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GEOPHYSICAL REPORT

on a

VLF-EM SURVEY

CR No. 1 CLAIM

CORBETT LAKE AREA, NICOLA M.D., B.C.

CR No. 1 CLAIM	:	14.5 kms S50°E of Merritt, B.C. and 0.6 kms N25W of the north end of Corbett Lake.
	:	N.T.S. 92I/2E
Written for	:	Burdos Mines Ltd., 1029-510 West Hastings Street, Vancouver, British Columbia
by	:	David G. Mark GEOTRONICS SURVEYS LTD., 420-890 West Pender Street, Vancouver, British Columbia
Dated	:	December 11, 1978

GEOTRONICS

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VANCOUVER, CANADA

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ILLUSTRATIONS

SUMMARY

During the last part of May and during July, 1978, a detailed VLF-EM survey was carried out over a portion of the C.R. #1 Claim in the area of the main showing. The C.R. #1 Claim is located 14.5 kms. S50E of Merritt, British Columbia, and 0.6 kms. N25W of the north end of Corbett Lake within the Nicola Mining Division. Access to much of the property can be gained by a two-wheel drive vehicle. The terrain consists mainly of flat to moderate slopes with the vegetation being grazing-type grass over much of the property. The purpose of the survey was to test the response of the VLF-EM method over the main showing and consequently test for any possible extension of the zone as well as new ones by way of mapping geological structure and/or sulphide mineralization directly.

Previous work has consisted of an inclined shaft, several trenches, an induced polarization survey, a soil geochemistry survey, and diamond drilling.

The property is mainly underlain by Lower Cretaceous volcanics of the Kingsvale Group which consist of flows, tuffs, and breccias. The mineralization consists of copper sulphides and native copper occurring as disseminations in amygdules and in thin fractures in andesite flows.

The VLF-EM readings were taken every ten meters on 30-meter separated east-west lines using Seattle as the transmitter station. They were then Fraser-filtered plotted and contoured.

CONCLUSIONS

1. The VLF-EM survey has reflected the main showing as a 70-meter long anomaly.

2. The anomalies strike in the same direction as the contacts as mapped by Preto and therefore are probably largely reflecting contacts. Preto shows the main prospect to be on a contact.

3. Many of these anomalies that could be of prime interest occur in the immediate area of the showing as well as over the rest of the property. This is especially true of the anomaly that occurs at the southwest end of anomalies d and f because of its appearing to reflect cross-structure.

RECOMMENDATIONS

1. The VLF-EM survey has been quite useful in the mapping of structure, especially contacts, which may be related to copper sulphides, and therefore should be continued over the rest of the property, or, at least the area underlain by the Kingsvale Group.

2. A magnetic survey for the purpose of geological mapping should be done over the property.

3. All the work done to date on the property should be compiled and correlated. The previous work, especially the soil geochemistry when correlated with the VLF-EM survey could be very useful in determining other areas of exploration interest. If the results of this work isn't available, or if it cannot be correlated properly, then the writer would strongly recommend a soil geochemistry survey as well as geological mapping. Special emphasis should be placed on the VLF-EM anomalies.

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CR #1 CLAIM

CORBETT LAKE AREA, NICOLA M.D., B.C.

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 carried out on the CR #1 Claim during the latter part of May, 1978 and during July, 1978.

The survey was done under the field supervision of T.W. Rolston with the aid of three instrument operators. A total of 12.5 line kms. of VLF-EM were done.

The primary purpose of the VLF-EM survey was to extend the known zones of copper mineralization found on the property. A secondary object of the VLF-EM survey was to delineate faults and/or shear zones which may be found to be important to the locating of additional mineralization.

PROPERTY AND OWNERSHIP

The CR # 1 Claim consists of one claim of 20 units as shown on Figure 1 and as described below:

Claim Name	No. of Units	Record No.	Tag No.	Expiry Date
CR #1	20	356 (12)	17861	Dec 16, 1978

The property is owned by Burdos Mines Ltd., of Vancouver, British Columbia.

LOCATION AND ACCESS

The legal post of the CR #1 Claim is located on Highway No. 5 14.5 kms. S50E of Merritt, British Columbia, and 0.6 kms. N25W of the north end of Corbett Lake.

The geographical coordinates are 50° 02'N latitude, and 120° 37'W longitude.

Access to the property is quite good and can be gained by a passenger car providing the road is dry (See Figure 1). One travels along Highway No. 5 for 17½ kms. south-east of Merritt where the legal claim post is located, and then turns east onto a dirt road. About 2 kms. along this road is the shaft and trenches.

PHYSIOGRAPHY

The CR #1 Claim lies in the southern part 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 to northwest. Elevations vary from 1,050 meters a.s.l. in the southwest corner to 1,400 meters a.s.l. in the northeast corner to give a relief of only 350 meters.

The main water source is Corbett Lake which sits about 0.5 km. south of the CR #1 Claim. There are a few creeks which drain southwesterly through the property and into Corbett Lake.

Vegetation varies from grazing-type grasses over most of the property to a lightly dense forest along the eastern and northern parts. It consists of pine, fir and spruce.

HISTORY OF PREVIOUS WORK

There is evidence of much physical work having been done on the property, but the writer is unsure of the date. The inclined shaft and several trenches, as well as diamond drilling and I.P. and geochemistry surveys were approximately done in the 1960's.

GEOLOGY

The following is based upon the engineering report done by T. R. Tough and the regional mapping done by Preto.

The property is underlain by the Lower Cretaceous Kingsvale Group. The rock-types within this group found on the property are plagioclase-rich reddish, brown, and maroon flows, tuffs and breccias of andesitic to basaltic composition; and reddish volcanic conglomerates. These rocks are divided by contacts trending N30°E and a 35° drip to the south-east.

On the eastern edge of the property of Upper Jurassic to Lower Cretaceous Age are chert pebble and cobble conglomerates and minor interbedded grit and sandstone.

East of the property separated from the above-mentioned rocks by a northeast-trending regional fault and north of the property are Nicola volcanics of Upper Triassic to Lower Jurassic age.

The mineralization consists of chalcopyrite, chalcocite, bornite, and native copper occurring as disseminations in amygdules and in thin fractures in andesitic flows. The main showing consists of a shallow inclined shaft sunk on a mineralized amygdaloidal, dark grey basaltic flow which is overlain by red tuffs.

VLF-EM SURVEY

1. 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 low 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.

2. Survey Procedure:

The VLF-EM survey was run on a grid in which the lines run east-west at 30-meter intervals from a baseline running due north-south. Dip angle readings were taken every 10 meters with the instrument facing towards the transmitter at Seattle. Fluroescent pink flagging was placed at each 10-meter station with the grid coordinates marked thereon.

3. Compilation of Data:

The readings were reduced by applying the Fraser Filter and then plotted on a map to the scale of 1:1,000 (1 cm = 10 m). Filtered data, as shown on Figure 2, are plotted between the reading stations. The positive filtered values were contoured at intervals of 2^{o} starting at 0^{o}.

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 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 anomalies are very long and linear in shape which is also suggestive of structure being the causitive source.

For the purpose of this discussion, an anomaly is, therefore, described as containing any value above 0^{o}. The result is that there exist a number of anomalies which to some may appear to be too many. However, it must be remembered that one of the primary purposes of the survey was to map geological structure, and the writer feels this is better accomplished by contouring at a close contour interval beginning at 0^{o}.

The trend of almost all of the VLF-EM anomalies is N20-40^{o}E. This is in complete agreement with the strike of the contacts as mentioned by Tough and as mapped by Preto. Therefore, the most likely causitive source of these anomalies are contact zones. However, it is entirely possible that some of these anomalies may alternately be caused by fault, shear or fracture zones.

There are at least 7 of these zones shown by the lower case letters b to h. Anomaly a quite possibly reflects a northeast-trending contact zone as well but it appears the survey only touched a portion of this anomaly.

To the immediate east of the inclined shaft between anomalies c and d, is a small low amplitude anomaly that strikes N20E and therefore very likely reflects the contact between the basaltic flow and the overlying red tuff. About 30 meters northwest of the shaft is a much stronger, longer anomaly that strikes N35^{o}E. Considering its higher amplitude quite possibly this anomaly is reflecting a fault. The two anomalies join together about 120 meters to the northeast.

The strongest, largest anomaly within the survey area is found in the southwest corner. It appears to be a combination of anomalies d and f. Unlike the main, northeasterly trend of the VLF-EM anomalies, this one strikes northerly. It is unusually wide with much of the width being greater than 100 meters. This width may be caused by a wide conductive zone (faulting, fracturing, or shearing), with increasing conductivity toward the center, or, by several conductors, not necessarily in the same direction, giving a total effect of one zone. The latter is much more likely since within the anomalous zone there appear to be several conductors striking in different directions. Since these conductors likely reflect geological structure, then the more probable areas for the occurrence of sulphide mineralization would be where these conductors cross each other.

The north end of this anomaly trends directly towards the anomaly to the immediate east of the shaft. Therefore, it could well be that part of this anomaly (the large one) is reflecting the same contact as the shaft anomaly is. Parallel and between these two anomalies about 40 meters to the east, is another anomaly that could well be the faulted segment that would join the shaft anomaly with the southern larger one.

Most of the VLF-EM anomalies have at least one area that likely reflect cross-structure. As mentioned above, these should be areas paid closer attention for the possibility of occurring sulphide mineralization.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.,

David Mark
Geophysicist

December 11, 1978

SELECTED BIBLIOGRAPHY

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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 at 420-890 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 ten years and have been active in the mining industry for the past thirteen 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 T. W. Rolston during the last part of May and during July, 1978.
5. I have no direct or indirect interest in Burdos Mines Ltd., nor in the property described herein, nor do I expect to receive any interest.

David G. Mark
Geophysicist

December 11, 1978

AFFIDAVIT OF EXPENSES

Established survey grid, VLF Electromagnetic survey, mapping and sampling was carried out on the CR #1 Claim, Corbett Lake Area, Nicola Mining Division, British Columbia to the value of the following:

FIELD

May 25 - 30, July 28 - 30, 1978

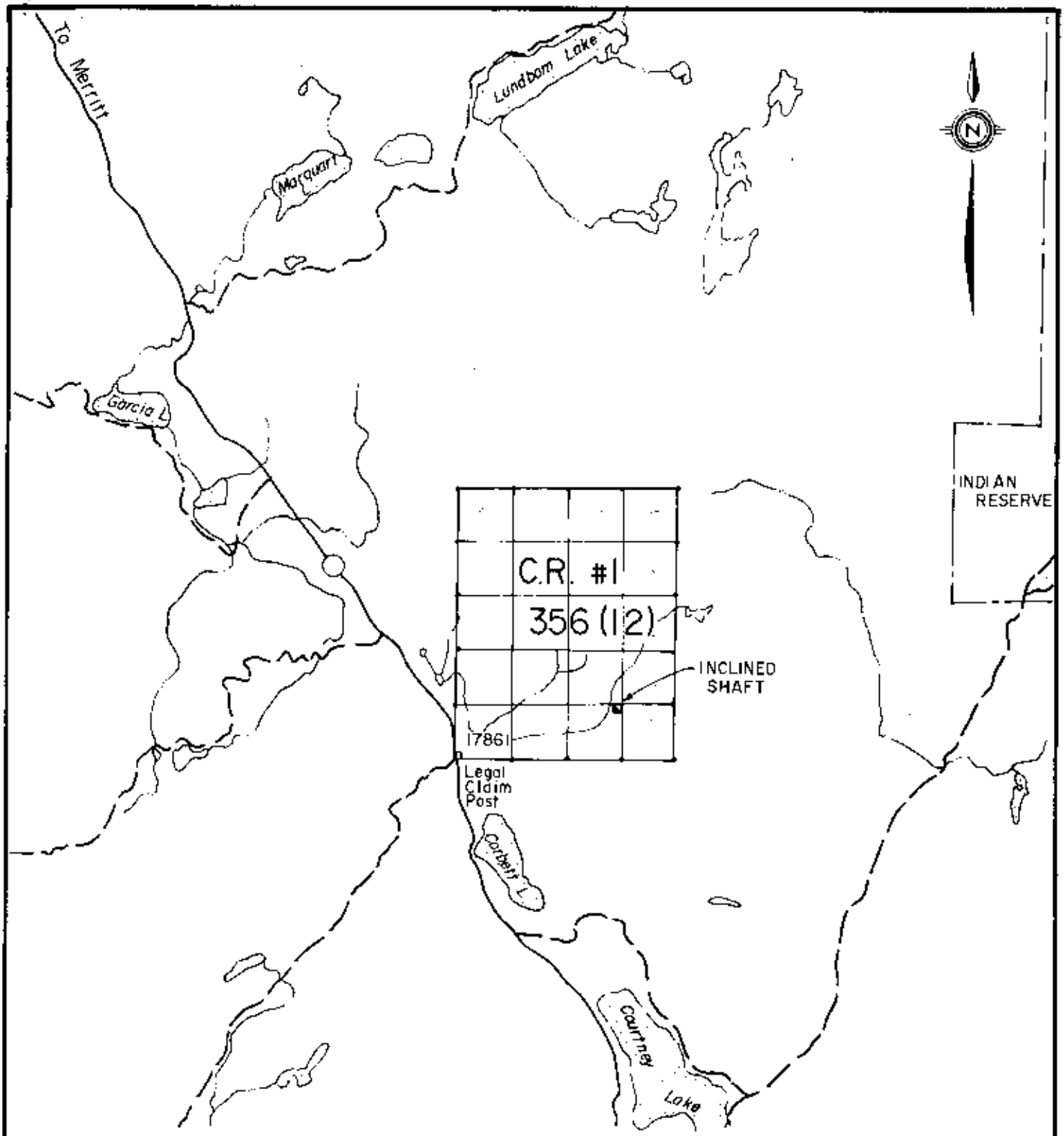
Wages and fees: 4 man geophysical crew; 10 days at $400.00	$4,000.00	
Travel expenses and truck rental	448.14	
Food and Lodging and Supplies	385,62	
Mapping and preliminary report	500.00	$5,333.76

REPORT

Geophysicist, 9 hours at $30.00	$ 270.00	
Office assistant, 7 hours at $15.00	105.00	
Drafting and printing	210.00	
Typing, xeroxing and compilation	100.00	685.00
TOTAL		$6,018.76

Respectfully submitted,
COLUMBIA GEOPHYSICAL SERVICES LTD.,

Tom Rolston, Manager



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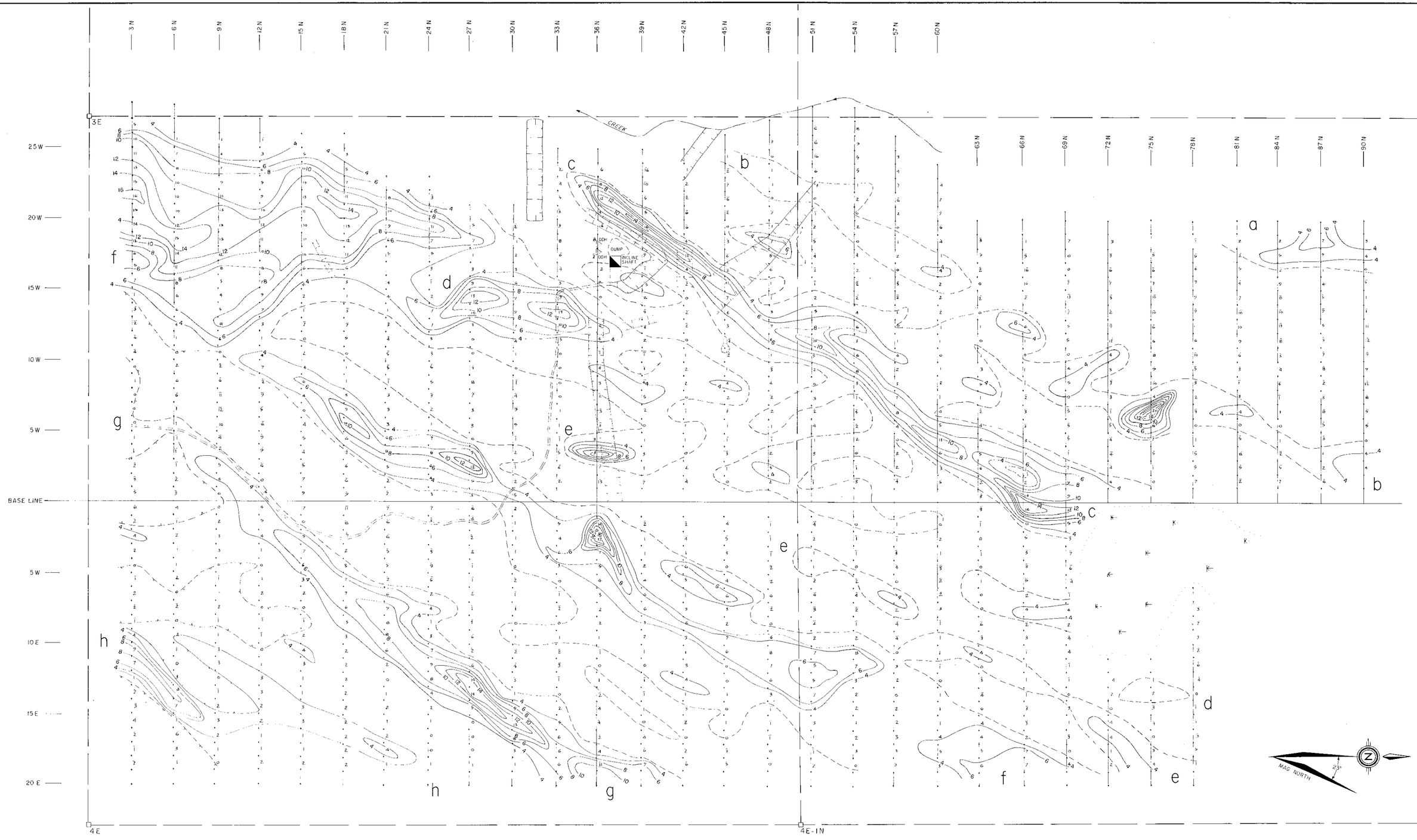
BURDOS MINES LTD.

CR #1 CLAIM

CORBETT LAKE AREA, NICOLA M.D., B.C.

LOCATION MAP

DRAWN BY:	JOB No.	DATE:	SCALE:	FIG. No.
Altair	78-33	AUG. 1978	1:50,000	1



LEGEND

- 4E — T.D. Post
- dirt road
- swamp
- pit
- trench
- shaft

INSTRUMENT : SABRE MODEL 27

0°

2° — 16°

CONTOUR INTERVAL - 2°

SEATTLE TRANSMITTER
18.6 KHz

SCALE IN METRES
10 0 10 20 30 40 50 60 70 80 90 100

To accompany geophysical report by David G York Geophysicist

GEOTRONICS SURVEYS LTD.

BURDOS MINES LTD.
CR#1 CLAIM
CORBETT LAKE AREA, NICOLA MID., B.C.

VLF EM SURVEY
FRASER FILTERED
DATA & CONTOURS

DRAWN BY:	JOB No	DATE:	SCALE:	FIG No
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