3255

REPORT ON INDUCED POLARIZATION SURVEYS ON SOME TUT CLAIMS GREEN LAKE AREA, BRITISH COLUMBIA

by

Richard O. Crosby, B.Sc., P.Eng.

August 12, 1971

93F/6E

Surveys executed by
Rio Tinto Canadian Exploration Limited

Interpretation and report by
Seigel Associates Limited

CLAIMS:

Name	Record No.
TUT 1 - 18 (inclusive)	78805 - 78822 (inclusive)
TUT 29 - 46 (inclusive)	92032 - 92049 (inclusive)
TUT 47 Fr.	92050
TUT 48 - 49 (inclusive)	92051 - 92052 (inclusive)
TUT 50 Fr.	92053

LOCATION:
About 140 miles west-southwest of Prince George, B. C.
Omineca Mining Division
128° 53° SE

DATES:
July 14 to July 28, 1971

TABLE OF CONTENTS

SUMMARY

The present induced polarization surveying has revealed two broad zones of increased chargeabilities. These responses could arise from significant volumes of rock containing from 3 percent to about 5 percent by volume of metallically conducting material such as sulphides, graphite or other minerals known to give increased induced polarization responses.

Since the high chargeability sources approach the ground surface, geological and geochemical studies should be carried out to determine if the increased chargeabilities may arise from base metal type mineralization. If these studies are favourable, diamond drilling may be warranted. Two drill holes are proposed upon the geophysical results alone.

REPORT ON
INDUCED POLARIZATION SURVEYS
ON SOME TUT CLAIMS
GREEN LAKE AREA, BRITISH COLUMBIA

INTRODUCTION

During the period July 14 to July 28, 1971, a geophysical field party under the direction of Mr. D. Sexsmith executed induced polarization surveys on a grid in the Green Lake area, British Columbia. All survey personnel were on the staff of Rio Tinto Canadian Exploration Limited. Data plotting was carried out in the Rio Tinto offices and the resulting maps were submitted to Seigel Associates Limited for interpretation and reporting.

The Green Lake area lies immediately west of Green Lake which is about 140 air miles west-southwest of Prince George. Access is by float equipped aircraft. The topography of the area is hilly and the elevation is about 3500 feet above sea level.

The claims covered, in whole or part, by these surveys are listed on the title page of this report and are shown on the accompanying maps on the scale of 1 inch = 400 feet. These claims are held by Rio Tinto Canadian Exploration Limited.

Seigel Mk VI time-domain (pulse-type) induced polarization equipment has been employed on this property. The transmitting unit had a rating of 2.5 kilowatts and equal on and off times of 2.0 seconds. The receiving unit was a remote, ground-pulse type triggered by the rising and falling primary voltages set up in the ground by the transmitter. The integration of the transient polarization voltages takes place for 0.65 seconds after a 0.45 second delay time following the termination of the current on pulse.

The purpose of an induced polarization survey is to map the subsurface distribution of metallically conducting mineralization beneath the grid covered. In the present area such mineralization could include chalcopyrite, molybdenite, pyrite and other metallic sulphide minerals. Metallic minerals such as graphite and magnetite as well as non-metallic minerals such as chlorite and sericite can give responses not always distinguishable from sulphide mineralization.

The three electrode array was employed for the survey. For this electrode array, one current electrode and two potential electrodes traverse the profiles with an interelectrode spacing called "a". The second or "infinite" current electrode is placed a distance greater than 5a from the measuring point which is defined as the midpoint between the moving current electrode and the near potential electrode. For the reconnaissance survey observations were taken for a = 200 feet and 400 feet. Station intervals were 200 feet.

For the present survey, seven lines oriented east-west were cut and chained. The distance between lines was 700 feet. In all, about 9.3 line miles of induced polarization surveying were carried out.

GEOLOGY

According to a geological map compiled by Rio Tinto Canadian Exploration Limited the southern two-thirds of the grid is underlain by altered granodiorite of Upper Jurassic or Cretaceous age. Altered sediments and volcanics are mapped in the northern one-third of the grid.

The target of the present survey was a large tonnage, low grade type of copper and/or molybdenum sulphide mineralization which might occur within the intrusive or volcanic rocks.

PRESENTATION OF RESULTS

The results of the geophysical surveys are shown on six accompanying plates, all on the scale of 1 inch = 400 feet.

Drawings IP-7108 and IP-7109 show the chargeability and resistivity results respectively in profile form. The chargeability scale is 1 inch = 10.0 milliseconds. The resistivity scale is 1 inch 1000 ohm-meters.

Drawings IP-7110 and IP-7112 are chargeability contour plans for the 400 foot and 200 foot electrode spacings respectively. The observed chargeabilities have been contoured with a 2.0 millisecond contour interval.

Drawing IP-7111 and IP-7113 are resistivity contour plans for the 400 foot and 200 foot electrode spacings respectively. The apparent resistivity values are shown in ohm-meters and have been contoured with an interval of 100 and 200 ohm-meters on Drawing IP-7111 and 100, 200 and 1000 ohm-meters interval on Drawing IP-7113.

DISCUSSION OF RESULTS

The chargeability results indicate that background values average about 10.0 milliseconds. With this background a uniform subsurface distribution of 1 percent by volume of metallically conducting mineralization would be expected to add approximately 10.0 milliseconds to the background level. Since deposits of low concentrations of base metal sulphides of sufficient dimensions may have economic significance, areas exhibiting chargeabilities in excess of 13.0 milliseconds may be worthy of further investigation.

A broad zone exhibiting chargeability responses in excess of 13.0 milliseconds was recorded along all of L 28 N and along the western

end of the rest of the grid. A second broad zone was recorded along the eastern ends of the grid lines, with peak chargeabilities recorded at 84 W on L 14 S and at 74 W on L 00. The peak chargeability on the 400 foot electrode spacings are 32.8 and 36.0 milliseconds respectively. These profiles are interpreted to indicate a source containing about 3.0 percent by volume of metallically conducting material. The source is interpreted to approach to within 100 feet of the ground surface and to extend to 300 feet or more below surface.

The chargeability anomaly in the north-west portion of the grid reaches a peak chargeability of 54.0 milliseconds at 130 W on L 28 N with the 200 foot electrode spacings. The source of this feature is interpreted to approach within about 50 feet and probably closer to the ground surface.

The observed resistivities range from about 200 to greater than 700 ohm-meters. A resistivity high extends from the southwest corner of the grid to the northeast corner. The areas of excess chargeabilities in all cases are coincident with low resistivities. The exception is the chargeability anomaly centred at 74 W on L 00. This zone is associated with a resistivity high.

The resistivity decreases could be caused by increased metallically conducting content of the rock, a change in rock type, or possibly by fracturing or alteration of the bedrock.

CONCLUSIONS AND RECOMMENDATIONS

The present induced polarization survey has revealed two broad zones which exhibit chargeability responses which could arise from subsurface concentrations of from 3 percent to greater than 5 percent by volume of metallically conducting material such as sulphides, graphite or

other minerals known to give induced polarization responses.

Since the sources of increased chargeability responses are interepreted to be near surface, it is recommended that geological and geochemical studies be carried out to determine whether the present responses may be due to base metal type sulphides. If these investigations are favourable, diamond drilling may be warranted. On the basis of geophysical data alone, the following would appear to be the optimum drill holes:

COLLAR	DIRECTION	DIP	MINIMUM DEPTH
L 28 N, 130 W	West	-45°	300 ft.
L 7 N, 74 W	West	Vertical	350 ft.

If these holes show favourable results, additional drilling can be recommended from the present data.

Respectfully submitted,

SEIGEL ASSOCIATES LIMITED

Richard O. Crosby

Richard O. Crosby, B.Sc., P.Eng.
Geophysicist

Vancouver, B. C.
August 12, 1971

PLATE I

CABOOSE PROJECT B.C.

TUT - CAP & T CLAIMS

SCALE 1" = 2640'

(ASARCO CLAIMS)
STAKED
CAP 1 to 3a

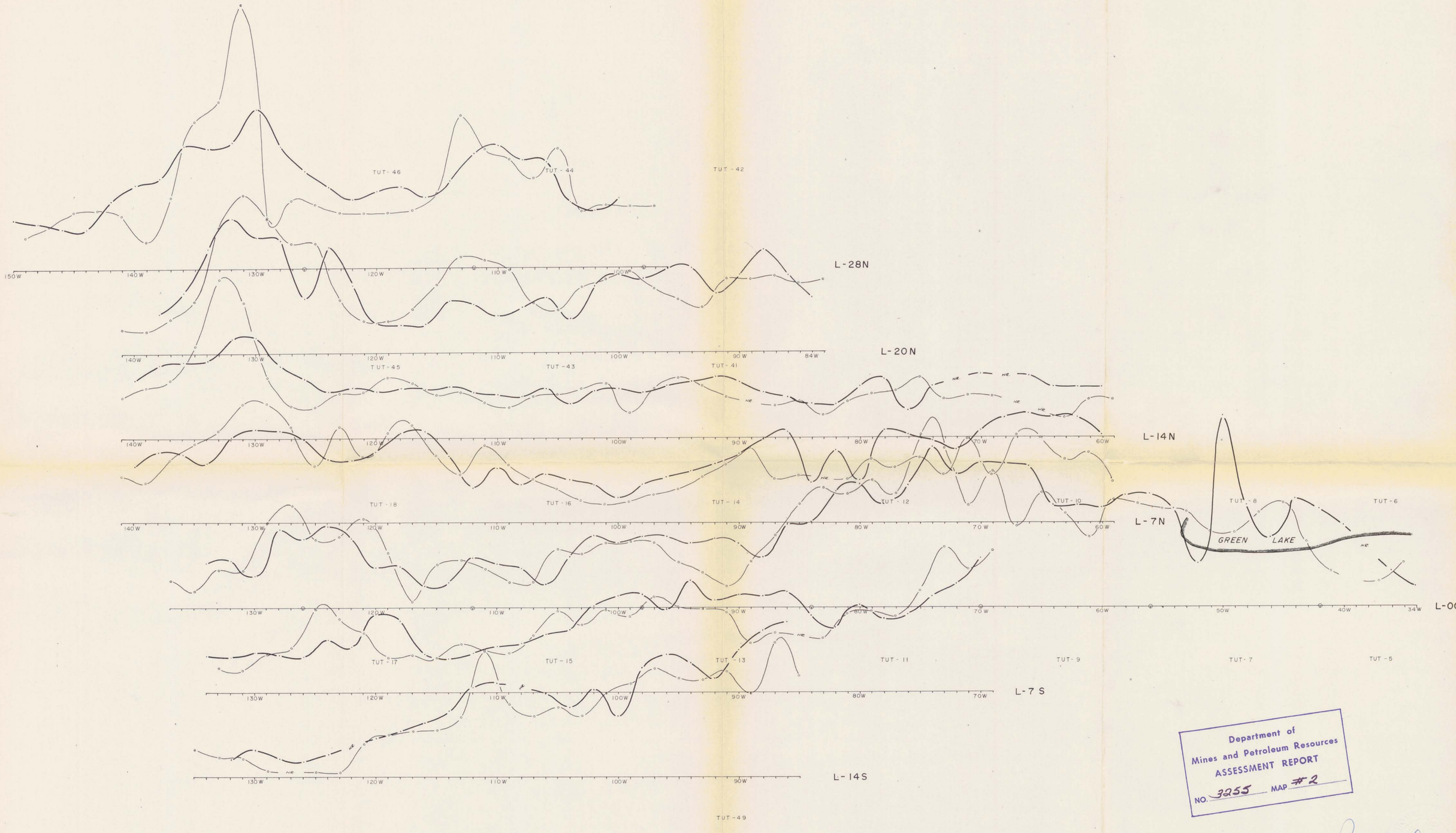
ENTIAKO LAKE

ENTIAKO RIVER

CABOOSE CR.

3255 M-1

Richard O. Crosby



Legend:

Chargeability profile scale 1" = 10 Milliseconds

Electrode spacing a = 200'

a = 400'

NOTE: Three electrode array

NR - no reading

N

N.T.S
93-F-6

SCALE

400' 0' 400' 800' 1200' 1600'

One Inch = 400 Feet

Richard O. Crosby

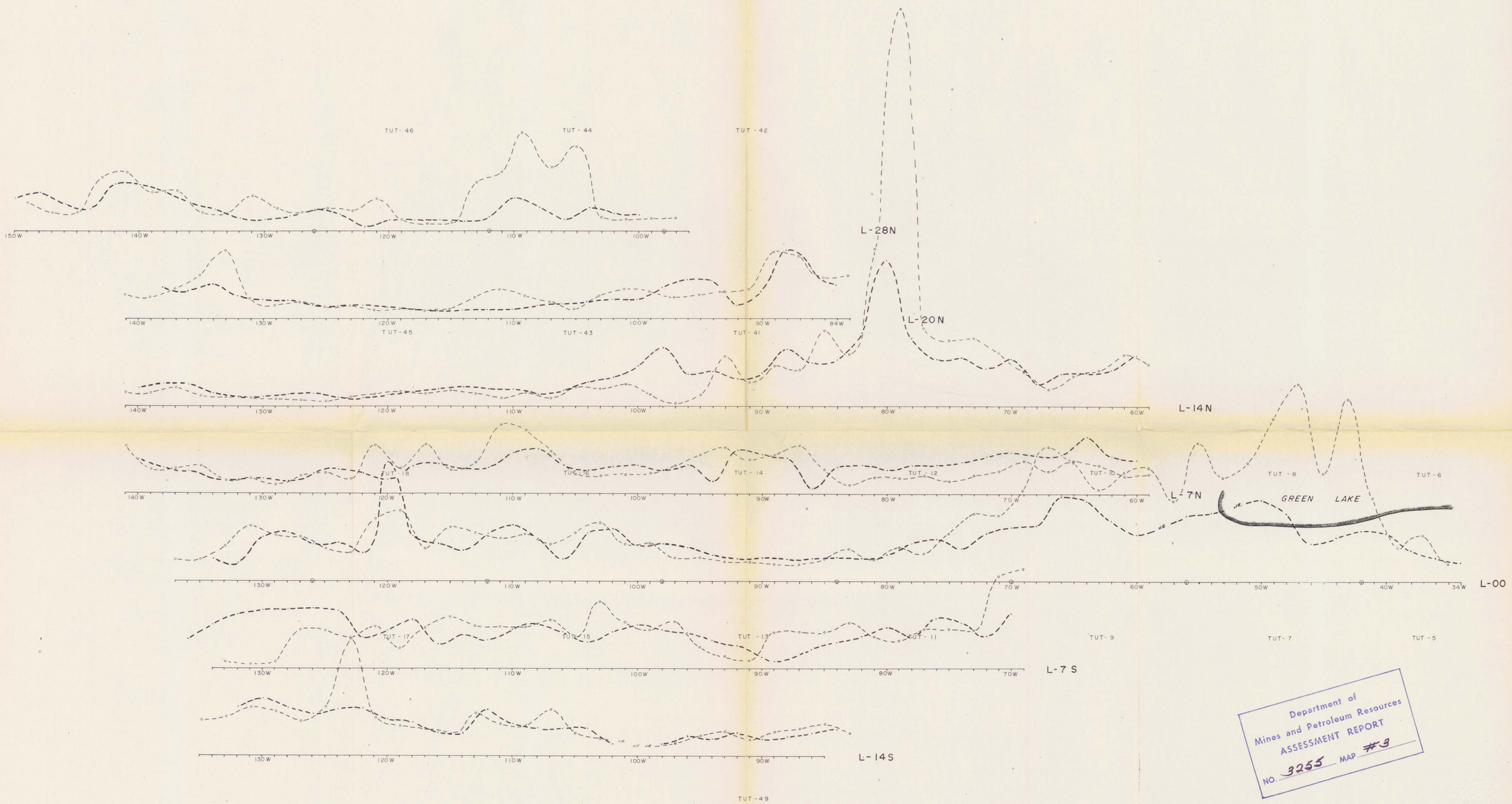
RIO TINTO CANADIAN EXPLORATION LIMITED

GREEN LAKE AREA B.C.

TUT CLAIMS

CHARGEABILITY PROFILE PLAN

AUG 71 | DNS/rwr | DWG. IP-7108



Richard O. Crosby

N

Legend:

Resistivity profile scale 1"=1000 Ohm-meters
Electrode spacing a = 200' o——o——o
a = 400' ·——·——·

NOTE: Three electrode array

NR - no reading

N.T.S
93-F-6

SCALE
400' 0' 400' 800' 1200' 1600'
One inch = 400 Feet

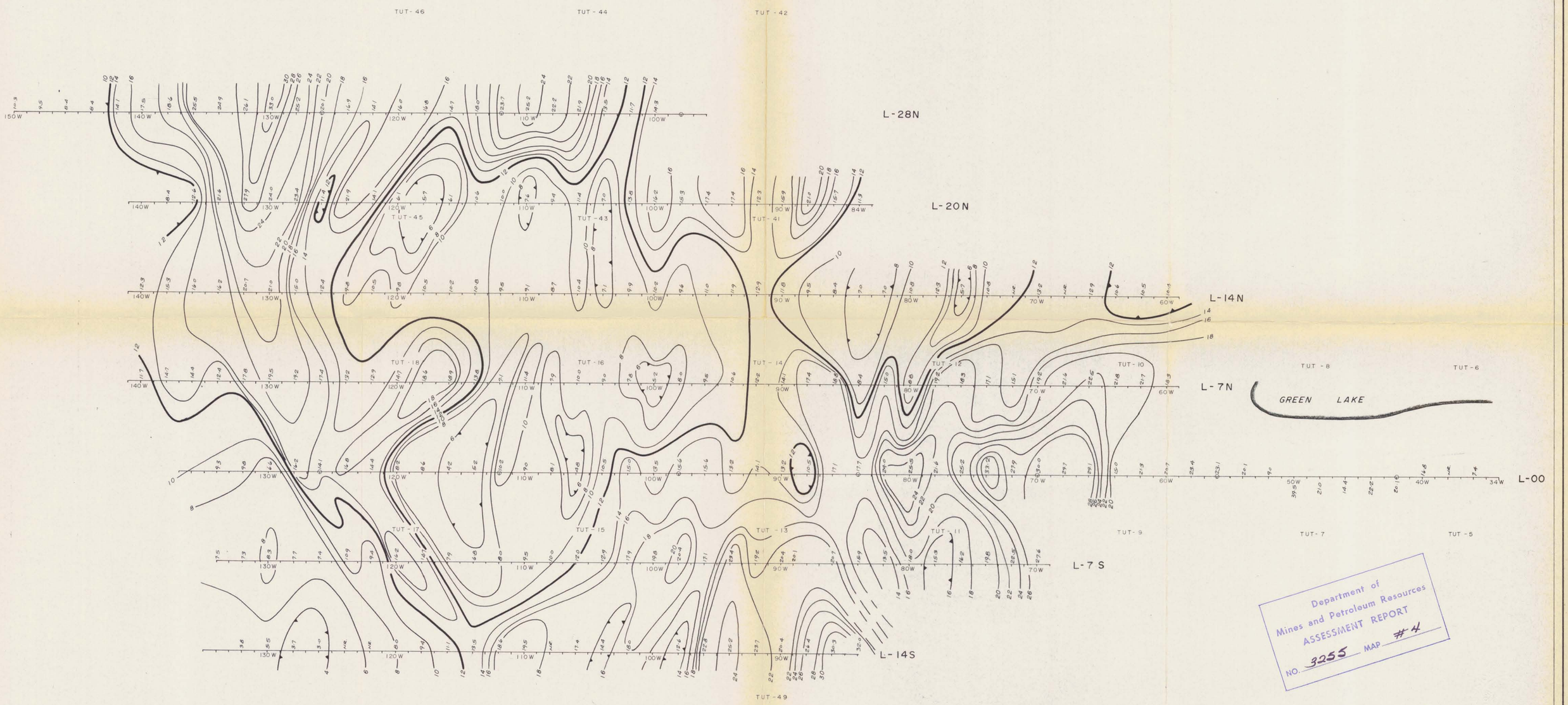
RIO TINTO CANADIAN EXPLORATION LIMITED

GREEN LAKE AREA B.C.

TUT CLAIMS

RESISTIVITY PROFILE PLAN

AUG 71 | DNS/rwr | DWG. IP-7109



Richard O. Crosby

N

Legend:

- 195 — Value in milliseconds
- Contour interval 2 Milliseconds
- 4 Millisecond contour interval
- 6 " " "
- 8 " " "
- 10 " " "
- 12 " " "
- 14 " " "

Chargeability low

NOTE: Three electrode array
Electrode spacing a = 400'

N.T.S
93-F-6

SCALE
400' 0' 400' 800' 1200' 1600'
One Inch = 400 Feet

RIO TINTO CANADIAN EXPLORATION LIMITED

GREEN LAKE AREA B.C.

TUT CLAIMS

CHARGEABILITY CONTOUR PLAN
400' SPACING

AUG 71	DNS/rwr	DWG. IP-7110

Richard O. Crosby

N

Legend:

Value in Ohm-meters

Contour interval 100 & 200 Ohm-meters

100 Ohm-meter contour interval
200 " " "
300 " " "
400 " " "
500 " " "
600 " " "
800 " " "

Resistivity low

NOTE: Three electrode array
Electrode spacing a = 400'

N.T.S.
93-F-6

SCALE
400' 0' 400' 800' 1200' 1600'
One Inch = 400 Feet

RIO TINTO CANADIAN EXPLORATION LIMITED

GREEN LAKE AREA B.C.

TUT CLAIMS

RESISTIVITY CONTOUR PLAN
400' SPACING

AUG 71 | DNS/rwr | DWG. IP-7111

TUT-46 TUT-44 TUT-42

L-28N

L-20N

TUT-45 TUT-43 TUT-41

L-14N

TUT-18 TUT-16 TUT-14 TUT-12 TUT-10 TUT-8 TUT-6

L-7N

GREEN LAKE

L-00

TUT-17 TUT-15 TUT-13 TUT-11 TUT-9 TUT-7 TUT-5

L-7S

L-14S

TUT-49

Richard A. Crosby

N

Legend:

8-7 Value in Milliseconds

Contour interval 2 & 10 Milliseconds
4 Millisecond contour interval
6 " " "
8 " " "
10 " " "
12 " " "
14 " " "

Chargeability low

NOTE: Three electrode array
Electrode spacing a = 200'

N.T.S
93-F-6

SCALE
400' 0' 400' 800' 1200' 1600'
One Inch = 400 Feet

RIO TINTO CANADIAN EXPLORATION LIMITED

GREEN LAKE AREA B.C.

TUT CLAIMS

CHARGEABILITY CONTOUR PLAN
200' SPACING

AUG 71 | DNS/rwr | DWG. IP-7112

TUT-46 TUT-44 TUT-42

L-28N

L-20N

TUT-45 TUT-43 TUT-41

L-14N

TUT-18 TUT-16 TUT-14 TUT-12 TUT-10 TUT-8 TUT-6

L-7N

GREEN LAKE

L-00

TUT-17 TUT-15 TUT-13 TUT-11 TUT-9 TUT-7 TUT-5

L-7S

L-14S

TUT-49

Richard O. Crosby

N

Legend :

450 Value in Ohm-meters

Contour interval 100, 200 & 1000 Ohm-meters

200 Ohm-meter contour interval
300 " " "
400 " " "
500 " " "
600 " " "
800 " " "
1000 " " "
2000 " " "

Resistivity low

NOTE: Three electrode array
Electrode spacing a = 200'

N.T.S
93-F-6

SCALE
400' 0' 400' 800' 1200' 1600'
One Inch = 400 Feet

RIO TINTO CANADIAN EXPLORATION LIMITED

GREEN LAKE AREA B.C.

TUT CLAIMS

RESISTIVITY CONTOUR PLAN
200' SPACING

AUG 71 | DNS/rwr | DWG. IP-7113