

Geological Report

- on the -

Makalu Property

Slocan Mining Division, British Columbia

N.T.S. 82K/14E

50°48' N, 117°10' W

- for -

Union Oil Company of Canada Ltd.,

335 - 8th Avenue S.W.

Calgary, Alberta

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**10,721**

Prepared by;

G. Belik and Associates Ltd.,

#206 - 310 Nicola Street,

Kamloops, B. C.

Gary D. Belik, M. Sc.

November 1, 1982

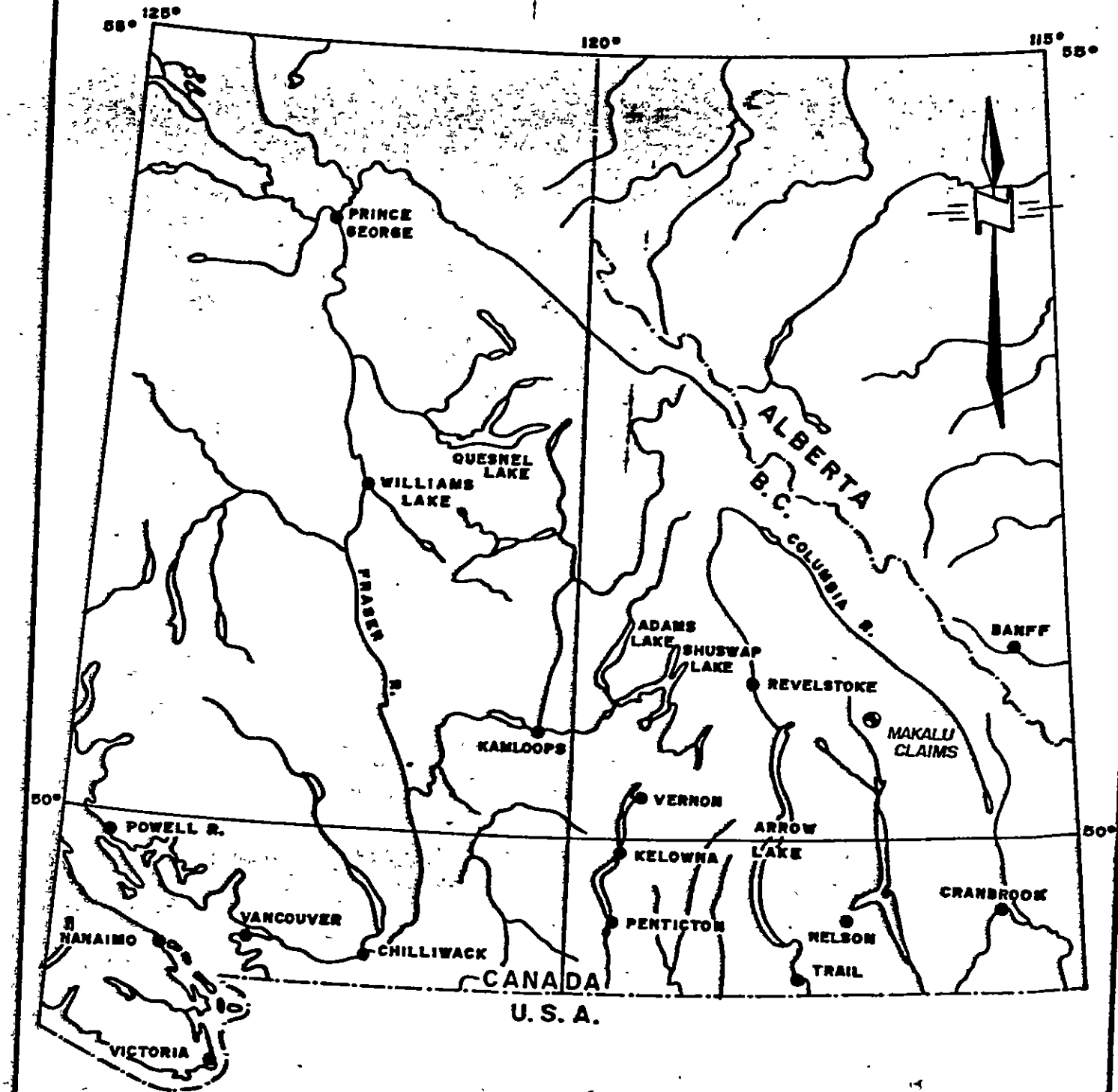
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UNION OIL CO. OF CANADA LTD.

LOCATION MAP  
**MAKALU CLAIMS**

*Henry Selite*  
 SLOCAN MINING DIVISION, B.C.

Date: Sept. 1982

Scale: 1" = 64 Miles

Drawn by: W.G.

Dwg no. 1014-1

## Summary

The Makalu Property encompasses tungsten - bearing skarn zones which are developed peripheral to a small elliptical discordant stock of equigranular biotite granodiorite of probable Cretaceous age. Most lithologies for the skarn units are calcareous members of the Hadrynian (Windermere) Horsethief Creek Group. Within the claim area this group is penetratively foliated, folded and has been regionally metamorphosed (Middle Greenschist facies).

Two general varieties of skarn are evident within the area mapped and include:

1. Tremolite - bearing, limestones which locally contain biotite and/or actinolite and diopside.
2. Iron - rich skarns which contain abundant pyrite, pyrrhotite, epidote, actinolite and hornblende  $\pm$  garnet and diopside.

Iron - rich skarns, which are developed as small lenses and pods at or within close proximity to the intrusive contact are clearly of metasomatic origin. However, evidence suggests that the tremolite - bearing skarn zones, which are areally extensive and present within all carbonate horizons mapped within the claim area, may be of regional metamorphic origin.

Tungsten mineralization discovered to date on the property is confined, for the most part, to the iron - rich skarns. Mineralized zones are low - grade, narrow, discontinuous and laterally confined (ie. tungsten mineralization does not extend 50 meters beyond the granodiorite stock).

Based on the negative results of extensive prospecting which was carried out within the claim area and on the low tenor and discontinuous nature of the mineralization discovered to date, no further work is recommended.

### Introduction

During August 17 to September 10, 1982 geological mapping, prospecting and rock sampling were carried out on the Makalu, Plug 1 - 2 and Mak 1 - 7 mineral claims situated near the Duncan River in the Slocan Mining Division, British Columbia. Work was supervised by G. Belik and Associates Ltd., #206 - 310 Nicola Street, Kamloops, B. C.

Of main interest on the property is the occurrence of tungsten mineralization within small skarn zones adjacent to a stock of equigranular biotite granodiorite. These zones were discovered by Union Oil Company of Canada Ltd. personnel during the course of a preliminary geological and geochemical exploration program carried out in 1980. Soil surveys carried out during the 1980 program partly delineated several areas with moderate to highly anomalous tungsten along the south margin of the granodiorite stock. Most of the highly anomalous values were obtained in close proximity to known mineralized outcrops.

The objectives of the 1982 program were:

1. Geologically map and prospect the claim area.
2. Follow - up and explain, if possible, high priority geochemical anomalies defined by the 1980 program.

3. Carry out a detailed evaluation of zones of potential interest.
4. Provide recommendations and guidelines for further exploration if warranted.

#### Location and Accessibility

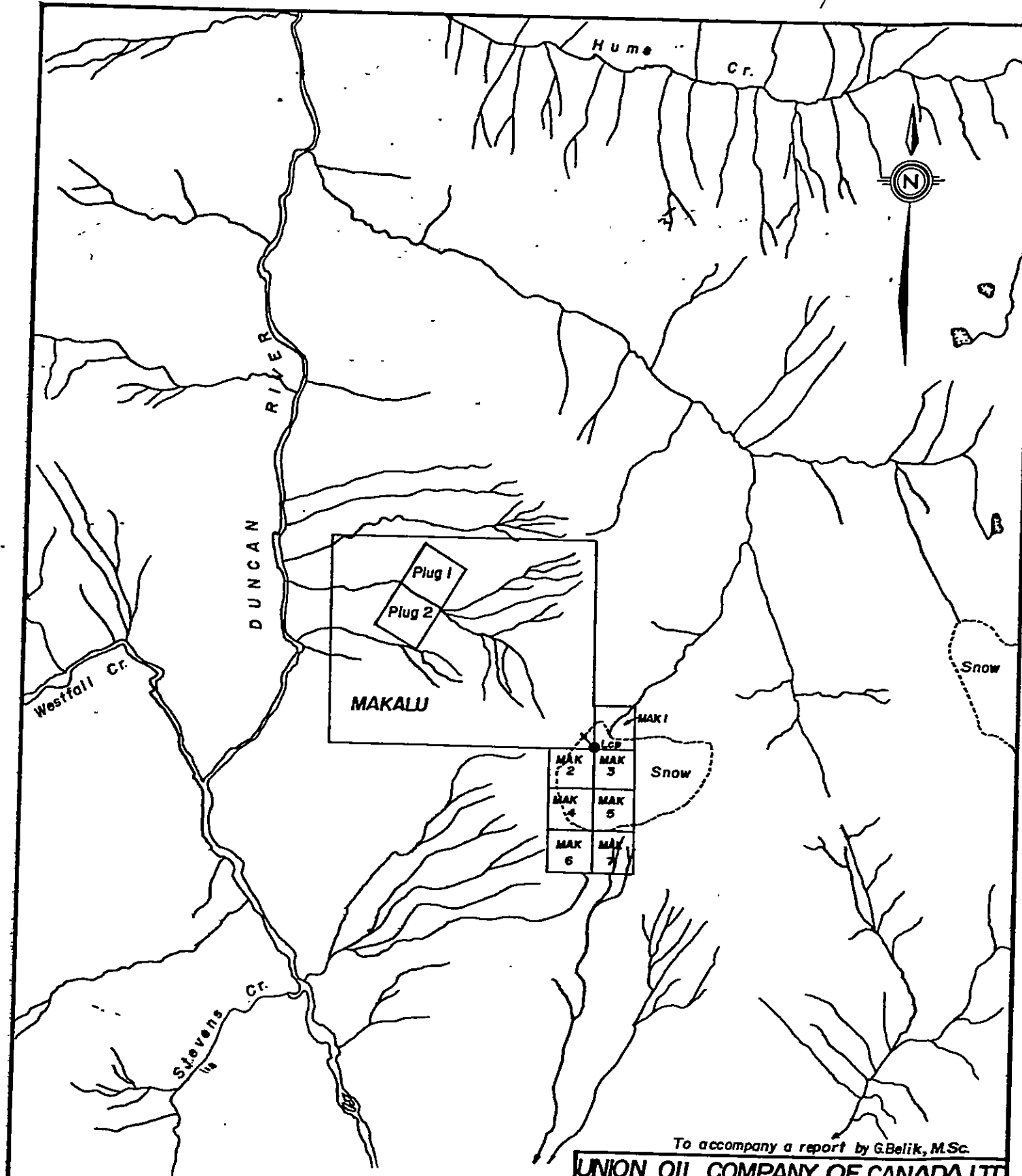
The Makalu Property is located south of the Duncan River in the Slocan Mining Division (N.T.S. 82K/14E). The center of the claim group is situated about 80 kms east-southeast of Revelstoke at geographic co-ordinates 50°48' North Latitude and 117°10' West Longitude.

Access to the property is via the Duncan River Forest Access Road which connects onto Highway 31 at Copper Creek.

#### Claims

The property is comprised of one 20-unit claim and 9 two-post claims as detailed below:

<u>Mining Division</u>	<u>Claim</u>	<u>No. of Units</u>	<u>Record No.</u>	<u>Record Month</u>
Slocan	Makalu	20	1554	October
"	Mak 1	2-post	1555 -	October
"	Mak 2	2-post	1556	October
"	Mak 3	2-post	1557	October



To accompany a report by G.Belik, M.Sc.

<b>UNION OIL COMPANY OF CANADA LTD</b>	
<b>CLAIM MAP</b>	
<b>MAKALU CLAIMS</b>	
<b>SLOCAN MINING DIVISION B.C.</b>	
Tech. Work By: G. Belik and Assoc. Ltd.	Scale: 1:50,000
Drawn By: W.G.	Date: Oct., 1982
Approved By: G. B.	Fig No. 1014-2

N.T.S. NO.  
82K/14E



## Claims (Continued)

<u>Mining Division</u>	<u>Claim</u>	<u>No. of Units</u>	<u>Record No.</u>	<u>Record Month</u>
Slocan	Mak 4	2-post	1558	October
"	Mak 5	2-post	1559	October
"	Mak 6	2-post	1560	October
"	Mak 7	2-post	1561	October
"	Plug 1	2-post	705	June
"	Plug 2	2-post	706	June

The registered owner of the above mineral claims is Union Oil Company of Canada Ltd., 335 - 8th Avenue S.W., Calgary, Alberta.

#### Physiography and Vegetation

The Makalu Property is situated in the Purcell Mountains along the east side of the Duncan River Valley. Elevation of the property ranges from 950 meters to 2400 meters. The surveyed area generally is very steep with numerous cliffs and precipitous bluffs.

The lower reaches of the claim area are covered primarily by thin stands of spruce, balsam and cedar with dense underbrush. Forest cover is lighter above 2000 meters a.s.l. and above 2150 meters a.s.l. alpine - type vegetation prevails.

## General Geological Setting

The Makalu Property is situated in the northeast corner of the Lardeau Map - Area within an area predominantly underlain by highly deformed, metasedimentary rocks of the Windermere Horsethief Creek Group (G.S.C. Open File 432; J. O Wheeler, 1977). Within the claim area these strata have been discordantly intruded by a small elliptical stock of biotite granodiorite of probably Cretaceous age. Carbonate horizons adjacent to the stock have been partly converted to skarn.

## Property Geology

### Horsethief Creek Group

Within the claim area, the Horsethief Creek Group can be subdivided into two members which may conform to Wheeler's Lower and Upper Divisions (O.F. 432). The northern member (Unit 1) consists of lustrous biotite and muscovite - biotite schist with intercalated lenses of pale green, banded, micaceous calc-silicate. The southern member consists of abundant limestone (Units 2 and 6) interlayered with pyritic, grey schists and pyritic quartzite (Unit 7) biotite - muscovite schist (Unit 5) and amphibolite (Unit 4).

#### Unit 1

Unit 1 consists of penetratively foliated, lustrous biotite and muscovite - biotite schist. Micaceous quartzite and muscovite - biotite - hornblende schist locally are evident and in the northeast corner of the Makalu claim schists are interlayered with pale green, banded micaceous calc-silicate.

Unit 2

Limestones, mapped as Unit 2, are abundant within the south half of the Makalu Claim and form prominent exposures in the bluffs surrounding the headwaters of Plug Creek. Unaltered exposures of limestone generally are light grey in color, thinly laminated and platy. Most of the limestones, however, are recrystallized and contain abundant tremolite  $\pm$  muscovite, biotite, vermiculite, actinolite and diopside. Some limestones, immediately adjacent to the biotite granodiorite stock, have been converted into iron - rich skarns. These skarns as well as the various varieties of tremolite - bearing limestone are discussed in more detail later in this report:

Unit 4

Unit 4, which consists of dark green to black amphibolite and hornblende - rich schist, serves as a useful marker horizon, 15 meters to 60 meters wide, which can be traced from the biotite granodiorite stock southeast through the southeast corner of the Makalu Claim, a distance of over 1 km. This unit, which is well foliated, probably represents the metamorphic equivalent of basic tuffs and or flows.

Unit 5

Unit 5 consists of a distinctive, light coloured, lustrous, biotite - muscovite schist. This schist has a relatively uniform appearance, is muscovite - rich and contains between 5% - 10% biotite.

Unit 6

Unit 6 contains grey, thinly laminated unaltered limestone interbedded with grey, pyritic schist and micaceous quartzite. This unit is well exposed in bluffs along the east edge of a small ice field situated at the headwaters of Plug Creek. Here, limestone beds, lamination size to 3 meters thick comprise 50% of the unit and occur interbedded with grey, rusty weathering, biotite - muscovite schist. The schists contain up to 6% finely disseminated pyrite and pyrrhotite. Sulphide - rich laminations locally are evident.

Unit 7

Pyritic biotite - muscovite schist and pyritic micaceous quartzite, designated as Unit 7, form rusty exposures along Plug Creek and in the bluffs south of Plug Creek. This unit characteristically contains finely disseminated pyrite and pyrrhotite in amounts up to 6%.

In the southwest corner of the Makalu claim and along the Duncan River access road, southwest of the claim area, Unit 7 contains abundant interbeds of grey pyritic schist (designated Unit 7a) and includes a sequence of white to light green, dense, laminated chert (Unit 7b).

Unit 8

Unit 8, which contains amphibolite, schist and skarn, forms a small outlier within the biotite granodiorite stock. Lithologies of Unit 8 characteristically are contorted, locally highly brecciated and are cut by numerous granitic dykes.

Skarns (Unit 3)

Most of the limestone horizons of Unit 2 contain abundant tremolite in bands, laminations, pods and knots. Tremolite - rich zones (Unit 3a), which locally comprise more than 70% of the limestone, contain 30% to 80% white, fine to coarsely crystalline tremolite in fibrous radiating clusters. Tremolite - rich zones locally are strongly silicified (Unit 3b) and some (Unit 3c) contain biotite, muscovite and a yellow to pale brown micaceous mineral (possibly vermiculite). At some localities a green and brown, banded carbonate (Unit 3d) is evident. This unit contains fine to medium crystalline tremolite, biotite, actinolite and diopside.

Units 3a to 3d have been classified as skarns which implies a metasomatic origin. However, the observed metamorphic assemblage is consistent with the overall regional metamorphic grade of the Horsethief Creek Group (ie. with some addition of silica, these units could have been derived by the regional metamorphism of impure, dolomitic carbonates). Other features which suggest a possible regional metamorphic origin for these units include:

1. Some of the units are foliated with a distinct micaceous sheen along cleavage surfaces.
2. There is no apparent zonation either texturally or mineralogically away from the biotite granodiorite stock.
3. There is no increase in the intensity of 'skarnification' towards the biotite granodiorite stock.

Definite skarns (Unit 3e) are evident within the claim area and occur as small pods and lenses within carbonate - bearing horizons at or within very close proximity to the biotite granodiorite stock. These skarns generally are massive and contain abundant pyrrhotite and pyrite, epidote and actinolite ± hornblende, calcite, garnet, chlorite and diopside.

#### Biotite Granodiorite (Unit 9)

A granitic stock (informally designated the Makalu Plug) is evident in the north - central part of the claim area. This stock generally is composed of fresh biotite granodiorite which locally contains widely spaced, narrow, quartz veins. Fracturing is poorly developed but locally exceeds 8 fractures per meter near the margins of the stock. Narrow, northerly - trending, quartz - sericite alteration zones were noted at a few locations.

The contact between the Makalu Plug and Horsethief Creek Group is well exposed along the eastern margin of the Makalu Claim. Here the contact is steep, sharp and discordant to the metamorphic fabric developed within the metasediments. Apart from the small skarn zones previously noted and a small area of silicification and alteration south of Plug Creek (Unit 9a) there is no appreciable thermal metamorphism and or alteration adjacent to the stock.

## Mineralization

Mineralization is rare within the granodiorite stock. Minor disseminated pyrite and minor pyrite and very minor molybdenite in quartz veins were noted at a few locations.

Tungsten mineralization was noted at three localities on the property which occur adjacent to a small embayment of the Makalu Plug in the vicinity of Plug Creek. A band of iron - rich skarn (Unit 3e) with scheelite, situated approximately 190 meters north of Plug Creek, was traced easterly from the granodiorite contact over a strike length of about 40 meters. This zone, which is about 2 meters wide, contains lenses of massive pyrrhotite and pyrite. Scheelite and chalcopyrite occur disseminated within this zone. Scheelite, galena and sphalerite were noted in a few narrow quartz veins cross-cutting the zone and adjacent to the zone. Sample 82BM-11 is a composite across the eastern edge of the zone. This section, which is composed of massive pyrrhotite and pyrite geochemically assayed 1057 ppm tungsten. A chip sample across the zone 18 meters to the west (82BM-12), assayed 435 ppm tungsten.

A second, parallel, highly oxidized and leached, iron - rich skarn zone, about 2.5 meters wide, is partly exposed about 20 meters south of the first zone. A sample across this zone (82BM-13), 10 meters from the granodiorite contact, assayed 2321 ppm tungsten.

Scheelite was lamped in a highly silicified, dense, tremolite - bearing zone adjacent to the Makalu Plug 100 meters south of Plug Creek. A composite sample from this zone assayed 43 ppm tungsten (82BM-15).

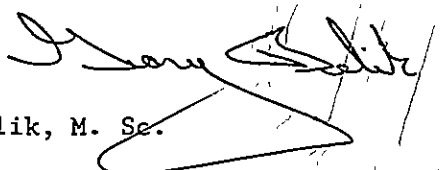
Within and adjacent to the silicified, tremolite - bearing zone are small pods and lenses of dark green, pyritic skarn. Samples from a 1.5 meter - wide lense and a large angular boulder of this material assayed 253 ppm and 146 ppm tungsten respectively.

#### Conclusions and Recommendations

Tungsten mineralization discovered to date on the Makalu Property is confined, for the most part, to small iron - rich skarns which occur peripheral to a small embayment of the Makalu Plug. Mineralized zones are low - grade, narrow, discontinuous and laterally confined.

Based on the negative results of extensive prospecting which was carried out within the claim area and on the low tenor and discontinuous nature of the mineralization discovered to date, no further work is recommended.

Respectfully Submitted;

  
Gary Belik, M. Sc.

November 1, 1982

Kamloops, B. C.



## References

- Fyles, J. T., 1964: Geology of the Duncan Lake area, Lardeau District, B. C.; B.C. Dept. Mines & Petrol. Resources, Bull 49.
- Wheeler, J. O., 1968: Lardeau (Welf half) map - area, B.C. (82K W<sub>2</sub>); Geol. Surv. Can., Paper 68-1, Part A, p. 56-58.
- 1977: Geology Lardeau West - Half; Geol. Surv. Can., Open File 432.
- Wise, H. M., 1980: Geological and Geochemical Report on the Makalu Claim, Slocan Mining Division, B.C.; unpublished.

Appendix I

Assay Certificates

ICP GEOCHEMICAL ANALYSIS

A .500 GRAM SAMPLE IS DIGESTED WITH 3 ML OF 3:1:3 HCL TO HNO3 TO H2O AT 90 DEG.C. FOR 1 HOUR. THE SAMPLE IS DILUTED TO 10 MLS WITH WATER.  
 THIS LEACH IS PARTIAL FOR: Ca, P, Mg, Al, Ti, La, Na, K, W, Ba, Sr, Cr AND B. Au DETECTION 3 ppb.  
 Au ANALYSIS BY AA FROM 10 GRAM SAMPLE. SAMPLE TYPE - ROCK CHIPS

DATE RECEIVED SEPT 13 1982 DATE REPORTS MAILED *Sept 20/82* ASSAYER *D. Jones* DEAN TOYE, CERTIFIED B.C. ASSAYER

G. BELIK & ASSOCIATES FILE # 82-1098

PAGE# 1

SAMPLE #	AG ppm	W ppm	Au* ppb
82BM-1	.2	2	5
82BM-2	.1	22	5
82BM-3	.1	22	5
82BM-4	.1	22	5
82BM-5	.1	2	5
82BM-6	.2	2	5
82BM-7	.1	22	5
82BM-8	.2	22	5
82BM-9	.1	22	5
82BM-10	.2	2	5
82BM-11	.1	1057	5
82BM-12	.1	435	5
82BM-13	1.6	2321	5
82BM-14	1.2	253	5
82BM-15	.2	43	5
82BM-16	.1	146	5
STD A-1	.4	2	5

*Hi W require regular assay*

Appendix II

Sample Descriptions

### Sample Descriptions

- 82BM-1: 2 meter chip sample north side of carbonate horizon; abundant tremolite.
- 82BM-2: 4 meter chip sample across rusty silicified zone along south edge of carbonate horizon.
- 82BM-3: 15 meter chip sample across carbonate zone with abundant tremolite ± biotite and vermiculite.
- 82BM-4: Selected sample of massive pink - weathering tremolite.
- 82BM-5: Selected sample of green skarn with pyrite and traces of chalcopyrite.
- 82BM-6: 4 meter chip sample across north end of carbonate zone with abundant tremolite.
- 82BM-7: Composite sample of 10 meter - wide carbonate zone with Units 3a and 3d.
- 82BM-8: Selected sample of tremolite - rich limestone.
- 82BM-9: 15 meter chip sample across carbonate zone with Units 3c and 3d.
- 82BM-10: White recrystallized limestone with 60% coarse tremolite; yellow fluorescent powder along fractures.
- 82BM-11: 2 meter chip sample across massive pyrrhotite/pyrite zone; visible scheelite.
- 82BM-12: 2 meter chip sample across skarn zone, 18-meters south of 82BM-11.
- 82BM-13: 2.5 meter chip sample across rusty, leached skarn zone.

Sample Descriptions (Continued)

- 82BM-14: Specimen from 1.5 meter dark green (actinolite) pyritic skarn with scheelite.
- 82BM-15: Composite of white, dense, siliceous unit with scheelite.
- 82BM-16: Specimen from large angular boulder of dark green pyritic skarn.

Appendix III

Summary of Field Notes

- Station 1: -Interbanded brown biotite schist and pale green/grey biotite -  
diopside schist; Bedding and early foliation ( $F_1$ )  $\frac{295}{76N}$
- $F_2$  folds (deform  $F_1$  foliation) - chevron type  
F.A.  $\frac{36}{307}$   
A.P.  $\frac{307}{90}$
- numerous pre  $F_2$  segmented quartz veins.  
-schists cut by post  $F_2$  granite and aplite dykes (narrow)
- Station 2: -fresh, medium grained biotite granodiorite.  
-contact with schist sharp; schists disrupted along contact but  
show no thermal effects.  
-cut by widely spaced barren, white, quartz veins.
- Station 3: -granodiorite contact.  
-knife-edge contact with schists.  
-no thermal effects or disruption of schists.  
-emplacement of granodiorite post - dates quartz veining in  
schist.  
-some larger, milky white quartz veins cut both schist and pluton.
- Station 4: -mainly biotite and muscovite - biotite schist; some interbands  
of biotite - diopside schist.  
-bedding and  $F_1$  foliation  $\frac{144}{85^{\circ}W}$
- Station 5: -banded schist near intrusive contact;  
 $F_1$  foliation  $\frac{346}{80^{\circ}E}$
- F.A. ( $F_1$ )  $\frac{30^{\circ}}{346}$
- highly folded.  
-large marker horizon parallel to  $F_1$  foliation.



- Station 6: -mainly crenulated muscovite - biotite schist.
- Station 7: -interbanded biotite schist and biotite grit (originally bedded arkose/siltstone).  
 -F<sub>1</sub> foliation  $\frac{340}{90}$   
 -bedding folded (F.A. (F<sub>1</sub>)  $\frac{15}{340}$  ) but generally horizontal.
- Station 8: -gross bedding down bluff for 150 meters  $\frac{320}{73E}$
- Station 9: -buff weathering carbonate zone with tremolite, muscovite and vermiculite (?).  
 -zone about 20 meters wide.  
 -5 meter zone on south side of rusty, siliceous sericitic schist with pyrite and pyrrhotite.  
 -zone trending about 315°.
- Station 10: -± 3m thinly laminated buff/grey carbonate.  
 -trending  $\frac{312}{90}$
- Station 11: -platy buff biotite carbonate.
- Station 12: -schist/skarn.  
 -bands and laminations of coarse tremolite.
- Station 13: -coarse, pink weathering, tremolite skarn.
- Station 14: -platy carbonate.
- Station 15: -hard, dense pale green skarn with pyrite and traces of chalcopyrite.  
 -banding  $\frac{150^{\circ}}{85N}$
- Station 16: -mafic dark green to black hornblende - rich schist.

- Station 17: -quartz/tremolite rock; pale grey/white; possible skarn;  
no effervescence.
- Station 18: -pale green calcareous skarn.
- Station 19: -pale grey/brown highly veined carbonate; abundant tremolite.
- Station 20: -Muscovite - biotite schist with mafic band (0.3m - 0.6m).  
-bedding  $\frac{160}{85W}$
- Station 21: -generally fresh biotite granodiorite; locally moderately  
fractured with a few rusty sections.  
-minor quartz veining.
- Station 22: -area drift covered.  
-angular float of muscovite - biotite schist and rusty weathering,  
dense, siliceous schist (possibly hornfels).
- Station 23: -skarn unit.  
-hornblende, tremolite and epidote rich rocks interlayered  
with schist and granitic dykes.  
-includes a brecciated skarn with an intrusive matrix.  
-complex, irregular contacts with granodiorite.  
-foliation in schist  $\frac{72}{785}$
- Station 24: -angular float of biotite muscovite schist.
- Station 25: -white to pale green highly siliceous schist (foliation not  
well pronounced).  
-weathered brown and rusty red.  
-siliceous contact zone.
- Station 26: -light green, altered intrusive; hybrid phase of main stock.  
-foliation  $\frac{125}{90}$

- Station 27: -quartz - biotite schist.  
 -somewhat silicified and altered.  
 -pyritic.  
 -foliation  $\frac{5^{\circ}}{90}$
- Station 28: -standard, well-foliated muscovite - biotite schist.  
 -compositional banding and foliation  $\frac{120}{78SW}$
- Station 29: -white, pale green and alternating brown/white dense siliceous dolomite.  
 -generally a skarn unit.  
 -contact with schist  $\frac{135}{85NE}$
- Station 30: -well foliated lustrous muscovite - biotite schist.  
 -foliation ( $F_1$ )  $\frac{135}{90}$
- Station 31: -well foliated muscovite - hornblende - biotite schist.  
 -foliation ( $F_1$ )  $\frac{154}{75SE}$
- Station 32: -white, buff - weathering tremolite/carbonate skarn.
- Station 33: -lustrous muscovite - biotite schist.
- Station 34: -10 meter carbonate zone widening to southeast.  
                   west contact  $\frac{175}{80^{\circ}E}$   
                   east contact  $\frac{134}{90}$   
 -west side: pale green/brown/white biotite/tremolite/actinolite  
 ±diopside carbonate.  
 -east side: white, tremolite - rich carbonate.
- Station 35: -mafic schist/amphibolite.

- Station 36:    -white, dense limestone; locally silicified.  
                   -east contact  $\frac{142}{90}$
- Station 37:    -biotite - muscovite schist.
- Station 38:    -interbedded, grey, thinly laminated limestone and grey, rusty-  
                   weathering, biotite - muscovite schist, with finely disseminated  
                   pyrite and pyrrhotite.  
                   -carbonate beds lamination size to 3m thick.  
                   -carbonate forms about 50% of section.
- Station 39:    -laminated grey/brown limestone.  
                   -west contact  $\frac{330}{86E}$   
                   -east edge (20m) consists of alternating bands of micaceous  
                   quartzite and sandy limestone.
- Station 40:    -highly siliceous, rusty, banded brown/white/green biotite -  
                   muscovite schist.  
                   -originally a laminated silty arenite.  
                   -grades into carbonate horizon.
- Station 41:    -rusty weathering interbanded grey biotite - muscovite schist,  
                   micaceous quartzite and muscovite - biotite schist.
- Station 43:    -interbanded grey laminated limestone, grey muscovite schist and  
                   micaceous quartzite.
- Station 44:    -mafic gneiss.
- Station 45:    -carbonate zone with tremolite.  
                   -west contact  $\frac{360}{80W}$

- Station 46: -limestone/skarn about 15 meters wide.  
 -west section: laminated brown and green (tremolite/biotite/  
 muscovite).  
 -east section: white to pale green tremolite limestone.
- Station 47: -mafic schist.  
 -between Station 47 and Station 48 10 meters of biotite -  
 muscovite schist.
- Station 48: -rusty grey schist and limestone.
- Station 49: -biotite - muscovite schist.  
 -foliation  $\frac{340}{90}$
- Station 50: -well foliated biotite - muscovite and muscovite - biotite  
 schist.
- Station 51: -white skarn with 40% to 80% coarse tremolite; yellow fluorescent  
 powder along fractures.
- Station 52: -hard, calcareous skarn; banded pink, light green and white.
- Station 53: -grey recrystallized limestone.
- Station 54: -rusty quartz/pyrite/pyrrhotite schists.
- Station 55: -rusty, heavy sulphide skarn; Pyrrhotite, Pyrite, Chalcopyrite  
 and Scheelite.  
 -pyritic quartz vein peripheral to zone with sphalerite, galena  
 and scheelite.
- Station 56: -oxidized and leached, iron - rich skarn zone adjacent to granite.
- Station 57: -lustrous muscovite - biotite schist; foliation  $\frac{350}{90}$

- Station 58:    -schists cut by 10 meter granodiorite dyke.  
              -dyke trending  $140^{\circ}$  (parallel to foliation).  
              -schists show no thermal effects.
- Station 59:    -mixed schist and granodiorite dykes and sills.
- Station 60:    -biotite - muscovite schist with a few seams of pyrite.  
              -highly contorted and locally brecciated.  
              -cut by granodiorite dykes and pods.
- Station 61:    -hornblende schist.  
              -locally highly contorted and brecciated.  
              -cut by dykes and sills.
- Station 62:    -chaotic breccia with an intrusive matrix.  
              -most fragments hornblende schist; somewhat altered and  
              recrystallized.
- Station 63:    -contact between granodiorite and muscovite - biotite schist.  
              -contact sharp and steep.  
              -cross-cuts foliation.  
              -no thermal effects along contact.
- Station 64:    -general siliceous pyritic schists and micaceous quartzite.  
              -sections contain pyritic actinolite skarn.  
              -a section of white quartz-tremolite skarn.
- Station 65:    -10 meter band of light green limestone.
- Station 66:    -rusty, pyritic biotite - muscovite schist.
- Station 70:    -fresh biotite granodiorite.  
              -rusty, dry fractures (about 3/meter).  
              -one pyritic quartz vein.

- Station 71: -pale to light green, white and buff laminated cherts.  
 -very siliceous and dense.  
 -platy cleavage (sericite along cleavages).  
 -bedding and foliation  $\frac{140}{60SW}$
- Station 73: -hard, resistant, siliceous, thinly laminated medium to dark green unit; part of chert sequence?
- Station 74: -well foliated siliceous, pyritic, grey muscovite schist.
- Station 75: -fresh biotite granodiorite.
- Station 76: -3m - 4m zone with numerous quartz veins; wall rock strongly sericitized and pyritic.
- Station 77: -small outcrop of buff weathering sericitic quartzite and hard, grey, pyritic schist.  
 -foliation  $\frac{315}{90}$
- Station 78: -rusty grey siliceous muscovite schist interlaminated with rusty sericitic quartzite.  
 -foliation  $\frac{75}{80N}$

Appendix IV

Statement of Expenditures



Statement of Expenditures

A. <u>Labour:</u>			
G. Belik, M. Sc., (Aug. 17-25, Sept. 8 - 10)			
12.0 days @ \$250.00/day		\$3,000.00	
R. Henderson, (Aug 17-25, Sept. 8 - 10)			
12.0 days @ \$120.00/day		<u>1,440.00</u>	\$4,440.00
B. <u>Support Aircraft;</u>			
-helicopter transportation;			1,078.60
C. <u>Truck Rental;</u>			
-12 days @ \$35.00/day		420.00	
-1430 kms @ \$0.20/km		<u>286.00</u>	706.00
D. Food and Accommodation;			750.00
E. <u>Equipment Rental;</u>			
-2 U.V. lamps,			
-12 days @ \$6.00/day			72.00
F. Consumables;			20.00
G. Geochemical Analyses;			164.00
H. Report Preparation;			1,200.00
			<hr/>
	Total Herein		\$8,430.60
			<hr/> <hr/>

Appendix V

Statement of Qualifications: G. D. Belik

**GARY D. BELIK, M.Sc.**


Consulting Geologist  
Mineral Exploration

#6 NICOLA PLACE, 310 NICOLA STREET • KAMLOOPS, B.C. V2C 2P5 • PHONE (604) 374-4247

CERTIFICATE

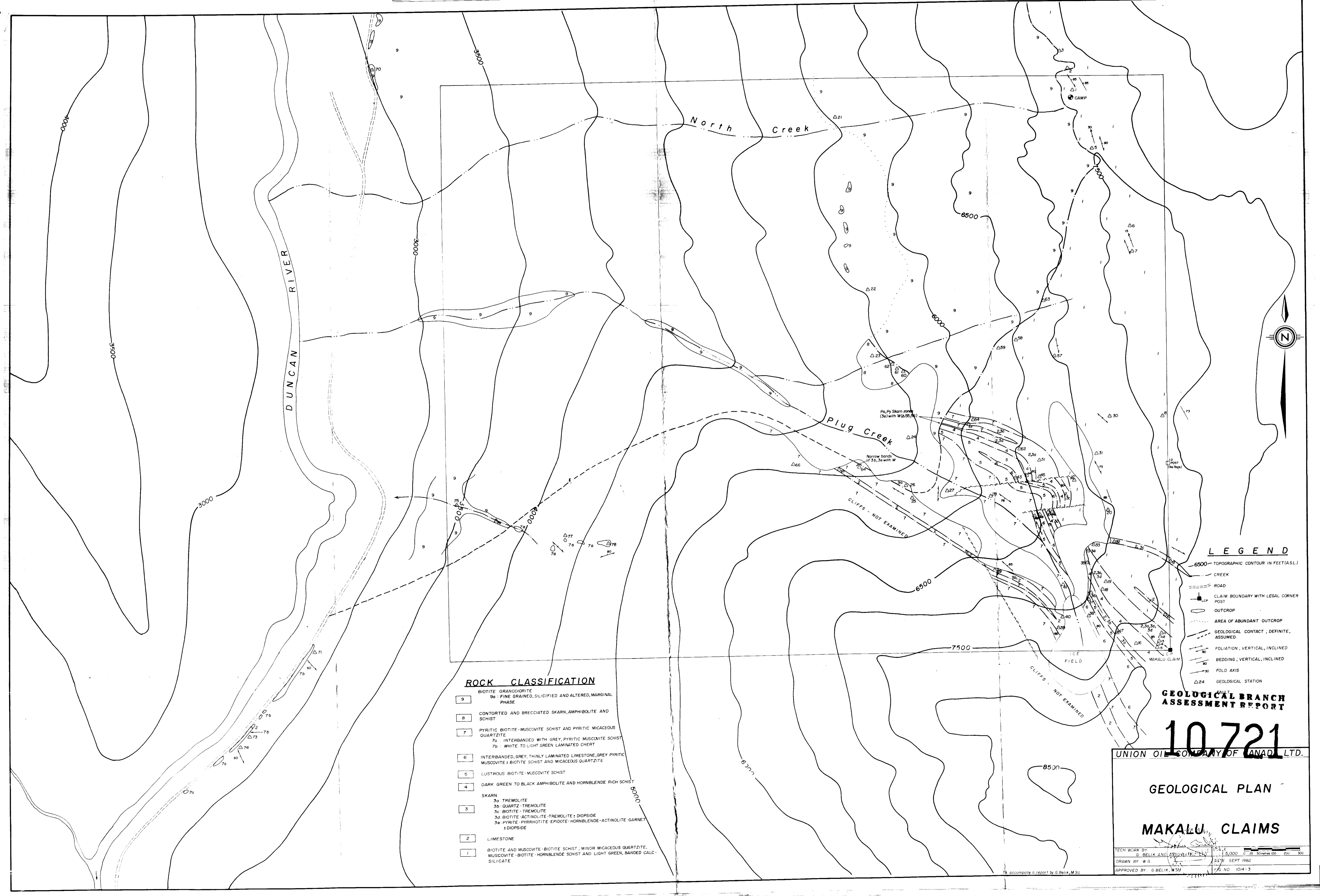
I, GARY D. BELIK, OF THE CITY OF KAMLOOPS BRITISH COLUMBIA, DO HEREBY CERTIFY THAT:

- (1). I am a member of the Canadian Institute of Mining and Metallurgy, and a fellow of the Geological Association of Canada.
- 92). I am employed by G. Belik and Associates Ltd., with my office at #206, 310 Nicola Street, Kamloops, B. C.
- (3). I am a graduate of the University of British Columbia with a B. Sc. in Honors Geology and a M. Sc. in Geology.
- (4). I have practised continuously as a geologist since May, 1970.
- (5). This report is based on an exhaustive study of all available data, published and unpublished reports, and my examination of the property from August 17 to September 10, 1982.
- (6). Permission is hereby granted to Union Oil Company of Canada Ltd. to use this report to satisfy requirements of the B. C. Ministry of Mines.

  
\_\_\_\_\_  
Gary D. Belik, M. Sc.  
GEOLOGIST

KAMLOOPS, B. C.  
November 1, 1982.

**G. BELIK AND ASSOCIATES LTD.**  
Consulting Geologist



**LEGEND**

- 6500 TOPOGRAPHIC CONTOUR IN FEET (A.S.L.)
- CREEK
- ROAD
- CLAIM BOUNDARY WITH LEGAL CORNER POST
- OUTCROP
- AREA OF ABUNDANT OUTCROP
- GEOLOGICAL CONTACT, DEFINITE, ASSUMED
- FOLIATION, VERTICAL, INCLINED
- BEDDING, VERTICAL, INCLINED
- FOLD AXIS
- Δ24 GEOLOGICAL STATION

**ROCK CLASSIFICATION**

- 9 BIOTITE GRANODIORITE
  - 9a FINE GRAINED, SILICIFIED AND ALTERED, MARGINAL PHASE
- 8 CONTORTED AND BRECCIATED SKARN, AMPHIBOLITE AND SCHIST
- 7 PYRITIC BIOTITE-MUSCOVITE SCHIST AND PYRITIC MICACEOUS QUARTZITE
  - 7a INTERBANDED WITH GREY, PYRITIC MUSCOVITE SCHIST
  - 7b WHITE TO LIGHT GREEN LAMINATED CHERT
- 6 INTERBANDED, GREY, THINLY LAMINATED LIMESTONE, GREY PYRITIC MUSCOVITE, BIOTITE SCHIST AND MICACEOUS QUARTZITE
- 5 LUSTROUS BIOTITE-MUSCOVITE SCHIST
- 4 DARK GREEN TO BLACK AMPHIBOLITE AND HORNBLENDE RICH SCHIST
- SKARN
  - 3a TREMOLITE
  - 3b QUARTZ-TREMOLITE
  - 3c BIOTITE-TREMOLITE
  - 3d BIOTITE-ACTINOLITE-TREMOLITE-DIOPSIDE
  - 3e PYRITE-PYRRHOTITE-EPIDOTE-HORNBLENDE-ACTINOLITE-GARNET-DIOPSIDE
- 2 LIMESTONE
- 1 BIOTITE AND MUSCOVITE-BIOTITE SCHIST, MINOR MICACEOUS QUARTZITE, MUSCOVITE-BIOTITE-HORNBLENDE SCHIST AND LIGHT GREEN, BANDED CALC-SILICATE

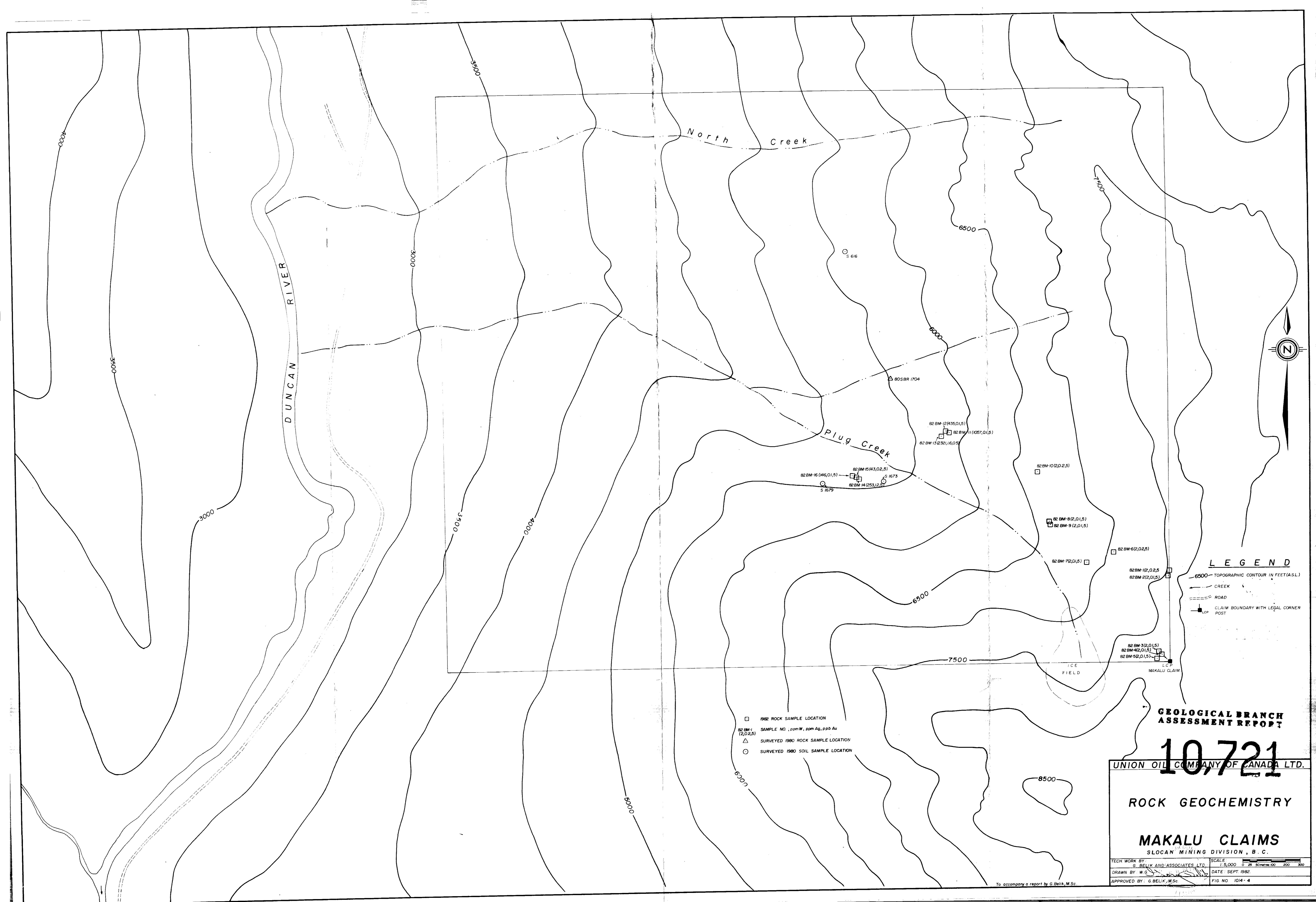
**GEOLOGICAL BRANCH ASSESSMENT REPORT**

**10.721**  
UNION OIL COMPANY OF CANADA LTD.

**GEOLOGICAL PLAN  
MAKALU CLAIMS**

TECH WORK BY	G. BELIK AND M. SCHMIDT	SCALE	1:5,000
DRAWN BY	W.G.	DATE	SEPT 1982
APPROVED BY	G. BELIK, M.Sc.	FIG. NO.	1014-3

To accompany a report by G. Belik, M.Sc.



**LEGEND**

- 6500 — TOPOGRAPHIC CONTOUR IN FEET (A.S.L.)
- CREEK
- ROAD
- CLAIM BOUNDARY WITH LEGAL CORNER POST

- 1982 ROCK SAMPLE LOCATION
- SAMPLE NO., ppm W, ppm Ag, ppb Au
- △ SURVEYED 1980 ROCK SAMPLE LOCATION
- SURVEYED 1980 SOIL SAMPLE LOCATION

**GEOLOGICAL BRANCH ASSESSMENT REPORT**

**10,721**

UNION OIL COMPANY OF CANADA LTD.

**ROCK GEOCHEMISTRY**

**MAKALU CLAIMS**  
SLOCAN MINING DIVISION, B. C.

TECH WORK BY G. BELIK AND ASSOCIATES LTD.	SCALE 1:5,000 0 25 50 meters 100 200 300
DRAWN BY W. G.	DATE SEPT 1982
APPROVED BY G. BELIK, M.Sc.	FIG. NO. 1014-4

To accompany a report by G. Belik, M.Sc.