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INDUCED POLARISATION REPORT

on the

SUSAP PROPERTY

Keromeos District  
Osoyoos Mining Division  
British Columbia

82E - 4W

Prepared for:

Aurora Gold Ltd.  
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Calgary, Alberta  
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By:

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August, 1991

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

21,801

## SUMMARY

Aurora Gold Ltd. optioned the Susap property from Mr. L. Little of Penticton, British Columbia on June 6, 1989. The latest review of the geology and previous exploration over the property was made by W. A. MacLeod in September 1989 and was submitted as an assessment report.

The property, consisting of 24 mineral claims, is located 12 kilometres south of Keromeos and has been intermittently explored since 1903.

The claims are underlain by Mesozoic "Kruger" syenitic through quartz monzonitic lithologies and "Nelson" granodiorite to monzonite intrusive into older volcanics and sediments of the Triassic Old Tom Formation.

Copper, molybdenum, and precious metal sulphide mineralization is closely associated with late stage felsic intrusives, silicified zones, and open fracture linings in characteristic sub-horizontal fracture sets within both intrusive phases.

Diamond drilling coupled with surface and underground sampling has outlined reserves of approximately 1.5 million tonnes @ 0.158% Cu. and 0.075% MoS<sub>2</sub>. across 8 to 30 metres true width on a zone that can be traced for approximately 100 meters at the main Susap prospect.

Drilling 700 metres east of the main showing has intersected similar mineralization @ 0.132% Cu and 0.010% MoS<sub>2</sub> over 9 metres width.

Both of these mineralized zones appear to be located along a single mineralized trend at 080/70S.

Regional aeromagnetic data suggests the presence of a buried late stage pluton within the main "Nelson" intrusive beneath the Susap prospect. "Climax type" molybdenum mineralization potentially related to late plutonism may be correlative with the drill defined near-surface mineralization.

The purpose for the Induced Polarisation survey was to determine if the mineralisation could extend over a much larger area than that of the main shear zone which has been drilled. The survey was carried out over a major copper geochemical anomaly in a set of three profiles using multiple separations in order to identify any variation with depth.

The results of the survey do show a close correlation with the geochemical results. An increase in the chargeability over the showing at the main adit was observed on the profiles to the east and there are indications that to the east there is an improvement in the chargeability with depth.

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## INTRODUCTION

The Susap property, consisting of 24 contiguous mineral claims, is located approximately 12 kilometres south of Keromeos in southern British Columbia.

Previous exploration, dating from 1903, has successfully delineated important copper, molybdenum, and precious metal prospects on the ground. In recognition of the exploration potential of the property, Aurora Gold Ltd. optioned the property from Mr. L. Little of Penticton, B.C. in June, 1989.

The present survey was carried out at the request of Mr. G. Nolin of Aurora in order to determine if the mineralisation could be much wider than indicated by previous exploration and also whether the grade showed any improvement with depth.

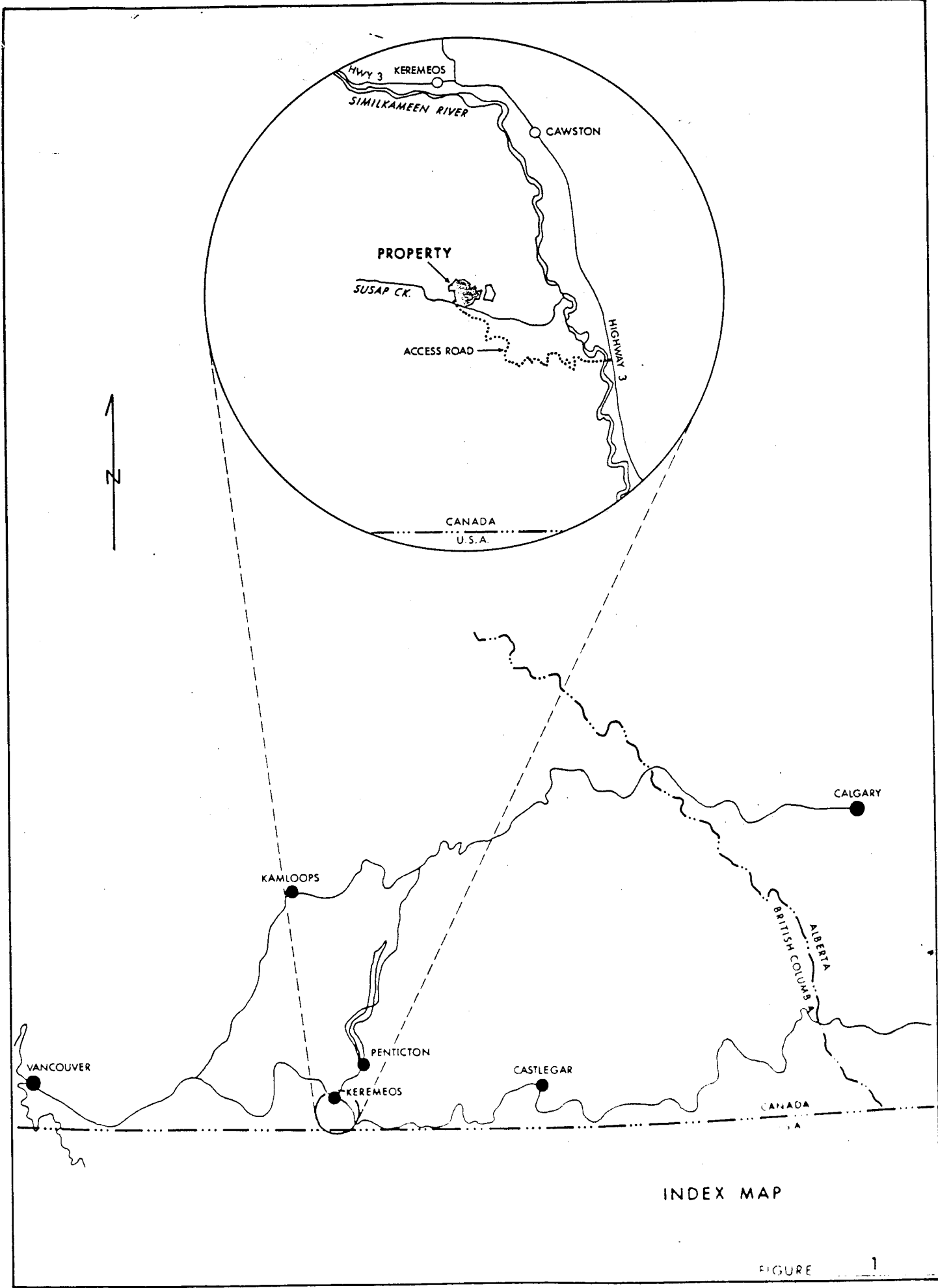
As this report is a continuation of the previous surveys carried out by W.A. MacLeod on behalf of Aurora much of the background information has been incorporated from that report except for the detail geology which the reader should obtain directly from the source.

## LOCATION and ACCESS

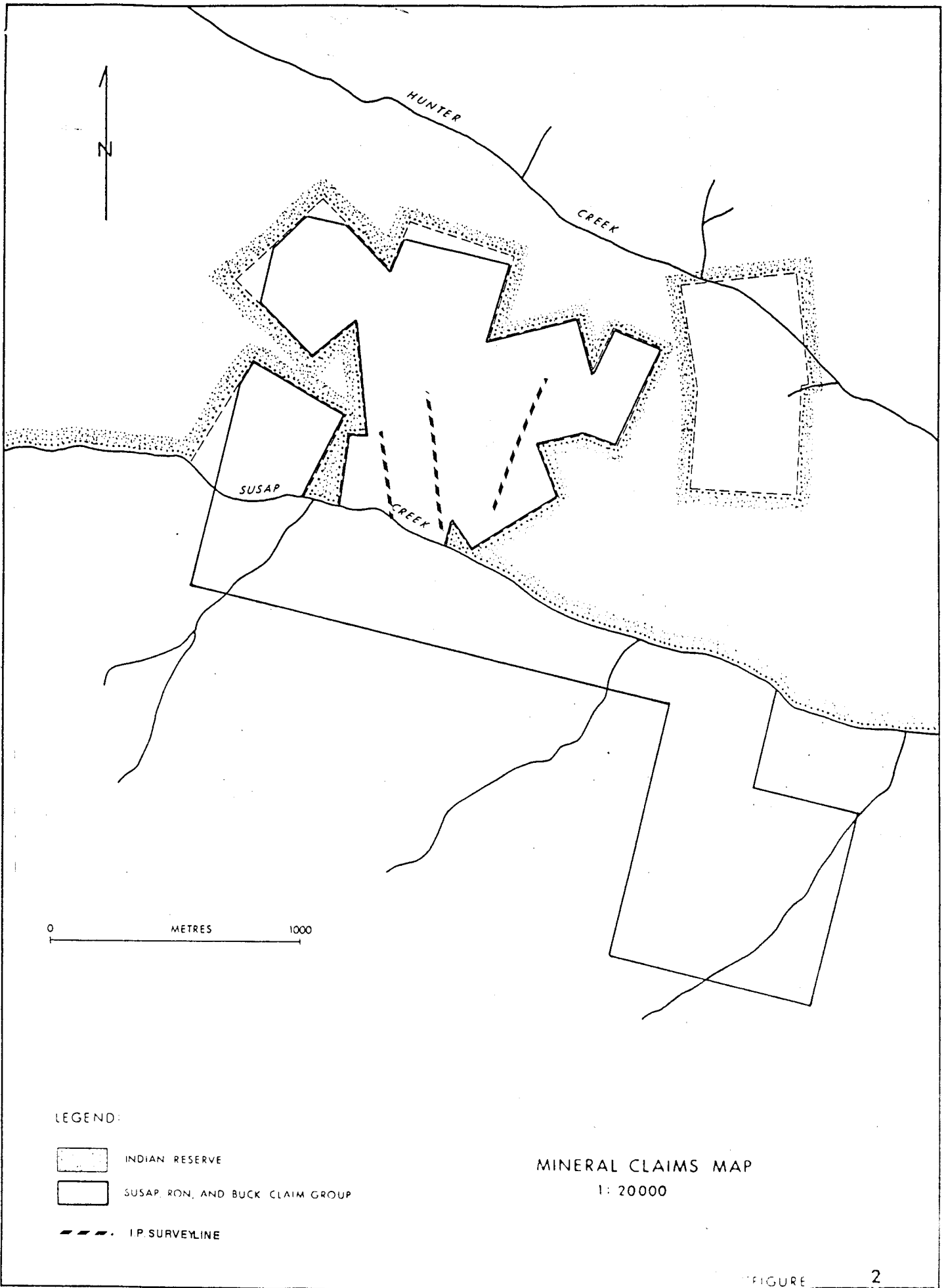
The Susap property is located within the Osoyoos Mining Division at an average elevation of 1400 metres ASL approximately 12 kilometres south of Keromeos in southern British Columbia at 49 degrees 06 minutes North Latitude; 119 degrees 48 minutes West Longitude in N.T.S. grid 82E - 4W (Figure 1).

The area of interest on the property is situated on a steep partially forested ridge between Hunter and Susap Creeks - both tributaries to the Similkameen River.




Access to the property is gained via Provincial Highway No.3 nineteen kilometres south of Keromeos and 14.6 kilometres west across the Similkameen River on a branch road and rough 4X4 access trail to location with an attendant 900 metre elevation gain from the valley floor.



INDEX MAP



LEGEND:

-  INDIAN RESERVE
-  SUSAP, RON, AND BUCK CLAIM GROUP
-  I.P. SURVEYLINE

MINERAL CLAIMS MAP  
1: 20000

PROPERTY

The Susap property consists of 24 contiguous mineral claims (Figure 2) summarized in the following table (Table I):

<u>Claim Name</u>	<u>Record Number</u>
Susap #2 (Fraction)	15736
Susap #3	16608
Susap #4	16609
Susap #5	16610
Susap #6	16611
Buck #11	26218
Buck #12	26219
Buck #13	26220
Buck #14	26221
Buck #15	26222
Buck #16	26223
Buck #17	26224
Buck #18	26225
Buck #19	26226
Buck #20	26227
Buck #21	26228
Buck #22	26229
Buck #23	26230
Buck #24	26231
Ron #1	27428
Ron #2	27429
Ron #3	27430
Ron #4	27431
Ron #5	27432

The claims located on the north side of Susap Creek are restricted to those lands within ten original Crown Grants exclusive of the Range Indian Reserve 13. Since Susap Creek marks the southern boundary of the reserve, the claims south of the creek are thus wholly unencumbered.

Acquisition of the mineral rights on the Reserve remains as negotiable with the local Indian Band.

The Susap Property is owned by Mr. Lyle Little of Penticton, British Columbia and was optioned to Aurora Gold Ltd. of Calgary, Alberta on June 6, 1989.

### EXPLORATION HISTORY (from W.A.MacLeod report 1989)

Previous exploration dates from 1903 with the first recorded work on the property by King Edward Mines Ltd. Two important copper - molybdenum - silver and gold showings were located 1500 metres apart on the north side of Susap Creek and immediately southwest of Hunter Creek.

A 46 metre adit intersected the Susap mineralization at an elevation of 1241 metres in 1904. A second adit of 11 metres length was driven in the showing at an elevation of 1276 metres during 1935.

The Hunter Creek prospect was similarly explored by a 10 metre adit and nearby 5 metre shaft.

Mineralization was reported to be intermittantly traceable across widths of 3 to 12 metres between the two prospects.

The property was later acquired by Friday Mines Ltd. who, in 1962, completed trenching and sampling of the Susap and Hunter Creek adits. General geological mapping, prospecting, longwire Afmag geophysics preceded the drilling of four short X-ray drill holes at the Susap location.

Combined airborne e/m, magnetic, and radiometric surveys were completed over the property by Grand Duchess Mines Ltd. in 1967.

Noranda Exploration Company optioned the property in 1967 and carried out geological mapping and soil sampling in addition to continued trenching and sampling over a small portion of the present property.

Cro-Mur Mining and Exploration Co. Ltd acquired the property in 1970. Upon completion of bulldozer trenching and access road construction, an evaluation report was prepared by Mr. W.V. Smitheringale. The claims were subsequently optioned to Scurry Rainbow Oil Ltd. in 1971.

Scurry remapped both the surface and underground geology and completed considerable trenching and a limited extension of one of the Susap adits. They followed their initial year's work with an IP and magnetometer survey and completed three diamond drill holes in the Susap Creek area in 1972.

Canadian Occidental Petroleum Ltd. operated the property under option in 1973. A very comprehensive regional and detailed geological, magnetometer, soil sampling, and access road construction program ensued over a large area extending well past the presently held lands. One 305 metre drill hole was completed beneath the earlier Scurry drilling at the Susap prospect in late 1973 and the option allowed to lapse.



Brenda Mines Ltd. completed a single 122 metre diamond drill hole just west and beneath the main Susap showing in 1977.

Teck Corporation Ltd. sampled the lower Susap adit in 1977.

United Hearne Resources Ltd. optioned the property from Cro-Mur in late 1978 and carried out a general prospect evaluation by G.A. Noel early the following year. The company subsequently resampled and mapped the old Hunter Creek workings and completed 6 diamond drill holes on the Susap prospect.

The property has apparently lain dormant until its acquisition by Mr. L. Little and the current option agreement with Aurora Gold Ltd.

#### AURORA GOLD

A complete review of previous exploration results and additional geological evaluation was carried out by W.A. MacLeod in 1989 and 1990 was submitted for assessment. In conjunction with that survey a test VLF survey was conducted across the strike of the mineralisation.

## GEOLOGY

The property is located on the part of a extensive structure which has a number of major showings of copper / molybdenum along its length. The trend is approximately 080 degrees. The known mineralisation is associated with bathylithic intrusions of Jurassic/Cretaceous age into earlier volcanics of the Old Tom Formation.

The geology and the copper/molybdenum mineralisation have been described in detail in the W. A. MacLeod report.

### INDUCED POLARISATION SURVEY

The field survey was carried out in the period July 3-12, 1991 by the author accompanied by Mr. G Nolin of Aurora Gold Ltd.

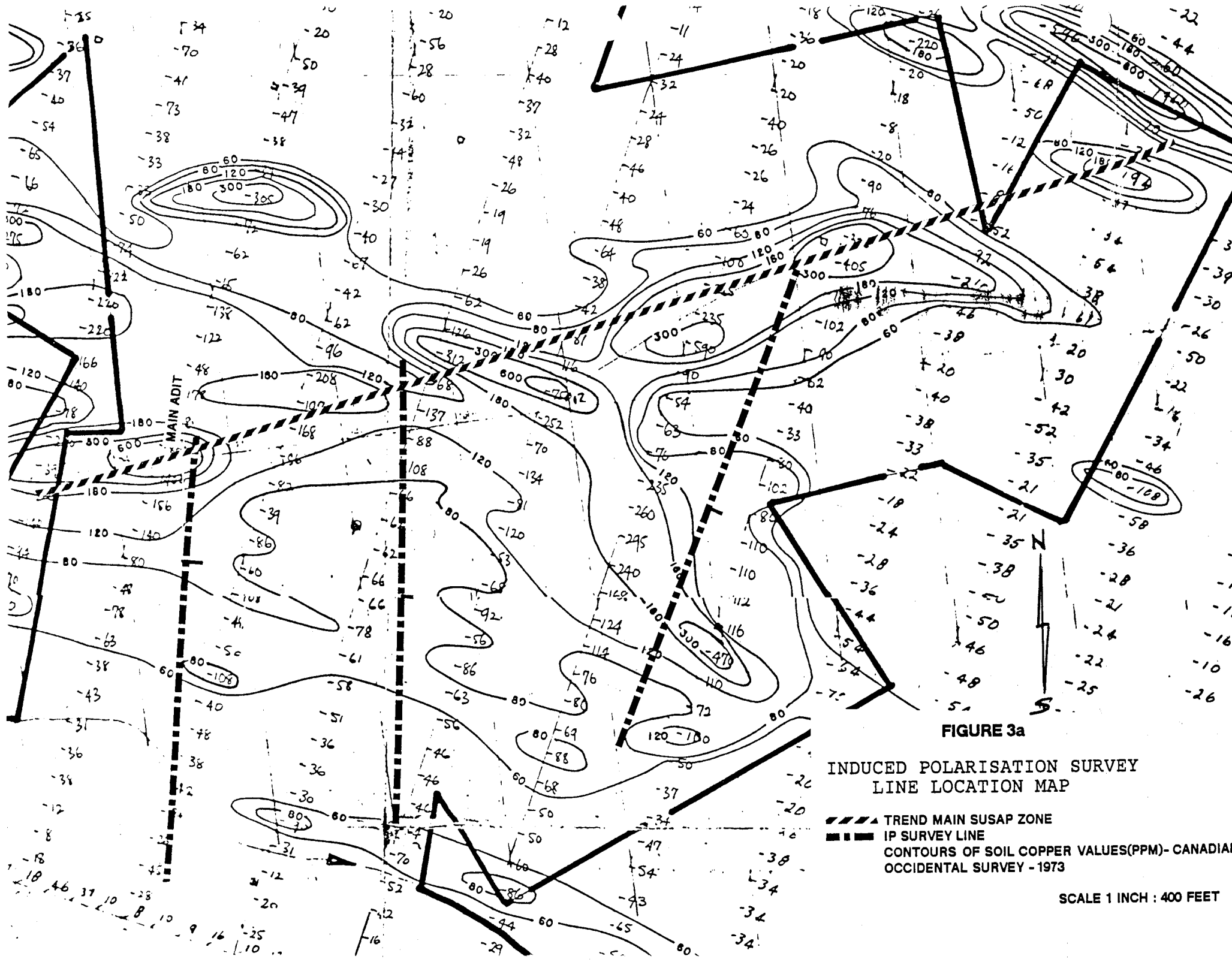
The Induced Polarisation survey was carried out over three selected profiles. Line #1 was surveyed over the area of the main adit where the mineralisation has also been exposed in surface trenches. The other two profiles were surveyed to the east and the location is shown on the soil copper anomaly map, (Figure 3). The reference zero location was selected where each line crossed the road and is indicated on the location map.

#### Equipment:

The survey equipment consisted of a Phoenix IPT-1 transmitter powered by a 3Kva generator with aluminum foil used as the ground electrodes and a 2 second on, 2 second off standard time cycle. Due to the high ground resistance the maximum current used was 0.2 amps. The receiver used was a Hunttec Mk IV s/n 1069 in time domain mode with a time delay of 160 milliseconds and an integration time of 65 milliseconds for each of 10 windows. The total value over the 10 windows provided by the instrument was used for plotting the data.

#### Specifications:

The dipole-dipole array with an 'a' value of 50 meters and with multiple separations of n=1 to 5 was used throughout the survey and the results are presented as standard pseudo-sections of apparent chargeability and apparent resistivity for each line.

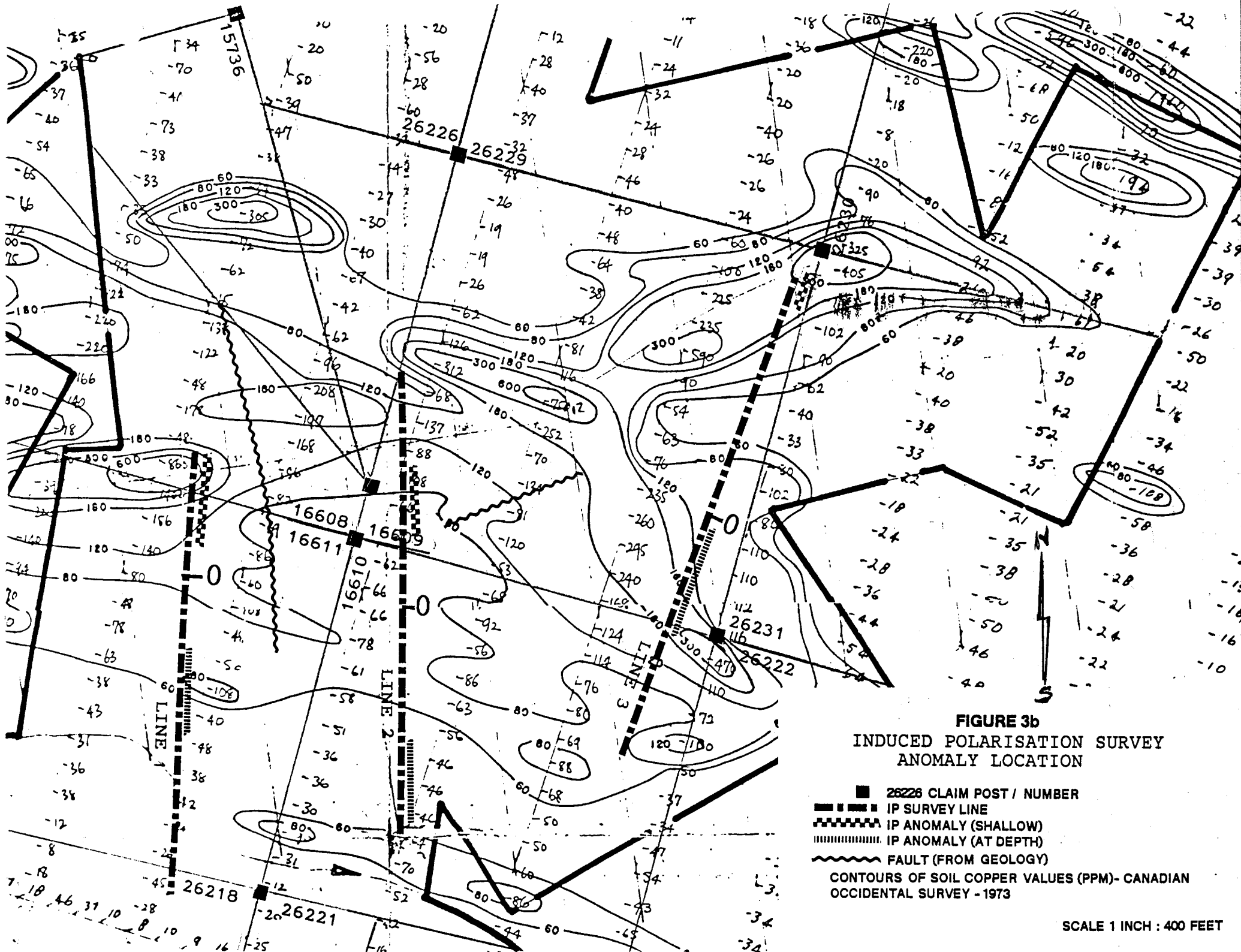


**FIGURE 3a**

**INDUCED POLARISATION SURVEY  
LINE LOCATION MAP**

- TREND MAIN SUSAP ZONE
- IP SURVEY LINE
- CONTOURS OF SOIL COPPER VALUES (PPM) - CANADIAN OCCIDENTAL SURVEY - 1973

SCALE 1 INCH : 400 FEET



**FIGURE 3b**  
**INDUCED POLARISATION SURVEY**  
**ANOMALY LOCATION**

- 26226 CLAIM POST / NUMBER
- — — — — IP SURVEY LINE
- ▣▣▣▣▣ IP ANOMALY (SHALLOW)
- ..... IP ANOMALY (AT DEPTH)
- ~~~~~ FAULT (FROM GEOLOGY)
- CONTOURS OF SOIL COPPER VALUES (PPM)- CANADIAN OCCIDENTAL SURVEY - 1973

SCALE 1 INCH : 400 FEET

## INTERPRETATION

The results are provided as pseudo-sections with the south shown on the right, (Figures 4-6).

All of the profiles are located on a steep slope to the south towards Susap Creek. There is insufficient variation in topography on the slope to cause any apparent anomalies in the chargeability response and therefore no corrections were deemed necessary.

### LINE #1 - Figure 4

The apparent chargeability results show a very distinct break to the south where the profile terminated at the Susap Creek. There is no apparent change in the bedrock type in this area to explain the change although an increase in the overburden in the valley along the creek may be sufficient to cause the break.

This profile crossed the main fault at the north end and shows a weak but broad chargeability response which is not distinctive but does give a reference for the other profiles where higher values were obtained. The fault does not produce any resistivity anomaly but there is an apparent increase in the resistivity over the mineralised area. Low resistivity values at approximately 100 meters south may indicate the location of a fault. Difficulties were also encountered in obtaining chargeability values due to high noise levels which often are associated with structures.

### LINE #2 - Figure 5

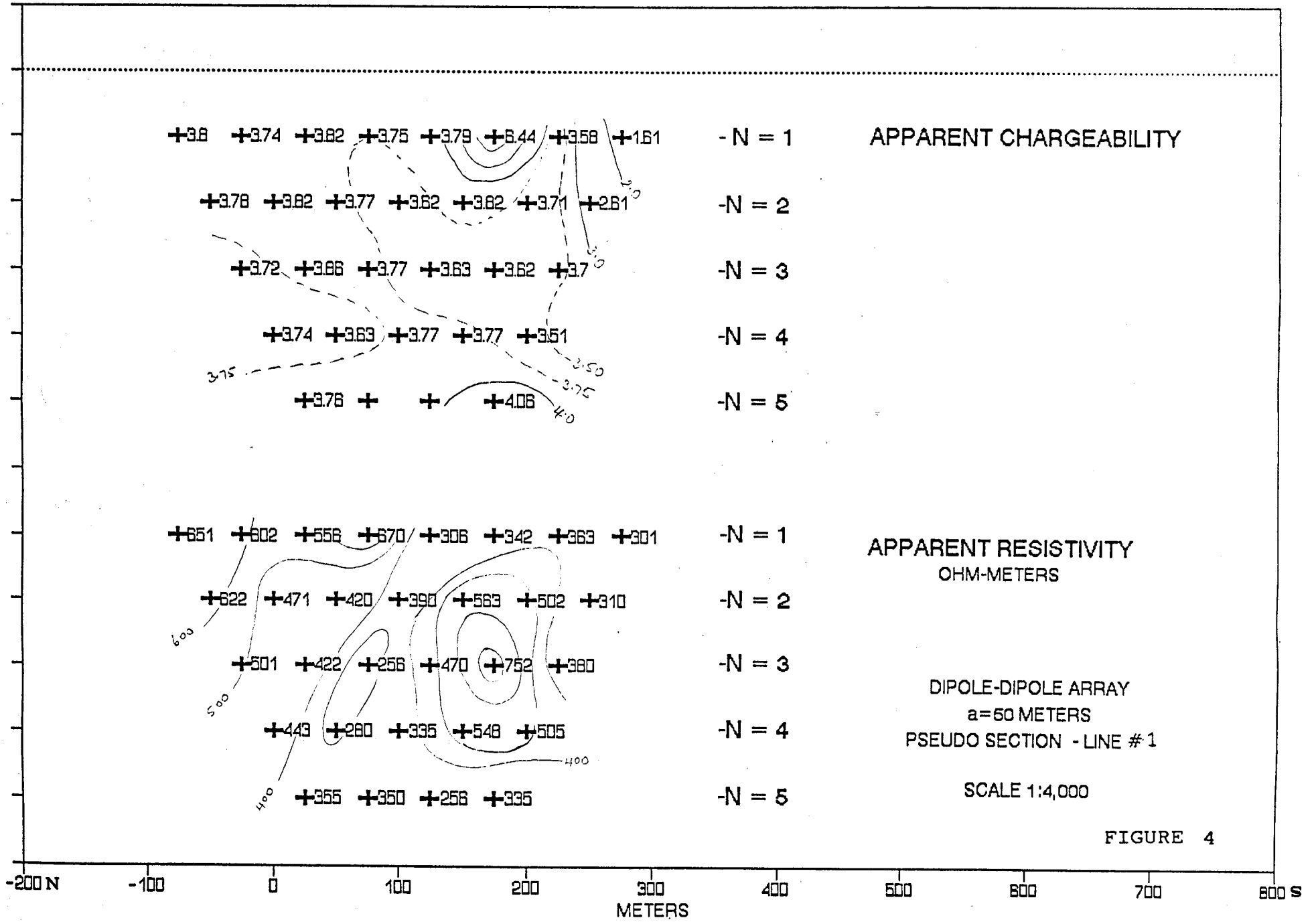
The results show an area of low chargeability in the central part of the profile with a correlation to a major change in resistivity. Weak chargeability anomalies, shallow to the north, deeper to the south, are similar in amplitude to the mineralised area on Line #1.

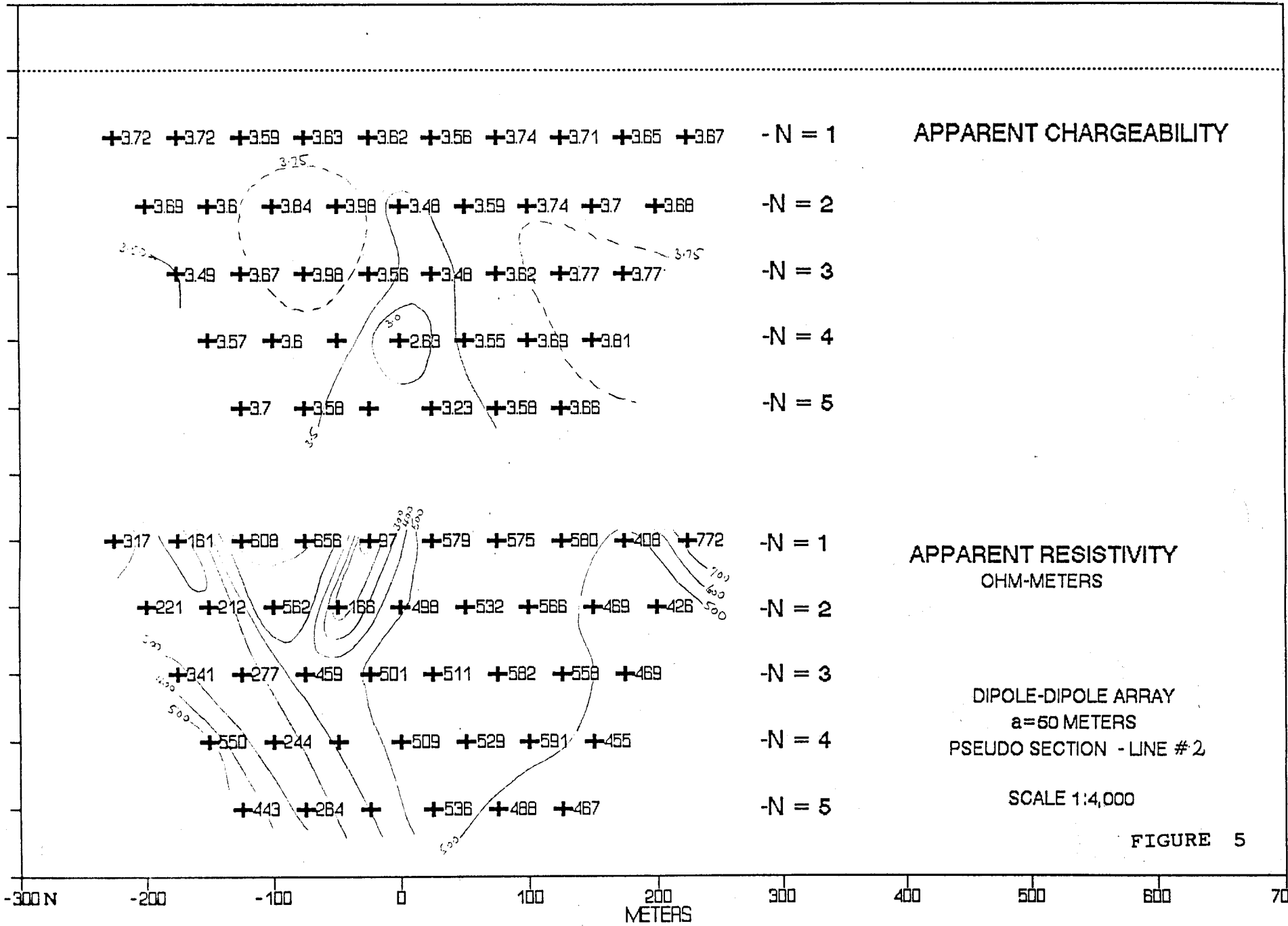
The area of low chargeability may be related to an area of lower geochemical copper soil values as shown in Figure 3.

### LINE #3 - Figure 6

The chargeability values show a distinct increase with depth possibly correlating with the southern part of Line #2. The orientation of this line was altered in order to avoid a major gully which could affect the results. The resistivities on this line were some of the lowest on the whole survey possibly due to more extensive fracturing and/or faulting in this part of the area.

A fault exposed by trenching between Lines 2 and 3 probably extends across both of these lines and represented by lower resistivity values: Line 2 at 50 meters N, Line 3 at 125 meters N.





APPARENT CHARGEABILITY

APPARENT RESISTIVITY  
OHM-METERS

DIPOLE-DIPOLE ARRAY  
a=50 METERS  
PSEUDO SECTION - LINE #2

SCALE 1:4,000

FIGURE 5



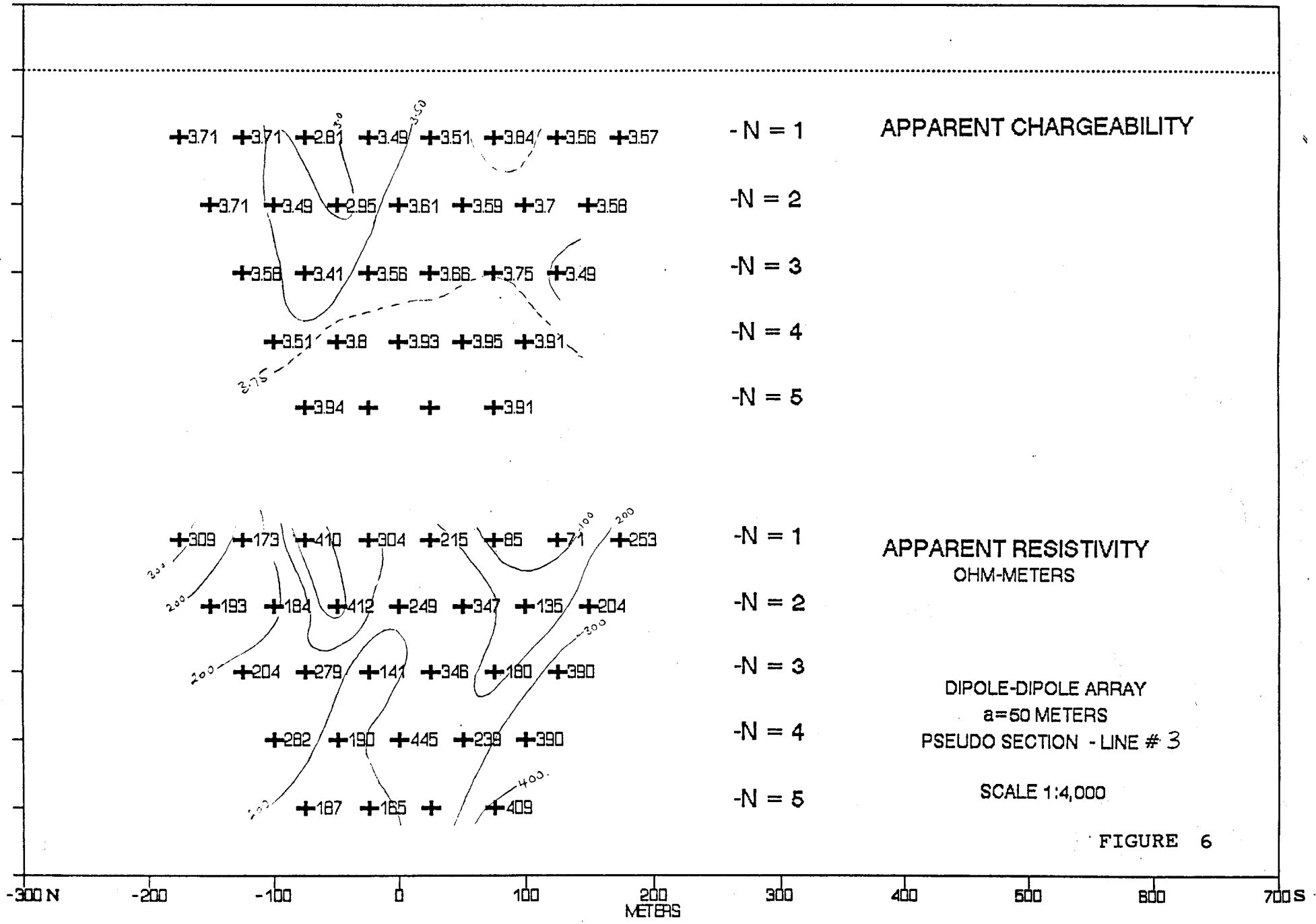


FIGURE 6

## CONCLUSIONS

The results of the Induced Polarisation survey have shown that the apparent chargeability anomaly produced by the mineralisation observed in the main adit and trenches is quite weak. Similar values, and in some cases higher values at depth, show that the potential for similar mineralisation exists outside of the known main fault zone. The areas of higher chargeability are all located to the south of the strike of the main zone intersected by the main adit and if caused by the same type of material would effectively increase the 'width' of the mineralised zone considerably. Multiple parallel/sub-parallel structures may be present in an area which has not been fully tested by drilling.

The high copper soil values, (Figure 3), at the north ends of the three Induced Polarisation survey lines are located over the main fault, (080 degrees), and associated mineralisation. There is an apparent correlation between the chargeability and the soil copper anomaly indicating a bedrock source for the copper values.

## RECOMMENDATIONS

Continued exploration is warranted on this property in order to determine the validity of the higher values obtained by the Induced Polarisation survey in an area which has not been previously drilled. Confirmation of copper/molybdenum mineralisation would give support to the copper soil geochemical anomalies which show considerable extension beyond the property boundaries.

**REFERENCES**

**MacLeod, W.A. (1989):** Assessment Report - Prospect Evaluation Report on the Susap Property.

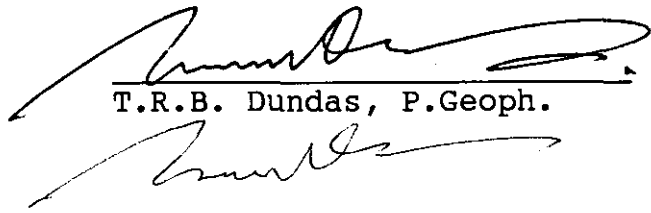
**Wallis, R.H., (1973):** Final Report on the Susap Property, Keromeos Area, B.C.; Canadian Occidental Petroleum Ltd., Company Report.

CERTIFICATE and SIGNATURE

I, Trevor R. B. Dundas do hereby certify that:

- 1) I am a practicing consultant Geophysicist resident in the City of Calgary, Alberta.
- 2) I am a graduate of the Queen's University of Belfast, N. Ireland with a B.Sc.(1966) in Geology and a graduate of London University, Imperial College of Science and Technology with a M.Sc.(1968) in Geophysics.
- 3) I am a member of The Association of Professional Engineers, Geologists, and Geophysicists of Alberta.
- 4) This report with the conclusions and recommendations therein contained is based upon data derived from my work on the property during July of 1991.

DATED at Calgary this 12th day of August, 1991

  
T.R.B. Dundas, P.Geoph.

CERTIFICATE AND SIGNATURE

I, Gary A. Nolin do hereby certify that:

- 1) I am a practising geologist, resident in the City of Calgary, Alberta.
- 2) I am a graduate of Western Washington State, Bellingham, Washington U.S.A. with a bachelors degree in Geology (1972).
- 3) I am a member of The Association of Professional Engineers, Geologists, and Geophysicists of Alberta.
- 4) This report with the conclusions and recommendations therein contained is based upon data derived from my work on the property during July of 1991.

DATED at Calgary this 12th day of August, 1991.

  
\_\_\_\_\_  
GARY A. NOLIN

ADDENDUM

SUSAP PROPERTY IP REPORT

STATEMENT OF COSTS

Senior Geologist	
Field July 3 - 12	
Office July 14 - July 15	\$ 5,600.00
Mob & Demob July 2 & July 13	2,800.00
Senior Geophysicist	
Field July 3 - July 12	
Office July 3 - July 12	
Mob & Demob July 2 & July 13	
Vehicles	1,289.14
Road Access Preparation	892.50
Meals & Accommodation	1,200.00
IP Equipment Rental	1,800.00
Helicopter	560.40
Expendable Field Supplies	<u>100.00</u>
	Sub-Total
	12,442.04
	G.S.T.
	13,312.98
Total Claimed Assessable Costs with 10% G & A	<u>\$14,644.28</u>