Report to
Adonis Mines Ltd.
on a
Geophysical Survey
of Axe Mineral Claims
by
Sherwin F. Kelly, P. Eng. 7/71

REPORT ON A GEOPHYSICAL SURVEY OF AXE MINERAL CLAIMS

NEAR

MERRITT, B. C.
49° 31', 120°, N. W.

by

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

to

ADONIS MINES LTD.
VANCOUVER, B. C.
OWNER OF THE CLAIMS

ON WORK DONE
from APRIL 21, to JUNE 22, 1971

Department of

Mines and Petroleum Resources

ASSESSMENT REPORT

NO. 3137 MAP

4

3137

Report on a

Geophysical Survey

of

Axe Mineral Claims

Merritt, B. C. 92 H / 15E

to

Adonis Mines Ltd.

Vancouver, B. C.

by

Sherwin F. Kelly, P. Eng.

Geophysicist and Geologist

July 23, 1971

Geophysical Report to
Adonis Mines Ltd.

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ILLUSTRATIONS

FOLDED IN ENVELOPE, VOL II.

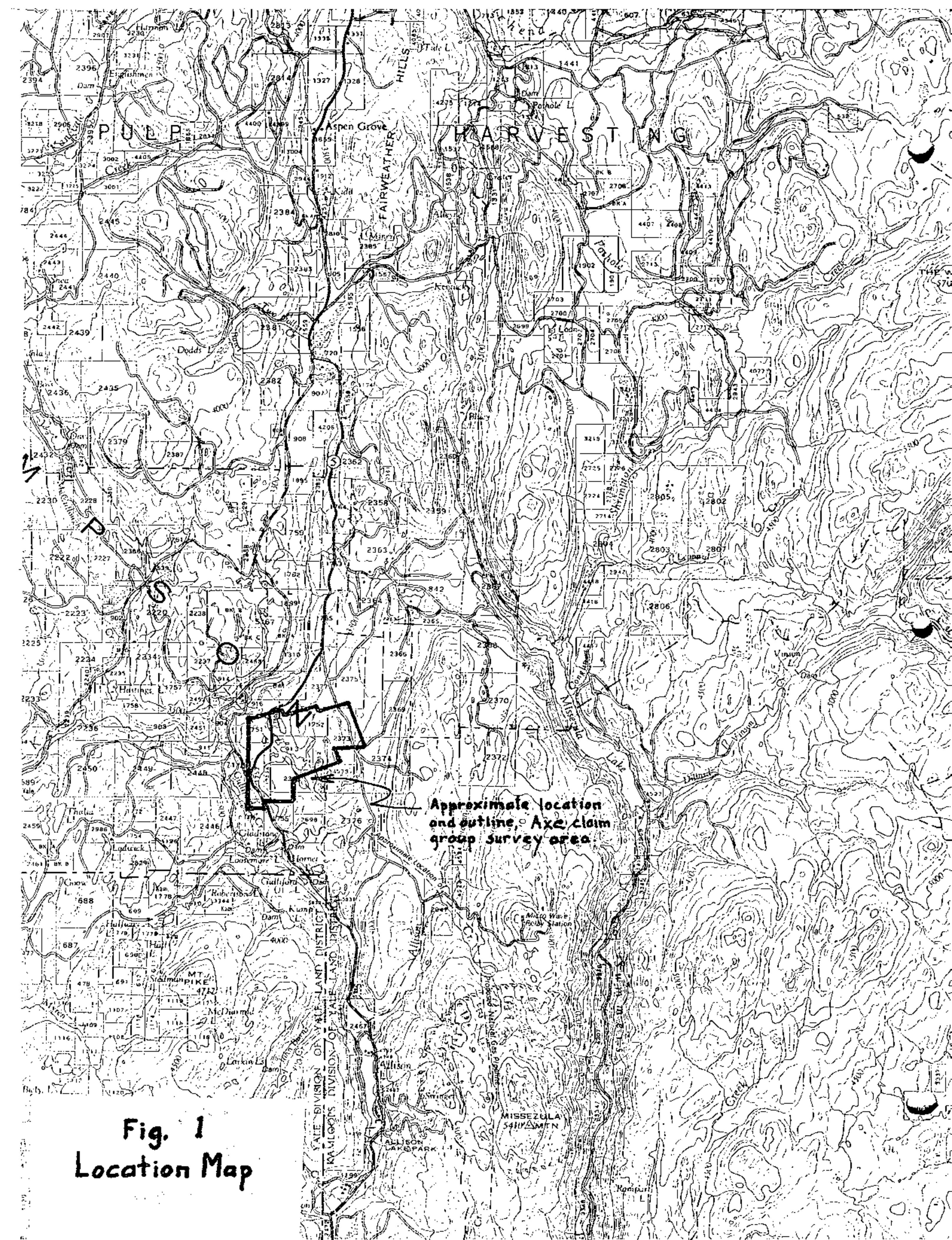

Fig. 1
Location Map

Report to

Adonis Mines Limited

on a Geophysical Survey

of a portion of its

Axe and Vent groups of Claims

by

Sherwin F. Kelly, P. Eng.

INTRODUCTION

Geophysical surveys by magnetic and electromagnetic techniques, were conducted in April, May and June of 1971, on 31 claims in a larger group held by Adonis Mines Ltd., lying about 30 miles south of Merritt, B. C., in the Nicola Mining Division.

The grid layout and line-cutting were done mostly in April and May. The geophysical field observations were taken by John C. Stinson in May and June, utilizing an MF1 flux-gate magnetometer for the magnetic survey and an M16-VLF receiver for the electromagnetic observations.

The southernmost portion of the area reported on herein, was covered by an IP survey, conducted by D. R. Cochran, P. Eng., between May 9th and 15th and described in a report dated May 18th, 1971 and signed by him. The IP survey extended north to Line 48N and thus overlapped the VLF survey on Lines 24N to 48N. It overlapped the magnetic survey only on Line 48N.

LOCATION AND ACCESS

The group of claims reported on herein lies on both sides of Highway No. 5, the Merritt-Princeton Highway, about 30 miles south of Merritt,

B. C. They are 10 or 11 miles south of Aspen Grove and are located in the Nicola Mining Division. The co-ordinates are 120° 39' west longitude and 49° 46½' north latitude. Figure 1 shows the approximate outline and location of the claim area surveyed and reported on herein, on the Tulameen topographic sheet 92 H/NE.

Access to the claims is provided by various logging and ranching roads which branch off Highway No. 5.

GRID

A base line 10,000 feet long was laid out just west of the Highway, running north and south. Within the survey area now being reported on, this base line lies along the boundaries between claims AXE #233 and #234 on the south, extending north to between claims AXE #223 and #224 and beyond. Throughout this area it lies west of the highway and at its nearest approach, the highway is only about 250 feet east of the base line, on claim AXE #231.

Grid lines were turned off to the east at 400 foot intervals. They were numbered from south to north (in hundreds of feet on some maps and in feet on others), beginning with Line 0 at the south end and extending to Line 100N (Line 10,000N) at the north end. The present report is concerned with the area between Lines 24N and 100N. Not all observations started at the base line, which is especially true on Lines 84N to 100N where the observations extend only eastward from the highway.

Stations were established on the grid lines at 100 foot intervals and are numbered in hundreds of feet east from the base line (on some maps the numbering is in feet).

The relationship of the grid lines and the stations thereon, to the claim boundaries, is shown on the map of magnetic contours, Figure 3. On this map the stations are numbered in feet (not hundreds of feet) east of the base line. The same grid also served for the VLF electromagnetic survey, Figures 4 and 5, on which the grid lines and stations are numbered in feet, not hundreds of feet.

The portion of the grid utilized in the present surveys, was laid out to cover all, or parts of claims AXE nos. 223, 225, 227, 229, 231, 233, 301 to 308, 310, 317 to 326, 333 to 338 and VENT nos. 1, 2, 21 and 22. This is shown on Figure 3.

MAGNETIC SURVEY

Instrument

The magnetometer employed for the magnetic survey was a Scintrex MF-1 Flux-gate magnetometer, manufactured by Scintrex Ltd. of Concord, Ontario. The serial number is 908474. The instrument measures the vertical component of the earth's magnetic field.

Procedure

A base station was established on the highway between Lines 80N and 84N. The instrument was zeroed at this point, utilising the setting giving the widest range of readings, 100,000 gammas full scale deflection. The sensitivity would accordingly be 2,000 gammas per scale division. On switching to the most sensitive setting, 1,000 gammas full scale deflection, the reading at this point turned out to be 420 gammas. This was adopted as the reading at the base station. All readings were then plotted against the resulting zero. That is, plotting the readings against this zero would show a value of 420 gammas at the base station.

Periodic checks for diurnal variation were made on this base station, or on other stations whose values had been previously established. John Stinson reported that, in the main, diurnal variations were small, in the range of 10 to 20 gammas. For such small variations, diurnal corrections were not made. If the variations were a little larger, corrections were made. If variations were quite large, the lines affected were re-run.

An exception to the latter rule occurred on Line 84N. Checking for diurnal variation revealed the necessity of applying corrections from -50 gammas to -180 gammas. The readings along this line are probably invalid, as will be explained below, under "Interpretation".

My inspection of the plotted profiles indicated that a good background, or "zero" value to use as a datum would lie about at the 100 gamma level. This was therefore accepted for plotting the profiles and contouring the results.

The actual instrument reading recorded at any station shown on the profiles, Figure 2, can be determined by adding +100 gammas to the value shown at that point on the profile.

Results

Except for the anomalous readings on Line 84N, magnetic relief in this area is generally not very great. The maximum positive value (excluding readings over the pipeline) is 540 gammas. The maximum negative reading is -500 gammas. This gives a total maximum relief of 1,040 gammas. Usually, however, the range is more nearly between +400 gammas and -100 gammas, for a total spread of 500 gammas.

The profiles are characterized by moderately narrow peaks and valleys of varying intensities. The peaks are generally in the neighborhood of 200 to 300 gammas and the low points closely approach zero or extend slightly below it. The widths of the highs are generally from 200 ft. to 400 or even 800 ft. The lows appear usually to be somewhat narrower, although there are some quite broad depressions on the profiles in the southern part of the area.

The profiles are so irregular that correlation from one line to the next can occasionally be doubtful. Nevertheless, there is a pretty clear indication of roughly north-south trends in both peaks and depressions.

Interpretation

Reference has been previously made to the anomalous readings on Line 84N, where excessively high diurnal corrections were indicated. This profile almost certainly records a "sudden commencement". This term designates a magnetic disturbance or "magnetic storm" which has a very sudden onset and may last anything from a few minutes to a few days. I believe this profile records such a "sudden commencement" at about the time the operator took the reading at station 30 E. Its maximum effect is recorded in the vicinity of Stations 40 E and 41 E, when the values changed abruptly from anomalous positive (over 700 gammas) to anomalous negative (circa -11,000 gammas). The disturbance obviously continued at least as far as Station 62 E. From this point to the end of the profile, at Station 90 E the disturbance is less obvious but is probably still in effect, because the readings are noticeably lower than on the same segments of the profiles to the north and to the south.

Because of the disturbance evident on Line 84N, I have not used any of the values recorded thereon, when constructing the map of magnetic contours, shown on Figure 3. On that map, this line shows no contours.

The general north-south alignment referred to above, when discussing the profiles, becomes evident on the contour map, Figure 3. The highs and the lows are of somewhat irregular shape but, in general, show ellipses with their longer axes north and south, or slightly east or west of that orientation. Disturbances are introduced by the pipeline but apparently not by the highway.

A structure such as a pipeline can exhibit magnetic polarity in various segments of the line. Consequently, it does not cause a consistent anomaly, but rather shows a scattering of locally intense positive and negative reactions. Thus, an intense positive reaction occurs at Station 1100 E on Line 68N, where the measurement line crosses a magnetic pole. A strong negative would show over a south pole. Where an observation line crosses the structure midway between two such poles, it would be in a neutral area and show almost no disturbance. The highs at the west ends of Lines 60N to 72N must therefore be discounted. The highs to the south, at the west ends of Lines 48N and 52N, on the other hand, are probably valid.

The interference from the pipeline in the vicinity of the west ends of Lines 60N to 76N, prevents any correlation northwards from the highs to the south, at the west ends of Lines 48N to 56N. The significance and correlation of the anomalously low readings immediately to the north, at the west ends of Lines 76N and 80N, are also uncertain. These lows might be related to the magnetic disturbance, or "sudden commencement", mentioned above, or they may represent a radical change in the nature of the underlying formations. Further work immediately north from them and to check them, would be required before they could be evaluated.

East of the locations just discussed, there is a trend evident in the magnetic lows and highs, which is nearly north and south. It is not due north and south, however, and there is some uncertainty in the correlation which could indicate a trend either slightly east of north, or slightly west of north. Extending the survey over a larger area would probably serve to define the choice between these alternatives.

For example, a cluster of highs on claims AXE #304 and #306 (in the vicinity of Stations 3000 E on Lines 64N to 80N) might be correlated with similar highs slightly west of north on claims AXE #308 and #310 (centered about on Stations 2400 E on Lines 88N to 100N).

Alternatively, the first group of highs mentioned above might, however, also be correlated with a group on claims AXE #323 and #325, generally in the vicinity of Stations 4000 E to 4200 E on Lines 88N to 100N. The general trend of the low values bounding this group and the first group on their east, parallels this north-easterly correlation.

Following the north-easterly correlation, the highs on claims AXE #319 and #321 (vicinity of Stations 4000 E to 5200 E on Lines 64N to 80N) would then correlate with the group of highs centered on AXE #324. These highs extend from the vicinity of Stations 4800 E to 5200 E on Line 88N to Station 5600 E on Line 100N.

The above-mentioned highs on claims AXE #319 and #321, might also be aligned with those on claims AXE #323 and #325, lying slightly west of north, although the low bordering zone previously mentioned, seems to angle across between them. As will be shown when discussing the VLF results, however, the trends exhibited by the electromagnetic readings, favor the north-westerly correlation.

At the east end of the survey area, the correlation appears to be more nearly north and south or even west of north. The highs at the east ends of Lines 56N to 80N are separated from those to the west, already described, by a low area on claims AXE #320 and #322, on either side of Station 6000 E. This moderately broad area of low intensity does not seem to have a clear counterpart on the lines to the north. This zone of lows may represent a different formation, or possibly an area of minor dislocation or folding which separates the northerly or west of north trends in the east, from the nearly parallel trends in the western part of the survey grid.

The above trends are pointed out in full cognizance of the fact that there are lows interspersed in the high trends and occasional highs in the low trends. These magnetic patterns derive from the characteristics of the Nicola volcanics and sediments which form the bedrock in this area. Andesites are the predominant rock and are of intermediate character between the acidic rhyolites and basic gabbros and basalts. There is some magnetite distributed irregularly through the andesites, which produces irregular magnetic reactions. Scattered highs along a definite trend will thus correspond, as a rule, with a flow, or an assemblage of similar flows of andesite. The lows separating trends of highs may be due simply to the contact between successive flows, to intercalated flows of more acidic character, to tuffs deficient in magnetite or to sedimentary beds. In other words, they represent a formational discontinuity which may be nothing more than a formational contact, or it may be due to the interposition of formations of a different character.

After some exploration work, such as trenching or drilling, has established the types of rocks underlying a few of the magnetic reactions, then the magnetic map can be employed to trace the extensions and continuities of the corresponding flows and beds. In the meantime, there is an indication of a generally northerly strike for the bedrock formations underlying this survey grid. This is, of course, in agreement with the trend, as generally established in this area, for the Nicola beds.

ELECTROMAGNETIC SURVEY

Instrument Used

The electromagnetic survey was made with a Ronka EM-16, serial no. 62, manufactured by Geonics Ltd. of Leaside, Ontario. Electromagnetic instruments of this type utilize the low frequency (VLF) broadcast waves emitted by ship-to-shore radio stations of the U. S. Navy.

The Ronka EM instruments are designed to tune in on one or more of such radio stations of the U. S. Navy, which are set up to communicate in particular with submarines. The antennae of these stations are vertical and consequently radiate the electromagnetic field in a horizontal plane. This field suffers distortion wherever it encounter conductive formations in the ground, such as metallic sulphide bodies, as well as some other types of geological structures, such as wet shear zones, faults and formational contacts. The EM-16 instruments measure the distortion produced by such conductive bodies, in both the in-phase and out-of-phase, or quadrature, components of the electromagnetic field.

The readings are made by orienting the instrument with respect to the transmitting station and then observing the tilt required to produce a minimum, or null audio signal, and also reading the ratio of the quadrature of the vertical component to the primary, horizontal field.

Procedure

For surveys in the southern interior of British Columbia, it is ussually convenient to tune in on the Jim Creek radio station near Seattle, Washington. It operates with 250 Kw of power at a frequency of 18.60 KHz. This station is particularly useful in areas where the prevailing formational strikes are nearly north and south, as is the case in the general area of

Merritt. Conductive formations with such a north-south strike give the best coupling with the waves emitted from Jim Creek. For veins with an east-west strike, a station on the east coast provides a better coupling.

Observations are made by orienting the instrument with respect to the transmitting station and then tilting the instrument forward or back in a plane at right angles to the direction to the emitting station, to detect the position of minimum, or null audio signal in the headphones. The tilt is indicated on a dial which reads in percentage, ie, percent slope, which is closely equivalent to the tangent of the angle of tilt. The tilt angle is designated as positive when the downward-protruding stem of the instrument is pointed forward and away from the operator. It is negative if the stem is pointed backwards towards the operator. A strong positive tilt indicates a conductor ahead of the operator,and a negative one indicates it is behind him. Consequently, it is necessary to know the direction in which the operator faced when he took the reading. All readings in the course of the present survey were taken with the operator facing west.

Readings were taken on both in-phase and out-of-phase components of the electromagnetic field. The tilt angles of the in-phase component, are the angles of inclination of the ellipses of polarization of the electromagnetic field; the tilt gives a directional indication of the location of the causative conductive body.

For the quadrature, or out-of-phase component, the instrument is used to determine the ratio, in per-cent, of quadrature component of the vertical, secondary field, to the horizontal, primary field. This ratio provides an approximate indication of relative conductivity of the subjacent formations. For maximum information, both components are observed and recorded, in order to obtain the greatest possible benefit from the data available.

Strong, metallic conductors produce a pronounced tilt of the instrument and a sharp reversal of tilt on crossing the causative body. The ratio of the quadrature component of the vertical secondary field to the primary horizontal field, as measured by the VLF instrument, also reverses sign when crossing a body of very good conductivity, but with signs opposite to those just mentioned. A "cross-over" results in the plotted profiles of the readings, with the in-phase component sloping down from positive to negative (going from west to east) while the quadrature slopes sharply up (going from negative to positive), when the operator faces west in this area. Other conductive features, such as wet formational contacts, shear zones, etc., produce similar results, but with less pronounced slopes. Conductive overburden will also distort the readings, as will pronounced topographic variations (a hill acts as a conductive mass, a valley as a resistant one). A poor conductor in non-conducting rock, produces cross-overs similar to those described above, but in this case both components have the same sign.

The readings are plotted along the grid lines to which they refer, one curve for the in-phase and another for the out-of-phase component. The percentage slope angle of the instrument tilt at each station, and the percent ratio of the quadrature component of the vertical secondary field to the horizontal primary field, can be read directly off the profiles.

Readings as above described, were taken along the east-west grid lines from Line 24N to Line 100N. The results are plotted on plan maps, which form Figure 4 and Figure 5 of this report.

Results

The profiles of the VLF readings are shown on Figures 4 and 5. On Figure 4 the profiles start on Line 2400N and extend north to Line 6000N. In the southern part of this area Lines 2400N to 4800N overlap the induced polarization survey area.

Where the profiles cross the pipeline, the influence of the latter is very apparent, with abrupt reactions extending north-westerly through this portion of the grid.

The VLF profiles on Figure 4 do not show the abrupt and prominent cross-overs usually characteristic of metallic conductors. There are some cross-overs, however, of a less striking character and which are probably indicative of underlying zones of moderate conductivity. Such indications of moderate conductivity can be caused by conductive contacts, faults, shear zones, etc., and also by zones of disseminated sulphide mineralization. Such zones of moderate conductivity therefore deserve investigation, but with the full understanding that they may be due to a conductivity which does not arise from sulphide bodies.

There is a trend of cross-overs in which the in-phase and quadrature components do show opposite signs, but without very steep slopes or acute peaks. These cross-overs occur between Stations 3600 E and 3800 E, from Line 4000N to Line 5200N. If they exist to the south, they are obscured by the pipeline reaction. To the north they fade out on Line 5600N, where they terminate in a zone of strong magnetic lows.

There are some other cross-overs in this part of the grid, but they are characterized by the in-phase component sloping down to the west, but the quadrature component showing only a weak slope, generally inclining upwards from only a zero reading, or a low positive one. This is indicative of rather low conductivity but nevertheless should be kept in mind because it may correspond to disseminated sulphides. The principal zone for reactions of this type lies between Stations 2000 E and 2400 E on Lines 2800N to 4000N.

At Line 4400N another zone of even more questionable cross-overs angles north-westerly from Station 1800 E.

At the east end of Line 6000N there is a moderately good cross-over at about Station 8600 E, but it seems to have no counterparts to the north or south.

Starting close to Station 7600 E on Line 5600N, there is a series of moderate cross-overs extending northerly across Line 6800N (Fig. 5). It seems to shift easterly and re-appears on Line 7600N at about Station 8100 E to continue northerly and then slightly westerly to Station 7700 E on Line 9200N. This trend runs into a magnetic high on Line 6800N and then shifts easterly to curve slightly north-westerly along a trend of magnetic highs to Line 9200N.

A somewhat more pronounced series of cross-overs nearly parallels the above, extending from Station 6700 E on Line 5600N northerly and north-easterly to Station 7300 E on Line 7200N or possibly Line 7600N. This trend also tends to lie along or close to a couple of magnetic highs.

Another series of cross-overs appears to branch off the one above described and extends slightly west of north, from Station 6700 E on Line 7200N, to close to Station 6400 E on Line 9200N. This trend lies along the side of a moderate magnetic high at first and then extends into a strong high on Line 8800N.

Close to Station 5800 E on Lines 5600N and 6000N, there are a couple of fairly strong cross-overs which apparently do not extend to the north, into the area of Figure 5 and the survey lines to the south do not extend far enough east to pick up their possible southern extensions. As these are moderately strong cross-overs, it would be worth while to extend to the east those survey lines to the south, to learn whether or not this is a persistent feature. If it is, it would be worth further investigation.

A series of moderate cross-overs, with a somewhat irregular, northwesterly trend, extends from Line 6800N at about Station 4600 E, to approximately Station 4200 E on Line 100N. This trend carries it through a series of magnetic highs.

West of the trend last described above, there are a few cross-overs which are rather weak and with short trends. The most pronounced one extends from Station 2900 E on Line 8400N to Station 2400 E at Line 9600N. Again, this trend lies parallel to, and within a magnetic high.

Interpretation

The predominant northerly to slightly west-of-north trend for most of the VLF cross-overs, reinforces the west-of-north correlation of magnetic highs as indicating the generally prevailing strike of the bedrock formations.

The fact that most of the cross-overs described tend to follow closely, or lie within magnetic highs, requires the sounding of a cautionary note. The moderate conductivity indicated by these cross-overs could derive, at least in part, from the presence of magnetite in the underlying formations. The comparatively weak strength of the magnetic highs, however, hardly indicates a sufficiently high content of magnetite to have influenced the VLF reactions to the extent recorded. The causative mineralization may have been, alternatively, pyrrhotite or it could also have been due to other sulphide mineralization associated with the magnetite. The fact that the cross-overs seem to favour the magnetic highs, probably indicates that they are not due to formational contacts, as such contacts would be more likely to occur either in the lows or on the flanks of the highs or lows. The VLF reactions therefore appear to arise within bodies of the more magnetic flows.

As chalcopyrite and chalcocite do occur in the Aspen Grove area in flows of basalt and of basic andesites, it therefore appears desireable to give those indications further attention.

COMPARISON WITH I. P. SURVEY

The VLF survey overlapped a good portion of the area covered by the I. P. survey, the overlap extending from Line 2400N to 4800N. The I. P. survey, it was noted, found that the chargeability decreased to the north and west of the grid studied, but showed high values near the eastern extremities of Lines 2400N, 2800N and 3600N. These high values lie so close to the pipeline as to cause them to be suspect. The VLF measurements in this area, were distorted by the pipeline, so no correlation between the results of the two methods can be attempted in this vicinity.

Low resistivities were observed in the I. P. survey, on the western ends of Lines 3600N to 4800N. In this area, the VLF profiles indicate a low resistance effect, probably arising in the overburden, at the west ends of these lines. High resistivities were recorded by the I. P. observations, at the east ends of Lines 2400N to 4000N, in the area where the VLF readings suffered interference from the pipeline.

RECOMMENDATIONS

The magnetic and VLF surveys on the areas thus far covered, are providing converging lines of evidence which it would be adviseable to extend more widely over your holdings.

The evidence is not yet strong enough to warrant extensive drilling or trenching. It does show possibilities which are of sufficient interest to warrant checking by other methods. I recommend that the area now under discussion be surveyed by the geochemical, soil analysis technique. If the overburden is not too deep, this will show whether or not copper mineralisation occurs in the bedrock formations. The results of this type of survey should then be carefully evaluated, to determine whether its reinforcements of the magnetic and VLF methods is strong enough to proceed at once to the stage of drilling and trenching, or whether the area should also be subjected to an I. P. survey. The I. P. survey, it should be kept in mind, will detect disseminated sulphides probably too weak to be picked up by the VLF method. The latter is useful for following stronger concentrations and the I. P. technique is useful for measuring the spread of disseminated mineralization.

The results to date are of sufficient interest to warrant a further checking of the area by other methods.

Respectfully submitted,

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

Merritt Mining Mart
Merritt, B. C.
July 23, 1971

I, Sherwin F. Kelly, P. Eng., residing at the Adelphi Hotel and maintaining a place of business at the Merritt Mining Mart 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 geologist and geophysicist in Europe, North Africa, United States, Canada, Mexico, Central America, South America and the Caribbean, since 1920. Since 1936, my work has been principally as a consultant.

(5) This report of a geophysical survey on a portion of the AXE and VENT groups of mineral claims, is based on geophysical data handed me by John C. Stinson and William Trethewey for review and interpretation. It is also founded on my personal knowledge of that general area, acquired by working therein myself, over the last ten years.

Respectfully submitted

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

Merritt Mining Mart
Merritt, B. C.
July 23, 1971

Declaration of Expenditures
for Geophysical Surveys on
Axe and Vent claim groups,
April-June 1971

Crew Employed

Name	Function	Daily unit cost Wages, plus board & provides	Days Employed	Total Cost	
J. A. Stinson	Field Manager	$62	16	$ 992	
D. Malcolm	Consultant	75	2	150	
W. Trethewey	Foreman	62	45	2,790	
J. C. Stinson	Instrument operator	44	27	1,180	
J. Butterworth	Lines & chain	42	5	210	
L. McClelland	Lines & chain	24	4	96	
A. Chenier	Chainman	20	2	80	
R. Trethewey	Chainman	32	16	512	
				$6,010	$6,010

The above personnel were employed within the following intervals:-

W. Trethewey J. C. Stinson J. A. Stinson	Between April 21 and June 22, 1971
J. Butterworth L. McClelland A. Chenier D. Malcolm	Between April 24 and May 23, 1971
R. Trethewey	June 3 to June 22, 1971.

Rental of Equipment

Ronka EM 16, serial no. 62, @ $15/day, for 11 days =	$ 165.00	
Scintrex MF-1, serial no. 908474, for minimum charge =	147.50	
Ford 3/4 ton 4 x 4 @ $25/day, for 36 days =	900.00	
Ford 3/4 ton 4 x 4 @ $25/day, for 16 days =	400.00	
	$1,612.50	$1,612.50

Carried forward———————————— $7,622.50

Brought forward		$7,622.50
Miscellaneous expenses, for flagging tape, marking pens, field books, repellant, etc.	$ 86.00	
Engineering services		
D. Malcolm, consultant.	300.00	
Sherwin F. Kelly, P. Eng., preparing report	500.00	
	$886.00	$ 886.00
		$8,508.50

The above sums were apportioned to the line preparation, the EM survey and the magnetic survey, to give a cost per line mile for each item. This was used in the "Affidavits on Application for Certificate of Work" dated May 17, 1971 (two) and June 23, 1971 (two). Of the sums spent, only $6,720.50 out of the above-itemized $8,508.50 was listed for the line cutting and geophysical work described in this report. The maps herewith show 21.4 line-miles of survey with the VLF instrument and 17.7 line-miles surveyed by magnetometer.

The costs of the induced polarization survey were set forth in the report on that work, by D. R. Cochrane, P. Eng. May 18, 1971.

I hereby certify that the expenses set forth above, were duly and properly incurred in the prosecution of the geophysical surveys on portions of the Axe and Vent groups of claims, described herein.

William Trethewey