

Geophysical Report
on the
LG -1 Mineral Claim
Kamloops Mining Division
British Columbia

N.T.S. 82 L 14E
Latitude 50° 48' North
Longitude 119° 03' West

Covering the LG-1 Claim (12 units)
located near Sicamous, B. C.

Work performed between September 1988 - January 15, 1989

Owners:

D. A. Leishman and W. Gruenwald

by

Douglas A. Leishman, B. Sc.
Consulting Geologist

Kamloops, B. C.

April 12, 1989

ARIS SUMMARY SHEET

District Geologist, Kamloops

Off Confidential: 90.01.10

ASSESSMENT REPORT 18701

MINING DIVISION: Kamloops

PROPERTY: LG
LOCATION: LAT 50 48 00 LONG 119 03 00
UTM 11 5629368 355536
NTS 082L14E

CLAIM(S): LG 1
OPERATOR(S): Leishman, D.A.
AUTHOR(S): Leishman, D.A.
REPORT YEAR: 1989, 18 Pages

COMMODITIES

SEARCHED FOR: Lead, Zinc, Silver, Copper

KEYWORDS: Mara Formation, Quartzite, Mica schist, Pegmatite dykes, Sphalerite
Galena, Chalcopyrite, Pyrrhotite

WORK
DONE: Geophysical
EMGR 2.9 km; VLF
Map(s) - 2; Scale(s) - 1:2000

RELATED

REPORTS: 15523
INFILE: 082LNW021, 082LNW023, 082LNW024, 082LNW025

LOG NO: 0503	RD.
ACTION:	
FILE NO:	

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FILMED

MINERALOGICAL BRANCH
ASSESSMENT REPORT

18,701

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Summary

A recent geophysical (VLF-EM) survey has been completed on the LG-1 mineral claim in the Kamloops Mining Division near Sicamous B. C. A previous geological examination indicates the claims are underlain by mafic volcanics within a package of siliceous sediments of the Mara Formation (Archean age). Stratabound lenses of massive sulphides with grades up to 12% combined lead-zinc and 5 ounces silver have been found on the property. The known mineralized horizon shows a strong electromagnetic (E.M) and magnetic response. Previous electrical surveys have indicated numerous E. M. conductors, most of which have not been properly evaluated. In addition, it appears the precious metal potential of the LG-1 claim has been overlooked.

The most recent work completed has extended the strike extension of the known mineralized horizon to the west and has delineated a second, and possibly more significant E. M. conductor to the south.

Untested geophysical targets, a favourable geological environment and indications from previous work gives the LG-1 claim excellent exploration potential for the discovery of stratabound massive sulphide mineralization.

Introduction

A recent VLF-EM survey on the LG-1 mineral claim has more accurately delineated the massive sulphide horizon. In addition, a second, better defined conductor has been outlined to the south of this mineral horizon.

This survey was part of the preliminary work towards the re-evaluation of the LG -1 property (formerly Annis). Future work will include a complete compilation of past data, the expansion of the newly established grid for future geological, geochemical and geophysical surveys and the dewatering of the adit for examination of the underground workings.

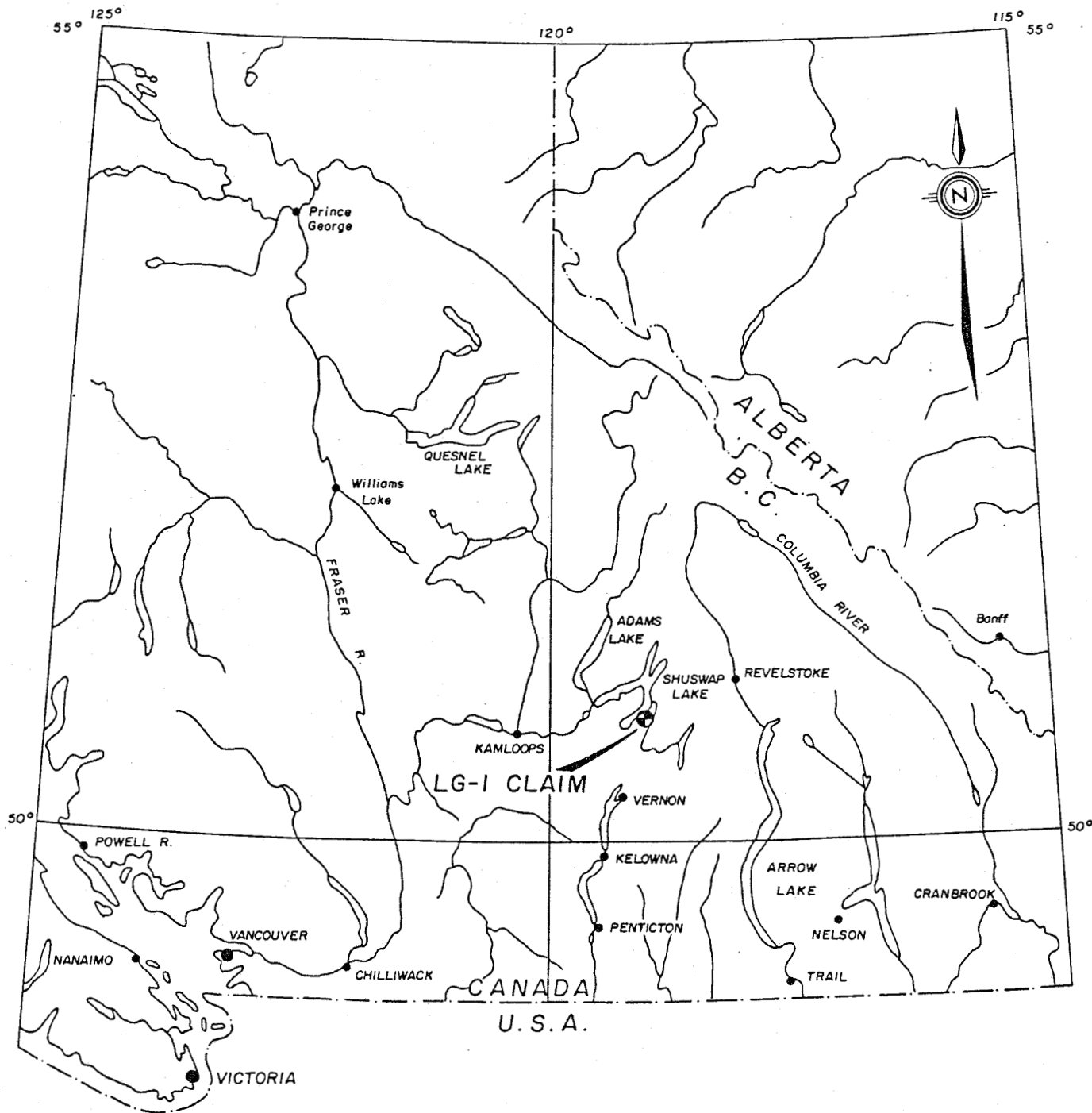
The report below outlines the survey work completed on the LG-1 mineral claim in the fall of 1988.

Location, Access and Physiography

The LG-1 mineral claim is located in south central British Columbia within the Kamloops Mining Division. The claim is situated approximately 8 kilometres southwest of the town of Sicamous on the east side of the Trans Canada Highway (Figures 20-1 and 20-2). Geographic co-ordinates of the centre of the claim are 50° 48' North Latitude and 119° 03' West Longitude. The property is located on N.T.S. Map No. 82L/14E.

Access to the property is via a short gravel road that leaves the highway approximately 7.5 kilometres southwest of the town of Sicamous, B. C. This road is followed for 3 kilometres to the southeast where it leads to the centre of the claim block (Figure 20-2). Recent logging activity within the area of the claim block allows for access most of the year.

The property lies on a ridge between the Salmon Arm of Shuswap Lake and Mara Lake. The central portion of the claim block straddles the relatively flat ridge top, while the northwest and southeast corners of the claim slope steeply to the northwest and southeast respectively. The total relief within the area of the claims is approximately 340 metres, ranging



LOCATION MAP

LG-1 CLAIM

KAMLOOPS MINING DIVISION, B. C.

Technical Work By:
D. Leishman B.Sc. W. Gruenwald B.Sc.

Scale: 1:2,500,000 (1cm = 25km)

Date: Jan., 1987.

Drawn By: W.G.

Fig. No. 20-1

from 610 metres a.s.l. in the northwest corner to 950 metres a.s.l. along the south central portion of the claim group. The known mineral occurrences are located near the 850 metre elevation in the west central portion of the claim group.

Rock exposure is limited, with the exception of sections along the road cuts and small knolls along the ridge tops. Overburden cover appears to be minimal (less than 5 metres), as indicated by previous trenching .

The property is covered by moderately thick stands of cedar, fir, hemlock and pine with minimal undergrowth. Recent logging activity has resulted in the clearing of large areas of the claim group. New roads have been the result of this recent logging. Freshly exposed rock faces along these new roads warrant examination.

Property

The LG-I mineral claim consists of 12 units and covers an area of approximately 300 hectares. All claim posts have been placed and claim lines are well marked.

Claim Name	Units	Record No.	Expiry Date
LG-I	12	6487	January 15, 1990

The owners of the claim are D.A. Leishman (Kamloops) and W. Gruenwald of Penticton, British Columbia.

History

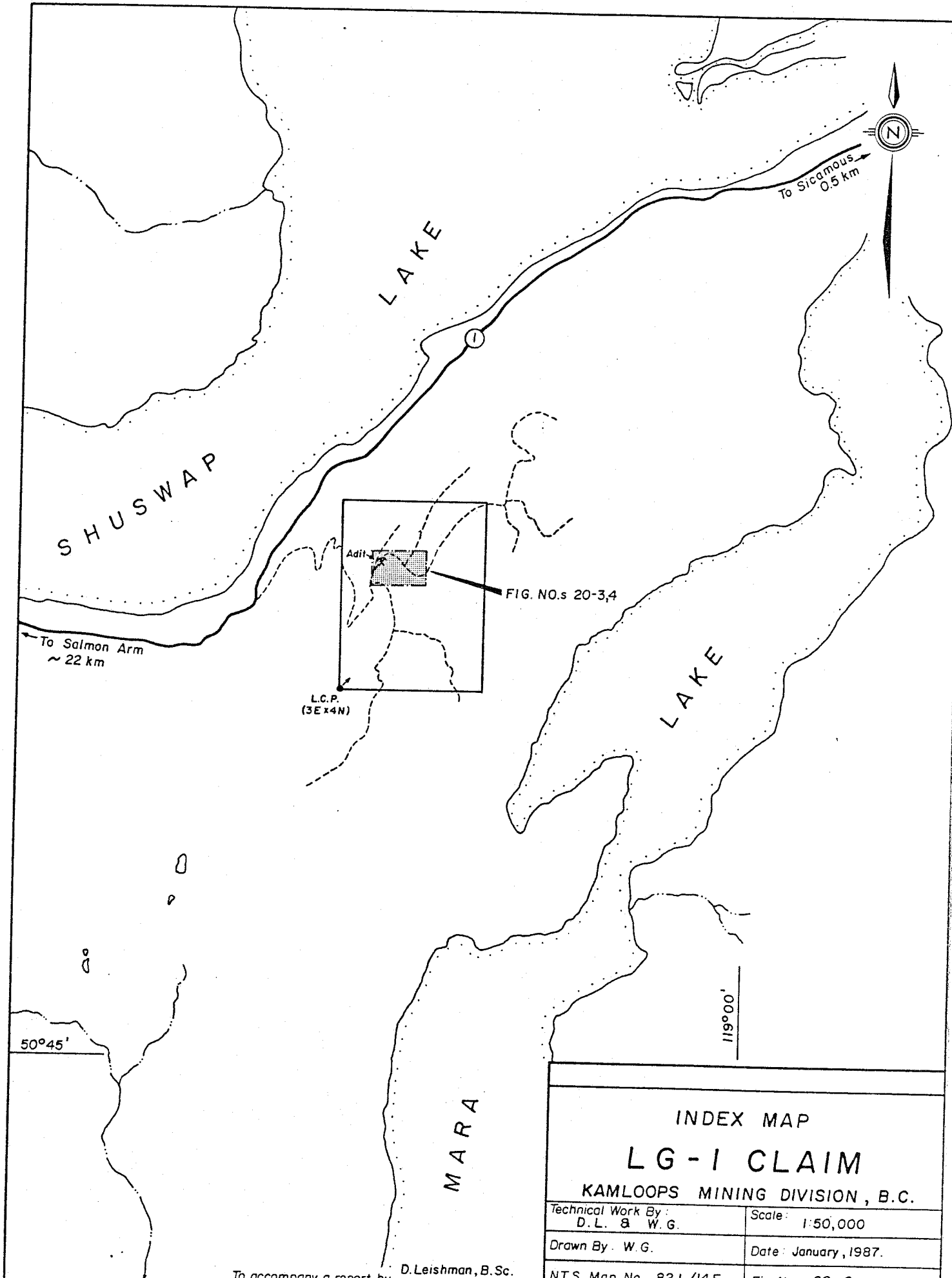
The area covered by the LG-I mineral claim has undergone intermittent periods of work since 1958. In 1958 an 85 foot adit was driven to intersect the downdip extensions of previously discovered surface showings of massive sulphide mineralization. In 1964, as documented in the M.M.A.R., Annis Mines Ltd. trenched the property in the area of

lead-zinc-copper mineralization (surficial expressions of the mineralization developed underground). In 1965 the same company extended the adit to 125 feet. Trenching and prospecting was also continued. By 1966 the adit was extended to 160 feet and 5 short holes were drilled by the company. Mineralization was reported in all 5 holes however no logs or assay values are presently available. It was reported in 1967 that further trenching had extended the strike of known mineralization to 2,000 feet.

Further work within the claim area was recorded by Sicamous Resources Ltd. in June 1973. This work was followed up in 1976 by the same company in the form of a geochemical soil survey which outlined a large zinc anomaly. Based on this work and the known mineralization the property was then optioned to Granges Exploration from a Mr. J. Hussein. In that year (1977), Glen White Geophysical Consulting Services Ltd. carried out a pulse type E.M. survey.

In 1978 Maverick Mountain Mines completed a geochemical soil survey which was followed by the diamond drilling of 13 shallow holes (1794 feet drilled). No further work was recorded on the property until it was picked up by Caltex Hydrocarbons Inc. in 1981.

The work completed by Caltex Hydrocarbons Inc. included a magnetic and soil sampling survey over areas of the E.M. response previously indicated by White's survey. This work was successful in outlining an area of strong magnetic response with co-incident geochemical values. This was in an area where no trenching had been completed, nor was there any known mineralization. One short drill hole (by Maverick Mountain Mines Ltd.) in this area was reported to have intersected sulphide mineralization over an interval of 1.5 metres however it is believed this intersection was at least 100 metres from the magnetic anomaly described above (Gruenwald 1982). Unfortunately drill records are not available. Apparently this zone is in an area south of the projected strike of the known mineralized horizon (Adit Zone). It is believed this work by Caltex was the last work completed on this property prior to being acquired by Gruenwald and Leishman.



To accompany a report by D. Leishman, B.Sc.

INDEX MAP LG-1 CLAIM KAMLOOPS MINING DIVISION, B.C.	
Technical Work By: D.L. & W.G.	Scale: 1:50,000
Drawn By: W.G.	Date: January, 1987.
N.T.S. Map No. 82 L/14E	Fig. No. 20-2

Regional Geology

Mapping by the Geological Survey of Canada indicates that the LG-1 claim to be underlain by rocks of the Archean (or later) Mount Ida Group. The Mara Formation, which consists of quartzites, argillites, limestones, and schists (sericite and chlorite) underlies the immediate area of the claim group. The predominant foliation within these metamorphosed units strike's approximately east to west with an indicated dip of 35° to 45° to the north. A major, northerly striking fault is indicated by the G.S.C to pass through the claim group. The claims lie very near the western margin of the extensional Shuswap Metamorphic Complex.

Property Geology

The description of the property geology is taken from Gruenwald (1982) and from observations made by the owners during visits to the property.

The LG-1 claim is underlain by units of the Mara Formation which consist mainly of quartzites, micaceous quartzite, micaceous schists, granite gneisses and pegmatites. Graphitic schists were also observed. Not noticed by previous operators was a dark green mafic volcanic? unit which was seen in an area of trenching south and east of the adit.

The mica schists, the more common rock type observed, are a pale beige white colour, fine to locally coarse grained and weakly to moderately fissile. Muscovite mica is dominant in these schists, however lenses rich in biotite and chlorite have been observed. Intercalated with the mica schists are lenses of massive, generally fine grained, micaceous quartzites. Granitic and pegmatite dykes are common, in places cutting the local planes of schistosity near the north and western part of the property. These intrusive dykes are generally narrow (less than 1 metre width) and considered more likely products derived from partial melting during the intense metamorphism of the schists .

Observed schistosity attitudes were variable, with strikes ranging from N 70° E to N 145° E and dipping from 40° to 50° to the north.

Mineralization was observed in the dump immediately adjacent to the adit and in-situ in the road cut above the adit. This mineralization consisted of massive to semi-massive sulphides, made up of pyrite, sphalerite, galena with minor chalcopyrite and pyrrhotite. Mineralized horizons (up to 1 metre thick) observed in the road cut above the adit appear to be conformable to bedding. Character samples taken in this zone returned values up to 12% combined lead-zinc and 5 ounces silver. Copper and gold values were low. Scattered fragments of sulphide mineralization were found within the area of trenching however due to slumping and an inadequate grid system it was not possible to properly map mineralized zones.

Geophysical Surveys

Introduction

A VLF-EM survey was performed over a small portion of the LG-1 claim (Figure 20-3). The objective of this work was to extend the grid as initiated by Gruenwald and Leishman in 1987. A total of 2.9 kilometres of grid line was added to the grid and the VLF-EM survey was completed over these new lines using the Annapolis transmitting station.

The magnetic plan (Figure 20-4) is included with this report however new data plotted on this plan was completed after the deadline for this years assessment work. The cost of this survey data will be included in the following years assessment report.

A description of the VLF-EM survey method and results follows.

VLF-EM Survey

Instrumentation and Survey Method

All lines were surveyed with a Sabre Electronics VLF-EM unit, model 27, with readings taken at 25 metre intervals along the cross lines. Since the direction of the grid lines was north to south, the Annapolis transmitting station was used as the source of the primary field. A total of 2.9 line kilometres were chained, flagged and surveyed.

The Sabre Electronics VLF-EM unit and method of reading is similar to other VLF-EM equipment. The method of reading is to locate the orientation of the transmitting station (in this case Annapolis) from the null of the field strength. From orientation at right angles to the transmitting station, the maximum field strength (100%) is adjusted by a gain control knob. Turning back and facing the transmitter station, the unit is then held vertical. The coil now at right angles to the transmitting station is rotated to locate the field strength null position. The angle of rotation is then recorded either to the right (+) or left (-).

Lines were recorded in field notes as if all lines were surveyed in a south to north direction. This was done to facilitate the use of the Fraser Filter Method in order to calculate and display anomalies. The following calculation illustrates the Fraser Filter Method:

South a _____ b _____ c _____ d North where a, b, c, d are station readings. F is the Filtered Value with $F = (a + b) - (c + d)$.

The Fraser Filter Method serves three useful purposes in the display and interpretation of results:

(1) Crossovers (normal anomaly interpretation) are displayed as high positive numbers, which may be contoured to correlate the varying strength of a conductor along its axis, and to enhance interpretation and display of the better conductors.

(2) Topography has a major effect in the reading of ground EM equipment. Steep hills will influence either the positive or negative orientation of the hill. Consequently ridges will be displayed as apparent crossovers. The Fraser Filter Method helps to smooth out some of the topographic effect, consequently apparent anomalies are not as enhanced as if they had been shown as profiles of the raw data.

(3) For the same topographic reasons, strong anomalies may in fact not produce an actual crossover in steep terrain. The Fraser Filter Method enhances these anomalies to their proper perspective.

Presentation of Results

All readings are plotted on a 1 : 2,000 scale base plan with the raw data to the left and the filtered data to the right (see Figure 20-3).

All new data was contoured at +10° intervals to illustrate the interpreted anomalies. Results are classified as anomalous if over +10 °. The new lines have been plotted with the results obtained in the 1987 survey. The table below lists the new lines added to the grid for the 1988 survey work.

New Lines Established For 1988 Survey

Line	6W	4N to 3S
Line	5W	BL to 3S
Line	4W	0+50N to 3S
Line	3+50W	BL to 3S
Line	3W	BL to 3S
Line	2W	BL to 3S
Line	1+50W	0+50N to 3S
Line	1W	BL to 3S

Discussion of Results

A total of three VLF-EM conductors were outlined in the 1988 survey, one of which was an extension of a conductor outlined by the previous survey in 1987. These zones are shown on Figure 20-3 and discussed below.

1. On line 6+00W, 3+37 N a small amplitude conductor was outlined. This conductor has a Fraser Filtered Value of $+18^\circ$ and appears to be the western extension of the conductor that overlies the mineralized horizon as explored by the Adit (Adit Zone).
2. A conductor has been detected on two lines (L6+00W, 1+75S and L5+00W, 2+37S) with a maximum Fraser Filtered Value of 38° . This conductor has a strike direction of approximately north 50° west.
3. A bowl shaped conductor has been outlined to the south of the baseline and appears to be continuous from Line 4+00W to Line 1+00W. It appears to be closed to the west however further work is needed to determine if it is related to the one line conductor previously discovered on Line 4+50 W, 0+50N. This conductor is open to the east however further work is needed to determine the eastern extension of this zone. The maximum Fraser Filtered value of this zone is 57° . The well defined shape and some apparent magnetic association indicates this conductor is caused by massive sulphides.

Conclusions and Recommendations

The work completed by the owners on the LG-1 claim has clearly indicated that the known mineralized horizons have a good electromagnetic and magnetic response.

The most recent VLF-EM survey has better delineated the conductor that corresponds to the zone of known mineralization (Adit Zone). In addition, a second conductor having a strike length of greater than 300 metres has been outlined. This second conductor appears to be related to massive sulphide mineralization.

In-situ mineralization as seen by the owner/operators appears to be strata controlled. Also, the identification of mafic volcanics in the trenches indicates the geology of this property has never been properly mapped. There is no indication that gold assays were completed on a regular basis.

The LG-1 mineral claim hosts potentially economic, stratabound, massive sulphide mineralization. Further work should be orientated towards the re-evaluation of this claim geologically and geophysically. Recently drill hole data has been obtained from Government files that will assist in this evaluation.

Douglas A. Leishman
Douglas A. Leishman, B.Sc.
Consulting Geologist

April 12, 1989
Kamloops, B. C.

References

- Black, J. M., P.Eng. Geological, Geochemical and Geophysical Report, Sicamous Resources Ltd., June 1973
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- Gruenwald, W. Report on the Jeff & Big J3 Claims, Sicamous Area, for Caltex Hydrocarbons Inc., Sept. 1981
- Gruenwald, W. Geological, Geophysical and Geochemical Report Jeff and Big J3 Claims, Caltex Hydrocarbons Inc., Nov. 1982
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- Leishman & Gruenwald
Geophysical and Geological Report on the LG-1 Mineral Claim, January 1987
- White, Glen E. Geophysical Report on a Pulse E. M. Survey, Jeff & Big J Claims, Granges Exploration, Dec. 1977
- MaverickMountainMinesLtd.
Report on Soil & Geochemical Surveys & Diamond Drilling, Jeff & Big J Claims, 1978
- B. C. M. M. A. R. 1964 page 105
1965 page 205
1966 page 146
1967 page 135
- M.E.M.P.R. Mineral Inventory, N.T.S. 82 L/NW, Occurrence #21,#23,#24,#25, Annis Property

Appendix I

List of Personnel

D. A. Leishman , B.Sc.

September 23, (1/2 day)

November 18, 19th, (2 days)

January 12, 13, April 8, 10, 11,12

(office, 2.5 days)

Appendix II

Statement of Costs

Labour

D. A. Leishman, B.Sc. 5.0 days @ \$300./day \$1,500.00

Total \$1,500.00

Expenses and Disbursements

Truck Rental and Mileage (4 x 4) 2.5 days x \$45./day = \$112.50

Fuel 30.00

Equipment Rental: Sabre VLF-EM 2 days x \$20./day 40.00

Food 28.00

Drafting, xeroxing, printing and binding 90.00

Telephone & shipping 35.00

Total \$325.50

Total Expenses Incurred \$1,825.50

Appendix III

Certificate of Qualifications

DOUGLAS A. LEISHMAN, B.Sc., A.R.S.M.

Consulting Geologist

Suite 2-423 First Avenue, Kamloops, B. C.

Mailing Address: P. O. Box 1288 M.P.S. Kamloops, B.C. V2C 6H3
Telephone 604-828-6150

CERTIFICATE

I, DOUGLAS A. LEISHMAN, of Kamloops, British Columbia, Do Hereby Certify That:

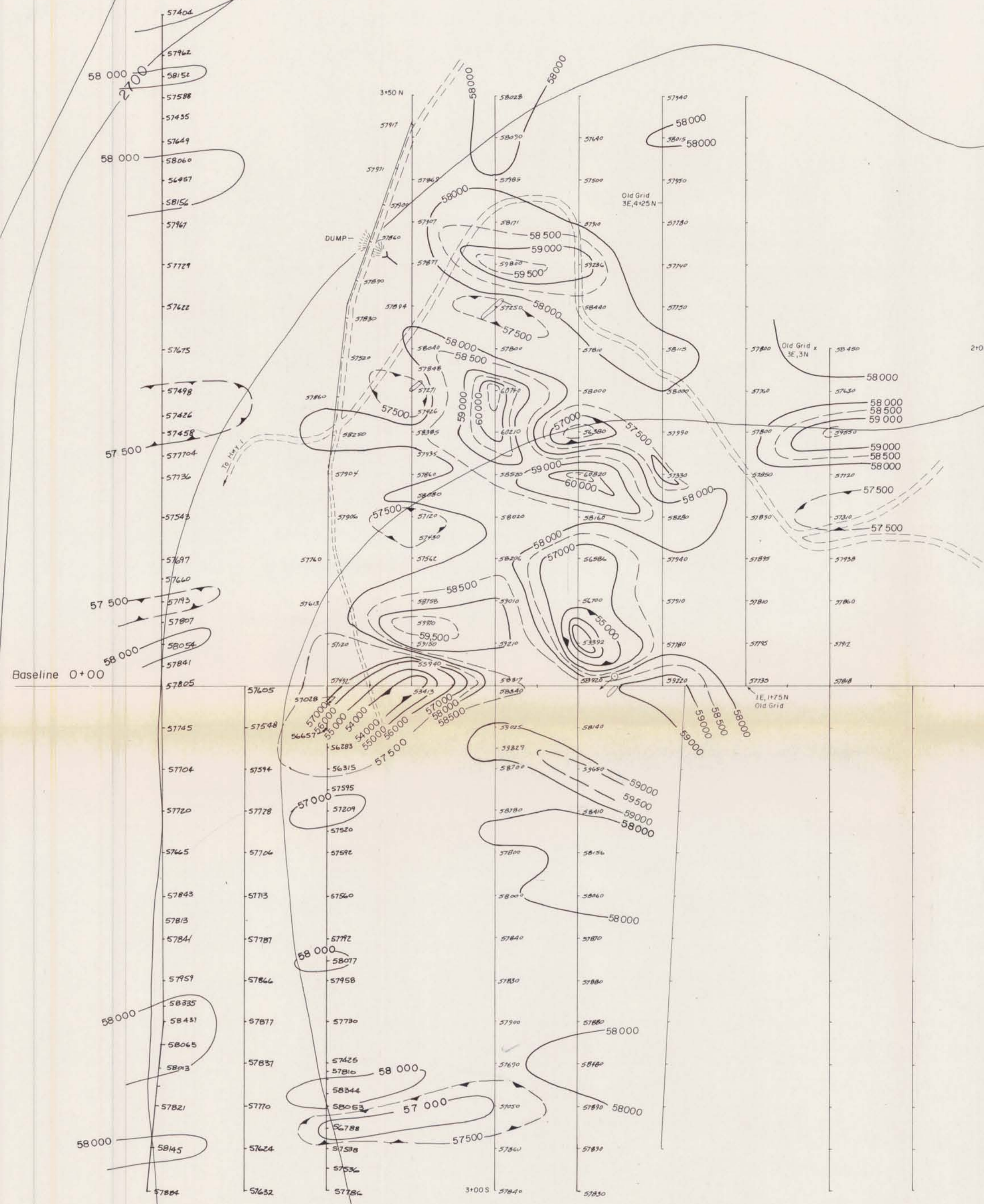
- (1) I am a self employed Consulting Geologist residing at the above address.
- (2) I am a graduate of the Northern Alberta Institute of Technology, Exploration Technology (Minerals Option), 1971, Edmonton, Alberta.
- (3) I am a graduate of the Imperial College of Science and Technology, Royal School of Mines, London, England, B.Sc. (Hons.) Mining Geology, 1981. I have been actively involved in mineral exploration since 1971.
- (4) I am an Associate of the Geological Association of Canada and a member of the Institute of Mining and Metallurgy (London, England).
- (5) I am the author of this report which is based on field work performed by myself during November 1988.

Douglas A. Leishman

Douglas A. Leishman, B.Sc.

Consulting Geologist

Kamloops, B. C.
April 12, 1989



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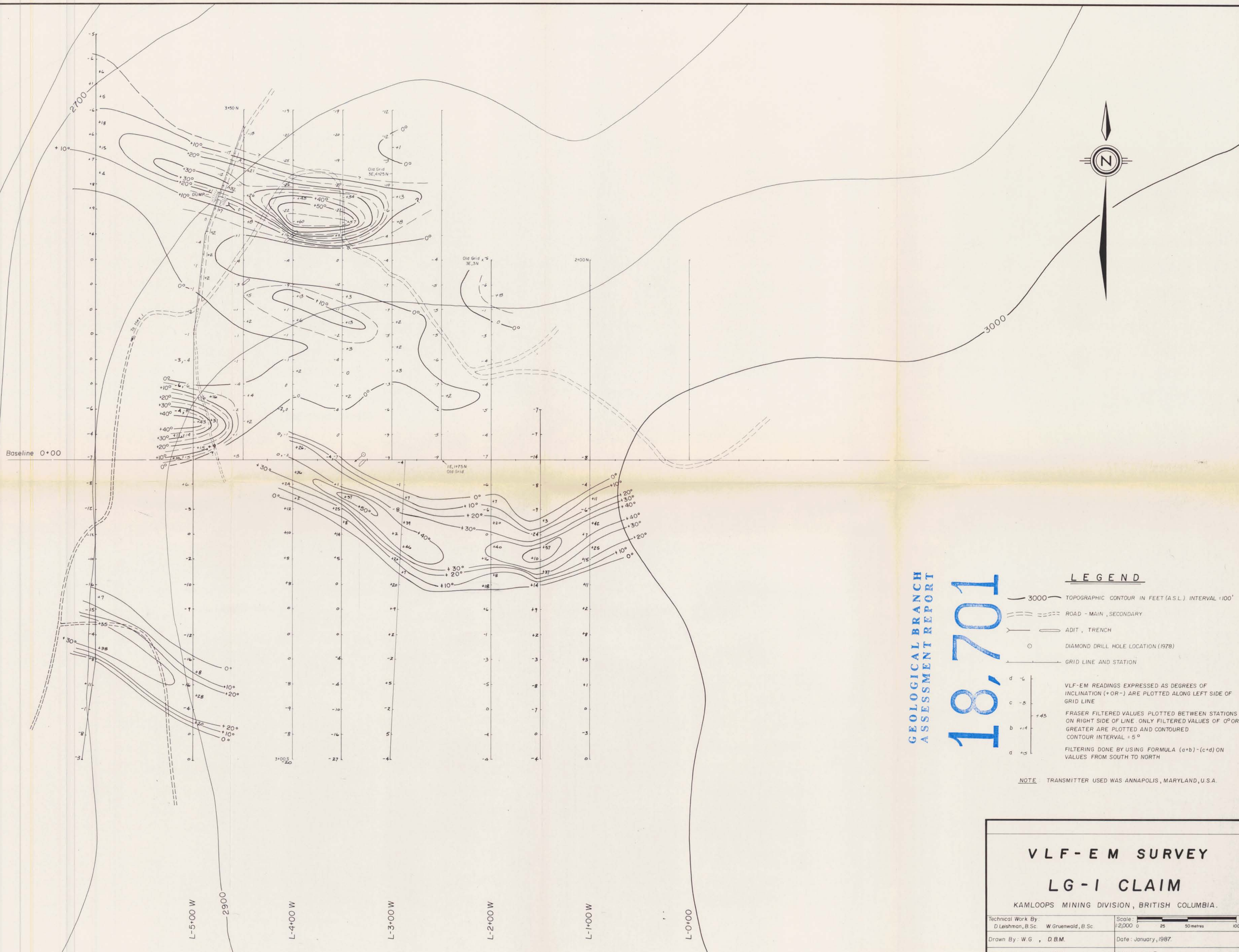
LEGEND

- TOPOGRAPHIC CONTOUR IN FEET (A.S.L.) INTERVAL = 100'
 - ROAD - MAIN, SECONDARY
 - ADIT, TRENCH
 - DIAMOND DRILL HOLE LOCATION (1978)
 - GRID LINE AND STATION WITH MAGNETIC VALUE EXPRESSED IN GAMMAS - TOTAL FIELD
 - ISOMAGNETIC CONTOUR - CONTOUR INTERVAL = 500 GAMMAS
 - MAGNETIC LOW
- NOTE: INSTRUMENT USED WAS A 'UNIMAG' PROTON MAGNETOMETER

**MAGNETIC PLAN
LG-1 CLAIM**

KAMLOOPS MINING DIVISION, BRITISH COLUMBIA.

Technical Work By: D. Leishman, B.Sc. W. Gruenwald, B.Sc.	Scale:
Drawn By: W.G., D.B.M.	Date: January, 1987.
Revised: April 1989	Fig. No. 20-4



GEOLOGICAL BRANCH
ASSESSMENT REPORT

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LEGEND

- 3000 TOPOGRAPHIC CONTOUR IN FEET (A.S.L.) INTERVAL = 100'
 - ROAD - MAIN, SECONDARY
 - ADIT, TRENCH
 - DIAMOND DRILL HOLE LOCATION (1978)
 - GRID LINE AND STATION
- d +6
c -8
b +14
a +15
- VLF-EM READINGS EXPRESSED AS DEGREES OF INCLINATION (+ OR -) ARE PLOTTED ALONG LEFT SIDE OF GRID LINE
- FRASER FILTERED VALUES PLOTTED BETWEEN STATIONS ON RIGHT SIDE OF LINE. ONLY FILTERED VALUES OF 0° OR GREATER ARE PLOTTED AND CONTOURED. CONTOUR INTERVAL = 5°
- FILTERING DONE BY USING FORMULA (a+b)-(c+d) ON VALUES FROM SOUTH TO NORTH

NOTE: TRANSMITTER USED WAS ANNAPOLIS, MARYLAND, U.S.A.

VLF-EM SURVEY

LG-1 CLAIM

KAMLOOPS MINING DIVISION, BRITISH COLUMBIA.

Technical Work By: D. Leishman, B.Sc. W. Gruenwald, B.Sc.	Scale: 1:2,000
Drawn By: W.G. , D.B.M.	Date: January, 1987.
Revised: April 1989	Fig. No. 20-3