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REPORT ON GEOLOGICAL, GEOCHEMICAL AND MAGNETOMETER SURVEYS ON THE PRINCE AND GEORGE GROUPS CARIBOO MINING DIVISION, B.C.

6/88

BY

A. I. BETMANIS, P.ENG.

NTS: 93 J/9, 93 J/8, 93 I/5

LONGITUDE: 122°04'W, LATITUDE: 53°31'N

PRINCE GROUP: OLE 3 (7621), OLE 4 (7622), PG 1 (7720), FATA (7866), MORGANA (7867), PRINCE (7868)

GEORGE GROUP: OLE 1 (7619), OLE 2 (7620), PG 2 (7719), LAKE (7949), GEORGE (7950)

OWNER: Teck Explorations Limited

OPERATOR: Teck Corporation

June 26, 1987
Vancouver, B.C.

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ILLUSTRATIONS

INTRODUCTION

Teck Explorations Limited holds the Prince and George Groups comprised of 162 units in 11 claims near Wicheeda Lake, 80 kilometres northeast of Prince George, B.C. The claims were staked at various times during 1986 by Teck, and are held by Teck under a prospecting agreement with Kol Lovang.

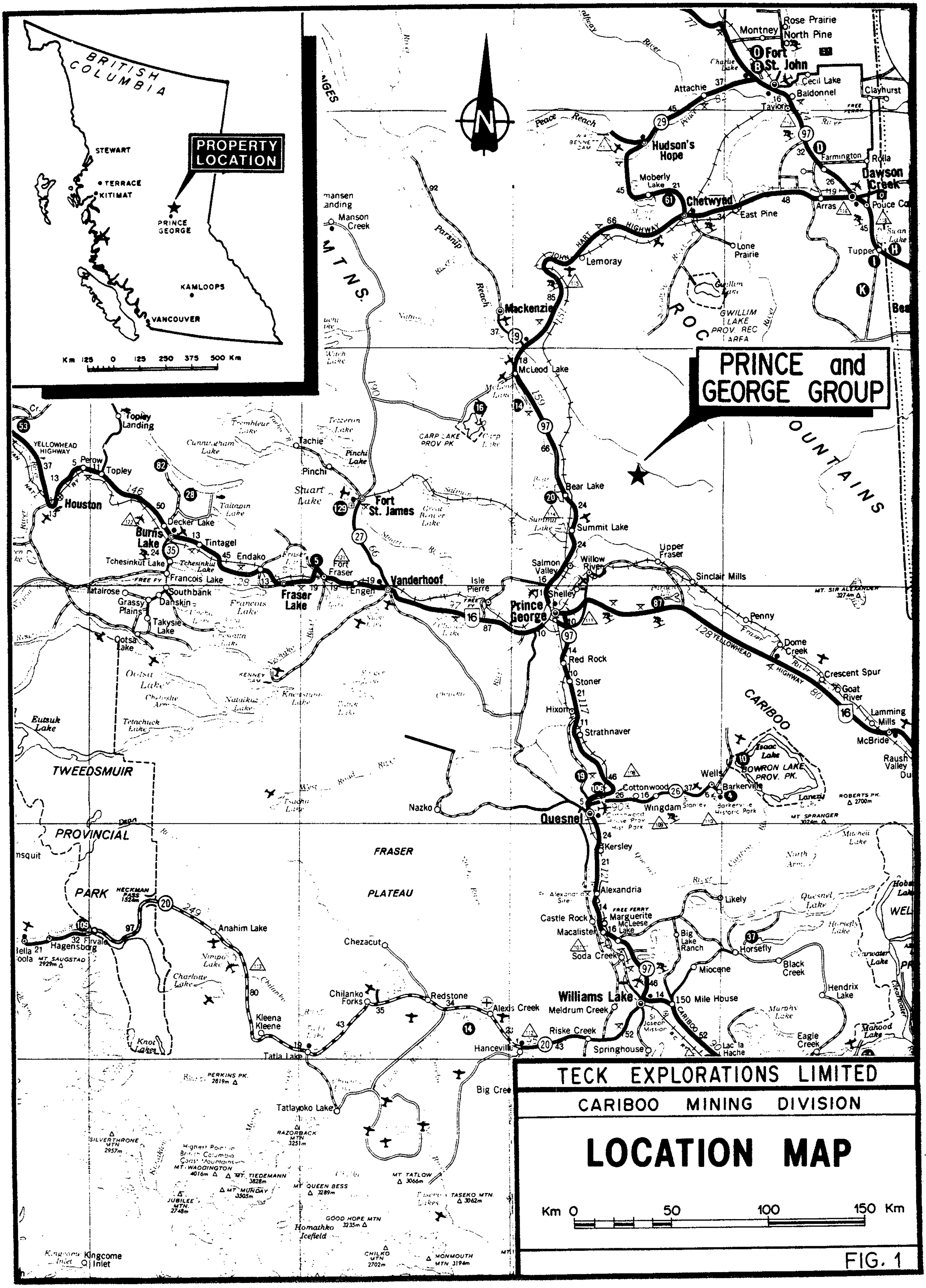
The property is underlain by carbonatitic and syenitic intrusives emplaced in Cambrian to Ordovician calcareous sediments. The intrusives locally contain signficant concentrations of niobium. Anomalous rare earth elements occur in the syenite.

The exploration program during 1986 located the main intrusives by geological mapping, geochemical soil sampling, and geophysical surveying. Limited hand trenching was done to evaluate soil profiles and sample carbonatites.

LOCATION, PHYSIOGRAPHY, AND ACCESS

The claims are located mainly southeast of Wicheeda Lake between Wicheika Creek and Parsnip River, 80 kilometres northeast of Prince George, in the Cariboo Mining Division, B.C. Most of the property lies within NTS 93 J/9, with parts extending into 93 J/8 and 93 I/5. The claims are centred at approximately latitude 53°31'N and longitude 122°04'W (Figure 1).

Elevations on the property vary from 820 to 1,490 metres. Slopes are moderately steep dropping down from a relatively flat ridgeline between Wicheika Creek and Parsnip River. Vegetation varies from virgin stands of timber at lower elevations to sections of alder overgrowths in old burns near the ridge. Although overburden is generally shallow, rock outcrop is limited to ridge tops and few rock bluffs.



TECK EXPLORATIONS LIMITED

CARIBOO MINING DIVISION

LOCATION MAP

Km 0 50 100 150 Km

FIG. 1

Four-wheel drive road access is possible to Wicheeda Lake and the edge of the northcentral part of the property from logging roads in the Parsnip River valley maintained by Pas Logging of Prince George. For practical purposes helicopter access from Prince George was used.

CLAIMS

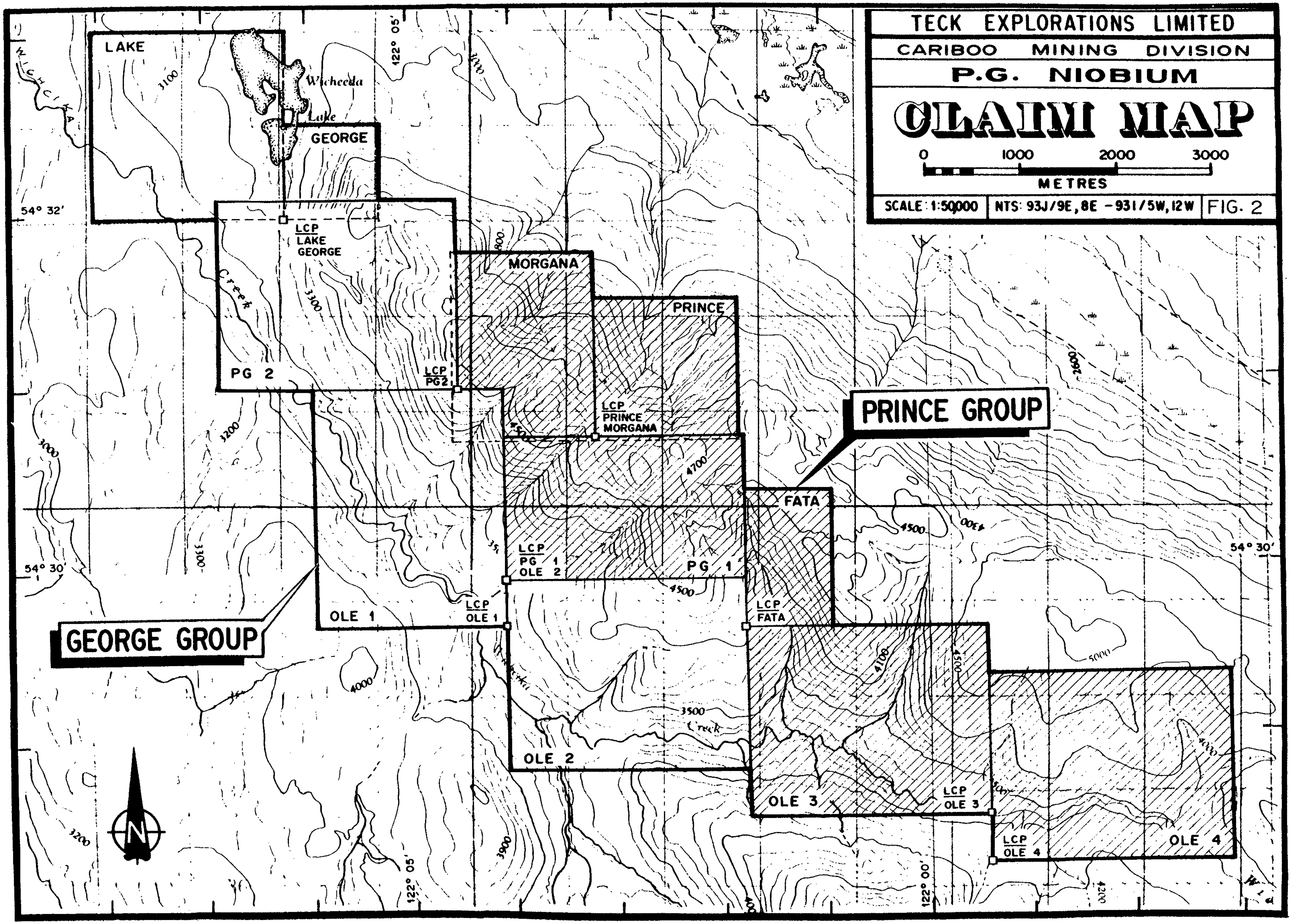
Eleven contiguous claims totalling 162 units were staked during 1986, and have been grouped into the Prince and George Groups (Figure 2).

Group	Claim (Units)		Record No.	Staked	Recorded
Prince	Ole 3	(20)	7621	April 21	April 25
	Ole 4	(20)	7622	April 21	April 25
	PG 1	(15)	7720	June 3	June 19
	Fata	(6)	7866	July 14	August 11
	Morgana	(12)	7867	July 22	August 11
	Prince	(9)	7868	July 22	August 11
George	Ole 1	(20)	7619	April 21	April 25
	Ole 2	(20)	7620	April 21	April 25
	PG 2	(20)	7719	June 3	June 19
	Lake	(16)	7949	August 25	September 5
	George	(4)	7950	August 25	September 5

The claims were staked and are held by Teck Explorations Limited.

PREVIOUS WORK

No previous work of substance has been done on the property or in the immediate area. In 1976 and 1977 Kol Lovang prospected the area and staked two claims on minor base metal showings, but no follow-up work was done and the claims were permitted to lapse. Later assaying of Lovang's samples indicated anomalous niobium values.



TECK EXPLORATIONS LIMITED
CARIBOO MINING DIVISION
P.G. NIOBIUM
CLAIM MAP
0 1000 2000 3000
METRES
SCALE: 1:50,000
NTS: 93J/9E, 8E - 93I/5W, 12W
LAKE
GEORGE
Wicheeda
Lake
PG 2
LCP LAKE GEORGE
LCP PG2
MORGANA
PRINCE
LCP PRINCE MORGANA
PRINCE GROUP
FATA
LCP PG 1 OLE 2
PG 1
LCP FATA
OLE 1
LCP OLE 1
GEORGE GROUP
OLE 2
OLE 3
LCP OLE 3
LCP OLE 4
OLE 4
Creek
54° 32'
54° 30'
122° 05'
122° 00'

FIG. 2

Teck entered into a prospecting agreement with Lovang in early 1986 and staked the initial Ole claims during April, 1986. A helicopter supported stream silt geochemical survey was made of in the Wicheika Creek drainage basin by Teck, resulting in additional claims being staked and outlining the initial areas for exploration. Further claims were staked during 1986 as location of intrusive zones became more defined.

SUMMARY OF WORK

Based on the initial detailed silt surveys, the areas of the Prince and George grids were chosen for follow-up work. The Lake, D and F grids were run as reconnaissance grids to investigate secondary silt anomalies. Additional fill-in work was done later on the Lake grid area. (See Figure 3 for grid locations).

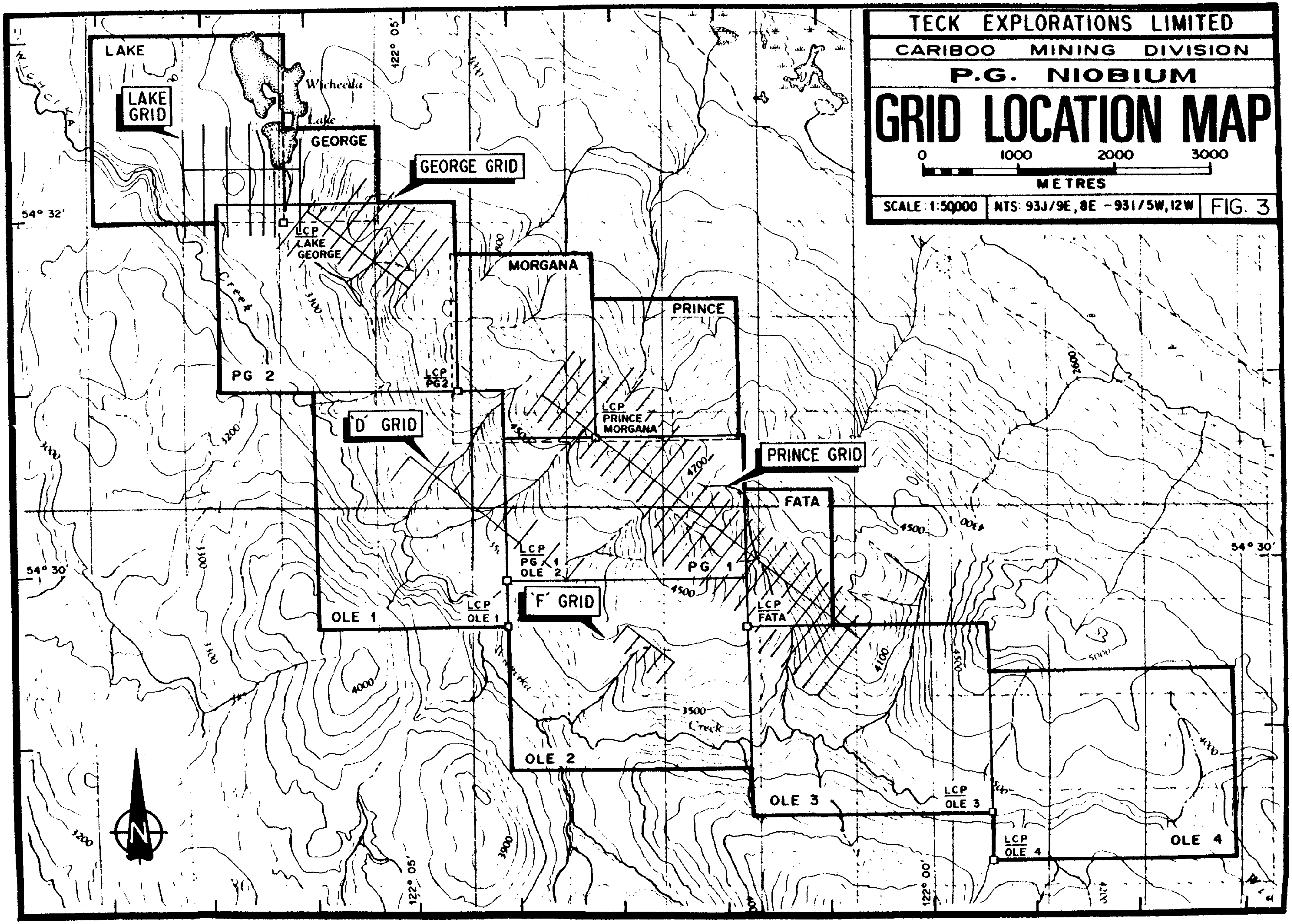
(a) Prince Grid

A base line in direction N50°W was cut for 4,350 metres and 28,900 metres of flagged cross-lines were established at 150 metre spacings with stations marked at 50 metre intervals.

Rock outcrops were mapped at a scale of 1:5,000 using the grid reference. Soil samples were collected at the 50 metre stations. Total field magnetometer readings were taken at 25 metre intervals along the lines. Several test pits were dug to obtain soil profiles, and seven trenches for a total of 79.5 metres were blasted to expose bedrock.

(b) George Grid

A base line was cut N50°W for 1,050 metres and 9,250 metres of cross-lines flagged at 150 metre intervals with station intervals marked at 50 metres.


TECK EXPLORATIONS LIMITED
CARIBOO MINING DIVISION
P.G. NIOBIUM
GRID LOCATION MAP
0 1000 2000 3000
METRES
SCALE: 1:50,000
NTS: 93J/9E, 8E - 93I/5W, 12W
FIG. 3
LAKE
LAKE GRID
Wichcela
Lake
GEORGE
GEORGE GRID
LCP LAKE GEORGE
MORGANA
PRINCE
PG 2
LCP PG2
LCP PRINCE MORGANA
'D' GRID
PRINCE GRID
FATA
LCP PG 1 OLE 2
PG 1
OLE 1
LCP OLE 1
'F' GRID
LCP FATA
OLE 2
OLE 3
LCP OLE 3
LCP OLE 4
OLE 4
Creek
54° 32'
54° 30'
122° 05'
122° 00'
3100
3200
3300
3500
3900
4000
4100
4200
4500
4700
5000
N

(b) **George Grid** (continued)

Soil samples were collected at 50 metre stations and magnetometer readings taken at 25 metre intervals. Geology was mapped at a scale of 1:5,000 on the grid.

(c) **Lake Grid**

A 1,250 metre east-west base line was flagged and north-south cross-lines were flagged at 250 metre intervals plus one intermediate line for a total of 7,600 metres. Stations were marked each 50 metres.

Soil samples were collected at 50 metre stations on the grid. 5,200 metres of magnetometer surveying at 25 metre intervals was completed.

(d) **D Grid**

A 2,100 metre N50°W base line was flagged and lines turned off at 300 metre spacings. Soil samples were collected on 3,250 metres of line at 50 metre spacings.

(e) **F Grid**

A 600 metre N50°W base line was flagged and 1,000 metres of flagged lines turned off at 150 metre intervals. Soil samples were collected at 50 metre intervals.

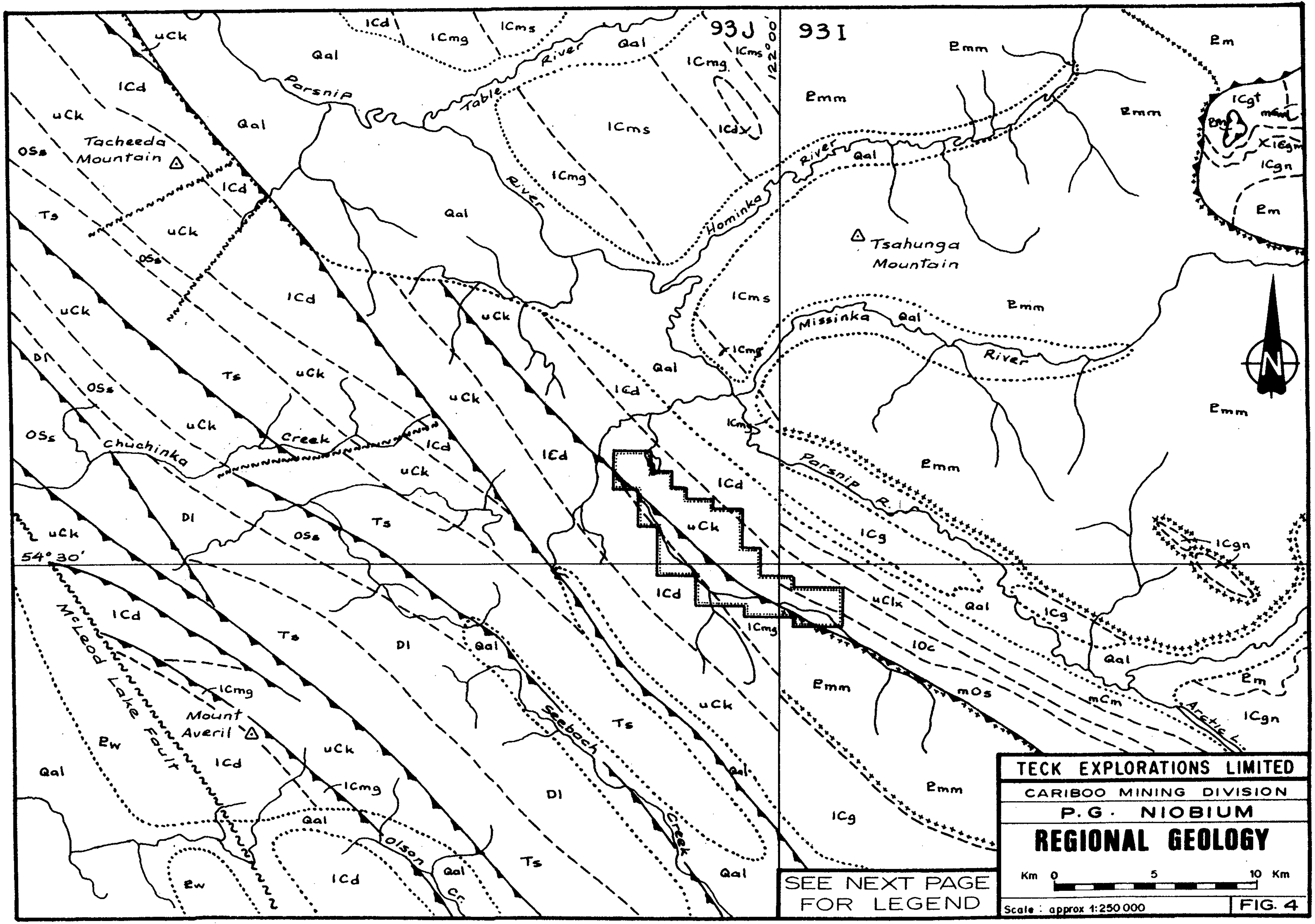
REGIONAL GEOLOGY

Regional geology has been mapped by Muller (GSC Map 1204A, McLeod Lake) and Taylor and Scott (GSC O.F. 630, Monkman Pass). Both map sheets include parts of the property (see Figure 4). The McLeod Lake map indicates that the property is underlain by upper Cambrian Ketchika Group limestones, silty limestones, calcareous siltstones, and calcareous schists overthrust by lower Cambrian Misinchinka Group black slates, greywackes, and minor coarser clastics. Lower Cambrian dolomites, limestones, and minor slates overlie the Misinchinka Group southwest of Wicheika Creek. The Monkman Pass map indicates that the property is underlain by lower Ordovician Chushina Formation limestones, argillaceous limestones, and minor shales, and middle Ordovician Skoki Formation dolomites and minor sandstones overthrust by metamorphosed preCambrian Missinchinka Group fine grained limy sediments. The thrust fault trace has been mapped on both map sheets as passing diagonally through the property a short distance northeast of and parallel to Wicheika Creek. Lithological attitudes strike approximately N50°W and dip steeply both northeast and southwest.

LOCAL GEOLOGY

Upper plate rocks southwest of the thrust fault were not examined in detail, but reconnaissance traverses indicate that they include interbedded calcareous schists, phyllites, some limestone, and minor unsorted conglomerate.

Lower plate rocks could be mapped in moderate detail on half of the Prince grid, and only partially on the George grid. Although overburden is shallow, rock outcrops are limited to ridge tops, roots of windfalls, occasional creek bed exposures, and massive limestone beds.



SEE NEXT PAGE FOR LEGEND

TECK EXPLORATIONS LIMITED
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REGIONAL GEOLOGY
FIG. 4

McLEOD LAKE (93J)

QUATERNARY

Qal	

TRIASSIC

Ts	Argillite, greywacke, shaly limestone

DEVONIAN

Dl	Limestone, silty and shaly limestone

ORDOVICIAN

OSs	Sandpile Group: limestone, dolomite, quartzite

CAMBRIAN

uCk	Kechinka Group: limestone, silty limestone calcareous schist.
lCd	Dolomite, limestone, quartzite, slate
lCmg	Misinchinka Group: slates, greywacke, quartzite, conglomerate
lCms	Chlorite and sericitic schists, phyllites, quartz-pebble conglomerate

PRECAMBRIAN

Pw	Wolverine Complex: metamorphosed granitoid gneiss.

MONKMAN PASS (93 I)

mOs	Skoki Fm: oncolitic dolomite, minor sandstone
lOc	Chushina Fm: limestone, argillitic limestone, minor shale
uClx	Lynx Fm: limestone, nodular limestone, dolomite
mCm	Dolomitic siltstone, dolomite, shale
lCg	Gog Group: includes lCgm, lCgn
lCgm	Mural Fm: limestone, minor shale
lCgn	McNaughton Fm: quartzite, conglomerate fine clastic sediments.
Rmm	Missinchinka Group: metamorphosed Rm and local Cambrian
Rm	Miette Group: undivided calcareous clastic sediments

LEGEND TO ACCOMPANY FIG. 4

LOCAL GEOLOGY (continued)

(a) **Prince Grid**

Principal lithologies on the Prince Grid are interbedded limestones with calcareous argillites and phyllites. The northeastern edge of the grid is underlain mainly by reasonably massive white limestone interbedded with less massive and thinner bedded medium to dark grey limestone. Southwesterly from the main limestone unit are interbedded light grey calcareous argillites and weakly calcareous phyllites, with few thick light to medium grey limestone beds. The limestone beds appear to become more silty to the southwest with increasing pseudo-nodular and sedimentary boudinage structures. The argillites and phyllites are locally ferruginous. The argillite-phyllite-limestone sequence probably correlates with either the Ordovician Chushina Formation of the Monkman Pass map sheet or the upper Cambrian Kechika Group of the McLeod Lake map sheet.

Bedding attitudes average N50°W and dip sub-vertically. The phyllites and argillites frequently are schistose parallel to bedding.

A dyke or sill-like carbonatitic intrusive of varying composition and thickness along its strike intrudes the sediments sub-parallel to a central limestone unit. The intrusive has been traced intermittently by float and outcrop for a distance of 2,700 metres. Geochemical soil surveys indicate that it is continuous except where displaced by faulting. Petrographic studies show that the intrusive is a carbonatite or close alkalic association of a carbonatite (see Appendix I). The carbonatite is medium to coarse grained, generally quartz-free, and contains intergrowths of feldspar, carbonate, pyroxene, and micas. Pyrite is a common accessory mineral. Fine grained pyrochlore as a minor accessory mineral has been identified by scanning electron microanalysis.

The main peak of the ridge on the Prince Grid was mapped as a moderately massive weakly calcareous argillite or very silty dolomite with limy nodules. The unit is distinctly different from the interbedded limestones and argillites. Its eastern margin is clearly fault controlled. It could be a thrust plate remnant, possibly of the upper Cambrian Lynx Formation. If the unit is overthrust, then the carbonatite could extend beneath it.

Several faults have been interpreted from displacement of limestone beds and the carbonatite. Location and direction of faulting are indicated by drainage patterns and local depressions. Dips of indicated faults are presumed to be moderately steep.

(b) **George Grid**

Rock outcrops on the George grid are very sparce, and therefore the geological map should be considered as largely diagramatic. Interbedded calcareous argillites and limestones similar to the Prince grid strike northwesterly and dip subvertically northeasterly and southwesterly. A variety of dykes, generally less than 5 metres wide, intrude the sediments sub-parallel to bedding. The majority of dykes are weakly to moderately calcareous, quartz deficient, intermediate intrusives. They are variably mineralized with accessory magnetite, pyrite, and rarely galena and fluorite. A syenite and syenite shatter breccia with a ferruginous carbonate and partly oxidized pyrite matrix intrudes limestones and possibly argillite at the western corner of the grid. Soil geochemistry indicates the intrusive to be roughly circular and maybe 400 metres in diameter.

Faulting was not observed but is interpreted from lithological offsets.

(c) **Lake Grid**

Due to lack of outcrop, geology of the Lake grid was not mapped. Scattered float and minor sub-outcrop areas indicate that the grid is underlain by calcareous schists, possible limestone, and is intruded by probable dykes of magnetic and non-magnetic calcareous intermediate intrusives. Float sample assays indicate that the intrusives are comparatively well mineralized with niobium.

SOIL GEOCHEMISTRY

Soil samples were collected from the B horizon at 50 metre stations on the Prince, George, Lake, D, and F grids. The samples were placed in Kraft soil bags and shipped to Acme Analytical Laboratories Ltd. in Vancouver, B.C. where they were screened to minus 80 mesh and analysed by ICP for Ba, Co, Cu, Ni, Sr, Zn, Ce, Nb, Ta, Y, and Zr. Only Nb, Ce, Sr, Zn, and Ba values were considered significant indicators of the carbonatitc and syenite intrusives. These values are plotted on geochemical soil dispersion maps for each grid. Possible, probable, and anomalous values in ppm were selected at mean plus one, two, and three standard deviations:

Element	M + SD	M + 2SD	M + 3SD
Nb	100	180	250
Ce	270	405	535
Sr	240	340	445
Zn	135	210	280
Ba	780	1,000	1,220
Ba *	1,000	1,500	2,000

* George grid values for barium were unusually high, therefore arbitrary contours were used.

(a) **Prince Grid**

Anomalous niobium soil values correlate very closely with location of the underlying carbonatite, and indicate very little lateral dispersion in soils. Test pit soil profiles (Figure 5) indicate that the upper B1 soils are good indicators of niobium in screened (-80 mesh) decomposed bedrock, whereas the lower B and upper C horizons are somewhat depleted in niobium. Decomposed bedrock of test pit PP1, analysed geochemically after screening to -80 mesh, gave 6000 to 7000 ppm Nb whereas the corresponding bedrock assay gave only 0.29% Nb_2O_5, suggesting that the pyrochlore is very fine-grained and may be concentrated in the sample by fine screening of soils.

Anomalous barium in soils correlates moderately well with niobium, and helps support the niobium anomaly.

Cerium correlates only partially with niobium and the known carbonatite. Insufficient rock analyses have been made to determine whether the cerium indicates zoning of the carbonatite or partial leaching in soils.

Zinc and strontium correlate moderately well with cerium.

(b) **George Grid**

Niobium outlines the syenite quite distinctly although syenite rock assays are comparatively low. Other smaller soil anomalies probably are related to carbonatitic dykes.

PRINCE GRID - TEST PIT PROFILES

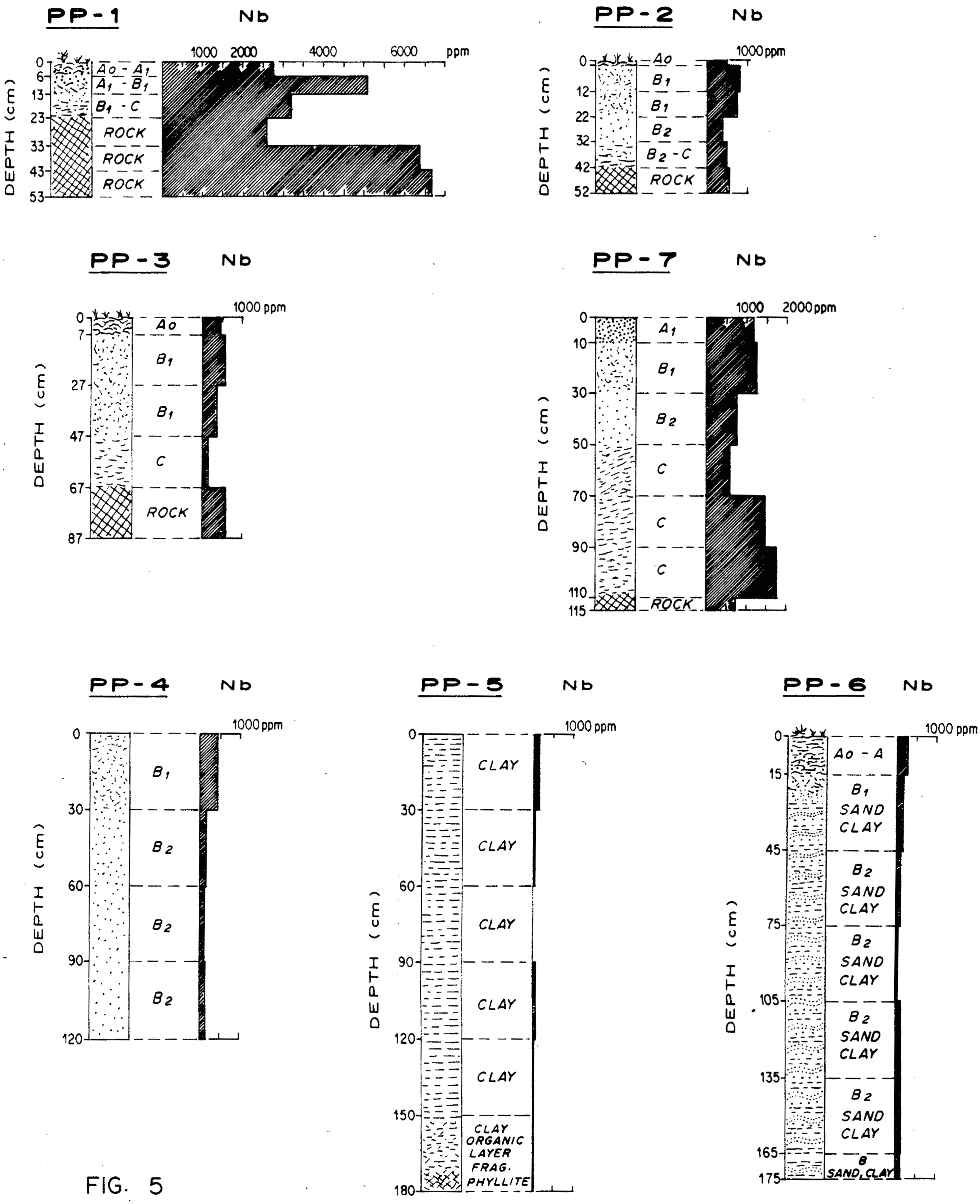


FIG. 5

(b) **George Grid** (continued)

Barium values from the grid were considerably higher than other grids, and although partially indicating the syenite, they emphasize a swarm of dykes east of the syenite.

Cerium defines both the syenite and the dyke swarm, but appears to display appreciable lateral dispersion from source.

Zinc and strontium correlate only weakly with known intrusives, and the values may suggest an alteration zoning outwards from the syenite.

(c) **Lake Grid**

Topography of the Lake grid is subdued with minor scattered float from magnetic and non-magnetic, calcareous and non-calcareous, intermediate intrusives. Moderately anomalous niobium, barium and cerium values occur in soils, and appear to correspond to areas of shallower overburden. Trenching to bedrock and soil profiles in select areas will be required to interpret the anomalies adequately.

(d) **D and F Grids**

Reconnaissance soil surveys were made on the D and F grids to test for sources of possibly anomalous niobium stream silt values. No anomalous niobium was obtained in soils. One partial line on the D grid gave anomalous cerium values which could not be correlated with adjacent lines.

MAGNETOMETER SURVEYS

Total field magnetic readings were taken at 25 metre intervals on the Prince, George, and Lake grids using a Geometric portable proton magnetometer with a backpack mounted sensor. Corrections for diurnal variation were made for each grid individually.

(a) Prince Grid

Very low magnetic relief is displayed by the argillites and limestones. The central part of the carbonatite shows a magnetic high of at least 100 gammas above background. No magnetite was recognized in the carbonatite, but pyrrhotite has been identified tentatively in thin section studies. An area of higher magnetic readings occurs south of the base line on the western part of the grid. No carbonatite outcrop or float was located in the anomalous area, and soil sampling does not indicate anomalous niobium.

(b) George Grid

A moderate but still reasonably subdued magnetic relief was obtained from the George grid area, and is believed to be caused by narrow magnetic and weakly magnetic dykes which only partly are exposed in outcrop. The syenite plug shows no distinct magnetic signature.

(c) Lake Grid

Two moderately prominant magnetic highs are indicated above an essentially flat magnetic background. The highs partly correlate with a niobium soil anomaly, and probably indicate a magnetic carbonatite related intrusive. However, from the variety of magnetic and non-magnetic intrusive float with niobium values found on the grid, the survey probabaly indicates only one niobium bearing intrusive phase.

ROCK SAMPLING AND TRENCHING

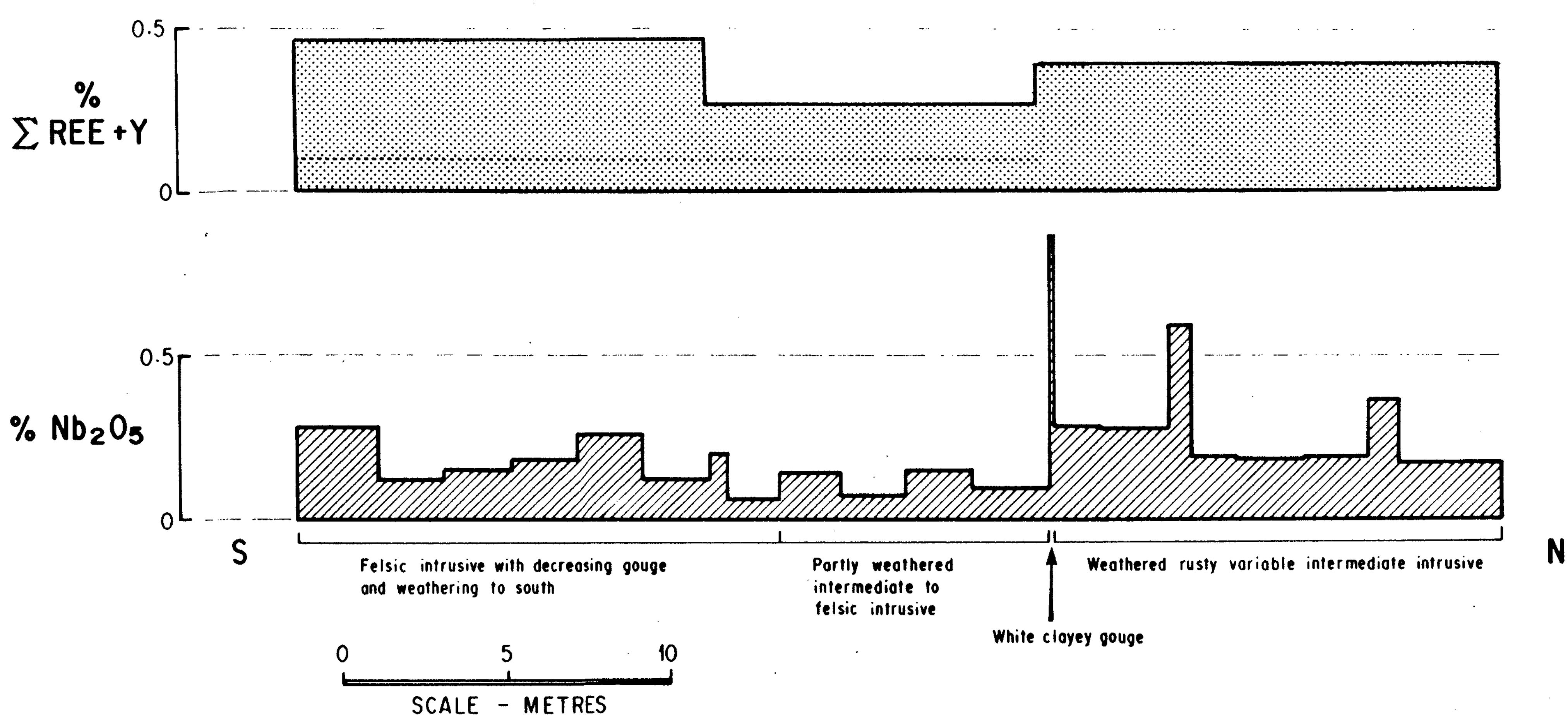
Samples of intrusive outcrops and sub-outcrops were collected during the course of geological mapping and geochemical soil surveying, and assayed for niobium. The sample locations and assays are indicated on the niobium geochemical soil survey maps. Results can be considered geochemical anomalous but uneconomic for niobium.

Select samples from the Prince grid were submitted to Vancouver Petrographics Ltd. for thin section study. These are reported in Appendix I with grid location reference.

Seven trenches were blasted and cleared on the Prince grid for a total of 79.5 linear metres of rock exposed. Trench locations are shown on the niobium geochemical soil survey map. Three of the trenches, PT-5 to 7, assayed significant grades of niobium (see Figures 6 and 7). The better grade sections appear to be from sections of the intrusive containing a fine grained black gouge or whitish clay on fractures. The intrusive appears to be layered and somewhat variable across strike. The suggested zoning may indicate that niobium grades could vary across strike, along strike, or even with depth. The full width of the intrusive has not been exposed.

REE GEOCHEMISTRY

Several soil samples overlying the carbonatite on the Prince grid and the syenite on the George grid were sent to X-Ray Assay Laboratories Ltd. in Ontario for rare earth analyses. Results showed anomalous rare earths, particularly from the syenite area. Further rock samples from surface grabs and trench composits were submitted for analyses. Results and chondrite plots are given in Appendix II.



TRENCH PT-5 / PRINCE GRID (37W)

FIG. 6

TRENCHES TP-6, TP-7 (36W)

PRINCE GRID

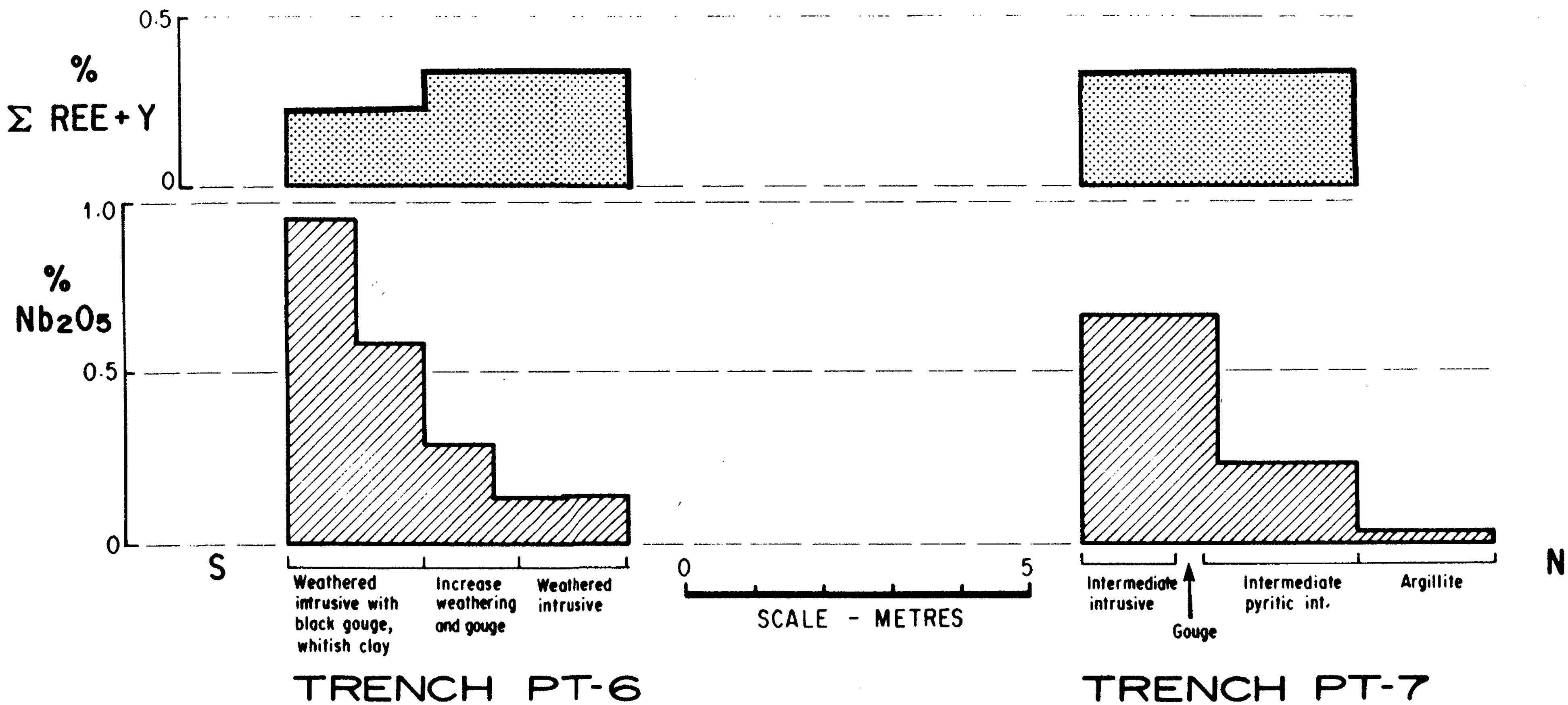
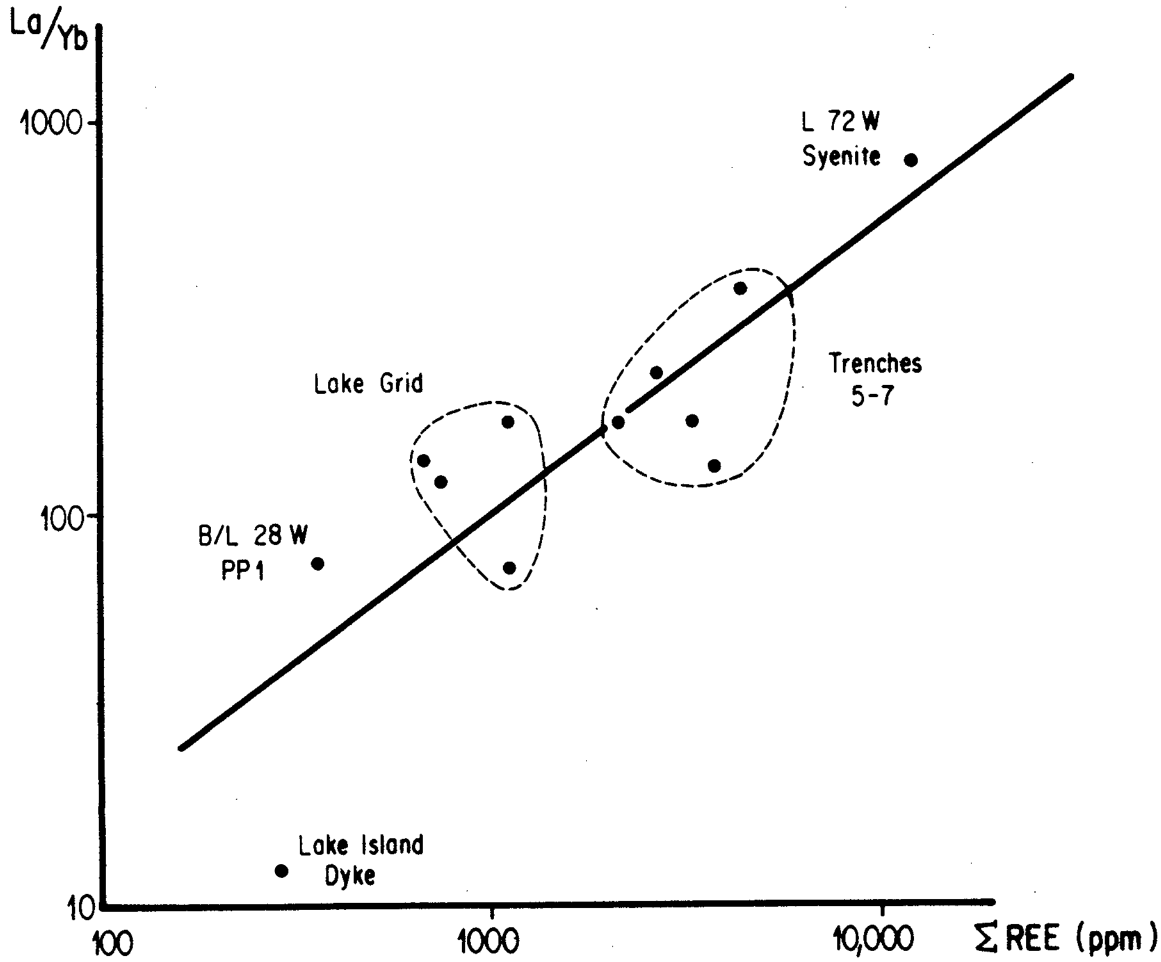


FIG. 7



REE DISTRIBUTION

FIG. 8

REE GEOCHEMISTRY (continued)

The chondrite plots show patterns typical of carbonatites and related alkalic intrusives. A plot of the ratio of light to heavy REE against total REE shows a reasonably good linear variation of REE fractionation (Figure 8), suggesting that the carbonatitic intrusives and syenite may be genetically related.

CONCLUSIONS

Geological mapping and soil geochemistry have outlined a linear carbonatitic intrusive and a small syenite plug emplaced in limestones and calcareous argillites. Magnetometer and geochemical soil surveys may indicate additional carbonatitic intrusives under overburden cover. The intrusives occur intermittently over a strike length of at least seven kilometres. The carbonatitic intrusives are anomalous in niobium, and the syenite is anomalous in rare earths. Rare earth distribution suggests that the intrusives could be related.

Outcrop exposures of the intrusives are limited, and may not be suitable for adequte sampling of niobium. A program of additional trenching or drilling may be required to determine the economic potential of the claims.

Respectfully submitted,

June 26, 1987
Vancouver, B.C.

A. I. Betmanis, P.Eng.

AUTHOR'S CERTIFICATE

I, Andris I. Betmanis, do hereby certify that:

1. I am a geologist residing at 2600 Belloc Street, North Vancouver, B.C.;

2. I am a graduate of the University of Toronto with a degree of BASc. in Applied Geology in 1965;

3. I am a registered member of the Association of Professional Engineers of the Province of British Columbia, registration number 8336;

4. I have practiced my profession as an exploraton geologist continuously for more than 20 years;

5. From July to October, 1986 I supervised the exploration program as described in this report on behalf of Teck Corporation, Vancouver, B.C.

A. I. Betmanis, P.Eng.

APPENDIX I

PETROGRAPHIC REPORTS

Vancouver Petrographics Ltd.

JAMES VINNELL, Manager
JOHN G. PAYNE

P.O. BOX 39
8887 NASH STREET

PHONE (604) 888-1323

Invoice #5899

August 27th, 1986

Report for: W. Meyer,
Teck Corporation,
1199 West Hastings St.,
VANCOUVER, B.C.
V6E 2K5

Samples:

10 rock chip samples for sectioning and petrographic study. 7 of the samples (containing visible opaques) were prepared as polished thin sections; the remaining 3 were prepared as conventional thin sections.

Sample numbers and preparation type are tabulated below:

AA-1	37+85W:3+85N	TS
2	36+22W:3+15N	PTS
3	36+00W:2+83N	PTS
4	36W:3+35N	PTS
5	36+00W:2+24N	TS
6	27+75W:1+20N	PTS
7	27+65W:0+80N	PTS
8	27W:0+80N	PTS
9	27W:B/L	TS
10	26+50W:1+10N	PTS

The lab numbers (AA-1 through 10) were assigned for preparation purposes; because of their simplicity, these are the numbers used for comparison and discussion in the summary section of this report.

Summary:

The principal questions to be addressed by this study are:
i) are the rocks carbonatites (or of carbonatitic affinities)?
ii) do they contain unusual amounts of Nb and, if so how does this occur?

In connection with the second question, the samples were submitted for Nb analysis (by X-ray fluorescence: a proven method for determination of total Nb).

Results are as follows:

Sample	Nb (ppm)
AA-1	111
2	1377
3	629
4	632
5	671
6	429
7	323
8	478
9	1229
10	129

The above results indicate that these rocks are distinctly anomalous in Nb by absolute standards (crustal abundance c. 25ppm). Even in alkalic igneous rocks (which is what these appear to be) Nb seldom exceeds about 100ppm, except in nepheline syenites which may contain in the range 100 - 300ppm.

Two of the samples (AA-2 and AA-9) contain Nb at levels approaching economic interest. 1,300 ppm Nb = 0.19% Nb_2O_5.

From a petrographic point of view the suite shows some variability; however, the samples possess certain features in common and appear to be of similar general genetic type.

Salient features are as follows:

The samples are medium-grained, non-foliated rocks showing hypidiomorphic-granular textures typical of igneous intrusives.

With only one exception (AA-8) they are quartz-free. They consist of varying proportions of intimately intergrown feldspars, carbonate, pyroxene and micas.

The majority of them contain major proportions (25% - 90%) of feldspars. In some cases (AA-2, 3, 4) this is albitic plagioclase; in others (AA-6, 7, 8, 9) it is a mixture of K-spar and plagioclase. AA-9 is essentially a feldspar rock (syenite). Three samples (AA-1, 5 and 10) contain little or no feldspar.

Carbonate is a ubiquitous constituent. In some cases (AA-1, 2, 4, 5) it is a major component (25% - 95%). Samples AA-3, 6, 7 and 10 have moderate to low carbonate contents (10% - 12%), and samples AA-8 and 9 contain only about 3% carbonate. Carbonates of more than one type are represented; these include calcite, ferroan dolomite (ankerite) and, possibly, normal dolomite. The different carbonates sometimes occur together in the same sample (e.g. AA-2, 4).

The textural form of the carbonate is strongly suggestive of a primary origin. It appears to be a cogenetic constituent which crystallized along with the silicates. It is not an alteration, nor does it exhibit veining relationships suggestive of exogenetic introduction.

The mafic silicates consist of micas and pyroxenes. These minerals together amount to between 15% and 70% in most of the rocks. Lower mafic contents are characteristic of samples AA-2, 4, 5 and 9.

The micas are a pale olive-green phlogopite and an orange-brown biotite, often intimately intergrown. They are major constituents in AA-1 and 10, and occur in minor proportions in AA-2, 3, 6 and 7 associated with the dominant pyroxene.

The pyroxene is somewhat variable in appearance but typically has a low extinction angle (atypical of normal augite or diopside). In some cases it shows a distinct brownish-green tint and in one sample (AA-8) is a striking deep green colour. It is probably a somewhat sodic variety. In most cases the pyroxene is notably fresh and exhibits euhedral or near euhedral form. In AA-3 and 10 it has an altered, sub-opaque appearance, and in the latter sample is associated with (altered to ?) a fibrous amphibole.

One sample (AA-3) has a considerable content of a mineral which is thought to be scapolite. The same mineral occurs in small quantities in some other samples. In these cases it is sometimes difficult to distinguish from muscovite.

Apatite is a relatively abundant accessory in samples AA-1 and 2, and sphene is notable in AA-8 and 10.

Generally the samples show only traces of opaques. Highest contents of opaques occur in AA-2 and 6. They consist mainly of bireflectant oxides (hematite? probably titaniferous) with minor amounts of partially limonitized sulfides.

The rocks in general are notably fresh. Exceptions are AA-8 in which feldspars are strongly altered to carbonate, and AA-10 where the pyroxene appears altered.

The overall conclusion is that these rocks are varieties of alkalic intrusives. The content of apparently primary carbonate in many of them is a strong indication that they are of carbonatitic affinites. One rock (AA-5), is composed almost entirely of carbonate and, if an origin as a marble can be excluded, may constitute an actual carbonatite.

No consistent relationship of Nb contents to the mineralogy is apparent within the suite. I will try to establish the source of the Nb by additional work using SEM microprobe analyses. This will be the subject of a supplementary report. It would help if you can provide a higher grade sample for this work.

Individual petrographic descriptions are attached.

J.F. Harris Ph.D.

Slide AA-1 (Sample 37+85W:3+85N

Estimated mode

Carbonate	26
Phlogopite) Biotite)	50
Pyroxene	20
Apatite	2
Plagioclase	1
K-feldspar	trace
Opaques	1

This rock consists essentially of a medium-grained, non-oriented intergrowth of the three major constituents, phlogopite, pyroxene and carbonate.

The dominant mineral is a pale-coloured mica, pleochroic from olive green to almost colourless, which is probably phlogopite. It contains zonal patches and flecks of an orange-brown colour - presumably of more biotitic composition.

The phlogopite forms extensive aggregates of subhedral grains, 0.2 - 1.0mm in size. These are host to clusters of subhedral-euhedral prismatic grains, 0.05 - 0.5mm, of a pale greenish pyroxene. This shows rather high birefringence and a distinctive low angle of extinction. It is probably a sodic variety (approaching aegirine or acmite in composition).

The pyroxene forms parallel growths (coalescent acicular grains) and skeletal crystals, as well as clumps of more or less euhedral grains; it often appears to be developing from the phlogopite.

The third major constituent, carbonate (apparently of calcitic composition) occurs throughout as irregular segregations of anhedral granular material of grain size 0.1 - 0.5mm; it also occurs more or less intimately as small flecks and pockets dispersed through the phlogopite/pyroxene intergrowth.

Apatite is a notably abundant accessory, as randomly disseminated, subhedral-euhedral prismatic individuals (0.05 - 0.5mm) and small groups.

Small, suhedral grains and clumps of opaques (probably Fe-oxides) are another disseminated accessory. These tend to concentrate more in the areas of dominant micas and pyroxene.

This rock is unaltered and exhibits what appears to be a primary granular intergrowth of typical intrusive igneous type.

Slide AA-2 (Sample 36+22W:3+15N)

Estimated mode

Carbonate	42
Plagioclase	28
Pyroxene	9
Biotite	4
Muscovite	9
Apatite	3
Limonite	2
Opaques	3

This is a rather heterogenous rock showing intimate textural intergrowth of all the constituents, with a tendency for a streaky, crudely banded, compositional segregation.

The dominant constituent is carbonate. This appears to be of two varieties: calcite (as evidenced by localized reactivity to dilute acid) and a probable ferro-dolomite (ankerite), which forms coarse segregations showing extensive limonite staining of grain boundaries and cleavages.

Plagioclase (of albitic composition) is the other major constituent. It occurs as compact aggregates of anhedral, strongly-twinned grains, 0.1 - 0.2mm in size. In part it is segregated as elongate and irregular masses, and in part is intimately intergrown with the other constituents. Small pockets of plagioclase occur interstitially throughout the more carbonate-rich areas.

Muscovite forms streaks and wisps of fine felted material and aggregates of tiny stubby flakes. These occur in both carbonate and plagioclase and appear primary. The plagioclase is typically clear and unaltered.

The rock shows crudely banded variations. One end of the slide is essentially an intergrowth of plagioclase and carbonate with fine-grained muscovite and abundant disseminated opaques (probably a somewhat titaniferous hematite). This passes to a less opaque-rich central zone in which biotite (pleochroic in an unusual range from olive green to orange brown) and pyroxene are prominent. The latter ranges from fine acicular masses to euhedral granular aggregates. Carbonate and plagioclase are intimately intergrown with the mafics.

This zone is flanked by coarse masses of Fe-stained carbonate, which passes once more into carbonate-plagioclase rock, this time with less opaques.

Apatite is an abundant accessory throughout, both in the usual disseminated form and also as local lenses and patches of compact granular aggregate.

Slide AA-3 (Sample 36+00W:2+83N)

Estimated mode

Plagioclase	26
?Scapolite	24
Pyroxene	35
Carbonate	12
Biotite	2
Apatite	1
Opaques	trace

This is another rock exhibiting an intimate non-oriented intergrowth of several major constituents in patchily varying proportions.

Plagioclase is much coarser in this sample than in the previous one. It forms an aggregate of subhedral prismatic grains 0.5 - 3.0mm in size. This is intimately intergrown with a mineral tentatively identified as scapolite, which forms mainly pockets and streaks of finely granular mosaic aggregates, but is locally developed as prismatic grains to 0.5mm.

Carbonate (probably dolomite) is an interstitial component throughout the plagioclase-scapolite, and sometimes shows lamellar intergrowth with plagioclase.

Pyroxene, with minor associated red-brown biotite, forms abundant clusters and networks throughout, seemingly texturally independent of the plagioclase-rich matrix. It is often a rather dark, inclusion-filled variety and ranges from tiny needles and granules of about 0.02mm in size up to coarse prismatic crystals of 2mm or more. These are sometimes skeletal and intergrown in lamellar/reticulate fashion with carbonate.

Apatite is a minor accessory as small disseminated individuals.

The sparse opaques consist of small clusters of Fe-Ti oxides and occasional grains of partially limonitized pyrite.

The complex, partially poikilitic textural fabric of this rock is a distinctive feature.

Slide AA-4 (Sample 36W:3+35N)

Estimated mode

Plagioclase	57
Carbonate	28
Muscovite	6
Opaques	6
Limonite	3

This rock is made up of an assemblage very similar to the mafic-poor zones in AA-2.

It consists of sodic plagioclase as rather feathery, randomly oriented, anhedral aggregates of fresh, well-twinned material. It is chiefly rather fine-grained (0.1 - 0.5mm) but locally forms coarser, phenocryst-like grains to 1 or 2mm.

Carbonate is intimately intergrown in interstitial mode and also forms coarse pockets with included shreds of plagioclase. It is probably of two forms: calcite (local reactivity to dilute acid) and ferroan dolomite. Segregations of the latter are distinguished by strong development of networks of intergranular and cleavage-controlled limonite.

Fine-grained muscovite forms felted wisps and clumps of small flakes throughout. It appears to be preferentially associated with the carbonate or carbonate/plagioclase contacts. It is not an alteration of plagioclase.

Opaques are relatively abundant, as randomly disseminated clusters of lath-like, bireflectant oxide grains, 0.02 - 0.2mm, probably a form of hematite. Apparently this oxide phase is not a Nb-carrier, as the Nb analysis for the sample is rather low.

Slide AA-5 (Sample 36+00W:2+24N)

Estimated mode

Carbonate	95
Pyroxene	3
Plagioclase	1
Scapolite	1
Limonite	trace
Pyrite	trace

This sample is composed essentially of an anhedral mosaic of carbonate of highly variable grain size from 0.05 - 3.0mm. The carbonate grains are essentially equant and show no oriented fabric or grain elongation.

An incipient foliation is evident in the distribution of the accessory minerals which tend to concentrate in discontinuous, sub-parallel wisps, and show a slight tendency to grain elongation.

These accessories are of three kinds. Commonest are individual prismatic, euhedral to sub-rounded, anhedral grains of pyroxene to 1mm in size. This is a variety showing colour zonation from rather bright green to brown.

Other accessories are rounded to elongate small grains of scapolite and laths of plagioclase. The three are locally associated but also occur independently disseminated.

Rare opaques may include pyrite.

The carbonate is fairly reactive to dilute acid and is presumably mostly calcite. A proportion of intergrown ankerite is also present, however, and is sometimes distinguishable as discrete grains showing pervasive limonite staining.

This rock could be a marble (of metasedimentary origin), though the presence of accessory plagioclase and pyroxene might be considered suggestive of an igneous or skarnic connection.

Slide AA-6 (Sample 27+75W:1+20N)

Estimated mode

K-feldspar	53
Plagioclase	22
Carbonate	10
Pyroxene	12
Biotite	2
Apatite	trace
Opaques	1

This rock differs from previous members of the suite in containing K-feldspar as the major constituent.

This occurs as a relatively coarse anhedral aggregate, 0.2 - 2.0mm, of perthitic composition. Plagioclase is intimately associated throughout, including zonal intergrowths; it also concentrates as pockets and veniform segregations, often with intergrown carbonate. The plagioclase is a less strongly twinned variety than in previous samples.

The carbonate phase tends to exhibit a more localized distribution in this rock than in most others of the suite. It lacks limonite staining and is reactive to acid, so is presumably calcite.

Pyroxene, locally quite a strong green in colour, forms the randomly disseminated clusters of small, elongate, subhedral grains familiar from other rocks of the suite. Rarely it forms coarser prismatic grains and skeletal intergrowths with carbonate. The pyroxene seems to concentrate mainly in the K-feldspathic areas and on K-spar/plagioclase contacts. It is essentially absent from the vein-like masses of plagioclase and carbonate.

Minor amounts of pale orange-red biotite are often associated with the pyroxene. Biotite also forms small dispersed flecks and fine-grained wisps through the feldspathic matrix.

Opaques consist of scattered clumps of lathlike hematitic oxides, and traces of pyrite as tiny disseminated specks.

Slide AA-7 (Sample 27+65W:0+80N)

Estimated mode

Plagioclase	45
K-feldspar	23
Carbonate	12
Pyroxene	18
Biotite) Phlogopite)	2
Apatite	trace
Opaques	trace

This is a rock of similar general type to AA-6, consisting of pyroxene and biotite disseminated through a plutonic-textured matrix of intimately intergrown K-spar and plagioclase with pockets of carbonate.

The K-spar is partially perthitic and the plagioclase rather poorly twinned. They form a relatively coarse, anhedral-subhedral intergrowth on the scale 0.5 - 5.0mm. The veinlike bodies of plagioclase (with carbonate), which appear rather prominent on the stained cut-off chip, show no clear boundaries in thin section, and are probably late magmatic segregation features.

The carbonate (only weakly reactive to acid, and therefore largely dolomitic in composition) forms partly rather coarse, locally euhedral segregations; it also occurs as small ragged interstitial pockets and dispersed wisps (incipient alteration?) through the matrix feldspars.

Pyroxene (a colourless to pale brown variety) forms abundant irregular clusters of prismatic grains, 0.1 - 1.0mm in size. Pale brown phlogopite, zonally flecked with orange-brown biotite, is a common minor associate of the pyroxene.

The sparsely disseminated opaques are largely limonite after pyrite (which is often visible as included remnants).

Slide AA-8 (Sample 27W:0+80N)

Estimated mode

Feldspars)	50
Carbonate alteration)	
Quartz	16
Pyroxene	26
Carbonate	3
Sphene	2
Scapolite	2
Apatite	1
Opaques	trace

This sample differs from all the others in the suite in containing quartz. It is also mineralogically distinctive in several other respects.

The feldspars are of uncertain composition, possibly cryptoperthitic orthoclase-albite. They are untwinned and appear homogenous in thin section. They can be seen, on the cut-off chip, to take a somewhat weak K-positive stain. They are unique in the suite in exhibiting strong pervasive alteration to fine-grained carbonate. In a few cases this alteration is complete, producing pseudomorphs of fine-grained carbonate.

The more or less altered feldspars typically form equant, euhedral grains, 0.2 - 1.5mm, densely disseminated through a cement or matrix of quartz and pyroxene.

The pyroxene is another distinctive feature. It is a striking, intense deep green in colour. It forms even disseminations and coalescent clumps and networks of euhedral-subhedral prismatic grains, 0.02 - 1.0mm.

Patchily strain-polarized quartz of ill-defined (but seemingly coarse) grain structure, forms irregular-shaped, interstitial masses, filling between, and forming a matrix to, the feldspars and pyroxenes.

Accessory constituents are carbonate, as small pockets; scapolite, as fine-grained clusters and individual grains intergrown with altered feldspars; apatite, as small disseminated individuals; and, most notable, sphene as scattered euhedral grains to 0.5mm.

Opaques are extremely sparse, consisting mainly of partially limonitized, tiny grains of pyrite or pyrrhotite.

The strongly euhedral character of many of the constituents of the rock, together with the cement-like interstitial habit of the quartz and carbonate, produces an unusual and distinctive textural intergrowth.

Slide AA-9 (Sample 27W:BL)

Estimated mode

K-feldspar	82
Plagioclase	10
Scapolite (?)	4
Carbonate	3
Sphene	1
Biotite	trace
Mineral X	trace
Opaques	trace

Although of simple composition as regards the major constituents (K-spar plus lesser plagioclase), this rock contains several minor and trace phases of uncertain composition.

The K-feldspar is partially perthitic and occurs as an aggregate of interlocking subhedral grains, 0.5 - 3.0mm in size. it shows diffuse, weak, pervasive argillization. The intergrown plagioclase is generally finer-grained and forms irregular patches of feathery or sub-radial texture.

Carbonate, and a colourless mineral forming fine-grained mosaic aggregates (believed to be the material designated as scapolite elsewhere in the suite), occur as intergranular fillings and irregular pockets in the K-spar aggregate.

Occasional, rather diffuse patches of orange biotite appear to be associated with the more argillized areas of K-spar and may be a form of alteration.
Sphene occurs as scattered, rather coarse subhedral grains, 0.5 - 2.0mm in size.

Mineral X (unidentified) occurs as rare, ill-defined wisps and patches of colourless, isotropic, very fine-grained, high relief material in the feldspar.

Traces of a pale brown, high relief mineral, similar to sphene, occurring as tiny equant euhedra could be pyrochlore (constituting a source for the relatively high Nb analysis given by this sample). This will be checked by SEM microprobe analysis on a polished thin section.

Slide AA-10 (Sample 26+50W:1+10N)

Estimated mode

Phlogopite) Biotite)	28
Altered pyroxene (?)	35
Amphibole (?)	13
Plagioclase	8
Carbonate	12
Sphene) Leucoxene)	3
Sulfides) Limonite)	1

This is a mafic-rich rock of strongly altered appearance. It contains several phases which cannot be identified with certainty.

It is an intimate intergrowth of the various components, many of which are fine-grained and possibly of secondary origin.

Phlogopite and red-brown biotite occur as extensive patches of minute felted aggregate, locally grading to clumps of individual flakes up to 0.2mm in size. Some of these areas contain intergrowths of a very pale bluish-green acicular mineral (showing incomplete extinction and anomalous low birefringence: a form of amphibole?). The same, or a related mineral, also forms areas of fibrous habit.

The other major constituent is a strongly altered prismatic mineral, as clusters of subhedral grains 0.1 - 2.0mm in size. From its habit, and by comparison with other rocks of the suite, this is probably a pyroxene, but strong alteration obscures its orignal character. It is now densely clouded (sometimes on a zonal pattern) with minute, high-relief inclusions. These are unidentifiable but may be a mixture of carbonate, epidote and sphene. Remnant patches within this pervasive alteration have low birefringence, and may be the same pale blue-green, amphibole-like mineral described previously.

Accessory constituents within this altered mafic melange are plagioclase, as poikilitic areas of anhedral aggregate sieved with included granules of the mafic components; and calcitic carbonate which forms pockets, veinlets and intergranular fillings (and has a more redistributed aspect than in the other rocks).

Traces of disseminated opaques are seen by reflected light, to consist of partially limonitized small grains of pyrite, pyrrhotite and chalcopyrite.

The origin of this rock is obscure. All that can be said is that it possesses an igneous texture, seemingly extensively modified by metasomatic processes.

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V Vancouver Petrographics Ltd.

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JOHN S. PAYNE

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PHONE (604) 888-1323

Report for: W. Meyer,
Teck Corporation,
1199 West Hastings St.,
Vancouver, B.C.
V6E 2K5

September 19th, 1986

Supplementary report. Invoice 5899

This report summarizes the results of scanning electron microanalyses on the two most Nb-rich samples of the suite.

Sample AA-2 (36+22W:3+15N)

Initial SEM work on this sample concentrated on the various types of opaque oxides, which appeared the most likely source of the relatively high Nb (1,377 ppm).

Examples of fine-grained oxides associated with altered pyroxene and the coarser, more abundant oxides associated with the plagioclase/carbonate intergrowth at one end of the slide were selected for testing. Both proved to consist essentially of Fe (oxide) with traces of Ti but no Nb, confirming the original optical identification as hematite. Associated carbonates were found to be of two kinds, a Ca variety (calcite) and a CaMgFe variety (ankerite), again confirming the optical indications.

A second session of SEM work was done on this sample after pyrochlore had been tentatively recognized in the other Nb-rich sample, AA-9. Optical re-examination of the slide led to the recognition of tiny grains of probable pyrochlore localized in a plagioclase-poor segregation of altered pyroxene, carbonate and granular aggregates of apatite.

SEM work confirmed these grains as pyrochlore, yielding the peaks of Ca, Na, Ti, Nb and possibly some Th. They occur as individual pale brown euhedra, 0.1 - 0.2mm in size, often partially altered to carbonate, and sometimes set in small patches of opaque material (which SEM analyses again indicate as being essentially ferruginous and devoid of Nb).

Sample AA-9 (27W:B/L)

Initial optical examination of this rock (originally prepared as a thin section) tentatively identified pyrochlore. Another portion of the sample was prepared as a polished thin section so the identification could be checked by SEM analysis.

SEM work confirms the mineral as pyrochlore (yielding peaks of Nb with lesser Ca, Na and Ti, and possible traces of Th).

The pyrochlore in this sample occurs as tiny, individual euhedra (maximum size 0.3mm), similar to those in AA-2 but unaltered. Like the sphene, which is a more prominent accessory, it occurs disseminated randomly through the aggregate of K-feldspar, calcite and the mineral denoted as possible scapolite.

The composition of the latter mineral was checked on the SEM and found to consist of Na with lesser Ca, plus Al and Si. No peaks of S or Cl were found which invalidates the identification as scapolite. Optical re-examination further indicates that the mineral is uniaxial and has a refractive index less than the mounting medium. The best match for the optical properties and mode of occurrence appears to be <u>cancrinite</u> (a mineral found chiefly associated with nepheline syenites).

In view of the above findings it appears likely that the form of Nb in an earlier sample (which analysed 0.7% Nb) is also pyrochlore. This could readily be checked by having a section for optical examination prepared from the crushed assay reject material.

J.F. Harris Ph.D.

APPENDIX II

REE ANALYSES AND CHONDRITE PLOTS

XRAL

CERTIFICATE OF ANALYSIS

TO: TECK EXPLORATIONS LIMITED
ATTN: W. R. MEYER
1199 WEST HASTINGS
VANCOUVER, BRITISH COLUMBIA
V6E 2K5

CUSTOMER NO. 700

DATE SUBMITTED
25-AUG-86

REPORT 29473

REF. FILE 24737-U3

11 SOILS PROJ. 1344

WERE ANALYSED AS FOLLOWS:

	METHOD	DETECTION LIMIT
TI PPM	XRF	5.000
RB PPM	XRF	2.000
SR PPM	XRF	2.000
Y PPM	XRF	2.000
Y PPM	ICPMS	1.000
ZR PPM	XRF	3.000
NB PPM	XRF	2.000
SN PPM	XRF	2.000
BA PPM	XRF	10.000
LA PPM	NA	0.100
CE PPM	NA	1.000
PR PPM	ICPMS	2.000
ND PPM	NA	3.000
SM PPM	NA	0.010
EU PPM	NA	0.050
GD PPM	ICPMS	2.000
TB PPM	NA	0.100
HO PPM	ICPMS	0.500
ER PPM	ICPMS	0.500
TM PPM	ICPMS	0.500
YB PPM	NA	0.050
LU PPM	NA	0.010
TH PPM	XRF	2.000

X-RAY ASSAY LABORATORIES LIMITED

DATE 07-OCT-86

CERTIFIED BY ....

XRAL

	SAMPLE	TI PPM	RB PPM	SR PPM	Y PPM	Y PPM
George 6	L72+00W-0+00N	5100	120	94	140	90
	L72+00W-0+50S	2000	28	180	210	160
	L72+00W-1+00S	690	28	130	120	90
	L72+00W-1+50S	1900	16	86	210	134
	L72+00W-2+00S	3100	54	120	250	154
	L72+00W-2+50S	3500	54	190	210	120
Prince 5	L37+50W-4+00N	3500	120	62	24	9
	L37+50W-3+50N	8800	150	320	62	44
	L37+50W-3+00N	7400	120	180	32	16
	L37+50W-2+50N	5900	58	220	32	19
	L37+50W-2+00N	4500	84	130	90	39

L72+00W George Grid soils over syenite

L37+50W Prince Grid soils over carbonatite

XRAL

SAMPLE	ZR PPM	NB PPM	SN PPM	BA PPM	LA PPM
L72+00W-0+00N	180	230	2	1300	648.
L72+00W-0+50S	51	350	<2	4600	17900.
L72+00W-1+00S	30	330	<2	4300	14000.
L72+00W-1+50S	45	310	2	2700	15500.
L72+00W-2+00S	42	710	<2	3700	13900.
L72+00W-2+50S	130	220	2	1500	5520.
L37+50W-4+00N	280	48	6	90	65.4
L37+50W-3+50N	160	770	<2	840	415.
L37+50W-3+00N	160	2400	<2	1600	223.
L37+50W-2+50N	280	340	<2	640	101.
L37+50W-2+00N	330	200	2	260	153.

XRAL

SAMPLE	CE PPM	PR PPM	ND PPM	SM PPM	EU PPM
L72+00W-0+00N	1130	100	290	46.0	11.7
L72+00W-0+50S	17300	1700	3500	349.	98.0
L72+00W-1+00S	13400	1300	2970	301.	71.3
L72+00W-1+50S	14500	1200	3300	335.	82.3
L72+00W-2+00S	14800	1200	3550	444.	112.
L72+00W-2+50S	6170	575	1600	203.	53.3
L37+50W-4+00N	146	11	45	7.56	1.21
L37+50W-3+50N	1240	51	143	21.7	5.54
L37+50W-3+00N	2070	29	97	15.3	3.05
L37+50W-2+50N	281	16	58	11.1	2.40
L37+50W-2+00N	320	22	77	14.9	3.64

XRAL

SAMPLE	GD PPM	TB PPM	HO PPM	ER PPM
L72+00W-0+00N	30	4.3	4.0	11.0
L72+00W-0+50S	240	14.0	9.5	16.0
L72+00W-1+00S	170	15.1	5.5	9.0
L72+00W-1+50S	150	17.3	7.0	13.5
L72+00W-2+00S	220	21.6	8.5	16.0
L72+00W-2+50S	120	13.4	6.0	12.0
L37+50W-4+00N	4	0.8	<0.5	1.5
L37+50W-3+50N	16	2.5	2.0	4.5
L37+50W-3+00N	7	1.0	0.5	2.0
L37+50W-2+50N	7	1.0	1.0	2.0
L37+50W-2+00N	11	1.9	1.5	4.5

XRAL

07-OCT-86 REPORT 29473 REF.FILE 24737-U3

SAMPLE	TM PPM	YB PPM	LU PPM	TH PPM
L72+00W-0+00N	1.5	8.23	1.11	120
L72+00W-0+50S	1.5	9.00	1.41	980
L72+00W-1+00S	1.0	7.80	0.61	600
L72+00W-1+50S	1.5	7.65	1.02	590
L72+00W-2+00S	1.5	8.15	1.43	750
L72+00W-2+50S	1.0	7.83	0.97	490
L37+50W-4+00N	<0.5	2.15	0.34	16
L37+50W-3+50N	0.5	3.15	0.47	80
L37+50W-3+00N	0.5	2.21	0.38	130
L37+50W-2+50N	2.0	2.34	0.37	42
L37+50W-2+00N	1.0	5.19	0.74	74

X-RAY ASSAY LABORATORIES 07-OCT-86 TECK EXPLORATIONS CHONDRITE NORMALIZED VALUES

MPLE	LA	CE	PR	ND	PM	SM	EU	GD	TB	DY	HO	ER	TM	YB
72+00W-0+50S	56825.4	21279.2	17000.0	5862.6	0.0	1817.7	1357.3	926.6	285.7	0.0	131.9	75.1	46.9	43.1
L72+00W-1+00S	44444.4	16482.2	13000.0	4974.9	0.0	1567.7	987.5	656.4	308.2	0.0	76.4	42.3	31.2	37.3
L72+00W-1+50S	49206.3	17835.2	12000.0	5527.6	0.0	1744.8	1139.9	579.2	353.1	0.0	97.2	63.4	46.9	36.6
72+00W-2+00S	44127.0	18204.2	12000.0	5946.4	0.0	2312.5	1551.2	849.4	440.8	0.0	118.1	75.1	46.9	39.0
72+00W-2+50S	17523.8	7589.2	5750.0	2680.1	0.0	1057.3	738.2	463.3	273.5	0.0	83.3	56.3	31.2	37.5

CHONDRITE RARE EARTH ELEMENT FACTORS USED TO NORMALIZE THE SAMPLE DATA: *(from Leedey Chondrite - Masuda et al 1973)*

A .315 CE .813 PR .100 ND .597 SM .192 EU .0722 GD .259
B .049 DY .325 HO .072 ER .213 TM .032 YB .209 LU .0323

X-RAY ASSAY LABORATORIES 07-OCT-86 TECK EXPLORATIONS CHONDRITE NORMALIZED VALUES

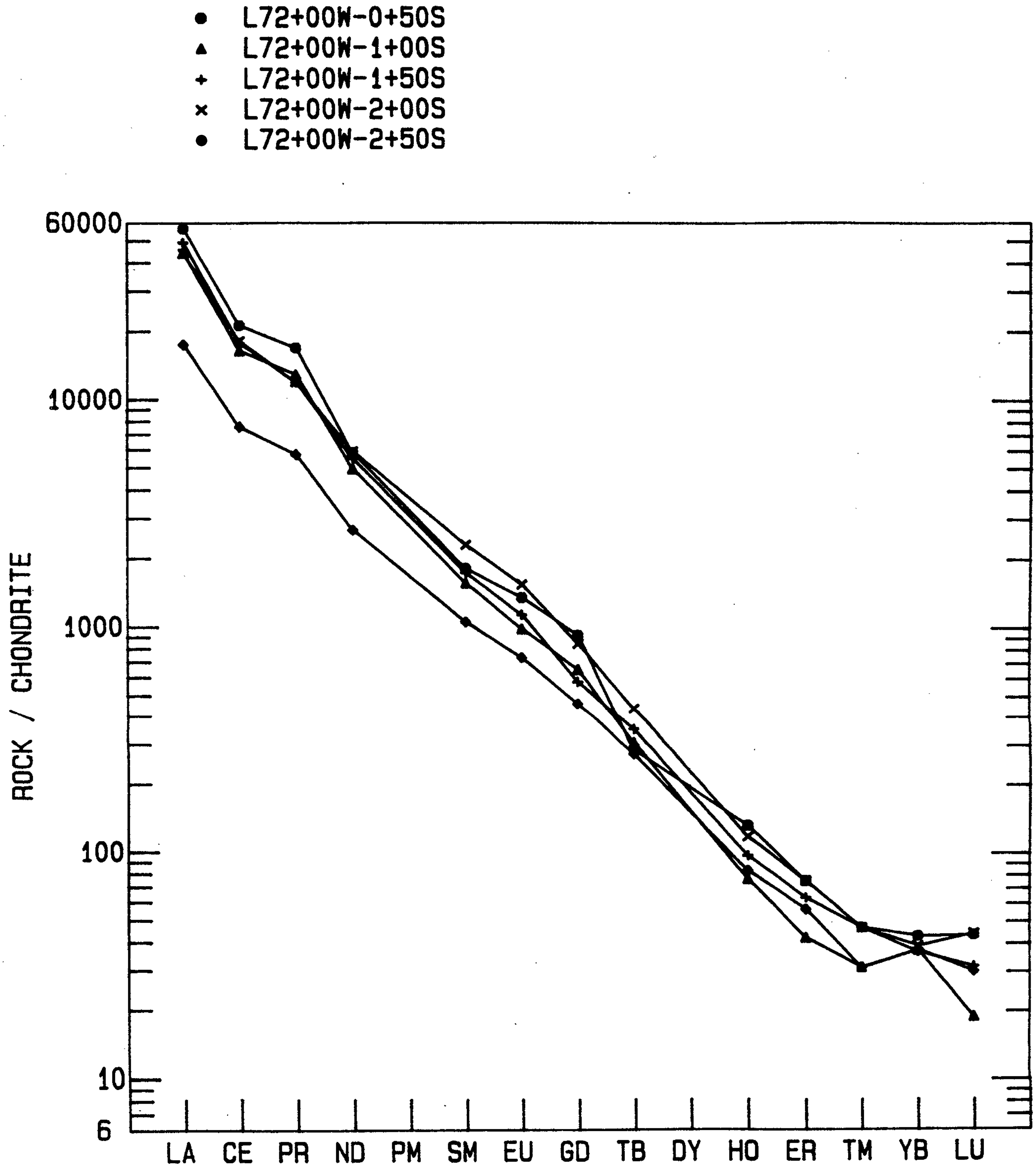
SAMPLE	LA	CE	PR	ND	PM	SM	EU	GD	TB	DY	HO	ER	TM	YB
72+00W-0+00N	2057.1	1389.9	1000.0	485.8	0.0	239.6	162.0	115.8	87.8	0.0	55.6	51.6	46.9	39.4
37+50W-4+00N	207.6	179.6	110.0	75.4	0.0	39.4	16.8	15.4	16.3	0.0	0.0	7.0	0.0	10.3
L37+50W-3+50N	1317.5	1525.2	510.0	239.5	0.0	113.0	76.7	61.8	51.0	0.0	27.8	21.1	15.6	15.1
L37+50W-3+00N	707.9	2546.1	290.0	162.5	0.0	79.7	42.2	27.0	20.4	0.0	6.9	9.4	15.6	10.6
37+50W-2+50N	320.6	345.6	160.0	97.2	0.0	57.8	33.2	27.0	20.4	0.0	13.9	9.4	62.5	11.2
L37+50W-2+00N	485.7	393.6	220.0	129.0	0.0	77.6	50.4	42.5	38.8	0.0	20.8	21.1	31.2	24.8

CHONDRITE RARE EARTH ELEMENT FACTORS USED TO NORMALIZE THE SAMPLE DATA: (from Leedey chondrite - Masuda et al 1973)

LA .315 CE .813 PR .100 ND .597 SM .192 EU .0722 GD .259
TB .049 DY .325 HO .072 ER .213 TM .032 YB .209 LU .0323

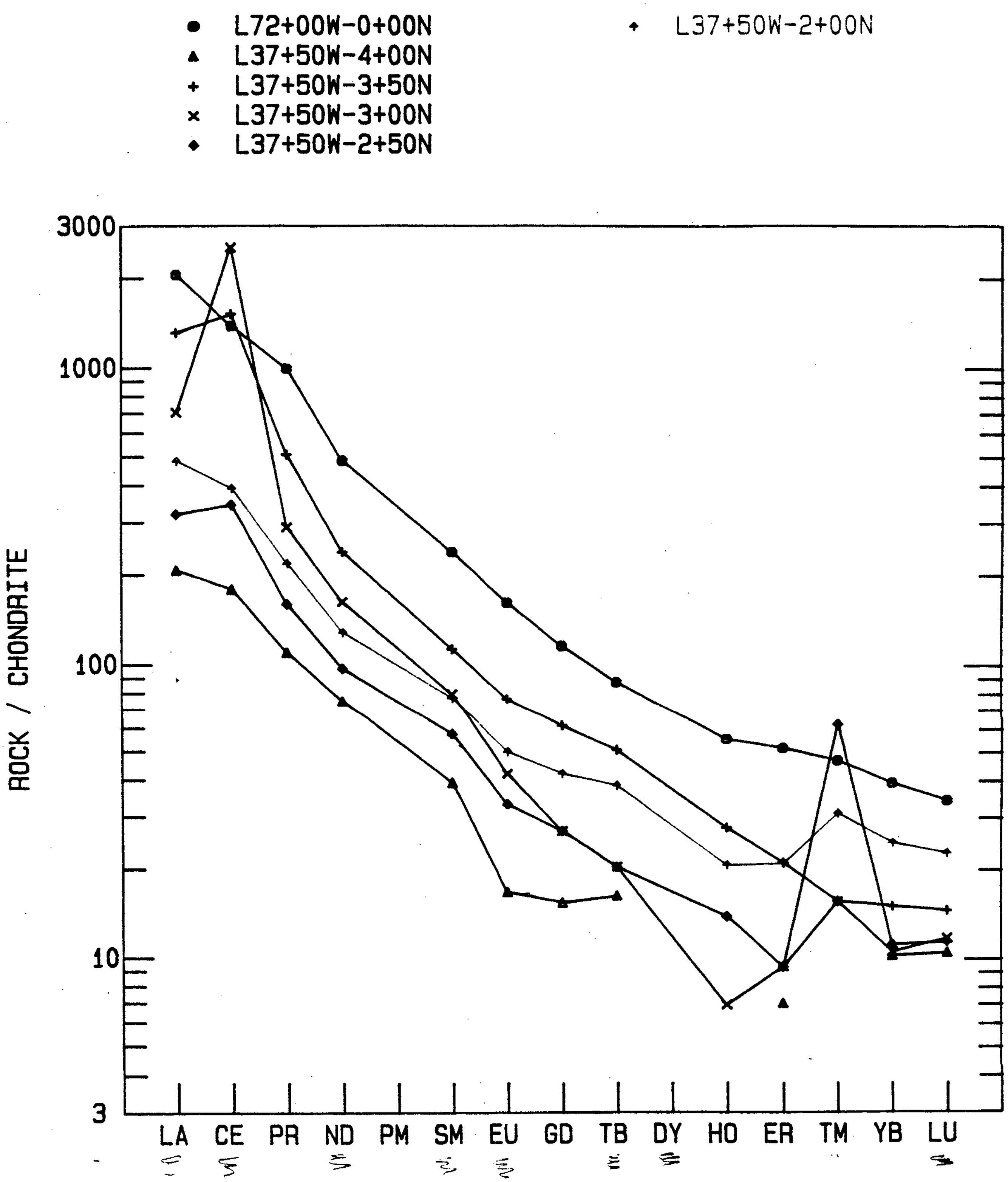
X-RAY ASSAY LABORATORIES 03-OCT-86
RARE EARTH CHONDRITE PLOTS

TECK EXPLORATIONS



X-RAY ASSAY LABORATORIES 03-OCT-86
RARE EARTH CHONDRITE PLOTS

TECK EXPLORATIONS



XRAL

CERTIFICATE OF ANALYSIS

TO: TECK EXPLORATIONS LIMITED
ATTN: W. R. MEYER
1199 WEST HASTINGS
VANCOUVER, BRITISH COLUMBIA
V6E 2K5

CUSTOMER NO. 700

DATE SUBMITTED
9-DEC-86

REPORT 30579

REF. FILE 26107-Q4

1 ROCK,12 C.ROCKS PROJ. 1344

WERE ANALYSED AS FOLLOWS:

	METHOD	DETECTION LIMIT
P205 %	XRF	0.010
Y PPM	ICPMS	1.000
LA PPM	NA	0.100
CE PPM	NA	1.000
PR PPM	ICPMS	2.000
ND PPM	NA	3.000
SM PPM	NA	0.010
EU PPM	NA	0.050
GD PPM	ICPMS	2.000
TB PPM	NA	0.100
HO PPM	ICPMS	0.500
ER PPM	ICPMS	0.500
TM PPM	ICPMS	0.500
YB PPM	NA	0.050
LU PPM	NA	0.010

X-RAY ASSAY LABORATORIES LIMITED

DATE 05-JAN-87

CERTIFIED BY ....

XRAL

05-JAN-87 REPORT 30579 REF.FILE 26107-Q4

SAMPLE	P2O5 %	Y PPM	LA PPM	CE PPM	PR PPM
10732	5.01	34	1290.	1750	107
10733	0.82	91	858.	1220	168
10734	0.72	54	1540.	1970	202
10735	5.95	50	712.	976	105
10736	2.80	60	964.	1750	133
10737	8.37	85	1090.	1530	151
10738	0.43	7	63.6	218	14
10739	1.22	59	4980.	5090	700
10740	0.31	12	157.	382	27
10741	1.83	24	371.	516	48
10742	0.15	21	241.	342	30
10743	0.06	48	344.	478	43
10744	0.09	24	65.1	115	10

ALL ROCK

Sample	Grid	Location	
10732	Prince	Trench PT5	0 – 13.6 m
10733	Prince	Trench PT5	13.6 – 24.0 m
10734	Prince	Trench PT5	24.0 – 36.5 m
10735	Prince	Trench PT6	0 – 2.0 m
10736	Prince	Trench PT6	2.0 – 5.0 m
10737	Prince	Trench PT7	0 – 4.0 m
10738	Prince	Prospect Pit PP-1 bedrock	
10739	George	Syenite outcrop composite	
10740	Lake	B/L 5+00E	
10741	Lake	B/L 5+70E	
10742	Lake	7+45E, 2+50S	
10743	Lake	7+52E, 0+35N	
10744	Lake	Lakeshore, north of grid.	

XRAL

SAMPLE	ND PPM	SM PPM	EU PPM	GD PPM	TB PPM
10732	505	59.1	18.4	16	6.1
10733	256	30.5	9.33	36	1.5
10734	480	51.3	15.9	26	3.5
10735	263	40.1	10.5	20	2.3
10736	357	48.2	16.0	28	5.5
10737	390	57.2	17.8	31	5.6
10738	39	7.13	1.41	3	0.4
10739	1140	169.	75.5	126	16.8
10740	89	13.3	2.30	6	0.7
10741	117	14.8	4.47	9	1.1
10742	83	14.6	4.88	9	1.0
10743	119	27.4	10.5	22	3.7
10744	32	11.0	3.89	8	1.7

XRAL

SAMPLE	HO PPM	ER PPM	TM PPM	YB PPM	LU PPM
10732	1.5	4.0	<0.5	9.85	1.40
10733	4.0	9.5	1.0	3.74	0.50
10734	2.5	5.5	0.5	4.12	0.53
10735	2.0	5.0	0.5	4.21	0.56
10736	3.0	7.0	1.0	5.49	1.09
10737	3.5	8.5	1.0	6.35	0.95
10738	<0.5	0.5	<0.5	0.83	<0.01
10739	3.5	5.0	<0.5	6.33	0.79
10740	<0.5	1.0	<0.5	1.17	<0.01
10741	1.0	2.0	<0.5	2.17	0.31
10742	1.0	2.5	<0.5	2.06	0.52
10743	2.0	5.5	0.5	4.75	0.95
10744	1.0	3.0	<0.5	5.49	1.20

X-RAY ASSAY LABORATORIES 05-JAN-87 TECK EXPLORATIONS LIMITED CHONDRITE NORMALIZED VALUES

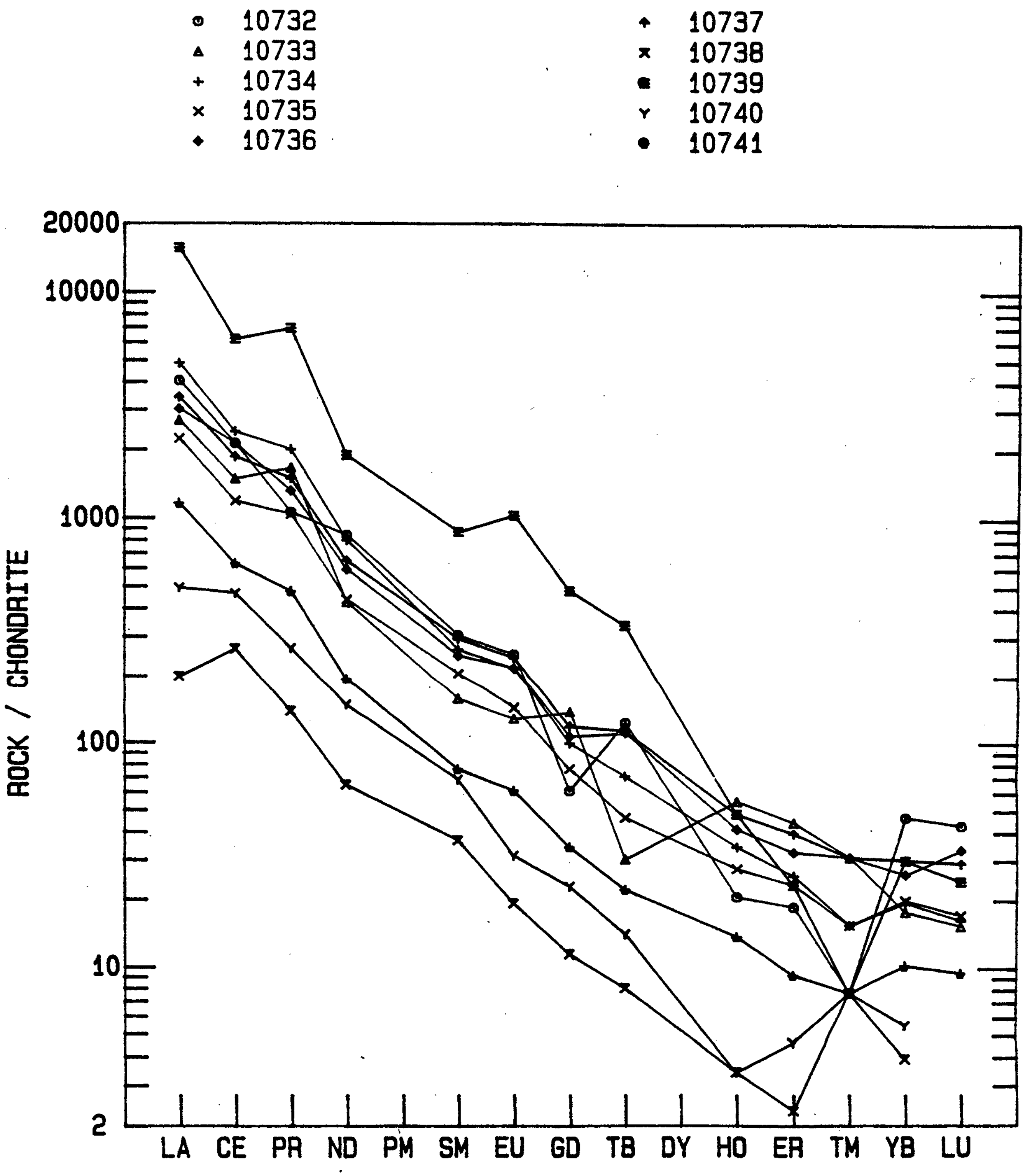
SAMPLE	LA	CE	PR	ND	PM	SM	EU	GD	TB	DY	HO	ER	TM	YB
10732	4095.2	2152.5	1070.0	845.9	0.0	307.8	254.8	61.8	124.5	0.0	20.8	18.8	7.8	47.1
10733	2723.8	1500.6	1680.0	428.8	0.0	158.9	129.2	139.0	30.6	0.0	55.6	44.6	31.2	17.9
10734	4888.9	2423.1	2020.0	804.0	0.0	267.2	220.2	100.4	71.4	0.0	34.7	25.8	15.6	19.7
10735	2260.3	1200.5	1050.0	440.5	0.0	208.9	145.4	77.2	46.9	0.0	27.8	23.5	15.6	20.1
10736	3060.3	2152.5	1330.0	598.0	0.0	251.0	221.6	108.1	112.2	0.0	41.7	32.9	31.2	26.3
10737	3460.3	1881.9	1510.0	653.3	0.0	297.9	246.5	119.7	114.3	0.0	48.6	39.9	31.2	30.4
10738	201.9	268.1	140.0	65.3	0.0	37.1	19.5	11.6	8.2	0.0	3.5	2.3	7.8	4.0
10739	15809.5	6260.8	7000.0	1909.5	0.0	880.2	1045.7	486.5	342.9	0.0	48.6	23.5	7.8	30.3
10740	498.4	469.9	270.0	149.1	0.0	69.3	31.9	23.2	14.3	0.0	3.5	4.7	7.8	5.6
10741	1177.8	634.7	480.0	196.0	0.0	77.1	61.9	34.7	22.4	0.0	13.9	9.4	7.8	10.4

CHONDRITE RARE EARTH ELEMENT FACTORS USED TO NORMALIZE THE SAMPLE DATA:

LA .315 CE .813 PR .100 ND .597 SM .192 EU .0722 GD .259
TB .049 DY .325 HO .072 ER .213 TM .032 YB .209 LU .0323

X-RAY ASSAY LABORATORIES 05-JAN-87
RARE EARTH CHONDRITE PLOTS

TECK EXPLORATIONS LIMITED



X-RAY ASSAY LABORATORIES 05-JAN-87 TECK EXPLORATIONS LIMITED CHONDRITE NORMALIZED VALUES

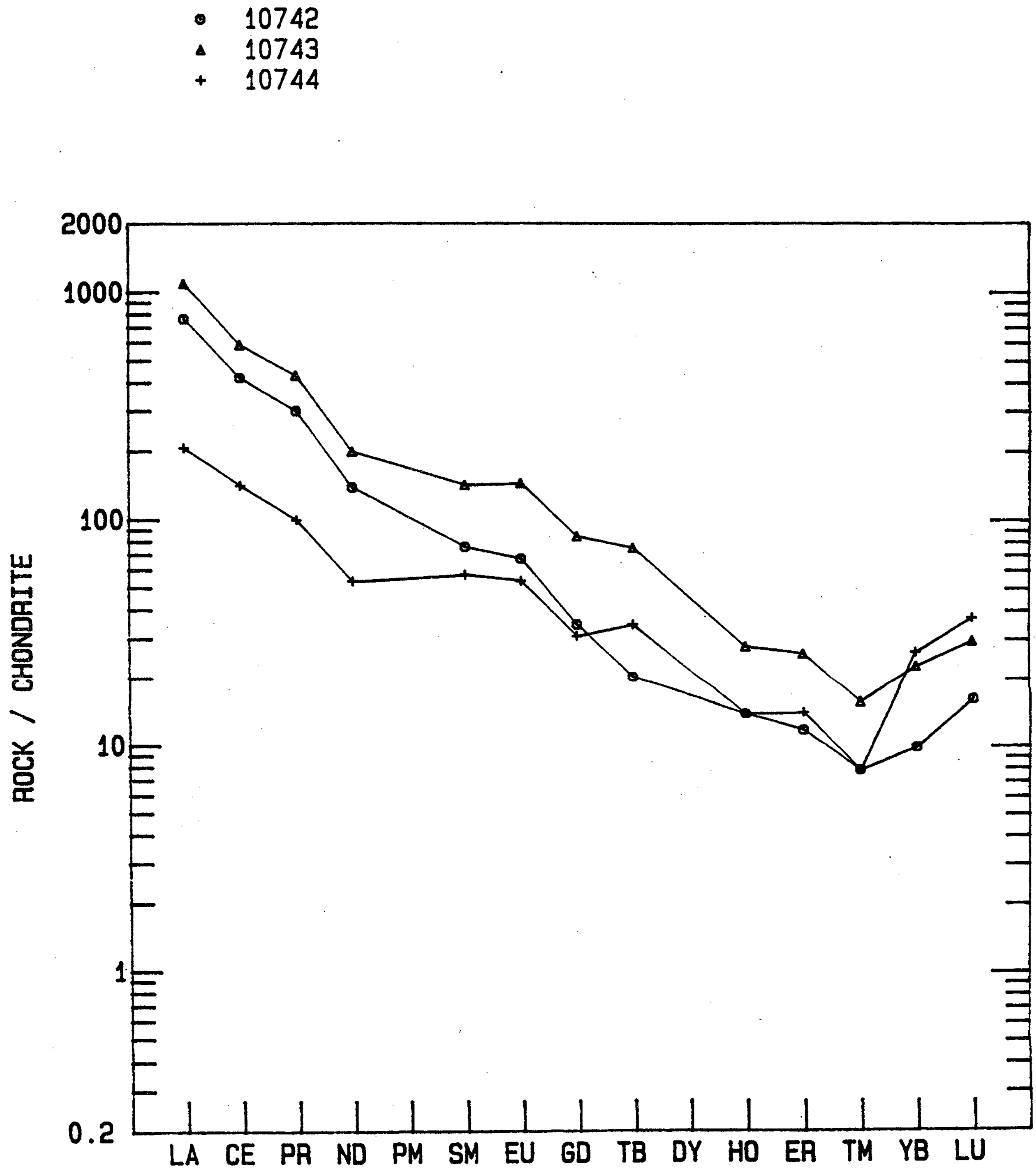
SAMPLE	LA	CE	PR	ND	PM	SM	EU	GD	TB	DY	HO	ER	TM	YB
10742	765.1	420.7	300.0	139.0	0.0	76.0	67.6	34.7	20.4	0.0	13.9	11.7	7.8	9.9
10743	1092.1	587.9	430.0	199.3	0.0	142.7	145.4	84.9	75.5	0.0	27.8	25.8	15.6	22.7
10744	206.7	141.5	100.0	53.6	0.0	57.3	53.9	30.9	34.7	0.0	13.9	14.1	7.8	26.3

HONDRITE RARE EARTH ELEMENT FACTORS USED TO NORMALIZE THE SAMPLE DATA:

LA .315 CE .813 PR .100 ND .597 SM .192 EU .0722 GD .259
TB .049 DY .325 HO .072 ER .213 TM .032 YB .209 LU .0323

X-RAY ASSAY LABORATORIES 05-JAN-87
RARE EARTH CHONDRITE PLOTS

TECK EXPLORATIONS LIMITED



ITEMIZED COST STATEMENT

A. July 12-July 13: Cut campsites, helipads, camp mobilization

A. I. Betmanis, 2 days @ $240/day		$480.00
G. Lovang, 2 days @ $160/day		320.00
K. Lehmann, 2 days @ $135/day		270.00
G. May, 2 days @ $125/day		250.00
Northern Mountain Helicopters, 2 days		2,488.60
Truck rental, 2 days @ $25/day		50.00
Motel and meals, 8 man-days @ $40/day		320.00
Telephone, communications		20.00
Fuel, flagging, sundries, etc.		50.00
	Group A Total	$4,248.60

B. July 14-July 22: Prince Grid, line cutting, geology, soil and magnetometer surveys

A. I. Betmanis, 8 days @ $240/day		$1,920.00
G. Lovang, 7 days @ $160/day		1,120.00
K. Lehmann, 7 days @ $135/day		945.00
G. May, 7 days @ $125/day		875.00
Northern Mountain Helicopters, July 18, 22		1,190.39
Camp accommodations, 29 man-days @ $15/day		435.00
Truck rental, 8 days @ $25/day		200.00
320 sample analyses @ $6.75 each		2,160.00
Telephone and communications		50.00
Sample shipping, flagging, sundries, etc.		200.00
	Group B Total	$9,095.39

C. July 20: F Grid, soil survey

G. Lovang, 1 day @ $160/day		$160.00
Camp accommodation, 1 day @ $15/day		15.00
29 sample analyses @ $6.75 each		195.75
Flagging, sundries, etc.		20.00
	Group C Total	$390.75

ITEMIZED COST STATEMENT
(continued)

D. July 23 - July 27: Prince Grid, geology, soil and magnetometer surveys

A. I. Betmanis, 7 days @ $240/day	$1,680.00
G. Lovang, 5 days @ $160/day	800.00
K. Lehmann, 6 days @ $135/day	810.00
G. May, 5 days @ $125/day	625.00
Camp accommodation, 23 man-days @ $15/day	345.00
Truck rental, 7 days @ $25/day	175.00
309 sample analyses @ $6.75 each	2,085.75
Telephone and communications	50.00
Sample shipping, flagging, sundries, etc.	200.00
Group D Total	$6,770.75

E. July 24-July 25: D Grid, soil survey

G. Lovang, 2 days @ $160/day	$320.00
K. Lehmann, 1 day @ $135/day	135.00
G. May, 2 days @ $125/day	250.00
Camp accommodations, 5 man-days @ $15/day	75.00
Northern Mountain Helicopters, July 24, 25	1,327.80
73 sample analyses @ $6.75 each	492.75
Flagging, sundries, etc.	30.00
Group E Total	$2,630.55
35% to Prince Grid (E1)	920.70
65% to George Group (E2)	1,709.85

F. July 28 - August 6: George Grid, geology, soil and magnetometer surveys

A. I. Betmanis, 10 days @ $240/day	$2,400.00
G. Lovang, 6 days @ 160/day	960.00
K. Lehmann, 6 days @ $135/day	810.00
G. May, 6 days @ $125/day	750.00
Camp accommodation, 24 man-days @ $15/day	360.00
Motel and meals, 4 man-days @ $40/day	160.00
Northern Mountain Helicopters, July 28, August 1, 15	2,357.28
Airfare Prince George-Vancovuer (K. Lehmann, G. May)	309.20
195 sample analyses @ $6.75 each	1,316.25
Truck rental, 10 days @ $25/day	250.00
Fuel, telephone	100.00
Sample shipping, flagging, sundries,etc.	150.00
Group F Total	$9,922.73

ITEMIZED COST STATEMENT
(continued)

G. August 29-September 1: Prince Grid, soil profile test pits, extend soil survey lines

G. Lovang, 3 days @ $160/day	480.00
K. Lehmann, 3 days @ $135/day	405.00
G. May, 3 days @ $125/day	375.00
R. Elliott, 3 days @ $100/day	300.00
Motel and meals, 12 man-days @ $40/day	480.00
Northern Mountain Helicopters	2,505.60
Truck rental, 3 days @ $25/day	75.00
Fuel	50.00
99 soil sample analyses @ $6.75 each	668.25
Telephone, flagging, sundries, etc.	30.00
Group G Total	$5,358.85

H. September-October 5: Prince Grid, trenching, additional magnetometer surveying

A. I. Betmanis, 14 days @ $240/day	$3,360.00
G. Lovang, 14 days @ $160/day	2,240.00
K. Lehmann, 14 days @ $135/day	1,890.00
Motel and meals, 6 man-days @ $40/day	240.00
Camp accommodations, 36 man-days @ $15/day	540.00
Truck rental, 14 days @ $25/day	350.00
Northern Mountain Helicopters	1,984.00
Blasting supplies, steel, plugger rental	1,418.50
Magnetometer rental	184.80
Radio telephone	50.00
Fuel, flagging, expendables, etc.	100.00
Group H Total	$12,630.55

I. October 5-October 10: Lake-George Grids, soil surveys, magnetometer surveying

A. I. Betmanis, 5 days @ $240/day	$1,200.00
G. Lovang, 5 days @ 160/day	800.00
K. Lehmann, 5 days @ $135/day	675.00
Camp accommodation, 12 man-days @ $15/day	180.00
Motel and meals, 3 man-days @ $40/day	120.00
Northern Mountain Helicopters	2,074.86
172 sample analyses @ $6.75 each	1,161.00
Truck rental, 5 days @ $25/day	125.00
Telephone and communications	25.00
Flagging, fuel, sundries, etc.	100.00
Group I Total	$6,460.86

ITEMIZED COST STATEMENT
(continued)

J. Post-fieldwork expenses

	Prince Grid	George Grid
X-Ray Laboratories Ltd., REE analyses (soils)	$660.00	$550.00
X-Ray Laboratories Ltd., REE analyses (rocks)	747.25	640.50
Drafting	530.00	516.29
Reporting	250.00	250.00
	$2,187.25	$1,956.79
Group J Total		$4,144.04

COST SUMMARY AND DISTRIBUTION

		PRINCE GROUP							GEORGE GROUP					
		OLE 3 (20)	OLE 4 (20)	P.G.1 (15)	FATA (6)	MORGANA (12	PRINCE (9)		OLE 1 (20)	OLE 2 (20)	P.G. 2 (20)	GEORGE (4	LAKE (16)	
REF.	CUM. BALANCE	21 APR. 25 APR.	21 APR. 25 APR.	3 JUN. 19 JUN.	14 JUL. 11 AUG.	22 JUL. 11 AUG.	22 JUL. 11 AUG.	STAKED RECORDED EXPENDITURE	21 APR. 25 APR.	21 APR. 25 APR.	3 JUN. 19 JUN.	25 AUG. 5 SEP.	25 AUG. 5 SEP.	CUM. BALANCE
A	1248.60			3000				4248.60						
B	1743.99	4000	4000		600			9095.39						
C								309.75						309.75
D	2414.74	2000	2000			1200	900	6770.75						
E1	1835.44			1500				920.70						
E2								1709.85			2000			19.60
F								9922.73	2000	2000	4000			1942.33
G	1804.29				1200	2400	1800	5368.85						
H	1561.59			3000	1200	4800	3600	12,357.30						
I								6460.86	2000	2000		800	3200	403.19
J1	748.84			3000				2187.25						
J2								1956.79				400	1600	359.98
	748.84	6000	6000	10 500	3000	8400	6300	61,308.22	4000	4000	6000	1200	4800	359.98

Prince Group: $ 40,200

George Group: $ 20,000

APPENDIX III

COST STATEMENTS


LEGEND
Cba Intrusive Carbonatitic Affinities
Lsa Limestone, argillaceous limestone, minor interbedded argillite
Agn Argillite, nodular, generally massive, locally weakly calcareous
Agl Argillite, calcareous, minor interbedded argillaceous limestone, locally phyllitic
Fault, interpreted
Geological contact, approximate
Bedding
Schistosity or shearing
Layering in intrusive
Outcrop
Subcrop or locally derived float area
GEOLOGICAL BRANCH ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
PRINCE GRID
GEOLOGY
metres 0 100 200 300 400 500 metres
Compiled:
Drawn:
Date: Aug. 1986
Scale: 1:5000
NTS: 93 J/8E & 9E
MAP P - Geo
H CREEK
CAMP CREEK
E CREEK
NB CREEK
Camp
Lsa
Agl
Agn
Cba
Lsa ?
-42+00 W
-39+00 W
-36+00 W
-33+00 W
-30+00 W
-27+00 W
-24+00 W
-21+00 W
-18+00 W
-15+00 W
-12+00 W
-9+00 W
-6+00 W
-3+00 W
-0+00
6+00 N
4+00 N
2+00 N
0+00
2+00 S
4+00 S
6+00 S
8+00 S

Ce
>535 ppm (M+ 3 SD)
>405 ppm (M+ 2 SD)
>270 ppm (M+ 1 SD)
H CREEK
CANE CREEK
E CREEK
NB CREEK
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
PRINCE GRID
SOIL GEOCHEM
Ce (ppm)
metres 0 100 200 300 400 500 metres
Date: Aug. 1986
Scale: 1:5000
NTS: 93 J/8E & 9E
MAP P-Ce

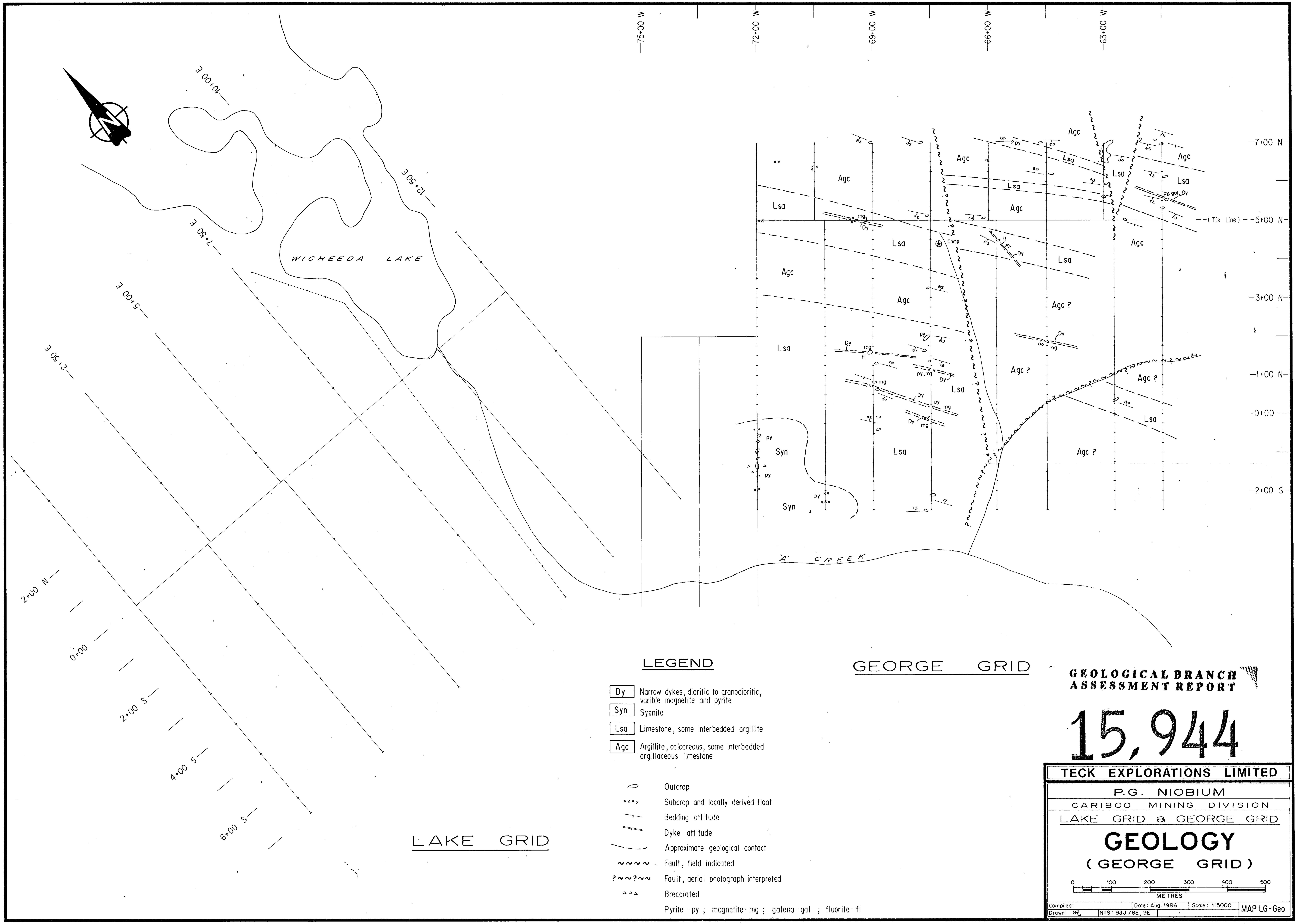
42+00 W
39+00 W
33+00 W
30+00 W
27+00 W
24+00 W
21+00 W
18+00 W
15+00 W
12+00 W
9+00 W
6+00 W
3+00 W
0+00
6+00 N
4+00 N
2+00 N
0+00
2+00 S
4+00 S
6+00 S
8+00 S
NB CREEK
H CREEK
CAMP CREEK
E CREEK
Camp
240
340
445
Sr
>445 ppm (M+ 3 SD)
>340 ppm (M+ 2 SD)
>240 ppm (M+ 1 SD)
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
PRINCE GRID
SOIL GEOCHEM
Sr (ppm)
metres 0 100 200 300 400 500 metres
Compiled:
Drawn:
Date: Aug. 1986
Scale: 1:5000
NTS: 93 J/8E & 9E
MAP P-Sr

Zn
>280 ppm (M+ 3 SD)
>210 ppm (M+ 2 SD)
>135 ppm (M+ 1 SD)
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
PRINCE GRID
SOIL GEOCHEM
Zn (ppm)
metres 0 100 200 300 400 500 metres
Compiled:
Date: Aug. 1986
Scale: 1:5000
Drawn:
NTS: 93 J/8E & 9E
MAP P- Zn

42+00 W
39+00 W
33+00 W
30+00 W
27+00 W
24+00 W
21+00 W
18+00 W
15+00 W
12+00 W
9+00 W
6+00 W
3+00 W
0+00
6+00 N
4+00 N
2+00 N
0+00
2+00 S
4+00 S
6+00 S
8+00 S
NB CREEK
H CREEK
CAMP CREEK
E CREEK
Camp
Ba
>1220 ppm (M+ 3 SD)
>1000 ppm (M+ 2 SD)
> 780 ppm (M+ 1 SD)
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
PRINCE GRID
SOIL GEOCHEM
Ba (ppm)
metres 0 100 200 300 400 500 metres
Compiled:
Drawn:
Date: Aug. 1986
Scale: 1:5000
NTS: 93 J/8E & 9E
MAP P-8a

-42+00 W
-39+00 W
-33+00 W
-30+00 W
-27+00 W
-24+00 W
-21+00 W
-18+00 W
-15+00 W
-12+00 W
-9+00 W
-6+00 W
-3+00 W
0+00
6+00 N
4+00 N
2+00 N
0+00
2+00 S
4+00 S
6+00 S
8+00 S
H CREEK
CAMP CREEK
E CREEK
Camp
Nb
>250 ppm (M+ 3 SD)
>180 ppm (M+ 2 SD)
>110 ppm (M+ 1 SD)
NOTE:
1. 20 ppm shown is ≤ 20 ppm
2. M & SD calculations based on cutting 20 ppm values shown to 10 ppm and > 350 ppm values cut to 350 ppm
0.16 Float (% Nb)
0.12 Outcrop (% Nb)
PT-5 PT-2 ....Trenches
GEOLOGICAL BRANCH ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
PRINCE GRID
SOIL GEOCHEM
Nb (ppm)
metres 0 100 200 300 400 500 metres
Compiled:
Date: Aug. 1986
Scale: 1:5000
MAP P - Nb
Drawn: WR
NTS: 93 J/8E & 9E

42+00 W
39+00 W
36+00 W
33+00 W
30+00 W
27+00 W
24+00 W
21+00 W
18+00 W
15+00 W
12+00 W
9+00 W
6+00 W
3+00 W
0+00
6+00 N
4+00 N
2+00 N
0+00
2+00 S
4+00 S
6+00 S
8+00 S
NB CREEK
H CREEK
CAMP CREEK
E CREEK
Camp
LEGEND
500 gammas
550 gammas
600 gammas
All values prefixed by 58,*.*.*
Instrument: E & G Geometrics, Proton Magnetometer
Model Nº G-816/826, Nº 6663
Operator: K. Lehmann
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
PRINCE GRID
MAGNETOMETER
SURVEY
metres 0 100 200 300 400 500 metres
Compiled:
Drawn:
Date: Aug. 1986
Scale: 1:5000
NTS: 93 J/8E & 9E
MAP P-Mag



LEGEND

Dy	Narrow dykes, dioritic to granodioritic, varible magnetite and pyrite
Syn	Syenite
Lsa	Limestone, some interbedded argillite
Agc	Argillite, calcareous, some interbedded argillaceous limestone

- Outcrop
- Subcrop and locally derived float
- Bedding attitude
- Dyke attitude
- Approximate geological contact
- Fault, field indicated
- Fault, aerial photograph interpreted
- Brecciated
- Pyrite - py ; magnetite - mg ; galena - gal ; fluorite - fl

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,944

TECK EXPLORATIONS LIMITED

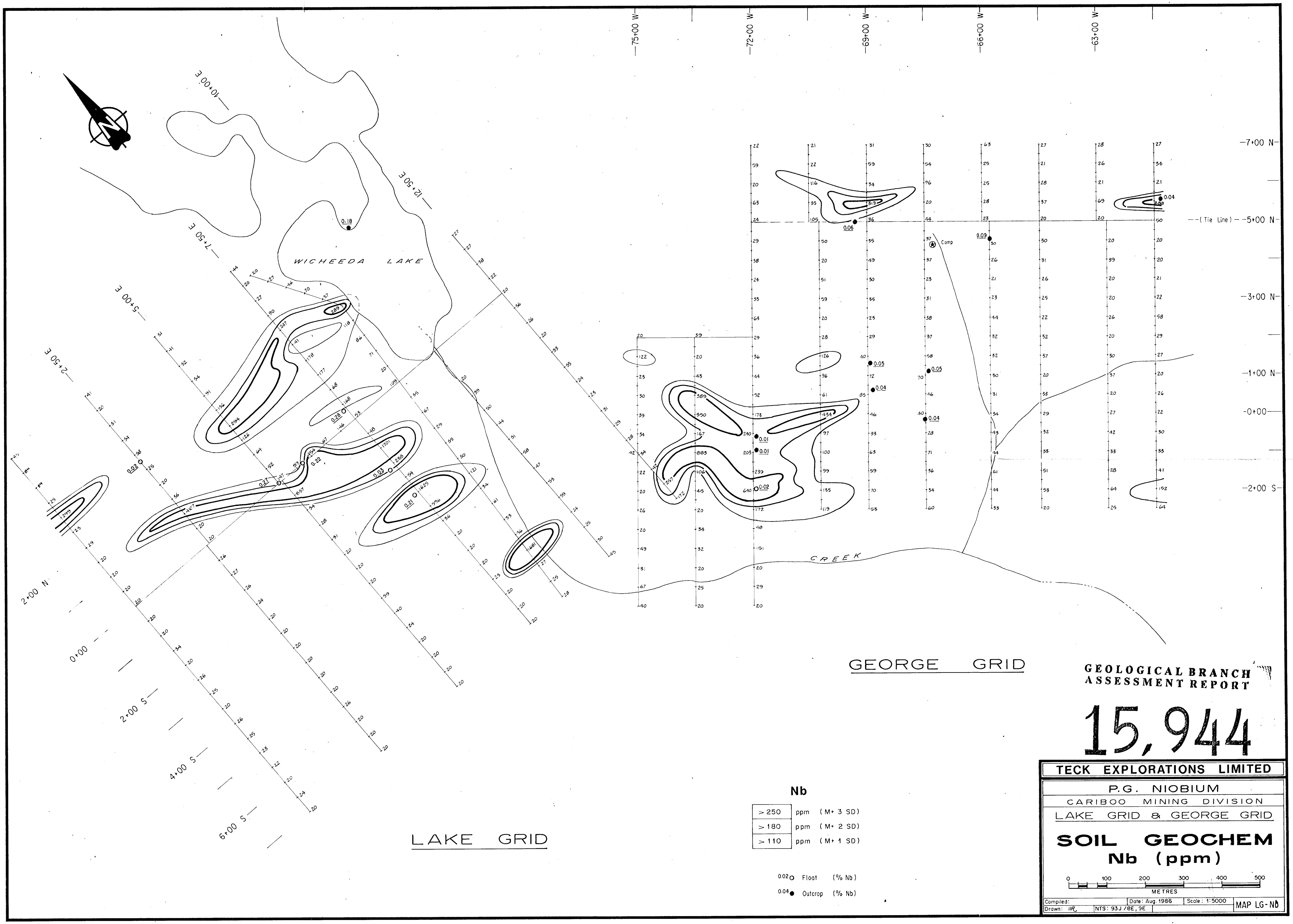
P.G. NIOBIUM

CARIBOO MINING DIVISION

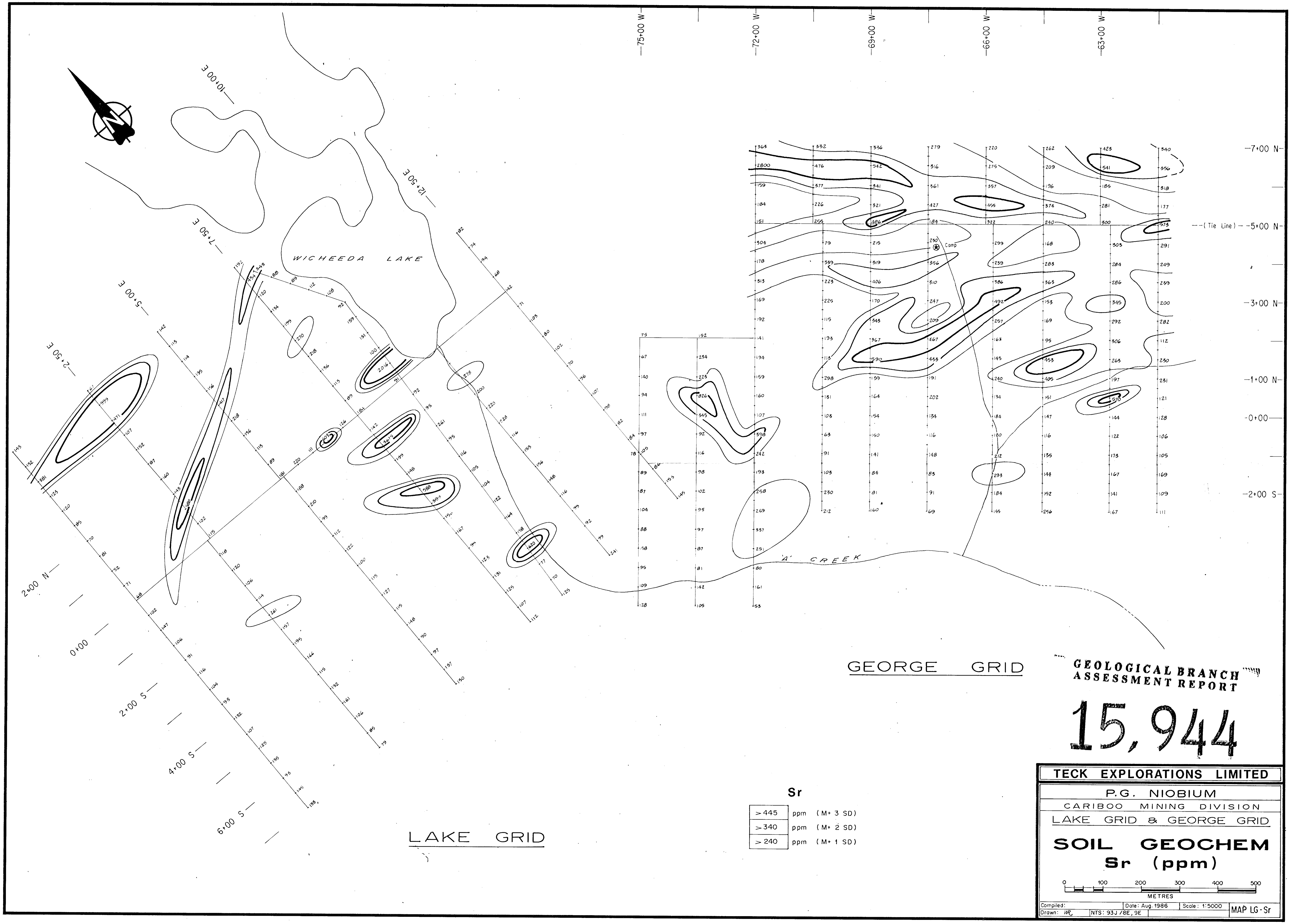
LAKE GRID & GEORGE GRID

GEOLOGY
(GEORGE GRID)

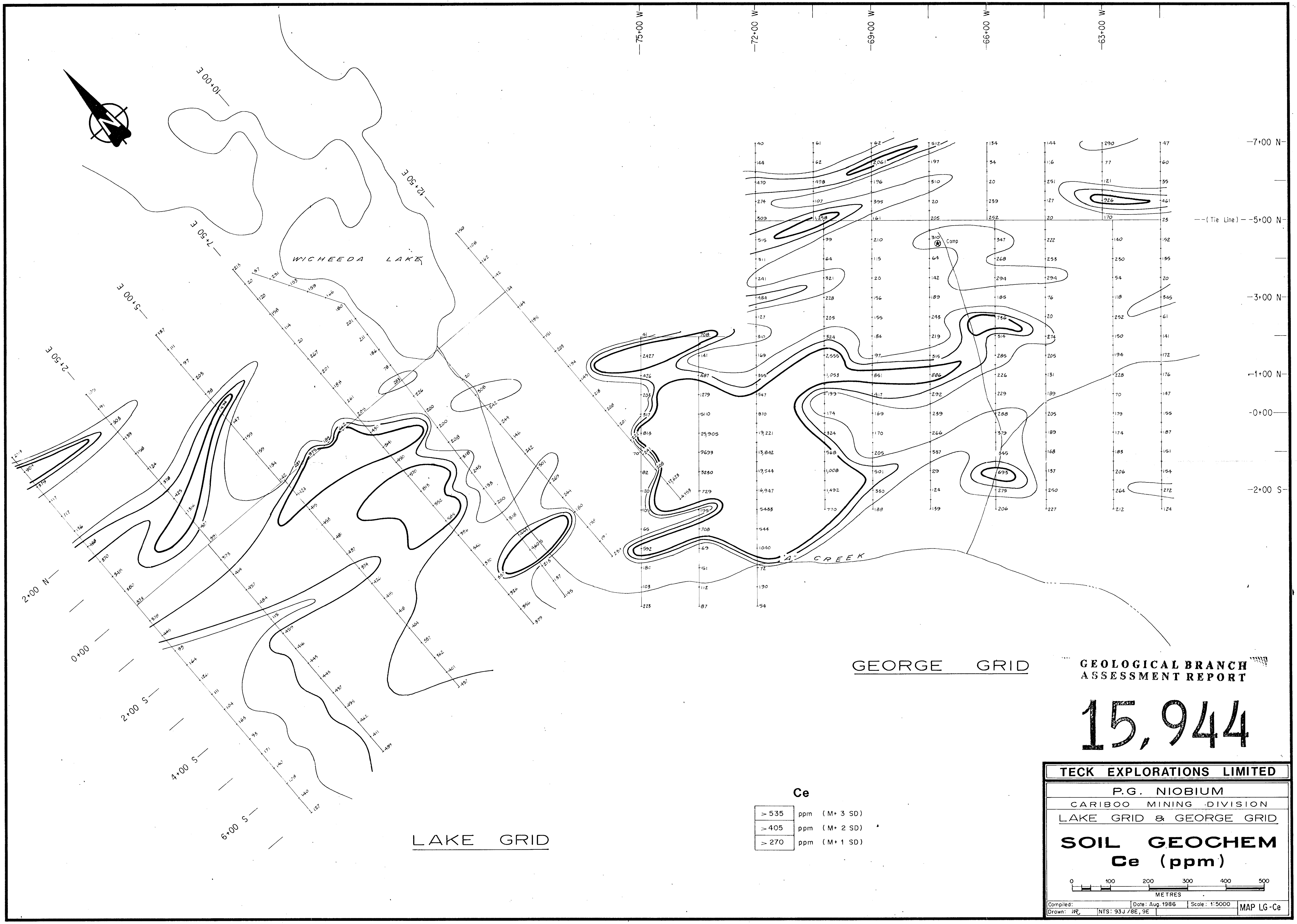
Compiled:	Date: Aug. 1986	Scale: 1:5000	MAP LG-Geo
Drawn:	NTS: 93J/8E, 9E		



GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
LAKE GRID & GEORGE GRID
SOIL GEOCHEM
Nb (ppm)
0 100 200 300 400 500
METRES
Compiled:
Date: Aug. 1986
Scale: 1:5000
Drawn: WR
NTS: 93J/8E, 9E
MAP LG-Nb
Nb
>250 ppm (M+3 SD)
>180 ppm (M+2 SD)
>110 ppm (M+1 SD)
0.02 Float (% Nb)
0.04 Outcrop (% Nb)
WICHEEDA LAKE
CREEK
Camp
(Tie Line)
LAKE GRID
GEORGE GRID
75+00 W
72+00 W
69+00 W
66+00 W
63+00 W
7+00 N
5+00 N
3+00 N
1+00 N
0+00
2+00 S
10+00 E
12+50 E
7+50 E
5+00 E
2+50 E
2+00 N
0+00
2+00 S
4+00 S
6+00 S



WICHEEDA LAKE
'A' CREEK
GEORGE GRID
LAKE GRID
75+00 W
72+00 W
69+00 W
66+00 W
63+00 W
7+00 N
5+00 N
(Tie Line)
3+00 N
1+00 N
0+00
2+00 S
10+00 E
12+50 E
7+50 E
5+00 E
2+50 E
2+00 N
0+00
2+00 S
4+00 S
6+00 S
Camp
Sr
>445 ppm (M+ 3 SD)
>340 ppm (M+ 2 SD)
>240 ppm (M+ 1 SD)
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
LAKE GRID & GEORGE GRID
SOIL GEOCHEM
Sr (ppm)
0 100 200 300 400 500
METRES
Compiled:
Drawn:
Date: Aug. 1986
NTS: 93J/8E, 9E
Scale: 1:5000
MAP LG-Sr



GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,944

TECK EXPLORATIONS LIMITED

P.G. NIOBIUM

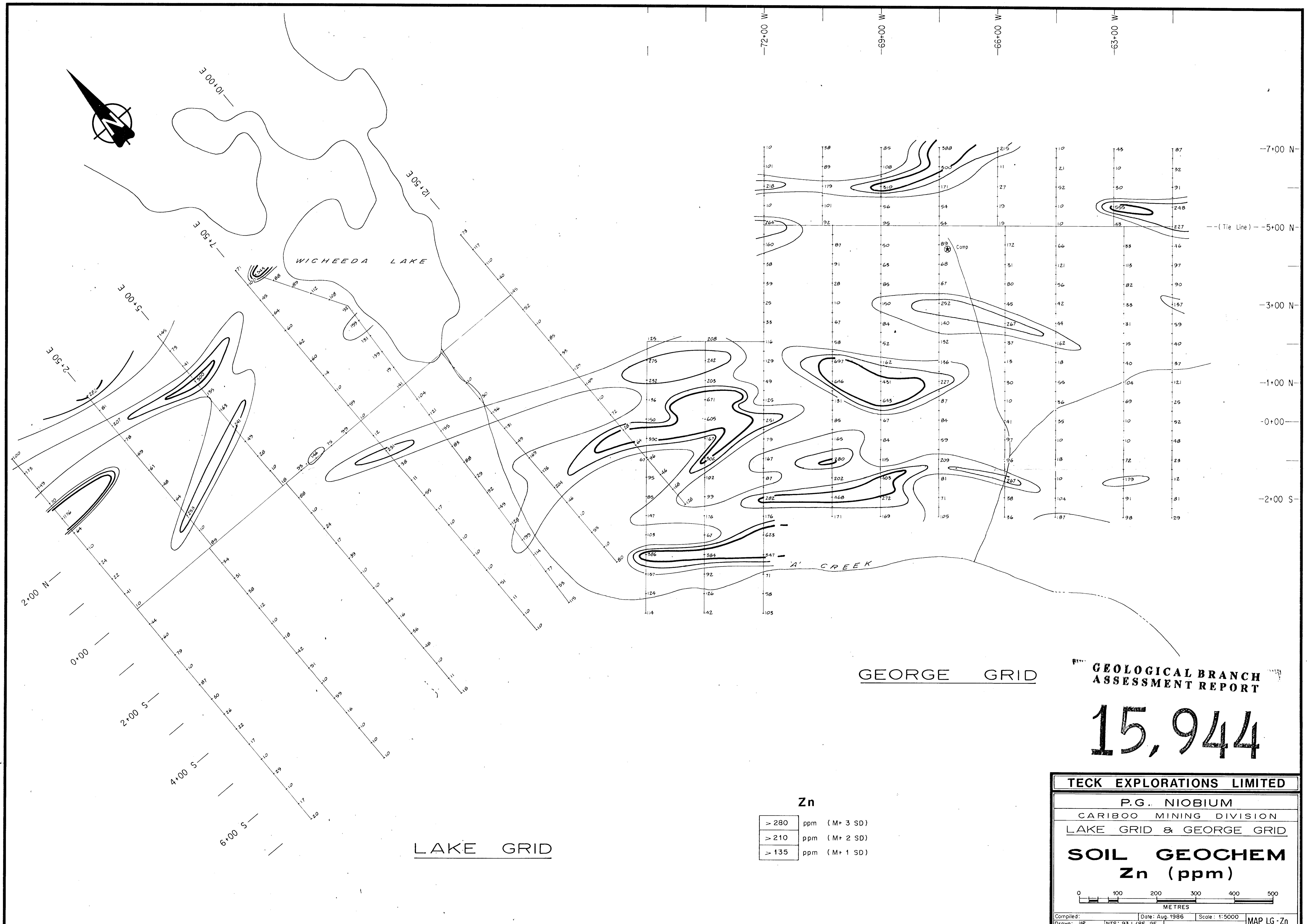
CARIBOO MINING DIVISION

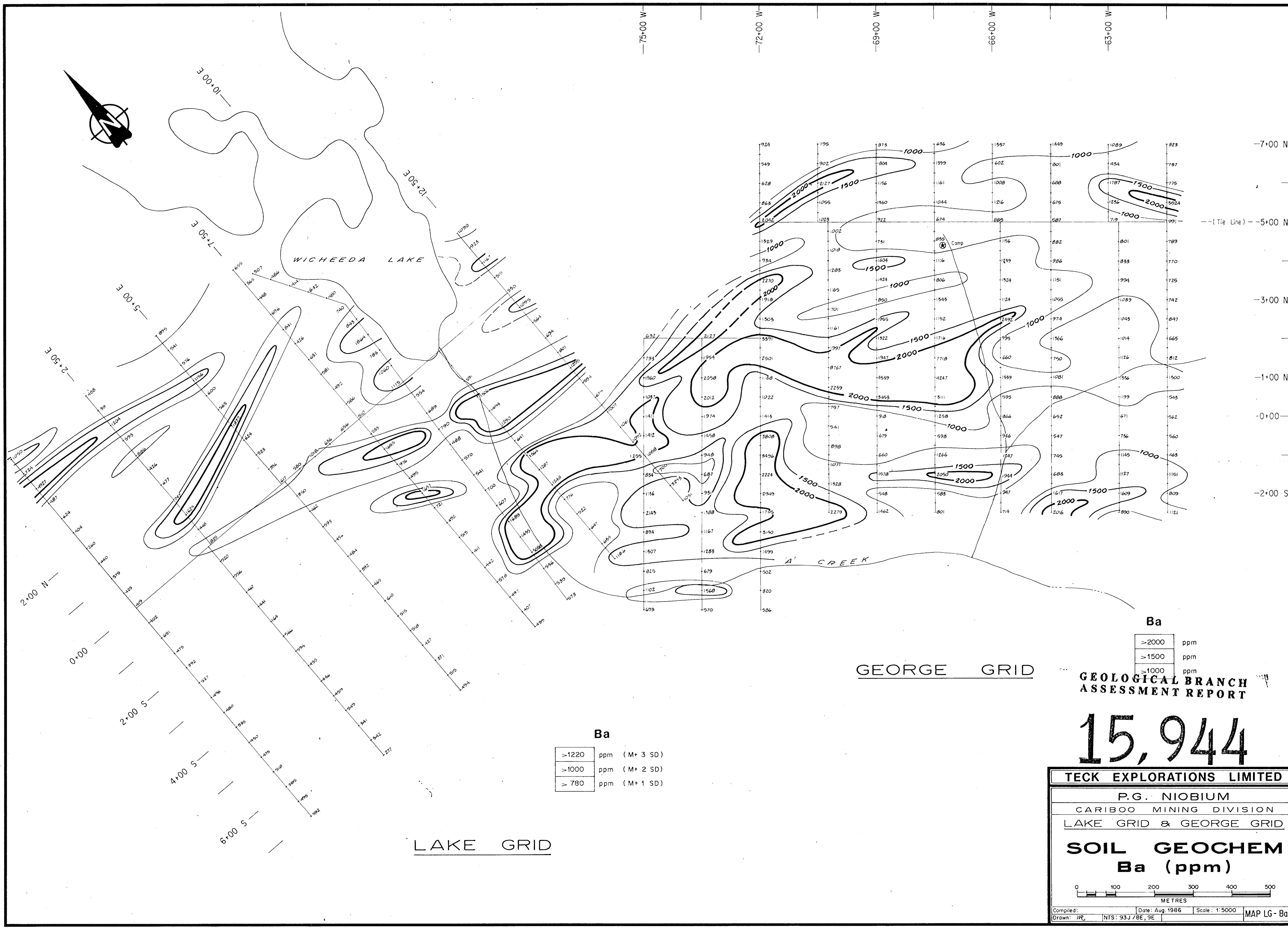
LAKE GRID & GEORGE GRID

SOIL GEOCHEM
Ce (ppm)

0 100 200 300 400 500
METRES

Compiled:	Date: Aug. 1986	Scale: 1:5000	MAP LG-Ce
Drawn:	NTS: 93J/8E, 9E		


WICHEEDA LAKE
'A' CREEK
LAKE GRID
GEORGE GRID
10+00 E
12+50 E
7+50 E
5+00 E
2+50 E
72+00 W
69+00 W
66+00 W
63+00 W
7+00 N
(Tie Line) 5+00 N
3+00 N
1+00 N
0+00
2+00 S
2+00 N
0+00
2+00 S
4+00 S
6+00 S
Camp
Zn
> 280 ppm (M+ 3 SD)
> 210 ppm (M+ 2 SD)
> 135 ppm (M+ 1 SD)
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
LAKE GRID & GEORGE GRID
SOIL GEOCHEM
Zn (ppm)
0 100 200 300 400 500
METRES
Compiled:
Drawn:
Date: Aug. 1986
Scale: 1:5000
NTS: 93J/8E, 9E
MAP LG - Zn



Ba

>2000	ppm
>1500	ppm
>1000	ppm

Ba

>1220	ppm	(M+ 3 SD)
>1000	ppm	(M+ 2 SD)
> 780	ppm	(M+ 1 SD)

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,944

TECK EXPLORATIONS LIMITED

P.G. NIOBIUM

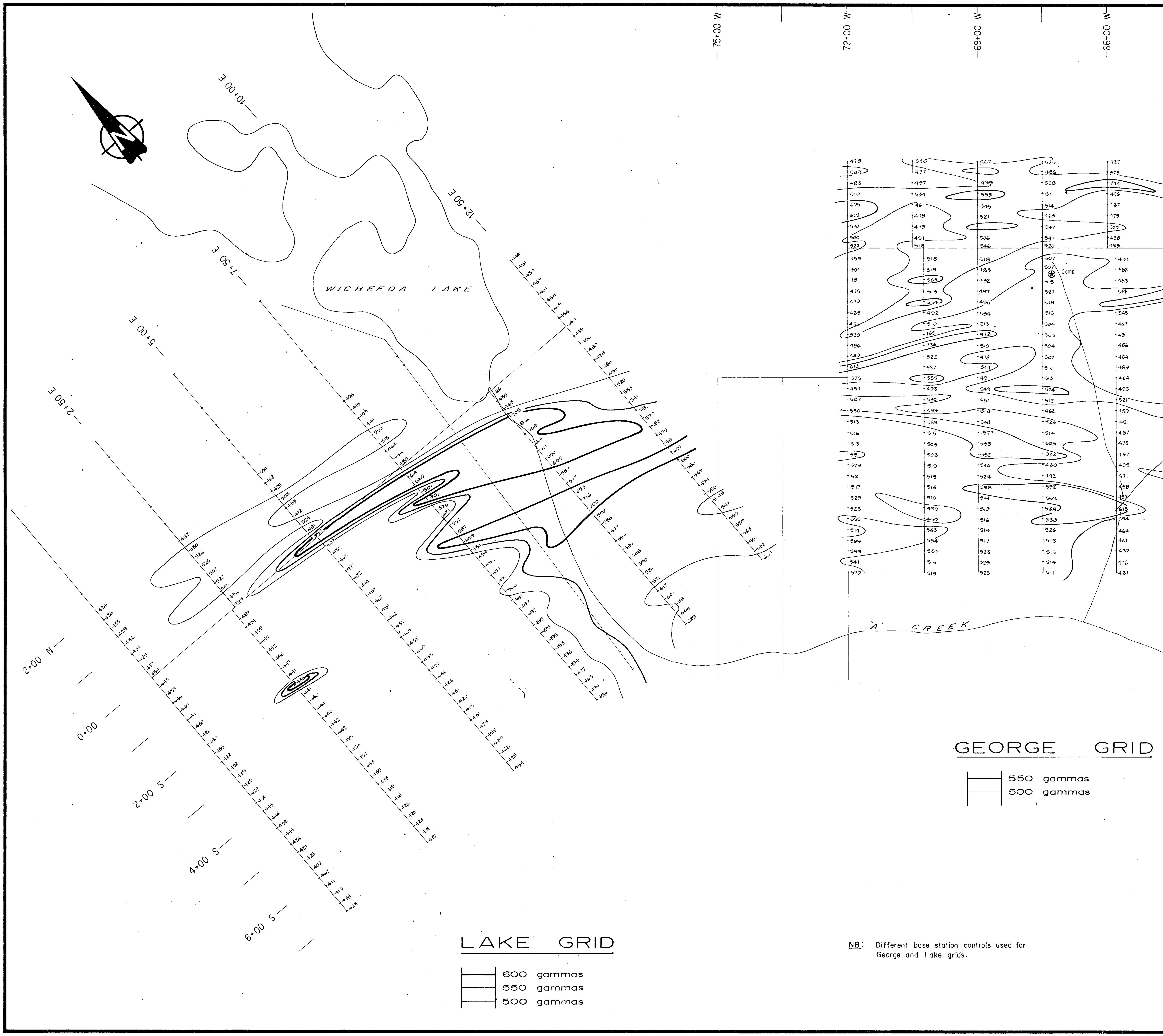
CARIBOO MINING DIVISION

LAKE GRID & GEORGE GRID

SOIL GEOCHEM
Ba (ppm)

0 100 200 300 400 500
METRES

Compiled: | Date: Aug. 1986 | Scale: 1:5000 | MAP LG-Ba
Drawn: [illegible] | NTS: 93J/8E, 9E



TECK EXPLORATIONS LIMITED

P.G. NIOBIUM

CARIBOO MINING DIVISION

LAKE GRID & GEORGE GRID

MAGNETOMETER SURVEY

0 100 200 300 400 500 METRES

Compiled:	Date: Aug. 1986	Scale: 1:5000
Drawn:	NTS: 93J/8E, 9E	MAP LG-Mag


48+00 W
45+00 W
42+00 W
39+00 W
36+00 W
33+00 W
30+00 W
27+00 W
21+00 W
18+00 W
15+00 W
4+00 N
2+00 N
0+00
2+00 S
3+50 S
1+00 S
C CREEK
D CREEK
E CREEK
F CREEK
"D" GRID
"F" GRID
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
"D" GRID & "F" GRID
SOIL GEOCHEM
Nb (ppm)
0 100 200 300 400 500
METRES
Compiled:
Drawn:
Date: Aug. 1986
NTS: 93J/8E, 9E
Scale: 1:5000
MAP DF-Nb

48+00 W
45+00 W
42+00 W
39+00 W
36+00 W
33+00 W
30+00 W
27+00 W
21+00 W
18+00 W
15+00 W
4+00 N
2+00 N
0+00
2+00 S
3+50 S
0+00
1+00 S
2+00 S
C CREEK
D CREEK
E CREEK
F CREEK
"D" GRID
"F" GRID
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
"D" GRID & "F" GRID
SOIL GEOCHEM
Ce (ppm)
0 100 200 300 400 500
METRES
Compiled:
Drawn:
Date: Aug. 1986
Scale: 1:5000
NTS: 93J/8E, 9E
MAP DF-Ce

48+00 W
45+00 W
42+00 W
39+00 W
36+00 W
33+00 W
30+00 W
27+00 W
21+00 W
18+00 W
15+00 W
4+00 N
2+00 N
0+00
2+00 S
3+50 S
1+00 S
C CREEK
D CREEK
E CREEK
F CREEK
"D" GRID
"F" GRID
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
"D" GRID & "F" GRID
SOIL GEOCHEM
Sr (ppm)
0 100 200 300 400 500
METRES
Compiled:
Date: Aug. 1986
Scale: 1:5000
Drawn:
NTS: 93J/8E, 9E
MAP DF-Sr


48+00 W
45+00 W
42+00 W
39+00 W
36+00 W
33+00 W
30+00 W
27+00 W
21+00 W
18+00 W
15+00 W
4+00 N
2+00 N
0+00
2+00 S
3+50 S
0+00
1+00 S
2+00 S
C CREEK
D CREEK
E CREEK
F CREEK
"D" GRID
"F" GRID
GEOLOGICAL BRANCH
ASSESSMENT REPORT
15,944
TECK EXPLORATIONS LIMITED
P.G. NIOBIUM
CARIBOO MINING DIVISION
"D" GRID & "F" GRID
SOIL GEOCHEM
Zn (ppm)
0 100 200 300 400 500
METRES
Compiled:
Drawn:
Date: Aug. 1986
Scale: 1:5000
NTS: 93J/8E, 9E
MAP DF - Zn

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,944

TECK EXPLORATIONS LIMITED

P.G. NIOBIUM

CARIBOO MINING DIVISION

"D" GRID & "F" GRID

SOIL GEOCHEM
Ba (ppm)

0 100 200 300 400 500
METRES

Compiled:	Date: Aug. 1986	Scale: 1:5000	MAP DF-Ba
Drawn:	NTS: 93J/8E, 9E		