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REPORT ON
INDUCED POLARIZATION SURVEY
IN THE
WHITEHORSE AREA, YUKON TERRITORY

BY
K.N. Hendry, B. Sc.

REPORT ON

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WHITEHORSE AREA, YUKON TERRITORY

BY

KENTING EXPLORATION SERVICES LIMITED

CALGARY, ALBERTA

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INTRODUCTION

This report describes the results of a combined Induced Polarization and Resistivity Survey carried out by Kenting Exploration Services Limited on the property of Whitehorse Copper Mines Limited near Whitehorse, Yukon.

The field work was carried out between June 10 and June 17, 1974 by Ken Hendry, Senior Geophysicist with a crew provided by Whitehorse Copper Mines Limited.

The survey area was located to the south of the mine and included Cowley Park and Black Cub grids.

The purpose of the survey was to detail Induced Polarization anomalies found on previous surveys.

SURVEY SPECIFICATIONS

Instrumentation

The equipment used for the Induced Polarization Survey consisted of a pulse-type system using a Huntec 2.5 kilowatt transmitting system combined with a Newmont Type Receiver.

The following specifications apply:-

Current D.C.	-	2.0 seconds "current on" 2.0 seconds "current off" Alternate pulses have reversed polarity
Transmitter Power Available	-	2.5 k Watt
Integrating Time	-	650 Milliseconds
Delay Time From "current off" To Start of Integration	-	450 Milliseconds

Calculations

The apparent resistivity is calculated by dividing the primary voltage, Vp, by the current, Ig, flowing between the current electrodes, C_1 and C_2, and multiplying by a geometrical factor appropriate to the electrode array being used. The apparent resistivity is expressed in ohm-meters.

Electrode Arrays

The detail work was carried out using the inline dipole-dipole array with an electrode separation,"a", of 200 feet and a dipole separation,"n", of n=1 to n=6. This array consists of two potential electrodes, P_1, and P_2, separated in this case by 200 feet, and two

current electrodes, C_1 and C_2, also separated by 200 feet. The current dipole is separated from the potential dipole by distances corresponding to multiples of 200 feet. The multiples correspond to "n" and range from n=1 to n=6 with n=6 being the deepest reading. The two dipoles are oriented in line.

RESULTS

The results are presented in diagramatic cross section with the resistivity in ohm-meters on top and chargeability in milliseconds below.

The vertical scale is considered to be: the n=3 reading is approximately equal to a depth penetration of "a" which in this case is 200 feet.

INTERPRETATION

Three areas were selected for detail work: Two areas in the Cowley Park grid (Line 116E, Line 120E, Line 122E and Line 102E, L106E) and one at Black Cub (Line 22S). Each area will be discussed separately.

The first area surveyed was the Cowley Park grid, Lines 116E, 120E and 122E. The lines have similar resistivity and chargeability features with the target chargeability anomaly on Line 116E, 36-40S at a depth of less than 200 feet. The anomaly appears to be narrower, deeper and dipping to the north on Line 120E between stations 37+50S and 40+50S. The anomaly appears much deeper on Line 122E between stations 42S and 46S; possibly as much as 400 feet deep. The polarization response appears to correspond with the low resistivity horizon (270 to 450 ohm-meters) which correlates with known occurrences of graphite in limestone.

The high resistivity features, 1000 - 2200 ohm-meters, probably represent the diorite intrusives.

The second area surveyed was also on the Cowley Park grid, Lines 102E and 106E. The chargeability response appears to be from a near surface body with an apparent dip to the south. The resistivity results do not suggest a specific rock type as the source of the polarization response.

The purpose of these lines was to test for anomalous polarization values between stations 24S and 28S. The response in this area was quite low. On Line 102E a single value of 15 milliseconds occurs at the n=5 depth (about 300 feet deep). This value is only slightly anomalous (background is considered to be 6 to 7 milliseconds).

The Black Cub area, Line 22S, was surveyed in an attempt to detail an anomaly found in an earlier I.P. survey. Also a diorite - limestone contact was thought to pass through this area and it was hoped that the resistivity contrast would be sufficient to distinguish it.

The major portion of the line seems to be in a low resistivity material (250 to 400 ohm-meters) such as limestone. A significant change occurs towards the east end with values above 1000 ohm-meters suggesting a high resistivity feature such as diorite. However this contact occurs much further east than was expected from surface mapping.

The chargeability is unusually high across most of the line with extremely high values at depth between 6E and the west end of the line. The high resistivity material to the east end of the line corresponds with low chargeability values (5 - 10 ms).

The low resistivity and high chargeability combination suggests graphitic limestone as the source.

CONCLUSIONS AND RECOMMENDATIONS

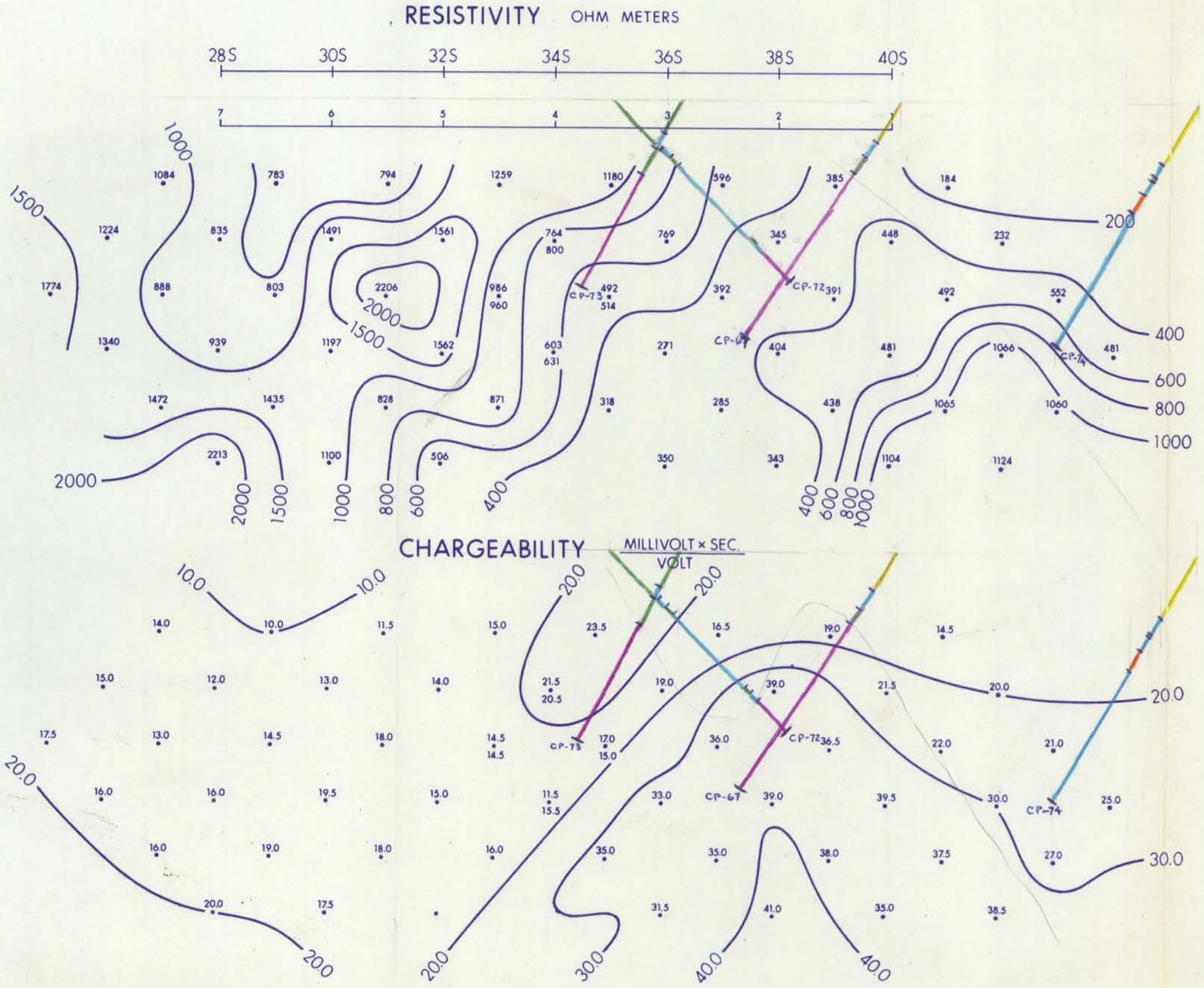
The geophysical data in all three areas suggests graphitic limestone as the source of the Induced Polarization anomaly. The very high values are not typical of sulphide zones containing a few percent of mineralization.

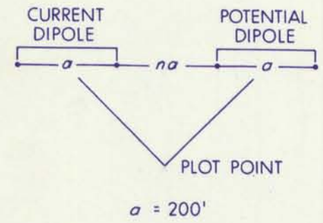
Therefore, little can be recommended on the basis of this work.

Respectfully submitted,

KENTING EXPLORATION SERVICES LIMITED

Ken Hendry,
Senior Geophysicist





WHITEHORSE COPPER MINES LTD.

INDUCED POLARIZATION SURVEY
LINE 116 E
DIPOLE DIPOLE ARRAY

COWLEY PARK GRID, WHITEHORSE, YUKON TERRITORY

TO ACCOMPANY REPORT BY : K. N. HENDRY, B.Sc.
J. E. WYDER, Ph.D., P.Eng.

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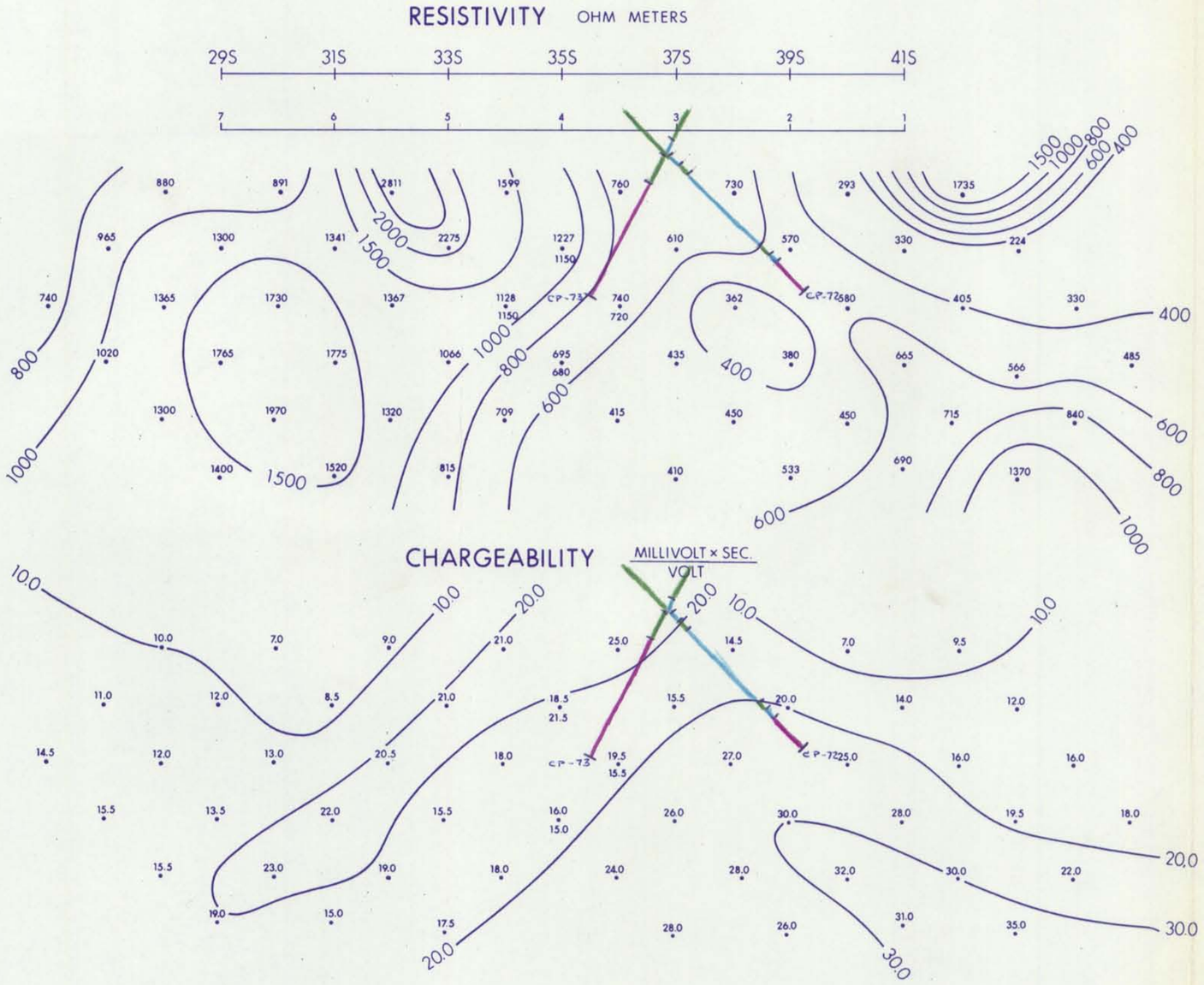
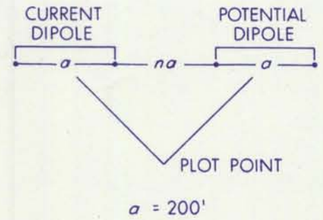
SCALE: 1" = 200 FEET	DATE: JUNE 1974
JOB NO: 2031	FIGURE NO.: 1
C.I.:	DRAWN BY: PHW





a = 200'

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INDUCED POLARIZATION SURVEY

LINE 120 E

DIPOLE DIPOLE ARRAY

COWLEY PARK GRID, WHITEHORSE, YUKON TERRITORY

TO ACCOMPANY REPORT BY : K. N. HENDRY, B.Sc.
J. E. WYDER, Ph.D., P.Eng.

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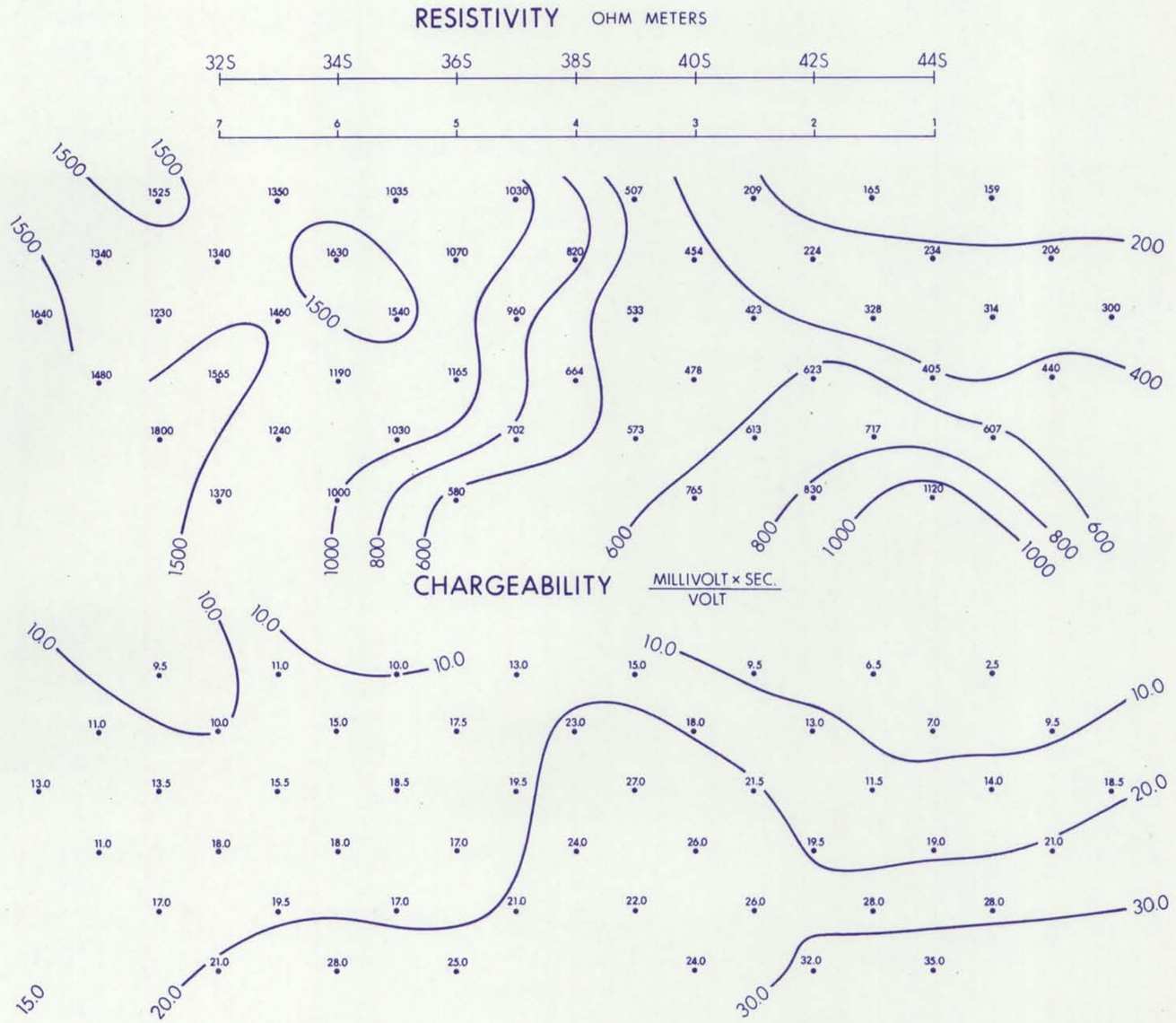
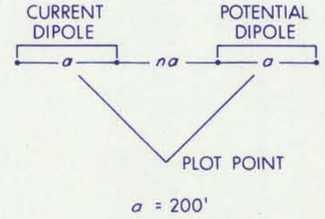
SCALE: 1" = 200 FEET	DATE: JUNE 1974
JOB NO: 2031	FIGURE NO.: 2
C.I.:	DRAWN BY: PHW





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INDUCED POLARIZATION SURVEY
LINE 122 E
DIPOLE DIPOLE ARRAY

COWLEY PARK GRID, WHITEHORSE, YUKON TERRITORY

TO ACCOMPANY REPORT BY : K. N. HENDRY, B.Sc.
J. E. WYDER, Ph. D., P. Eng.

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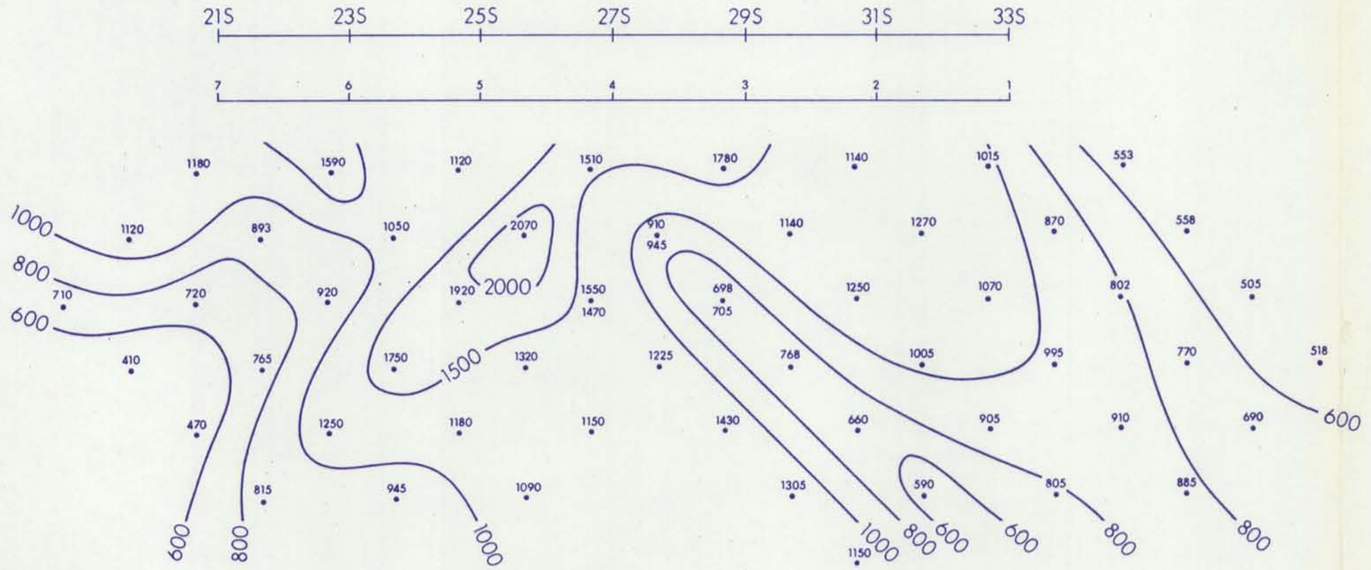
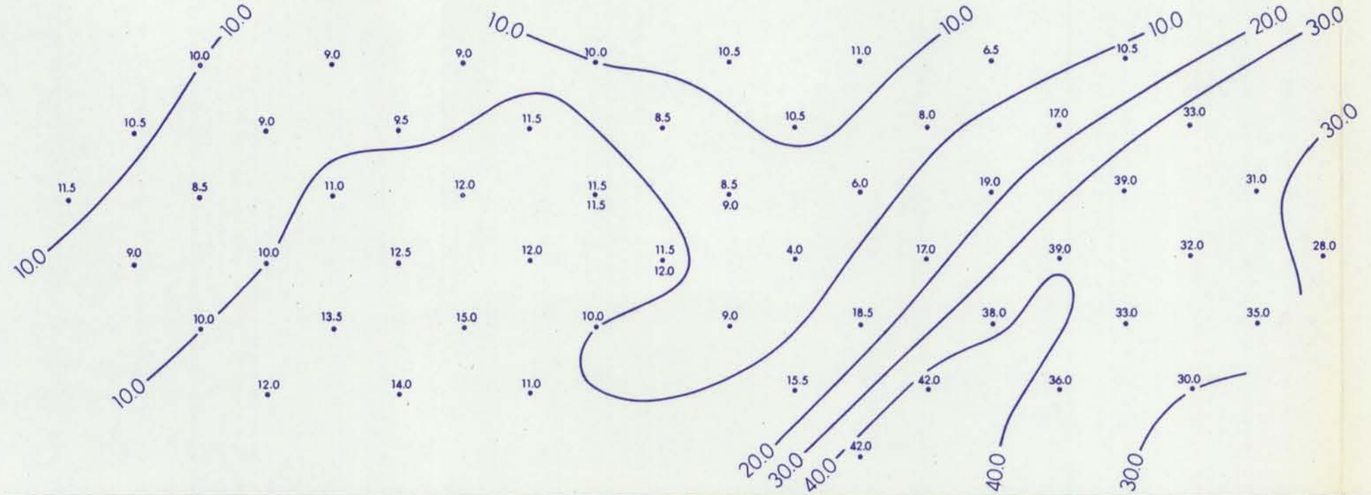
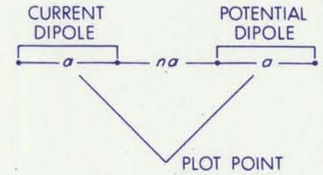
SCALE: 1" = 200 FEET	DATE: JUNE 1974
JOB NO: 2031	FIGURE NO.: 3
C.I.:	DRAWN BY: PHW

RESISTIVITY OHM METERS



CHARGEABILITY MILLIVOLT × SEC. / VOLT





a = 200'

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INDUCED POLARIZATION SURVEY

LINE 102 E

DIPOLE DIPOLE ARRAY

COWLEY PARK GRID, WHITEHORSE, YUKON TERRITORY

TO ACCOMPANY REPORT BY : K. N. HENDRY, B. Sc.
J. E. WYDER, Ph. D., P. Eng.

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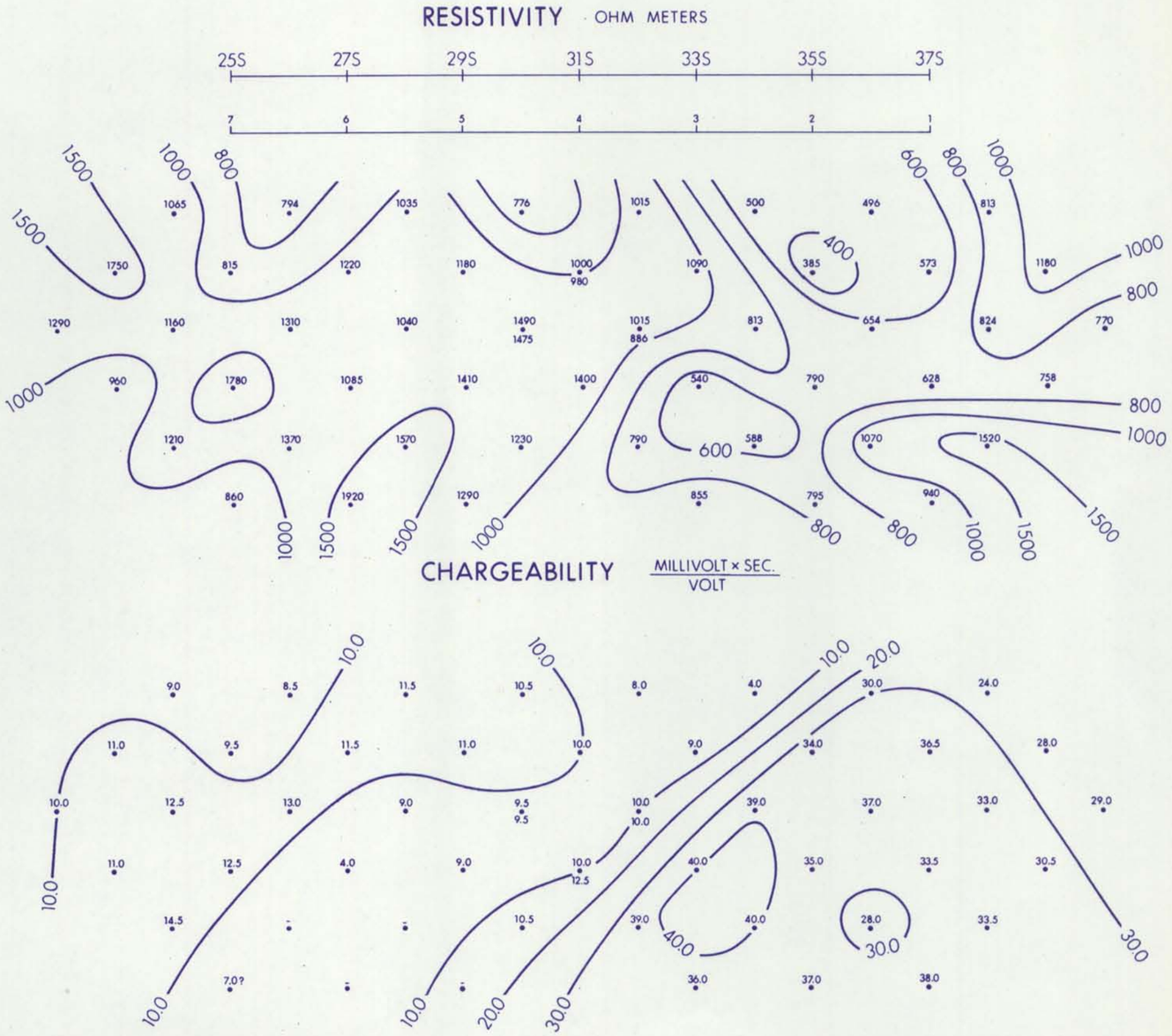
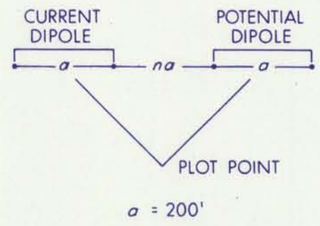
SCALE: 1" = 200 FEET	DATE: JUNE 1974
JOB NO: 2031	FIGURE NO.: 4
C.I.:	DRAWN BY: PHW





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INDUCED POLARIZATION SURVEY

LINE 106 E

DIPOLE DIPOLE ARRAY

COWLEY PARK GRID, WHITEHORSE, YUKON TERRITORY

TO ACCOMPANY REPORT BY : K. N. HENDRY, B.Sc.
J. E. WYDER, Ph.D., P.Eng.

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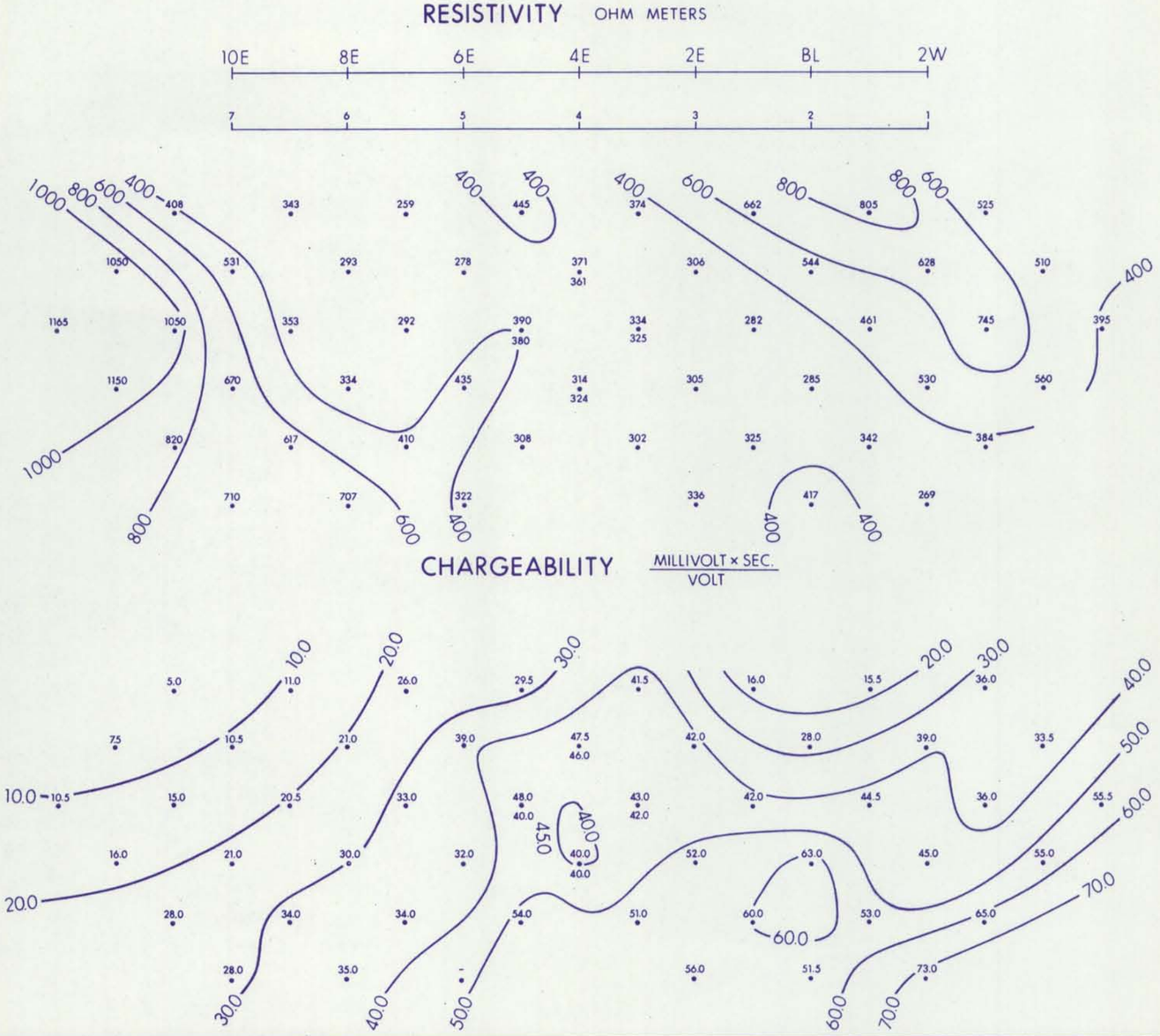
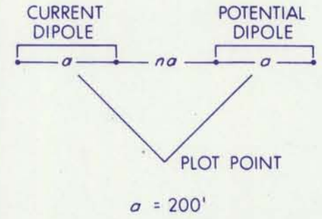
SCALE: 1" = 200 FEET	DATE: JUNE 1974
JOB NO: 2031	FIGURE NO.: 5
C.I.:	DRAWN BY: PHW





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INDUCED POLARIZATION SURVEY

LINE 22 S

DIPOLE DIPOLE ARRAY

BLACK CUB GRID, WHITEHORSE, YUKON TERRITORY

TO ACCOMPANY REPORT BY : K. N. HENDRY, B. Sc.
J. E. WYDER, Ph. D., P. Eng.

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SCALE: 1" = 200 FEET	DATE: JUNE 1974
JOB NO: 2031	FIGURE NO.: 6
C.I.:	DRAWN BY: PHW