REPORT TO 92I/2W
ACAPLOMO MINING & DEVELOPMENT CO. LTD.
ON A
GEOPHYSICAL SURVEY OF TWO
OF ITS MAKELSTIN CLAIMS
BY
SHERWIN F. KELLY, P. ENG.

6/72

REPORT ON ELECTROMAGNETIC AND MAGNETIC SURVEYS

ON MAKELSTIN CLAIMS
NOS. 53 and 55B

on

IRON MOUNTAIN, MERRITT, B. C.
50°, 120°, S. W.

by

SHERWIN F. KELLY, P. ENG.,
GEOPHYSICIST AND GEOLOGIST

to

ACAPLOMO MINING & DEVELPMENT CO. LTD.
MERRITT, B. C.
OWNER OF THE CLAIMS

ON WORK DONE FROM
MAY 13 to MAY 14, 1972

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REPORT TO

ACAPLOMIC MINING & DEVELOPMENT CO. LTD.

MERRITT, B. C.

ON

ELECTROMAGNETIC AND MAGNETIC SURVEYS

OF TWO OF ITS NAKELSTIN CLAIMS

BY

SHERWIN F. KELLY, P. ENG.,

GEOPHYSICIST AND GEOLOGIST

JUNE 30, 1972

REPORT TO

ACAPLOMO MINING & DEVELOPMENT CO. LTD.

ON ELECTROMAGNETIC AND MAGNETIC

SURVEYS

TABLE OF CONTENTS

MAPS

REPORT TO

ACAPLOMO MINING & DEVELOPMENT CO. LTD. (N.P.L)

ON ELECTROMAGNETIC AND MAGNETIC SURVEYS

ON TWO OF ITS MAKELSTIN CLAIMS

BY

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GEOPHYSICIST AND GEOLOGIST

INTRODUCTION

Electromagnetic and magnetic surveys were made in May, 1972 on Makelstin Nos. 53 and 55B. These claims are in the southern part of the group belonging to Acaplomo Mining & Development Co. Ltd., which covers the top of Iron Mountain immediately southeast of Merritt, B. C. The elevation of that portion of the property near the summit of the mountain is in the neighbourhood of 5,500 feet. The geophysical surveys of these two claims were filed as assessment work on those and on two adjoining claims (54 and 56B) in the office of the Mining Recorder in Merritt, by an affidavit dated May 15, 1972.

The surveys are described in the present report. They form a stage in the continuing exploration of this group of claims, which survey has not yet covered all of the southern portion of the property. These surveys extend the coverage of the two southernmost rows of claims, which is not as yet complete.

The electromagnetic and magnetic profiles are shown on the maps appended hereto. The magnetic contours have not been drawn, however, as this portion of the drafting will be deferred until the coverage has been expanded, so as to permit extending the entire contour map across this area, from the surveys on those claims immediately to the north which have already been covered.

...2

LOCATION AND ACCESS

The Makelstin group, of about 60 claims, extends north and south along the ridge of Iron Mountain and down both its east and west flanks. The co-ordinates are 120° 45' W longitude and 50° 2' N latitude. Figure 1 shows the approximate outline and location of these claims, entered on a portion of the Merritt topographic sheet 92 I/SE.

Access to the claims may be had from the Coldwater road, which is a gravel highway running southerly from the east boundary of Merritt. About six miles south of Merritt, a gravel road turns east up Kwinshatin Creek. The old shaft on the Makelstin No. 1 claim, is about seven miles up this road from the turn-off.

An alternative access road also is available, which goes up the north face of Iron Mountain. It leaves the Merritt-Princeton highway about a mile east of the Coldwater turn-off and zig-zags to the south, up the face of the mountain.

SITE OF WORK

The geophysical surveys reported on herein, were carried out along grid lines which had been previously cut on claims Makelstin No. 53 and 55B.

The work done on Makelstin No. 53, in Aca No. 2 group, is to be applied to Makelstin Nos. 53 and 54, both in Aca No. 2 group. The work done on Makelstin No. 55B in Aca No. 1 group, is to be applied to Makelstin Nos. 55B and 56B, both in Aca No. 1 group.

BASE LINES AND GRID LINES

The base line and grid lines in this area had been cut and picketed some time previously. The base line extends southerly along the boundary between

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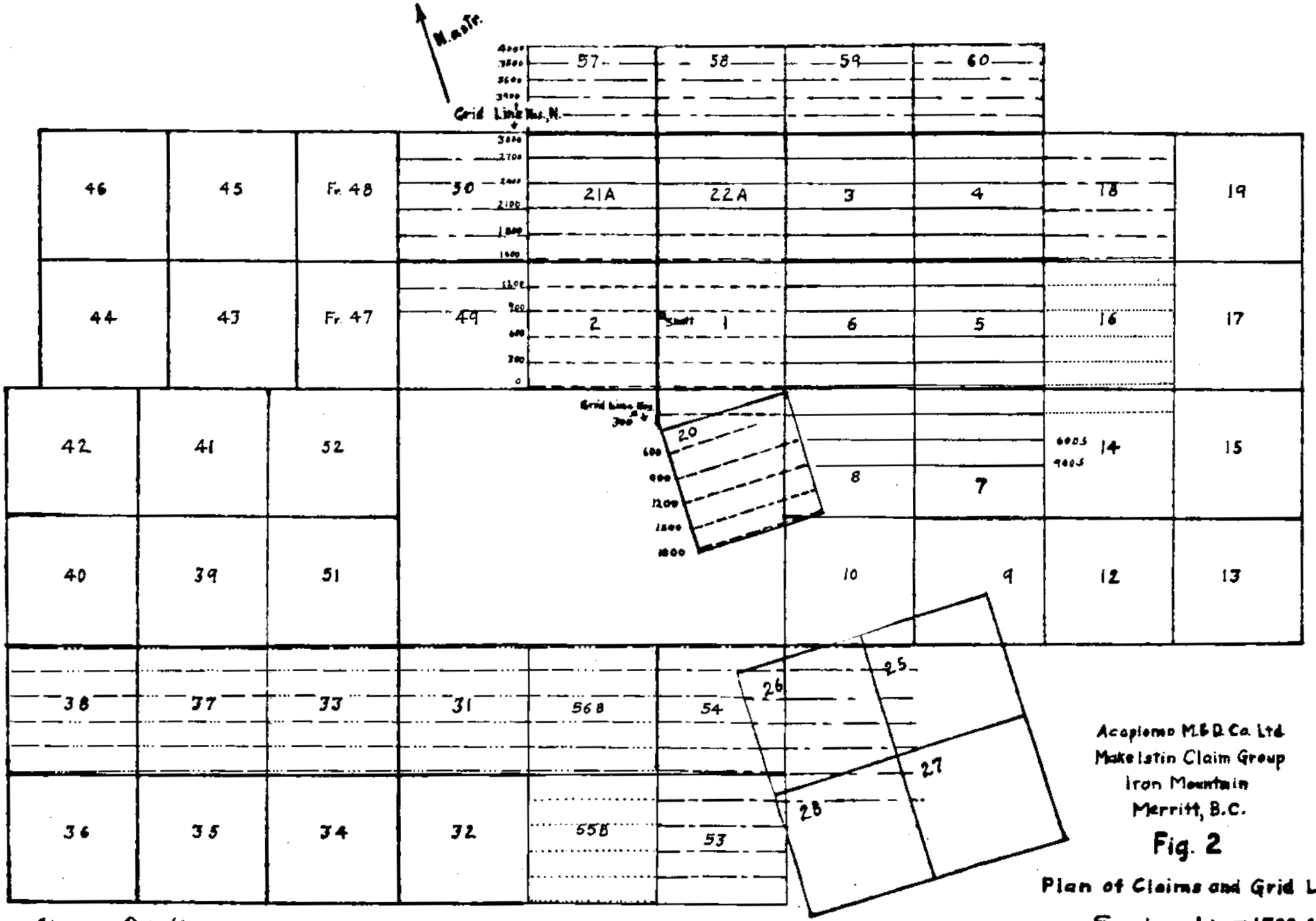


Acapiemo M.& D. Co. Ltd.
Makelstin Claim Group
Iron Mountain
Merritt, B.C.

Fig. 2

Plan of Claims and Grid Lines

Scale 1 in. = 1500 ft.

Sherwood F. Kelly, P.Eng.
Feb 24, 1971

claims 53 and 54 on the east and 55B and 56B on the west. It is an extension of the main base line which runs through the northern part of the property, passing close to the shaft in Makelstin No. 1.

Grid lines were turned off to the east and the west from this base line at 300 foot intervals, beginning with line 3,000 S at the northern boundary of claims 54 and 56B and ending with line 6,000 S along the southern boundary of claims 53 and 55B. Each grid line was picketed east and west from the base line, at 100 foot intervals. Five grid lines, 4,800 S to 6,000 S, were utilised in this survey, for 1,500 feet east and 1,500 feet west of the base line.

INSTRUMENTS USED

The vertical force fluxgate magnetometer employed for the magnetic survey, was manufactured by Scintrex Ltd. of Concord, Ontario. It is an MF-2 model, serial number 102004, the same as used in the previous magnetic work, reported under the date of January 10, 1972.

The same Ronka EM-16 was utilised as before, manufactured by Geonics Ltd. of Toronto, Ontario, with serial number 78.

The VLF Ronka EM-16 instruments are designed to tune in on one or more radio stations of the U. S. Navy, set up to communicate with ships at sea. Electromagnetic waves emitted by the vertical antennas of these stations, in the fifteen to twenty-five kiloHertz (kHz) band, propagate horizontally through the ground (as well as above the surface) and are distorted by sub-surface conductivity contrasts. These may arise from overburden variation, wet shear zones or faults, formational contacts and especially from metallicly conductive, sulphide mineral deposits. The distortions of the electromagnetic field caused by such contrasts are measured with this instrument.

...4

Specifically, observations are made of the tilt of the ellipse of polarization of the primary field (the in-phase component) and of the ratio of the out-of-phase, secondary vertical field (quadrature component) to the primary field.

The vertical force, fluxgate magnetometer measures the variations in the vertical component of the earth's magnetic field. This vertical component is influenced by variations in the magnetic susceptibilities, or magnetic reactions, of the rocks underlying the surface mantle of soil. The strength of the magnetic field read at each point is recorded in gammas. The gamma is a measurement of the strength of any magnetic field and is nearly equivalent to the one-hundred-thousandth part of the total strength of the earth's magnetic field. The reading at each field station is recorded as being so many gammas above or below a datum, or reference value which is arbitrarily set for the particular area being investigated. This value is determined after selecting a base station for reference purposes. The instrument is then read at this base station and set to record a convenient scale reading at this point. This setting is maintained for the balance of the survey, and all readings taken are recorded in gammas with reference to that arbitrarily set scale.

SURVEY PROCEDURES

The base station used for surveys in the southern part of the claim group is designated Base #2. Its location is described on page 4 of my report dated March 31st, 1971. This base station is approximately 50 feet south of station 2800 W on line 4500 S. A log lying beside the road has been notched and ribboned to mark this base. The value set for that point in the report mentioned, was revised as a consequence of the work described in my later report, dated August 20th, 1971. As a result of the latter survey,

...5

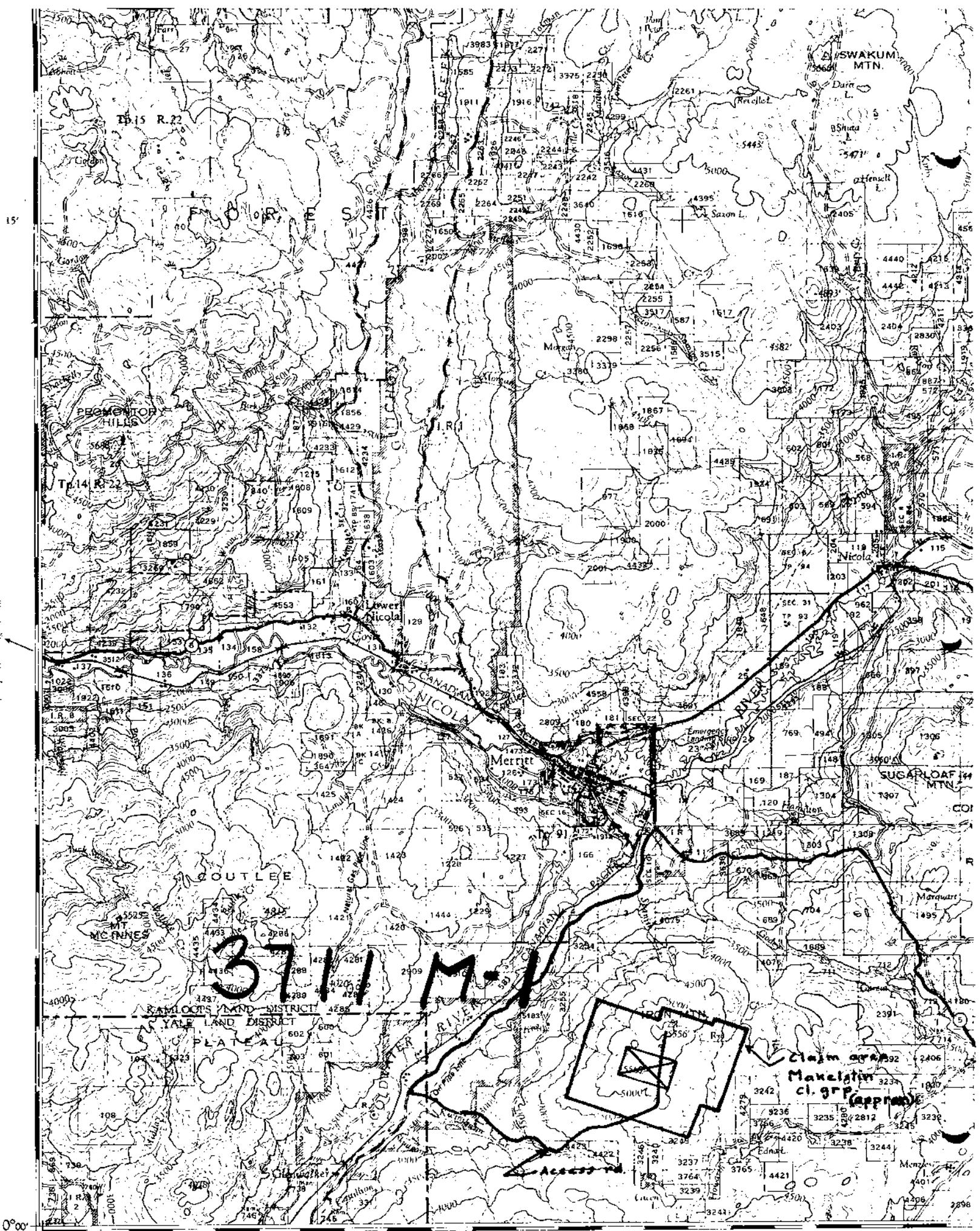
the base value at Base #2 was found to be a scale reading of 719 on the 10k scale. This would correspond to a value of 7,190 gammas.

For the present survey, the instrument was set to read 719 at Base #2. Periodic checks were made at the base to record the diurnal variation. This variation proved to be minor, ranging between scale readings of 710 and 730. Observations were made at 100 foot intervals for distances of 1,500 feet west and 1,500 feet east of the base line, along lines 4,800 S, 5,100 S, 5,400 S, 5,700 S and 6,000 S.

In prior work on the claim group, 720 was adopted as the zero, or datum value for magnetic surveys in this area. When plotting current readings, 720 was therefore adopted as the zero value. The readings have been translated into gammas and are shown as so many gammas above or below the zero line. On the 10k scale of the magnetometer, 720 is equal to 7,200 gammas; a value at a profile station of 200 gammas, would therefore mean that the gamma value at that point was 7,200 plus 200, or 7,400, corresponding to a reading of 740. Therefore, the reading at any station can be deduced by dividing by 10 the gamma value indicated for that station, and adding the resulting figure to 720; this will give the actual instrument reading at that station, corrected for diurnal variation.

For the electromagnetic work, the VLF readings were taken along the same grid lines. The values plotted for the in-phase component are the percent slope, or tangent of the angle of inclination of the instrument, when recording a minimum audio signal. The tilt indicates the inclination of the ellipse of polarization of the primary field. The tilt is positive if the lower stem of the instrument points away from the operator, and negative if toward it. As the tilt points toward the disturbing conductive formation (positive if in front of the operator, negative if behind him) the direction the operator was facing when making the observation, must be known. The operator faced west in all of this work.

...6



121°00' Merritt, B.C. Sheet 92 1/SE. Scale: 1 in. = 2 miles. 45' Fig. 1

N (astr.)

Makelstin 56 B

Base Line

Makelstin 54

Line 4500S

1400 W 1200 W 1000 W 800 W 600 W 400 W 200 W 200 E 400 E 600 E 800 E 1000 E 1200 E 1400 E

+10% Line 4800S −10% +10% Line 5100S −10% +10% Line 5400S −10% +10% Line 5700S −10% +10% Line 6000S −10%

Makelstin 55 B

Makelstin 53

+10% 0 −10%

3711 M-3

Acaplomo Mining & Development Co. Ltd. (N.P.L.)

Merritt, B.C.

Fig. 3
Electromagnetic Profiles.

Accompanying a report by Sherwin F. Kelly, P. Eng.
dated June 30, 1972

Scale

Horizontal
1 in. = 200 ft.
0 100 200 ft.

Vertical
+10%
1 in. = 20%
0
−10%

Legend

Primary field; i.e. in-phase component.

Secondary field; i.e. out-of-phase component.

Claim boundaries.

Sherwin F. Kelly P. Eng.

Makelstin 56 B

Makelstin 558

Base Line

Makelstin 54

Makelstin 53

N (astr.)

Line 4500 S

Line 4800 S

Line 5100 S

Line 5400 S

Line 5700 S

Line 6000 S

1400 W 1200 W 1000 W 800 W 600 W 400 W 200 W 200 E 400 E 600 E 800 E 1000 E 1200 E 1400 E

3711 M-4

Acaplomo Mining & Development Co. Ltd. (N.P.L.)

Merritt, B. C.

Fig. 4
Magnetic Profiles

Accompanying a report by Sherwin F. Kelly, P.Eng.
dated June 30, 1970

Scale

Horizontal 1 in. = 200 ft.

Vertical 1 in. = 200 gammas.

Legend

Profiles of magnetic readings.

Claim boundaries.

Sherwin F. Kelly P.Eng.

The out-of-phase, or quadrature component, is measured perpendicularly to the primary field. The recorded value is the ratio in percent, of the vertical, out-of-phase secondary field to the primary field. It is an indicator of relative conductivity. In general, when the in-phase observations change sharply from positive to negative going westerly and the quadrature does the reverse, producing sharp "cross-overs", a strongly conductive body is being traversed.

SURVEY RESULTS

A claim map is shown on Figure 2, from which the location of the survey may be determined. The VLF electromagnetic profiles are shown on Figure 3 and the magnetic profiles on Figure 4.

Electromagnetic Survey

The electromagnetic profiles are shown on Figure 3.

The outstanding feature of the electromagnetic survey is the essentially flat response of the quadrature, or out-of-phase component. Not only is it flat, but it is also very weak. This indicates that the secondary field generated within the subjacent formations, is negligible. From this it may be deduced that there are no strongly conductive formations near the surface of the bedrock.

The general lack of relief in the VLF responses is so pervasive that the occurence of a couple of feeble cross-overs can hardly be noticed. There are two, however, on line 4800 S, albeit they are quite weak. One occurs between stations 1000 E and 1100 E and the other is between stations 200 W and 300 W. The one at the eastern end of line is negligible and the one which occurs just west of the base line is probably too weak to be of any particular interest. Possibly a conductive contact, or a fault might have been traversed at this point. It is of interest to note, however, that it was on this same line that

...7

the most accentuated magnetic responses were recorded.

There are some prominent dips in the profiles of the in-phase component, particularly noticeable just west of the base line. They follow a generally northerly trend. These dips are probably the effect of a local, conductive overburden. The lack of any corresponding, pronounced quadrature response, indicates the probable absense of strongly conductive material in the bedrock.

In sum, the flat responses in the VLF measurements imply a lack of pronounced conductivity contrasts in the bedrock. Hence, there are probably no strong, metallic veins or even pronounced shear zones, in the immediately underlying bedrock.

Magnetic Results

The magnetic profiles are shown on Figure 4.

The profile along line 4800 S is outstandingly irregular. It is marked by numerous, strong highs and lows of striking appearance. The magnetic relief in this profile is of the order of 2300 gammas, with rapid alternations between the highs and the lows.

The remaining profiles exhibit a much smaller range of magnetic reactions, with relief varying from about 300 gammas to about 500 gammas.

The distribution of the lows and highs is somewhat erratic and there appears to be no strong trend, either to the magnetic peaks or the valleys. There is a slight tendency, however, for a northerly or a northeasterly trend to appear, as in the lows near the eastern end of the survey area and in the lows just west of the base line in the southern portion of the area.

...8

The abrupt variations along line 4800 S are probably due to a near-surface effect, possibly even boulders in the overburden. Narrow veins carrying iron as magnetite, possibly along with hematite, under shallow overburden, could be responsible for the effects noted. This unique magnetic response, combined with the VLF responses (a couple of weak cross-overs) along the same line, gives rise to a conjecture that there is a change in geological character of the bedrock in this vicinity.

CONCLUSIONS

The electromagnetic and magnetic surveys depicted on the accompanying figures, serve to expand the general coverage of the area. Their full significance will not become evident until the work is further extended and the whole picture emerges, when the contour maps covering this general area can be completed.

RECOMMENDATIONS

It is recommended that the expansion of the magnetic and electromagnetic coverage in this area be continued and that it also be examined by a geochemical soil analysis survey.

Respectfully yours,

Sherwin F. Kelly

Sherwin F. Kelly, P. Eng.
Geophysicist and Geologist

Adelphi Hotel
Merritt, B. C.
June 30, 1972

Declaration of Expenditures

The geophysical surveys herein reported, were conducted under my direction by George Cressy, Jr. and Arnold Gardner, on a contract basis. The work was done May 13-14, 1972.

Magnetometer survey, 15,000 feet of grid lines	$ 150.00
EM-16 survey, 15,000 feet of grid lines	150.00
Truck rental, 2 days	50.00
Preparation of geophysical report	250.00
	$ 600.00

Of this sum, only $400.00 is now being claimed, to apply to claims Makelstin Nos. 53, 54, 55B and 56B.

I hereby certify that the above expenditures were duly and properly incurred for the work performed and reported on herein.

Sherwin F. Kelly, P. Eng.
President

Adelphi Hotel
Merritt, B. C.
June 30, 1972

CERTIFICATION OF QUALIFICATIONS

I, Sherwin F. Kelly, P. Eng., residing at the Adelphi Hotel in Merritt, B. C., certify that:--

(1) I am a registered Professional Engineer in the Province of British Columbia.

(2) I received the degree of B. Sc. in Mining Engineering from the University of Kansas in 1917.

(3) I pursued graduate work in geology and mineralogy at the Sorbonne, Ecole des Mines and Museum d'Histoire Naturelle in Paris and at the University of Kansas and the University of Toronto. I also taught those two subjects at the two latter universities. I received my training in geophysics from Prof. Conrad Schlumberger of the Ecole des Mines, in Paris.

(4) I have practised as a geophysicist and geologist in Europe, North Africa, United States, Canada, Mexico, Central America, South America and the Caribbean, since 1920. Since 1935, my work has been principally as a consultant.

(5) This report of electromagnetic and magnetic surveys conducted on two of the Nakelstin claims belonging to Acaplomo Mining & Development Co. Ltd., is based on field work carried out under my directions.

Respectfully submitted,

Sherwin F. Kelly, P. Eng.,
Geophysicist and Geologist.

Adelphi Hotel
Merritt, B. C.
June 30, 1972