2483

R. H. SERAPHIM ENGINEERING LIMITED
Geological Engineering

Telephone: Office 685-2914
Res. 224-7309

316
127 — 470 GRANVILLE STREET
VANCOUVER 2, B.C.

GEOPHYSICAL REPORT

INDUCED POLARIZATION SURVEY

FISH LAKE (NEAR TASEKO LAKE)

CLINTON M.D.

on

Claims held by

NATIONAL TRUST COMPANY LTD.

Optioned to

NITTETSU MINING CO. LTD.

by

R.H. SERAPHIM, Ph.D. P.Eng.

July 15, 1970.

CLAIMS	RECORD NO's
BB 25, 26, 28, 45, and 47	12856,12857,12859,12876, & 12878
being part of Group No. 3 which includes	
BF Nos. 79 to 92	18495 to 18508 inclusive

LOCATION

1 mile north of FISH LAKE, which is 10 miles north of Taseko Lake, and at 123° 51° S.W.

Dates - June 13 to 25, 1970.

DOMINION OF CANADA:

PROVINCE OF BRITISH COLUMBIA.

TO WIT:

In the Matter of Cost of an Induced Polarity Survey on the BB Claims 25,26,28,45 and 47 (Group No. 3) Fish Lake Area, Clinton M.D. British Columbia

I, R.H. SERAPHIM

of 4636 West 3rd Ave., Vancouver, British Columbia

in the Province of British Columbia, do solemnly declare that a detailed induced polarity survey involving a total of 16,400 feet was completed on claims BB Nos. 25, 26, 28, 45, and 47 as per the attached report at a total cost of $3,850.32, (three thousand eight hundred and fifty dollars and thirty two cents) between the dates of June 13 and June 25, 1970, inclusive. The costs are claimed for assessment credits of $3,300.00 as shown on the application made by J. Buchholz, a copy of which is attached.

Personnel engaged in the survey were W. Raymond, L. Goyette, H. Buchholz, J. Gabel, B. Holmes, L. Swanson, R. White, A. Okamura, T. Sakaino, and H. Morita, as shown in Appendix B.

And I make this solemn declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath and by virtue of the "Canada Evidence Act."

Declared before me at the City of Vancouver, in the Province of British Columbia, this 21 day of July, 1970, A.D.

R.H. Seraphim

L. Goyette

~~A Commissioner for taking Affidavits within British Columbia~~ or ~~A Notary Public in and for the Province of British Columbia.~~

★o

Sub-mining Recorder

TABLE OF CONTENTS

	Page
SUMMARY and CONCLUSIONS.....	1
INTRODUCTION.....	2
LOCATION, ACCESS, TOPOGRAPHY, GEOLOGY.....	2
SURVEY METHOD.....	3
RESULTS.....	4

PLATES

#1 LOCATION MAP - 10 mi = 1 in..... 1A

#2 SURVEY GRID and CLAIM MAP - 3000 ft = 1 in..... 2A

#3 PLAN of SURVEY - 200 ft = 1 in.....Front Pocket

DETAILED PROFILES of FREQUENCY EFFECT, RESISTIVITY and METAL FACTOR, lines 21 North to 6 North...Appended

#4 Grid Location Map, 1" = 400' (Rear)

APPENDICES

STATEMENT of COSTS.....Appendix A

PERSONNEL and SALARIES.....Appendix B

OPERATORS QUALIFICATIONS.....Appendix C

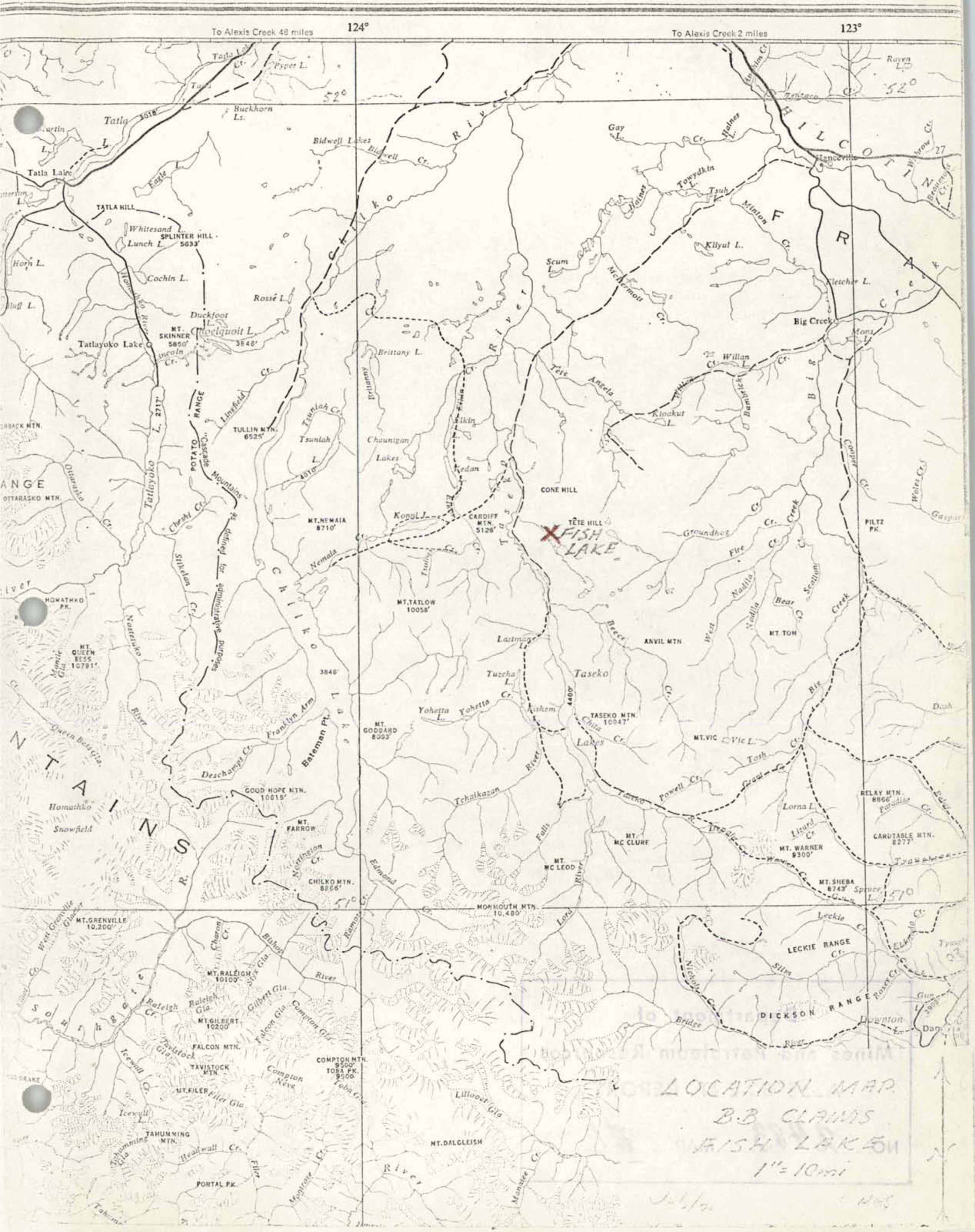
Telephone: Office 685-2914
Res. 224-7309

R. H. SERAPHIM ENGINEERING LIMITED
Geological Engineering

316
~~127~~ 470 GRANVILLE STREET
VANCOUVER 2, B.C.

SUMMARY and CONCLUSIONS

The detailed induced polarization survey on the claims shows two strong anomalies. These may be parts of a larger anomalous zone which has a weak central area. Apparently only part of the west anomaly has been drilled, and this drilling showed abundant pyrite with minor chalcopyrite. The fringe areas of the west anomaly, and selected parts of the east anomaly, might be drilled as a further test. Percussion drilling is probably the best drilling method in this type of soft altered rock, as diamond drilling is commonly more expensive than usual, and would likely not provide good core recovery.


To Alexis Creek 48 miles
124°
To Alexis Creek 2 miles
123°
52°
Tatla Lake
Tatla L.
Buckhorn Ls.
Pyper L.
Bidwell Lakes
Bidwell Cr.
Chilko River
Gay L.
Haines L.
Towydkin L.
Tsuh L.
Minton Cr.
Hanceville
CHILCOTIN
FRASER
Raven L.
Eagle L.
TATLA HILL
Whitesand L.
SPLINTER HILL 5633'
Lunch L.
Horn L.
Cochin L.
Kliyul L.
Scum L.
McDermott Cr.
Fletcher L.
Big Creek
Rossé L.
Duckfoot L.
Choelquoit L.
3846'
MT. SKINNER 5850'
Tatlayoko Lake
Lincoln Cr.
Brittany L.
Willan L.
Mons L.
Tete Angela Cr.
Kloakut L.
Bambrick Cr.
Big Cr.
Linefield Cr.
TULLIN MTN. 6525'
Tsuniah Cr.
Tsuniah L.
4010'
Chaunigan Lakes
Elkin L.
Vedan L.
Taseko
CONE HILL
Cooper Cr.
Tatlayoko L. 2717'
POTATO RANGE
"Cascade Mountains" as defined for administrative purposes
Cheshi Cr.
OTTARASKO MTN.
Ottarasko Cr.
MT. NEMAIA 8710'
Konni L.
CARDIFF MTN. 5128'
TETE HILL
FISH LAKE
Groundhog Cr.
Fire Cr.
PILTZ PK.
Nemaia
Stikelan Cr.
HOMATHKO PK.
MT. TATLOW 10058'
Nadila Cr.
Scallon Cr.
Bear Cr.
MT. TOM
MT. QUEEN BESS 10791'
Nostetuko River
Chilko Lake
Lastman L.
Beece Cr.
ANVIL MTN
3846'
Tuzcha L.
Taseko
Yohetta L.
Yohetta Cr.
Nishem
4400'
TASEKO MTN. 10047'
Chita Cr.
Lakes
MT. VIC
Vic L.
Tosh Cr.
Queen Bess Gla.
Franklyn Arm
MT. GODDARD 8003'
Bateman Pt.
Deschamps Cr.
Powell Cr.
Granite Cr.
RELAY MTN. 8866'
Paradise Cr.
GOOD HOPE MTN. 10615'
Tchaikazan River
Lorna L.
Homathko Snowfield
MT. FARROW
Falls
MT. MC CLURE
Lizard Cr.
MT. WARNER 9300'
CARDTABLE MTN. 8277'
Tyaughton
Norrington Cr.
Edmond
CHILKO MTN. 8866'
MT. MC LEOD
MT. SHEBA 8743'
Spruce L.
51°
MONMOUTH MTN. 10,480'
Lord River
Leckie Cr.
MT. GRENVILLE 10,200'
West Grenville Glacier
Charon Cr.
Bishop
Ramose Cr.
LECKIE RANGE
MT. RALEIGH 10100'
River
Slim Cr.
Nichols Cr.
DICKSON RANGE
Raleigh Cr.
Raleigh Gla.
Gilbert Gla.
MT. GILBERT 10200'
Falcon Gla.
Compton Gla.
Bridge River
Downton L.
Southgate
FALCON MTN.
TAVISTOCK MTN.
Compton Neve
COMPTON MTN. 9500'
TOBA PK. 9500'
Toba Gla.
Icewall Cr.
MT. FILER
Filer Gla.
Lillooet Gla.
Icewall L.
TAHUMMING MTN.
Headwall Cr.
MT. DALGLEISH
PORTAL PK.
Montrose Cr.
Manatee Cr.
River
MOUNTAINS
Department of Mines and Petroleum Resources
LOCATION MAP
B.B CLAIMS
FISH LAKE
1" = 10 mi

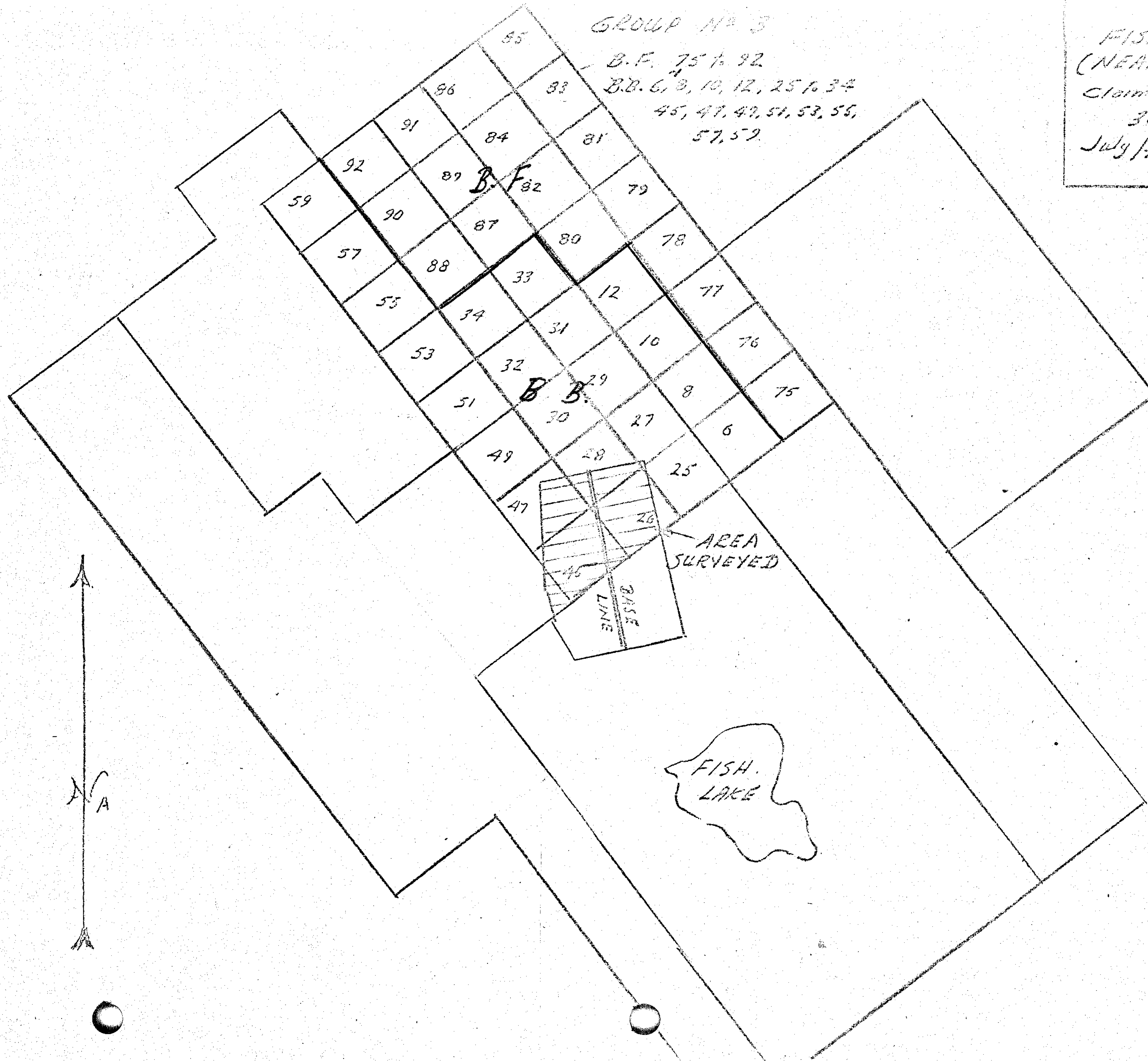
INTRODUCTION

An induced polarization survey was conducted over some of the BB claims near Fish Lake, close to Taseko Lake, between the 13th and 25th days of June, 1970. Nittetsu Mining Co. Ltd has the claims under option. Nittetsu's chief geophysicist, Mr. Akio Okamura, directed the work, assisted by Mr. Taizi Sakaino. The writer, Dr. R.H. Seraphim P.Eng., has inspected the work at site, and discussed the procedure and results with Mr. Okamura. The survey was completed to explore the extent and intensity of the pyrite-chalcopyrite mineralization exposed in a number of trenches, and drilled as shown on the Plan of Survey.

LOCATION, ACCESS, TOPOGRAPHY, GEOLOGY

The location map shows the location of the property relative to Taseko Lake. The property is reached from Williams Lake by a rough road, or by float plane, landing on Fish Lake. The region is part of the Chilcotin Plateau, and is only a few miles east of the Coast Range. Relief on the survey area is in the order of 100 feet; much of the survey area is meadow and swamp.

FISH LAKE
(NEAR TASEKO)
Claims and I.P. Grid
3000'=1in
July/70 RHS
of the A.B.



Intensely altered intrusives, dioritic feldspar porphyry, intrude andesitic and argillaceous? tuffs. Tertiary volcanics, exposed along the west limit of the surveyed area, overlie these rocks. The intrusives are strongly fractured and altered with sericite, silica, clay minerals, and some gypsum. The resulting rocks are very incompetent. Pyrite, chalcopyrite, magnetite, and pyrrhotite mineralization occur as dissemination and on fracture planes.

SURVEY METHOD

The location and extent of the surveyed grid is shown on the Plan of Survey. The station interval is 100 feet on grid lines at 300 ft intervals. The instruments used were a Phase Lock Induced Polarization Receiver Model R 5280, and an Induced Polarization Transmitter Model T 2800, both made by Geoscience Inc. of 199 Bent St., Cambridge, Mass. U.S.A. The transmitting unit has a rating of 1.8 k.w. The dipole-dipole electrode configuration, with electrode dipoles of 100 ft., was used, and four dipole separations, (nx) at 100, 150, 200, and 250 ft were read. The current was transmitted at two frequencies, 0.3 cps and 3.0 cps. The impedance of a system which can be polarized will vary with frequency, and therefore if the ground can be polarized, the impedances measured will vary with the frequencies used. This Per Cent Frequency Effect is expressed as $\frac{R1 - R2 \times 100}{R1}$ where R1 and

R2 are the apparent resistivities at the lower and higher frequencies respectively. The resultant Apparent Per Cent Frequency Effect, for each of the four dipole separations, is plotted on the pseudo section along each grid line.

The Apparent Resistivity, (in ohm-feet), was also measured, and shown on the same plate. Also shown is the Apparent Metal Factor, which is obtained by dividing the Apparent Per Cent Frequency Effect by the Apparent Resistivity. This procedure accentuates the Induced Polarization anomalies in areas of low resistivity.

RESULTS

The anomalous areas are indicated on the accompanying plan and pseudo-sections. The background values of Apparent Per Cent Frequency Effect did not exceed 3% in general, and they did increase with depth. The Apparent Resistivity is 200 to 500 ohm feet near surface, and it also increased with depth. The anomalous zones were found on lines 2100 N, 1800 N, 1500 N, and 1200 N, where the Apparent Per Cent Frequency Effect exceeds 10% in places, and the Apparent Resistivity is low.

The strongest anomalies are on lines 18 north, West anomaly, and 15 north, East anomaly. Actually these two anomalies may join, and be parts of one large anomaly, with a weak central area. The anomalies without doubt are

produced at least in part by sulfides, as sulfides are found in the nearby trenching and drilling. However, Mr. Okamura advises that in his experience, the strongest induced polarization anomalies usually indicate pyrite, and suggests that the fringes of the anomalies may be the best place to look for copper sulfides. The writer is inclined to agree with this observation, and suggests that other techniques, such as magnetic survey, geological observations, or geochemistry be used before deciding if and where drilling should be attempted.

R. H. Seraphim

July 15, 1970. Dr. R.H. Seraphim, P.Eng.

APPENDIX A

STATEMENT OF COSTS OF THE INDUCED POLARIZATION SURVEY

Salaries (as per Appendix B - includes Supervision)	$1,840.20
Groceries	594.00
Camp Construction, supplies and equipment	477.00
Transportation, Travel	444.00
Overhead @ 0.2 (Salaries and Groceries)	495.12
Total	$3,850.32

of which $3,300.00 is claimed for
Assessment Credits on BF 74-92
inclusive of group No. 3.

R.H. Deaphin

APPENDIX B

EVIDENCE OF EXPENDITURES INCURRED

Name and Address	Position	Rate	Days Worked	Period	Total Salary
W. Raymond	Leader	650/M + Board	10	June 14-25	$ 262.00
L. Goyette	Cook	650/M + Board	10	June 14-25	262.00
H. Buchholz	Helper	550/M + Board	10	June 14-25	221.50
J. Gabel	Helper	450/M + Board	10	June 14-25	183.00
B. Holmes	Helper	450/M + Board	10	June 14-25	183.00
L. Swanson	Helper	450/M + Board	10	June 14-25	183.00
R. White	Helper	450/M + Board	10	June 14-25	183.00
T. Sakaino - 404-470 Granville	Geophysicist	393/M	12	June 14-25	157.20
A. Okamura - 404-470 Granville	" Assist.	411/M	12	June 14-25	164.40
H. Morita - 404-470 Granville	Geologist	411/M	3	June 4-6	41.10
				Total	$1,840.20

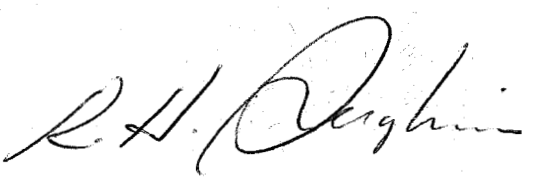
R. H. Dingman

APPENDIX C

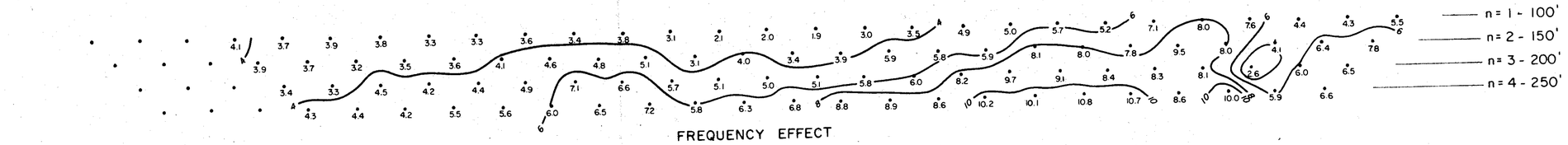
STATEMENT of OPERATOR'S QUALIFICATIONS

Mr. Akio Okamura, the geophysical operator, for the subject geophysical survey, is a graduate of The Mining Industry Course, with specialization in geophysics, from Kyoto University, Japan. He has had eighteen years experience as a geophysical operator, all with Nittetsu Mining Co.

Mr. Taizi Sakaino, the assistant to Mr. Okamura, is a graduate surveyor from Waseda College, Japan. He has had twenty-five years experience as a surveyor, all with Nittetsu Mining Co.

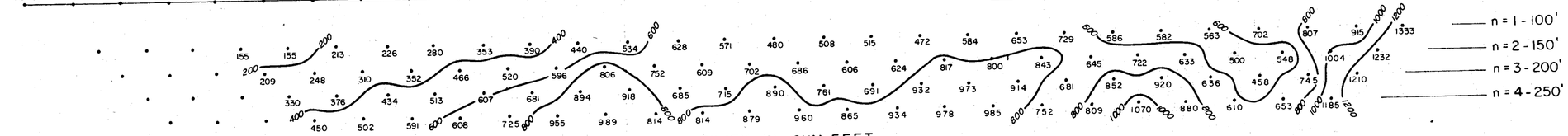


15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



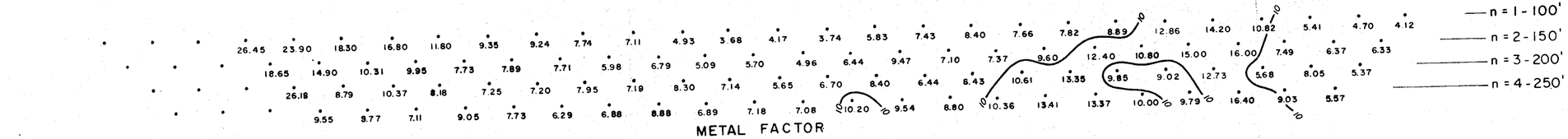
FREQUENCY EFFECT

15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



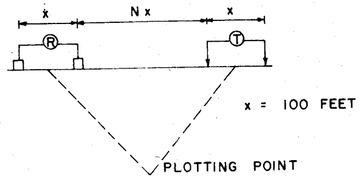
RESISTIVITY IN OHM-FEET.

15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



METAL FACTOR

ELECTRODE CONFIGURATION



I. P. RESPONSE

STRONG

MEDIUM

WEAK

2483

NITTETSU MINING CO. LTD.

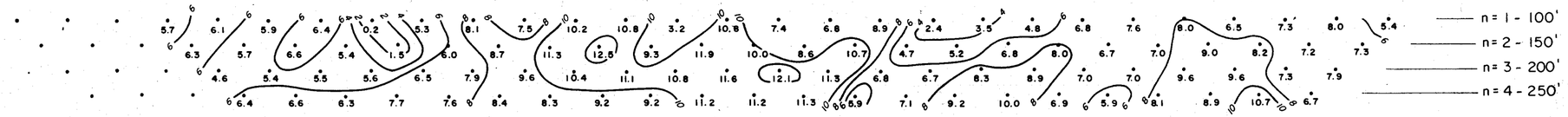
FISH LAKE PROJECT

INDUCED POLARIZATION PROFILES

SCALE: 1" = 200'

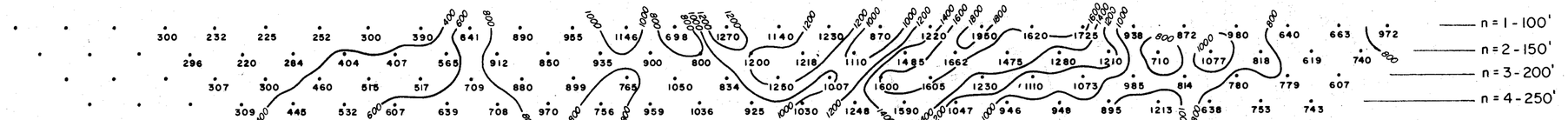
LINE 21 + 00 N

15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



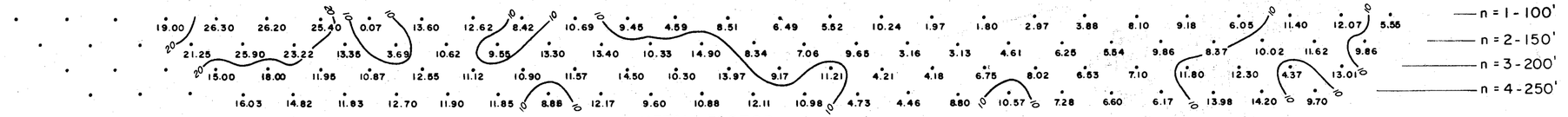
FREQUENCY EFFECT

15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



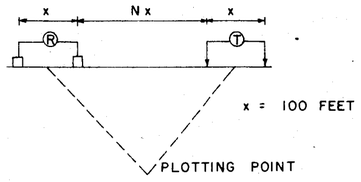
RESISTIVITY IN OHM-FEET

15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



METAL FACTOR

ELECTRODE CONFIGURATION



I. P. RESPONSE

STRONG

MEDIUM

WEAK

2483

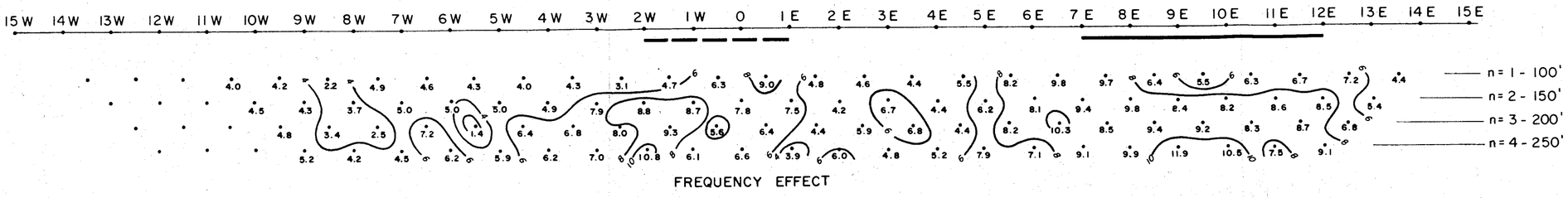
NITTETSU MINING CO. LTD.

FISH LAKE PROJECT

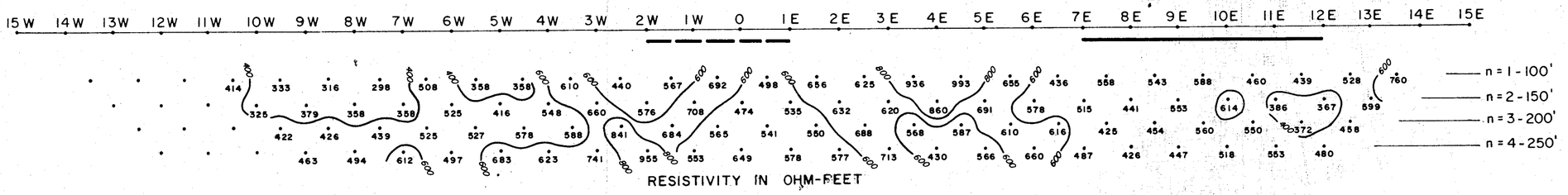
INDUCED POLARIZATION PROFILES

SCALE: 1" = 200'

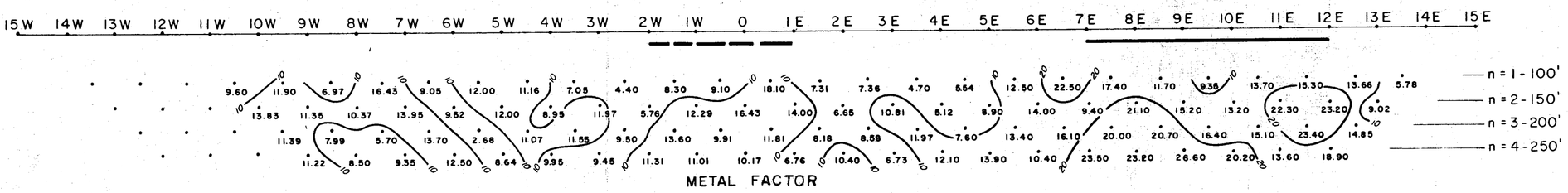
LINE 18+00 N



FREQUENCY EFFECT

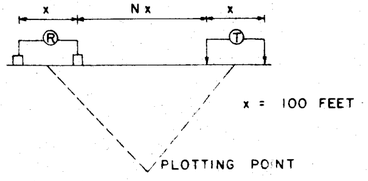


RESISTIVITY IN OHM-FEET



METAL FACTOR

ELECTRODE CONFIGURATION



I. P. RESPONSE

STRONG

MEDIUM

WEAK

2483

NITTETSU MINING CO. LTD.

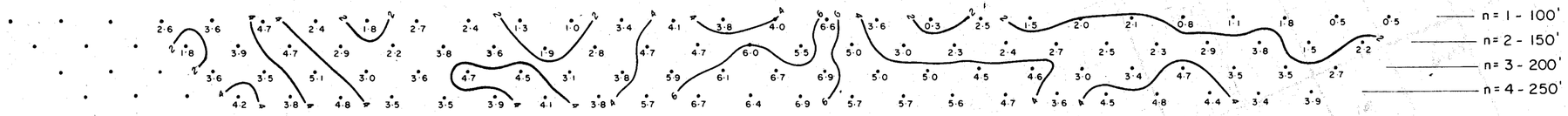
FISH LAKE PROJECT

INDUCED POLARIZATION PROFILES

SCALE: 1" = 200'

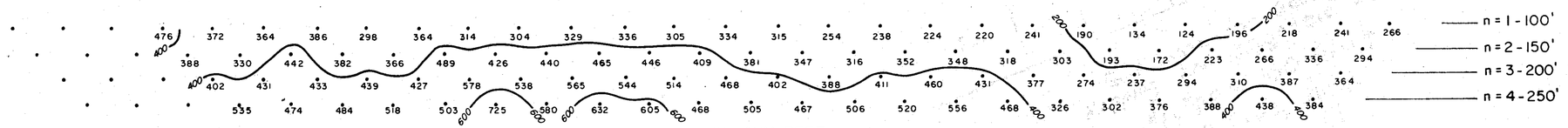
LINE 15+00 N

15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



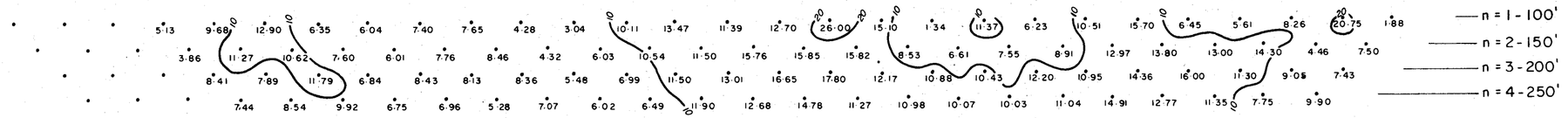
FREQUENCY EFFECT

15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



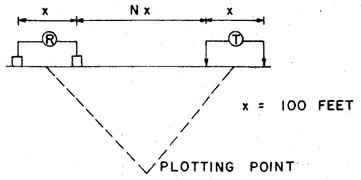
RESISTIVITY IN OHM-FEET

15W 14W 13W 12W 11W 10W 9W 8W 7W 6W 5W 4W 3W 2W 1W 0 1E 2E 3E 4E 5E 6E 7E 8E 9E 10E 11E 12E 13E 14E 15E



METAL FACTOR

ELECTRODE CONFIGURATION



I. P. RESPONSE

——— STRONG

– – – MEDIUM

------- WEAK

2483

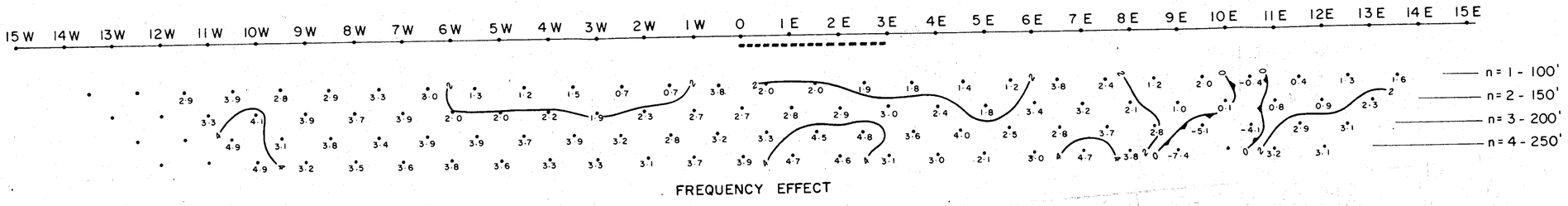
NITTETSU MINING CO. LTD.

FISH LAKE PROJECT

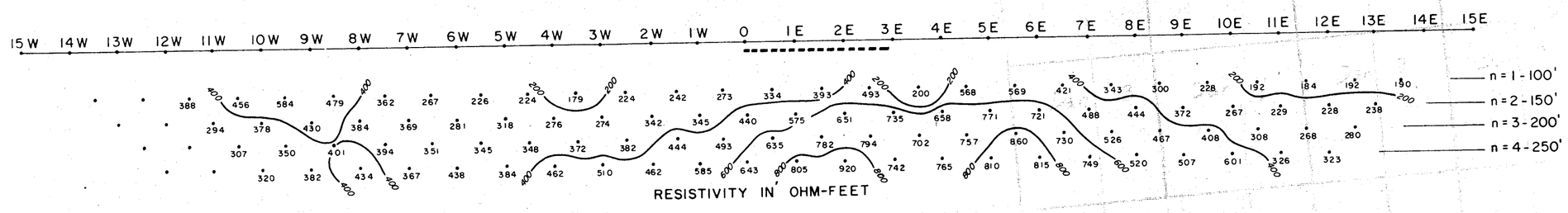
INDUCED POLARIZATION PROFILES

SCALE: 1" = 200'

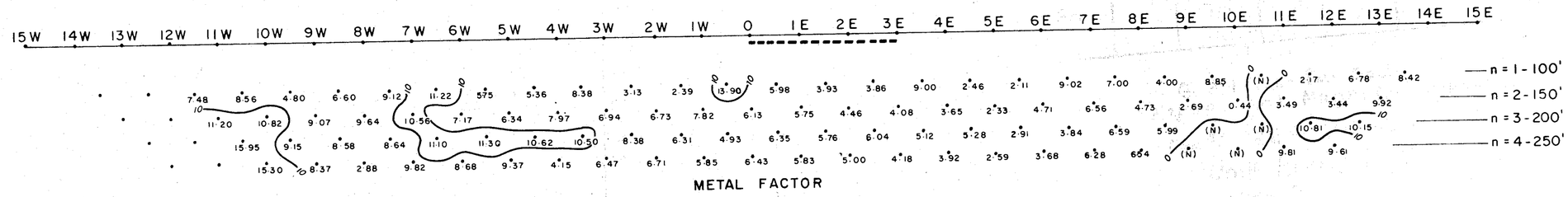
LINE 12 + 00 N



FREQUENCY EFFECT

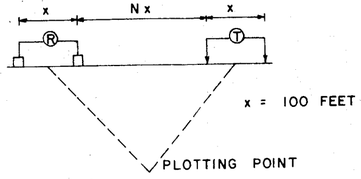


RESISTIVITY IN OHM-FEET



METAL FACTOR

ELECTRODE CONFIGURATION



I. P. RESPONSE

——— STRONG

— — — MEDIUM

- - - - - - - WEAK

2483

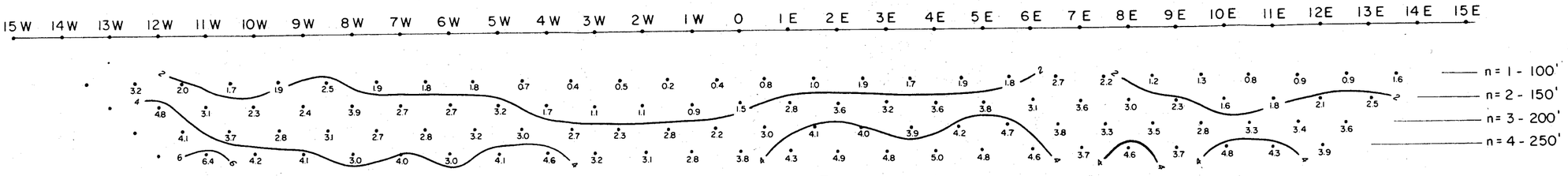
NITTETSU MINING CO. LTD.

FISH LAKE PROJECT

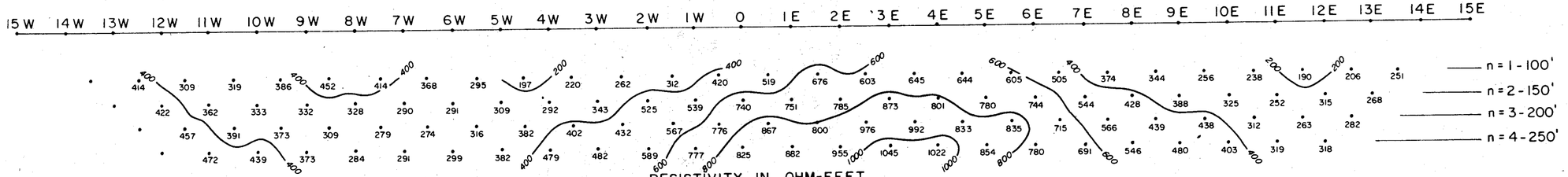
INDUCED POLARIZATION PROFILES

SCALE: 1" = 200'

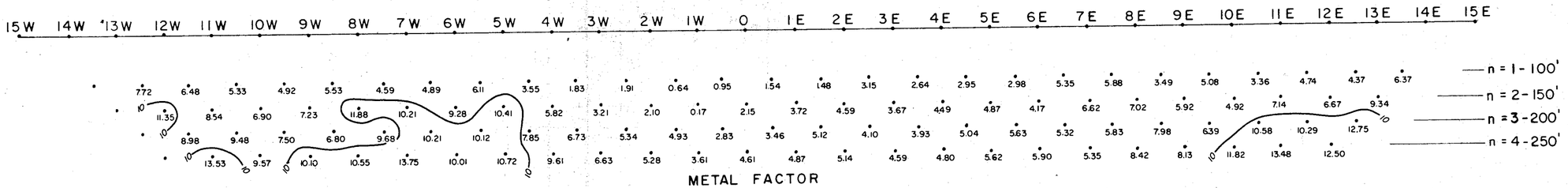
LINE 9+00 N



FREQUENCY EFFECT

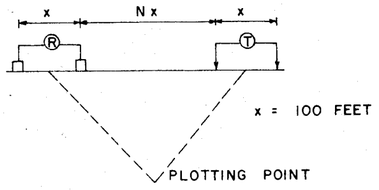


RESISTIVITY IN OHM-FEET



METAL FACTOR

ELECTRODE CONFIGURATION



I. P. RESPONSE

STRONG

MEDIUM

WEAK

2483

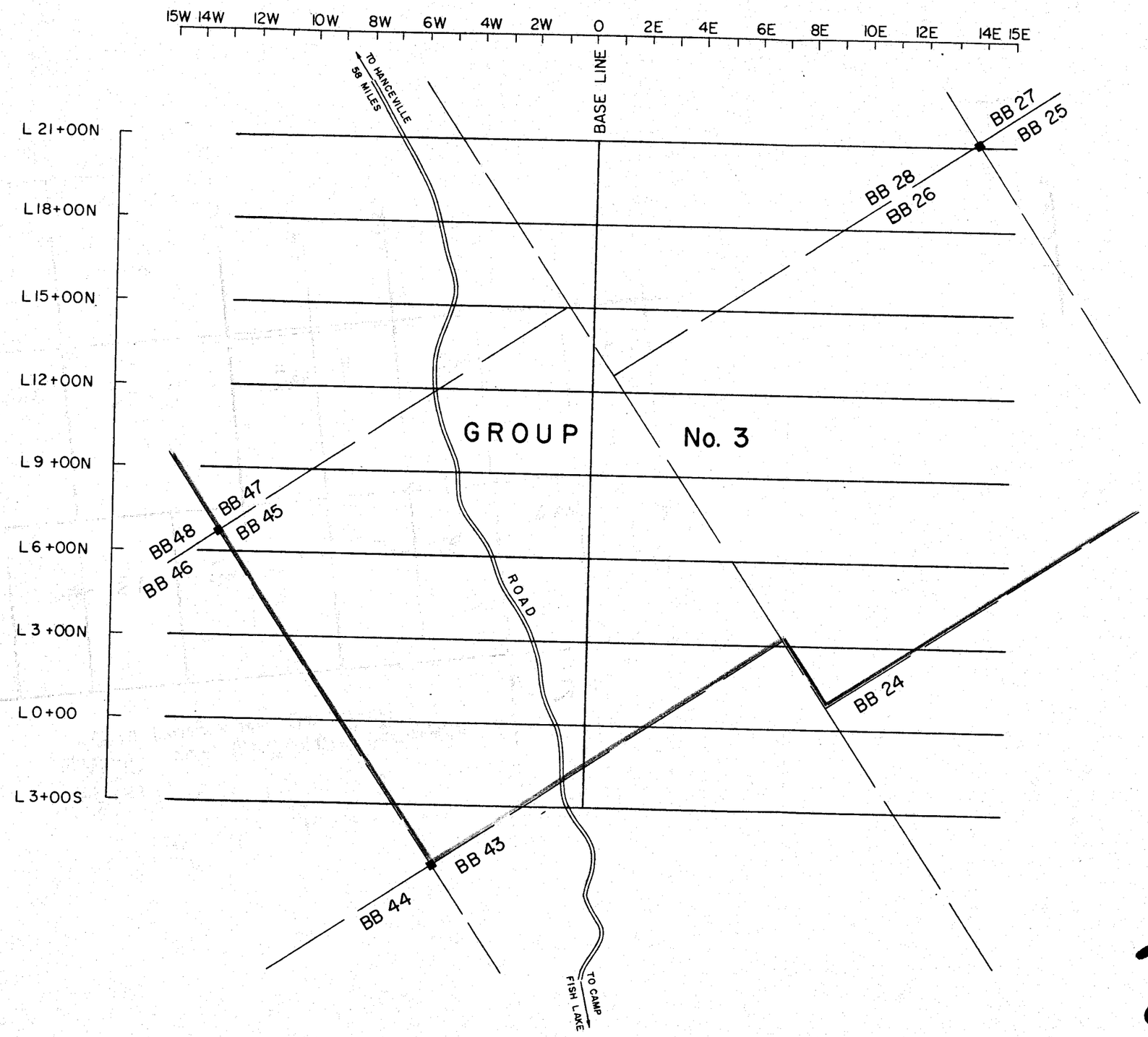
NITTETSU MINING CO. LTD.

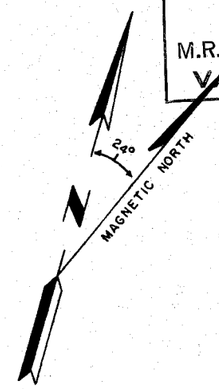
FISH LAKE PROJECT

INDUCED POLARIZATION PROFILES

SCALE: 1" = 200'

LINE 6 + 00 N





BB No. 25, 26, 28, 45 & 47 MINERAL CLAIMS

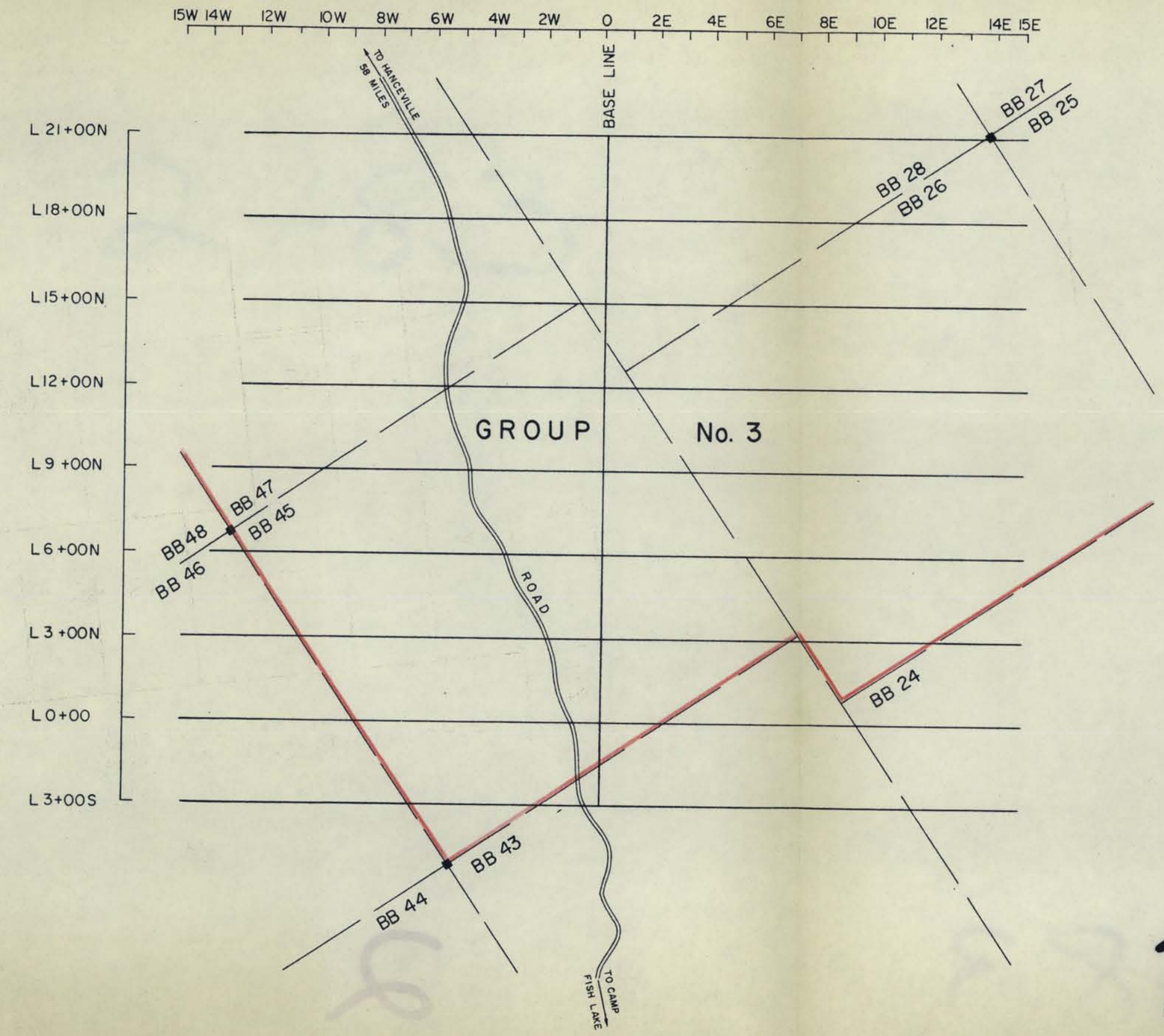
FISH LAKE

CLINTON MINING DIVISION B.C.

GRID LOCATION MAP

SCALE: 1" = 400'

2483



BB No. 25, 26, 28, 45 & 47 MINERAL CLAIMS

FISH LAKE

CLINTON MINING DIVISION B.C.

GRID LOCATION MAP

SCALE: 1" = 400'

2483

15W 14W 12W 10W 8W 6W 4W 2W 0 2E 4E 6E 8E 10E 12E 14E 15E

BASE LINE

TO HENCEVILLE 56 MILES

L 21+00N
L 18+00N
L 15+00N
L 12+00N
L 9+00N
L 6+00N
L 3+00N
L 0+00
L 3+00S
L 6+00S
L 9+00S
L 12+00S
L 15+00S
L 18+00S
L 21+00S
L 24+00S

BB 27
BB 28
BB 26
BB 25

EAST

WEST

ANOMALY

ANOMALY

GROUP No. 3

BB 24

BB 47
BB 46

BB 48
BB 49

BB 45

BB 44

BB 41

BB 42

BB 43

B.L.

TO CAMP FISH LAKE

N

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2483 MAP #3

LEGEND:

- ROAD
- POOR ROAD
- BULLDOZER TRENCH
- BULLDOZER CLEARING
- SWAMP
- CREEK
- CLAIM LOCATION LINE
- ASSUMED CLAIM LOCATION LINE
- DRILL SITE, DIAMOND OR PERCUSSION

NOTE: ALL FEATURES SKETCHED FROM GRID STATION

I.P. RESPONSE:

- STRONG
- MEDIUM
- WEAK

2483

NITTETSU MINING CO. LTD.

FISH LAKE PROJECT

INDUCED POLARIZATION SURVEY

SCALE: 1" = 200'

R. H. SERAPHIM ENG. LTD.

JULY 12, 1970

R. H. SERAPHIM

To accompany report by
R.H. Seraphim on the
Fish Lake Claims near Tesekho Lake
Clinton M.D., dated July 15, 1970