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GEOPHYSICAL REPORT

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ON

MAGNETIC AND VLF-EM SURVEYS

OVER THE

JAN CLAIM GROUP

AND THE

LOUISE CLAIM GROUP

HEDLEY AREA

SIMILKAMEEN AND OSOYOOS MINING DIVISIONS

BRITISH COLUMBIA

: 2 km E of Hedley (Jan) 1 km S of Hedley (Louise) : 49 ⁰ 120 ⁰ SE
: N.T.S. 92H/8E
: KIRBY ENERGY VENTURES INC. #1140-625 Howe Street Vancouver, B.C. V6C 2T6
: David G. Mark, Geophysicist GEOTRONICS SURVEYS LTD. #403-750 West Pender Street Vancouver, B.C., V6C 2T7
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: January 6, 1983

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SUMMARY

VLF-EM and magnetometer surveys were carried out over a portion of the Jan Claim Group and the Louise Claim Group during the fall of 1982. The Jan Claim Group is 2 km east of Hedley and the Louise Claim Group, 1 km south. Access to each of the properties is easily gained by a two-wheel drive vehicle. The terrain consists of mainly moderate slopes forested with moderately dense coniferous trees. The purpose of the surveys was to locate probable zones of gold or sulphide mineralization either directly or through mapping the structure.

Both the properties are mainly underlain by Upper Triassic Nicola Group volcanics with an intrusion of Coast Intrusive granites on the east side of the Louise Claim Group. Bands of metamorphosed limestone, calcareous argillites and argillites associated with basic intrusives are mineralized with goldbearing arsenopyrite in the Hedley Mascot Gold Mines and Nickel Plate Mines. Also gold within quartz veins have been discovered in the nearby Banbury Gold property.

The VLF-EM and magnetic readings were taken every 40 m on 50-meter separated east-west lines on the Jan Claim Group and every 40 meters of 100-meter separated east-west lines on the Louise Claim Group. The VLF-EM readings were then Fraser filtered, plotted and contoured. The magnetic readings were diurnally corrected and computer-contoured.

CONCLUSIONS

The VLF-EM anomalies have reflected conductors that are probably geological structure such as faults, shears and contacts but could also very easily be sulphide zones.

Some of the most interesting parts of the VLF-EM anomalies are those that appear to indicate cross-structure since these would be prime areas to look for sulphide and gold mineralization. In general, the VLF-EM survey has revealed complex structure which is encouraging for future exploration.

The magnetic survey has revealed magnetic low lineations that are probably reflective of geological structure. The magnetic high lineations as well as magnetic high areas may simply be reflecting flows and/or phases of the Nicola volcanics.

On the Jan Claim Group is one southwest-trending magnetic high lineation that is particularly interesting because of its correlation with soil geochemistry gold anomaly E and three VLF-EM anomalies. The lineation may be reflecting a gold-bearing vein similar to the main vein of Banbury's.

RECOMMENDATIONS

1.

The VLF-EM and magnetic surveys should be extended

over the remainder of the property, but with a reading interval of 20 m rather than 40 m.

2. The property should be geologically mapped.

- stronger VLF-EM 3. The anomalies should be checked with soil geochemistry sampling wherein the out total sample is pulverized, that is, not screened, because of the possible occurrence of coarse gold. The samples should then be tested for lead, zinc, silver, copper and gold.
- 4. A MaxMin ΙI EM system should be run across the stronger VLF-EM anomalies as well. This system for the part, defines drill targets most more accurately than the VLF-EM system.
- 5. Further exploration work that may be recommended is an induced polarization survey and a diamond drilling program but these are contingent upon the results of the soil geochemistry and geological surveys.

GEOPHYSICAL REPORT

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SIMILKAMEEN AND OSOYOOS MINING DIVISIONS

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INTRODUCTION AND GENERAL REMARKS

This report discusses the survey procedure, compilation of data and the interpretation of a very low frequency electromagnetic (VLF-EM) survey and a vertical component magnetic survey carried out each on the Jan Claim Group and the Louise Claim Group during the period of September 20th to November 13th, 1982.

The survey was done by Trans-Arctic Explorations Ltd. under the field supervision of Richard Simpson with the aid of two helpers. A total of 12.5 line km of VLF-EM survey and 8.3 line km of magnetic survey were carried out over the Louise Claim Group. 21.0 line km of both surveys were done on the Jan Claim Group.

The primary purpose of the VLF-EM was to delineate faults

and/or shear zones associated with gold mineralization and that of the magnetic survey was to map lithology as well as structure. The results would aid in the subsequent geological mapping and soil geochemistry survey.

PROPERTY AND OWNERSHIP

The Jan Claim Group consists of 8 claims totalling 41 units and the Louise Claim Group consists of 2 claims totalling 24 units both as shown on Figure 1 and as described below:

Claim Name	No. Units	Record No.	Expiry Date
1) Jan Claim Grou	P		
Jan 1	10	1609 (12)	Dec. 3, 1983
Tuf 1	12	1611 (12)	Dec. 3, 1983
Tuf 2	4	1631 (2)	Feb. 2, 1984
Tuf 3	6	1620 (2)	Feb. 8, 1984
Mary 1	6	1610 (12)	Dec. 3, 1983
Franklin 1	1	1582 (9)	Sept. 28, 1983
Franklin 2	1	1583 (9)	Sept. 28, 1983
Omega 1	1	1584 (9)	Sept. 28, 1983
	41		
2) Louise Claim G	roup		
Cass 1	8	1643 (1)	Jan. 24, 1984
Louise 1	16	1644 (1)	Jan. 24, 1984
	24		

The two properties are owned by Kirby Energy Ventures Inc. of Vancouver, British Columbia.

LOCATION AND ACCESS

The legal post of the Jan 1 claim is found 48 km ${\rm N60}^{\rm O}{\rm W}$ of

the town of Hedley, B.C. and that of the Louise 1 claim is found 2.8 km S45^OW of the same town. The Jan Claim Group is located almost entirely north of the Similkameen River and the Louise Claim Group is located almost entirely south of the Similkameen River.

The geographical coordinates are 49° 19' N latitude and 120° 9' W longitude (approximately central to both properties).

Good access is made possible by a good primary highway which cuts through the Mary 1, Tuf 1 and Tuf 3 (north side of the Similkameen River). Access to the Jan 1 claim is made possible by 2-wheel drive vehicle on a good all weather road which leads north from Highway #3 approximately 4.5 km west of Hedley. Access to the south side of the River for the remainder of the Jan Claim Group is made possible by a good dirt road, which leads south from Highway #3 approximately 7 km west of Hedley and parallels the Similkameen River on its southern banks.

Access to the Louise Claim Group is made possible by a combination of logging roads which lead south from Highway #3 approximately 7.2 km west of Hedley and travels up Whistle Creek Valley. Approximately 4 km from the highway it meets with another road wich forks to the left (SE) and follows another creek identified as Pettigrew Creek. After travelling this road for another 4 or 5 km another road intersects it forking again to the left and leads out of the Whistle and Pettigrew Creeks drainage area and into Henri Creek. Approximately 2 to 3 km east of here the road enters the western boundary of the Cass 1 claim.

PHYSIOGRAPHY

The properties lie at the southern end of the physiographic division known as the Thompson Plateau which is part of the Interior Plateau System. The terrain is generally that of flat or rolling hills over most of the property. The general trend of the topography runs north-south. Elevations vary from 515 meters a.s.l. along the Similkameen River to 1,345 meters a.s.l. within the Jan claim and the Louise claim to give a relief of 830 meters within each of the two claims groups.

The main water source would be the Similkameen River. Otherwise the properties are fairly dry and water supply would depend on seasonal run-off.

The forest cover consists of fir, pine and spruce and varies from closely growing, immature stands to more widely spaced mature stands. Open areas of grassland and sagebrush also occur for the most part at lower elevations.

HISTORY OF PREVIOUS WORK

There is evidence of physical work having been done in the area, but the writer is unsure of the dates. The only other work known to the writer is a soil geochemistry survey over a portion of the Jan Claim Group carried out in late 1981.

GEOLOGY

The following is quoted from Phendler's 1981 report on the soil geochemistry survey when the property was known as the Lora-Jan claims.

"The LORA-JAN claims lie four kilometers west of Hedley

in south central British Columbia and is underlain by a succession of argillites, limestones and volcanic rocks of the Nicola group of Upper Triassic age with possibly some minor granodiorite in the northwest corner.

"In the Nickel Plate area east of Hedley the goldbearing deposits occur in metamorphosed limestone associated with basic stocks, dykes and sills. In LORA-JAN area the sedimentary bands within the the volcanics are mainly argillites and calcareous material somewhat restricted. Similar basic intrusions are is present as occur on Nickel Plate Mountain and similar type mineralization has been found. Further exploration may lead to the discovery of more favourable conditions development of commercial deposits for (after the H. Rice, Geological Survey of Canada Memoir 243, 1960).

"South of the Similkameen River, the mineralization is mainly vein-like in form with quartz the principal gangue mineral and gold also being present. Geological conditions are somewhat similar to the north but calcareous strata are even less common.

gold-bearing quartz vein deposit "One such is the Banbury Gold Mine property where recent exploration the presence of interesting gold values has shown in two northerly-striking quartz veins. These veins appear to continue north into the ground held by Kirby Energy Ventures, Inc."

The Phendler report did not cover the Louise Claim. It is also underlain by Nicola rocks that have been intruded by Coast Intrusive granites on the east side.

INSTRUMENTATION AND THEORY

VLF-EM UNIT

A VLF-EM receiver, Model 27, manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. was used for the VLF-EM survey. This instrument is designed to measure the electromagnetic component of the very low frequency field (VLF-EM), which for these surveys is transmitted at 24.8 KHz from Seattle, Washington.

In all electromagnetic prospecting, a transmitter produces an alternating magnatic field (primary) by a strong alternating current usually through a coil of wire. If a conductive mass such as a sulphide body is within this magnetic field, secondary alternating current is induced within it which а in turn induces a secondary magnetic field that distorts the primary magnetic field. It is this distortion that the ΕM receiver measures. The VLF-EM uses a frequency range from 16 to 25 KHz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because its relatively high frequency, the VLF-EM can pick up of bodies of a much lower conductivity and therefore is more susceptible to clay beds, electrolyte-filling fault or shear zones and porous horizons, graphite, carbonaceous sediments, lithological contacts as well as sulphide bodies of too low a conductivity for other EM methods to pick up. Consequently the VLF-EM has additional uses in mapping structure and in picking up sulphide bodies of too low a conductivity for conventional EM methods and too small for induced polarization. (In places it can be used instead of I.P.). However, susceptibility to lower conductive bodies results in its a number of anomalies, many of them difficult to explain

and, thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

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MAGNETOMETER

The magnetic survey was carried out using a portable vertical component, Model G-110 fluxgate magnetometer manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B.C. This is a visual-null type instrument using a digital dial readout with a range of 100,000 gammas and a reading accuracy of 10 gammas. The G-110 has a temperature co-efficient of 2 gammas per degree centigrade.

Only two commonly occurring minerals are strongly magnetic; magnetite and pyrrhotite. Hence, magnetic surveys are used to detect the presence of these minerals in varying concentractions. Magnetic data are also useful as a reconnaissance tool for mapping geological lithology and structure since different rock types has different background amounts of magnetite and/or pyrrhotite.

SURVEY PROCEDURE

For the Jan Claim Group, 21 km of Grid was established almost entirely over the Jan 1 and Tuf 2 claims.

Two well marked base lines were established bearing northsouth through the center of the Jan claim (one in the nerthern area and one in the southern area). These were marked by orange survey ribbon with blue ribbon used at cross line intersections.

The cross lines were put in perpendicular (east/west) and spaced at 50-m intervals.

For the Louise Claim Group, 11 km of grid was established entirely on the southern area of the Louise claim.

The base line bearing north-south for 1.1 km was well marked as described previously except that orange and yellow ribbon was used.

The cross lines were put in perpendicular to the baseline at 100 m line spacing.

The VLF-EM survey was run using the Seattle station which transmits at 24.8 KHz. All readings were taken at 40-m intervals facing the station.

On the magnetic survey, readings were taken at the same 40-m stations on the survey lines with the instrument always facing north.

The magnetic diurnal change was monitored in the field by the closed loop method and double-checked by a series of base stations.

COMPILATION OF DATA

VLF-EM

Sheets 1 and 2 on both claim groups show the VLF-EM results after they have been reduced applying the Fraser filter. Filtered data is plotted between actual reading stations. The positive dip-angle readings have been contoured at an interval of 4° .

The Fraser filter is essentially a 4-point difference operator, which transforms zero crossings into peaks, and a low pass

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smoothing operator which reduces the inherent high frequency noise in the data. Therefore, the noisey, non-contourable data are transformed into less noisy, contourable data. Another advantage of this filter is that a conductor that does not show up as a crossover on the unfiltered data quite often shows up on the filtered data.

MAGNETIC

The contour plans of the magnetic field were generated by a computer printer plot contouring procedure.

The magnetic field was interpolated at regular spaced positions from the observed data. The interpolation method consisted of a linear skew norm method based on the potential field equation. All computations were completed on an Otrona Attache micro-computer.

The final contour plan were traced from the printer plot contour plans onto dylar drafting film.

DISCUSSION OF RESULTS

The major cause of VLF-EM anomalies, as a rule, are geologic structures such as fault, shear and breccia zones. It is therefore logical to interpret VLF-EM anomalies to likely be caused by these structural zones. Of course, sulphides may also be a causitive source. But in the writer's experience, when VLF-EM anomalies correlate with sulphide mineralization, the anomalies are usually reflecting the structure associated with the mineralization rather than the mineralization itself.

The major trend of the VLF-EM anomalies, as seen on the Jan Claim Group, is primarily southwest and on the Louise

Claim Group, primarily south. Considering the VLF-EM anomalies are likely reflecting structure, the major strike of structure on these properties is concluded to be in both these directions.

It should be pointed out that another reason for anomalies striking primarily south on the Louise Claim Group is due to the grid bias. That is, the readings, have been taken every 40 m east-west on 100 m separated lines north-south cause the contouring to elongate the anomalies in a northsouth direction.

On both properties, there is considerable variation in intensity from one VLF-EM anomaly to the next. This is not only due to the conductivity of a causitive source, but also the direction it strikes relative to the direction to the transmitter. In other words, those conductors lying closer to the same direction as the direction to the transmitter (S55W in this case), can be picked up easier than those that are lying at a greater angle. Depending upon its conductivity, a conductor may not be picked up at all if it's at too great an angle. For example, the VLF-EM survey has shown few conductors striking northwesterly, a low optimum direction for the VLF-EM using the Seattle transmitter.

On both VLF-EM survey maps, the writer has drawn in lineations that are not apparent from the contouring. Some have also been drawn in to show the connection of two or more anomalies. The lineations are therefore probably reflecting geological structure and/or sulphide zones.

On the Jan Claim Group, the survey has produced a high number of anomalies. In the writer's experience the anomalies are relatively short with good intensity. Also the anomalies are quite complex striking in several different directions and therefore indicating cross-structure. The more intense anomalies are of greater economic interest since they may be reflecting sulphides, fracturing and/or alteration associated with gold mineralization. Also, the highs often are at points of intersection of two conductors striking in two different directions. If the conductors are in fact geological structure, then the points of intersection become particularly interesting since where structures intersect become amenable to mineralizing fluids.

On the Louise Claim Group, the VLF-EM anomalies are not quite as intense, though they seem to be equally complex, which, as explained above is indicative of cross-structure.

The magnetic field, as revealed by the magnetic survey on both the Jan and Louise Claim Groups, is relatively fairly quiet. Over most of the southern two-thirds of the Jan Claim Group, the magnetic field varies only 3,600 to 4,000 gammas, and on the northern third, 4,200 to 4,600 gammas. Over the Louise Claim Group, the magnetic field varies only 3,600 to 4,200 gammas. This is a typical range for the Nicola rock-types.

As a result, a possible interpretation of the magnetics for the Jan Claim Group is that the southern two-thirds of the survey area is underlain by Nicola sediments, and the northern third by the Nicola volcanics, especially the northeast corner. Similarly, the lower intensity of the magnetic field over the Louise Claim Group indicates it to be largely underlain by Nicola sediments with the higher field in the north central and northeastern parts of the survey area likely indicating Nicola volcanics and/or Coast Intrusive granites. Alternately,

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the 'pothole' effect of the magnetic contours (to be discussed below) is indicative of the whole survey area of the Louise Claim Group being underlain by Nicola volcanics.

On both magnetic maps, especially that of the Louise Claim Group, the parameters chosen for the computer contouring have resulted in numerous small enclosed anomalies throughout the survey area producing a 'pothole' effect. The writer has therefore drawn in lines indicating lineations of magnetic highs as well as lineations of magnetic lows.

Lineations of magnetic lows are indicative of geological structure since the structure often alters the magnetite within the rock. As a result, VLF-EM anomalies frequently correlate with magnetic lows, which is the case on the Jan and Louise Claim Groups.

The lineations of magnetic highs may be indicative of volcanic flows. However, one magnetic high lineation located on the Jan Claim Group survey is of particular interest. It correlates with soil geochemistry gold anomaly E as well as a series of VLF-EM anomalies. This lineation of magnetic, VLF-EM and soil geochemistry anomalies could quite possibly be reflecting a gold-mineralized vein similar to that occurring on the Banbury property to the immediate south. The magnetic high could be caused by pyrrhotite and the VLF-EM highs, fracturing, alteration and/or sulphides. The lineation crosses line at L-40 N, strikes southwesterly, the base and has a minimum length of 800 m being open to both the northeast and southwest.

On the Louise Claim Group, a southwesterly-striking VLF-EM anomaly correlates with a lineation of magnetic highs

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as well. The anomaly crosses L-0 at 15+50 E and is open to the southwest, as well as possibly the northeast. The minimum length is up to 800 m.

Respectfully submitted, GEOTRONICS SURVEYS LTD.

David G. Mark, Geophysicist

January 6, 1983

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GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in Province of British Columbia, do hereby certify:

That I am a Consulting Geophysicist of Geotronics Surveys Ltd. with offices at #403-750 West Pender Street, Vancouver, British Columbia.

I further certify:

- 1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.
- 2. I have been practising my profession for the past 15 years and have been active in the mining industry for the past 18 years.
- 3. I am an active member of the Society of Exploration Geophysicists and a member of the European Assocation of Exploration Geophysicists.
- 4. This report is compiled from data obtained from magnetometer and VLF-EM surveys carried out by Trans-Arctic Explorations Ltd. under the supervision of Richard Simpson from September 10th to the 27th, 1982.
- 5. I have no direct or indirect interest in the Jan Claim Group nor the Louise Claim Group nor in Kirby Energy Ventures Inc. of Vancouver, B.C., nor do I expect to receive any interest therein as a result of writing this report.

id G. Mark. Geophysicist

January 6, 1983

AFFIDAVIT OF EXPENSES

(Jan Claim Group Only)

The VLF-EM and magnetic surveys were carried out from September 10th to 27th, 1982 on the Jan Claim Group, Hedley Area, Similkameen M.D., B.C. to the value of the following:

FIELD:

2 Geophysical technicains, 60 hours at \$40/hour	\$ 2,400
Vehicle rental, 7 days at \$90/day	630
Room and board	540
Survey supplies	90
Magnetometer and VLF-EM instrument rental, 1 week at \$250/week	250
	\$ 3,910

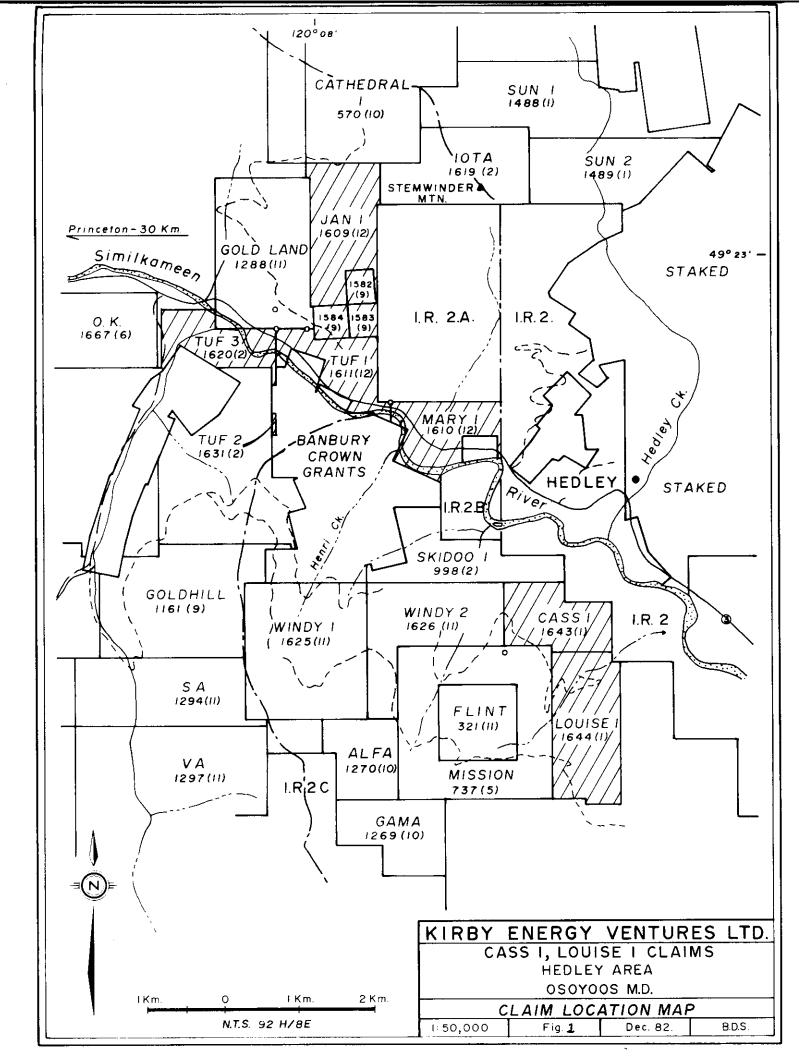
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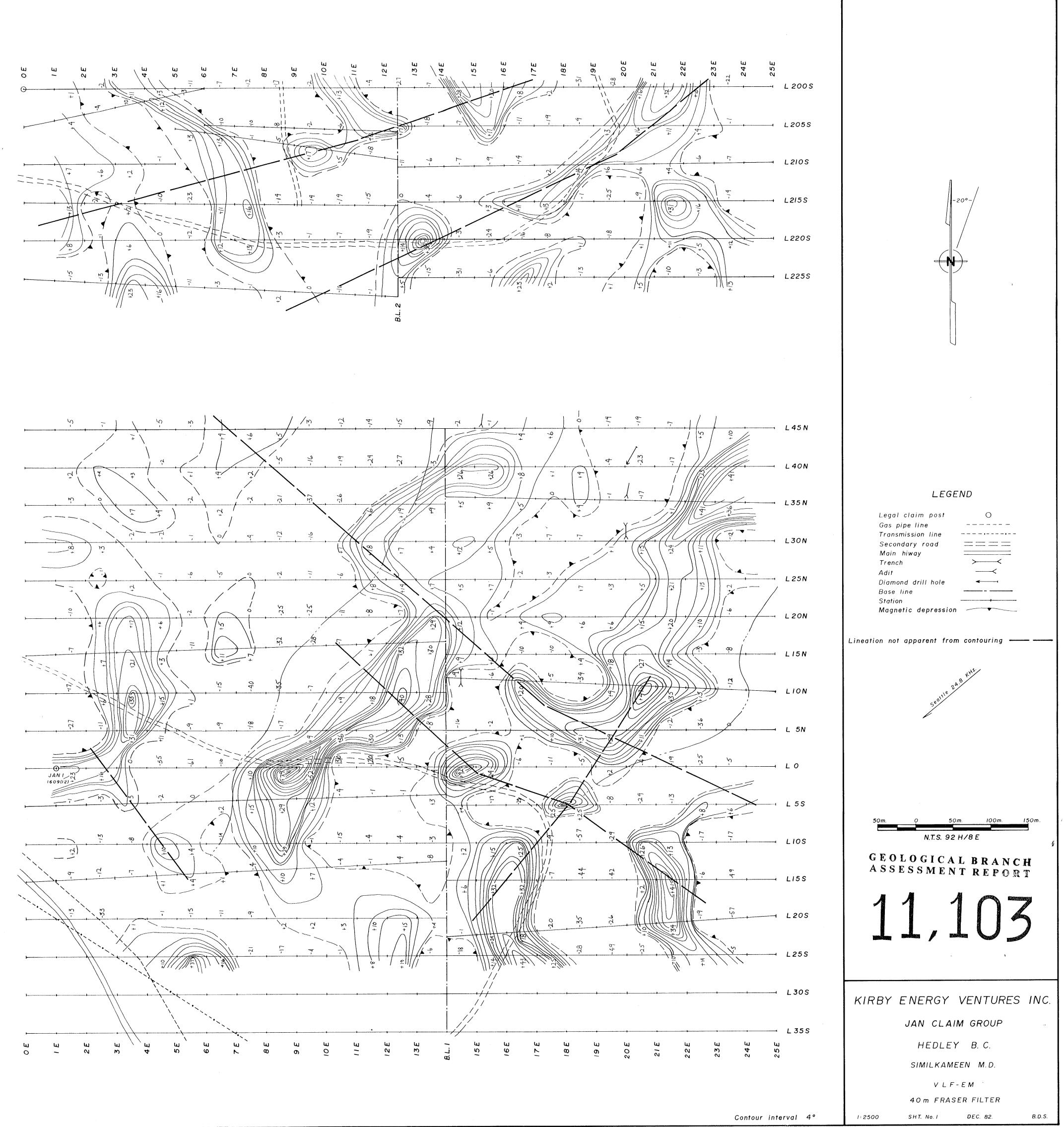
Geophysicist, 10 hours at \$40/horu	400
Geophysical technician, 20 hours at \$25/horu	500
Drafting and printing	350
Typing, photocopying and compilation	120
	\$ 1,370

Grand Total \$ 5,280

Respectfully submitted, TRANS-APOPIC EXPLORATIONS LTD.

Richard "Simpson Manager





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