4211

92 I/9W

GEOPHYSICAL REPORT

on

MAGNETIC AND VLF-EM SURVEYS

for

MANOR MINES LTD.,

RAMONA CLAIM GROUP

KNUTSFORD AREA, KAMLOOPS, M.D.

MARCH, 1972

Ramona Claim Group: 3/4 miles East of Knutsford

50° 120° NE

N.T.S. 92 I/9E

Written for:

MANOR MINES LTD
205-846 W Hastings Street,
Vancouver 2, B.C.

by:

Howard A. Larson
Geophysicist
Geotronics Surveys Ltd
514-602 W Hastings Street
Vancouver 2, B.C.

March 27, 1972

MAGNETIC AND VLF-EM SURVEYS
RAMONA CLAIM GROUP

TABLE OF CONTENTS

MAGNETIC AND VLF-EM SURVEYS
RAMONA CLAIM GROUP

TABLE OF CONTENTS

SUMMARY

VLF-EM and magnetic surveys were completed over a portion of the Ramona claims located approximately 3/4 of a mile east of Knutsford during March, 1972. The purpose of the surveys was to assist in the mapping of geology.

Access to the survey area was via Simm's road from Knutsford. The terrain is quite gentle with the exception of the valley sides in the western half of the property.

According to the G.S.C. map of the area, the property is underlain by rocks of the Cache Creek Group and the Nicola Group. No faults are shown but there is one copper occurrence on the southwest corner of the survey grid and one rock sample, seen by the writer, contained some minor pyrite mineralization.

The magnetic survey reflected the contact between the Nicola Group and the Cache Creek Group. The higher values appear to correlate with rocks of the Cache Creek Group while the lower values correlate with the rocks of the Nicola Group and a possible shear zone.

The VLF-EM survey correlated fairly well with the magnetics. While some of the anomalies appear to reflect the terrain variations there is good correlation with a possible shear zone. There is also a strong anomaly of which there is no surface expression of its caustive source.

CONCLUSIONS AND RECOMMENDATIONS

It is felt that the magnetometer and VLF-EM surveys were successful in their objective of supplying information on the structural geology of the property. The contact between the Nicola Group and the Cache Creek group was positioned and mapped relative to the survey grid and one fault was located.

The copper mineralization in the Nicola group is generally found within veins, impregnations, stockworks, and mineralized shear zones in the country rock. The principal copper minerals being chalcopyrite and bornite as well as some chalcocite, cuprite, azurite and malachite. Often magnetite and pyrite occur with the copper mineralization.

The Cache Creek rocks of this area show some gold and silver mineralization in quartz veins and also in some intrusive granitic rocks. Also the G.S.C. geology map shows one copper occurrence near the contact with the Nicola group.

From the above it is felt that further work should be carried out in the following manner.

1) It is important that the property be thoroughly geologically mapped to verify the position of the contact and to locate additional targets. This mapping could be assisted by continuing the magnetometer and VLF-EM surveys over the remainder of the property. Special attention should be given to the area around the VLF-EM anomaly in the northeast section of the survey area.

2) The property should be soil sampled with emphasis placed on areas in the Nicola group showing possible shear zones, veins, impregnations, and stockworks.

3) Based on results from above, an induced polarization survey should then be carried out.

Respectfully submitted,

Howard A. Larson

Howard A. Larson, Geophysicist
GEOTRONICS SURVEYS LTD

February 29, 1972

GEOPHYSICAL REPORT

ON A

MAGNETIC & VLF-EM SURVEYS

RAMONA CLAIM GROUP

KNUTSFORD AREA, KAMLOOPS M.D., B.C.

INTRODUCTION AND GENERAL REMARKS:

This report discusses the procedure, compilation and interpretation of a fluxgate magnetometer survey and a very low frequency electromagnetic (VLF-EM) survey carried out on the Ramona Claim group in March, 1972.

The field work was carried out by the writer, and R.S. Simpson. The number of line miles completed with both magnetometer and VLF-EM was approximately 9 and the 3,600 feet Base line was read with the magnetometer.

The object of both the magnetic and VLF-EM surveys was to obtain information on the structural geology of the property. In addition the VLF-EM may possibly reflect sulphide zones.

LOCATION AND ACCESS 50° 37.5' 120° 20'

The survey area is located about 3.5 miles south of Kamloops and about 2.5 miles east of Rose Hill.

Access to the property is obtained by travelling 3.3 miles south on Highway #5 from its junction with Highway #1. One then goes east on Simm's Road for approximately 0.6 miles to the initial post of Ramona #47.

PROPERTY AND OWNERSHIP

The Ramona claim group consists of 40 contiguous claims; Ramona 1-18, 51, 53-64, Carol 16, 18, 19, 23, 25, 27, 29 and 31. The claim group, as shown in Figure 2, is as follows:

Name	Record No.	Expiry Date
Ramona 1-18	104192-104209	February 4, 1973
Ramona 51	104239	February 4, 1973
Ramona 53-64	104240-104251	February 4, 1973
Carol 16	104142	February 4, 1973
Carol 18	104144	February 4, 1973
Carol 19	104145	February 4, 1973
Carol 21	104147	February 4, 1973
Carol 23	104149	February 4, 1973
Carol 25	104151	February 4, 1973
Carol 27	104153	February 4, 1973
Carol 29	104155	February 4, 1973
Carol 31	104157	February 4, 1973

All claims are wholly owned by Manor Mines Ltd.

PHYSIOGRAPHY

The survey area is located in the physiographic unit known as the Thompson Plateau which forms part of the Interior Plateau. The elevation varies from about 2,900 feet in the east to about 2,600 feet in the west around Peterson Creek thus giving a relief of about 300 feet.

Pleistocene ice occupied the Thompson Plateau and thus much of the area is probably covered by glacial drift which could become quite deep over the flat areas.

The main stream in the area is Peterson Creek which flows north just to the west of the surveyed claims. There are a few intermittent creeks running west into Peterson Creek.

The climate is semi-arid with annual rainfall varying from 10 to 11 inches (below 10 inches usually defines a desert). Temperatures vary from the high extreme in summer of over 100°F though the usual temperature during the summer days would be 60°F to 80°F and in winter 20°F to 40°F.

There are virtually no trees within the survey area except for light forest at the higher elevations in the north east section.

GEOLOGY

The geology of the property is as shown on Figure 3 and was sketched from the G.S.C. map of W.E. Cockfield published in 1948. While conducting the surveys the writer identified 2 rock outcrops. The identified rocks were in agreement with the G.S.C. map.

The oldest rocks on the property are those of the Cache Creek group which is of Carboniferous and Permian age. The rock types composing this group are argillite, quartzite, hornstone, limestone, sheared conglomerates, breccia, greenstone, and serpentine. The Cache Creek rocks in this area show some gold and silver mineralization in quartz veins and in some small granitic rocks that cut them. Also, the G.S.C. geology map shows one copper occurrence near the contact with the Nicola group.

The next group in decreasing age sequence is the upper Triassic Nicola group which occur in the south west half of the property. The rock types composing this group are greenstone;

andesite, basalt, agglomerate, breccia, tuff, minor argillite, limestone and conglomerate.

There are small areas of the Kamloops volcanics and the Iron Mask Batholith lying to the west of the property. Some of these rocks may actually occur on the western edge of the property.

No faults or shear zones have been shown by the G.S.C. map to exist on the survey area. Nonetheless, one of the prominent gullies indicates possible faulting in a northwest direction.

No economically interesting mineralization was seen by the writer on or in the immediate area of the claims. However, some minor pyrite mineralization was observed at 12N - 9W and the G.S.C. map does indicate a copper showing on the southwest corner of the property.

In the general area many copper occurrences are found both within the Iron Mask Batholith and the older, intruded Nicola rocks close to the batholith. Generally, they are in veins, impregnations, stockworks and mineralized shear zones in the country rock with the principal copper minerals being chalcopyrite and bornite as well as some chalcocite, cuprite, azurite and malachite. Additional minerals that often occur with the copper are magnetite and pyrite. There have been shipments of ore, though small, from many of the prospects. The largest producer was the Iron Mask Mine which shipped a total of 189,230 tons of ore.

The main developer in the area presently is Afton Mines Ltd which, as of February 21, 1972 has blocked out 36 million tons of 0.66% copper. The main mineral form is native copper found within an intrusive breccia at the contact of the Nicola Volcanics and the Iron Mask Batholith.

Leemac Mines is also carrying out a drilling programme on a very promising prospect. Its main copper mineral is chalcopyrite with some bornite within a porphyritic diorite.

HISTORY OF PREVIOUS WORK

The area around the copper showing was first staked by O.S. Batchelor and associates in 1898. A 100-foot shaft was sunk and some open cuts were made. The claims are now believed to have lapsed, and no work has apparently been done on the property for years.

INSTRUMENTATION AND THEORY

1) MAGNETOMETER

The magnetic survey was carried out using a portable vertical component, Model G-110 fluxgate magnetometer manufactured by Geotronics Instruments Ltd. of Vancouver, B.C. This is a visual-null type instrument using digital dial readout with a range of 100,000 gammas and a reading accuracy of 10 gammas. The G-110 has a temperature coefficient of 2 gammas per degree centigrade.

Only two commonly occurring minerals are strongly magnetic; magnetite and pyrrhotite. Hence, magnetic surveys are used to detect the presence of these minerals in varying concentrations. Magnetic data are also useful as a reconnaissance tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

2) VLF-EM

A VLF-EM receiver, Model G-28, manufactured by Geotronics Surveys Ltd of Vancouver, B.C. was used for the VLF-EM survey. This instrument is designed to measure the electromagnetic component of the very low frequencey field (VLF),

transmitted at 18.6KHz. 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 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

0+00 of the base line was located on a fence 600 feet east down the road from the initial post of Ramona 47. From this point the base line strikes north along the fence for 3,600 feet. Red flagging was used to mark 100 foot stations along this line. Cross lines were chained and compassed in normal to the base line at 400 foot intervals.

Magnetometer readings were taken every 200 feet on even stations except in isolated cases where the spacing was dropped to 100 feet to provide additional information. All the readings were corrected for diurnal drift by tying into base stations established every 400 feet along the base line. The indicated drift at no time exceeded 100 gammas per hour and loops were closed within ½ hour to one hour.

VLF-EM readings were taken every 100 feet on the cross lines, facing towards Seattle.

During the execution of the survey the writer identified some outcrops and made topography notes to aid in the interpretation of the geophysical survey.

COMPILATION OF DATA

1) Magnetic

A cumulative frequency graph, Figure 4, was drawn from all the magnetic data. The mean background value was read off the graph to be 54,320 gammas which was then subtracted from all readings so that they read positive or negative around a mean background value of 0 gammas. The resulting values were then plotted on sheet 3 and contoured at an interval of 100 gammas. The 0 contour was not drawn in since being the mean background value, it was felt it would only detract from the interpretation. The positive contours were drawn in solid and the negative ones, dashed.

2) VLF-EM

Sheet 2 shows the VLF-EM results after they have been reduced applying the Fraser filter. Filtered data is plotted between actual reading stations. The positive dip-angle readings have been contoured at an interval of 10^{o}. The 5^{o} contour was also drawn in.

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 crossover on the unfiltered data quite often will show up on the filtered data.

INTERPRETATION

1) MAGNETIC

The cumulative frequency plot shows that most values fall on or near a straight line. This would normally indicate that all the values plotted are from the normal distribution of a single rock type. However, upon observation of sheet 1 it is immediately apparent that there are two distinct areas of magnetic intensity, one that is in the southwest portion of the survey area and one that is in the northeast. The southwest portion has a relatively small rate of change most of the treated results ranging between 0 and -670 gammas. Similarly the northeast portion exhibits a small range with the treated data having most values between 0 and 410 gammas.

Correlating this with the geology map (Figure 3) the southwest area appears to reflect rocks of the Upper Triassic Nicola Group (Greenstone andesite, basalt, aglomerate, breccia, tuff, minor argillite, limestone, and conglomerate) while the higher values to the northeast could be due to Paleozoic rocks of the Cache Creek group (argillite, quartzite, hornstone, limestone, sheared conglomerate, breccia, greenstone, and serpentine).

While conducting the survey the writer identified outcrops at Line 0 N - 4 W and Line 12 N - 9 W. Neither sample had detectable magnetization and both of these appeared to be andesites with the latter containing minor pyrite mineralization. This agrees with the G.S.C. geology maps positioning of the Nicola Group. If the contact between the Cache Creek Group and the Nicola Group is as indicated the rocks in the northeast section of the survey area are probably greenstones of the Cache Creek group. However, if the contact actually lies to the east of the survey area the rock types causing the relative magnetic highs could be basalt of the Nicola Group.

Correlation with the airborne magnetic map shows that the survey area lies within a magnetic depression which approximates the indicated position of the Nicola Group.

The extreme magnetic lows tend to occur in valleys or on the steep slopes falling into these valleys. This could be caused by either a shear zone or a terrain effect, or possibly a combination of both of these. The valley had relatively steep sides and a flat bottom which suggest that it could be a surface expression of a fault.

Negative anomalies A and B are interesting because they could not be associated with any terrain features and thus possibly reflect a separate rock type within the Nicola Group.

2) VLF-EM

The VLF-EM Fraser Filter results are shown on sheet 2 with the filtered data plotted between stations.

It can readily be seen that the anomalies strike between north and northwest. Part of this is caused by the Seattle transmitter being along the same direction. That is, the VLF-EM will pick up conductors that strike in this direction most easily and those in a perpendicular direction least easily. In addition, the writer biased the contours along this direction.

With the exception of anomaly "B" which is undoubtedly caused by nearby power lines, and anomaly "D" most of the anomalies are of low order and can be correlated directly with terrain. Of these, the series of anomalies A - A' is most interesting because of their relative strength, their correlation with the previously mentioned valley, and with the magnetic low (mag. anomaly "E") where the minor pyrite mineralization was found. The fact that the magnetic highs shown on lines 20 and 24 N terminate at this line also suggest the possibility of a fault which has displaced the correponding rock type to the west of the line off the survey area.

Anomaly "C" is relatively strong and occurs on even terrain in an area of relative magnetic highs.

Respectfully submitted,

Howard A. Larson

Howard A. Larson, Geophysicist
GEOTRONICS SURVEYS LTD

February 29, 1972

SELECTED BIBLIOGRAPHY

Aeromagnetic Map, Kamloops, British Columbia, Geological Survey of Canada, Mp 5216G, Sheet 92, I/9, 1968.

Fraser, D.C., Contouring of VLF-EM Data, Geophysics, Vol. 34, No. 6, pp. 958-967, 1969.

Lepeltier, Claude, A Simplified Statistical Treatment of Geochemical Data by Graphical Representation, Economic Geology, Vol. 34, pp. 538-550, 1969.

Peters, Leo J., The Direct Approach to Magnetic Interpretation and Its Practical Application, Geophysics, Vol. 14, No. 3, pp. 290-320, 1949.

Cockfield, W.E., Geology and Mineral Deposits of Nicola Map-Area, British Columbia, Geol. Surv. of Can., Mem. 249, 1948.

GEOPHYSICIST'S CERTIFICATE

I, Howard A. Larson, 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 514-602 West Hastings Street, Vancouver 2, B.C.

I further certify that:

1) I am a graduate of the University of British Columbia (1971) and hold a B.Sc. degree in Geophysics.

2) I have been practicing in my profession for the past year and have been active in the mining industry for the past four years.

3) This report is compiled from data obtained from a magnetometer survey carried out by myself in March, 1972, on the Ramona claims and pertinent data from published maps and reports as listed under Selected Bibliography.

4) I have no direct or indirect interest in the properties or securities of Manor Mines Ltd. Vancouver, B.C. nor do I expect to receive any interest therein.

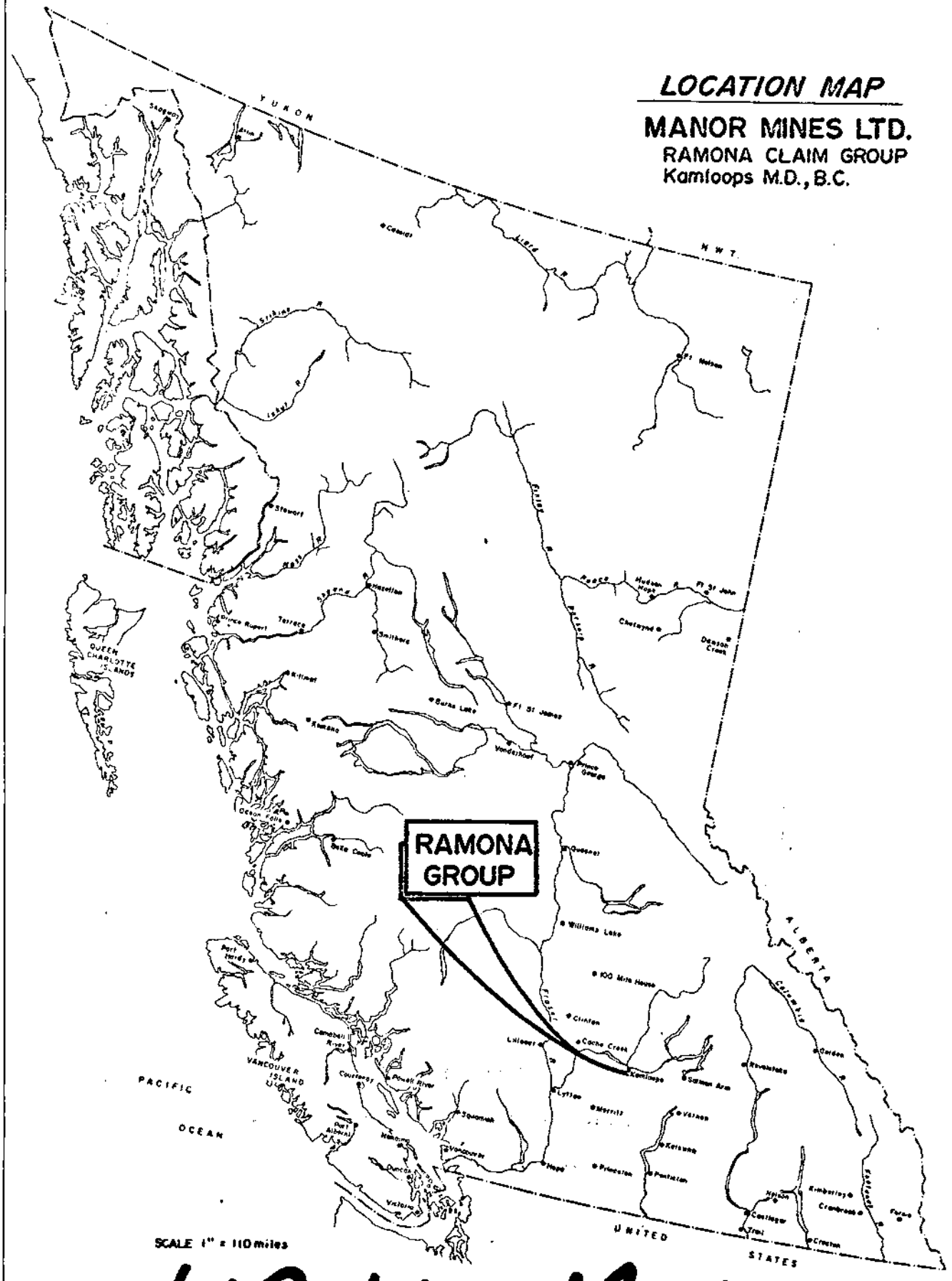
Howard A. Larson
Geophysicist

March 27, 1972

LOCATION MAP

MANOR MINES LTD.

RAMONA CLAIM GROUP
Kamloops M.D., B.C.

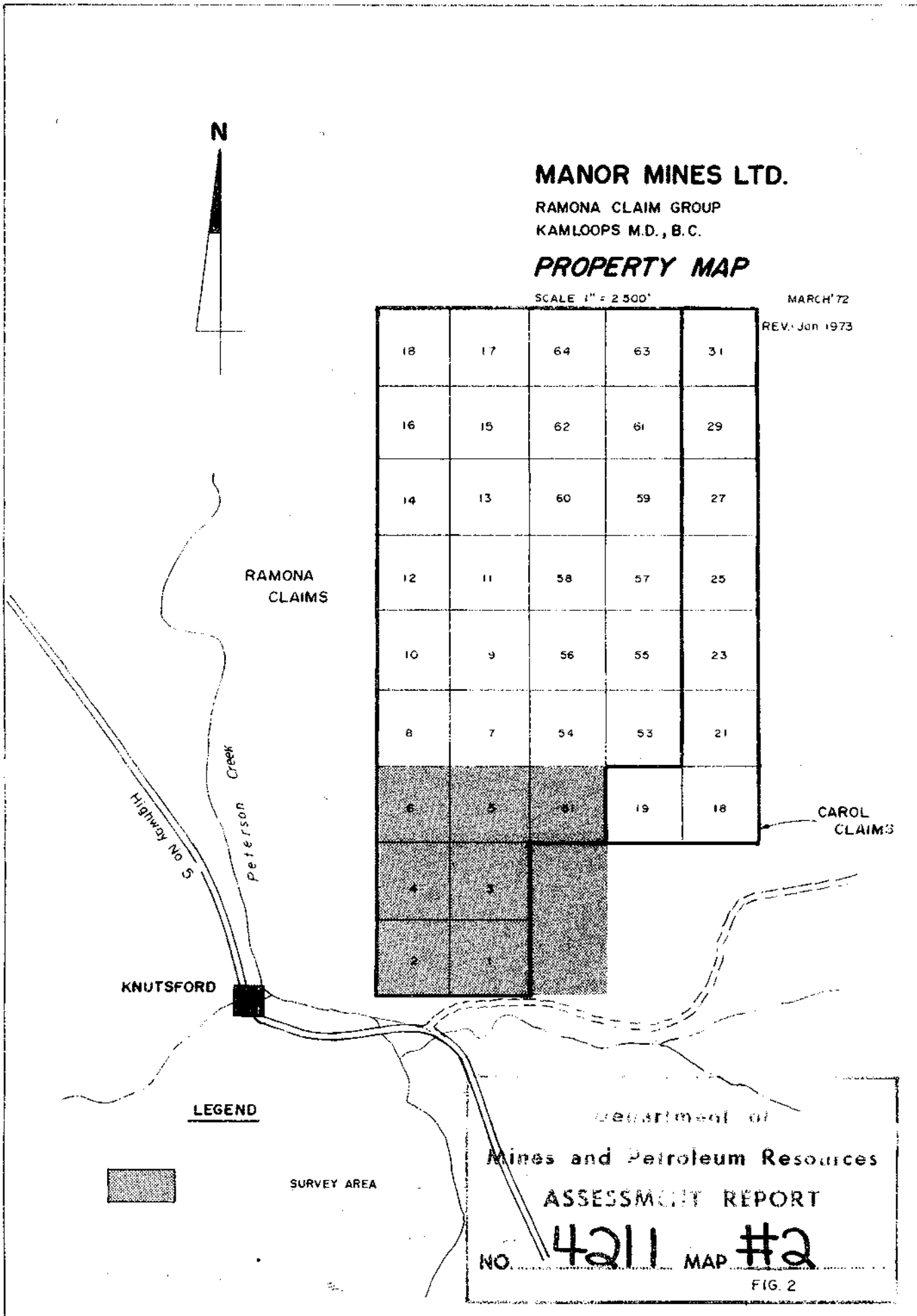


4211 M-1

FIG. 1

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4211 MAP #1

1-M 1152


N
MANOR MINES LTD.
RAMONA CLAIM GROUP
KAMLOOPS M.D., B.C.
PROPERTY MAP
SCALE 1" = 2,500'
MARCH '72
REV. Jan 1973
18
17
64
63
31
16
15
62
61
29
14
13
60
59
27
12
11
58
57
25
10
9
56
55
23
8
7
54
53
21
6
5
52
19
18
4
3
2
1
RAMONA CLAIMS
CAROL CLAIMS
Highway No 5
Peterson Creek
KNUTSFORD
LEGEND
SURVEY AREA
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4211 MAP #2
FIG. 2

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4211 MAP #3

GEOLOGY

SCALE 1" = 2000'

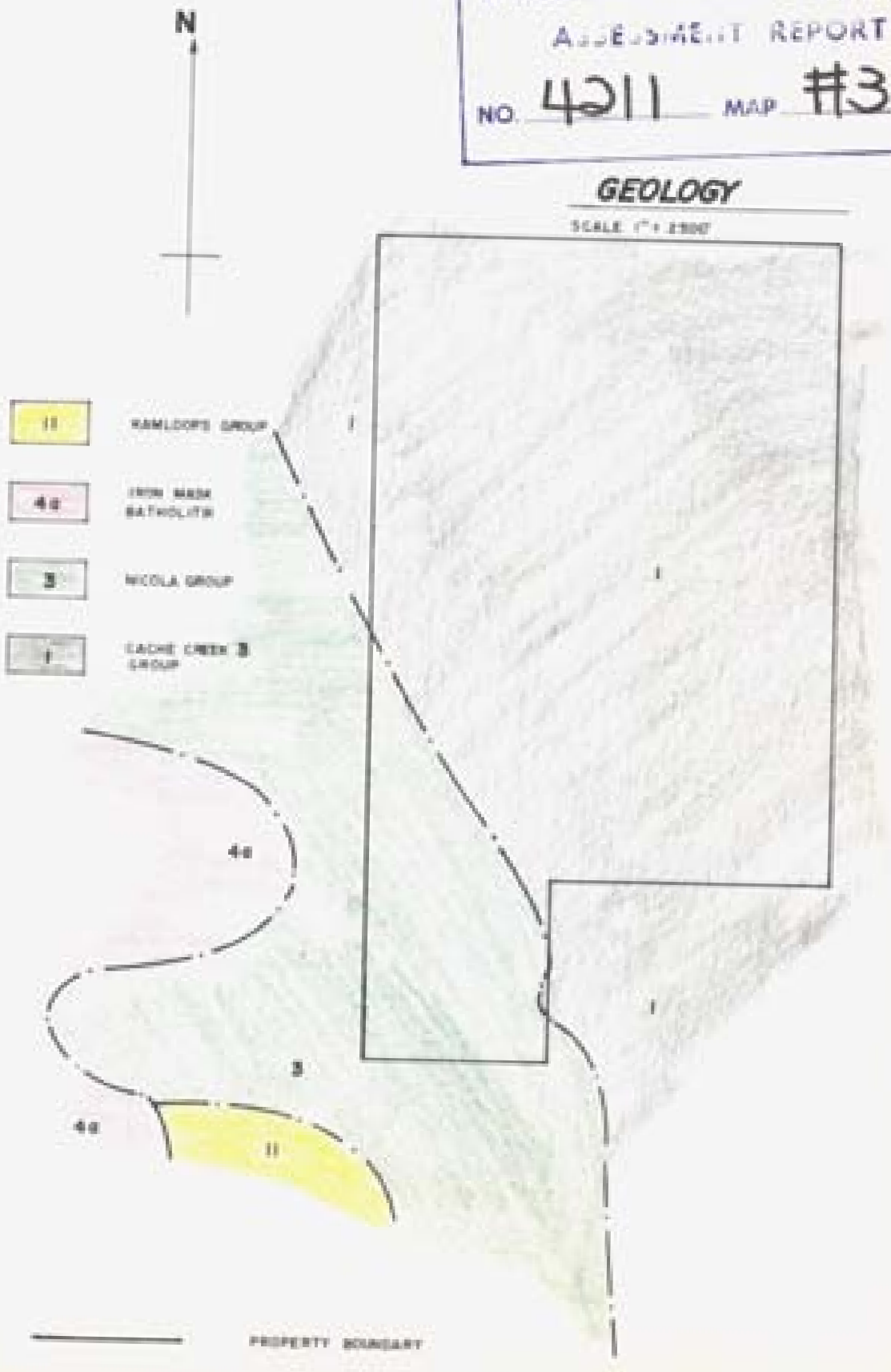
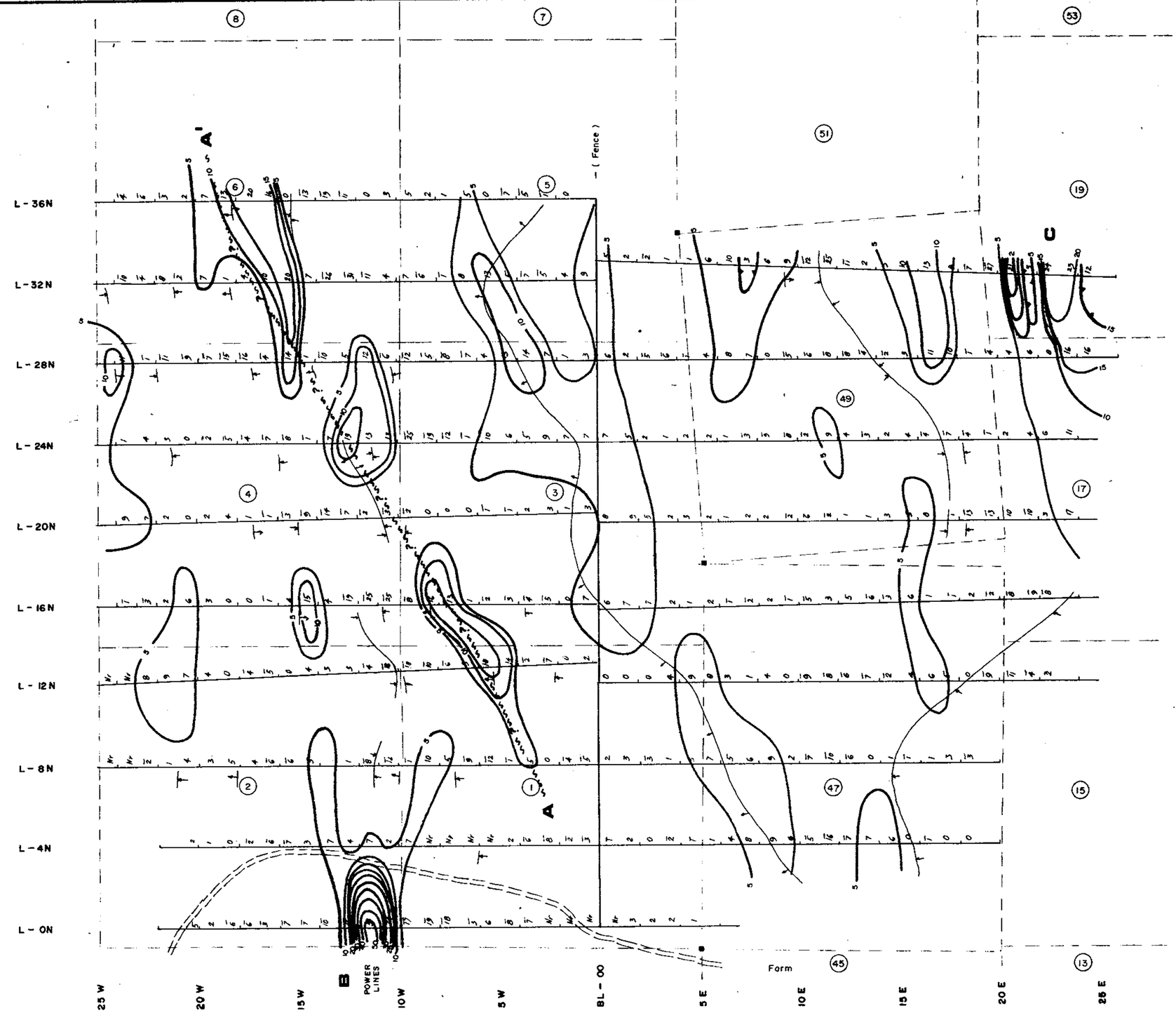
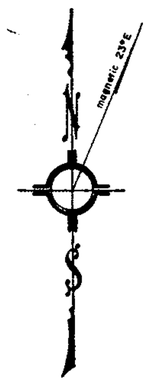


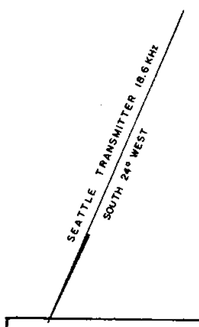
FIG. 3





LEGEND

- Survey line
- Claim post
- (49) Claim line & No. of claim
- Road
- Possible fault
- Ridge
- Valley



NOTE READINGS ARE IN DEGREES.
CONTOUR INTERVAL IS 5°.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4211 MAP #5

TO ACCOMPANY GEOPHYSICAL REPORT BY H. LARSON

GEOTRONICS SURVEYS LTD.

MANOR MINES LTD.
RAMONA CLAIM GROUP, Kamloops M.D.

VLF – EM Survey, Fraser filter
Data & contours

SCALE 1" = 400'	March 1972	JOB No. 72 – 31	Sheet No. 2	DRAWN BY P.P.

NICOLA GROUP

CACHE CREEK GROUP

L - 36N
L - 32N
L - 28N
L - 24N
L - 20N
L - 16N
L - 12N
L - 8N
L - 4N
L - ON

25 W 20 W 15 W 10 W 5 W BL - 00 5 E 10 E 15 E 20 E 25 E

(Fence)

Farm

magnetic 23°E

LEGEND

- Survey line
- Claim post
- (49) Claim line & No. of claim
- Road
- Ridge
- Valley
- Geologic contact

NOTE VALUES ARE IN GAMMAS.
THESE VALUES HAVE BEEN OBTAINED BY SUBTRACTING 54320 gammas FROM THE FIELD VALUES.

CONTOURS CONTOUR INTERVAL IS 100 gammas.
NEGATIVE CONTOUR
POSITIVE CONTOUR

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4211 MAP #4

4211 M-4

GEOTRONICS SURVEYS LTD.

MANOR MINES LTD.
RAMONA CLAIM GROUP, Kamloops M.D.

Magnetic Survey
Data & contours

SCALE 1" = 400'	March 1972	JOB No. 72-31	Sheet No. 1	DRAWN BY R.P.