

5096

92J/3E

GEOPHYSICAL REPORT

ON A

VLf-EM SURVEY

HIT CLAIM GROUP

BRANDYWINE FALLS, VANCOUVER M.D., B.C.

JUNE, 1974

It, Hit

92J/3E

**HIT Claim Group: 8.5 miles west of the settlement
of Alta Lake, B.C.**

: 50°123 S.E.

: N T S - 92J/3E

**Report by: David G. Mark
Geophysicist
Geotronics Surveys Ltd
302-475 Howe Street
Vancouver, B.C.**

**for: Abaca Resource Industries Inc.
728-510 W. Hastings Street
Vancouver, B.C.**

Date signed: August 19, 1974

**Department of
Mines and Petroleum Resources**

ASSESSMENT REPORT

NO. 5096 MAP

Geotronics Surveys Ltd.

Vancouver, Canada

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SUMMARY

A VLF-EM survey was completed over the greater portion of the 39 claim Brandywine Falls property of Abaca Resource Industries Inc. The claims are located near the confluence of Callaghan and Alexander Creeks which is about 8½ air miles west of the settlement of Alta Lake. Access is by Highway 99 north from Vancouver and 6 miles of fairly good gravel road which run through the property. The terrain is moderate and the vegetation consists of large conifers with moderate underbrush. Two small lakes as well as several small creeks are found throughout the claims.

Though no detailed geological mapping of the area has been done, it appears that the property is underlain by Coast granitic rocks intrusive into Triassic-Cretaceous sediments and volcanics. The property is on strike of the sulphide veins found on the Northair property and on those found on the Consolidated Standard and Yukon Gold Placers property.

A model 27 Sabre Electronics instrument was used to carry out the survey. The resulting in-phase data was Fraser-filtered, plotted, and contoured on a 5-degree interval.

The survey produced several fairly strong anomalies, 4 of which are of primary interest. In general the anomalies do not seem to be caused by topography though there is some correlation. At least one of the anomalies seems to be caused by a fault.

CONCLUSIONS

1. The property is on strike of the Northair vein and the Consolidated Standard and Yukon Gold Placers vein and is located over at least one major geologic contact.
2. The VLF-EM survey produced several anomalies of fairly good intensity and/or of good length.
3. It is probable that at least one of these anomalies is caused by sulphides similar to those found in the area.
4. The 4 best anomalies are found to the west of the baseline. This is in accordance with the observation on the property that outcrops found west of the baseline appear to be more conducive to mineral deposition.

RECOMMENDATIONS

Considering the above and that a VLF-EM survey should be interpreted with other work, further exploration is definitely warranted on the property. The work recommended is as follows:

1. Since the claims were staked in a 'hot' area it is strongly recommended to first carry out a perimeter survey of the claims to ensure that all of the property covered by the claims belong to Abaca.

2. A soil geochemistry survey should be carried out over the property and the samples tested for gold and silver.

3. Self-potential work should be carried out wherever soil geochemistry anomalies are coincident with VLF-EM anomalies. This has been found to work excellently on the Northair property.

4. The geology of the property should be thoroughly mapped. This would enable a better interpretation of the geophysics and the geochemistry.

Respectfully submitted,
GEOTRONICS SURVEYS LTD



David G. Mark
Geophysicist

GEOPHYSICAL REPORT
ON A
VLF-EM SURVEY
HIT CLAIM GROUP
BRANDYWINE FALLS, VANCOUVER M.D., B.C.

INTRODUCTION AND GENERAL REMARKS

This report discusses the procedure, compilation, and interpretation of a very low frequency electromagnetic (VLF-EM) survey carried out on the HIT claim group during June, 1974.

The field work was under the supervision of the writer. The number of line miles completed was approximately 20 and the area covered by the survey is as shown on Fig. 2.

The object of the VLF-EM survey was to outline any probable areas of gold-silver mineralization as is found on the nearby Northair Mines property. Here gold-silver occurs within vein-type deposits of iron, copper, lead, and zinc sulphides. A secondary object was to delineate fault, shear, or contact zones that may be important to the control and deposition of any possible mineralization.

PROPERTY AND OWNERSHIP

The property is comprised of 39 contiguous mineral claims as shown on Figure 2 and as described in the table below:

<u>CLAIM NAME</u>	<u>RECORD NUMBER</u>	<u>EXPIRY DATE</u>
IT 51-54 Fractions	22690-3	27 June '75
IT 36-46	22708-18	3 July '75
HIT 1-6	25198-203	14 Nov. '74
1st HIT Fraction	25204	18 Jan. '75
2nd HIT Fraction	25205	18 Jan. '75
MISS Fraction	25206	18 Jan. '75
HIT 7-18	25207-18	18 Jan. '75
GAP 1, 2	25939, 40	28 Feb. '75
GAP Fraction	25941	28 Feb. '75

The recorded owner of the claims is D.J. Hall who apparently is holding the claims for Abaca Resource Industries Inc.

LOCATION AND ACCESS

The property is located 8.5 air miles west of the settlement of Alta Lake, B.C. which itself is 70 air miles north of Vancouver.

The geographical coordinates are 50° 09' N. latitude and 123° 08' W. longitude.

Access to the claims is gained by travelling north along Highway 99 about 69 miles from Vancouver to where Callaghan Creek crosses the road (about 3 miles past Brandywine Falls). A short distance northeast of Callaghan Creek, one turns north onto a fairly good gravel road and travels about 5 miles to a fork. The claim group is about 1 mile past the fork on the left road.

PHYSIOGRAPHY

The property is found within the physiographic unit known as the Coast Mountains, the terrain of which in general is quite rugged. The terrain of the property itself, however, is moderate. The slopes vary from level to about 30° with rock bluffs occurring locally.

Two small lakes occur within the claims area and Alexander Creek flows southerly on the east side of the claims area. Small creeks are found throughout the property.

The property is covered by a coniferous forest of large trees with moderate underbrush.

HISTORY OF PREVIOUS WORK

Apparently, no previous geological, geochemical, geophysical or physical work has been carried out on these claims.

GEOLOGY

The geological description is taken from M.K. Lorimer's engineering report on the property.

"There appears to be no detailed geological mapping of the area and no attempt was made by the writer to study the geology on his visit. However, on the basis of available information and observations, it may be assumed that the area is underlain by Coast granitic rocks intrusive into Triassic-Cretaceous sediments and volcanics, and having a northwesterly strike."

"Rocks exposed by road cuts near the southern boundary indicate the presence of a contact between granodiorites and argillites in the vicinity. An oxidized zone in this area carries pyrite. This contact is on the projection of a major contact mapped by C. Camsell of the Geological Survey of Canada (Map 1711, 1917)."

"Although it is two miles away, the property is on the strike of the Northair veins."

INSTRUMENTATION AND THEORY

A VLF-EM receiver, model 27, manufactured by Sabre Electronic Instruments Ltd of Burnaby, B.C. was used for the survey. This instrument is designed to measure the magnetic component of a very low frequency (VLF) electromagnetic field. The U.S. Navy submarine transmitter located at Seattle, Washington and transmitting at 18.6 KHz. was used.

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 IP). 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 base line was measured in from the initial post of HIT 1 and 2 mineral claims in a N 15 W direction by chain and compass. This direction was considered as

the best average of the strike of the mineralization on the Northair property, the strike of the mineralization on the Consolidated Standard and Yukon Gold Placers property and the direction to the VLF-EM transmitter at Seattle. The base line was blazed in and marked by blue flagging every 100 feet.

The cross lines (or survey lines) were compassed and chained in every 400 feet in a perpendicular direction to the base line. The stations on these lines are 100 feet apart and are also marked by blue flagging tape. Readings were taken by the instrument at these stations and were read facing southerly towards Seattle.

COMPILATION OF DATA

The readings were reduced by applying the Fraser Filter. Filtered data, as shown on sheet 1, are plotted between the reading stations. The positive filtered values were contoured at intervals of 5° .

The Fraser filter is essentially a 4 point difference operator which transforms zero crossings into peaks, and a low pass smoothing operator which reduces 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 cross-over on the unfiltered data quite often will show up on the filtered data.

DISCUSSION OF RESULTS

The VLF-EM survey, as can be seen on Sheet 1, has produced several anomalies (or conductive zones) most of which are definitely worthy of exploration interest. These are discussed below and are labelled A to M respectively.

The writer would like to point out that interpretation of a VLF-EM survey without correlation with other work such as geological, geochemical, and/or geophysical surveys is very difficult. The possible causes of a VLF-EM anomaly can be many and therefore much of the following is conjectural.

The causitive source of any of the anomalies including the unlabelled ones of low intensity and small size

could well be sulphides. Considering the number of anomalies, it is unlikely all of them are caused by sulphides. However, it seems quite probable that sulphides are the causitive source of at least one anomaly, considering the number of anomalies on the property and the proximity of sulphide veins in the areas.

Anomalies A,B,C, and D are of primary interest because of their size and their relatively high intensity. Anomaly A reaches an intensity of 35° and the other three anomalies are not far below that. Anomalies A and B are at least 4,000 feet long and open to the south. Anomaly C is at least 2,000 feet long open to the north and probably joins anomaly F to the south, which would give it a minimum length of 4,000 feet. Anomaly D is at least 1,200 feet long, is open to the north and south, and could very well join anomaly E which would give it a minimum length of 3,600 feet.

Anomaly D is of special interest because of its greater than normal width. This indicates that the causitive source is of moderate conductivity on the edges of the anomaly and increase in conductivity towards the center.

This could be caused by zoning within a sulphide deposit that has mineralization within the center giving it greater conductivity. It is unlikely caused by a fault because of the width.

There is a waterfall within anomaly A which indicates part of its cause could be a fault.

None of the anomalies A to F seem to be reflecting topography though there is some correlation between anomaly B and topography.

Anomalies G and H have good intensity, have a minimum length of about 1,000 feet and are open to the south. Anomaly H correlates very well with a gully. Ordinarily, if terrain effects a VLF-EM survey, such as gullies and ridges, a gully would produce a VLF-EM low. Therefore in this case the gully is probably caused by a fault which is causing the anomaly.

Anomalies I, J and possibly K, as seen on the map occur in swampy areas. Therefore, the probable cause of these anomalies is either clay sediments deposited in the swamps

or electrolytes produced by the swamps.

Anomaly L has fairly good intensity, has a minimum length of 800 feet and is open to the north. Anomaly M is of lower intensity but has a minimum length of 1,600 feet and is open to the north as well.

As mentioned above, the unlabelled anomalies of low intensity or small size should not be entirely precluded. These would be reflecting sulphide zones of low conductivity or at depth.

Respectfully submitted,
GEOTRONICS SURVEYS LTD



David G. Mark
Geophysicist

August 19, 1974

SELECTED BIBLIOGRAPHY

Fraser, D.C., Contouring of VLF-EM Data, Geophysics,
Vol. 34, No. 6 (December) 1969.

Lorimer, M.K. Report on the Fahey Group for Abaca Mining
Ltd (N.P.L.), L.J. Manning and Associates,
February, 1974.


GEOPHYSICIST'S CERTIFICATE

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

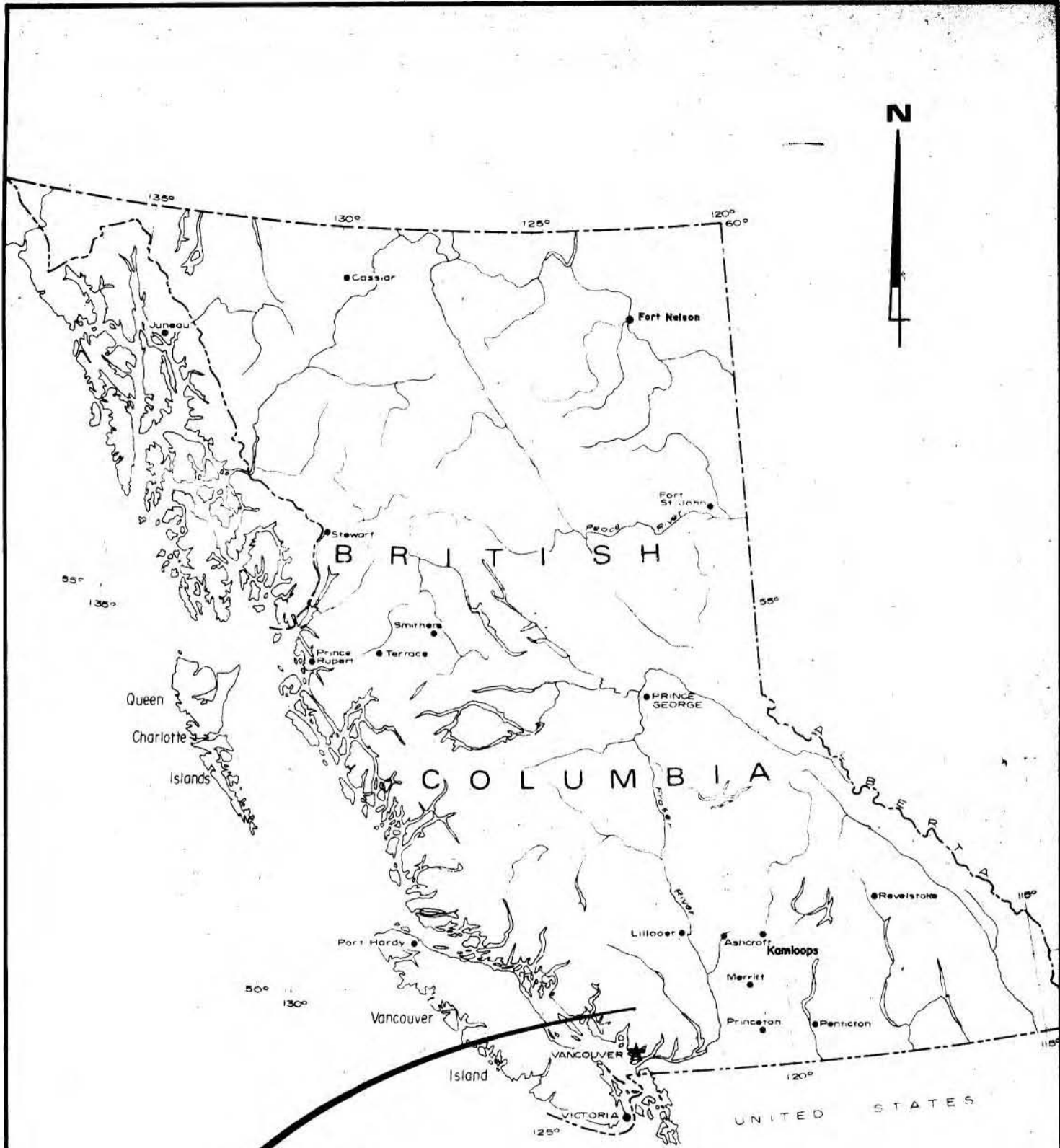
That I am a Consulting Geophysicist of
Geotronics Surveys Ltd., with offices at 302-475 Howe
Street, Vancouver, B.C.

I further certify that:

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 in my profession for the past six years and have been active in the mining industry for the past nine years.
3. I am an active member of the Society of Exploration Geophysicists and a member of the European Association of Exploration Geophysicists.
4. This report is compiled from data obtained from a VLF-EM survey carried out under the supervision of myself, during June, 1974 on the HIT claim group.
5. I have no direct or indirect interest in the properties or securities of Abaca Resource Industries Inc., Vancouver, B.C. nor do I expect to receive any interest therein.


David G. Mark
Geophysicist

August 19, 1974



HIT CLAIMS GROUP

FIG. 1

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5096 MAP #1

GEOTRONICS SURVEYS LTD.
ABACA RESOURCE INDUSTRIES INC.
"HIT" CLAIMS GROUP
VANCOUVER M.D., B.C.
LOCATION MAP
 SCALE 1" = 134 mi

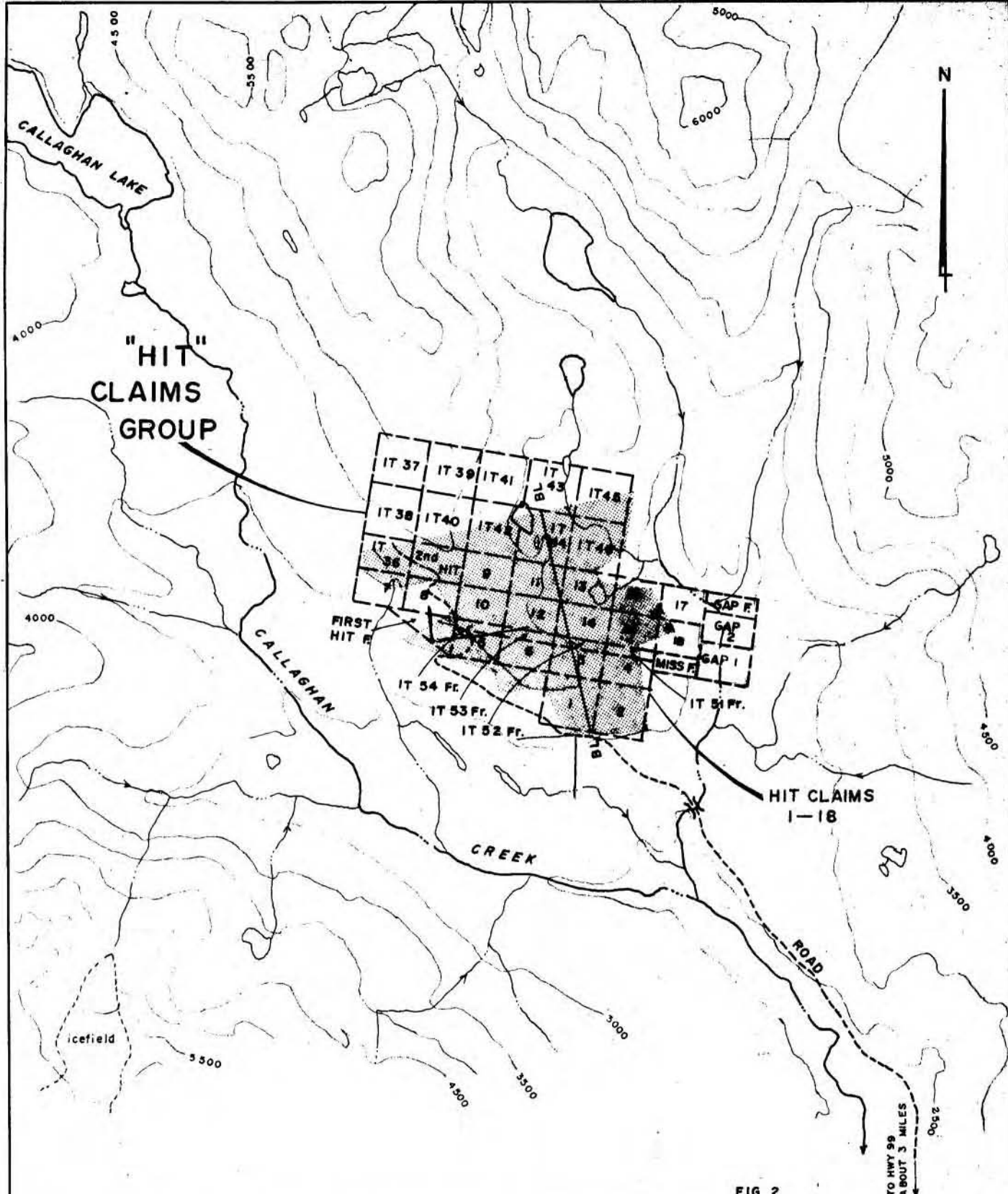



FIG. 2

 SURVEY AREA
 Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. **5096** MAP **#2**

GEOTRONICS SURVEYS LTD.
ABACA RESOURCE INDUSTRIES INC.
 "HIT" CLAIMS GROUP
 VANCOUVER M.D., B.C.
CLAIM MAP

DRAWN BY PDT DRAFTING SERVICES	SCALE 1" = 4000'	DATE AUGUST 1974
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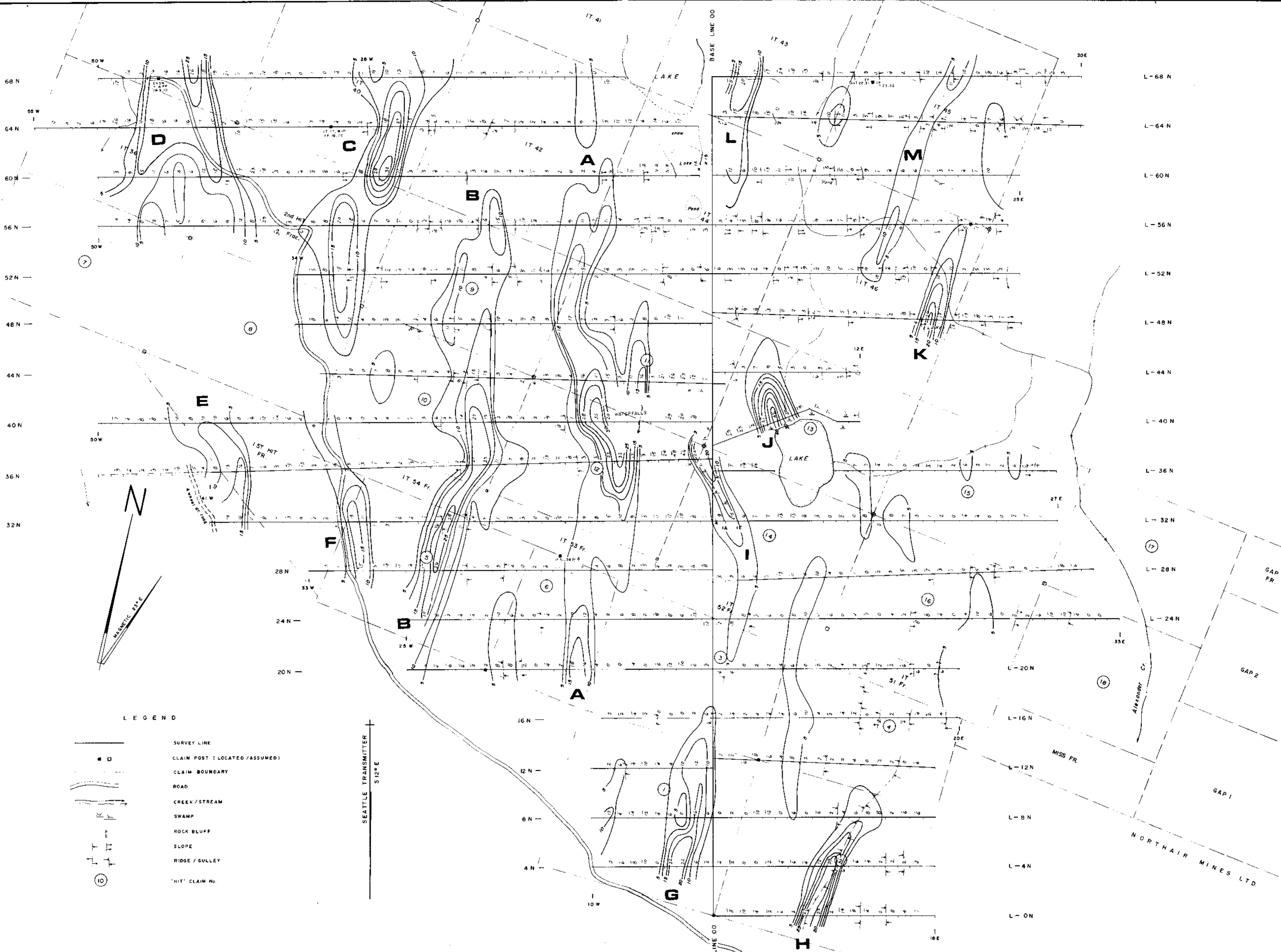
COST BREAKDOWN
VLF-EM SURVEY
on the
HIT CLAIM GROUP
BRANDYWINE FALLS, VANCOUVER M.D., B.C.

David Mark, Geophysicist @ \$150/day for 10 days	\$1,500.00
Dennis Mark, helper-instrument operator @ \$100/day for 10 days	1,000.00
1 x 4-wheel drive, rental @ \$30/day for 10 days	300.00
1 x Sabre model 27 VLF-EM instrument at \$20/day for 10 days	200.00
Survey supplies	105.00
Drafting, printing and geophysical report	700.00
TOTAL	<u>\$3,805.00</u>

Declared before me at the *City*
Vancouver, in the
Province of British Columbia, this *20th*
of *August, 1974*



Jean Paul SUB-MINING RECORDER
A Commissioner for taking Affidavits within British Columbia
A Notary Public in and for the Province of British Columbia



LEGEND

- SURVEY LINE
- CLAIM POST (LOCATED / ASSUMED)
- CLAIM BOUNDARY
- ROAD
- CREEK / STREAM
- SWAMP
- ROCK BLUFF
- SLOPE
- RIDGE / GULLEY
- 'HIT' CLAIM NO.

NOTE: READINGS ARE IN DEGREES.
CONTOUR INTERVAL IS 5'.

Department of Mines and Petroleum Resources ASSESSMENT REPORT TO ACCOMPANY GEOPHYSICAL REPORT BY D.G. MARK, GEOPHYSICIST NO. 5096 MAP #3		GEOTRONICS SURVEYS LTD.
ABACA RESOURCE INDUSTRIES INC. 'HIT' CLAIM—GROUP BRANDYWINE FALLS, B.C. VANCOUVER M.D.		
VLF-EM SURVEY DATA & CONTOURS—FRASER FILTER		
PDI DRAFTING SERVICES SCALE: 1" = 400' DATE: AUGUST '74	JOB No.: 74-28 DRAWN: PECEK	SHEET: 1

5096
M3