

180-#947-#8765

GEOPHYSICAL REPORT

ON THE

TP 1 CLAIM

NICOLA MINING DIVISION

BRITISH COLUMBIA

for

SUTHERLAND RESOURCES LTD.

N.T.S. 92I/2E

50⁰ 03'N 120⁰ 35'W

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

8765
NO.

Calgary, Alberta.

December, 1980.

T.R. Rolston-Project Geophysicist

& W. G. Timmins-P. Geol.

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SUMMARY

The TP 1 Claim consists of 15 units situated some ten miles on Highway No. 1 southeast of Merritt, British Columbia, Nicola Mining Division, south-central British Columbia.

The logistics involved in all phases of exploration, development, and production are excellent.

The property is underlain by Nicola volcanic flows of Triassic age. The flows are generally thin-bedded.

A VLF-EM survey was conducted over the property during October, 1980 by Columbia Geophysical Services Ltd. The survey has indicated ten priority and five secondary anomalies.

A program consisting of geological mapping in conjunction with detailed magnetic, electromagnetic, geochemical and induced polarization surveys over selected anomalous areas to be followed by diamond drilling is recommended.

INTRODUCTION

The following report commissioned by officers of Sutherland Resources Ltd., is based on information from available public and private reports, and analysis of data obtained from a VLF-FM survey conducted by Columbia Geophysical Services Ltd. during October, 1980.

PROPERTY

The property consists of one located mineral claim comprised of 15 units as follows:

<u>Claim Name</u>	<u>Units</u>	<u>Record No.</u>	<u>Expiry Date</u>
TP 1	15	774	November 20, 1980

OWNERSHIP

The claim is owned by Sutherland Resources Ltd. of Vancouver, British Columbia.

LOCATION AND ACCESS

NTS 92I/2E

The claim is located some ten miles southeast of Merritt on the east side of Highway No. 5. The legal corner post is 200 meters east of the junction of Highway No. 5 and Kane

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Valley Road, and approximately 1500 meters northeast of Corbett Lake in the Nicola Mining Division, south-central British Columbia.

A dirt road to the south of the legal corner post leads into the property.

TOPOGRAPHY

The claim lies to the south of Mount Nicola where the elevations vary from 3500 to 4600 feet above sea level. The topography is gentle with rolling upland pasture with stands of poplar, fir, and pine.

WATER

Water would be available from Logans Creek and Corbett Lake which lie to the west of the claim.

CLIMATE

Winters are cold with moderate snowfall, whereas the summer months are warm to hot with moderate precipitation.

POWER

Diesel electric power would be required for initial phases of development and hydroelectric power would be available if future requirements warrant it.

SUPPLIES

Most supplies would be available from Kamloops, Merritt, Princeton, or Vancouver, B. C.

TRANSPORTATION

Rail service is located in Merritt and good daily truck transportation is also available in the area.

HISTORY

There is no recorded history or past production relating to the property.

GENERAL GEOLOGY

Regionally, the area is underlain by the Nicola Group of rocks which consist of greenstones, andesites, basalts, breccias, limestone, and related rocks of Triassic age. The Nicola Group has been mapped trending northerly from Princeton to beyond

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Kamloops and across a width of some 20 miles.

Large scale, north trending faults, both parallel and sub-parallel, occur to the south of Merritt, B. C.

Jurassic granodiorite, diorite, and quartz diorite intrusives occur peripheral to, and as plugs and stocks within, the Nicola Group.

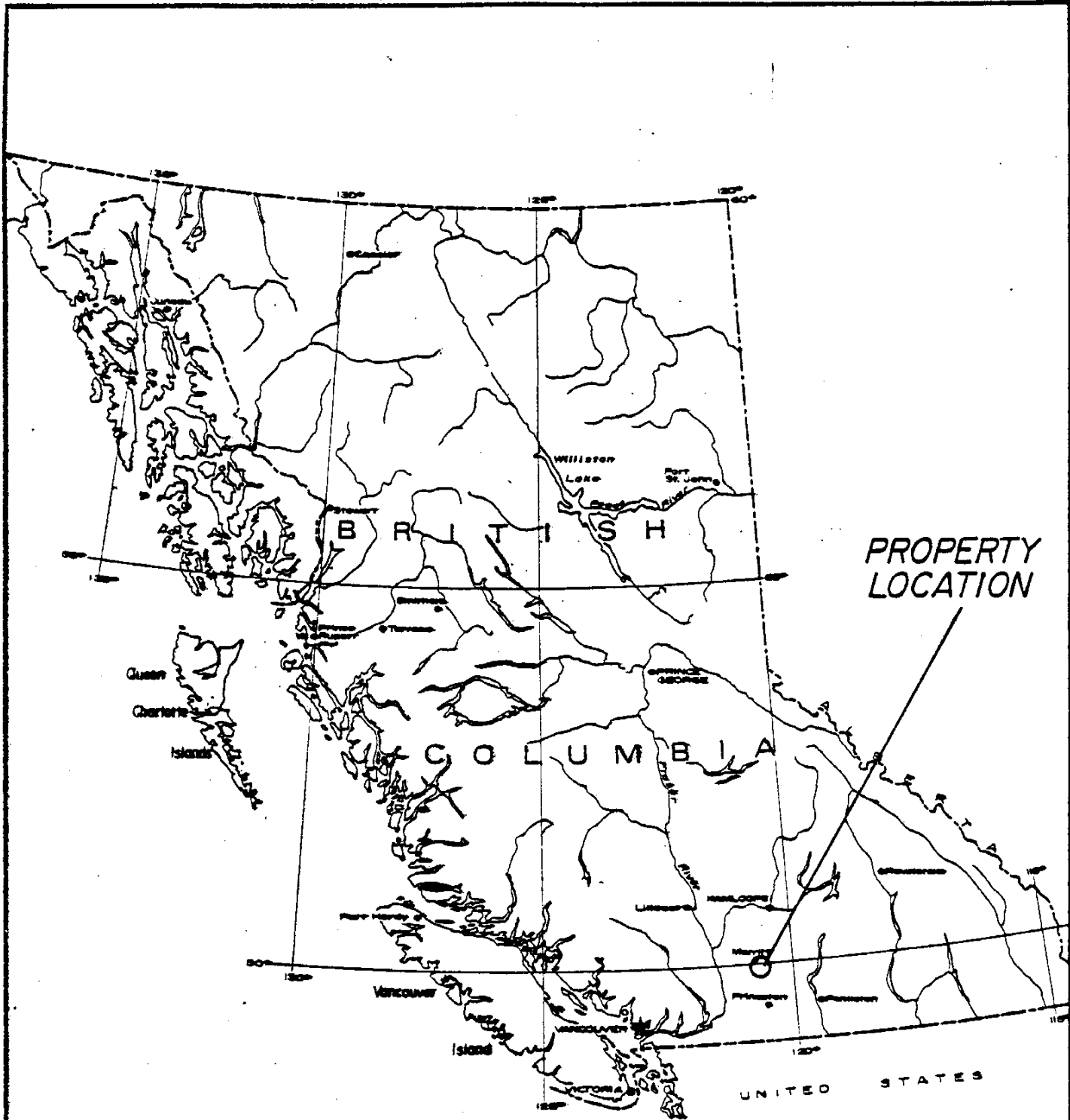
LOCAL GEOLOGY

The claim is underlain by Triassic Nicola rocks consisting of volcanic flows, tuffs, and minor sediments. The flows are relatively thin-bedded, from a few feet to a few tens of feet in thickness. The tuffs are medium to coarse-grained, brown to reddish, and generally only a few feet thick.

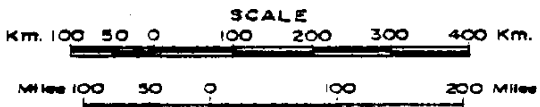
The andesitic to basaltic flows are generally fractured and brecciated near the top, with considerable calcite and amygdaloidal with elongation of the calc-silicate amygdules prominent near the base of the flows.

The rocks generally exhibit a N 30⁰ E strike and a 35⁰ dip to the southeast.

There are no known mineralized zones on the property.



PROPERTY
LOCATION





MT. NICOLA



TP1		

HIGHWAY 5
12 Miles to Merritt B.C.

Corbett
Lake

Courtney
Lake

SUTHERLAND RESOURCES LTD

TP 1 CLAIM MAP

Nicola M.D.

Scale: 1 cm = 500 m

EXPLORATION PROGRAM

The claim should be geologically mapped in detail with detailed magnetometer, electromagnetometer, geochemical, and induced polarization surveys.

Contingent upon the results of the geological, geophysical, and geochemical surveys, a drill program should be initiated to test anomalous conditions.

GEOPHYSICAL SURVEY INTRODUCTION

During the month of October, 11th to 31st, 1980, a ground VLF-Electro magnetic geophysical survey was conducted over the pre-established survey grid on the TPl claim (15 units). The grid is spaced at 100 metres with 20 metre stations. The EM Survey was conducted at 200 metre line spacing with 20 metre stations. Two base lines were established to allow for close survey control. BL1 is positioned in a north-south direction and BL2 is positioned north-south at 10E. The survey was carried out by a two man crew of Columbia Geophysical Surveys Ltd., Burnaby, B. C. using a Sabre Model 27 VLF-EM receiver tuned to 18.6 KHZ Transmitter located at Arlington, Wash. U. S. A. This transmitting station was selected due to its orientation in line with the property lithology and strong field strength. The dip angle was measured at each survey station and recorded in the field. A Fraser filter method was applied to the dip angle data

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and the results plotted on a map scale 1:4000 and contoured at +5 degree intervals, as only the positive anomalies have significance in outlining EM conductors.

ANALYSED SURVEY DATA

The EM data was first plotted in graph form:

- (a) Dip angle data to show (cross over) conductors
- (b) Filtered data at 20 metre intervals to show near surface conductors
- (c) Filtered data at 40 metre intervals to show conductors at a greater depth
- (d) Filtered data at 20 metre, contoured at 5 degree intervals.

From this method of reduction of the data, the EM survey shows three main north-south Conductive Zones with a greater depth, reflecting major fault zones. These are plotted on map sheet 1. Along these faults are several anomalies labeled A, B & C.

ANOMALOUS ZONE 'A'

A1; Located on L2N, 300E, appears to be a surface conductor with great depth which could indicate a mineralized zone along a major fault and is considered a primary target which requires detailed geology and geophysics.

A2: Located at L6N to 8N at 150E, again indicates a very strong surface anomaly with depth striking north-south with high intensity for a length of 400 metres indicating a mineralized conductor in a moisture filled fault or fracture. This is considered a secondary anomaly.

A3; Located on L14N at 300E and 16N at 400E. This is a very strong anomaly on both surface and at great depth, striking north-northeast for 400 metres. Due to the high intensity and great depth, this anomaly could be reflecting a well mineralized area, therefore should be detailed with geological mapping and geophysics. This is considered a primary anomaly and therefore a primary target for economic consideration.

A4; Located on L20N at 200E, L22N at 200E striking north along a north-northwest trending major fault. Again this anomaly appears to be reflecting a probable mineralized zone and can be considered a major exploration target which should be followed up with detailed geology and geophysics.

A5; Located on L10N at 400E, appears to be a surface conductor and would be considered a secondary anomaly. This does not appear to be an important exploration target at this time.

ANOMALOUS ZONE 'B'

B1 & B2 is located L '0' at 12E, L2N at BL2. These anomalies are possibly one large anomaly striking north-west for 300 to 400 metres with cross faulting at L2N. The anomaly may include anomaly C1 located on L4N at 1050E. These three anomalies make up one major anomalous zone at the intersection of two major cross faults. This zone is the priority exploration target of the entire survey and should be considered as the primary target for further exploration consisting of detailed geology, geophysics and possibly drilling for economic mineralization.

B3; Located on L10N at 700E. This anomaly reflects a strong surface conductor and a very strong conductor at depth, therefore is also a primary target and requires further detailed geology and geophysics.

B4; Located on L14N at 850E. This anomaly is a weak surface conductor but stronger at depth, probably reflecting a fault zone and would be considered a secondary anomaly, thus is not considered to require further investigation at this time.

B5; Located on L20N at 750E and is a strong surface conductor as well as a strong conductor at depth possibly reflecting a mineralized zone along a major fault. This anomaly requires detailed geology and geophysics to investigate possible

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economic mineralization and is considered a primary exploration target.

The B series of anomalies appear to lie along a continuous fault or fracture zone.

ANOMALOUS ZONE 'C'

C1; Located on L4N at 1050E. This anomaly appears to be associated with anomaly B2 and is described in detail with B1 and B2 as a major exploration target.

C2; Located on L8N at 1300E. The anomaly appears to be a secondary target due to a moderate surface conductor and a moderate depth anomaly. Anomaly C2 would be considered a secondary target, however due to its characteristics, requires further geological and geophysical investigation.

C3; Located on L12N at 1350E, L14N at 1300E. This is considered as a secondary anomaly reflecting both a weak surface conductor and conductor at depth with continuity trending north-south for 400 metres. The anomaly could be reflecting the fault zone and no further investigation is recommended at this time.

C4; Located on L18N, 1300E and L20N, 1300E. Anomaly C4 is a secondary anomaly probably reflecting the continuation of a major north-south fault, therefore no further investigation is recommended at this time.

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The C series of anomalies also appears to reflect a continuous fault or fracture pattern.

ANOMALY 'D'; Located on L2N, 1400E. This anomaly is a primary exploration target. The EM reflects two surface conductors over a strong conductor at depth, along a major northeast-southwest cross fault that intersects anomaly B1. Anomaly D is located in the south-east corner of the TPl claim along with anomalies B1, B2 and C1. This portion of the claim appears to be a major exploration target area, and should be first priority to be followed up with detailed geology, geophysics and possibly drilling.

SUMMARY OF EM ANOMALIES (MAP SHEET 1)

The VLF-EM survey indicated numerous EM conductors however after considerable data analysing, the anomalies are reduced to three categories as follows;

- (1) Primary anomalies which require further detailed geological mapping detailed geophysics and possibly drilling. There are a total of 10 primary anomalies designated A1, A3, A4, B1, B2, B3, B5, C1, C2 and D.
- (2) Secondary anomalies which should not be investigated further until more positive results are obtained from continued exploration on the primary targets. There are five secondary anomalies designated A2, A5, B4, C3 and C4.

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- (3) Surface anomalies which are probably reflecting non mineralized moisture filled fractures on which no work is recommended.

CONCLUSIONS & RECOMMENDATIONS

Sutherland Resources Ltd. owns the TP 1 mineral claim comprised of 15 units, located about ten miles southeast of Merritt, British Columbia.

The property is underlain by Triassic Nicola rocks consisting of volcanic flows, tuffs and minor sediments.

A VLF-EM survey was conducted over the property during October, 1980 by Columbia Geophysical Services Ltd.

The geophysical survey has indicated ten primary anomalies and five secondary anomalies. The primary anomalous zones are interpreted as being associated with faulting and possible sulphide mineralization and further exploration is warranted.

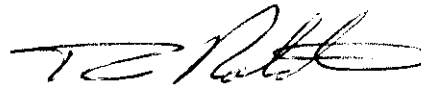
It is recommended that the entire property be geologically mapped in conjunction with detailed magnetic, electromagnetic, geochemical and induced polarization surveys over selected anomalous areas.

Contingent upon results of the above exploration program, a second phase, consisting of diamond drilling, should be undertaken to test significant anomalous zones.

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Respectfully submitted,



T. Rolston, Project Geophysicist
Columbia Geophysical Services Ltd.

December 5, 1980.



W. G. Timmins, P. Geol.
W.G. Timmins Expl. and Dev. Ltd.

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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), transmitted at 18.6 KHz, from Seattle, Washington or at 17.8 KHz from Cutler, Maine.

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.

Columbia geophysical supplies ltd.

7050 HALLIGAN STREET, BURNABY, B.C. V5E 1R6

Phone: (604) 526-1732
or (604) 687-6671

CERTIFICATE OF QUALIFICATIONS

I, Tom Rolston, of 7050 Halligan Street, Burnaby, B.C. have actively been engaged in my profession since 1953 and state as follows:

1. 11 years with the R.C.A.F. as Instrument and Electronic Technician with crew supervisory capacity in various electronic and instrumentation systems.
2. Two years with Kerr-Addison Mines Ltd. as Electronic Technician servicing, repairing and maintaining various type of geophysical instruments, with two seasons as Field Supervisor and Geophysical Instrument Operator in mining exploration, including airborne and ground geophysical surveys, geochemical surveys, geophysical and geochemical drafting and mapping.
3. 10 years with Geotronics Surveys Ltd. as Field Supervisor of geophysical and geochemical surveys and Instrument Operator of various geophysical instruments such as airborne and ground systems magnetometer, electromagnetic, gravity meter, self-potential meter, scintillometer and induced polarization.
4. The past 15 years contracting geophysical survey in close association with mining engineers for various mining companies.
5. President and Manager of Columbia Geophysical Services Ltd.

DATED at Burnaby, British Columbia this 20 day of NOV 1980.



Tom Rolston, Geophysical Operator and Project Geophysicist
For: Columbia Geophysical Services Ltd.

CERTIFICATE

I, WILLIAM G. TIMMINS, maintaining offices at 201-909-5th Avenue S.W., Calgary Alberta do hereby certify that:

1. I am a geologist having been practising my profession for seventeen years.
2. I am a graduate of the Provincial Institute of Mining, Haileybury and have attended Michigan Technological University, Houghton, Michigan.
3. I am a member in good standing of the Association of Professional Engineers of British Columbia, and of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
4. I have no interest direct or indirect in the property or securities of Sutherland Resources Ltd., nor do I expect to receive any such interest.
5. This report is based on government and private reports, and an analysis of VLF-EM data with T.C. Rolston of Columbia Geophysical Services Ltd.

Dated at Calgary, Alberta this 5th day of December, 1980.



W.G. Timmins, P. Geol.
Consulting Geologist.

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C. DRILLING (Details in report submitted as per section 8 of regulations.)
 (The itemized cost statement must be part of the report.)

D. GEOLOGICAL, GEOPHYSICAL, GEOCHEMICAL
 (Details in report submitted as per section 5, 6, or 7 of regulations.)
 (The itemized cost statement must be part of the report.)
 (State type of work in space below.)

		COST
37.5 L.Km. SURVEY CRID @ 50 ⁰⁰		1875 ⁰⁰
18 L.Km. GEOPHYSICAL VLF-EM SURVEY @ 200 ⁰⁰		3600 ⁰⁰
DATA REDUCTION, BRACKETING & REPORTS		2500 ⁰⁰
TOTAL OF C AND D		7975 ⁰⁰

Who paid for the above-described work? Name SUTHERLAND RESOURCES LTD
 Address 8029-510 W. HASTINGS ST.
VANCOUVER B.C.

Portable Assessment Credits (PAC) Withdrawal Request		AMOUNT
Amount to be withdrawn from owner(s) account(s):		
Name of Owner		
(May be no more than 30 per cent of value of the approved work submitted as assessment work in C and (or) D.)	1.	
	2.	
	3.	
	4.	
TOTAL WITHDRAWAL		
TOTAL OF C AND (OR) D PLUS PAC WITHDRAWAL		

I wish to apply \$ 4500⁰⁰ of this work to the claims listed below.

(State number of years to be applied to each claim and its month of record.)

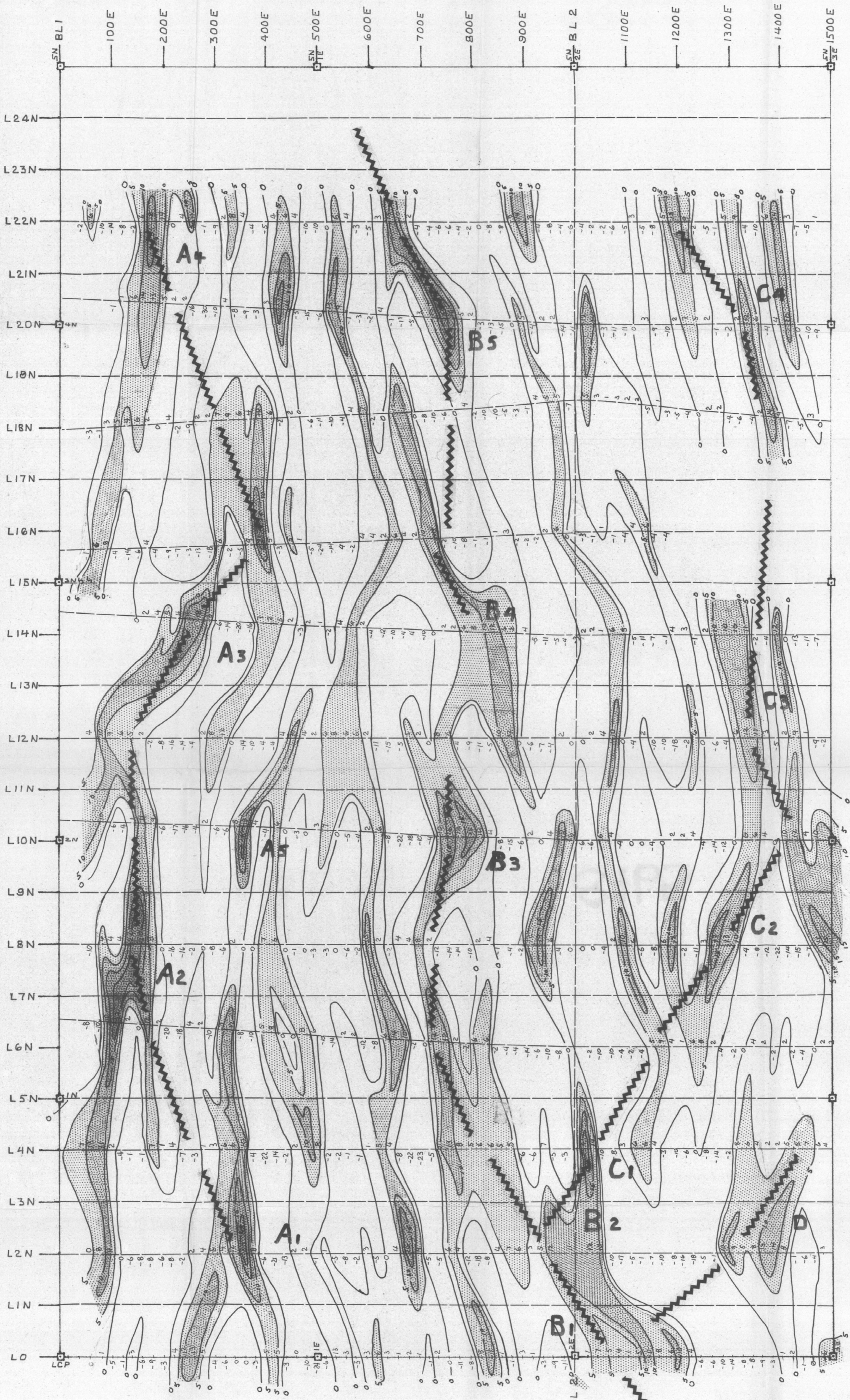
TP 1 Rec # 774 (11) apply 3 yr. work
15 UNITS.

TERP

Value of work to be credited to portable assessment credit (PAC) account(s).

(May only be credited from the approved value of C and (or) D not applied to claims.)

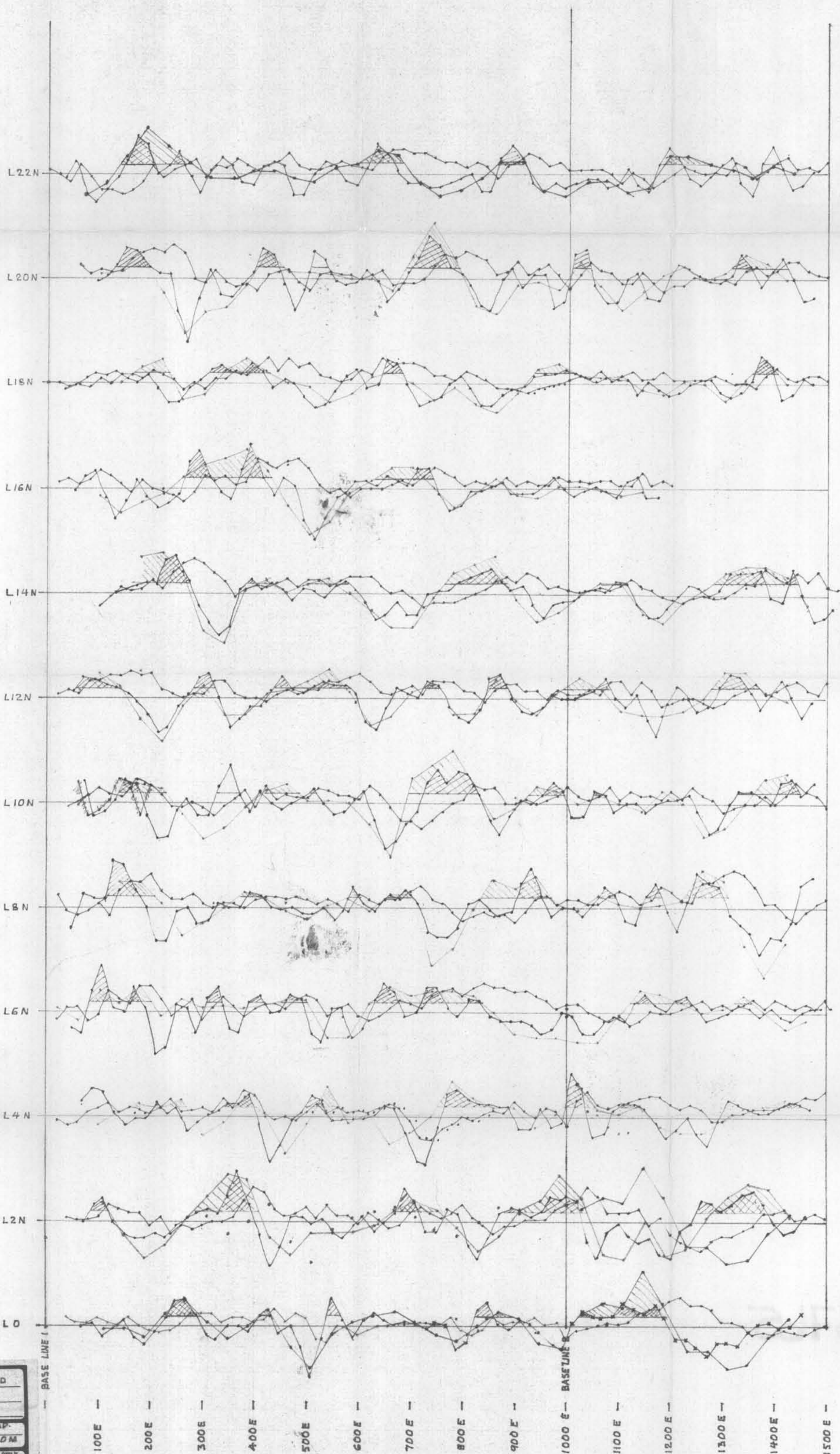
		AMOUNT
In owner(s) name.	1.	
	2.	
	3.	
In operator(s) name (person paying for the work).	1.	
	2.	



SEATTLE 18.6 KHz
23°

MINERAL RESOURCES BRANCH
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NO.

SUTHERLAND RESOURCES LTD.			
TPI CLAIM, NICOLA M.D.			
MERRITT AREA, B.C.			
VLF-EM SURVEY - CONTOUR MAP			
Type of survey CONTOUR INT. 5° FRASER FILTER 20M			
scale 1:4000	date OCT 80	job no. R037	sheet no. 1
		drawn by TWR	
COLUMBIA GEOPHYSICAL SERVICES LTD.			



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TPT CLERMONT NICOLA M.B.
MERRITT AREA B.C.
VLF-EM SURVEY PROFILE MAP
FRASER FILTER 20M and 40M
1:4000 OCT 80 4837 2" TWR
COLUMBIA GEOPHYSICAL SERVICES LTD.