions and on the east and south by an Upper Triassic-Jurassic eugeosynclinal assemblage overlain by clastic sedimentary rocks of the Bowser Basin. Granitic intrusions of Mesozoic or Tertiary age are fairly common in the area (Souther and others, 1974).

In the vicinity of the prospect argillaceous rocks predominate, but there are local exposures of volcanic rocks, including siliceous pyroclastics, suggesting a late Upper Triassic age for at least some of the rock units (Souther, 1974). On the eastern side of Bronson Creek valley, the above rocks are invaded by an elongated feldspar porphyry intrusion with which potentially economic mineralization is associated.

GEOLOGY

Rock Types

The apparently oldest rocks on the claims are thin-bedded black to dark grey argillites and siltstones with local sandy beds. These rocks strike northwesterly and dip 20° - 30° east, except where modified by faulting.

Coarse pyroclastic rocks, including siliceous tuffs and tuff-breccias, are exposed at the lip of the Inel cirque, with argillaceous rocks above and below.

The sedimentary and volcanic rocks are intruded by a feldspar porphyry body that outcrops along the east side of upper Bronson Valley for at least four miles and attains a local outcrop width of 4,400 feet.

The feldspar porphyry (granodiorite ?) is medium grey in colour when fresh, with generally closely packed plagioclase phenocrysts averaging approximately 2mm in length, set in a dark green-grey groundmass. Quartz, although not conspicuous, probably averages more than 10%. Locally, relict biotite is present. Magnetite was observed in many places as disseminations and, in a trench east of camp, as fracture fillings up to 2cm in width. Generally the feldspar porphyry is pyritized and sericitized and weathers a pale rusty brown colour.

Several dykes cut sedimentary and volcanic rocks as well as the feldspar porphyry near the eastern feldspar porphyry contact. The most striking of these dykes is a porphyry containing orthoclase phenocrysts which are commonly about 2cm in length. Other dyke types include several fine-grained, light coloured and generally magnetite-bearing dykes and a medium grey quartz feldspar porphyry. In general, the strike of the dykes appears to approximate that of the feldspar porphyry.

More detailed descriptions of the above rocks are given in Gifford (1972) and Birkeland (1973).

Alteration

There are considerable amounts of hydrothermal alteration associated with the feldspar porphyry intrusion. The feldspar porphyry itself is generally more or less sericitized and pyritized. Locally, the rock is silicified.

In the mineralized northern Inel cirque area, the alteration assemblage in the feldspar porphyry comprises sericite, quartz, pyrite ($\pm 2\%$), local magnetite and very small amounts of chalcopyrite and molybdenite. Secondary biotite is reported in some thin sections (Gifford, 1972). Minor gypsum was observed, associated with molybdenite in pyritized feldspar porphyry along the eastern side of the cirque.

The eastern and southeastern contact of the feldspar porphyry with argillites in the cirque is generally marked by an increase in pyrite (10% or more) in disseminations and fracture fillings.

Across the contact, the argillites are chloritized and carry numerous ankerite veins with subsidiary calcite. Quartz veins are also present. Locally, the argillites are bleached and pyritized. This zone also contains numerous pyrite veins, some of which carry sphalerite, galena and chalcopyrite.

A little epidote occurs in intermediate volcanic rocks and sericite is found in siliceous pyroclastic rocks at the toe of the cirque.

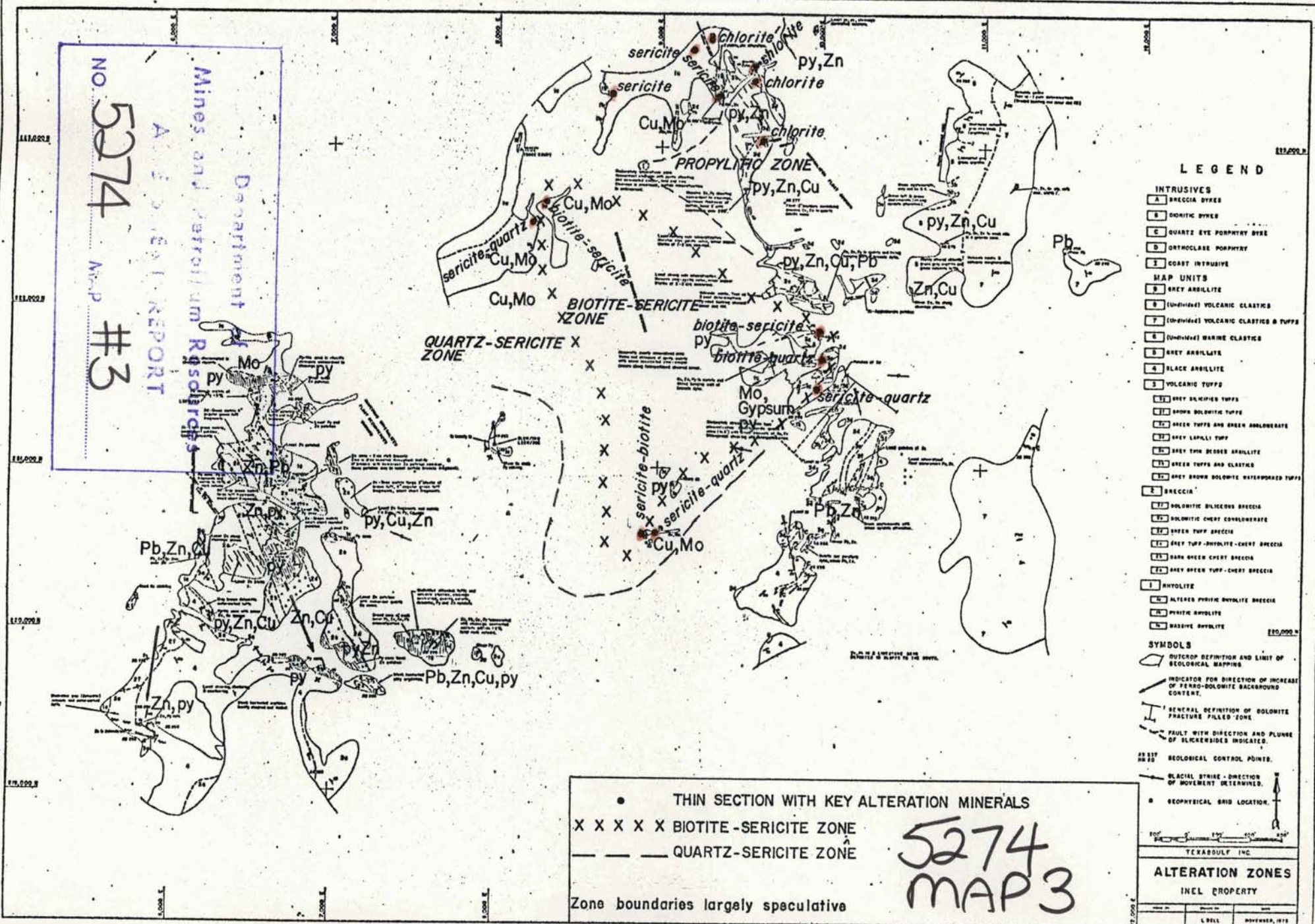
The most intense alteration appears to be related to the intrusive-sedimentary contact and is restricted to the area of the Inel cirque.

Structure

A major zone of faulting strikes northeasterly through the cirque, resulting in much shearing and folding, particularly in the argillites. Veining within the zone includes prominent ankerite veins as well as quartz-pyrite veins.

NO 5274 MAP #3

Department
Mines and Petroleum Resources
ALTERATION ZONES
REPORT



LEGEND

INTRUSIVES

- (A) BRECCIA DYKES
- (B) DIORITIC DYKES
- (C) QUARTZ DYE PORPHYRY DYKE
- (D) ORTHOCLASE PORPHYRY
- (E) COAST INTRUSIVE

MAP UNITS

- (1) GREY ARBILLITE
- (2) (UNDIVIDED) VOLCANIC CLASTICS
- (7) (UNDIVIDED) VOLCANIC CLASTICS & TUFFS
- (6) (UNDIVIDED) MARINE CLASTICS
- (8) GREY ARBILLITE
- (4) BLACK ARBILLITE
- (3) VOLCANIC TUFFS
- (11) GREY SILICIFIED TUFFS
- (12) BROWN DOLOMITIC TUFFS
- (13) GREEN TUFFS AND GREEN ANHLOGERATE
- (14) GREY LAPULLY TUFF
- (15) GREY THIN BEDDED ARBILLITE
- (16) GREEN TUFFS AND CLASTICS
- (17) GREY BROWN DOLOMITIC WATERPOURED TUFFS

BRECCIA

- (17) DOLOMITIC SILICEOUS BRECCIA
- (18) DOLOMITIC CHEST CONGLOMERATE
- (19) GREY TUFF BRECCIA
- (20) GREY TUFF-DIOLITE-CHEST BRECCIA
- (21) DARK GREEN CHEST BRECCIA
- (22) GREY GREEN TUFF-CHEST BRECCIA

ANTHOLITE

- (23) ALTERED PYRITIC ANTHOLITE BRECCIA
- (24) PRIMITIVE ANTHOLITE
- (25) MASSIVE ANTHOLITE

SYMBOLS

- (O) OUTCROP DEFINITION AND LIMIT OF GEOLOGICAL MAPPING
- (I) INDICATOR FOR DIRECTION OF INCREASE OF FERRO-DOLOMITIC BACKGROUND CONTENT.
- (H) GENERAL DEFINITION OF DOLOMITIC FRACTURE FILLED ZONE
- (F) FAULT WITH DIRECTION AND PLUNGE OF SLICKENSIDES INDICATED.
- (CP) GEOLOGICAL CONTROL POINT.
- (S) GLACIAL STRIKE - DIRECTION OF MOVEMENT DETERMINED.
- (G) GEOPHYSICAL GRID LOCATION.

0 1000 2000 FEET

TEXADOLY INC

ALTERATION ZONES
INCL PROPERTY

L BELL NOVEMBER, 1970

• THIN SECTION WITH KEY ALTERATION MINERALS
 X X X X X BIOTITE-SERICITE ZONE
 — — — — QUARTZ-SERICITE ZONE

Zone boundaries largely speculative

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MAP 3

Although no solid evidence regarding direction and amount of displacement along the fault has been collected, the presence of siliceous volcanic rocks between the fault and the feldspar porphyry and nowhere else, nearby, at this elevation, suggests the possibility of considerable off-setting.

Several small (generally 6 in. to 2 ft. wide) intrusive breccias containing angular feldspar porphyry fragments are exposed in argillites and tuffs near the eastern contact of the feldspar porphyry.

MINERALIZATION

Chalcopyrite was found in very small amounts as disseminations and as small, local, fracture fillings with quartz in the feldspar porphyry in the northern Inel cirque area. This mineralization occurs in the sercite-quartz alteration zone, accompanied by \pm 3% pyrite and, rarely, molybdenite. Minor malachite and pyrolusite are also present. Disseminated and fracture filling magnetite is found in the same general area but magnetite does not appear to be intimately related to either Cu or Mo mineralization.

A few grab samples were collected in the copper zone (see appendix). The best sample assayed only 0.11% Cu.

A little molybdenite, altering to ferrimolybdite and associated with minor gypsum, occurs in pyritized feldspar porphyry near the contact in the eastern cirque area.

Pyrite and lesser amounts of sphalerite accompanied by minor galena and chalcopyrite occur in fracture and joint fillings in the chlorite-carbonate zone in argillites and tuffs along the eastern and southeastern contacts of the feldspar porphyry. The same minerals also occur in fracture fillings in coarse siliceous pyroclastic rocks along the southeastern contact of the feldspar porphyry. The gangue minerals in the above veins are quartz and carbonates. Some

of the veins on the eastern contact have yielded impressive gold values (e.g. 2.5 ft. of 1.4 oz./T Au) and free gold has been reported (Gifford, 1972).

Northwest of the cirque, along the east side of Bronson Glacier, local fracture fillings of chalcopyrite were discovered in chloritized sedimentary rocks a few feet from the northwestern contact of the feldspar porphyry. Minor molybdenite occurs in feldspar porphyry a few yards away and barite veins were found in chloritized sediments nearby.

East of the toe of Bronson Glacier, lenses of massive pyrrhotite, pyrite and chalcopyrite, up to one foot in width, occur in siltstones within 300 feet of the nearest feldspar porphyry exposures.

GEOCHEMISTRY

Twenty five silt samples were taken from creeks draining the feldspar porphyry intrusion and most samples returned anomalous values for total Cu, Zn and, where tested, Mo and Pb. The analyses were made by Bondar-Clegg & Co., North Vancouver, B. C. Most of the silt samples contained much bank material.

The sample locations and results are plotted on the accompanying map (in pocket).

DISCUSSION

It was earlier proposed that the Inel prospect might be of the volcanogenic massive sulphide type (Gifford, 1973). However, 1974 work indicates that the "rhyolite" referred to in earlier Texasgulf Inc. reports is an altered intrusive rock (feldspar porphyry) which was, I suspect, closer to granodiorite than to rhyolite in original composition. Although it is possible that the feldspar porphyry was a feeder for late Upper Triassic volcanism, the fact that the intruded rocks are mainly sediments suggests that present rock exposures are well below the stratigraphic position of any possible vent.

The alteration pattern developed in the Inel cirque is of the type associated with hydrothermal systems of porphyry copper deposits. The sericite-quartz and chlorite-carbonate alteration assemblages are locally well represented and a zone of heavy pyritization occupies much of the lower slope along the east side of the cirque. However, although there is an orthoclase porphyry dyke that is probably metasomatic, and there is local secondary biotite, the potassic zone found in porphyry copper mines is not well developed in present rock exposures. Where seen, the quartz-sericite zone contains more sericite than quartz, and very little copper, although much of this zone is very poorly exposed because of overburden and snow.

A. L'Orsa

A. L'Orsa

AL:11

Alford

REFERENCES

- Birkeland, A.O., 1973, Geological and Geophysical Report, Inel and Hiho Mineral Claims: unpublished report for Texasgulf Inc.
- Gifford, R. G., 1973, Notes on Proposed Drill Program for 1974, Inel Property: unpublished report for Texasgulf Inc.
- Gifford, R. G., 1972, Geological Survey, Inel Claim Group: unpublished report for Texasgulf Inc.
- Kerr, F. A., 1948, Lower Stikine and Western Iskut River Areas, British Columbia: Geol. Survey, Canada, Mem. 246.
- Kerr, F. A., 1930, Preliminary Report on Iskut River Area, B. C.: Geological Survey, Canada, Summary Report, 1929, Part A, p. 30A - 61a.
- Souther, J. G., Brew, D. A. & Okulitch, A. V., 1974, Iskut River, (Geological map), open file 214: Geol. Survey, Canada.
- Souther, J. G., 1974, Map of Volcanic Rocks of the Canadian Cordillera: Abstracts, Volcanic Geology and Mineral Deposits of the Canadian Cordillera: Geological Association, Canada, P. 23 - 25

APPENDIX A

1974 Trenching, Inel

<u>Assay No.</u>	<u>Trench</u>	<u>Au o//t</u>	<u>Ag oz/t</u>	<u>Cu %</u>
8509	Southwest	0.005	0.02	0.04
8510	Southwest	tr	tr	0.07
8511	top	0.01	0.03	0.05
8513	Southeast	0.08	0.12	0.11

Samples are also plotted on the accompanying geological map.

APPENDIX BINEL OPTIONSTATEMENT OF EXPENDITURESSalaries & Fringes (Field Work)

A.T. L'Orsa	Geologist	5-28 July	24 da. @ \$65	\$1,560.00
L.A. McJannet	Field Asst.	5-28 July	24 da. @ \$25	600.00
E.W. Medley	Field Asst.	5-21 July	17 da. @ \$35	595.00
P. McCloskey	Field Asst.	11-21 July	11 da. @ \$25	275.00
J.M. Newell	Geologist	13-14 July	2 da. @ \$120	240.00
				<hr/>
				\$ 3,270.00

Room & Board: 78 man-days @ \$10/day 780.00

Equipment Rental

2 cobra rock drills - 1 mo.	380.00
1 Traeger radio - 1 mo.	140.00
<hr/>	
	\$ 520.00

Helicopter Support (Mob, Demob, Resupply)

44.5 hrs. Bell 206-B @ \$210	9,345.00
2.75 hrs. Bell 206-B @ \$285	786.50
<hr/>	
	10,131.50

Fixed Wing Support (Mob & Demob.) 2,464.77

Geochemical Analysis & Assays

25 samples @ \$2.25	56.25
4 assays @ \$14.00	56.00
<hr/>	
	112.25

Travel 495.00

Shipping 726.03

Miscellaneous Supplies & Equipment 1,500.00

Communications 52.14

APPENDIX C

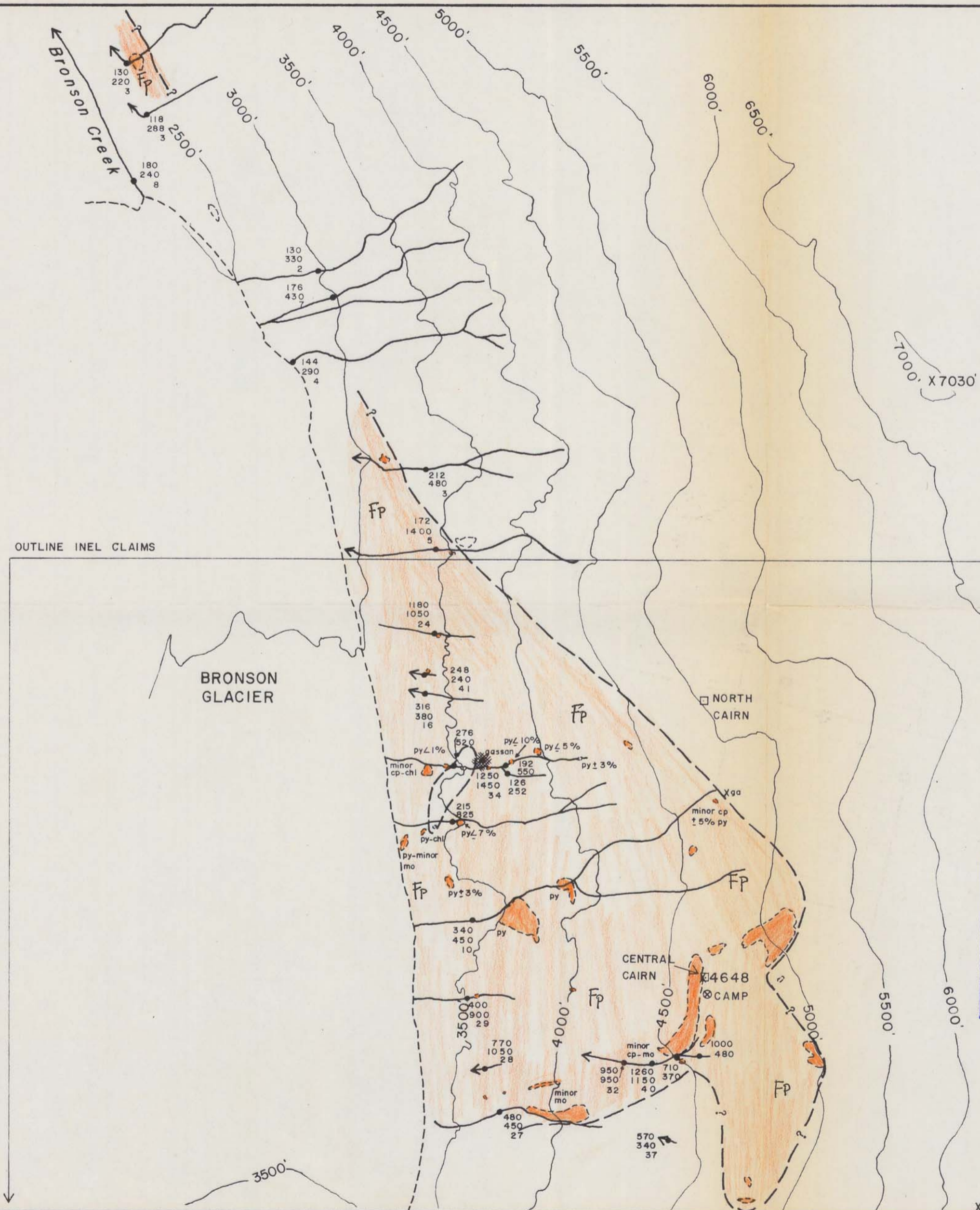
STATEMENT OF QUALIFICATIONS

I, A. L'Orsa, hereby certify that I received a B.Sc. in geology in 1961 from Tulane University, New Orleans, Louisiana and an M.Sc. in geology in 1964 from the same University.

I am a Fellow of the Geological Association of Canada and I have been engaged in mineral exploration in B.C. and elsewhere since 1962.

A. L'Orsa

Attest.



To accompany Geological & Geochemical Report:
 INEL CLAIM GROUPS
 Liard Mining Division
 by
 A.T. L'Orsa
 19 November 1974



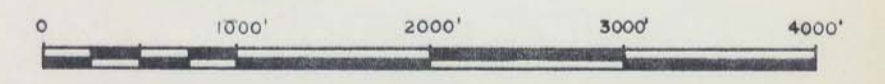
OUTLINE INEL CLAIMS

CLAIMS CONTINUE

LEGEND

- FP FELDSPAR PORPHYRY; contacts are approximate
- SILT SAMPLE
 - 520 Cu
 - 340 Zn
 - 37 Mo
- CREEKS
- - - CONTACTS
- OUTCROPS
- 4000' CONTOURS

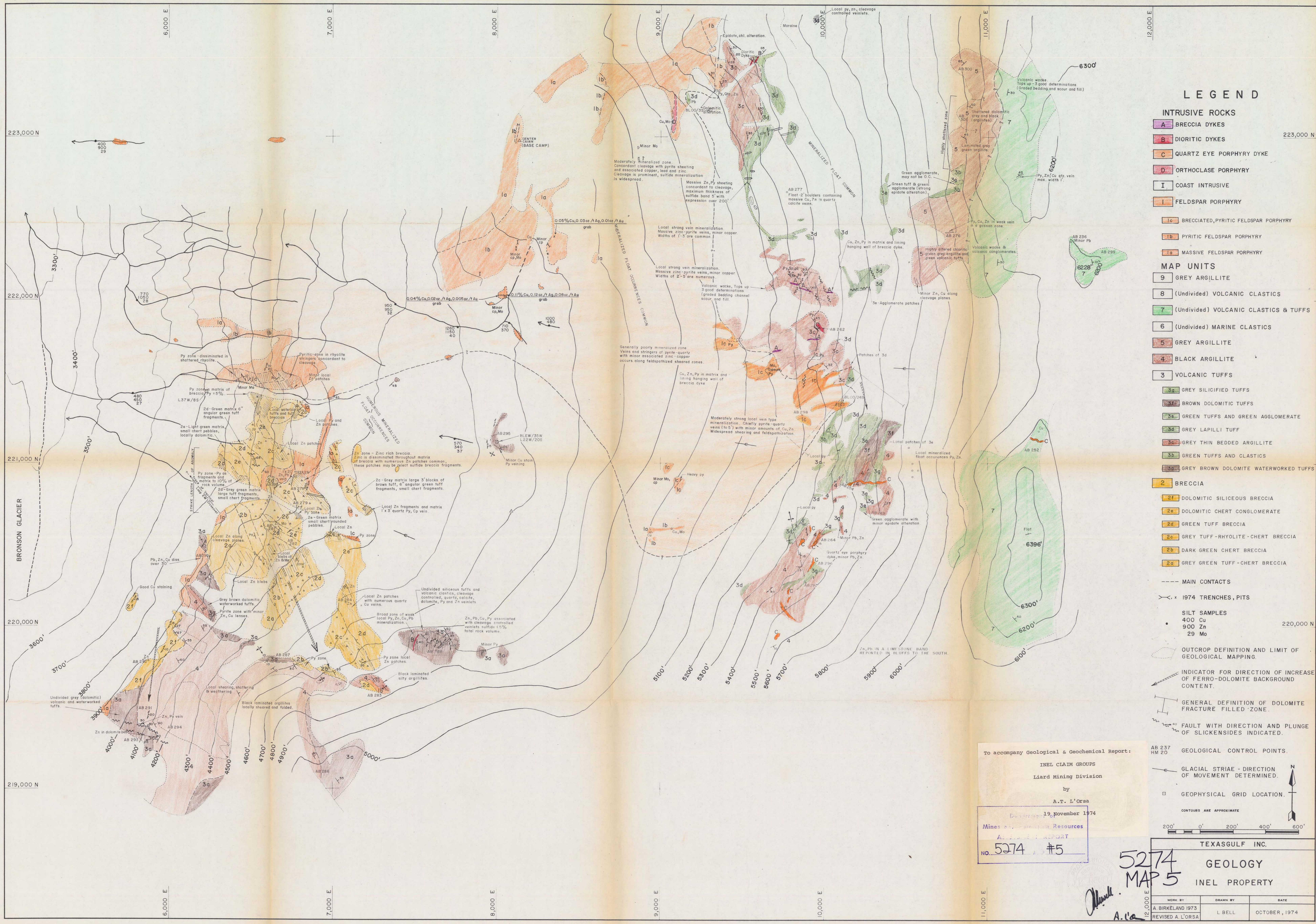
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MAP 4



Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 5274 MAP #4

A. L'Orsa

Texasgulf Inc.			
INEL PROSPECT			
SILT SAMPLES			
WORK BY	DRAWN BY	DATE	DRW/G NO.
T. L'ORSA	K. M. GORRIE	OCTOBER 19, 1974	



LEGEND

- INTRUSIVE ROCKS**
- A** BRECCIA DYKES
 - B** DIORITIC DYKES
 - C** QUARTZ EYE PORPHYRY DYKE
 - D** ORTHOCLASE PORPHYRY
 - I** COAST INTRUSIVE
 - 1** FELDSPAR PORPHYRY
 - 1c** BRECCIATED, PYRITIC FELDSPAR PORPHYRY
 - 1b** PYRITIC FELDSPAR PORPHYRY
 - 1a** MASSIVE FELDSPAR PORPHYRY

- MAP UNITS**
- 9** GREY ARGILLITE
 - 8** (Undivided) VOLCANIC CLASTICS
 - 7** (Undivided) VOLCANIC CLASTICS & TUFFS
 - 6** (Undivided) MARINE CLASTICS
 - 5** GREY ARGILLITE
 - 4** BLACK ARGILLITE
 - 3** VOLCANIC TUFFS

- 3a** GREY SILICIFIED TUFFS
- 3b** BROWN DOLOMITIC TUFFS
- 3c** GREEN TUFFS AND GREEN AGGLOMERATE
- 3d** GREY LAPILLI TUFF
- 3e** GREY THIN BEDDED ARGILLITE
- 3f** GREEN TUFFS AND CLASTICS
- 3g** GREY BROWN DOLOMITE WATERWORKED TUFFS

- 2** BRECCIA
 - 2f** DOLOMITIC SILICEOUS BRECCIA
 - 2e** DOLOMITIC CHERT CONGLOMERATE
 - 2d** GREEN TUFF BRECCIA
 - 2c** GREY TUFF-RHYOLITE-CHERT BRECCIA
 - 2b** DARK GREEN CHERT BRECCIA
 - 2a** GREY GREEN TUFF-CHERT BRECCIA
- MAIN CONTACTS
- x x 1974 TRENCHES, PITS
- SILT SAMPLES
400 Cu
900 Zn
29 Mo
- OUTCROP DEFINITION AND LIMIT OF GEOLOGICAL MAPPING.
- ➔ INDICATOR FOR DIRECTION OF INCREASE OF FERRO-DOLOMITE BACKGROUND CONTENT.
- ▭ GENERAL DEFINITION OF DOLOMITE FRACTURE FILLED ZONE.
- ~ FAULT WITH DIRECTION AND PLUNGE OF SLICKENSIDES INDICATED.

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 A.T. L'Orsa REPORT
 NO. 5274 #5

AB 237 HM 20 GEOLOGICAL CONTROL POINTS.

➔ GLACIAL STRIAE - DIRECTION OF MOVEMENT DETERMINED.

□ GEOPHYSICAL GRID LOCATION.

CONTOURS ARE APPROXIMATE

200' 0' 200' 400' 600'

TEXASGULF INC.
GEOLOGY
 INEL PROPERTY

WORK BY A. BIRKELAND 1973	DRAWN BY L. BELL	DATE OCTOBER, 1974
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 MAP 5
 A.L.O.