

COMBINED GEOLOGICAL REPORT  
ON THE  
LOUISE AND JAN CLAIM GROUPS  
SIMILKAMEEN MINING DIVISION  
49° 19' Latitude - 120° 07' Longitude  
92H/8E

FOR

KIRBY ENERGY VENTURES INC.  
#1140 - 625 Howe Street  
Vancouver, B.C., V6C 2T6

BY

Guy A. Royer, B.Sc.  
Trans-Arctic Explorations Ltd.  
#815 - 850 West Hastings Street  
Vancouver, B.C., V6C 1E2

DECEMBER 6, 1984

12834

84-1212-12834

10/85

TABLE OF CONTENTS

SUMMARY .....	1 ✓
INTRODUCTION .....	2 ✓
PROPERTY AND OWNERSHIP .....	2 ✓
LOCATION AND ACCESS .....	3 ✓
PHYSIOGRAPHY .....	4 ✓
FLORA .....	4 ✓
FAUNA .....	5 ✓
CLIMATE .....	5 ✓
EXPLORATION LOGISTICS .....	5 ✓
HISTORY OF PREVIOUS WORK .....	5 ✓
GENERAL DESCRIPTION OF ROCK TYPES .....	6 ✓
GEOLOGY OF THE JAN CLAIM GROUP .....	8 ✓
GEOLOGY OF THE LOUISE CLAIM GROUP .....	10 ✓
ECONOMIC POTENTIAL .....	12 ✓
STRUCTURAL GEOLOGY-REGIONAL .....	15 ✓
STRUCTURAL GEOLOGY OF THE JAN AND LOUISE CLAIM GROUPS .....	16 ✓
HISTORICAL GEOLOGY .....	16 ✓
BIBLIOGRAPHY .....	18 ✓
CERTIFICATE .....	19 ✓
COST BREAKDOWNS .....	20 ✓

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

12,834

### SUMMARY

The area under discussion is owned by Kirby Energy Ventures Inc. and consists of two claim groups comprised of sixty-one units located in the vicinity of Hedley in south-central British Columbia. The Louise Claim Group lies entirely south of the Similkameen River within one kilometer of Hedley being accessible by a series of two-wheel drive logging roads. The Jan Claim Group is predominantly north of the river and is easily accessible by paved highway.

Trenches and adits are present on two separate areas of the Jan Claims; i.e. Jan 1 and across the river on Tuf #3. The author did not personally observe any physical evidence of recent workings on the Louise Claim Group but did notice a large number of old claim posts suggesting that surface prospecting has occurred on this group in the past but any old pits or trenches have since sloughed in and become unrecognizable. The claim blocks are within two km of the Hedley Mascot Nickel Plate Gold Mines which ceased primary production in 1955. The Jan Claim Group adjoins the presently active Banbury Gold Mine to the north, its mineralized zones striking towards this group. The Louise and Jan Claim Groups quite recently had a soil sample and geophysical survey consisting of VLF-EM and magnetics conductors over their territory; in addition both areas were mapped in considerable detail by the author.

Two contrasting rock types are present on the claim. The Nicola group of Upper Triassic Age consisting of sediments and volcanics, is intruded by Jurassic granodiotite of the Coast Intrusions. The latter rock type is found mainly on the north section of the Jan Claim Group and on the eastern section of the Louise Group. Traces of sulphides are quite ubiquitous in many of the sediments and in some of the volcanics of the Jan Claim Group but are much

more sparsely distributed on the Louise Claims where they occur in similar rock types. No trace of sulphides are visible in hand specimens in any of the Plutonic rocks. Despite the fact that only pyrite and less pyrrhotite are visible in hand specimen and that they occur only in traces, the ubiquity of these minerals in the Nicola rocks confers much significance to these claim groups. The rocks are broadly analagous to those at the Hedley Gold Mines and especially to those at Banbury. The results of geophysical surveys reveal favourable structures and there are several interesting geochemical anomalies.

#### INTRODUCTION

On behalf of Kirby Energy Ventures the writer mapped and prospected in detail the surface outcrops on the two claim groups including some of the areas adjacent to them. The author was engaged in late September to early October being contracted by Trans-Arctic Explorations. The mapping scale chosen was 1:5,000. He was competently assisted by Fred Myberg.

#### PROPERTY AND OWNERSHIP

The properties can be conveniently divided and described into two groups. The Jan Claim Group consists of eight claims totaling forty-one units while the Louise Claim Group is composed of two claims numbering twenty units. They are as follows:

Jan Claim Group

<u>Claim Name</u>	<u># Units</u>	<u>Record #</u>	<u>Expiry Date</u>
Jan #1	10	1609	Dec. 3, 1984
Tuf #1	12	1611	Dec. 3, 1984
Tuf #2	4	1631	Feb. 3, 1985
Mary #1	6	1610	Dec. 3, 1984
Franklin #1	1	1581	Sept. 28, 1984
Franklin #2	1	1583	Sept. 28, 1984
Omega	1	1584	Sept. 28, 1984
Tuf #3	6	1620	Feb. 8, 1984

Louise Claim Group

<u>Claim Name</u>	<u># Units</u>	<u>Record #</u>	<u>Expiry Date</u>
Cass #1	8	1643	Jan. 24, 1985
Louise #1	12	1644	Jan. 24, 1985

These claims are owned by Kirby Energy Ventures Inc. Most of the valley floor is owned and cultivated by ranchers whom at least have the surface rights. Because of the assessment work recently completed the expiry dates are extended for one year.

LOCATION AND ACCESS

The two claim groups are found between geographical co-ordinated 120° 03' to 120° 09' longitude and 49° 19' to 49° 4' latitude. The Jan Claim Group is about two km west of Hedley with most of it north of the Similkameen River. The southern Trans-Canada Highway #3 provides outstanding access to much of the claim group with the north part easily accessible by dirt road. The Louise Claim Group is more complicated to visit. One must follow a long series of two-wheel drive logging roads which splay off the Whistle Creek main haulage road. It commences seven km west of

Hedley. Although only one to four air km from Hedley, it is approximately twenty-two km by road.

### PHYSIOGRAPHY

This area is located in the south end of the Thompson plateau. The eastern edge of the Cascade Mountains is approximately thirty km west of the Okanogan Valley thirty km east whilst twenty km south near the International Boundary is the Cathedral Mountains. As it is a part of the plateau the topography is quite gentle by Cordilleran standards with large rounded prominent hills. The terrain is more or less deeply incised by valleys. The Similkameen Valley is very prominent and its sides are often very precipitous. This is quite noticeable on the northeast corner of the Tuf #3 Claim and the north side of the Cass Claim. Lower Whistle Creek flows through Tuf #3 while a small creek flows through the heart of the Louise Claim. The relief of the Jan Claim Group varies from 515 meters to 1,220 meters above sea-level with the highest elevations being northward. The Louise Claim Group has elevations ranging from 760 to 1,370 meters above sea-level with the highest elevation on the south edge.

### FLORA

Much of the Jan Claim Group is sparsely forested with hills and hollows often covered by grass, sagebrush and ground cactus with spruce and ponderosa pine being the dominant tree types. Only in the valleys is the vegetation quite lush with fir and birch being common. Much cultivated and irrigated land is found on the Tuf and Mary Claims. The Louise Group is generally more densely forested.

### FAUNA

Many domestic cattle and a few horses are present throughout the claims. The most prolific large wild animals include black bear, mule deer and cougar.

### CLIMATE

Summers are quite arid and hot. By coastal standards, winters are cool with moderate snowfall. The higher elevations have somewhat cooler and damper conditions than the valley floor.

### EXPLORATION LOGISTICS

An ample supply of water is available for exploration purposes on both the Jan and Louise Claim Group. The Similkameen River is the main water source for the Jan. On the Louise Group is a small year-round creek flowing northeast through the center of the claim which would provide sufficient water for drilling purposes. A good supply of timber is present on both claim groups. Any supplies required would be easily attainable from Princeton or Penticton. There are truck and rail services available in both centers with Penticton being serviced by commercial airlines. Hedley is also serviced with regular express and passenger service.

### HISTORY OF PREVIOUS WORK

The Hedley area has received attention from miners and prospec-

tors for well over a century. Placer were first worked on in the 1860's, the first lode claims being staked in 1894 on Nickel Plate Mountain. Periods of gold production were 1904-1927 and 1934-1955. Recently Banbury has undertaken major underground and surface development work on its property which is adjacent to the Jan Group and in close proximity to the Louise Group.

Two very short adits and several trenches were found on the Jan #1 Claim and the enclosed crown grants. They are probably exploration adits being only three to six meters long and one to three meters wide. A group of trenches and one adit, the portal of which appeared in good condition, were found by the author on the Tuf #3 Claim on the edge of an old crown grant. The trenches vary in length from two to ten meters and are one to three meters wide. Many old illegible claim posts were noted in the area of the trenches. Indeed, the large number of old claim posts found on both the Louise and Jan Groups indicates the active and persistent interest in this area in the past. A bit of old drill pipe seen on the Jan #1 Claim but no drill core was noted.

In November, 1980, 670 soil samples were collected from the Jan Claim Group. Between September 2nd and November 13th, 1982, a total of 12.5 line kilometers of VLF-EM survey and 8.3 kilometers of magnetic survey were undertaken on the Louise Group. A total of 21 km of both was done on the Jan Claim Group. The area was visited by T.R. Tough, P.Eng. in January of 1983.

#### GENERAL DESCRIPTION OF ROCK TYPES

The Nicola group of rocks are Upper Triassic in age and they cover a greater percentage of the Princeton area than any other map unit. They are composed mainly of lavas whose thickness is



unknown. The common type is a massive andesite porphyry with a groundmass of andesine, pyroxene, chlorite epidote, actinolite and magnetite; phenocrysts of either plagioclase or pyroxene are present. The sedimentary rocks in the sequence are usually more restricted, they are usually found as lenses of tuffaceous, argillaceous and carbonate rocks.

The Nicola group was first named in 1877 by Dawson. In 1940, Bostock divided the group bottom into: (1) Redtop formation; (2) Sunnyside formation; (3) Hedley formation; (4) Henry formation and (5) Wolf Creek formation. This group contains most of the mineralized zones known in the Princeton area. The Redtop is recognized by thin, light and dark grey quartzite beds. The Sunnyside consists of alternating thin and thick beds of limestone. The Hedley formation consists of thinly bedded, pure and impure limestones and quartzites intercalated with massive limestone beds. The Henry formation essentially consists of black argillite, tuff and impure limestone whilst the Wolf Creek formation is conformable with the Henry and consists of the aforementioned rock types. In general, the Nicola rocks are only mildly metamorphosed, the group represents an epoch of widespread vulcanism. The lavas were poured into a deep and extensive marine basin of great extent, it was of such depth that only a little quartzite was deposited.

The granodiorites are of Lower Cretaceous age and are often correlated with the Coast Range intrusions. All these rocks are gradational but in the Princeton area it is possible to distinguish three types of granodiorite. The grey variation has a normal granitic texture, its average composition being that of a tonalite. The red granodiorite is coarser grained and is variable in texture and grain size with aplitic and pegmatitic phases. The white granodiorite has a fine to coarse grained texture, needles of amphibole and typically adioritic composition.

### GEOLOGY OF THE JAN CLAIM GROUP

The rocks on the Jan Claims can be easily sub-divided into two very distinctive categories. The granodiorites are predominantly found on the north part of the claims with the Nicola group rocks outcropping on the southern part. The granodiorites are quite variable, both in grain size and composition, but are relatively coarse grained in most cases. Some outcrops are segregated into phases which vary in mineralogy and grain size. Hornblende is usually the dominant mafic but biotite may be more prominent and abundant in the more felsic outcrops. In the coarse grained rocks these major minerals form larger phenocrysts than the felsic components while the reverse is usually true in the fine grained phases. Most of the rock is fairly unaltered, but some areas are heavily iron stained, traces of epidote are occasionally encountered. Rock is mainly grey in colour with red and greenish tinted patches.

The grain size in the finer grained rocks varies from 2 to 4 millimeters and ranges from 1 to 2 centimeters in the coarser rocks. The average composition is approximately: plagioclase 50%, K-feldspar 10%(?), quartz 15%, hornblende 15%, biotite 7%. In the mafic phases it is: plagioclase 45%, K-feldspar 10%(?), quartz 7%, hornblende 37%, biotite 7%. The colour index correlates with the quartz content, where the index is below 15, quartz may form up to 30% of the rock. Usually the feldspars are all one colour, mainly light grey, so perhaps many rocks would be properly described as tonalites as K-feldspar may be only an accessory. But without a petrographic microscope one cannot positively differentiate the feldspars. The average colour is 25, but varies from 10 up to 47, the latter specimens would seem to be dioritic. These variable phases are often in close relationship. In a couple of spots the the contact between the Plutonic rocks and the Nicola group is visible. The granodiorite here is relatively highly al-

tered, but no contact metamorphism is discernable in hand specimens in the abutting Nicola sediments.

There is no trace of sulphides visible in hand specimens in any of the granodiorite observed. But considering the degree of iron staining observed in some outcrops, sulphides may occur microscopically. The granodiorite outcrops often as prominent rounded hills which display traces of spheroidal weathering, and are separated by narrow, relatively steep valleys. An outlier of granodiorite is found south of the river on the southeast part of Tuf #3.

The Nicola group of rocks is a complex aggregate of interbedded sediments and volcanics that are often difficult to unravel. On the Jan Claim Group the sediments are volumetrically more abundant than the volcanics. Most of the rocks particularly the sediments contain traces of sulphides. Black aphanitic chert is the most abundant sediment present in outcrop. It is very rusty in spots and the sulphides are usually quite conspicuous. The trenches are usually found in close proximity to this rock. Grey quartzite and argillite is often interbedded within the chert, all three rock types are often very transitional. A little greywacke is present, this rock is dark coloured with very poorly sorted grains. Green quartzite is the predominant rock type on the Tuf #3 Claim. Some of the sedimentary beds contain quartz veins and a few calcite veins are present, particularly in the vicinity of the trenches.

The volcanics are intimately associated with the sediments and the two groups are often difficult to differentiate. They vary from aphanitic to porphyritic, but even in the latter, the phenocrysts are about 1 mm long. The volcanics are usually greenish in colour and often weathered to an olive brown. The aphanitic volcanics include tuffs. Some of the rock is a feldspar porphyry,

although the phenocrysts of plagioclase are no more than 1 mm long. Sulphides are often lacking or else are very sparsely distributed in the volcanics. These rocks are particularly common on the southwest part of the Jan #1 Claim but are usually found, albeit often in small quantities within most of the Nicola sediments. None was noted though on the Tuf #3 Claim.

The thickness of the beds varies considerably. Bedding planes are difficult to discern in the black chert and quartzite which could indicate that these beds have a considerable thickness, e.g. 10 meters. The beds of argillite are about 3 cm to 1 meter in thickness, but as their bedding planes are easily recognizable, it is possible that the beds of other sediments may be in a similar range. The bedding of the tuffs is quite indistinct.

#### GEOLOGY OF THE LOUISE CLAIM GROUP

The rocks on the Louise Claim Group are fairly similar to those on the Jan Claim Group but a couple of major differences exists. Granodiorite occurs on the south and east sections of the Louise Claim Groups. This rock is as variable here as the granodiorite on the Jan Group. Much of this rock is finer grained and also more felsic than that found on the Jan Group, with quartz being especially prominent. On the east-central Louise Claim the rock is often as coarse grained as that on the Jan Group. Much of the rock here is segregated into phases which differ considerably in composition and grain size. The coarse grained phase is generally more mafic. Though at time this segregation may be quite fine grained. One phase of granodiorite is frequently enclosed in another with much variability in their size and shape. On the southwest Louise Claim the rock may be leucocratic with a colour index of no more than 7. The feldspars are generally of all one

colour as on the Jan Group, so many of the rocks may actually be tonalites.

The Nicola sediments are often different from those on the Jan Group. Carbonates are very plentiful on the Louise Group, especially towards the northwest with a band outcropping on the central Louise. In outcrop the carbonate, which is probably limestone, is the most abundant sediment on this group. The carbonate is quite pure with well formed rhombs varying in size from 2 to 10 mm with most being 3 mm. Externally the carbonate weathers to a light buff and brown. A bit of chalk was noted and on the adjoining Windy Claim, bluish-grey agillaceous carbonate is present. The carbonate is frequently interbedded with quartzite in many places with the two rock types being sometimes transitional. The carbonate is stained pink or green in a few spots but is usually white. Even though lacking visible sulphides, traces of skarn material were noted with tremolite and diopside being identified.

Green to dark grey quartzite outcrops on the northwest Cass Claim with a little on the nearby Louise. It is interbedded with argillite, carbonate, chert and volcanics. This quartzite is quite similar to that on the Jan Claim Group except for being more calcareous. The argillites on the Windy Claims are dark purplish and often very rusty, these grade into black chert.

the volcanics are intercalled with the sediments. These are mainly feldspar porphyry, phenocrysts of mafic minerals in addition to plagioclase are sometimes visible as are traces of sulphides. Similar rock but with only sparse phenocrysts is present on the east edge of the Louise Claim. The volcanics are dark green and are less abundant than the sediments.

Much overburden conceals the contact between the granodiorite in-

trusives and the Nicola group on the west part of the claims. Quartz veining is somewhat less prominent here than on the Jan Claims with the occurrence of sulphides being much sparser. On both claim groups the volcanics are volumetrically sub-ordinate to the sediments in outcrop. The plutonic rocks are quite similar on both claim groups. The chief lithological difference between the two is the abundance of carbonate on the Louise Group. On the Jan Claim Group in the black chert appears to be the single most abundant sediment. Not only is the chert, quartzite and argillite transitional to each other for volcanics are frequently intercalated with these sediments. No macroscopic fossils were visible in either claim group. Some sedimentary layers reveal a little cross-bedding and ripple marks, but in general visible sedimentary features are often conspicuously lacking/including bedding planes. Chert and argillite are aphanitic or nearly so. The quartzites and greywackes are all rather fine grained with many having grains less than 1 mm long.

#### ECONOMIC POTENTIAL

The lithology of both claim groups is somewhat analagous to that present at the Hedley Mine which hosted gold mineralization in metamorphosed limestone associated with basic stocks, dykes and sills. Fine grained sulphides are quite widely distributed in the Nicola group rocks on the Jan Group with their occurrence being much sparser and more restricted on the Louise Claim Group. Much quartz and little calcite veining occurs on the Jan Group but these do not appear to be preferential beneficiaries for the sulphides. Skarn was the host rock for the Hedley gold deposits and the scarcity of it on these two claim groups may be significant. Only iron-bearing types of sulphides occur in hand specimens, but these could carry economic mineralization whether as inclusions

or in solid solution, particularly the pyrrhotite. Almost invariably the sulphides occur only as traces within the host rock, i.e. less than 1% and these occur only as tiny flecks less than 1 mm long. The only exception is near a trench on the Jan Claims where they occur in a siliceous bed composing up to 3% of rock with sulphide flecks up to 1 cm long. It is entirely possible that sulphides of other metals besides iron-bearing types occur microscopically but one would expect to see at least traces occasionally visible in hand specimens.

The rocks on the Louise Claims including the Nicola are often entirely barren of visible sulphides. Thus it is quite logical that all visible workings are present on the Jan Claim Group. The black cherty rocks on the Jan Claim Group are quite intensely fractured, which is of importance as it would allow mineralizing solutions to penetrate deep down into the rock. The black chert contains sulphides in the greatest abundance, followed by the quartzitic and argillaceous beds. The volcanics sometimes contain visible sulphides but usually only in very minute quantities. Visible sulphides are entirely lacking in the Plutonic rocks.

There are two zones of surface workings on the Jan Claim Group that were noted. All these trenches in black cherty rock especially where quartz and calcite veining are prominent and where grey quartzite beds are present. The Jan #1 Claim contains several trenches, many of them being within 100 meters of each other. One tiny adit is found about 200 meters northward while two other trenches are found southwest and southeast respectively. The trenches are mainly located in the central area of the Jan #1 Claim, north of the three crown grants where a wide tongue of Nicola group rocks protrude into the granodiorite. The strikes of the trenches vary from 075° to 145°. Much altered greenish yellow to dark rusty crumbly gossan is present both in and near them. Much veining is present.

Another group of trenches and one bonafide adit are located on the southeast corner of the Tuf #3 Claims which lies south of the river. These workings are located in sediments, quartzites and cherts near the contact with red medium grained granodiorite. The bearings are  $110^{\circ}$  to  $167^{\circ}$ . There are even fewer sulphides in the vicinity of these trenches than on the Jan #1 Claim. The adit, as far as one could peer into, was in stable condition despite posted signs to the contrary. The workings are all within 200 meters of each other. Seven trenches were counted, despite the apparent lack of sulphides, The amount of gossan would justify all the trenching accomplished, especially considering the intrusion nearby.

Superficially the Jan Claim Group would seem to possess a higher potential for economic mineralization because sulphides are more abundant here than on the Louise Group. However, the Hedley ore deposits were found in a skarn (altered carbonates) and much more carbonate is present on the Louise Group than on the Jan Group. Although only a mere trace of skarn is found on the Louise Group there is a possibility of significant occurrences of it in the sub-surface. On the Louise Group almost the entire contact between the Nicola Group and the granodiorite is obscured by thick overburden. Only by drilling is it possible to discern significant relationships and/or economic mineralization. Something of possible significance is the predominance of sediments over volcanics in both claim groups which is analagous to the situation at Hedley and quite atypical of the Nicola group generally as volcanics are usually more abundant than sediments. Large areas of gossan are present and many rock including the granodiorites are iron stained. Indeed it is possible that the plutonic intrusions were the original source for the sulphides. Some of the carbonate and quartzite is slightly green stained indicating possible traces of copper, this would not be surprising considering the many copper occurrence in Nicola rocks.



At the Nickel Plate gold mine diorite and gabbro bodies were present adjacent to the ore zones. On the Louise and Jan Claim Groups the granodiorite is sometimes segregated into mafic phases that are quite dioritic or even gabbroic. One cannot positively differentiate these two rock types without a microscope as they are defined by the nature of their plagioclase. But judging by their hornblende content the rocks under question would seem to be dioritic. To briefly re-iterate, there is definite potential on these claims for economic mineralization. One intriguing drilling target would be on the Louise Claim adjacent to the Nicola group and granodiorite contact.

#### STRUCTURAL GEOLOGY-REGIONAL

The structure of the Princeton area is rather imperfectly known mainly because it is underlain by igneous rocks. Three generations of folding are recorded; (1) Early Cretaceous, (2) Late Cretaceous/Early Tertiary and (3) Mid Tertiary time. Highly complex structures have evoked from these forces. This area occupies the eastern limb of a broad and complex geosyncline with the formations being progressively older from west to east. The major faults in the area generally radiate northwards, most have a northwestern trend but those near Hedley usually strike northeast. The period of faulting commenced early in Jurassic time and continued into the early Tertiary according to the evidence of the igneous intrusions. Folding occurs in the Triassic, Cretaceous and Tertiary formations. The general trend of Nicola rocks is approximately north-south with the direction of younging being east to west. This generalized picture is complicated by a number of quite steep folds truncated by faults.

### STRUCTURAL GEOLOGY OF THE JAN AND LOUISE CLAIM GROUPS

Despite the close juxtaposition of several differing rock types, no evidence exists that these were due to faulting, facies changes in Nicola rocks are the probable causes. On the northern area of the Louise Claim are structures that seem to mimic faulting, albeit the rocks on both sides of the possible faults are identical. According to the geologic map compiled by Bostock, faulting does occur on the Cass Claim. Here the Sunnyside formation is sandwiched by granodiorite eastwards and by the Henry formation westwards. One dominant set of strikes trend from northwest to northeast, while a second set, probably due to folding of the strat, trend east-west while some strike orientations lie between these two trends.

Some of the rocks, especially the cherts are quite prominently fractured and these usually occur in two sets of orientations. Although these are relatively constant in one outcrop, they do tend to vary between outcrops so there are no mutual sets of fractures discernable. Tight folding has obviously occurred on the claim groups as the dips are almost invariably quite steep, i.e.  $65^{\circ}$  to  $75^{\circ}$ , east or west. The portions of strata that do strike east-west are obviously foldnoses. None of the outcropping rocks display any metamorphosed textures or features.

### HISTORICAL GEOLOGY

The earliest geological record in the Princeton area is of carboniferous age. These Hozameen group rocks were deposited in a marine basin which probably extended over the area. It would seem that similar conditions that produced these rocks continued into Upper Triassic time since the Nicola group also consists of mar-

ine sediments together with much lava and pyroclastic material which formed well bedded tuffs. At the end of the Triassic the sea regressed and a period of deformation commenced in the Early Jurassic along with erosion. Magmas were intruded into these deformed strata resulting in the present granodiorites. These were probably the source of the economic mineralization.

By Mid Cretaceous time unfossiliferous sediments were laid down in certain areas while in other much vulcanism occurred, resulting in lavas, breccias and tuffs. Widespread vulcanism occurred in Mid Tertiary time and the resultant volcanics are associated with sediments deposited in local lake basins. More folding and erosion occurred afterwards followed by extrusions of basalt. Most of this basalt was eroded away later on, though as late as Pliocene times basalt was extruded, In Pliocene time the area was covered by a glacier which moved generally in a southerly direction. The degree of erosion varied considerably from area to area.

BIBLIOGRAPHY

Billingsley, Paul and Hume, C.B. - Ore Deposits on Nickel Plate Mountain, Hedley, B.C., C.I.M.M., Vancouver, four installments, Pub: 1940, 1941.

Phendler, R.W. - Report on LORA and JAN Claim Group, Hedley Area, B.C., for Kirby Energy Ventures Inc., November 1980, Vancouver.

Rice, H.M.A. - Geology and Mineral Deposits of the Princeton Map Area, B.C., Geological Survey of Canada, Memoir 243, 1960, Ottawa.

Stevenson, W.G. & Associates - Geological Report on Mineral Claims in Hedley District for Banbury Gold Mines, April, 1979, Vancouver.

Tough, Thomas R. - Preliminary Geological Report on the Jan and Louise Claim Groups, Hedley Area, B.C., February, 1983, Vancouver.

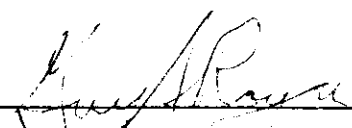
CERTIFICATE

I, Guy A. Royer am a consulting geologist for Trans-Arctic Explorations Ltd. of Vancouver, British Columbia.

I hereby certify that:

1. I am a graduate of the University of Saskatchewan with a B.Sc. degree in geology.
2. I have been practising my profession for five years.
3. I have no interest, beneficial or otherwise in the property of this company.
4. I am the author of this report, which is primarily based upon my personal observations made while in the field.

Dated at Vancouver, B.C. this 6th day of December, 1984.

  
\_\_\_\_\_  
Guy A. Royer, B.Sc.

KIRBY ENERGY VENTURES INC. - HEDLEY, B.C.

GEOLOGICAL MAPPING 1984

Cost Breakdown

CLAIMS

Jan #1 - 1609(12); Mary #1 - 1610(12); Tuf #1 - 1611(12);  
 Tuf #2 - 1631(2); Tuf #3 - 1620(2); Omega 1 - 1584(9);  
 Franklin #1 - 1582(9); Franklin #2 - 1583(9): (41 units)

PERSONNEL

Mr. G. Royer, geologist  
 Mr. F. Myberg, assistant

Work was conducted on and between September 20th - 26th inclusive.

FIELD

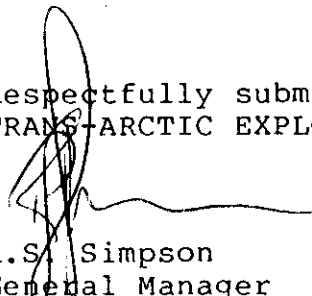
1 geologist, 70 hours at \$35/hour	\$ 2,450.00
1 assistant, 70 hours at \$15/hour	1,050.00
1 supervisor, 2 days at \$200/day	400.00
1 4x4, 3/4 ton truck, 3 days at \$90/day (including gas and oil)	270.00
7 days room and board, 2 men at \$70/day	490.00
	\$ 4,660.00

OFFICE - Report

Geologist, 40 hours at \$35/hour	\$ 560.00
Drafting and printing	575.00
Typing, photocopying and compilation	280.00
Total cost of combined report	\$ 1,415.00

The proportionate share of this 41 unit claim group	\$ 950.79
	\$ 5,610.79

Respectfully submitted  
 TRANS-ARCTIC EXPLORATIONS LTD.

  
 R.S. Simpson  
 General Manager

KIRBY ENERGY VENTURES INC. - HEDLEY, B.C.

GEOLOGICAL MAPPING 1984

Cost Breakdown

CLAIMS

Cass #1, Rec. #1643(1); Louise #1, Rec. #1644(1) (20 units)

PERSONNEL

Mr. G. Royer, geologist

Mr. F. Myberg, assistant

Work was conducted on and between September 27th to October 1st, 1984 inclusive.

FIELD

1 geologist, 54 hours at \$35/hour	\$ 1,890.00
1 assistant, 54 hours at \$15/hour	810.00
1 supervisor, 1 day at \$200/day	200.00
1 4x4, 3/4 ton truck, 1 day at \$90/day (including gas and oil)	90.00
6 days room and board, 2 men at \$70/day	420.00
	<u>\$ 3,410.00</u>

OFFICE - Report

Total cost of combined report for two non-contiguous claim groups \$1,415.00

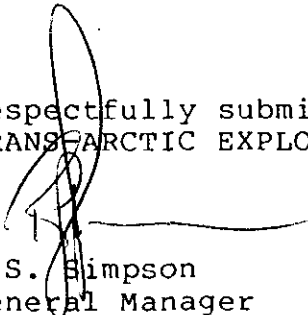
The proportionate share of this 20 unit claim group

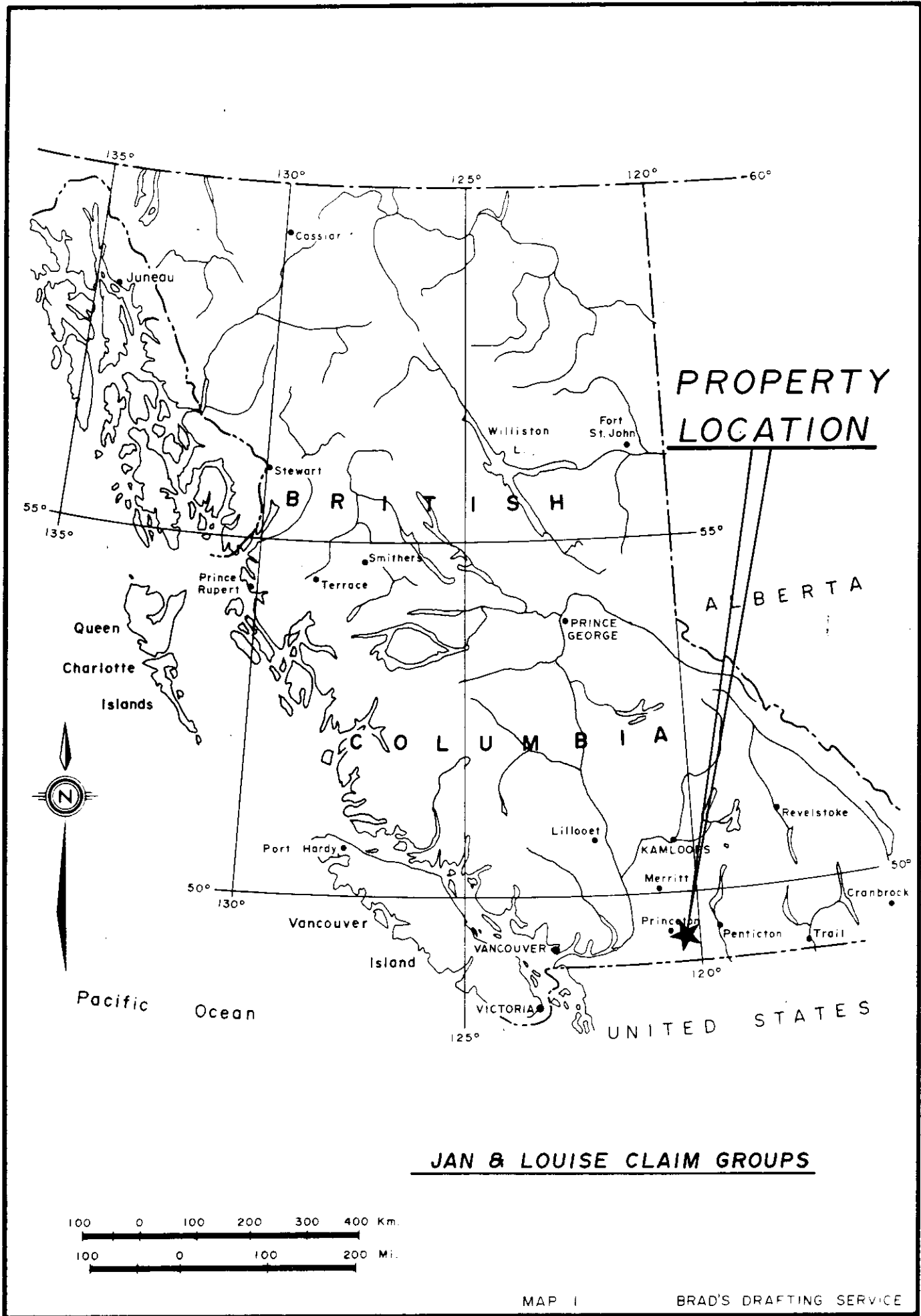
\$ 464.21

20 unit group grand total

\$ 3,874.21

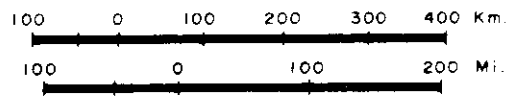
Respectfully submitted  
TRANS-ARCTIC EXPLORATIONS LTD.

  
 R.S. Simpson  
 General Manager

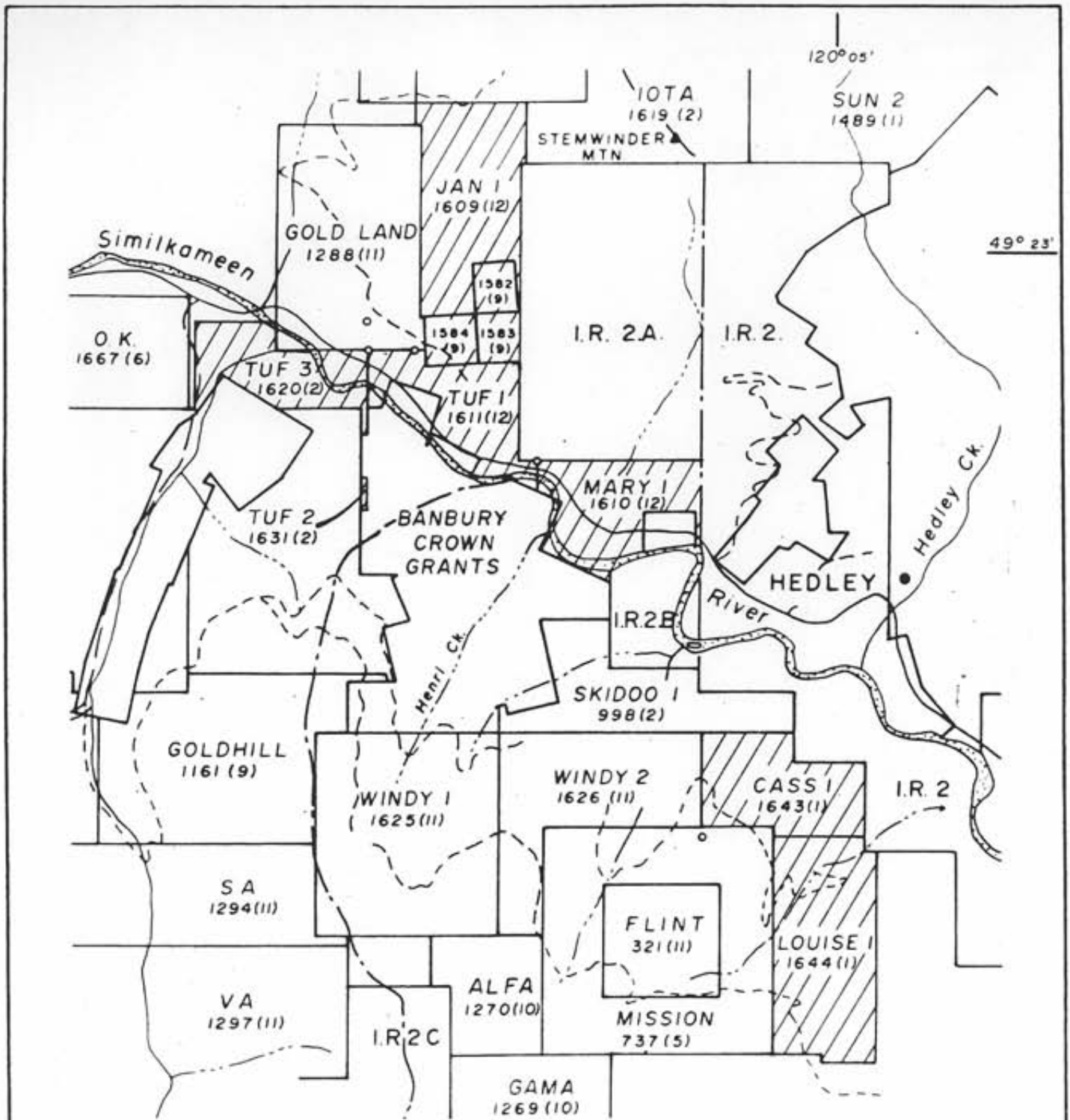


**PROPERTY  
LOCATION**

**JAN & LOUISE CLAIM GROUPS**







KIRBY ENERGY VENTURES INC.

JAN CLAIM GROUP

LOUISE CLAIM GROUP

SIMILKAMEEN RIVER, HEDLEY AREA

SIMILKAMEEN & OSOYOOS M.D., B.C.

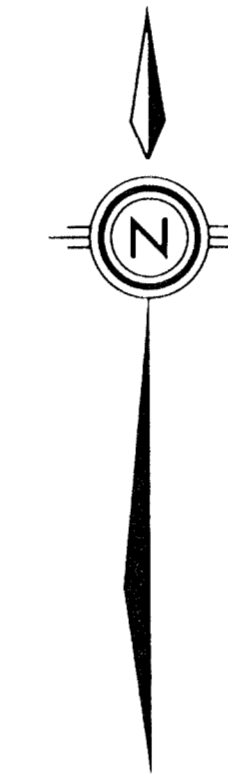
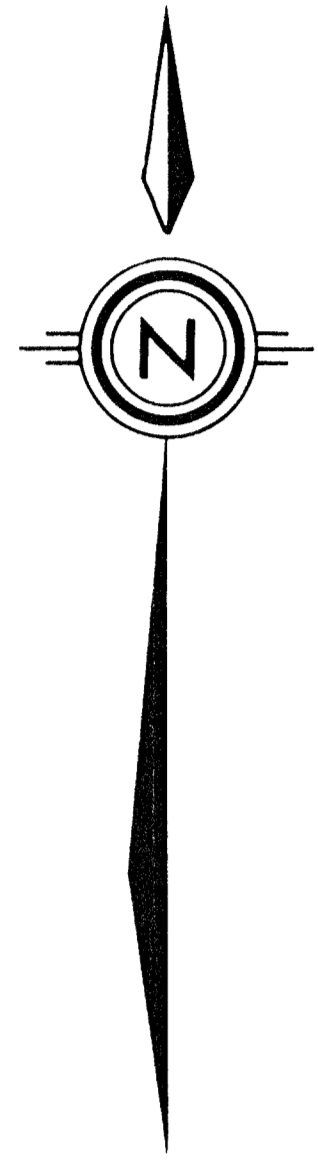
**CLAIM LOCATION MAP**

SCALE:	DATE:	MAP:	NTS:
1:50,000	Jan. 85.	2	92 H/8 E



120°08'

120°05'



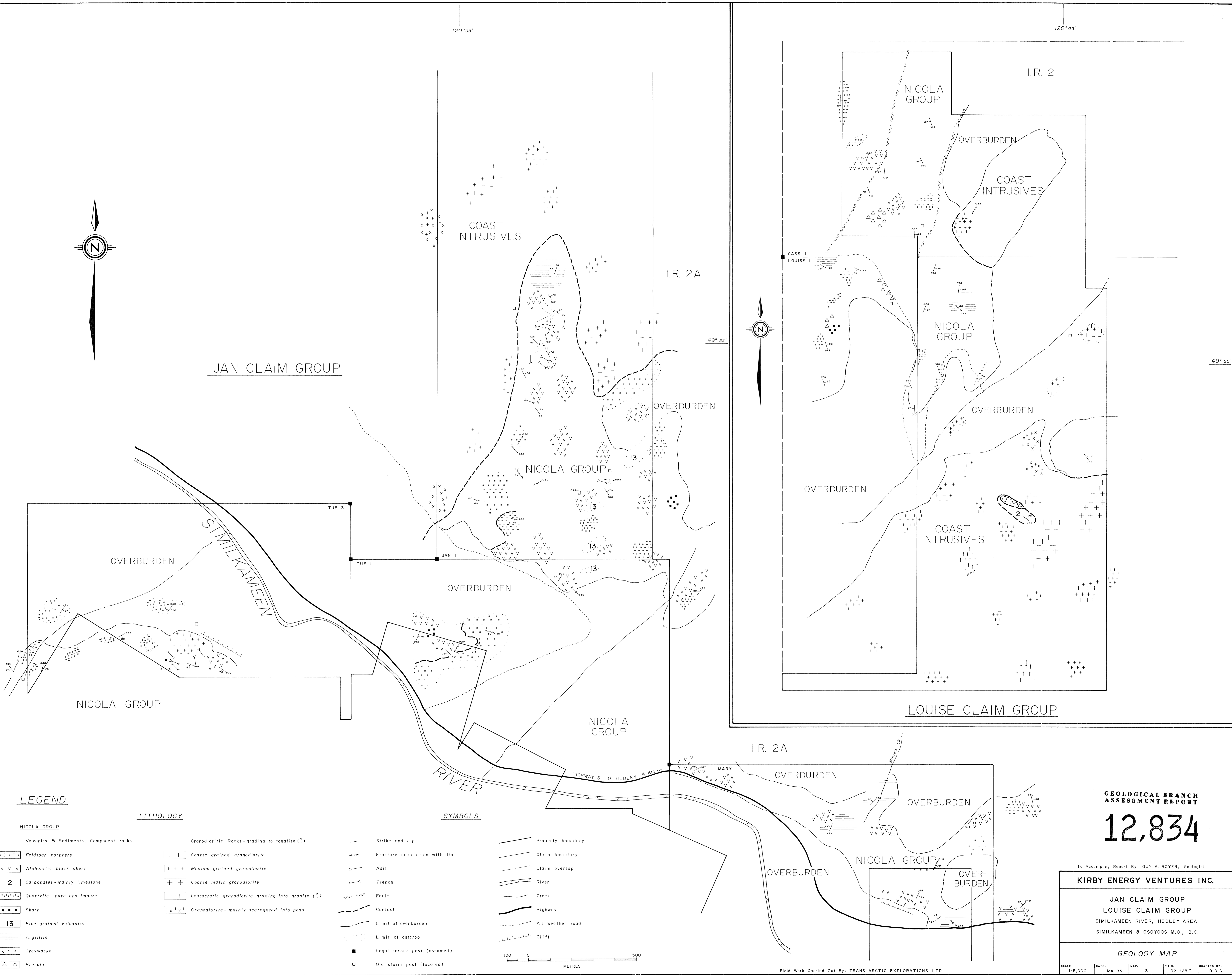
JAN CLAIM GROUP

I.R. 2A

49° 23'

I.R. 2

49° 20'



**LEGEND**

- NICOLA GROUP**
- Volcanics & Sediments, Component rocks
  - [Symbol] Feldspar porphyry
  - [Symbol] Alphanitic black chert
  - [Symbol] Carbonates - mainly limestone
  - [Symbol] Quartzite - pure and impure
  - [Symbol] Skarn
  - [Symbol] Fine grained volcanics
  - [Symbol] Argillite
  - [Symbol] Greywacke
  - [Symbol] Breccia

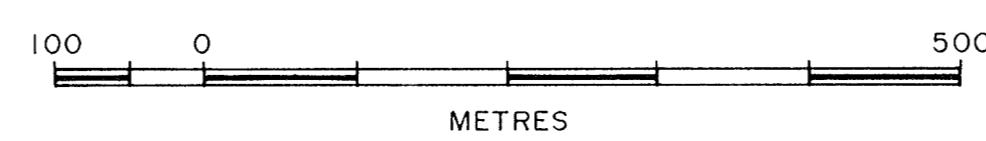
**LITHOLOGY**

- [Symbol] Granodioritic Rocks - grading to tonalite (?)
- [Symbol] Coarse grained granodiorite
- [Symbol] Medium grained granodiorite
- [Symbol] Coarse mafic granodiorite
- [Symbol] Leucocratic granodiorite grading into granite (?)
- [Symbol] Granodiorite - mainly segregated into pods

**SYMBOLS**

- [Symbol] Strike and dip
- [Symbol] Fracture orientation with dip
- [Symbol] Adit
- [Symbol] Trench
- [Symbol] Fault
- [Symbol] Contact
- [Symbol] Limit of overburden
- [Symbol] Limit of outcrop
- [Symbol] Legal corner post (assumed)
- [Symbol] Old claim post (located)

- [Symbol] Property boundary
- [Symbol] Claim boundary
- [Symbol] Claim overlap
- [Symbol] River
- [Symbol] Creek
- [Symbol] Highway
- [Symbol] All weather road
- [Symbol] Cliff



**GEOLOGICAL BRANCH ASSESSMENT REPORT**

**12,834**

To Accompany Report By: GUY A. ROYER, Geologist.

**KIRBY ENERGY VENTURES INC.**

JAN CLAIM GROUP  
LOUISE CLAIM GROUP  
SIMILKAMEEN RIVER, HEDLEY AREA  
SIMILKAMEEN & OSOYOOS M.D., B.C.

**GEOLOGY MAP**

SCALE:	DATE:	MAP:	N.T.S.	DRAWN BY:
1:5,000	Jan. 85	3	92 H/B/E	B. D.S.

Field Work Carried Out By: TRANS-ARCTIC EXPLORATIONS LTD.