3138

GEOPHYSICAL REPORT

on

Adonis Mine's

Aspen Grove Project



Two Survey Areas:

(a) Area One situated immediately east of Highway No. 5 and 24 road miles north of Princeton

(b) Area Two situated along gravel road approximately 4½ miles south of Aspen Grove

92H/15E

Nicola Mining Division

British Columbia

N.T.S. 92H/15

Latitude 49°50'N; Longitude 120°38'W

on behalf of

ADONIS MINES LTD.

Field Work between May 9 and 15, 1971

Instrument Operator Mr. A. Scott (B.Sc. Geophysics)

Report by:

D. R. Cochrane, P.Eng.
May 18, 1971,
Delta, B.C.

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SUMMARY AND CONCLUSIONS:

Between the 9th and 15th of May, 1971, a field crew employed by the author completed 6.9 line miles of induced polarization survey on mineral claims in the Aspen Grove area, and on behalf of Adonis Mines Ltd. Two areas were surveyed. Area One is centered 24 road miles north of Princeton and immediately east of Highway No. 5; and Area Two is situated some 4½ miles south of Aspen Grove.

A Hewitt Enterprises Pulse type (time domain) induced polarization unit was deployed, in a Wenner field array with an "a" spacing of 300 feet,(The "a" spacing is normally also considered as the approximate exploration depth).

In Area One, geophysical surveying was conducted along east-west flag lines spaced 400 feet apart. In Area Two, two north-south lines were run, and are also spaced 400 feet apart.

The property surface is quite open, gently rolling and believed to be underlain by Nicola rocks intruded by "Coast type" acidic stocks.

The induced polarization survey recorded self potential, apparent resistivity and chargeability data, and maps showing the results accompany this report.

Statistical analysis of the apparent resistivity data show that two families of values exist, thereby suggesting that in

Area One at least, two different rock types underlie the survey grid. The contact may lie close to the 1500 ohm-feet iso-resistivity line or in and around two geophysical discontinuities discussed in the body of this report.

Chargeability response ranged from 2.75 to 8.3 milliseconds, (or millivolt seconds per volt) and the arithmetic mean is 5.3. Values in excess of 8.0 are considered to be slightly anomalous, and one anomalous "patch" lies in an area of considerable apparent resistivity change, and is bounded on the north by a self potential gradient of 110 millivolts recorded within 300 feet.

The southeast sector of Area One is geophysically complex, exhibits above average chargeability response and therefore is regarded as the highest priority exploration target within the area surveyed.

Respectfully submitted,

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. COCHRANE

D. R. Cochrane, P.Eng.,
May 18, 1971,
Delta, B.C.

INTRODUCTION:

In the early part of May, 1971, a field crew employed by the author completed 6.9 line miles of induced polarization surveys on behalf of Adonis Mines Ltd. Geophysical work was centered in two areas (referred to as Area One and Area Two), near Aspen Grove in south central B.C.

The purpose of the survey was to evaluate drift covered mineral claims lying within a metalogenic belt characterized by numerous copper and copper-molybdenum occurrences. This report describes the field procedures employed and discusses the results obtained.

LOCATION AND ACCESS:

The area is readily accessible by Highway Number 5 and is approximately midway between Princeton and Merritt. Area One lies immediately east of the Highway some 24 road miles north of Princeton and Area Two lies approximately 4½ miles south, on the Otter Lake road, from the settlement of Aspen Grove. The national topographic system code designation for the area is 92H/15; and Latitude 49°50'N, Longitude 120°38'W.

GENERAL SETTING:

The Aspen Grove area is situated in the Thompson Plateau subdivision of the Interior Plateau physiographic system of

British Columbia. It is a gently rolling upland surface of very moderate relief varying from just over 3,000 to just over 5,000 feet above sea level. The region is underlain primarily by The Nicola Series, an Upper Triassic volcanic-metasedimentary sequence including andesite and rhyolitic flows, and with minor intercalated bands of argillite, tuffs and limestone. Nicola rocks are intruded by middle to late Mesozoic Age "Coast Intrusions", usually in the form of granodiorite or quartz diorite stocks and/or smaller discordant plutons.

The area was covered by Pleistocene ice and a relatively thick mantle of drift covers bedrock, especially at lower elevations. The survey areas were quite open with occasional scattered clusters of pine and spruce.

No major topographic features were traversed and therefore topographic influence on the geophysical data is believed to be minimal.

## GENERAL CONSIDERATIONS OF THE PULSE TYPE INDUCED POLARIZATION METHOD:

Two varieties of induced polarization surveys are in common use today in mineral exploration. The first is the time domain or pulse type method in which a steady direct current is impressed on the ground for a few seconds and then abruptly terminated. A fraction of a second after cessation of current impulse, the decay voltage, (caused by sub-surface capacitive-like storage) is measured. The second method is the variable (dual) frequency technique or frequency domain. In this variety, the percentage difference between the impedance (a.c. resistance) offered at two separate frequencies, is measured.

The Hewitt (HEW 100) I.P. unit is a time domain unit and the exact method of measurement is outlined in the field procedure section.

The reader is referred to Wait, J.R. (1966), for a thorough treatment of frequency domain, and Seigel, H.O. (1966) and/or Brant (1966), for a discussion of time domain.

I.P. effect occurs when a current is passed through a volume of rock containing electronic conductors. Geophysical elec. conductors, or "metallic minerals" include most sulphides, (pyrite, chalcopyrite, bornite, molybdenite) certain oxides, clays, graphite and certain micas. Apart from the sulphides, minerals with highly unsatisfied basal lattice surfaces act as leaky condensers and give rise to I.P. effects. All common rocks are responsive to some degree, and this response is designated background. It is often equivalent to one volume percent of scattered pyrite, and probably due to unsatisfied charges at lattice imperfections, mineral and rock boundaries, fractures, and so on. Background in various parts of B.C. with the HEW-100 I.P. unit is as follows:

| Area | Lithology | Background (m.s.) |
|---|---|---|
| Highland Valley | Guichon Batholith | 2.5 to 4.0 |
| Ashnola, Southern B.C. | Unaltered rhyolite porphyry | 7.0 |
| North of Aspen Grove | Nicola Volcanics | 4.0 to 7.5 |
| Princeton | Princeton Sediments | approx. 17.0 |
| Cassiar area | Lower Paleozoic sediments | 1.5 to 5.0 |

Factors other than the amount of metallic conductors which affect I.P. response are grain size, conductivity of mineral, porosity, tortuosity (pore geometry), type of gangue minerals, composition and amount of pore fluid, degree of alteration, and mode of mineralization (disseminated, lode, vein type, etc.).

Rogers, (1966), has pointed out that the resistivity of rock is only slightly influenced by changes in the sulphide content at low levels. Much of the change is due to other effects such as moisture content, fracturing, pore space, ground water, extent, degree and type of alteration, type of sulphides and mode of sulphide distribution, etc. However, alteration in combination with increased sulphide content, not uncommonly affects the resistivity significantly. Unfortunately, there are many additional causes for resistivity variation and rarely can sulphides be recognized or predicted from resistivity data alone.

Background d.c. apparent resistivity in various parts of B.C. with the HEW-100 I.P. unit follows:

| Area | Lithology | Background (ohm-feet) |
|---|---|---|
| Highland Valley | Guichon Batholith | 1600 |
| Ashnola, British Columbia | Rhyolite porphyry | 3300 |
| North of Aspen Grove | Nicola Volcanics | 1000 |
| Princeton | Princeton sediments | 500 |
| Cassiar | Lower Paleozoic sediments | 1000 - 2000 |

Previous to current impression, the receiving pots are balanced, and this, the self potential value (recorded in millivolts) is often a useful geophysical tool. When metallic lustered sulphide minerals are situated in a suitable geological-hydrological environment, the sulphides oxidize and a natural or spontaneous "battery effect" occurs. Often the self potential effect over sulphide bodies is negative and in the order of a few hundred millivolts.

With a Wenner electrode configuration, the self potential and first derivative of the self potential are valuable information if the transit interval is equal to, or is one-half the "a" spacing distance. This was the case in the Adonis survey, and the S.P. values recorded are actually rate change or gradient values, with each line independent of adjacent lines.

FIELD PROCEDURE:

A standard Wenner Array with an "a" spacing of 300 feet was used for the I.P. survey of Adonis' property. For this array, the distance between pots and electrodes is equal, as illustrated below:

$E_1$ --- "a" --- $P_1$ --- "a" --- $P_2$ --- "a" --- $E_2$

←300'→ ←300'→ ←300'→

transit direction →

The front positions are positive and the rear positions negative.

A suitable station was chosen for instrument to set up at and the stake men and front pot man moved to the appropriate positions on the line. A small hole was dug beneath the humus and cleared of rocks in order to seat the pots (positions $P_1$ and $P_2$). A small amount of salt water was added to improve electrical contact.

The stakemen (positions $E_1$ and $E_2$) cleared a strip of ground (roughly 1 foot square) of moss, leaves and rocks, spread aluminum foil over the cleared part and buried the foil. Salt water was poured into the foil to assure good ground contact. If contact was still subnormal, two more stakes were set out some 6 feet to either side of the foil.

Communication with the instrument operator was facilitated by small transceivers and when all positions were reported "ready", the instrument operator commenced measurement. Firstly, the self potential of the ground between front ($P_1$) and rear ($P_2$) pots was balanced and recorded in millivolts (front pot was always defined as positive pole and data was corrected when plotted to account for changes in transit direction). A 4 second current pulse was then initiated during which the transmitter current and impressed EMF between the pots was noted. On cessation of the current pulse, an integrated value of the residual decay voltage is automatically registered on the receiver galvanometer. This value was recorded along with position of instrument, RC filter, integration function, output voltage of the transmitter, notes on terrain, steadiness of SP, and the "sharpness" of the I.P. The I.P. was normalized and the procedure repeated until three successive values agreed to within 10 percent. Often an 8 second current pulse was used and various combinations of filters and integration times to assist in interpretation of results.

The order was then given to move on 300 feet to the next station and the procedure repeated.

## DATA REDUCTION:

The raw I.P. data, recorded on standard note forms, was normalized in the field by Mr. A. Scott (by slide rule) and checked in the office by the author. The chargeability is defined by the relationship--

$$\text{chargeability (in milliseconds)} = 100 \times \frac{\text{IP (decay voltage)}}{\text{dV (m.v.)}}$$

and resistivity by the relationship--

$$\text{apparent resistivity (ohm-feet)} = 2\pi\text{"a"} \times \frac{dV}{I}$$

where, IP = the integrated decay voltage

dV = impressed EMF between receiving pots

a = "a" spacing (300 feet in this instance)

I = electrode current

These normalized variables were plotted, contoured, and accompany this report.

## DISCUSSION OF RESULTS:

### A. Self Potential

The self potential results of Area One are displayed in Figure 2, and of Area Two in Figure 5. The values presented are in millivolts, and are gradient measurements, recorded between two receiving porous pots spaced 300 feet apart. The readings are plotted midway between the pots, and are corrected for directional bias.

Large self potential gradients (in the order of 100 m.v. or so) are often indicative of sulphides in bedrock, if situated in a suitable physical-hydrological environment. However, other geologic situations may give rise to fairly large self potential effects. The largest gradient recorded on the Adonis survey is located at 30E on line 36N (Area One) where a potential of +160 m.v. occurred. Other fairly large gradients were observed at 34E on line 28N (110 m.v.), 14E on line 36N (117 m.v.), and at 18E, line 20N (108 m.v.). All these values occur in Area One. The largest gradient recorded in Area Two was at 16 + 50S on line C, across trenches present close to the lines.

B. Apparent Resistivity

Apparent resistivity results, (in ohm-feet) are shown in Figure 3 (Area One) and 5 (Area Two). The lowest recorded resistivity (highest conductivity) is 360 ohm-feet, and highest resistivity 5400 ohm-feet. The arithmetic mean is 1175, and the mode (most frequent range) lies in the 700 to 849 ohm-feet class. The data is positively skewed with respect to frequency distribution, as may be observed in Figure 6 (a). A secondary mode occurs in the 1750 to 1899 range, and this bimodal distribution, or two apparent resistivity family distribution, suggests that two different rock types underlie Area One. If such is the case, the contact would probably lie close to the 1500 ohm-foot iso-resistivity contour. The iso-resistivity pattern in Survey Area One (see Figure 3) is quite arcuate. The predominant feature is a large resistivity low centered in the northwest survey sector, with a "nose" of high resistivity impinging from the southeast.

The "low" (less than 1000 ohm-feet) is often indicative of broken, altered bedrock, and "highs" usually indicate more competent bedrock conditions. A major apparent resistivity disruption cuts obliquely across the east end of line 28N and is designated linear A-A'. A similar feature, at right angles to A-A' is designated B-B', (see Figure 3). These disruptions are indicative of bedrock discontinuity and may be due to faults or contacts.

Survey work in Area Two consisted of two lines (north-south lines 400 feet apart) and therefore cross line correlation is tentative. The highest resistivity value recorded was 1880 ohm-feet, and the lowest value 410 ohm-feet. In general, apparent resistivities increase to the north, suggesting more competency in this direction.

C. Chargeability

The chargeability results are shown in contoured plan form in Figure 4 (Area One) and 5 (Area Two). A frequency histogram, of the distribution of values (with respect to class) accompanies the body of this report as Figure 6-B. The latter figure shows data to be positively skewed, with a single mode in the 4 to 5 milli-second range. This class represents 20 percent of the total population, and is slightly less than the arithmetic mean of 5.3 m.s. Thus chargeability values within the 4 to 6 second range are believed to represent "background". Values above 5.3 are classed as above average, and values above 8.0 as slightly anomalous. Chargeability response ranged from a low of 2.75 to a high of 8.3 m.s.

The similarity of the D.C. apparent resistivity, and chargeability in survey Area One is readily apparent. But for a few exceptions, the chargeability decreased in intensity to the north and to the west. The area of most interest is situated near the east ends of lines 20N, 24N and 28N. A high of 8.2 was recorded in this area. Mr. Scott, the instrument operator, recorded sharp IP response in this area, and, in addition, 8 second to 4 second pulse ratios were in excess of 1.3, thereby suggesting a "sulphide" type response. (note: "sulphide" type IP response is obtained over disseminated sulphides, and unfortunately, in addition, over disseminated magnetite and graphite.). However, it is distinct from "membrane" type, commonly caused by platey minerals and alteration products.)

A one station chargeability peak of 8.3 m.s. was recorded at the west end of line 24N; and an 8.0 was recorded at 32E on line 36N.

The "above average" chargeability zone is centered primarily in the south and east property sector, and therefore this area must be assigned the highest exploration priority.

The most interesting chargeability response observed in Area Two, lies within a plus 6.0 m.s. band which may trend north-northeast across survey lines B and C, (cross line correlation, as previously mentioned, is necessarily tentative). The highest response (7.8 m.s.) occurred at 10 + 50S on recon. line "B".

Respectfully submitted,

D. R. Cochrane, P.Eng.,
May 18, 1971,
Delta, B.C.

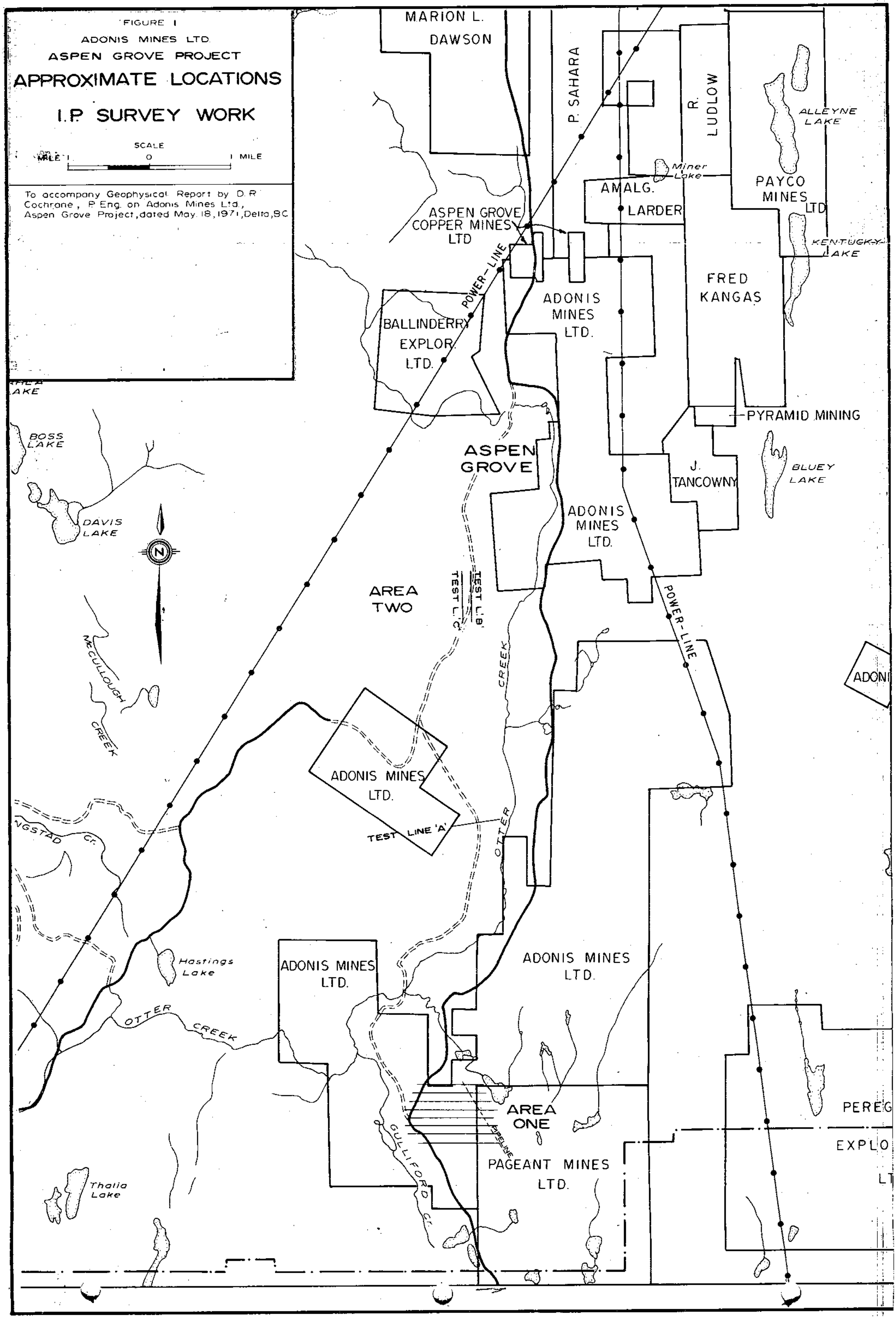
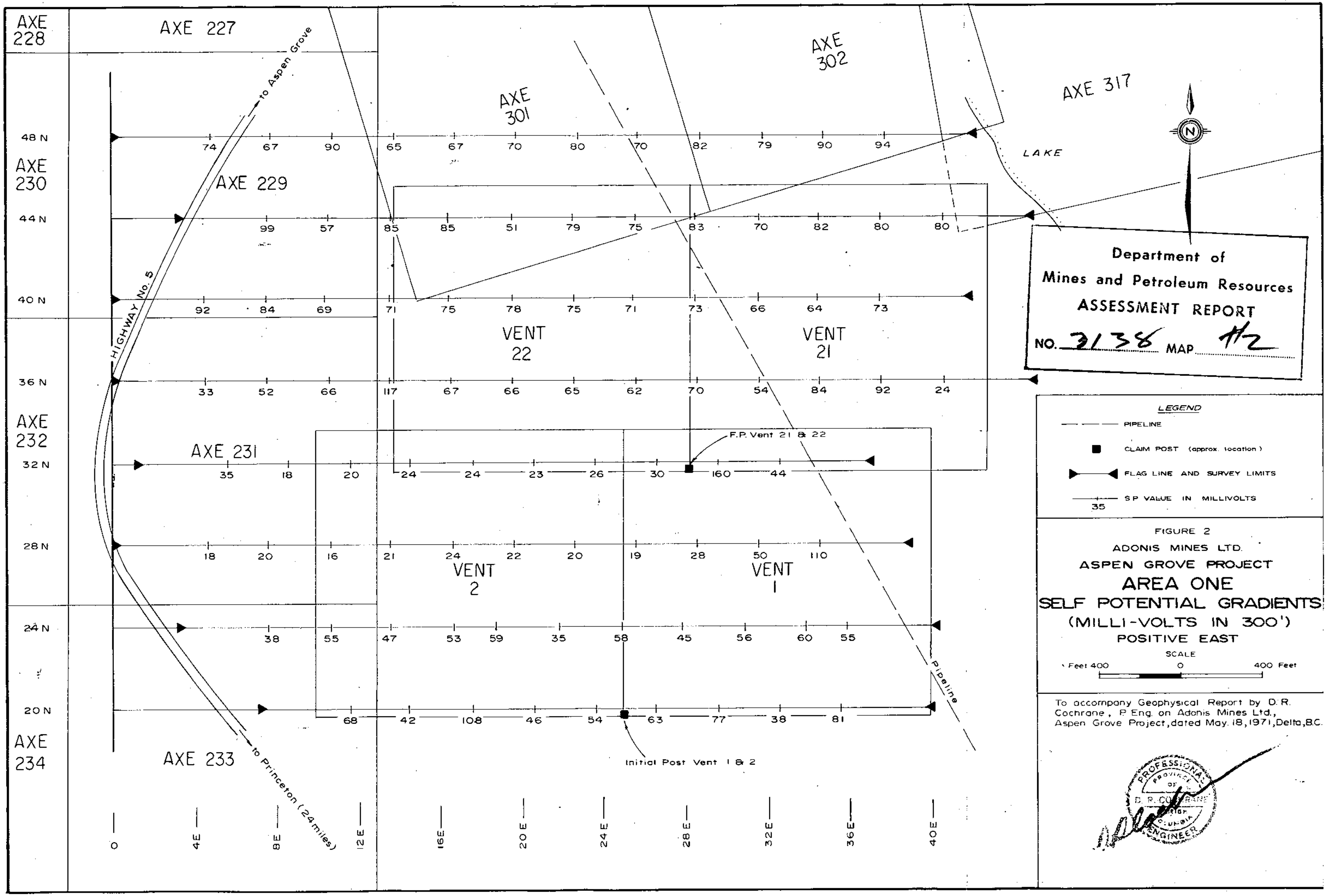
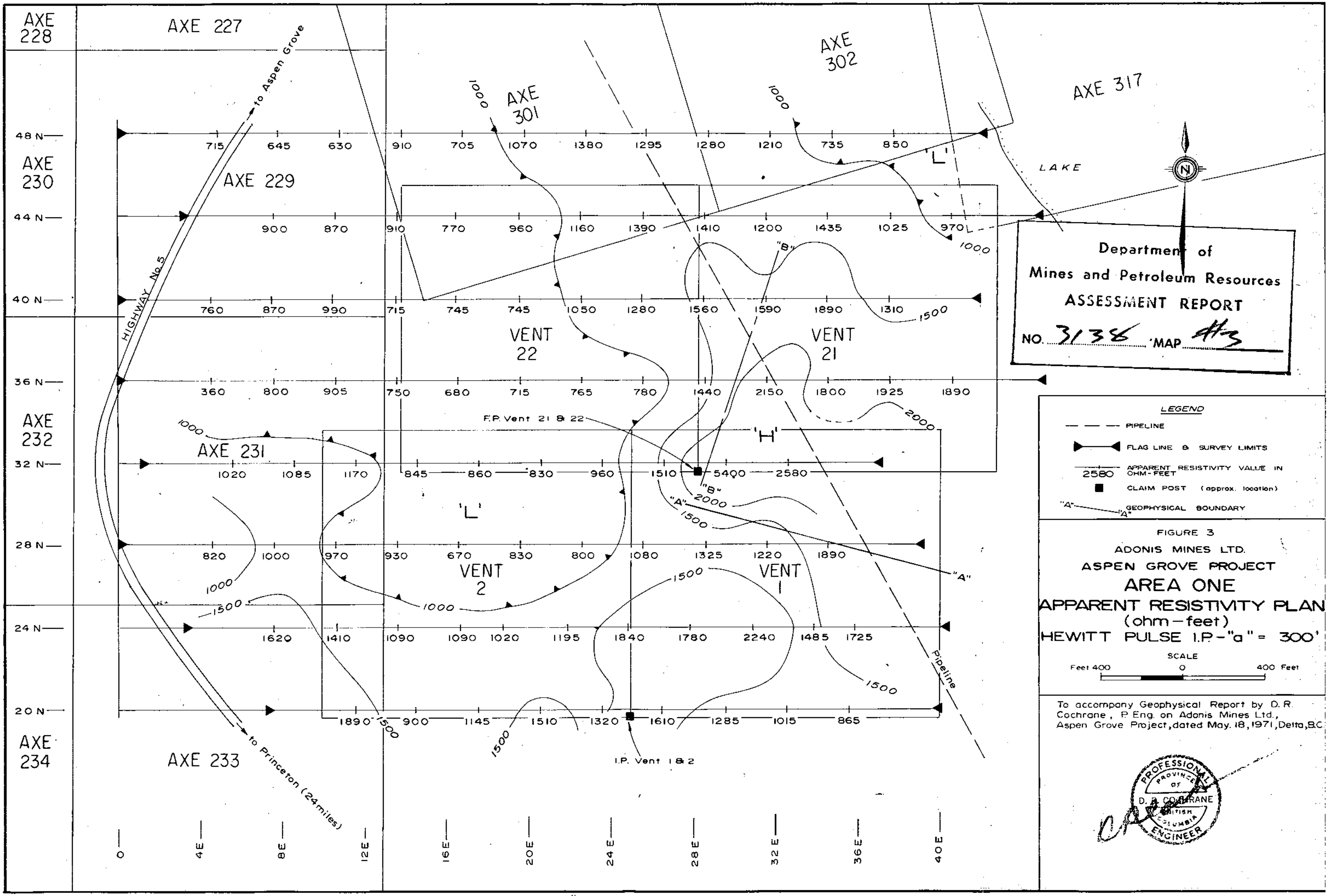


FIGURE 1
ADONIS MINES LTD.
ASPEN GROVE PROJECT
APPROXIMATE LOCATIONS
I.P. SURVEY WORK
SCALE
MILE 1 0 1 MILE
To accompany Geophysical Report by D.R. Cochrane, P.Eng. on Adonis Mines Ltd., Aspen Grove Project, dated May 18, 1971, Delta, BC
MARION L. DAWSON
P. SAHARA
R. LUDLOW
ALLEYNE LAKE
Miner Lake
PAYCO MINES LTD
AMALG. LARDER
KENTUCKY LAKE
ASPEN GROVE COPPER MINES LTD
POWER-LINE
FRED KANGAS
ADONIS MINES LTD.
BALLINDERRY EXPLOR. LTD.
PYRAMID MINING
BOSS LAKE
ASPEN GROVE
J. TANCOWNY
BLUEY LAKE
DAVIS LAKE
N
ADONIS MINES LTD.
AREA TWO
TEST L. 'B'
TEST L. 'C'
POWER-LINE
McCULLOUGH CREEK
CREEK
ADONI
ADONIS MINES LTD.
TEST LINE 'A'
OTTER
NGSTAD CR.
Hastings Lake
ADONIS MINES LTD.
ADONIS MINES LTD.
OTTER CREEK
AREA ONE
PIPELINE
GULLIFORD CR.
PEREG
EXPLO
LT
PAGEANT MINES LTD.
Thalia Lake



AXE 228
AXE 227
AXE 230
AXE 229
AXE 301
AXE 302
AXE 317
AXE 232
AXE 231
AXE 234
AXE 233
to Aspen Grove
to Princeton (24 miles)
HIGHWAY No. 5
LAKE
VENT 22
VENT 21
VENT 2
VENT 1
Pipeline
F.P. Vent 21 & 22
Initial Post Vent 1 & 2
48 N
44 N
40 N
36 N
32 N
28 N
24 N
20 N
0
4E
8E
12E
16E
20E
24E
28E
32E
36E
40E
74 67 90 65 67 70 80 70 82 79 90 94
99 57 85 85 51 79 75 83 70 82 80 80
92 84 69 71 75 78 75 71 73 66 64 73
33 52 66 117 67 66 65 62 70 54 84 92 24
35 18 20 24 24 23 26 30 160 44
18 20 16 21 24 22 20 19 28 50 110
38 55 47 53 59 35 58 45 56 60 55
68 42 108 46 54 63 77 38 81
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3138 MAP #2
LEGEND
PIPELINE
CLAIM POST (approx. location)
FLAG LINE AND SURVEY LIMITS
S P VALUE IN MILLIVOLTS
35
FIGURE 2
ADONIS MINES LTD.
ASPEN GROVE PROJECT
AREA ONE
SELF POTENTIAL GRADIENTS
(MILLI-VOLTS IN 300')
POSITIVE EAST
SCALE
Feet 400 0 400 Feet
To accompany Geophysical Report by D.R. Cochrane, P.Eng. on Adonis Mines Ltd., Aspen Grove Project, dated May 18, 1971, Delta, B.C.
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. COCHRANE



AXE 228
AXE 227
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AXE 230
AXE 231
AXE 232
AXE 233
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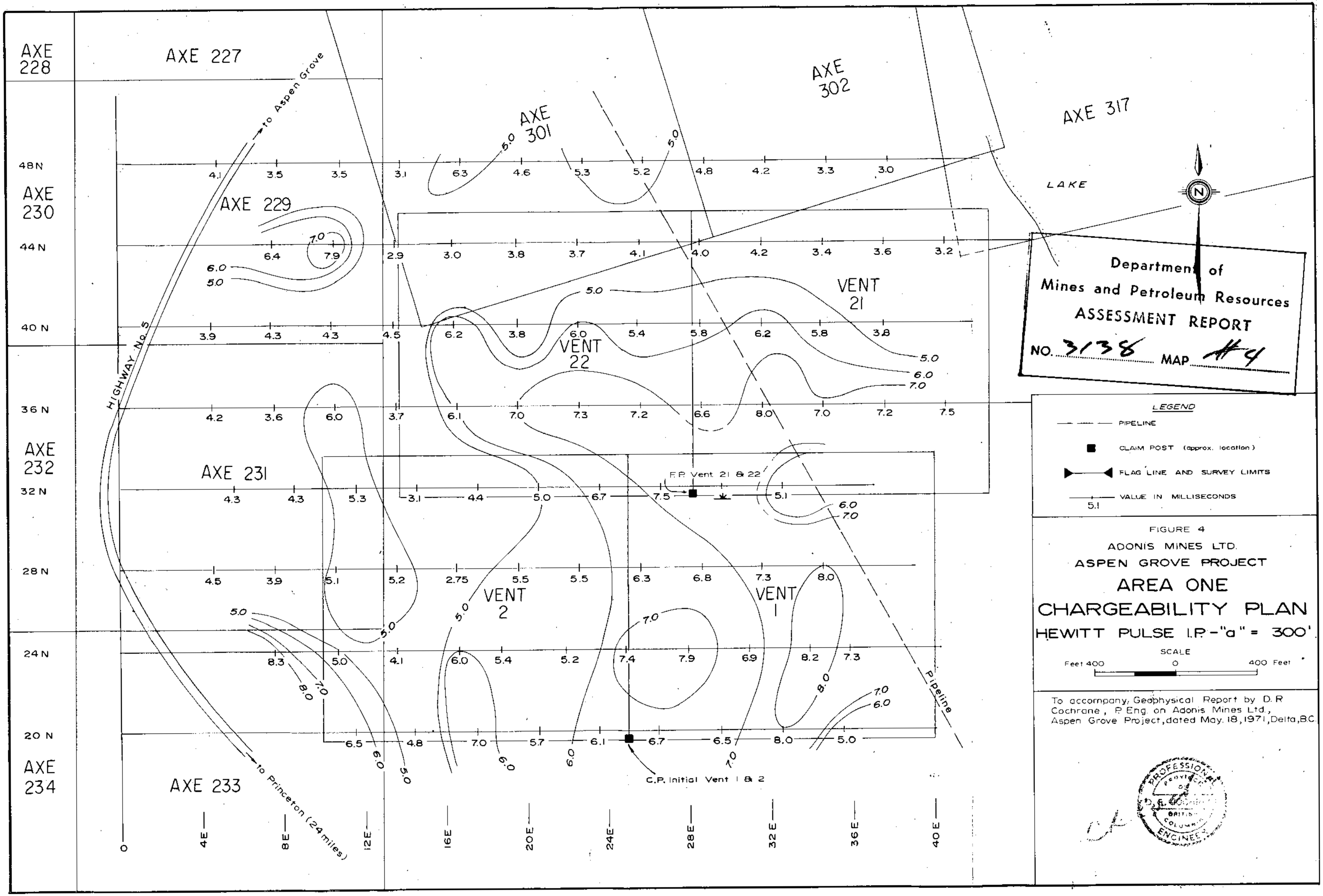
AXE 301
AXE 302
AXE 317
LAKE
to Aspen Grove
to Princeton (24 miles)
HIGHWAY No 5
VENT 22
VENT 21
VENT 2
VENT 1
'L'
'H'
"A"
"B"
F.P. Vent 21 & 22
I.P. Vent 1 & 2
Pipeline
48 N
44 N
40 N
36 N
32 N
28 N
24 N
20 N
0
4E
8E
12E
16E
20E
24E
28E
32E
36E
40E
715 645 630 910 705 1070 1380 1295 1280 1210 735 850
900 870 910 770 960 1160 1390 1410 1200 1435 1025 970
760 870 990 715 745 745 1050 1280 1560 1590 1890 1310
360 800 905 750 680 715 765 780 1440 2150 1800 1925 1890
1020 1085 1170 845 860 830 960 1510 5400 2580
820 1000 970 930 670 830 800 1080 1325 1220 1890
1620 1410 1090 1090 1020 1195 1840 1780 2240 1485 1725
1890 900 1145 1510 1320 1610 1285 1015 865
1000
1500
2000
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3138 MAP #3
LEGEND
PIPELINE
FLAG LINE & SURVEY LIMITS
2580 APPARENT RESISTIVITY VALUE IN OHM-FEET
CLAIM POST (approx. location)
"A" "A" GEOPHYSICAL BOUNDARY
FIGURE 3
ADONIS MINES LTD.
ASPEN GROVE PROJECT
AREA ONE
APPARENT RESISTIVITY PLAN
(ohm – feet)
HEWITT PULSE I.P. – "a" = 300'
SCALE
Feet 400 0 400 Feet
To accompany Geophysical Report by D.R. Cochrane, P.Eng. on Adonis Mines Ltd., Aspen Grove Project, dated May. 18, 1971, Delta, B.C.
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. COCHRANE



AXE 228
AXE 227
AXE 301
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AXE 317
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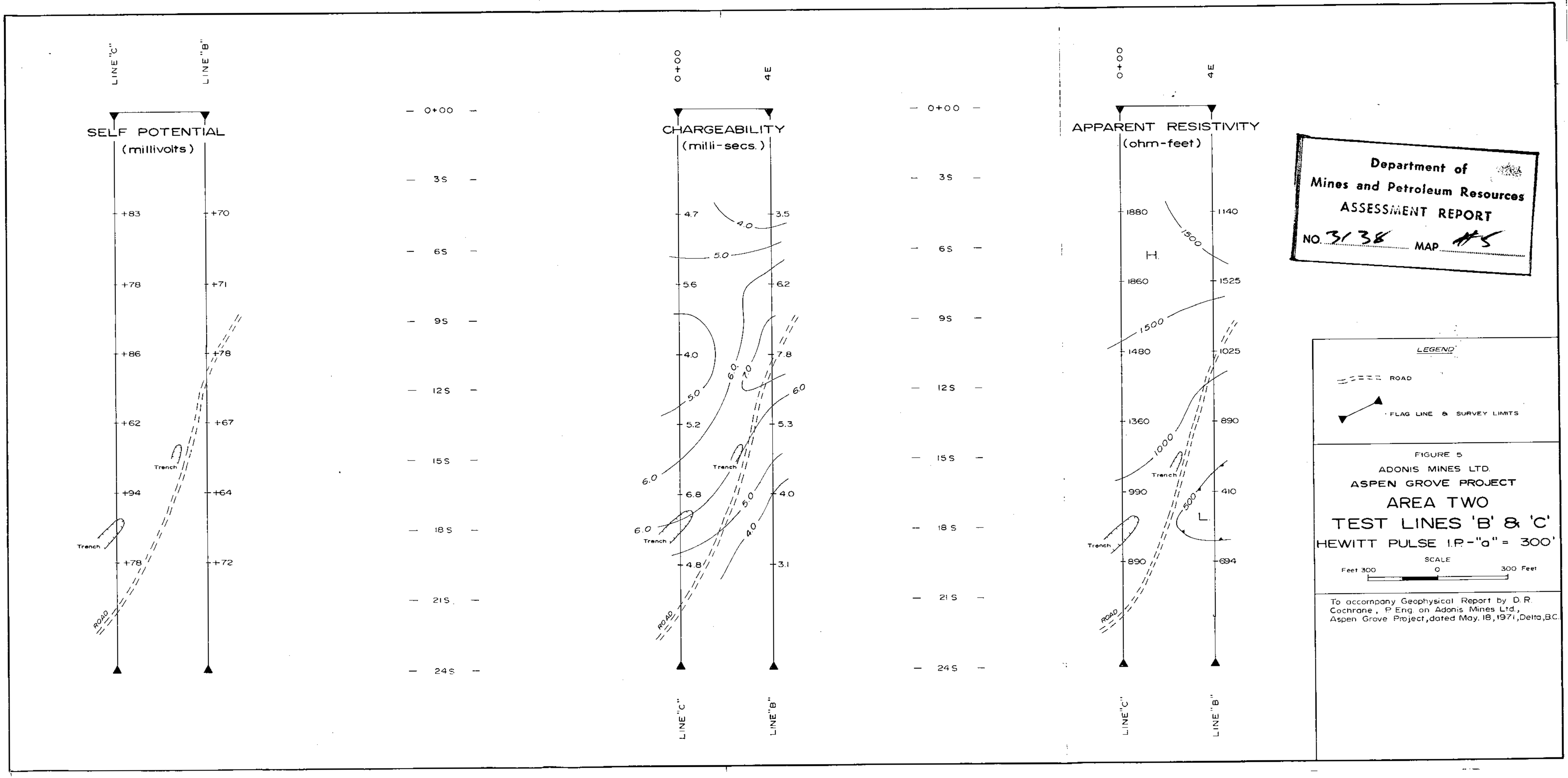
C.P. Initial Vent 1 & 2
48N
44N
40N
36N
32N
28N
24N
20N
0
4E
8E
12E
16E
20E
24E
28E
32E
36E
40E
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3138 MAP #4
LEGEND
PIPELINE
CLAIM POST (approx. location)
FLAG LINE AND SURVEY LIMITS
VALUE IN MILLISECONDS
FIGURE 4
ADONIS MINES LTD.
ASPEN GROVE PROJECT
AREA ONE
CHARGEABILITY PLAN
HEWITT PULSE I.P.-"a" = 300'
SCALE
Feet 400 0 400 Feet
To accompany Geophysical Report by D. R Cochrane, P. Eng. on Adonis Mines Ltd., Aspen Grove Project, dated May 18, 1971, Delta, B.C.
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA

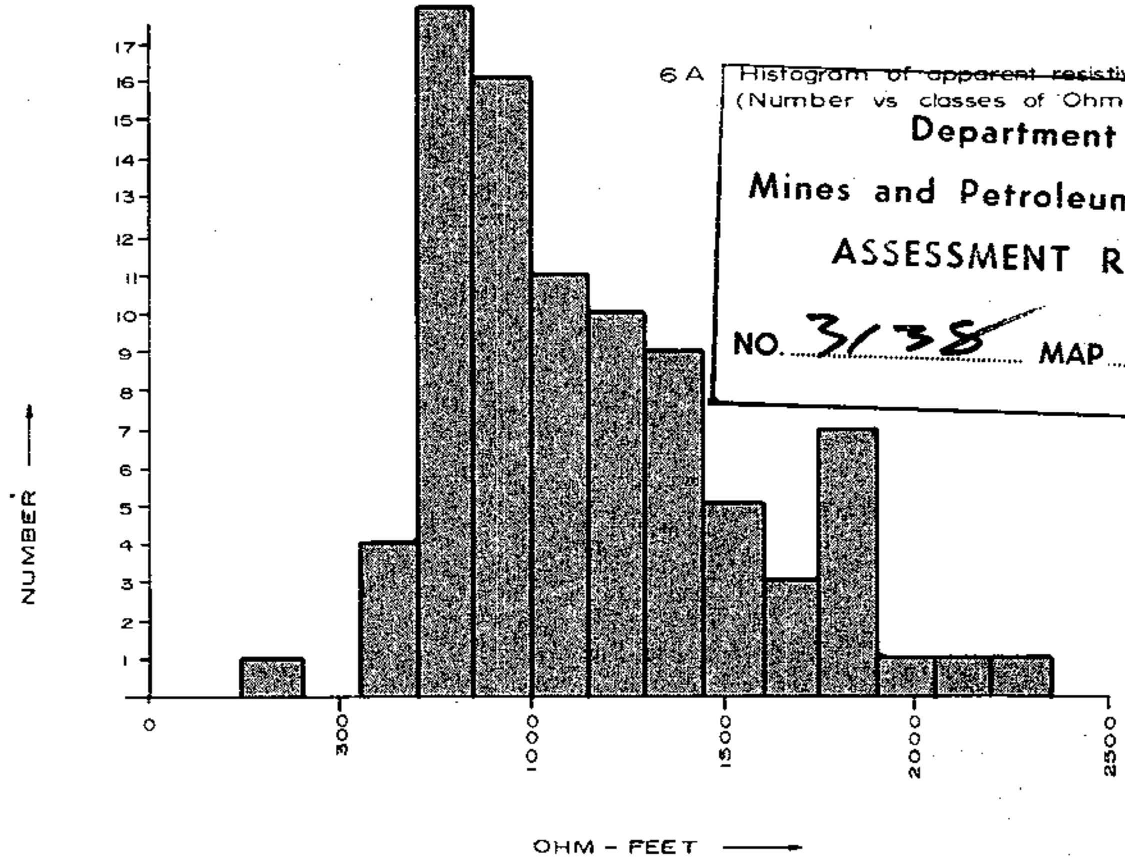


SELF POTENTIAL
(millivolts)
CHARGEABILITY
(milli-secs.)
APPARENT RESISTIVITY
(ohm-feet)
LINE "C"
LINE "B"
0+00
4E
0+00
3S
6S
9S
12S
15S
18S
21S
24S
+83
+78
+86
+62
+94
+78
+70
+71
+78
+67
+64
+72
4.7
5.6
4.0
5.2
6.8
4.8
3.5
6.2
7.8
5.3
4.0
3.1
1880
1860
1480
1360
990
890
1140
1525
1025
890
410
694
1500
1000
500
H.
L.
Trench
ROAD
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3138 MAP #5
LEGEND
ROAD
FLAG LINE & SURVEY LIMITS
FIGURE 5
ADONIS MINES LTD.
ASPEN GROVE PROJECT
AREA TWO
TEST LINES 'B' & 'C'
HEWITT PULSE I.P. - "a" = 300'
SCALE
Feet 300 0 300 Feet
To accompany Geophysical Report by D.R. Cochrane, P.Eng. on Adonis Mines Ltd., Aspen Grove Project, dated May. 18, 1971, Delta, B.C.

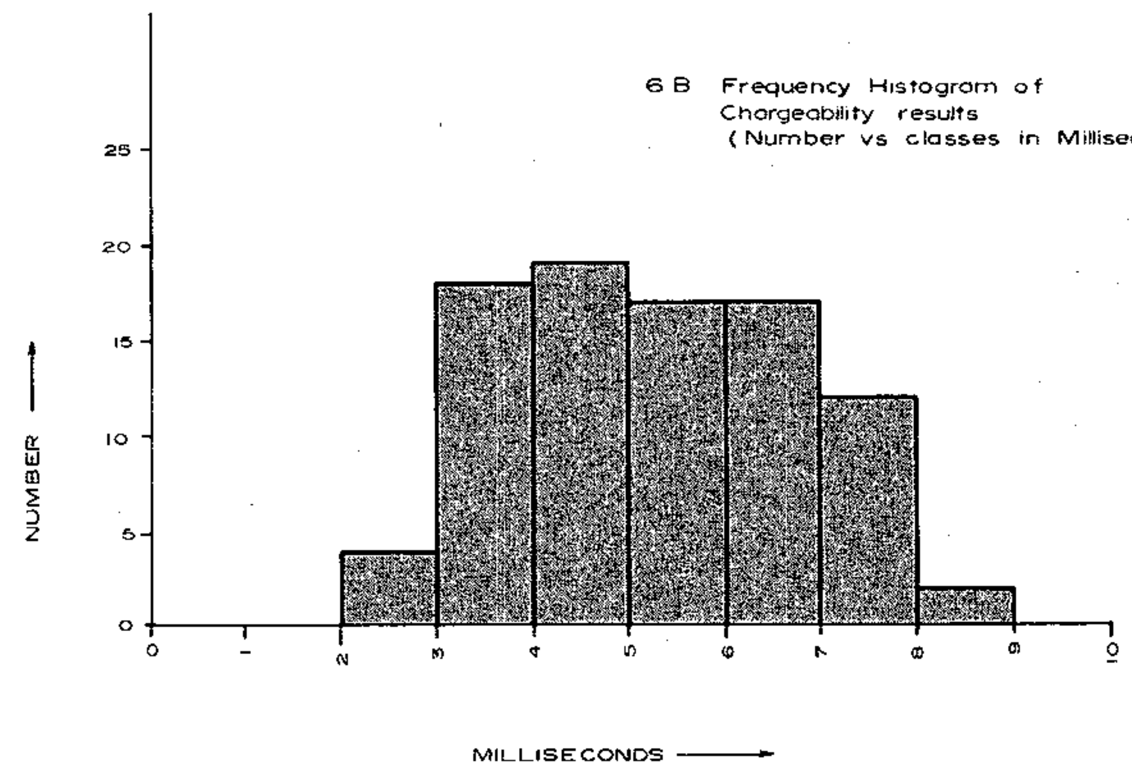
FIGURE 6

6 A Histogram of apparent resistivity values
(Number vs classes of Ohm-feet)






6 B Frequency Histogram of
Chargeability results
(Number vs classes in Milliseconds)



## APPENDIX I

### Certificates

| | |
|---|---|
| Name: | COCHRANE, Donald Robert |
| Education: | B.A.Sc. - University of Toronto<br>M.Sc. (Eng.) - Queen's University |
| Professional Associations: | Professional Engineer of British Columbia, Ontario and Saskatchewan.<br>Jr. member of C.I.M.M., member of G.A.C., M.A.C., Geological Engineer. |
| Experience: | Engaged in the profession since 1962 while employed with Noranda Exploration Co. Ltd., Quebec Cartier Mines Ltd., and Meridian Exploration Syndicate. |

| | |
|---|---|
| Name: | SCOTT, Alan R. |
| Education: | B.Sc. - Geophysics, University of British Columbia |
| Experience: | Two summers - crew member and operator with Geo-X Surveys Ltd.<br>Presently employed with D.R.Cochrane, P.Eng. - Chief Operator. |

| | |
|---|---|
| Name: | CHASE, William |
| Age: | 19 |
| Education: | Grade 12 Diploma |
| Experience: | Employed since September, 1970 and engaged in EM and IP surveying. Previous experience at the Anvil Mine, Y.T. Summer 1970. |

| | |
|---|---|
| Name: | N. Estacaille |
| Age: | 24 |
| Education: | Grade 12 Diploma |
| Experience: | ½ year exploration experience with Huntec. |

# APPENDIX II

## Personnel and Dates Worked

| Personnel | Type of Work | Dates Worked |
|---|---|---|
| A.Scott, B. Chase, N. Estacaille | Mobilization, setting up camp | May 9 |
| A.Scott, B. Chase, N. Estacaille | I.P. Survey | May 10, 11, 12, 13, 14 |
| D. R. Cochrane | Mapping and Supervision | May 12, 13, 14 |
| A. Scott and B. Chase | Demobilization and Data processing | May 15 |
| D. R. Cochrane | Report Preparation | May 19 and 20 |
| Altair | Drafting | May 21, 24, 25 |

APPENDIX III

Cost

As per agreement between Adonis Mines Ltd., and D. R. Cochrane, P.Eng., regarding geophysical induced polarization in the Aspen Grove Area, on behalf of Adonis Mines:

Areas One and Two: 6.9 line miles @ $229.00/line mile

= $1,580.10

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. COCHRANE

D. R. Cochrane, P.Eng.,
Delta, B.C.

# APPENDIX IV

## Instrument Specifications

### Transmitter Unit

| | |
|---|---|
| Current pulse period (D.C. Pulse)<br>Manual initiated timer | 1 - 10 seconds |
| Current measuring ranges | 0 - 500<br>0 - 1000 milliamperes<br>0 - 5000 |
| Internal voltage converter<br>27 volt D.C. 350 watt<br>output with belt pack batteries | 250<br>500 volts D.C. Nominal<br>1000 |

500 watts using 27 volt aircraft batteries

Transmitter can switch up to 3 amps at 1000 volts from generator or battery supply with resistive load. The switching is done internally in the transmitter unit. Remote control output can switch up to 10 kilowatts of power by using a separate control unit. A remote control cord is supplied with auxiliary equipment.

### Receiver Unit

| | |
|---|---|
| Self Potential Range | 0 - 1000 millivolts<br>1 millivolt resolution |
| Integration time periods | .8 seconds<br>1.6 seconds |
| Tandem Integration time periods | 1.6 seconds<br>3.2 seconds |
| Input filtering | 3 ranges plus 4 integration combinations |
| Delay time from cessation of current pulse | .3 seconds |

(Combined Photo Electric Coupled Receiver and Transmitter)

| | |
|---|---|
| Operation Temperature | .25°F - 120°F |

### POWER SUPPLY

| | |
|---|---|
| Receiver Unit | 4 Eveready E136 Mercury Batteries<br>2 Eveready E134 Mercury Batteries<br>2 Eveready E401 Mercury Batteries |
| Transmitter Unit (recon. mode) | Sealed Rechargeable 8 amp. hr. belt pack capable of driving the converter at 350 watts for a minimum of one day's operation before recharge. |
| Transmitter Unit (med.power mode) | Aircraft 11 amp. hr. Battery |
| Battery Charger | Custom Automatic cutoff for charging sealed batteries. |