GEOLOGY AND GEOCHEMISTRY

STEELE CREEK 93N/14W

PIK CLAIMS

55°55'N 125°27'W

T. PEARSE, B.Sc.

under the supervision of

G.E. DIROM, P.ENG.

NORANDA EXPLORATION COMPANY, LTD.

OMINECA MINING DIVISION

July 1972 - July 1973

4534

4522

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A. INTRODUCTION

The PIK Group of Mineral Claims is a copper prospect situated approximately 30 miles northwest of Germansen Landing, B. C., lying entirely within differentiated phases of the Hogem Batholith. 1972 exploration work included line-cutting, soil sampling, and geological mapping.

B. CLAIMS & OWNERSHIP

The property consists of 22 contiguous mineral claims and fractions situated at 55°55'N latitude and 125°27'W longitude in the Omineca Mining Division. The claims are fully owned by Noranda Exploration Company, Limited, (No Personal Liability) and are listed as follows:

Claims	Record Nos.	Recording Date
PIK # 1 - 16	100649 - 100664	July 1971
PIK # 1 - 6 Fr.	100665 - 100670	July 1971

C. LOCATION & ACCESS

The PIK Group of Mineral Claims is located approximately 30 miles northwest of Germansen Landing, B. C. and about 1 mile northwest of the headwaters of the north branch of Duckling Creek. It is immediately adjacent to the Lorraine copper deposit.

Access is by helicopter from Germansen Landing or by road from the 26 mile junction into the Lorraine camp to within ½ mile of the property.

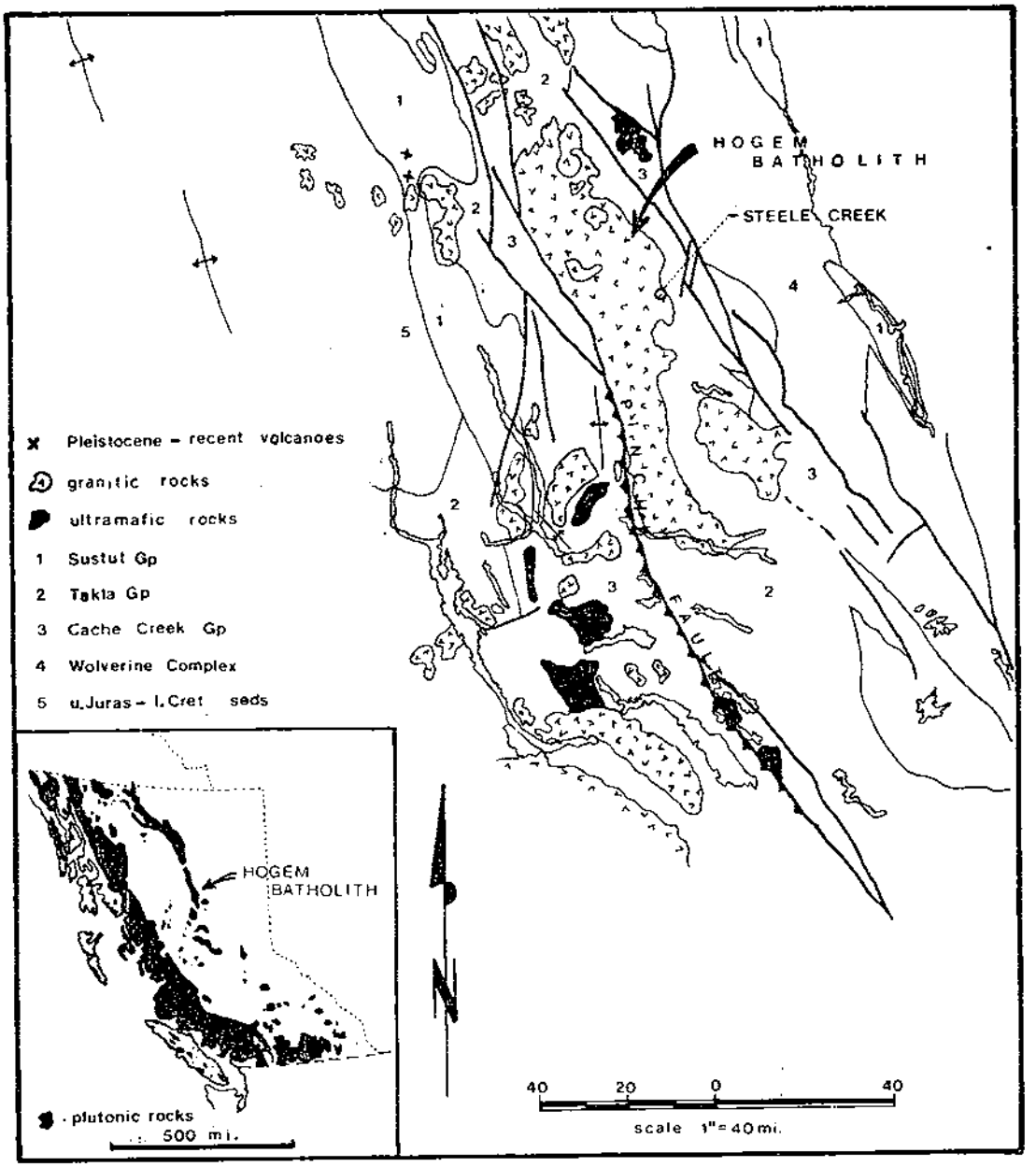

Fig. 1. Sketch showing location and geologic setting of the Steele Creek Property.

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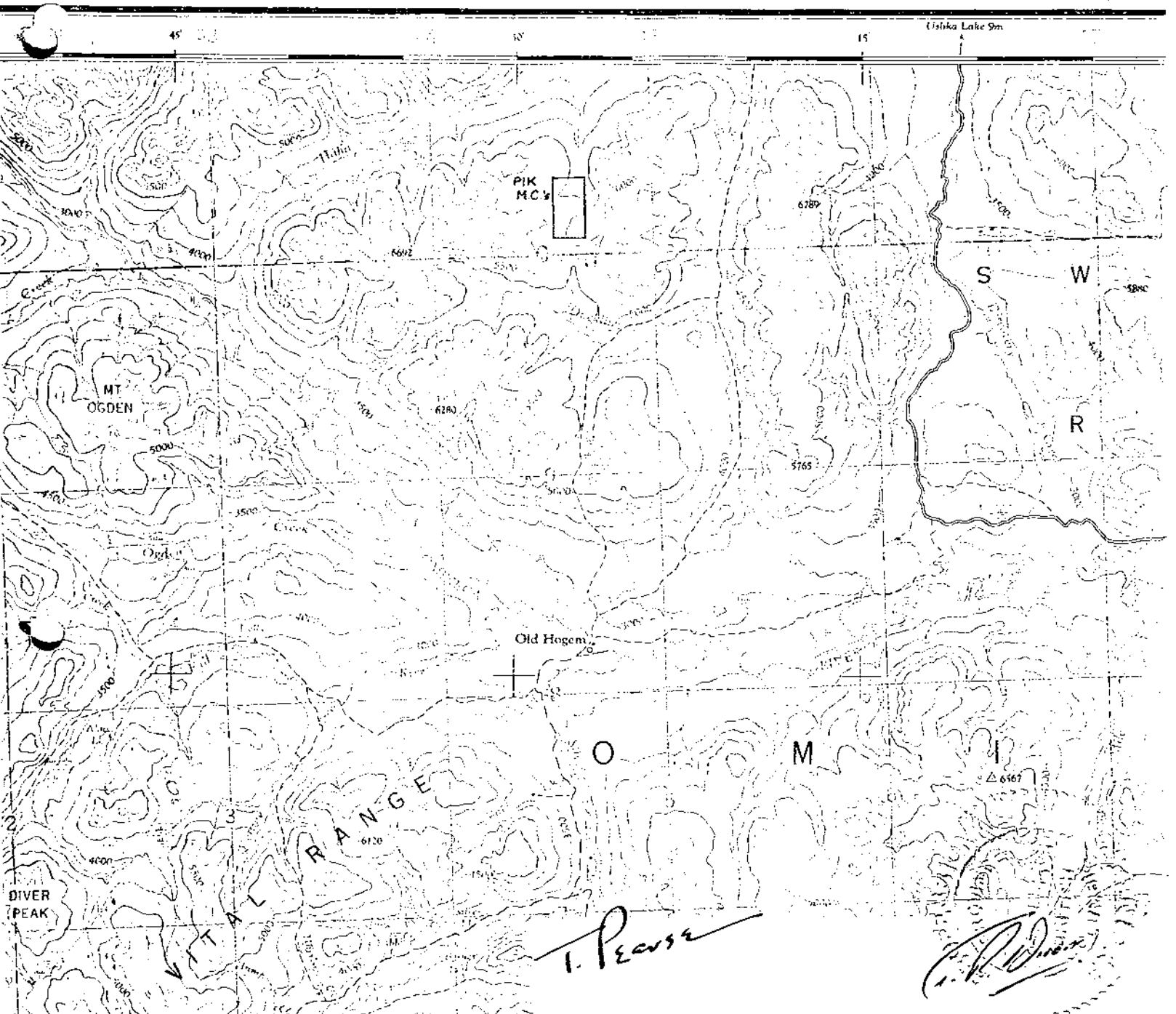


NORANDA EXPLORATION COMPANY, LIMITED

LOCATION MAP

PIK 1 - 16 M.C.'s, PIK 1 - 6 Fr. M.C.'s

Omineca M.D. 1" = 4 Miles

#93 N/14W 4522 M2 FIG. 2

D. REGIONAL GEOLOGY

The PIK Property is situated just within the eastern contact of the Hogem Batholith with the older Takla volcanic rocks. In this part of the Hogem a regionally conformable (i.e. NW-trending) syenite complex separates older, more basic differentiates of the batholith to the northeast and younger, quartz-enriched intrusive rocks to the southwest. The syenite body commonly has a k-feldspar-rich envelope surrounding it which probably represents a potash metasomatic alteration of the Hogem wall-rock (monzo-diorites) by the syenite fluids. Windows of foliated basement rocks and usually closely-associated bodies of holomafic pyroxenites are exposed in the core areas of the syenite complex. Copper mineralization occurs as disseminations of chalcopyrite and bornite within syenite and k-feldspathized monzo-diorites and is apparently spatially associated with the ultramafic rocks (cf. Lorrain deposit). The PIK Claims overlie k-feldspathized Hogem monzo-diorites that have been intruded by the Duckling Creek syenite and ultramafic rocks of undetermined genetic affinities with respect to the other Hogem phases.

E. LOCAL GEOLOGY

The PIK Claim Group is underlain entirely by coarse-grained, silica-deficient, intrusive rocks of the Hogem Batholith comprising 3 easily mappable lithologies: (1) syenite (SC); (2) Hogem monzo-diorite (HG); and, (3) pyroxenite (P).

The most abundant rocks are those belonging to the Duckling Creek Syenite Complex which, here, is comprised of pegmatitic and megaporphyritic, leucocratic syenites (unit SC). These are pinkish, generally coarse-grained, but otherwise variously textured rocks composed predominantly of euhedral alkali feldspar crystals up to 10 cm. in length embedded in a finer-grained matrix of feldspar with or without biotite. These rocks grade into finer-grain aplitic varieties that in turn crosscut the coarser-grained syenite and granitoid rocks.

The least abundant rocks are holomafic and feldspathic pyroxenites that occur as small irregularly-shaped pods in close spatial relationship to the syenites. The dominant minerals are pyroxene, biotite, and k-feldspar, the latter increasing in concentration toward the syenite contacts giving the pyroxenite a "knotty" texture. The origin of these mafites is undoubtedly related to petrogenesis of the syenites and could have evolved either as a distinct cumulate phase during syenite differentiation (Garnett, 1971) or through potash metasomatism of some ingested mafic-rich, county rock fragments by an alkaline magma (Koo, 1968).

The oldest rocks on the property comprise about 40% of the outcrop -- these are the medium-grained, mesocratic potash-enriched monzodiorite hybrids typically found along the contacts of the syenite complex. They grade from salmon-coloured to grey black to green

and are medium-grained, hypidiomorphic granular rocks comprised of k-feldspar, plagioclase, pyroxene, amphibole, biotite, and magnetite.

F. SULPHIDE MINERALOGY & ALTERATION

Chalcopyrite and bornite are the only sulphides that have been observed in outcrop and exist as rare, disseminated intergranular blebs within the monzo-diorite and syenites units generally in close proximity to the pyroxenites.

Mineralization in the monzo-diorites is accompanied by pink k-feldspar alteration.

G. SOIL GEOCHEMISTRY

1. Collection & Treatment

Approximately 230 soil holes were dug, 80% of which yielded a B-horizon sample as well as a C-horizon sample. Soils were placed in "Hi Wet Strength Kraft 3 1/2" x 6 1/8" Open End" envelopes and the location marked on the envelopes with indelible felt pens. All samples were analyzed for copper, molybdenum, and zinc in the Noranda Exploration Company, Limited laboratory located at 1050 Davie Street, Vancouver 5, B. C.

The samples are first hung in a drying cabinet for a period of twenty-four to forty-eight hours. They are then mechanically screened and sifted to obtain a -80 mesh fraction.

The determination procedure for total copper and total molybdenum is as follows: 0.200 grams of -80 mesh material is digested in 2 ml of $HClO_4$ and 0.5 ml. of HNO_3 for approximately four hours.

Following digestion each sample is diluted to 5 ml. with demineralized H_2O. A Varian Techtron Model AA-5 Atomic Absorption spectrophotometer was used to determine the parts per million Cu and Mo in each sample.

2. Results & Discussion

Of the 230 samples taken, 197 were treated statistically to produce an average background scatter (M) of 213 (% =18) over a range of 42-400 ppm total Cu. Based on this treatment the following scheme was used for contouring the geochemical data:

Background < 249 ppm
Threshold = 249 to 285 ppm
Anomaly 1st Order = 285 to 357 ppm
Anomaly 2nd Order = 357 to 501 ppm
Anomaly 3rd Order > 501 ppm

Theoretical frequency distribution plots yield bimodal curves for both B and C horizons with 100 ppm being the mode for the B and 130 ppm being the mode for the C horizon (cf. Fig. 3). This may suggest that at least one other parameter than bedrock geology is affecting elemental dispersion.

Two broad Cu anomalies are outlined; the larger trending NW across the southern half of the property and the smaller as an irregularly-shaped area on the NE corner of the grid. The highest Cu value obtained was 3300 ppm on the baseline at 110 N. A strong Mo anomaly is coincident with the main Cu anomaly with values up to 120 ppm total Mo. Other small localized anomalies for both elements exist scattered randomly over the property.

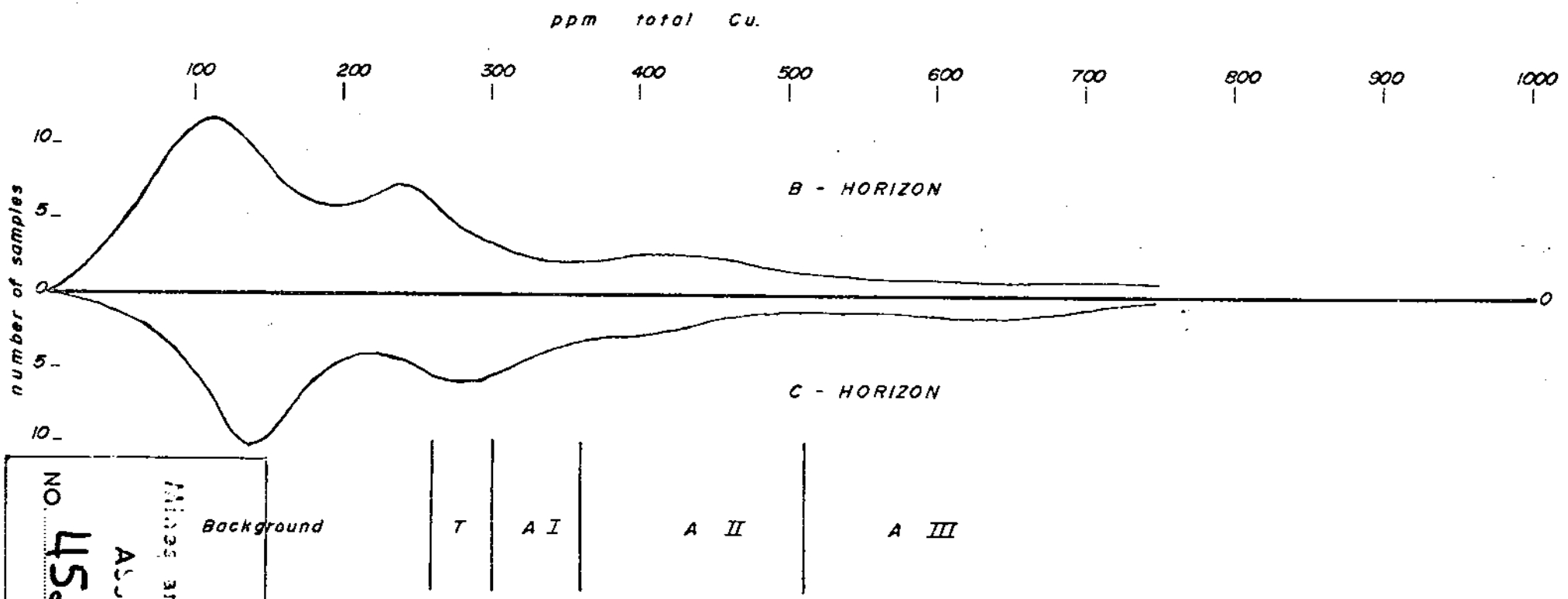


Fig.3 - Frequency distribution curves for total Cu in B and C soil horizons, PIK group of M.C.'s, Omineca Mining Division.

The main anomaly lies on a westerly gradient and attains its highest values at the break in slope along the base of PIK ridge. Here the ground is swampy and the samples contain an abundance of organic material. The C-horizon was sampled at depths greater than 20 inches in this vicinity.

Elemental enrichment through hydromorphic transport has been suspected and soils have been run for cold extractable Cu. Ratios of soluble Cu to total Cu are surprisingly low as shown in Fig. 4 and generally run well under 20%. Within the area of the main anomaly the cxCu proportion increased somewhat but nowhere exceeded nor reached 50%. The conclusion here is that, although the physiographic characteristics of the anomaly lead one tosuspect Cu enrichment by hydromorphic migration, in fact soluble transport of Cu has not played a large role in the development of the anomaly (see Bradshaw, Clews, and Walker in Can. Mining Journal, May 1972, p.61).

The smaller anomalous area to the northeast lies immediately down-slope from small, but numerous occurrences of Cu mineralization in the Hogem granitoid rocks.

Respectfully submitted

T. Pearse

T. Pearse B.Sc.

Endorsed by

G.E. Dirom, P.Eng.

Qualifications of Field Personnel

Messr. R. Specht was employed by Noranda Exploration Company, Limited as a junior field assistant from May 1972 to September 1972.

Messr. C. Forster has been employed by Noranda Exploration Company, Limited as a junior field assistant and is currently working for his second year in this capacity.

They were instructed in the necessary field procedures by J.D. Knauer, Geochemist, and Gavin E. Dirom, P. Eng.

Gavin E. Dirom, P. Eng.

STATEMENT OF QUALIFICATIONS

I, Tony D. Pearse of the Town of Smithers, Province of British Columbia do certify that:

1. I have been an employee of Noranda Exploration Company, Limited, since March 1971.

2. I am a graduate of the University of British Columbia with a Bachelor of Science Degree in Honours Geology.

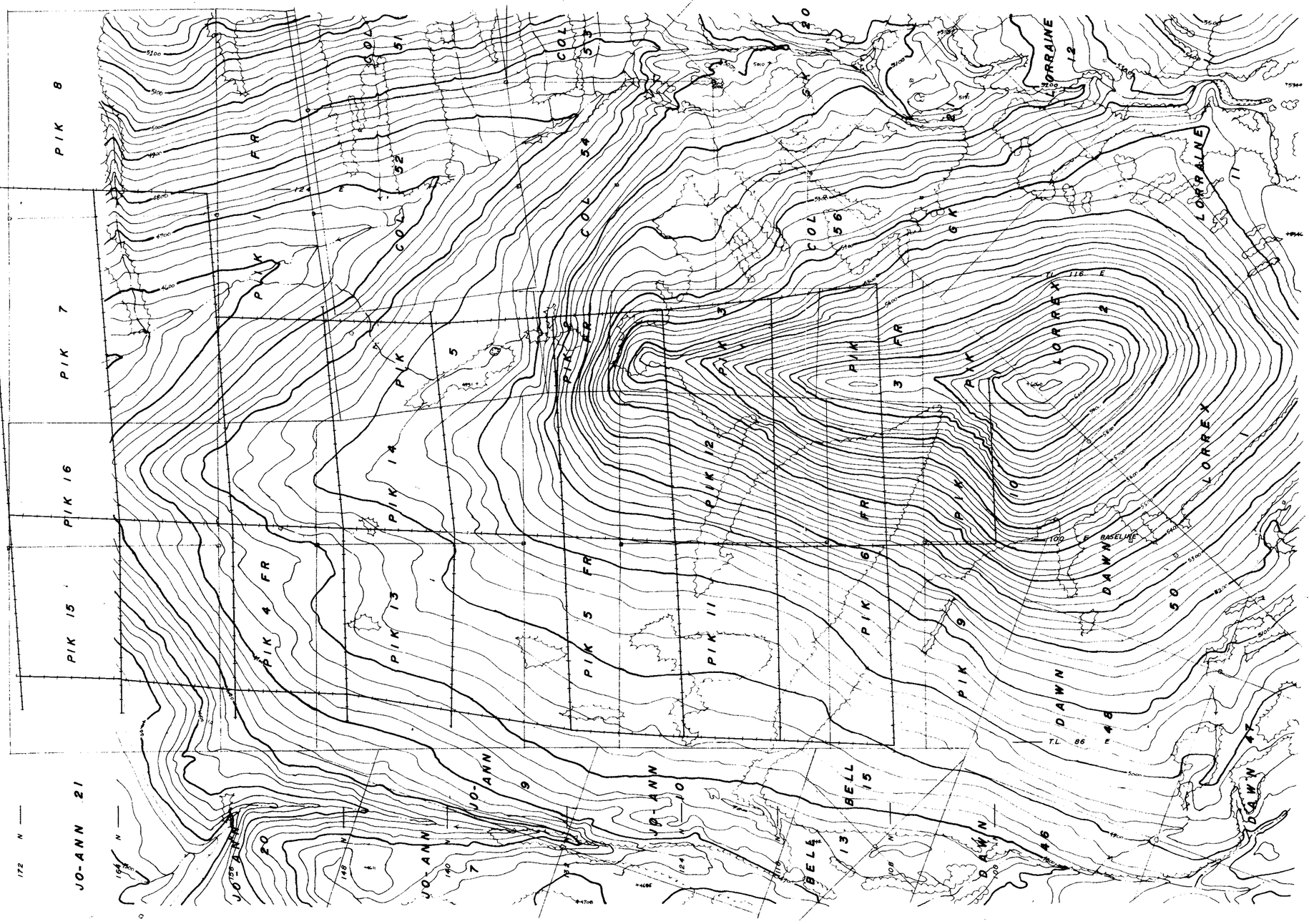
3. I am a member of the Geological Association of Canada - Cordilleran Section and a Junior Member of the Canadian Institute of Mining and Metallurgy.

4. I have held the positions of field geologist and geological assistant for various companies over the past eight field seasons.

Dated at Smithers
this 25 day of
July 1973

T. D. Pearse

T. D. Pearse,
Geologist,
Noranda Exploration Company, Limited.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4522 MAP #4

To accompany Geological and Geochemical Report on PIK Group of mineral claims, Omineca Mining Division, by T. Pearse under the supervision of G.E. Dirom, P.Eng. Dated June 29, 1973.

T. Pearse
G.E. Dirom

REVISED

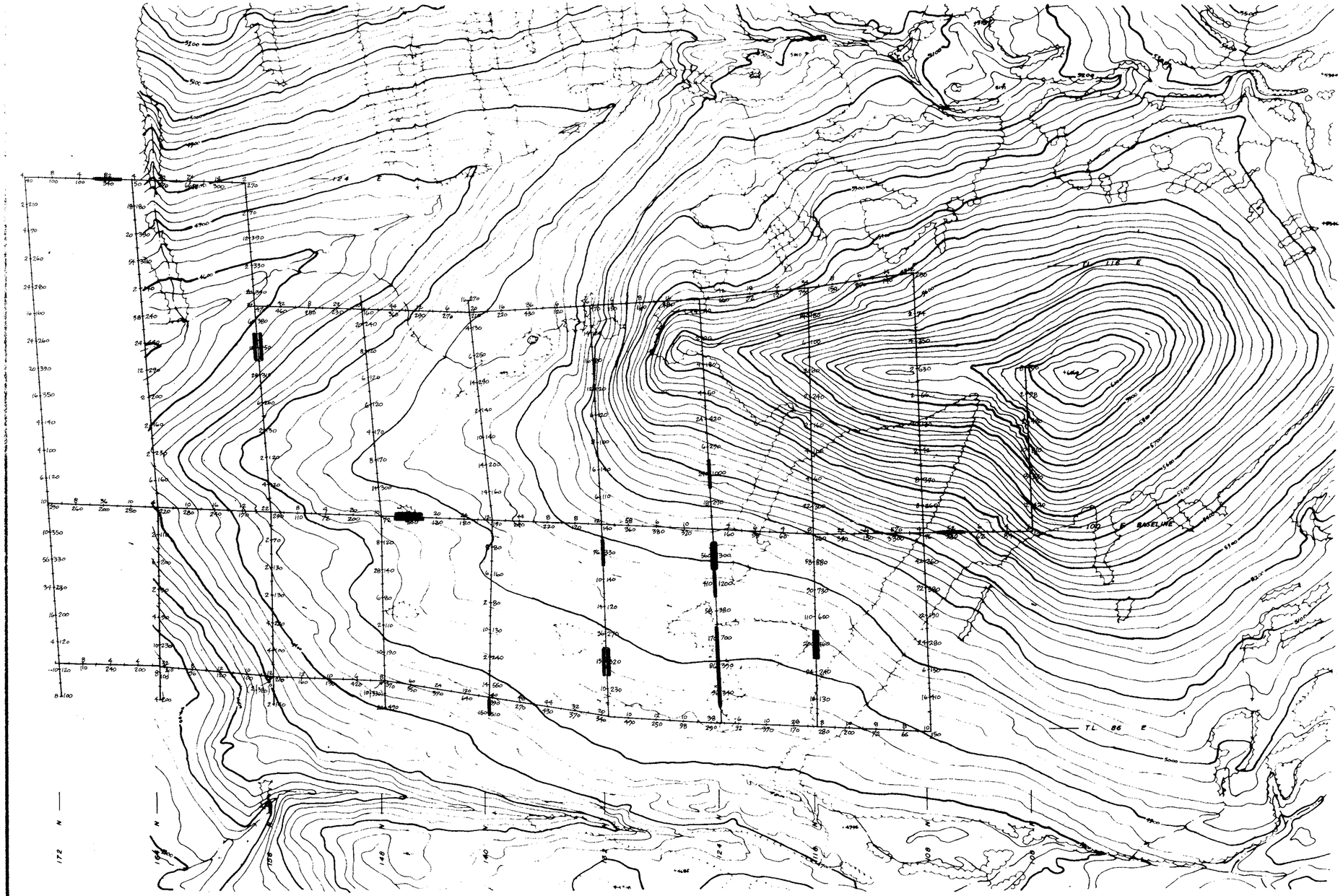
CLAIM SKETCH

not tied to topography

PROJECT: PIK

PROJ. Nº 1015	SURVEYED BY: T.P. DATE: 1972
N.T.S. 93 N/14 W	DRAWN BY: A.P. SCALE: 1" = 400'
DWG. Nº 1 PIK-72-3	NORANDA EXPLORATION CO. LTD.
	OFFICE: SMITHERS

4522-M4



Cx Cu / tot. Cu. Ratio Profile

$40\% < \frac{Cx\ Cu}{tot\ Cu} < 60\%$

$20\% < \frac{Cx\ Cu}{tot\ Cu} < 40\%$

$\frac{Cx\ Cu}{tot\ Cu} < 20\%$

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T. Pearse

$\frac{28}{300}$ = ppm Cx. Cu / ppm Total Cu.

$\frac{Cx.}{Tot.} \mid \frac{\ }{Tot.}$

REVISED

SOIL GEOCHEMISTRY
-"C" HORIZON -CU.-

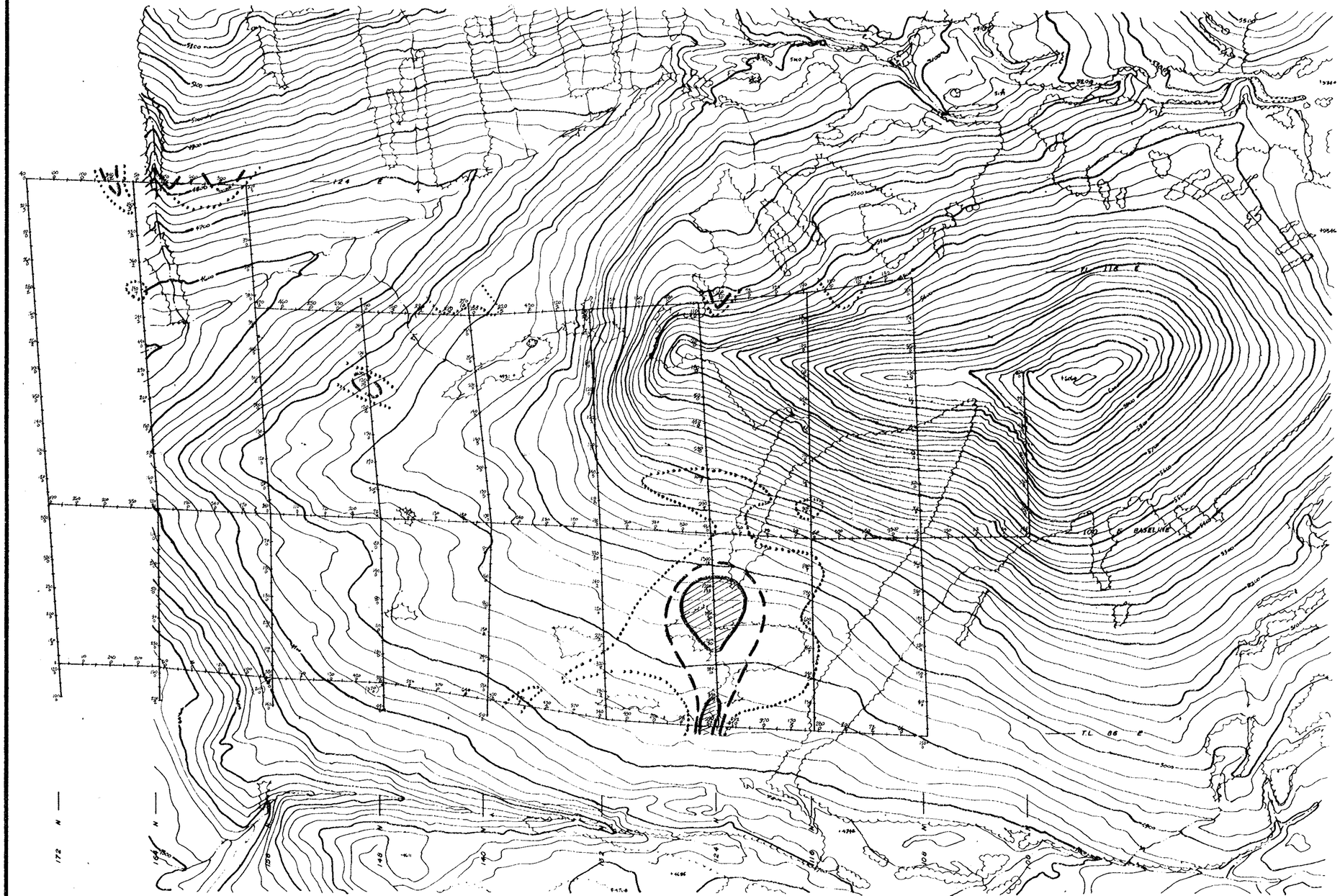
PROJECT: PIK

PROJ. Nº 1015
N.T.S. 93N/14W
DWG. Nº 4
PIK-72-9

SURVEYED BY: ..... DATE: 1972
DRAWN BY: A.P. SCALE 1" = 400'

NORANDA EXPLORATION CO. LTD.
OFFICE: SMITHERS

4522-MT



C - HORIZON Mo. CONTOURED

> 25 ppm

> 10 ppm

> 5 ppm

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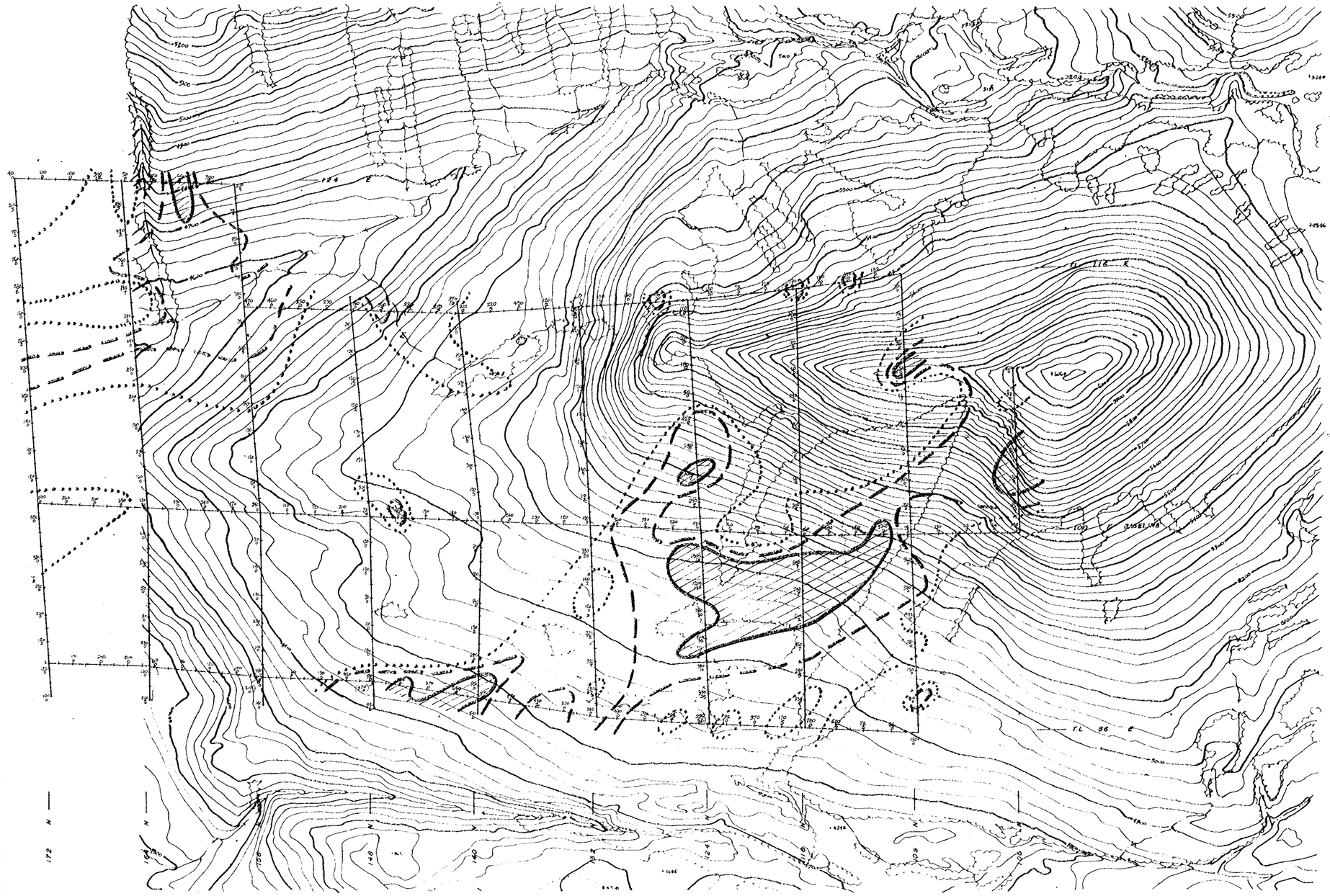
T. Pearse

390 — ppm Cu.
2 — ppm Mo.

REVISED	SOIL GEOCHEMISTRY "C" HORIZON Cu.&Mo.
	PROJECT: PIK
PROJ. Nº 1015	SURVEYED BY: ..... DATE: NOV. 1972
N.T.S. 93 N/14 W	DRAWN BY: A.P. SCALE: 1" = 400'
DWG. Nº 3	NORANDA EXPLORATION CO. LTD.
PIK - 72 - 8	OFFICE: SMITHERS



C-HORIZON CU CONTOURED

> 501 ppm (Anomaly III)

> 357 ppm (Anomaly II)

> 249 ppm (Threshold + Anomaly I)

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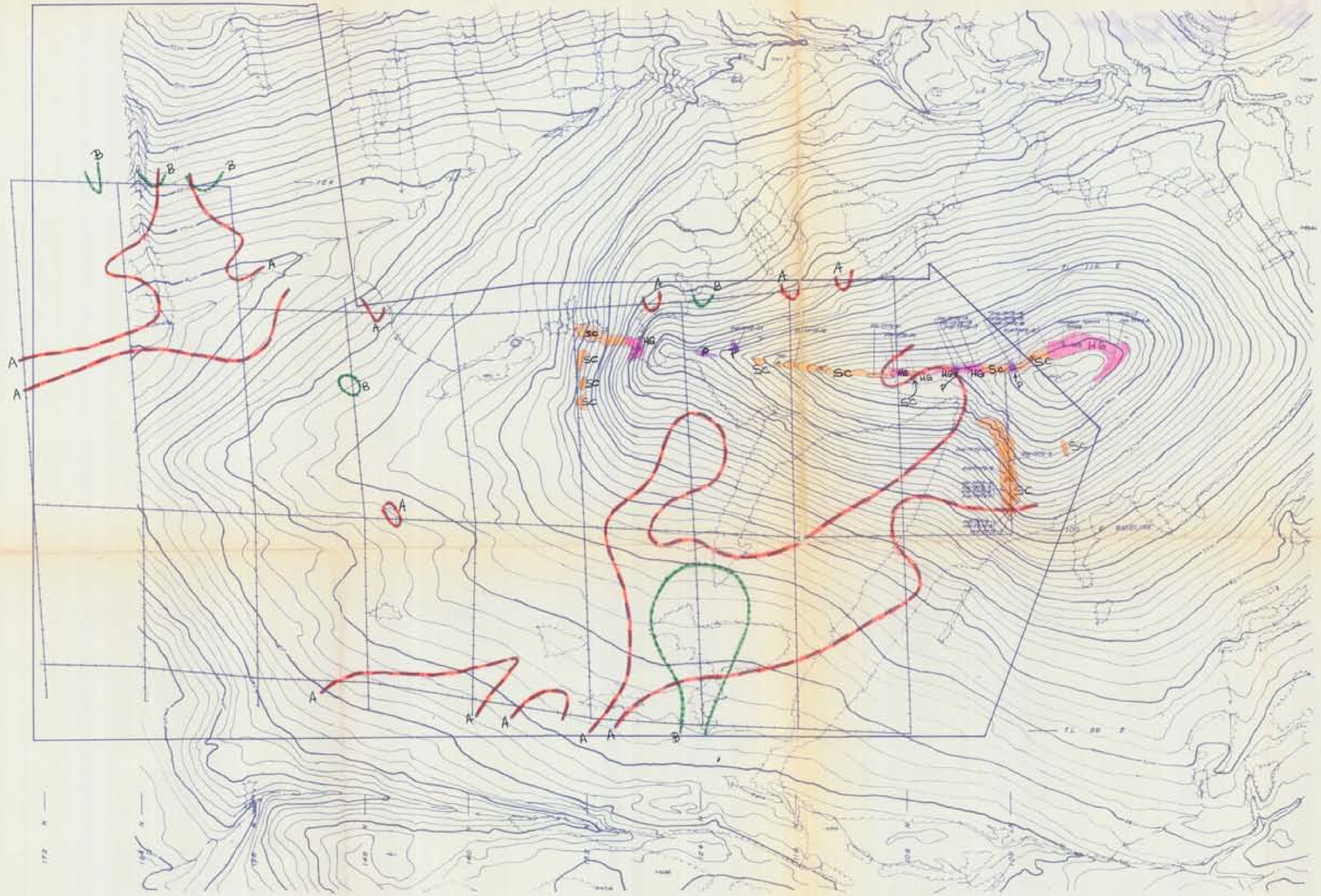
T. Pearse

330 — ppm Cu
2 — ppm Mo

REVISED	SOIL GEOCHEMISTRY "C" HORIZON Cu/Mo.
	PROJECT: PIK
PROJ. Nº 1015	SURVEYED BY: T.P. DATE: Nov. 1972
N.T.S. 93N/14W	DRAWN BY: A.P. SCALE: 1" = 400'
DWG. Nº 2	NORANDA EXPLORATION CO. LTD.
PIK-72-7	OFFICE: SMITHERS



GEOLOGY

- SC - Syenite complex
- HG - Hegem Granitoid Rocks
- P - Pyroxenite / Feldspathic pyroxenite

GEOCHEMISTRY

- A — Anomaly II Cu - C-horizon
- B — >10 ppm Mo - C-horizon

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ASSESSMENT REPORT
NO. 4522 MAP #8

To accompany Geological and Geochemical Report on PIK Group of mineral claims, Omineca Mining Division, by T. Pearse under the supervision of G.E. Diram, P.Eng. Dated June 29, 1973

T. Pearse

REVISED	COMPOSITE
	PROJECT: PIK
PROJ. Nº 1015	SURVEYED BY: T.P. DATE: NOV. 1972
N.T.S. 93N/14W	DRAWN BY: A.P. SCALE: 1" = 400'
DWG. Nº 5 -72-10	NORANDA EXPLORATION CO. LTD
	OFFICE: SMITHERS

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