

84-977-13030

ASSESSMENT REPORT  
GEOLOGY OF THE LAXEY CLAIM GROUP  
NEAR EHOLT, B.C.  
N.T.S. 82E/2E  
49°08'5"N Latitude 118°35'0"W Longitude  
GREENWOOD MINING DIVISION

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

13,030

James T. Fyles, P.Eng.  
Kettle River Resources  
October 1984

PART  
2 OF 2

TABLE OF CONTENTS

	<u>PAGE</u>
ABSTRACT	1
INTRODUCTION	2
HISTORY	2
CLAIM INFORMATION	3
GENERAL GEOLOGY	3
Knob Hill Group	4
Brooklyn Formation	4
Intrusive Rocks	6
Tertiary Rocks	7
Mineralization	8
Mineral Potential	8
REFERENCES	10

APPENDICES

STATEMENT OF COSTS

STATEMENT OF QUALIFICATIONS

FIGURES

Figure 1 Laxey Claim Group  
Regional Geology & Location Map

In Pocket

ABSTRACT

The Laxey group of claims (58 units) is about 8 kilometres northeast of Greenwood.

This report describes the geology of the claims and assesses the stratigraphic controls of copper-skarn deposits discovered in previous work. These deposits are within calcareous formations of the Knob Hill Group which is mainly greenstone with a few interbedded cherts and limestones. The formations in general strike east and dip 20 to 50 degrees to the north and are truncated by an easterly-trending pluton of granodiorite.

The determination of the potential for gold requires further sampling of the known showings and additional surveys in an area of Tertiary rocks in the southeastern part of the claims.

## INTRODUCTION

The Laxey group of claims comprising 58 units owned by Kettle River Resources Ltd. of Greenwood and Noranda Exploration Company, Limited (No Personal Liability), 1050 Davie Street, Vancouver, B.C. is about 8 kilometres northeast of Greenwood. The center of the claim group is latitude  $49^{\circ}08.5'N$  and longitude  $118^{\circ}35.0'W$ .

British Columbia Highway 3 passes through the northwestern corner of the claims and various logging roads cross the valley of Eholt Creek providing access to the central part of the claim group. The abandoned CPR railway grade crosses the southern and eastern part of the claims and the B.C. Hydro power line built in 1979 and 1980 provides good exposures of bedrock and access from the south.

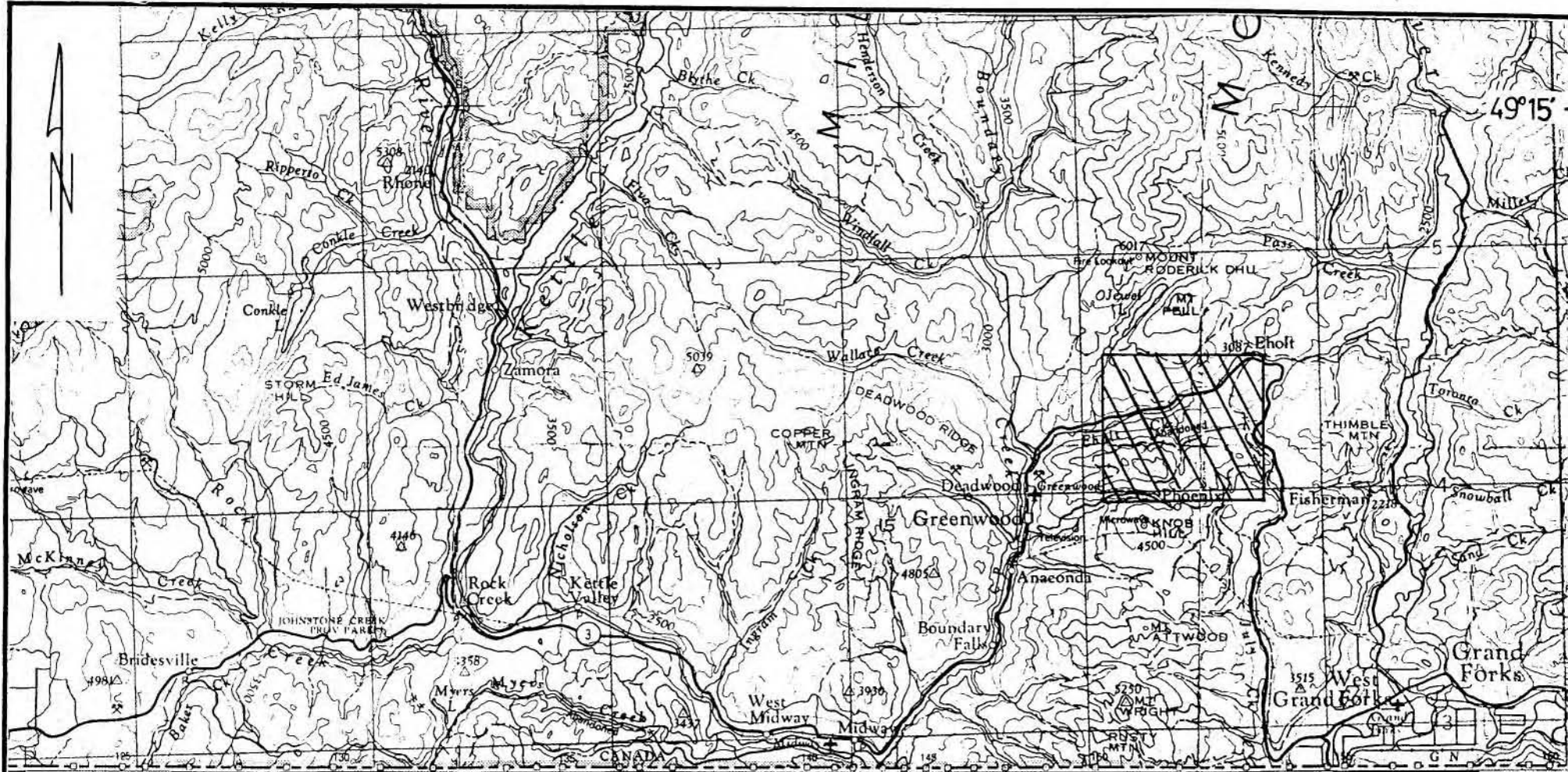
The claims straddle the valley of Eholt Creek at an elevation of about 2,500 feet\* (760 metres) and cover the steep wooded slopes south of the valley to elevations of about 4,000 feet (1,220 metres). There are no outcrops in the valley bottom, which is under cultivation, and moderately abundant outcrops on the valley walls, upland slopes, and canyons of Glenside Creek and west of it.

\* Elevations in feet correspond to those on the 1:12,000 scale map of Figure 1.

## HISTORY

The area was prospected and explored around the turn of the century during the activity which led to production of copper and gold at Phoenix and in the Summit Camp (which is immediately east of the claim group). Much of the area was staked and subsequently the claims were Crown Granted in this period. The Great Laxey (L.1425) which covered old workings on the 3333 foot hill about 1 kilometre east of the mouth of Glenside Creek was one of these Crown Grants, now reverted.

The area was held as the Ren group in 1957 and geological and geophysical work was carried out under the direction of R.T. Trenaman and F.J. Hemsworth. Between 1966 and 1969 it was held by King Resources of Calgary as the Stan group, and geological, geophysical and geochemical surveys were carried out under the direction of M.C. Robinson to assess the copper-molybdenum potential. In 1970 and 1972 eleven holes totalling 500 metres were drilled for copper by Jason Explorers of Vancouver in the area south of the railway grade.



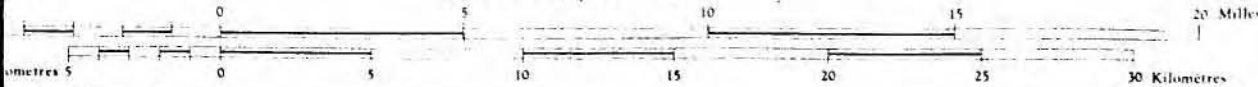
15' 4 5 119°00' UNITED STATES OF AMERICA 6 7 45' 8 30' 91 Republic 32 m

# PENTICTON

## BRITISH COLUMBIA

WEST OF SIXTH MERIDIAN - OUEST DU SIXIÈME MÉRIDIEN

Scale 1:250,000 Échelle



REVISED

LOCATION MAP

LAXEY MAP AREA

PROJ No.  
N.T.S. **B2E**  
DWG. No.

SURVEY BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
DRAWN BY: **JK** SCALE: **1:250,000**

**NORANDA EXPLORATION**

OFFICE: \_\_\_\_\_

The Laxey group was staked by Kettle River Resources in 1982 to determine:

- a) the potential for gold, particularly in zones of pyrite in and near the granite contact;
- b) the significance of the stratigraphy and structure of the pre-granitic rocks in relation to the scattered distribution of the various showings; and
- c) to compare this geology with that of the gold-copper deposits in the Phoenix and Summit Camps.

The geological map (Figure 1 in pocket) made by J.T. Fyles in the summer of 1984, in part addresses these objectives. An understanding of the geology of this area depends heavily on previous work by the writer in immediately surrounding areas. Church (1983) mapped part of the area and provided valuable data on the volcanics and the Lion Creek granodiorite. The Laxey group is entirely within the Greenwood map area (see Little, 1983) and the present map adds detail to that work.

#### CLAIM INFORMATION

The following are the claims of the Laxey group to which this work is applied.

CLAIM NAME	OWNER	RECORD NO.	DATE STAKED
The			
Ron	Kettle River Resources Ltd.	3273	Oct. 26/82
Iron King	" " " "	3279	Oct. 26/82
Bonnie	" " " "	3334	Nov. 22/82
Ron Fr.	" " " "	3333	Nov. 22/82
File Fr.	" " " "	3280	Oct. 26/82
Barron Fr.	" " " "	3281	Oct. 26/82

#### GENERAL GEOLOGY

Most of the claim group contains metamorphosed greenstone and chert of the Late Paleozoic (?) Knob Hill Group and a northwesterly-trending elongate pluton called the Lion Creek granodiorite. Along the southern and eastern fringes of the claim group are sedimentary and volcanic rocks of the Upper Triassic Brooklyn Formation. These rocks are intruded by Tertiary feldspar porphyry and syenite dykes and small irregular intrusions.

### KNOB HILL GROUP

Greenstone and amphibolite with interbedded quartzite and minor limestone and skarn form the oldest rocks on the Laxey group. They outcrop on the south slopes of Eholt Creek below elevations of 4,000 feet (1,200 metres). The greenstones are massive, aphanitic to very fine-grained, green rocks composed of hornblende and inconspicuous plagioclase and chlorite. Locally they contain small irregular or rounded lenses and layers rich in epidote with minor quartz and carbonate. From analytical work, Church (1983) concluded that they are of "volcanic derivation" and of basaltic composition.

The greenstone is interbedded with mappable units of quartzite composed of very fine-grained quartz. Judging from field observations (mainly the irregular chert-like banding) these rocks are considered to be mainly metacherts. In addition there are lenses and thin formations of grey and white crystalline limestone, marble and skarn. The lenses up to a few metres long and wide are within the greenstones and the mappable formations are as much as 10 metres thick on or near greenstone-metachert contacts.

These rocks form an interbedded succession trending east and dipping 20 to 50 degrees north. Rather scarce attitudes of epidote bands in the greenstone are subparallel to bedding and foliation and to formational contacts in the limestone and metachert. Although there are many outcrops on the south slope of Eholt Creek these north-dipping units are displayed best on the steep slopes of Glenside Creek and in the canyons to the west.

The rocks south of Eholt Creek and the Lion Creek pluton are very similar to rocks to the north of the pluton at the eastern edge of the claims and on the hills east and west of Prior Creek which appear to be in a somewhat higher grade of regional metamorphism. There is a higher proportion of metachert in this northern area and at the eastern edge of the claims the metachert is associated with biotite-bearing siliceous grey hornfelsic argillite. Attitudes of bedding and formational boundaries trend east and dip at moderate angles to the north.

### BROOKLYN FORMATION

Parts of the Brooklyn Formation occur on the fringes of the Laxey claim group. This succession of Upper Triassic sedimentary and volcanic rocks which contain the major copper deposits in the Greenwood area is described elsewhere (see Seraphim 1958, Little 1983, Fyles 1982) and the following notes refer only to those parts of the formation shown on Figure 1.

On the ridge north of Providence Lake and south of the power line, the Brooklyn Formation contains the members listed in the following table.

Map Symbol; Thickness	Lithology and Contacts
	-----Fault Contact with Knob Hill Group-----
Bgs	Dark green fine-grained to aphanitic dioritic greenstone with an obscure mottled appearance and brecciated structure particularly noticeable on weathered surfaces.
Bls More than 500 m	Grey to white fine-grained massive and thinly-bedded crystalline limestone with a few beds and lenses of cherty tuffaceous thinly-bedded hornfelsic siltstone.
Bls Bss Bbx 200-300 m	Transition member containing lenses of grey to white limestone locally crowded with round chert pebbles and cobbles (Bls), thin-bedded volcanic sandstone, siltstone, hornfelsic siltstone and dark grey argillite (Bss) and fine-grained chert breccia (Bbx).
Bbx 550 m	Chert breccia, massive siliceous green, grey and buff sharpstone conglomerate grading upward into fine-grained chert breccia sandstone and siltstone.
	-----Unconformable contact with Knob Hill Group-----

The rocks strike north and dip steeply. The stratigraphic top determined from primary sedimentary features is to the east and the formation is truncated on the north and east by a normal fault which dips 35 to 50 degrees to the south and west. This fault is referred to as the Snowshoe fault by Fyles (1982) and the Eholt Valley fault by Little (1983) and is significant for the Laxey group because it terminates the Brooklyn rocks just south of the southern boundary of the claims.

The Brooklyn Formation northeast of the fault occurs east of the Laxey group and only the basal chert breccia member is shown on Figure 1. It consists of massive, buff weathering breccia composed of angular fragments of white and locally purple quartz, buff and grey chert, jasper, greenstone and locally limestone up to 5 cm across in a matrix of the same materials. North of the Lion Creek granodiorite, metachert breccia of the same member is dark grey with white chert fragments in a matrix of chert fragments with biotite and amphibole. In this area the member and the unconformity beneath it trend N25°E and dip very steeply to the east.



INTRUSIVE ROCKS

The Lion Creek granodiorite is the principal intrusive on the claims. It is well-exposed only on the small hills south of Eholt Creek and north of Highway 3 mainly north of the claims. It is composed of medium-grained, massive, biotite-hornblende granodiorite transecting both the Knob Hill Group and the Brooklyn Formation. The granodiorite contains a few narrow white quartz and epidote veins, narrow dykes of aplite and felsite, and Tertiary dykes which locally are abundant. Church (1983, p.4) gives the following petrographic description of samples of the Lion Creek granodiorite from just east of the Laxey claims.

This is a light grey massive granoblastic rock having the following approximate model composition: feldspar, about 65 per cent (mostly plagioclase); quartz, 25 per cent; and accessory amphibole, biotite, and magnetite. The plagioclase occurs as rectangular oscillatory-zoned plates, intermixed with subhedral quartz, 1 to 4 millimetres across, with slightly smaller interstitial quartz and feldspar and magnetite grains associated with patches of pale yellow-green amphibole and scattered biotite books. Some garnet, sphene, and diopside are reported near the contaminated borders of the intrusion.

The Emma porphyry is a northerly-trending offshoot of the Lion Creek granodiorite exposed north of the Emma mine along the eastern edge of the claim group. In outcrops this is a massive, grey, fine-grained porphyritic rock with phenocrysts of plagioclase 1 to 3 millimetres across. It is described petrographically by Church (1983, p.4) as follows:

This is a distinctive porphyritic phase consisting of about 8 per cent subhedral plagioclase, individual and clusters, and 1 per cent partly resorbed amphibole phenocrysts, 1/2 to 4 millimetres in length, suspended in a fine-grained quartzofeldspathic matrix. According to normative calculations the rock contains a total of 20 per cent quartz and about 70 per cent feldspar (An<sub>30</sub>), the chemical composition of the Emma phase being very similar to the Lion Creek intrusion.....

The southern contact zone of the Lion Creek granodiorite is one of the main areas of mineralization on the Laxey group. It is more or less well-exposed along Highway 3 in the western part of the claim group, on the 3,333 foot hill south of Eholt Creek in the area of the old workings on the former Great Laxey claim and on the slopes of the hill near the railway grade west of the Oro Denoro mine. This is an easterly-trending, locally sinuous, relatively sharp contact with irregular offshoot dykes of quartz diorite,

aplite and a few quartz veins extending no more than 100 metres from the main mass of granodiorite. One irregular small offshoot (?) of granodiorite is exposed 700 metres south of the main body in the southeast corner of the claim group.

The dips of the main contacts are not known although exposures in workings at the Emma and Oro Denoro suggest that it is a steep dyke-like body. The granodiorite seems to have been emplaced passively without significantly deflecting the trends and dip of the formations intruded. Church suggests that old fracture sets controlled the shape of the Lion Creek granodiorite and the Emma porphyry.

#### TERTIARY ROCKS

Dykes and small irregular bodies of syenite and feldspar porphyry are fairly common throughout the claim group. They are most numerous along the southern edge of the group south of the railway grade both east and west of Glenside Creek where they form the northern part of the Tertiary basin exposed at Phoenix. Mainly they occur as easterly-dipping lenticular dykes as much as 150 metres thick and several hundred metres long, but smaller dykes and irregular masses are also common. On the eastern slope of Glenside Creek on the power line, a probably Tertiary breccia is exposed. It is composed of fractured grey-green feldspar porphyry with abundant epidote and hematite along fractures and in fragments. The fragmental structure consists of poorly-defined, round, epidote-rich knots 2 to 5 centimetres across in a matrix of feldspar porphyry. The shape and contact relations of this breccia are uncertain.

## MINERALIZATION

The known mineral deposits on the Laxey group are copper-skarn zones in calcareous members of the Knob Hill Group. They occur in the area of the former Great Laxey claim on the south and west slopes of the 3,333 foot hill south of Eholt Creek (see Figure 1 and Assessment Report 768) on the slopes south of the railroad grade 900 to 1,200 metres west of the Oro Denoro mine, and in the canyon 1,100 metres west of Glenside Creek at an elevation of 3,500 feet (1,070 metres). The shape of the mineralized zones is controlled by the calcareous members interbedded with the chert and greenstone. They are a few metres thick and dip at moderate angles mainly to the north. The best mineralization is within 500 metres of the exposed granodiorite.

As described in Assessment Report 768 (p.14):

Metallic mineral present in the lime silicate include magnetite, hematite pyrite, chalcopyrite, bornite, chalcocite and molybdenite. Azurite and malachite staining is common at the surface. The mode of occurrence of the metallic minerals varies substantially. Magnetite occurs in pods, masses and lenses of almost pure magnetite up to a few feet in maximum dimension. Pyrite occurs in veins, veinlets, pods and lenses and, to some extent, it follows what appear to be late slips and fractures. Chalcopyrite occurs primarily as finely disseminated grains and small masses. Molybdenite is sparingly present in small but visible grains in some of the skarn material.

## MINERAL POTENTIAL

- 1) The known stratigraphically-controlled copper-skarn deposits could be economically significant if they carried sufficient gold. Very few assays for gold have been recorded and, although they are low (less than 0.1 oz per ton), it is recommended that the showings be sampled and assayed for gold.
- 2) Horizons within the Brooklyn Formation which carry copper and gold deposits at Phoenix (and elsewhere in the Greenwood area) do not occur within the Laxey claim group. They are terminated by a south-dipping normal fault just south of the southern edge of the claims.
- 3) Gold mineralization at Phoenix may have been controlled at least in part by Tertiary intrusion and faulting. A zone of Tertiary

intrusions extends from near Phoenix into the southeastern corner of the claims near Glenside Creek and that area should be studied more closely with a view to carrying out a geologically-controlled geochemical survey.

REFERENCES

- Church B.N. 1983, Geology in the vicinity of the Oro Denoro Mine in Geology in British Columbia, 1976, Ministry of Energy, Mines & Petroleum Resources. pp.1-13.
- Fyles J.T. 1982, Geology of the Phoenix-Oro Denoro Area. Ministry of Energy, Mines & Petroleum Resources. Assessment Report No.10632.
- Little H.W. 1983, Geology of the Greenwood Map Area, B.C. Geol. Science Canada Paper 79-29.
- Rolinson M.C. 1966, Geological Report on Part of the Stan Group of Mineral Claims, Eholt Area. Ministry of Energy, Mines & Petroleum Resources Assessment Report No.768.
- Seraphim R.H. 1956, Geology and Copper Deposits of the Boundary District, British Columbia. Canadian Institute of Mining and Metallurgy. Transactions Vol. LIX pp. 384-394.
- Ministry of Energy, Mines & Petroleum Resources Assessment Reports No. 198 (1957), 768 (1966), 889, 1162, 1816, 2113 (1969).
- Geology Exploration and Mining 1970 p.428, 1972 p.36.

**APPENDIX I**  
**STATEMENT OF COSTS**

STATEMENT OF COSTS

Fees J.T. Fyles:

Fieldwork ( October 2-6)	
5 days @ \$250 per day	1,250.00
Map Compilation and report.	
3 days @ \$250 per day	750.00

Food and Accommodation:

5 days @ \$30 per day	150.00
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Transportation:

5 days @ \$100 per day	500.00
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Report Preparation (drafting and typing)	500.00
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TOTAL COST	<u>500.00</u> <u>\$3,150.00</u>
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APPENDIX II  
STATEMENT OF QUALIFICATIONS



STATEMENT OF QUALIFICATIONS

I, James T. Fyles of 1720 Kingsberry Crescent, Victoria, B. C. hereby certify that:

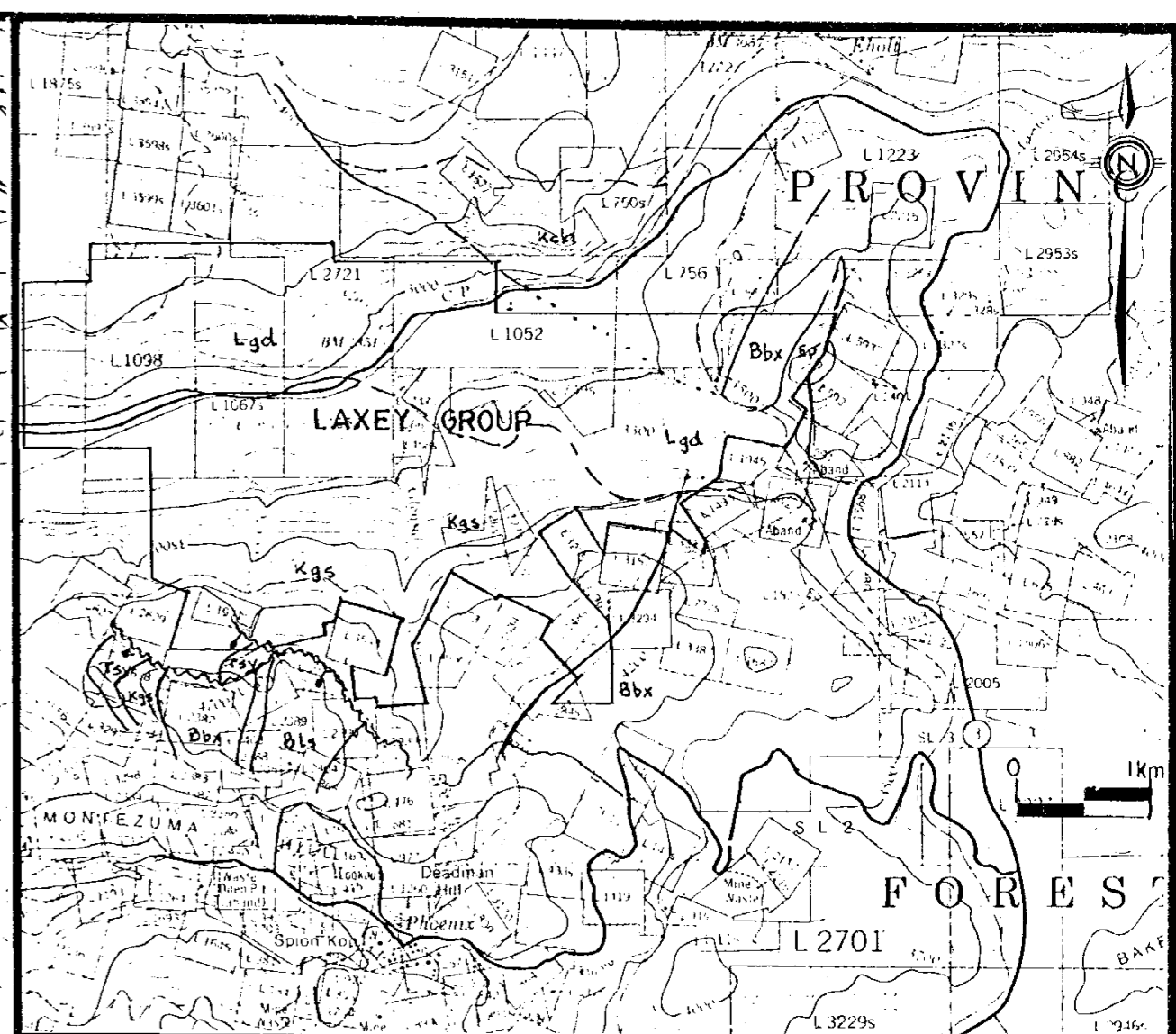
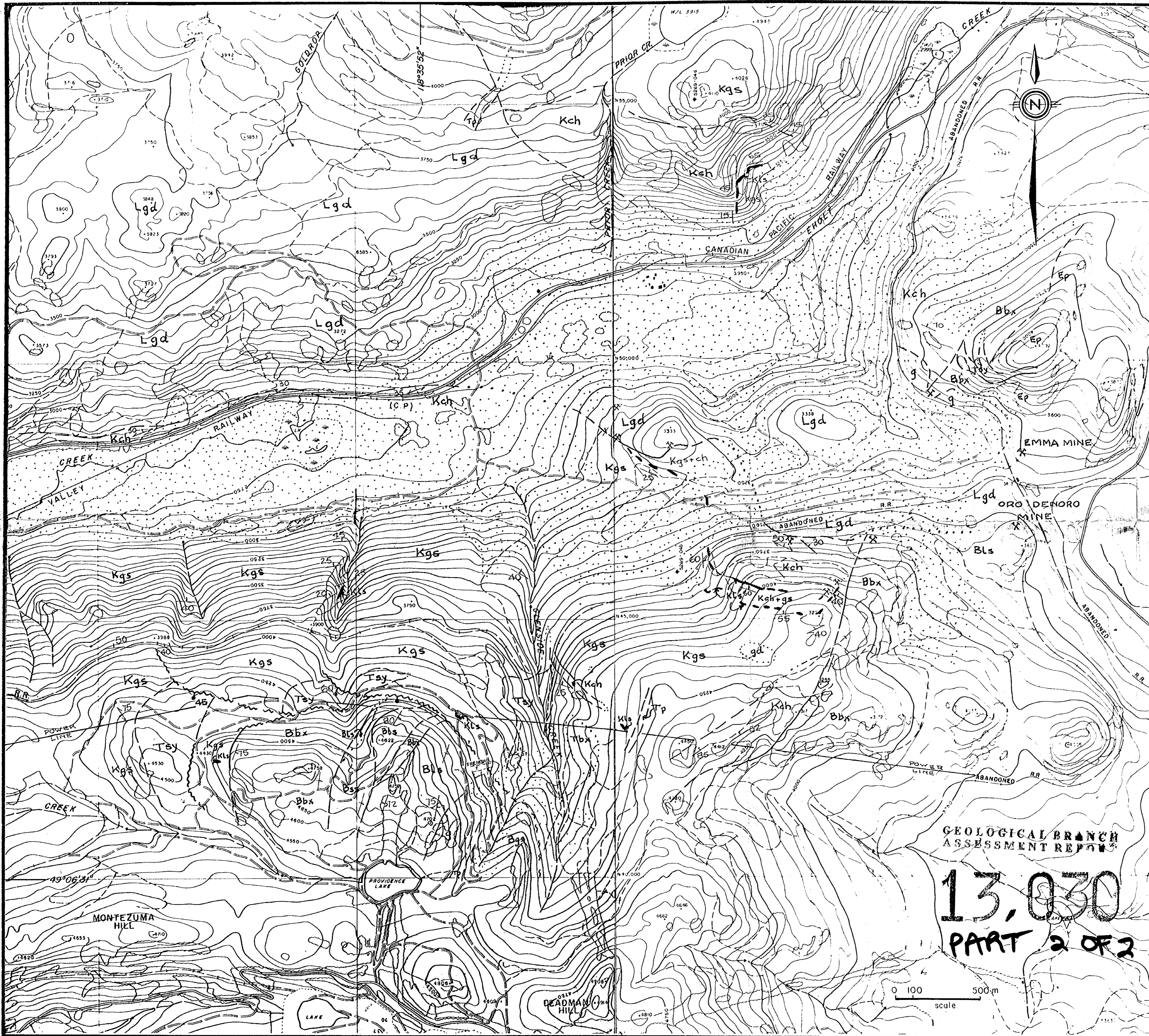
- 1) I am a consulting geologist and Director of Kettle River Resources Ltd.
- 2) I have practiced my profession in British Columbia since 1948.
- 3) I am a graduate of the University of British Columbia (BASc'47, MASc'49) and of Columbia University (PhD'54).
- 4) I am a registered Professional Engineer in British Columbia (#2563), a Fellow of the Geological Association of Canada, a Fellow of the Society of Economic Geologists and a Member of the Canadian Institute of Mining and Metallurgy.
- 5) This report is based on field work done by me in the area shown in the enclosed map.

Victoria, B. C.

*Nov 25 1984*

*James T. Fyles*

James T. Fyles



LOCATION MAP 1:50,000 GROUP OUTLINED IN BLACK

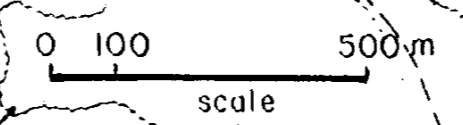
### LEGEND

<b>TERTIARY</b>	
<span style="border: 1px solid black; padding: 2px;">TpTay</span>	FELDSPAR PORPHYRY, SYENITE
<span style="border: 1px solid black; padding: 2px;">Tbx</span>	BRECCIA
<b>INTRUSIVE ROCKS</b>	
<span style="border: 1px solid black; padding: 2px;">Lgd, Ep</span>	LION CREEK GRANODIORITE, & EMMA PORPHYRY
<span style="border: 1px solid black; padding: 2px;">g</span>	GABBRO & DIORITE
<b>BROOKLYN FORMATION</b>	
<span style="border: 1px solid black; padding: 2px;">Bgs</span>	GREENSTONE
<span style="border: 1px solid black; padding: 2px;">BlS</span>	LIMESTONE
<span style="border: 1px solid black; padding: 2px;">Bss</span>	SANDSTONE, SILTSTONE ETC.
<span style="border: 1px solid black; padding: 2px;">Bbx</span>	SHARPSTONE CONGLOMERATE
<b>NOB HILL GROUP</b>	
<span style="border: 1px solid black; padding: 2px;">Kch</span>	CHERT & QUARTZITE
<span style="border: 1px solid black; padding: 2px;">Kgs</span>	GREENSTONE & AMPHIBOLITE
<span style="border: 1px solid black; padding: 2px;">Kls</span>	LIMESTONE & MARBLE
<span style="display: inline-block; width: 10px; height: 10px; border: 1px dotted black; margin-right: 5px;"></span>	AREAS OF LITTLE OR NO OUTCROP
<b>GEOLOGICAL CONTACT</b>	
<span style="display: inline-block; border-bottom: 1px dashed black; width: 20px; margin-right: 5px;"></span>	
<b>FAULT</b>	
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<span style="display: inline-block; width: 20px; border-left: 1px solid black; margin-right: 5px;"></span>	BEDDING & BANDING
<span style="display: inline-block; width: 20px; border-left: 1px solid black; margin-right: 5px;"></span>	SCHISTOSITY & FOLIATION
<span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></span>	MINE WORKING

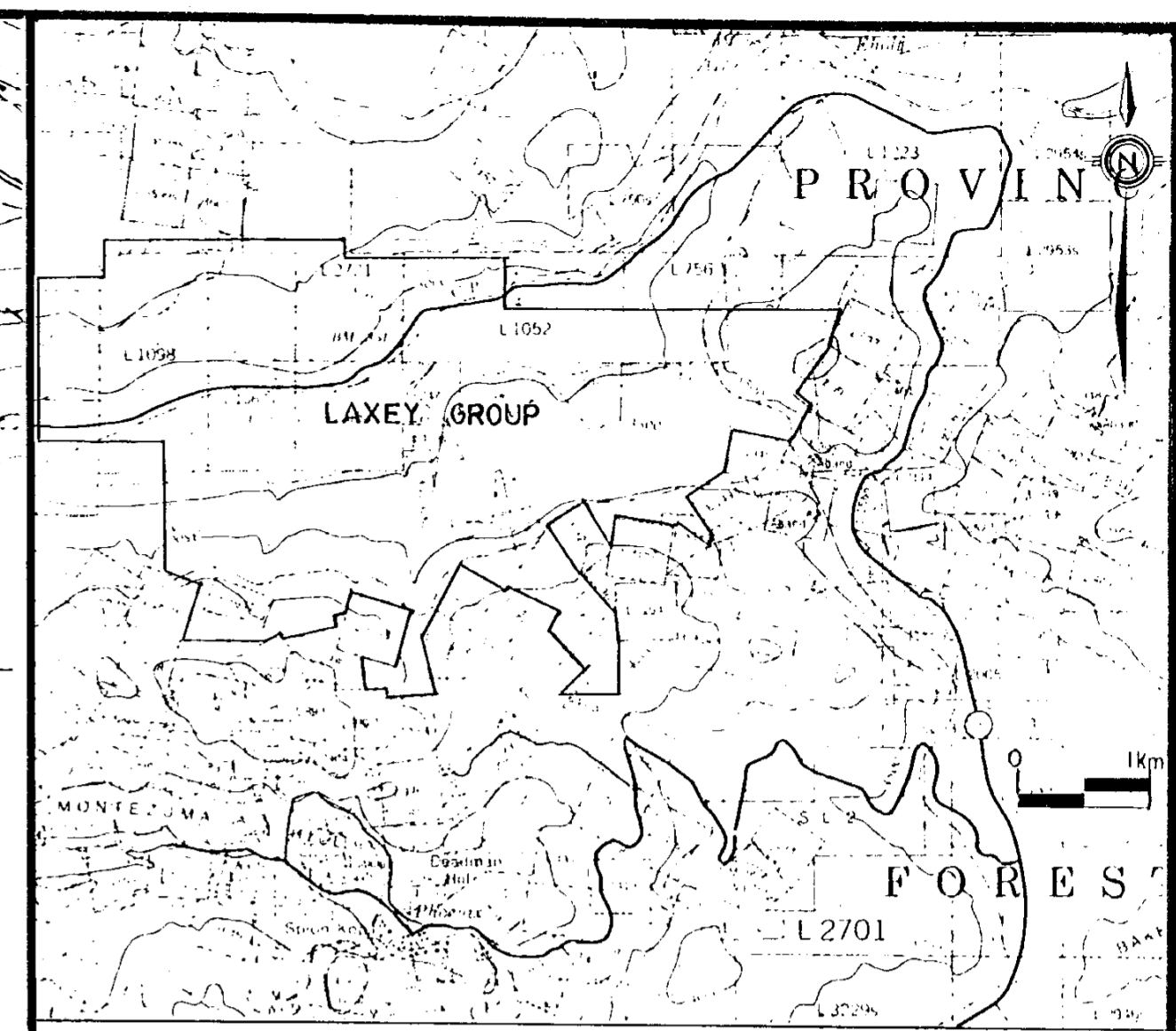
**GEOLOGICAL BRANCH  
 ASSESSMENT REPORT**

# 13,030

## PART 2 OF 2



REVISED	LAXEY CLAIM GROUP	
	REGIONAL GEOLOGY	
PROJ. No. ....	SURVEY BY: J.T.F. OCT '84	DATE: .....
N.T.S. 82 E/2	DRAWN BY: .....	SCALE: 1:12,000
DWG. No. ....	<b>NORANDA EXPLORATION</b>	
	OFFICE: .....	



LOCATION MAP 1:50,000 GROUP OUTLINED IN BLACK

GEOLOGICAL BRANCH ASSESSMENT REPORT

13,030 PART 2 OF 2

REVISED	LAXEY CLAIM GROUP CLAIM MAP	
PROJ. No. 15	SURVEY BY: SKS/LIIII	DATE: 84-12-04.
N.T.S. 82 E/2	DRAWN BY: SKS/LIIII	SCALE: 1:12,000
DWG. No.	NORANDA EXPLORATION	
	OFFICE Vancouver	