85-200-13610
01/86

GEOPHYSICAL REPORT

ON A

VLF-EM SURVEY

OVER THE

SHORTY CLAIM GROUP

SHORTY CREEK, CRANBROOK AREA

FORT STEELE MINING DIVISION

BRITISH COLUMBIA

PROPERTY	: 25 km S80°W of Cranbrook, B.C. on Shorty Creek
	: 49° 27' North Latitude 116° 08' West Longitude
	: N.T.S. 82F/8E
OWNED BY	: TRANS-ARCTIC EXPLORATIONS LTD. 815-850 West Hastings Street Vancouver, B.C., V6C 1E2
SURVEY BY	: TRANS-ARCTIC EXPLORATIONS LTD. 815-850 West Hastings Str Vancouver, B.C., V6C 1E2
WRITTEN BY	: David G. Mark, Geophysic GEOTRONICS SURVEYS LTD. 403-750 West Pender Stre Vancouver, B.C., V6C 2T7
DATED	: April 6, 1985

GEOTRONICS

GEOTRONICS SURVEYS LTD.
Engineering & Mining Geophysicists
VANCOUVER, CANADA

13610

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13,610

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SUMMARY

A VLF-EM survey, was carried out over the southern portion of the Snow claim during the summer of 1984. The property is located 25 km S80°W of Cranbrook, British Columbia on Shorty Creek. Access to the property is easily gained by a two wheel drive vehicle. The terrain consists of moderate to steep slopes covered with light to moderately dense coniferous trees. The purpose of the work was to locate probable areas of gold-sulphide mineralization as is found on the nearby Leader A Claim. Of particular interest were intrusive porphyries known to be associated with gold deposits in the area.

The property is mostly underlain by the Creston Formation, which is composed mostly of argillites and quartzites. The eastern part is underlain by the Kitchener-Siyeh Formation which is composed of impure magnesium limestone, argillites, and calcareous quartzites. These two formations are separated by a north- to north-northeasterly-trending fault called the Perry Creek Fault. On the nearby Leader A Claim occurs an auriferous quartz vein (Wellington prospect) returning assays up to 0.598 oz gold/ton and 10.56 oz silver/ton across 0.58 m.

The VLF-EM readings were taken every 50 meters on 100-meter separated east-west lines within the south central portion of the Snow claim. The data was then reduced, plotted and contoured.

CONCLUSIONS

1. The Shorty Claim Group is located in an area of numerous gold deposits. The most well-known is the Wellington on nearby Angus Creek. Others in close proximity to the property are the Rome and Valley deposit and the Running Wolf deposit.

2. The VLF-EM survey revealed conductors striking predominantly northeasterly and also striking northwesterly. Conductors are indicative of geological structure such as fault, shear and contact zones. Parts or all of these conductors can be mineralized. The survey did not reflect the Perry Fault that appears to strike northerly through the center of the survey area.

3. The survey area is quite limited and no other work has been done on the property. Therefore, when the exploration program is continued, a more meaningful interpretation will then be possible.

RECOMENDATIONS

1) The property should be soil sampled on a 50 meter by a 100 meter grid. The creeks and gullys should also be sampled. In the laboratory, the whole soil sample should be pulverized, screened for metalics and then fire-assayed with an AA finish for gold. It would also be useful to test for lead, zinc, silver, and copper. Any anomalies discovered should then be detailed on a 10 meter by 10 meter grid and the same lab procedure followed.

2. At the same time, geological mapping should be carried out.

3. The VLF-EM survey should be extended over the whole property.

4) If possible, the detailed soil anomalies should be trenched by 'cat' or backhoe.

5) Soil anomalies should then be tested by resistivity-IP sections to optimize the locations and angles of diamond drill holes.

GEOPHYSICAL REPORT

ON A

VLF-EM SURVEY

OVER THE

SHORTY CLAIM GROUP

SHORTY CREEK, CRANBROOK AREA

FORT STEELE MINING DIVISION

BRITISH COLUMBIA

INTRODUCTION AND GENERAL REMARKS

This report discusses the survey procedure, compilation of data and the interpretation of a VLF-EM survey carried out over a portion of the Shorty Claim Group during the period of June 27th to Sept. 11th, 1984.

The survey was carried out by Trans-Arctic Explorations Ltd. under the field supervision of Guy Royer, geologist, with the aid of Dean Bowra. A total of 9.2 line km of VLF-EM survey were done.

The primary purpose of the VLF-EM survey was to look for gold deposits such as are common in this area, as, for example, the auriferous quartz veins containing sulphides on the nearby Leader A Claim (Wellington). Of particular interest were porphyritic intrusives (flows?) commonly known as 'miner's porphyries' which in this area frequently occur with gold deposits. The VLF-EM survey was carried out to delineate geological structure such as fault and shear zones or sulphide deposits either of which could be related to gold deposits.

PROPERTY AND OWNERSHIP

The property consists of two claims containing 36 units staked within the Fort Steele Mining Division as shown on Map 2 and as described below:

Claim Name	No. Units	Record No.	Expiry Date
Snow	16	2054	Jan. 5, 1986
Shorty	20	2074	Feb. 6, 1986
	36		

The expiry date shown takes into account the survey under discussion as being accepted for assessment credits.

The claims are owned by Trans-Arctic Explorations Ltd. of Vancouver, British Columbia.

LOCATION AND ACCESS

The property is located 25 km S80°W of Cranbrook on Shorty Creek and on Perry Creek.

The geographical coordinates for the center of the property are 49° 27' north latitude and 116° 08' west longitude.

Access is easily gained by travelling north from Cranbrook on Highway #95A for 15 km to Wycliffe. One then turns south and travels southwesterly along the Perry Creek access road to the eastern boundary of the Snow claim about 10 km past Old Town, a distance of about 19 km. Four-wheel drive is recommended.

PHYSIOGRAPHY

The property lies to the west of the Rocky Mountain trench within the Purcell Mountains which ia a physiographic division of the Columbia Mountain System. The terrain consists of steep, partially logged slopes throughout most of the property. It lies on the northwest side of the northeasterly-trending valley of Perry Creek.

Elevations vary from about 1,460 meters a.s.l. on Perry Creek on the eastern boundary of the Snow claim, to 2,270 meters a.s.l. on the ridge on the western boundary of the Shorty claim to give an elevation difference of 810 meters.

The main water sources would be Perry Creek as well as the easterly-flowing Shorty Creek and Liverpool Creek.

The forest cover consists of fir, spruce and hemlock(?) and varies from closely growing, immature stands to more widely spaced, mature stands.

HISTORY OF PREVIOUS WORK

Since the two claims have been staked, no previous work has been done.

The history of the area goes back to the 1880's when prospectors working the Perry Creek placers discovered the vein now covered by the nearby Leader A Claim (the Wellington prospect). Little ore has been shipped from this vein, even though assays have run as high as 4.8 oz/ton Au and 6.8 oz/ton Ag. There are also high values in lead, zinc and copper.

GEOLOGY OF AREA

The following is quoted from L. Sookochoff's 1983 Geological Evaluation Report on the nearby Leader 2 Claim:

"The general geological setting of the area is of the Proterozoic Lower Purcell Group which is divided into three Formations. In the Hellroaring Creek - Angus Creek - Perry Creek area the Creston and Kitchener Formation predominate and are lenticularly northeasterly trending, commonly in a fault contact and bounded to the north and south by the Aldridge Formation.

"The basal Aldridge Formation - the oldest formation known to occur in the area - is composed mainly of grey to brownish grey, rusty weathering argillite and argillaceous quartzite.

"The Creston Formation is transitional from the Aldridge Formation and embraces that succession of greyish argillaceous quartzites which is included between the dark rusty weathering, argillaceous quartzites of the lower Aldridge Formation and the thin bedded, calcerous rocks of the upper Kitchener Formation. In general, the Creston Formation consists of argillaceous quartzites, purer quartzites and argillites whose beds average about one foot in thickness. Narrow beds, pods, and lenses of calcerous rocks occur in the upper part of the formation. These are more numerous toward the top of the Creston and where they are abundant, the strata are considered to belong to the overlying Kitchener Formation.

"The Creston Formation is host to gold quartz veins on Perry Creek, a northeasterly flowing tributary of the St. Mary River with the confluence 13 km northwest of Cranbrook. The deposits occur in the argillaceous quartzites which are well bedded in beds '2 inches to 2 feet' in thickness, the latter separates by

thin beds of meta-argillites.

"The deposits occur as true fissure veins averaging about '8 feet' with some as wide as '20 feet'. They can be traced for long distances along strike. The gold values occur as native in the outcrops and with pyrite at depth.

"The Kitchener Formation, [on some maps combined with the Siyeh Formation and called the Kitchener-Siyeh Formation], consists predominantly of impure, magnesium limestone, argillite and calcerous quartzite. Limestone and calcerous rocks compose the bulk of the formation and serve to distinguish it from the underlying formations. The upper part is generally argillaceous. Due to the formation containing easily deformed rocks, great stretches of it have been altered to chlorite and talc-carbonate schist.

"A small stock of porphyritic granite within one km west of the property intrudes sediments of the Creston Formation. The granite contains large idiomorphic crystals of orthoclase in an isometric groundmass of plagioclase, quartz and hornblende.

STRUCTURE

"The general structure of the area is of a broad, northerly striking anticline exposing the core of the Proterozoic rocks with younger rocks to the west and east. The regional St. Mary's fault trends east northeast to the north of the property area and creates a fault contact with the Aldridge and younger formations.

"Faults extending from the south generally terminate or trend into the St. Mary's fault and commonly indicate contacts between the Creston and Kitchener formations.

"One of the fault contacts referred to as the Sawmill Creek Fault

determines a Creston-Kitchener Formation contact which trends through the Leader A Claim. The St. Mary's fault is within two km north.

MINERALIZATION

"On the adjacent Leader A Claim a mineralized quartz vein follows a strong fissure with varying strike from nearly north-south to north 35-50° with a dip of from 68° to 80° east. The vein varying from 'a few inches to three feet wide' can be traced along a length of '2,000 feet'. The vein is composed of white banded quartz containing galena, pyrite and locally chalcopyrite with tungsten reported in the adit at the southernmost extension of the vein.

"Assays from the Leader A vein reportedly returned up to .598 oz Au/ton and 10.56 oz Ag/ton across '1.9 feet' with a reported assay of 4.80 oz Au/ton. A reported 1720 tons of possible ore were calculated on the vein."

PROPERTY GEOLOGY

Rice's G.S.C. map shows the Shorty Claim Group is entirely underlain by both the Creston and the Kitchener-Siyeh formations.

The contact, which is also the Perry Creek Fault trends northerly and northeasterly through the property with the Creston Formation occurring to the west and the Kitchener-Siyeh Formation occurring to the east.The Creston formation underlies about 70% of the property.

MINERAL DEPOSITS IN CLOSE PROXIMITY

The following is a description of two deposits occurring along the Old Baldy Fault a few km to the northeast and is taken from Rice's Memoir 228, dated 1941.

Rome and Valley Group

"The Rome and Valley group consists of twenty-three claims held by location, controlled by J.M. Baird and associates of Cranbrook, B.C. It is located near the head of Rome Creek, a tributary of Perry Creek, about a mile from the Perry Creek road near Sawmill Creek.

"The deposits consist of two or more large and persistent quartz veins apparently occupying fissures in a fault zone. In a few places the contain small amounts of pyrite and galena. Crystals of pyromorphite (lead phosphate) were seen in one open-cut. Assays from samples taken by the owners are reported to range from $1.10 to $19.95 a ton in gold (gold at $35 an ounce).

"The main workings consist of thirteen open-cuts, ten of which expose a vein striking north 15 degrees east and dipping 35 degrees to 50 degrees southeast. The vein has been traced for 1,550 feet and probably continues for at least another 1,000 feet to the north. It varies in width from 2 to 25 feet and averages about 9 feet. The remaining open-cuts are located on a parallel vein of the same type and apparently comparable in size with the first described.

Running Wolf Group

"The Running Wolf group is located on French Creek, a tributary of Perry Creek, and is reached by a trail about a mile long from

the Perry Creek road.

"The deposit consists of a number of quartz veins occupying fissures in greatly altered Creston argillaceous quartzite. The workings consist of five adits, three of which are now caved. The main adit exposes three veins, each about 30 feet wide. Two of these veins occupy fissures striking in the same direction as the fault zone on the Rome and Valley group and approximately in line with it. The third vein is in a cross fracture. A few hundred feet down the hill another adit has been driven along a vein that parallels the main veins above. The veins are composed of massive quartz with occasional specks of pyrite and are reported to carry gold. They have been fractured by post-mineral movements along the original faults.

"The Rome and Valley and the Running Wolf groups are apparently on the same zone of fracturing and faulting, and this zone probably continues south across the ridge between Perry Creek and Moyie River at Old Baldy Mountain. Exposed on the Ridge at this point is a strong fracture zone that is occupied by a large quartz vein."

INSTRUMENTATION AND THEORY

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 this survey is transmitted at 24.8 KHz from Seattle, Washington.

In all electromagnetic prospecting, a transmitter produces an alternating magnetic 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, a secondary alternating current is induced within it which in turn induces a secondary magnetic field that distorts the primary magnetic field. It is this distortion that the EM receiver measures. The VLF-EM uses a frequency range from 16 to 24 KHz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because of its relatively high frequency, the VLF-EM can pick up 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, its susceptibility to lower conductive bodies results in 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.

SURVEY PROCEDURE

The survey consisted of 9.2 line km of VLF-EM survey of the property as shown on Maps 3 and 4.

The base line, on a bearing of due north, was extended for 1,500 m from the (4S, 2W) identifucation post of the Snow claim on Perry Creek, being well flagged with survey flagging. The survey lines were run perpendicular to the base line (east-west) at 100 m spacings. The instrument readings were taken every 50 m along the survey lines facing towards the transmitter at Seattle.

COMPILATION OF DATA

The VLF-EM field results were plotted on Map 3 at a scale of 1:5,000. They were then reduced by applying the Fraser-filter. The filtered results were subsequently plotted on Map 4, at the same scale. The filtered data were plotted between actual reading stations. The positive dip-angle readings were then 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 smoothing operator which induces the inherent high frequency noise in the data. Therefore, the noisy, 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.

DISCUSSION OF RESULTS

The major cause of the 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 causative source. But when VLF-EM anomalies correlate with sulphide mineralization, the anomalies are often reflecting the structure associated with the mineralization rather than the mineralization itself.

The station spacing at 50 m is rather wide for VLF-EM. As a result, the anomalies will tend to reflect more regional-type structural zones.

The Perry Creek Fault that occurs within the Shorty Claim Group appears to strike northerly through the center of the survey area. However, it does not appear to be reflected by the VLF-EM results. It is therefore quite possible that the fault does not occur within the survey area.

There is some variation in intensity from one VLF-EM anomaly to the next. This is not only due to the conductivity of a causative source, but also the direction it strikes relative to the direction to the transmitter. In other words, those conductors lying parallel or sub-parallel to the direction of the transmitter (S70W 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 is at too great an angle.

VLF-EM highs are of particular economic interest since they may be reflecting sulphides, fracturing and/or alteration any of which could be associated with gold mineralization. The highs often are at points of intersection of two or three conductors striking in two or three different directions. If the conductors are in fact geological structures, then the points of intersection represent areas that could be amenable to mineralizing fluids.

From the Fraser-filtered data, the writer has attempted to draw in the conductors that the contouring is trying to outline. The results are plotted on Map 3 with the raw data. A word of caution is that the results may not be strictly correct since the contouring is quite complex. It was not always obvious where the conductor was situated or which direction it trended.

From the plot of the conductors it would appear that the primary direction of structure on this property is northeasterly with the

secondary direction being northwesterly. Other than the major fault, this agrees with the regional geology which indicates that almost all faults and contacts strike northeasterly.

Of particular interest are those parts of the conductors which have greater conductivity shown by higher values. These indicate, perhaps, zones of mineralization. The greater conductivity could be due to sulphides, alteration, and/or fracturing, any of which can be associated with gold deposits.

Little else can be said about the VLF-EM survey results until further work is carried out. Then a more meaningful interpretation can be given.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark,
Geophysicist

April 6, 1985

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GEOPHYSICIST'S CERTIFICATE

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

That I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices located 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 16 years and have been active in the mining industry for the past 19 years.

3. I am an active member of the Society of Exploration Geophysicists and a member of the European Association for Exploration Geophysicists.

4. This report is compiled from data obtained from a VLF-EM survey carried out by Trans-Arctic Explorations Ltd., under the field supervision of geologist, Guy Royer, in the period of June 27th to September 11th, 1984.

5. I do not hold any interest in Trans-Arctic Explorations Ltd. nor in any of the claims of the Shorty Claim Group, nor will I receive any interest as a result of writing this report.

David G. Mark
Geophysicist

April 6, 1985

AFFIDAVIT OF EXPENSES

The VLF-EM survey was carried out during the period of June 27th to September 11th, 1984 on the Shorty Claim Group, in the Cranbrook Area, Fort Steele Mining Division, B.C., to the value of the following:

FIELD:

Supervisor, 3 days at $200/day, (includes truck)	$ 600
Geologist/Instrument operator, 27 hours at $35/hour	945
Surveyor's helper, 27 hours at $15/hour	405
Helper, 3 days at $100/day	300
4 X 4, 3/4 ton truck, 3 days at $110/day (includes oil and gas)	330
Room and board, 9 man-days at $50/man/day	450
Instrument rental (VLF-EM), 1 week at $175/week	175
Survey supplies	100
	$ 3,305

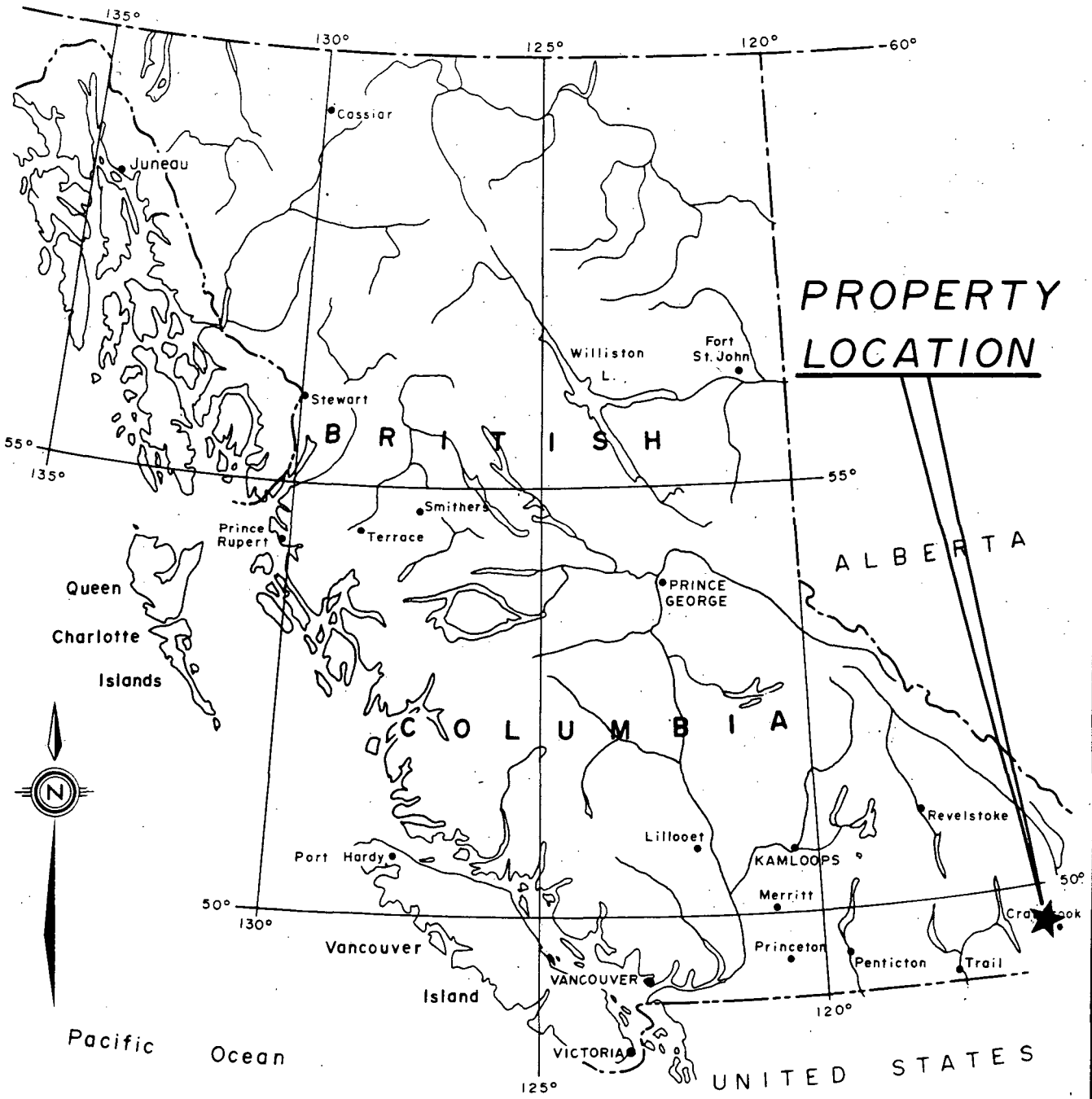
REPORT:

Geophysicist, 10 hours at $40/hr	$ 400
mmophysical technician, 16 hours at $25/hr	400
Drafting and printing	500
Typing, compilation and photocopying	100
	$ 1,400

GRAND TOTAL	$ 4,705

Respectfully submitted,
TRANS-ARCTIC EXPLORATIONS LTD.

R. Simpson
Manager

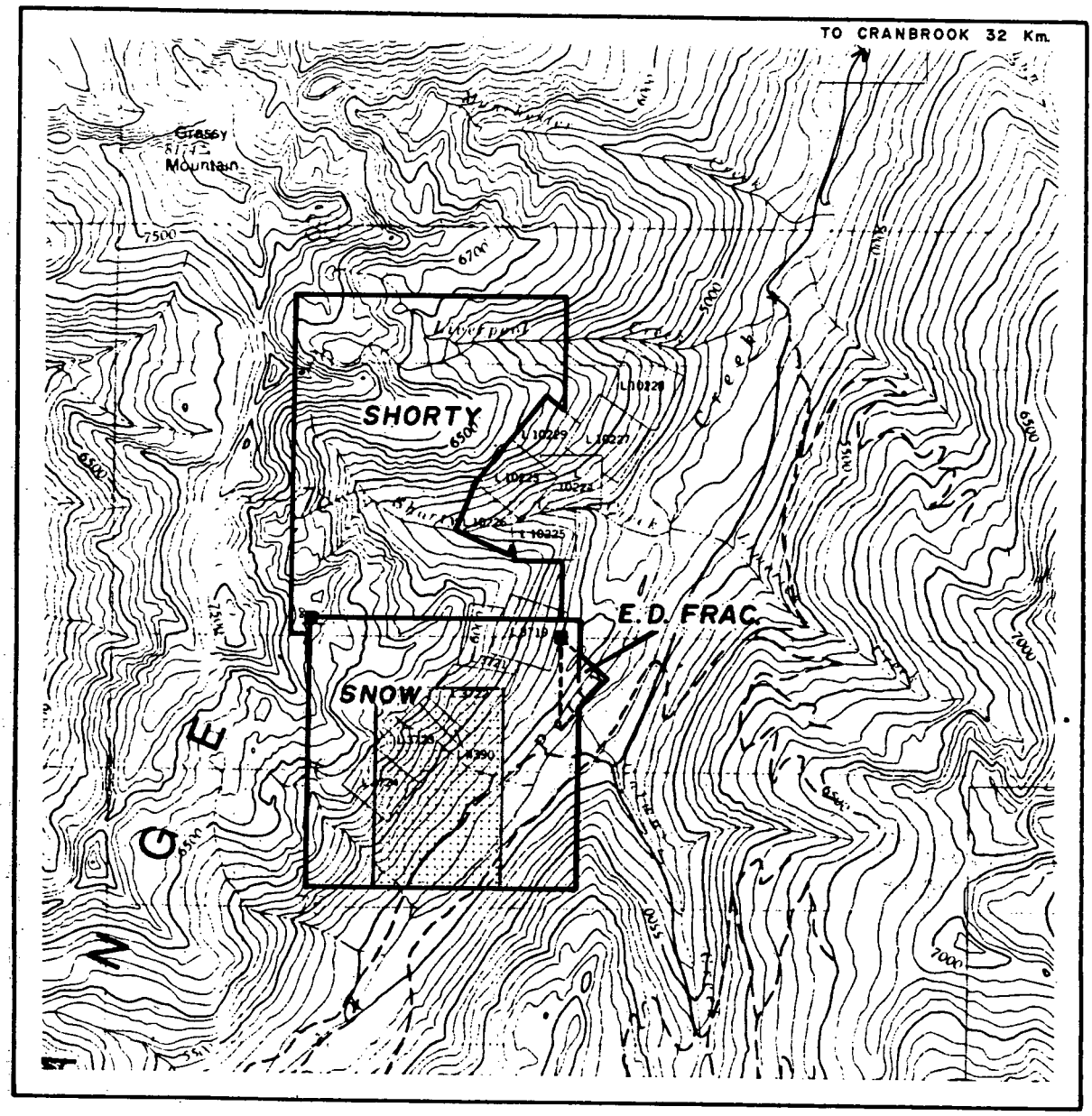


SHORTY CLAIM GROUP

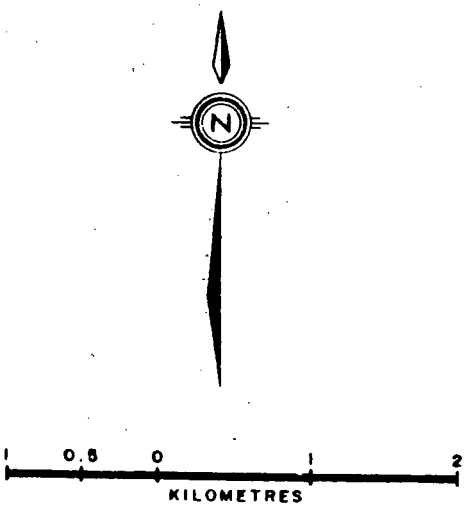
100 0 100 200 300 400 Km.

100 0 100 200 Mi.

MAP 1 BRAD'S DRAFTING SERVICE



Survey area



TRANS- ARCTIC EXPL. LTD.

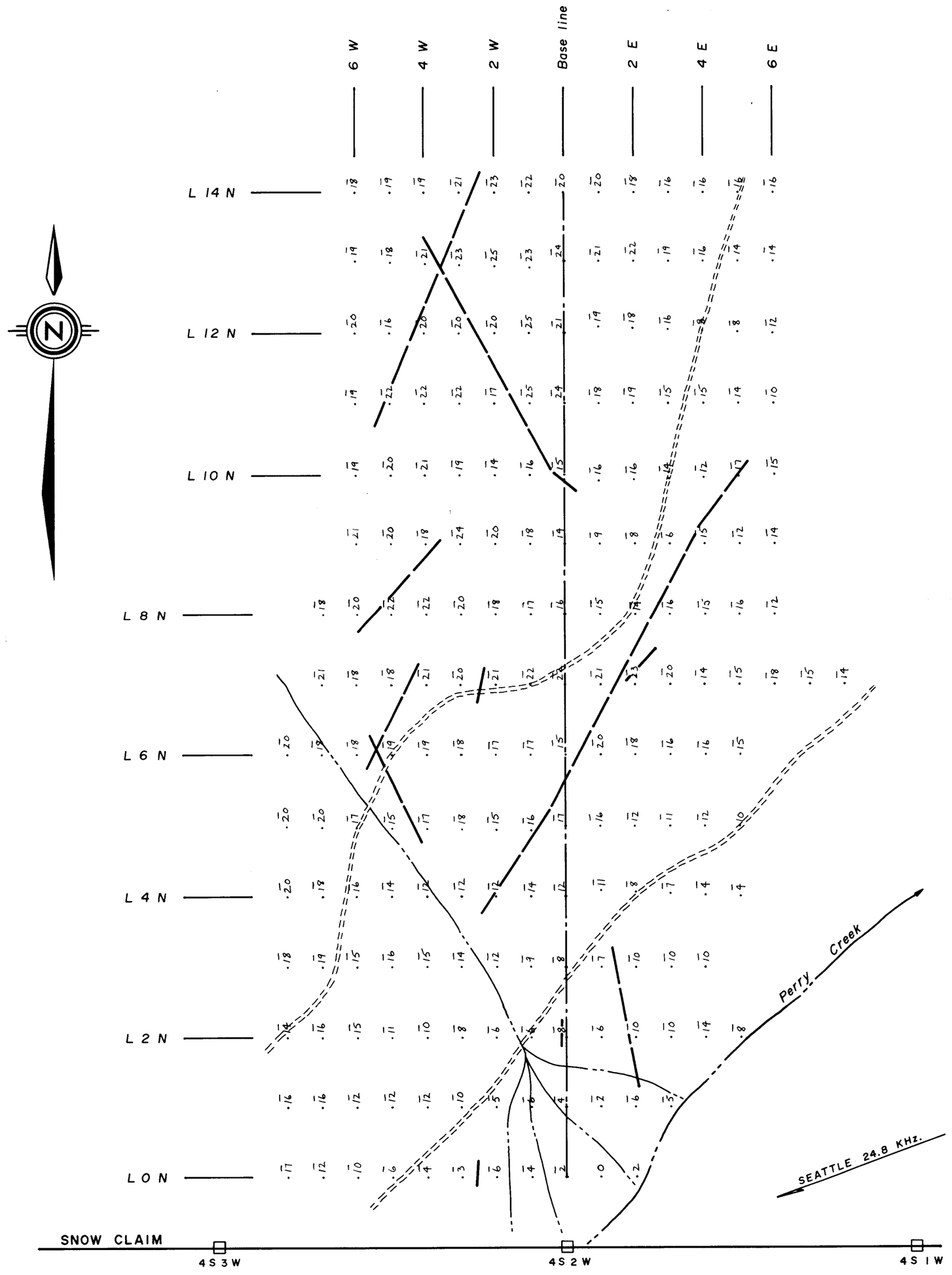
SHORTY CLAIM GROUP

PERRY CREEK, CRANBROOK AREA, B.C.

FORT STEELE M.D.

CLAIM LOCATION MAP

SCALE:	DATE:	MAP:	N.T.S.
1:50,000	April 85.	2	82 F/8 E



Survey Carried Out By: TRANS-ARCTIC EXPLORATIONS LTD.

N.T.S. 82 F/8 E

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,610

LEGEND

- Road
- Creek
- Survey station
- Claim boundary
- Identification post (approximate)
- VLF-EM Conductors

INSTRUMENT: Sabre Model 27 VLF-EM Unit.

100 m 0 500 m

To Accompany Report By: DAVID G. MARK, Geophysicist

TRANS-ARCTIC EXPLORATIONS LTD.

SHORTY CLAIM GROUP

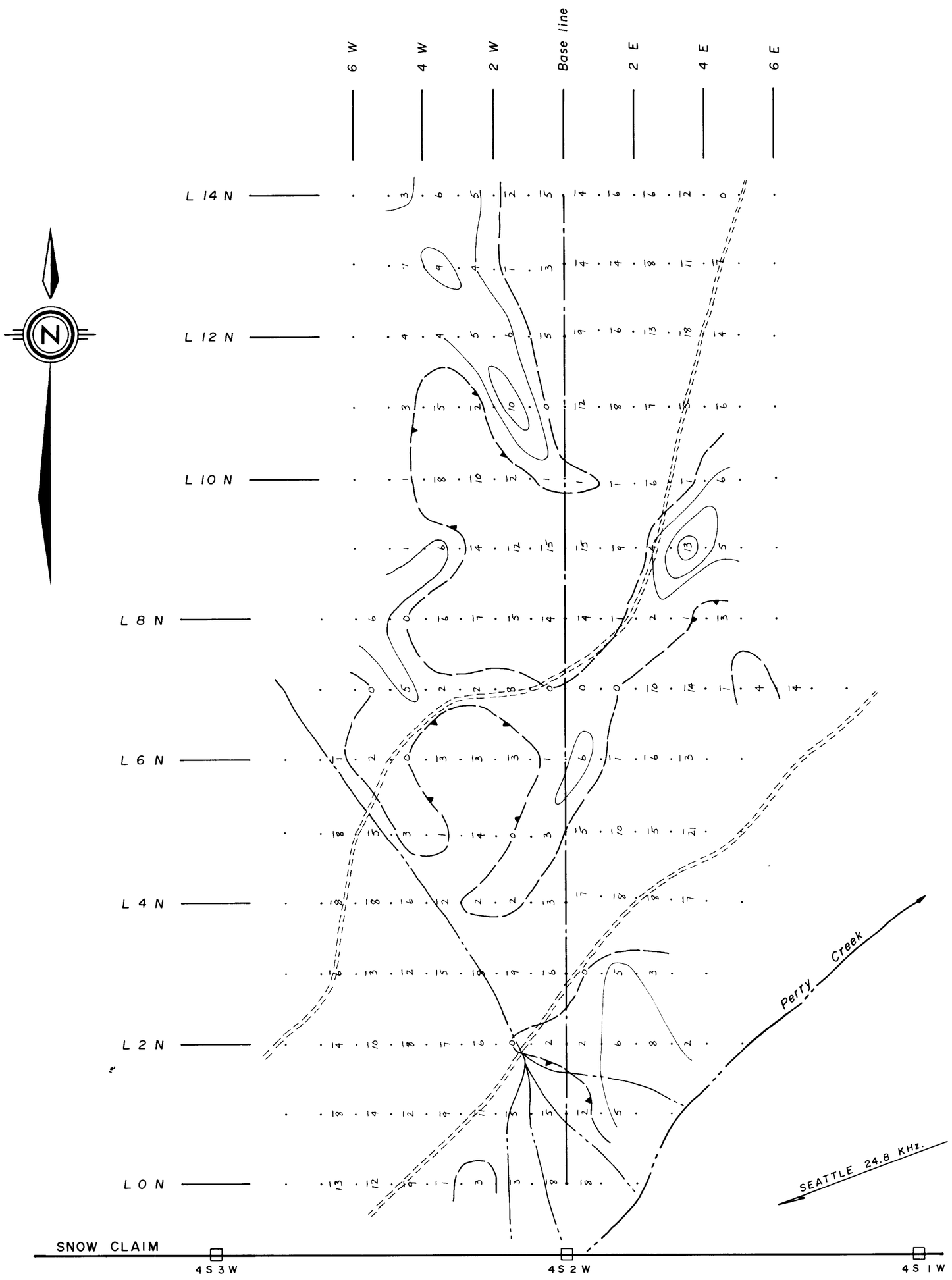
PERRY CREEK, CRANBROOK AREA, B. C.

FORT STEELE M. D.

VLF-EM SURVEY

RAW DATA & CONDUCTORS

SCALE:	DATE:	MAP:	DRAWN BY:
1:5,000	April 85.	3	B. D. S.



Survey Carried Out By: TRANS-ARCTIC EXPLORATIONS LTD.

N.T.S. 82 F/8 E

GEOLOGICAL BRANCH
ASSESSMENT REPORT

13,610

LEGEND

- Road
- Creek
- Survey station
- Claim boundary
- Identification post (approximate)

CONTOUR INTERVAL

- 0 degree
- 4 degree and higher

INSTRUMENT: Sabre Model 27 VLF-EM Unit.

100 m 0 500 m

To Accompany Report By: DAVID G. MARK, Geophysicist

TRANS-ARCTIC EXPLORATIONS LTD.

SHORTY CLAIM GROUP

PERRY CREEK, CRANBROOK AREA, B. C.

FORT STEELE M. D.

VLF-EM SURVEY

FRASER FILTERED DATA & CONTOURS

SCALE:	DATE:	MAP:	DRAWN BY:
1:5,000	April 85.	4	B. D. S.