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REPORT ON

AN INDUCED POLARIZATION SURVEY

JUSTICE GROUP OF CLAIMS

MERRITT, BRITISH COLUMBIA

(50°,121°,SE)

for

VANMETALS EXPLORATION LIMITED

by

92I/2W

HUNTING SURVEY CORPORATION LIMITED

Toronto, Ontario

August, 1962

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INTRODUCTION

From July 2nd. to July 11th., 1962, an Induced Polarization (I.P.) survey was carried out by Hunting Survey Corporation Limited over part of the Justice group of claims owned and operated by Vanmetals Exploration Limited.

The Justice group of claims is located a few miles to the west of Merritt in the Highland Valley district, British Columbia (50°,121°, SE). The survey extended over the following claims: Justice 4, 5, 6, 8, 15, 17, 19 and 21.

The survey was performed by a five-man crew. The project geophysicist in charge of the survey and the technician-operator were E.L. Gregotski and F.H. Faulkner, respectively, of Hunting Survey Corporation Limited. Vanmetals Exploration Limited provided three helpers for handling the electrodes on the lines. They were R. Mackay, H. Krause, and C. Langlois.

The geophysical survey was carried out along pre-cut and chained picket lines. The lines surveyed, Lines 32E, 40E, 48E, 52E, 60E and 68E, were turned off at right angles to baseline 100+00N, and are orientated north and south. Footages on these lines are called North. The basic coverage of the survey consisted of readings at 200 foot intervals which, in some cases, were decreased to 100 feet. In this manner, a total of 19,400 feet or approximately 3.67 miles of lines were surveyed.

The data were obtained using the "three electrode array". This array consists of one current electrode (C_1), two potential electrodes (P_1 and P_2), the second current electrode (C_2) remaining fixed at "infinity". The basic electrode spacings were 200, 400 and 800 feet. Additional data were obtained on some of the lines with electrode spacings of 100 feet, and on others with electrode spacings of 1,600 feet. Invariably, where data with the 100 foot electrode spacing were obtained, the station interval was decreased from 200 to 100 feet.

The Hunting pulse-type instrument is similar in design and operation to those described by R.W. Baldwin in "A Decade of Development in Overvoltage Survey", A.I.M.E. Transactions, Vol. 214, 1959. Power is obtained from a Volkswagen motor coupled to an 18 kw., 400 cycle generator which provides a maximum of 10,000 watts d.c. to the ground. The cycling rate is 1.5 seconds current on and 0.5 seconds current off, the pulses reversing continuously in polarity. The data collected in the field consists of careful measurement of the current (I) in amperes flowing through electrodes C_1 and C_2, and of the primary voltage (V_p) in volts appearing between P_1 and P_2 during the "current on" part of the cycle. Also, the secondary voltage or overvoltage appearing between electrodes P_1 and P_2 during the "current off" part of the cycle is integrated electronically with respect to time, to provide a measurement of polarization (V_s) in millivolt-seconds. The "apparent chargeability" in milli-seconds is calculated by dividing the polarization (V_s) by the primary voltage (V_p). The "apparent resistivity" in ohm-meters is proportional to the primary voltage (V_p) divided by the measured current (I), the proportionality factor depending on the geometry of the array used. The resistivity and chargeability obtained are called "apparent" as they are the values which that portion of the earth sampled by the array must have if it were homogeneous. As the earth sampled is usually inhomogeneous, the calculated "apparent resistivity" and "apparent chargeability" are functions of the "true" resistivities and chargeabilities of the various sections of the earth sampled and of the geometry of those sections.

The results of the survey are shown on the individual profiles in the Appendix of this report. These profiles have a horizontal scale of 1 inch to 100 feet. The "apparent chargeability" is plotted at a vertical scale of 1.0 milliseconds per inch. The "apparent resistivity" is plotted on a vertical logarithmic scale of 2 inches per logarithmic cycle. These I.P. profiles also show the results of a ground magnetometer survey obtained by Vanmetals Exploration Limited over part of the claim group. The magnetometer profiles are shown at the vertical scale of 400 gammas per inch.

The interpretation of the I.P. survey is presented in the form of two maps sheets located in the map pocket at the end of this report. The detailed results of the interpretation are shown in the form of a series of Interpreted Sections presented at a horizontal and vertical scale of 1 inch to 100 feet. The interpretation map, which also shows the lines surveyed, presents a generalized vertical projection to the surface of the more interesting zones, at a scale of 1 inch to 200 feet.

PREVIOUS WORK

That part of the property which was surveyed is covered by overburden of unknown thickness. Some geological information was made available from the adjacent area. This information was presented to the interpreter in the form of a geological map at a scale of 1 inch to 200 feet. Thus, in the southern half of claim Justice 1, two tongues of granite are intruding andesitic rocks of the Nicola Group. The contact between the granite of the Coast Intrusions and the Nicola Group is assumed to coincide roughly with the Jesse Creek which flows westerly a few hundred feet south of the survey area. A number of copper-bearing granitic floats have been reported on the property.

The interpreter was also provided with the results of a ground magnetometer survey extending from 96+00N to 115+00N over the I.P. survey area. The magnetometer data were obtained at 100 foot intervals on lines 400 feet apart and coinciding with the I.P. grid. The results of the ground magnetometer survey where available, are shown on the I.P. profiles in the Appendix of this report.

INTERPRETATION

The resistivity measurement remained fairly constant throughout the area at 200 to 500 ohm-meters. The weak variations observed are mainly due to changes in the overburden properties and in its thickness, and are not considered significant in the present problem.

On the other hand, the chargeability measurements indicate a wide anomalous zone north of approximately 106+00N and extending beyond the eastern, western and northern limits of the survey area. To the south of the anomalous zone, a normal background value of approximately 1 millisecond is observed. Over the anomalous zone, the shorter spacings show the weakest apparent chargeabilities indicating that there is a definite increase in chargeability with depth. On the other hand, the largest electrode spacing, 1,600 feet, and in a few places, the 800 foot pacisng, show a decrease in values which indicate a decrease in chargeability at larger depth. Thus, in the interpretation, an attempt was made to determine the depth to the top, the thickness and the true chargeability of this layer.

The technique used in the interpreation is based on the assumption of a layered earth and is described in Dr. H.O. Seigel's paper: "Mathematical Formulation and Type Curves for Induced Polarization" (GEOPHYSICS, Vol. XXIV, No. 3, July 1959, pp. 547-565). The set of curves for the two layer response using the Wenner or four electrode array are also valid for the three electrode array used in this survey. This technique involves plotting the measurements made with the different electrode spacings at a given station against the electrode spacing.

These curves are then fitted to the type curves similar to those published by Seigel. On Lines 32E, 48E and 68E, each curve is defined by three points at each station occupied during the survey. On Lines 40E and 52E, four points were available for each curve. Four points were available over part of Line 60E and three points over the rest of the line as the 100 foot electrode spacing was used only from 110+00N to 120+00N. These calculations were carried out at intervals of 200 feet on each line over the anomalous zone. In this manner, some 70 quantitative analysis were carried out most of which provided reasonable answers. The results were then plotted in the form of sections at a horizontal and vertical scale of 1 inch to 100 feet, and weighted against each other to produce a consistent picture. These sections could not be shown on the I.P. profiles in the Appendix of this report due to their large size and therefore are shown as a separate map sheet in the pocket of this report. As these sections are at the same scale as the I.P. profiles, one can easily be compared with the other by unfolding the profiles over this map sheet.

As only three, or at most four, points are available, the depth curves at the stations are incompletely defined giving rise to a certain degree of uncertainty in the determinations. Thus, an intermediate layer may be overlooked or the bottom effect of the lowest layer may not be recognized. In all cases, an attempt has been made to accept the solution which will give the lowest chargeabilities so that the chargeabilities shown on the accompanying map are minimum values. The calculated depths can be in error to some degree although the overall picture will not be affected too significantly. Thus, at a calculated depth of 100 feet, the actual depth may vary from 50 to 200 feet, and at a calculated depth of 800 feet, the uncertainty could be in the order of ±200 feet. A layer at depth also has a degree of uncertainty in the indicated thickness; however, it is estimated that it would not be thinner than one-half, nor thicker than twice, the indicated thickness. Finally, the depth shown on the accompanying maps represent the shortest distances to the various layers from the station on the line. Thus, the I.P. method measures these distances in a plane which is perpendicular to the ground surface and to the line. These distances may also go to a point on the interface which is located on one side or the other of the line if the interfaces dip in a direction other than that of the ground surface.

These uncertainties in the interpretation are indicative of the reconnaissance nature of the survey as compared with a really detailed survey. A detailed survey would have been conducted in such a manner that a large number of electrode spacings from 10 to 2,000 feet, at a number of stations were obtained to provide fully defined depth curves for the interpretation. The time involved in such a survey, and therefore its cost, would most probably be prohibitive when it is considered that drilling would still be required. The purpose of the present survey was mainly to locate mineralization, at a reasonable cost, in such a way as to indicate a reasonable drilling program which in turn would rpovide the final details on the mineralization. This, it is believed, has been accomplished although it is important that the reader realizes the limitations of the data and the uncertainties in the interpretation.

The following paragraphs present a detailed discussion of the interpretation of the individual sections.

Line 32E

On Line 32E, the depth curves are defined by three electrode spacings, namely, 200, 400 and 800 feet. The interpreted first layer, including the overburden, shows an estimated chargeability of approximately 1.0 milliseconds and a thickness varying between 100 and 300 feet. The underlying layer has an estimated chargeability varying between 3.7 and 5.8 milliseconds, averaging at approximately 4.5 milliseconds. Only at 120+00N could the bottom of this 4.5 millisecond layer be calculated. This is shown to appear at a depth of approximately 600 feet with a very low chargeability of less than 1 millisecond estimated for the underlying material. This lower interface is weakly indicated by the depth curves at 118+00N and 122+00N. The available data did not allow a depth calculation but the indications are that these depths would be deeper than at 120+00N.

The first layer with a chargeability of 1.0 milliseconds is interpreted as being overburden. The 4.5 millisecond layer is believed to be mainly intrusive rocks. The chargeabilities may be due to the normal background for that intrusive but more probably indicate weak mineralization of 1/2 to 2 percent sulphides. This layer is part of Zone B shown on the accompanying interpretation map. The magnetic profile indicates that the intrusive rocks are more magnetic than the rocks to the south. On the other hand, the higher magnetic values extend well beyond the anomalous I.P. zone suggesting that the magnetite has little or no effect on the chargeabilities. In fact, the magnetic high just south of the I.P. zone may represent the outer phase of the intrusive or the metamorphosed portion of the intruded Nicola rocks.

Line 40E

The depth curves on Line 40E are defined by four electrode spacings, namely, 200, 400, 800 and 1600 feet. The section of high chargeability varies in depth from approximately 300 to 500 feet. On the basis of its chargeability, it is arbitrarily divided into three zones on the accompanying interpretation map. Zone B, with chargeabilities of 4 to 6 milliseconds extends from approximately 121+00N to the northern end of the line. Zone C, with chargeabilities between 6 and 9 milliseconds, extends from approximately 115+00N to 121+00N. Zone D, with chargeabilities of 9 to 15 milliseconds, extends from the southern edge of the anomolous zone at 107+00N to 115+00N. The bottom of the section of high chargeability is calculated at a depth of approximately 700 feet at 110+00N which increases to approximately 850 feet at 120+00N. The underlying material shows a very low chargeability varying between 0.4 and 1.2 milliseconds. Overlying the high chargeability section at the north end of the profile, are two layers, the uppermost with a chargeability of 1.3 milliseconds and the second with a chargeability of approximately 2.7 milliseconds. From 126+00N to 114+00N, the 1.3 millisecond layer is not observed although it may be present at the ground surface as a very thin layer. From 112+00N and southward, the 2.7 millisecond layer is lost although it could still be present as a thin layer between the 1.3 millisecond layer and the higher chargeability section.

The 1.3 millisecond layer is recognized as being mainly overburden. The 2.7 millisecond layer could be composed of a different type of overburden or a basically non-mineralized portion of the intrusive rocks. The latter possibility suggests that Zone B observed on the previous line could contain some mineralization. It is believed that this 2.7 millisecond layer is not an outlayer of Nicola rocks as the southward extension of the survey over this formation indicates much lower chargeabilities for this formation.

The magnetometer profile shows higher values over the intrusive rocks. However, these higher values extend some distance south of the I.P. anomolous zone, suggesting that although magnetite may be present, its effect on the chargeabilities is negligible.

Line 48E

The depth curves on Line 48E are defined by three electrode spacings, namely, 200, 400 and 800 feet. The surface layer varies in depth from 50 to approximately 400 feet, and in estimated chargeability from 1.0 to 2.1 milliseconds. These higher chargeabilities suggest the presence of two layers such as were observed on the previous line, with chargeabilities in the order of 1.0 and 2.7 milliseconds each. The lack of data from narrower electrode spacings combined with the possible thinness of one or the other layer, does not allow their separation. This uncertainty may increase slightly the depth to the second layer but at the same time would also increase the estimated chargeabilities shown. The highest estimated chargeabilities of the survey are shown to extend from approximately

108+00N to 116+00N and are labelled Zone D on the accompanying interpretation map. The chargeability of 7.4 milliseconds at 112+00N is included in this zone as no allowance could be made for the bottom of this zone on the basis of the available data. For this reason, the estimated chargeability is a minimum value which would increase if the bottom of the layer had been allowed for. At 114+00N and 116+00N, Zone D is shown to overlay Zone B with chargeabilities of 4.0 and 4.6 milliseconds. On the accompanying interpretation map, Zone B is shown to extend northward to approximately 125+00N. At Stations 126+00N and 128+00N, only the 800-foot electrode spacing measurements were carried out. The values obtained show a definite increase which is already noticeable at 124+00N. This increase can be explained in two ways: first, the presence of high chargeability values such as occur in Zone D which is supported to some degree by the slightly higher chargeability at 124+00N and by those on Line 52E (this possibility is shown on the interpretation map); or secondly, by a smaller depth to the 4.5 millisecond layer which would be indicated by an increase in value on the narrower spacings.

The estimated high chargeabilities of Zone D indicate the possibility of 1 to 5 percent sulphides with somewhat lesser mineralizations in Zone B. These rough estimates of sulphide content are based on the assumption that the magnetite present in the intrusive does not materially affect the chargeabilities. This is supported by the magnetometer profile which shows an anomaly of almost 2000 gammas a fair distance to the south of the I.P. anomolous zone. The combination of magnetometer and I.P. data again suggest the possibility of mineralization within the intrusive rocks with either a magnetic edge to the intrusive or a zone of magnetic metamorphism in the Nicola foramtion.

Line 52E

The depth curves on Line 52E are defined by four electrode spacings, namely 200, 400, 800 and 1600 feet. The quantitative analysis of these data indicate a fairly simple three-layer picture with the middle layer showing a marked hump in the centre. The depth to the first interface varies between approximately 150 to 550 feet. The first layer shows a calculated chargeability varying between 1.0 and 2.2. These chargeabilities suggest the possibility that two layers are actually present, the uppermost with a lower chargeability in the order of 1.3, and the second with a chargeability of the order of 2.7 milliseconds, as observed on some of the previous lines. Unfortunately, these two layers if they exist, could not be separated on the basis of the available data. If this is the case, the depths to the first interface would be slightly greater than those shown but at the same time the chargeabilities of the second layer would also be increased. The chargeability of the second layer is shown to vary between 8.2 and 12.9 milliseconds with most of these values indicated as being minimum values. The bottom of the second layer, i.e. the second interface, is calculated to vary between approximately 400 and 850 feet at Stations 112+00N to 120+00N. This interface is also indicated by the data but its depth could not be calculated at Stations 110+00N, 122+00N and 124+00N. The middle layer is shown as Zone D on the accompanhing interpretaion map and extends northward from approximately 108+00N.

Due to the possibility that the first layer is in actuality two layers, the depths shown to the first interface are not necessarily equivalent to the depths of overburden. At the same time, the stronger mineralization of Zone D does not necessarily reach bedrock surface. The sulphide contents of Zone D is estimated at between 1 and 5 percent on the assumption that the effect of magnetite present in the intrusive does not appreciably affect the chargeabilities. As in the case of the lines previously discussed, the ground magnetometer profile supports this suggestion. The magnetic data show that the intrusive is slightly more magnetic than the intruded Nicola rocks. However, the strong anomaly which is belived to indicate a zone of metamorphic Nicola rocks or a magnetic outer edge of the intrusive, shows no response to the I.P. method.

Line 60E

The depth curves for Line 60E are defined by four electrode spacings from 100+00N to 120+00N, namely, 100, 200, 400 and 800 feet. North of 120+00N, the 100-foot electrode spacing is absent and therefore the depth curves are based on only the other three spacings. The quantitative analysis show basically a two-layer case. Thus, the first layer, with chargeability of 1.0 to 1.6 milliseconds varies in thickness from 100 to approximately 400 feet. The low chargeabilities so obtained strongly suggest that the layer of 2.7 milliseconds detected or suspected on some of the other lines can be present only as a thin layer. The calculated chargeabilities of the second layer vary between 3.8 and 7.2 milliseconds. This layer is arbitrarily divided into Zone B extending from the southern edge of the anomalous zone at approximately 109+00N to 120+00N. From this point to 129+00N, it is labelled as Zone C on the basis of the slightly higher chargeabilities which are considered as being minimum values. The northernmost station on the line is considered as being part of Zone B. The bottom interface of these zones is indicated at Stations 116+00N, 118+00N, 128+00N and 130+00N. Although indicated, the depth to the second interface could not be calculated due to the absence of the 1600-foot electrode spacing data.

The magnetometer data again show a magnetic anomaly overlapping the I.P. anomalous zone by several hundred feet, thereby suggesting that the nagnetite in the intrusive has little or no effect on the chargeabilities.

Line 68E

The depth curves on Line 68E are defined by the data from three electrode spacings, namely, 200, 400 and 800 feet. The anomalous zone is seen to be displaced sharply to the north, its southern edge being located at approximately 121+00N. The surface chargeabilities are very low where they could be properly estimated. The depth to the first interface varies from approximately 300 feet to less than 100 feet. The I.P. data indicates that the second layer comes very close to the surface at approximately 127+00N and also at 131+00N. The actual depth at these shallow points could not be calculated due to the absence of narrow spacing data. The second layer shows chargeabilities of 4.5 to 7.8 milliseconds. The bottom of this high chargeability layer is calculated at 128+00N to be at a depth of approximately 350 feet. This second interface is indicated at Stations 124+00N, 126+00N and 130+00N, but its depth could not be calculated. This anomalous section is arbitrarily divided into Zone B extending from approximately 121+00N to 125+00N , and also from 129+00N and northward, Zone C being located in between.

Weak variations in the observed chargeabilities at 114+00N suggest the possibility that the southern part of the anomalous zone extends eastward to very close to Line 68E. This is indicated by the approximate outlines of Zone B on the accompanying interpretation map although the distance between the anomalous zone and the line cannot be estimated.

The magnetic data available do not extend as far north as the I.P. anomalous zone. However, at approximately 108+00N. a fairly strong magnetic anomaly is seen to produce no discervable effects on the I.P. data, thus, suggesting that the magnetite if present in the intrusive, has little or no effect on the observed chargeability values.

SUMMARY AND CONCLUSIONS

The I.P. survey of part of the Justice group of claims in the Merritt area, discovered a large zone of anomalous chargeability values. This anomalous area is located north of 108+00N and extends eastward, westward and northward beyond the limit of the survey area.

The results of the I.P. survey were submitted to detailed interpretation which, although limited in accuracy due to limited basic data, roughly outlines the mineralization within the survey area. This detailed interpretation changed somewhat the results of the preliminary and qualitative interpretation carried out in the field without the benefit of the time consuming calculations. Thus, the field conception of an inclined tabular body, although still valid to a certain degree, evolved into a rather complex zone of mineralization which extends northward much farther than expected.

The results of the final interpretation are presented in detail on the map labelled Interpreted Sections, at horizontal and vertical scales of 1 inch to 100 feet. These results are summarized in plan form on the accompanying Interpretation map at a scale of 1 inch to 200 feet. There, the survey area is divided into Zones A, B, C and D. Zone A is an area of low chargeability and generally low magnetism. It is underlain by the non-mineralized Nicola formation. The northernmost part of Zone A encloses a band of magnetic highs which may represent a contact zone of Nicola rocks altered by the granitic Coast Intrusive immediately to the north, or a contact zone within that intrusive. This magnetically high part of Zone A produces no discernible response in the I.P. data.

The anomalous area is divided into Zones B, C and D on the basis of the calculated chargeabilities. Zone B indicates chargeabilities of 4 to 6 milliseconds, Zone C chargeabilities of 6 to 9 milliseconds, and Zone D chargeabilities of 9 to 15 milliseconds. Within the anomalous area, Zone B extends over all of Line 32E, the northernmost part of Line 40E and the central part of Line 48E. Another section of Zone B is observed on both sides of Zone C on Lines 60E and 68E. A small area of Zone C is also observed separating Zone B from Zone D on Line 40E. Zone D extends over the southern part of Lines 40E and 48E, then trends northward over all of Line 52E and may also extend across the northernmost part of Line 48E. Zone B is also observed to extend southward beneath Zone D on Line 48E. All these zones are seen to be overlain by materials with chargeabilities of less than about 2.7 milliseconds. There are some indications that this material actually is divided into two layers: the topmost or overburden layer with a chargeability of approximately 1.3 milliseconds, and a first bedrock layer, not necessarily present everywhere, with a chargeability in the order of 2.7 milliseconds. In many places, Zones B, C and D are found to overlie material of very low chargeability (0 to 2 milliseconds).

On the basis of all the available data, it is believed that the mineralization is irregularly distributed within the granitic intrusive in irregularly shaped zones. The upper section with a chargeability of 1.3 milliseconds or less is associated with the overburden. The upper and lower sections with chargeabilities of 2.7 milliseconds or less, not shown on the accompanying map, represent portions of the non-mineralized intrusive. Finally, Zones B, C and D, with their respective ranges of chargeabilities, are zones, within the intrusive, which are mineralized to various degree. As mentioned previously, there is a slight possibility that Zone B with its low range of chargeabilities may indicate an unusually but still normal background of a different phase of the intrusive.

The significance of the calculated chargeabilities in terms of sulphide content is always difficult to estimate without samples to calibrate, in a sense, the method for the area. However, past experience has shown that 1% of disseminated sulphides will usually produce 3 to 8 milliseconds of true chargeability. Thus, dividing by 8 the lower value of the chargeability range of each zone will indicate a minimum sulphide content for that zone, whereas dividing by 3 the upper value of the chargeability range will suggest an upper limit to the sulphide content. In this manner, it is estimated that Zone B contains from 0.5 to 2%, Zone C from 0.7 to 3% and Zone D from 1 to 5% sulphides. On the other hand, the chargeability values calculated are considered as being minimum values in most cases, thereby increasing these possible sulphide contents to an unknown degree.

The economic value of this mineralization cannot be estimated as the I.P. method does not differentiate between chalcopyrite and pyrite. In any case, a high grade ore-body is not expected on the basis of the present data although very small pockets of high grade sulphide mineralization at depth may have remained undetected by the survey. On the other hand, a relatively small percentage of copper could make this a very economical proposition if one considers the size of the possible ore zone and the fact that it is still open in three directions. The copper values found in granitic floats on the property strongly suggest that at least some copper will be found.

RECOMMENDATIONS

Considering the large size of the zone of mineralization of possible ore-grade detected by the I.P. survey, and the fact that the zone is open in three directions, further work is definitely warranted. This work may take the form of one of two possible approaches. First, the I.P. survey could be extended to completely outline the mineralized zone by extending thepresent lines in a northerly direction and by adding additional lines to the east and west of the surveyed area at intervals of 800 feet. The second approach, believed to be more appropriate at this time, is to partly investigate the economic possibilities of the known I.P. zone by direct field investigation. Unfortunately, trenching cannot be recommended as there is no guarantee anywhere that the mineralization reaches bedrock surface and that the bedrock surface is within trenching depth. Thus, drilling will be required to obtain results as definite as possible.

Due to the nature of the interpreted mineralization, it is quite possible that one drill hole may hit an exceptionally good or poor section thus giving an improper impression of the whole. Thus, it is recommended that a drilled section be obtained. Such a section could consist of 4 vertical drill holes, each 500 feet deep, located on Line 48E at 114+00N, 116+00N, 118+00N and 120+00N. The location and angle of hole are not critical due to the large extent of the anomalous zone. However, this recommended section has the advantage of investigating, with two of the holes, the highest chargeabilities calculated in Zone D at relatively shallow depth, and with the two other holes, sampling the poorer Zone B while at the same time producing a fairly continuous cross-section of the area.

On the basis of the results of the recommended preliminary drilling, the next step in the exploration program may then be decided upon, either in the form of additional drilling or of extending the I.P. survey if warranted.

HUNTING SURVEY CORPORATION LIMITED

C. W. Faessler,
Senior Geophysicist

APPENDIX

I.P. Profiles: Line 32E

Line 40E

Line 48E

Line 52E

Line 60E

Line 68E

VANMETALS EXPLORATION LIMITED
JUSTICE GROUP, MERRITT B.C.
I.P. PROFILE - LINE 32+00E
JULY, 1962

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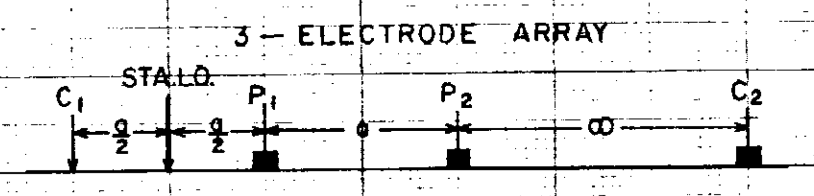
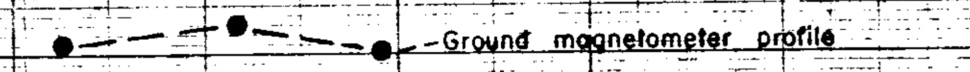
HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA

VANMETALS EXPLORATION LIMITED
JUSTICE GROUP, MERRITT BC
I.P. PROFILE - LINE 40+00E
JULY, 1962.





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VANMETALS EXPLORATION LIMITED
JUSTICE GROUP, MERRITT B.C.
I.P. PROFILE-LINE 48+00E
JULY, 1962

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HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA

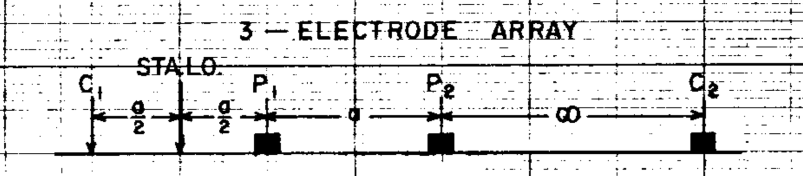
L.52E

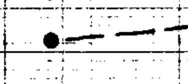
VANMETALS EXPLORATION LIMITED

JUSTICE GROUP, MERRITT B.C.

I.P. PROFILE · LINE 52+00E

JULY, 1962.





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HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA

VANMETALS EXPLORATION LIMITED
JUSTICE GROUP, MERRITT B.C.
I.P. PROFILE - LINE 60+00E
JULY 1962

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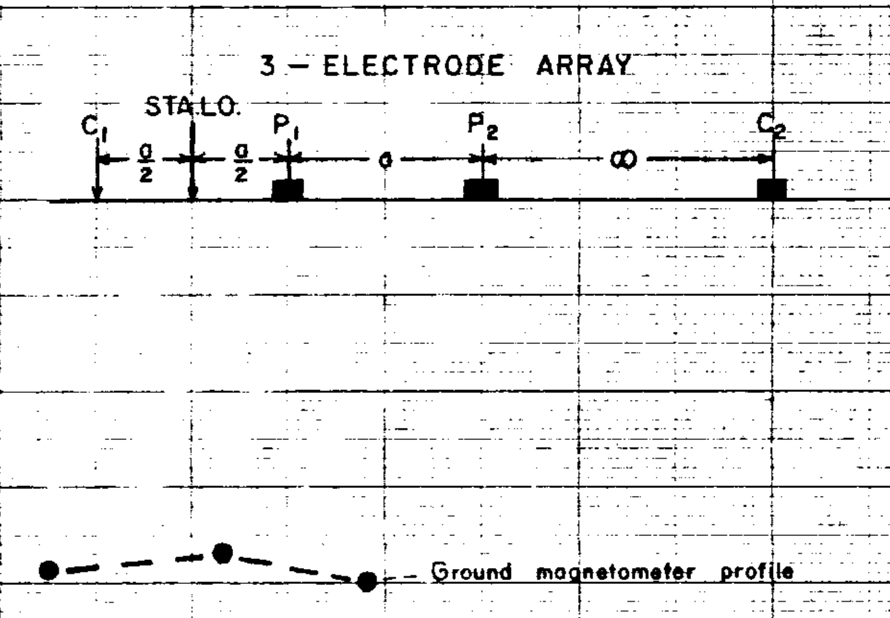
HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA.

VANMETALS EXPLORATION LIMITED

JUSTICE GROUP MERRITT B.C.

I.P. PROFILE - LINE 68+00E

JULY, 1962



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HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA

Line 32+00E
calculated
observed but not calculated
Line 40+00E
assumed, not detected
Line 48+00E
7·4 minimum
observed, not calculated
Line 52+00E
minimum
8·6 minimum
8·7 minimum
no calculations here
observed, not calculated
Line 60+00E
minimum
observed, not calculated depth unknown
Less than 4·0
Line 68+00E
These depths not calculated
less than 100'
less than 300'
less than 100'
Possible weak side effect. Depth not known
5·5 minimum
4·5 minimum
observed, not calculated
LEGEND
Interpreted section, depths calculated
Assumed section, depths not known
Calculated true chargeability in milliseconds.
Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. 461 MAP 1
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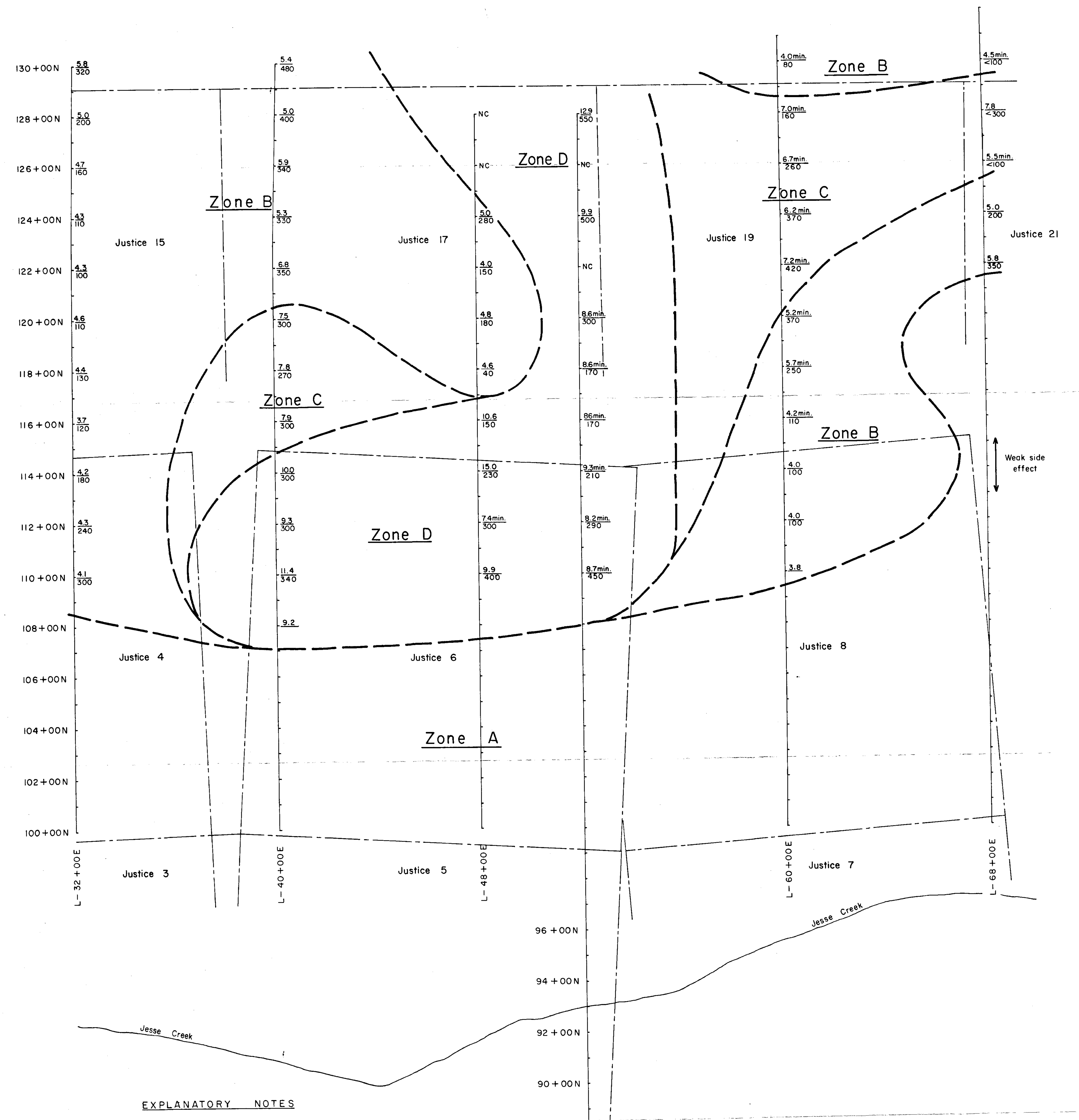
VANMETALS EXPLORATION LIMITED
JUSTICE GROUP
NEAR MERRITT, B.C. (50°, 121° S.E.)
INDUCED POLARIZATION SURVEY
INTERPRETED SECTIONS
Hor. and Vert. Scales: 1 inch = 100 feet
C.G. Fassler, Senior Geophysicist
HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA, JULY 1962



EXPLANATORY NOTES

15.0 / 230 ------- Calculated chargeability in milliseconds / Calculated depth below surface in feet

NC ---------- No calculations

Zone A ------ Chargeabilities of less than 2 milliseconds. Mainly Nicola formation.

Zone B ------ Chargeabilities of 4 to 6 milliseconds. Mainly intrusive rocks. Chargeabilities may represent normal background for intrusive or more probably indicate weak mineralization of 1/2 to 2% sulphides.

Zone C ------ Chargeabilities of 6 to 9 milliseconds Mainly intrusive rocks containing some mineralization: 3/4 to 3% sulphides.

Zone D ------ Chargeabilities of 9 to 15 milliseconds Mainly intrusive rocks containing the highest mineralization indicated: 1 to 5% sulphides

Note: Sulphide contents are estimated on the basis of the minimum chargeabilities indicated. Although some magnetite is present, its effect on the chargeabilities is believed to be negligible.

C.W. Faessler, Senior Geophysicist

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 461 MAP 2

(M8)

VANMETALS EXPLORATION LIMITED
JUSTICE GROUP
Near MERRITT, B.C. (50°, 121° S.E.)
INDUCED POLARIZATION SURVEY
INTERPRETATION
Scale: 1" = 200'

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HUNTING SURVEY CORPORATION LIMITED, TORONTO, CANADA
JULY, 1962