

6384

77-#255 # 6384

GEOPHYSICAL REPORT
On A
PULSE ELECTROMAGNETOMETER SURVEY
GRANGES EXPLORATION AB

Mt. Davidson area, Smithers Mining Division
Lat. 53°11'N Long. 124°51'W N.T.S. 93 F/2

AUTHOR: Glen E. White, B.Sc., Geophysicist
DATE OF WORK: March 3 - 12, 1977
DATE OF REPORT: March 21, 1977

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

NO. _____

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respectively

INTRODUCTION

This report discusses a pulse electromagnetometer survey which was conducted over an area of anomalous geochemical values to try and locate any electromagnetic effects. The pulse electromagnetometer (PEM) was used for this survey as it is insensitive to topography, will detect poorer conductors than conventional systems, will penetrate conductive overburden and will penetrate some 75 - 150% of the coil separation depending upon the conductor configuration.

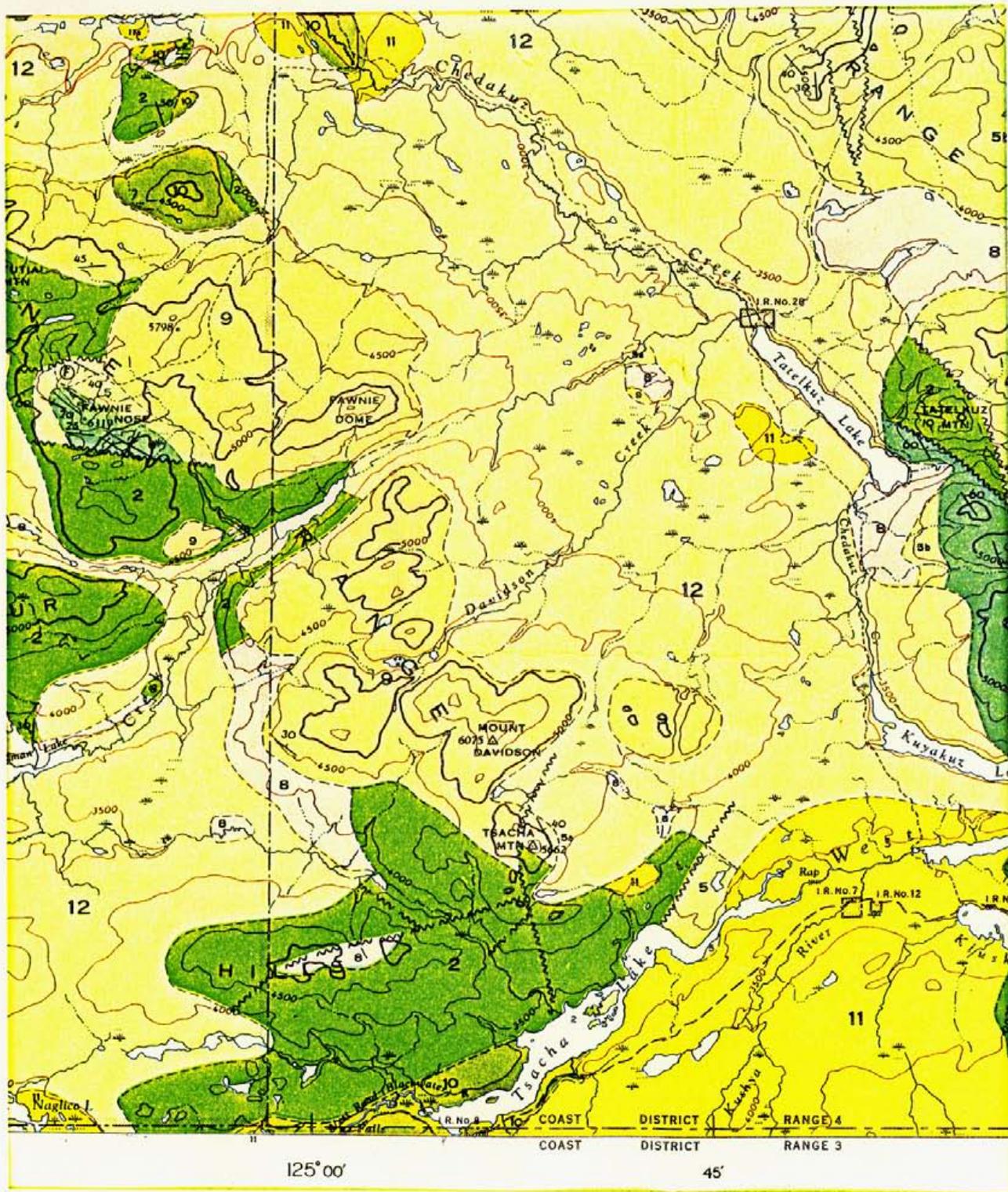
PROPERTY

The property consists of the PEM claim composed of 20 units - TAG #08328 staked on March 2-3, 1977 and recorded in Vancouver March 18, 1977.

LOCATION AND ACCESS

The PEM claim is located on the northern flank of Mt. Davidson, Latitude $53^{\circ}11'N$, Longitude $124^{\circ}51'W$, N.T.S. 93 F/2.

Access to the survey area is by helicopter to a large clearing in the survey area which contains a 14' x 16' tent floor.



**GRANGES EXPLORATION LTD.
GEOLOGY MAP**

SCALE 1" = 4 MILES

Glen E. White

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Fig 2

PHYSIOGRAPHY

The survey area is situated on the north side of Mt. Davidson in general between 4700 feet ASL and 5300 feet ASL. Approximately one third of the survey area lies in an old burn and is relatively open. The majority of the area is covered with spruce, balsam fir and jack pine. Drainage from the area flows northward into Davidson Creek, a tributary of Chedakuz Creek. The property for the most part is covered with Pleistocene and recent gravels, sand, clay and till.

GENERAL GEOLOGY

The general geology of the area is shown on Preliminary Map 54-11 of the Nechako River at a scale of 1" = 4 miles. The property is indicated as underlain by Cretaceous and/or Tertiary volcanics and related tuffs and breccias. The south side of Mt. Davidson is intruded by Jurassic and/or Cretaceous acid plutonic rocks.

SURVEY SPECIFICATIONS

Survey Grid

The survey grid was established previous to the PEM survey and consisted of N-S directed lines spaced 100 m apart extending 500 m each side of an E-W baseline. The lines were blazed and numbered at 100 m intervals.

Pulse Electromagnetometer Survey

The PEM system is used primarily in the horizontal loop configuration. The transmitter consists of a transmit loop 6 meters in diameter that is laid out horizontally on the ground. The loop is energized by a pulse of 15 to 20 amps at 24 volts. The current is turned off by a special ramp circuit. The on-off time is 10.8 ms. The receive coil is generally spaced 25-100 meters from the transmit loop. The signal on the receive coil is sampled, averaged and then stored during the reading interval. One sample is taken of the primary pulse and eight samples are taken of the secondary field during the off time. Time synchronization is by radio link or cable.

The eight channels of secondary field information are equivalent to a wide spectrum of frequency information from approximately 2 KHz to 16 Hz which allows for determination of overburden effects and penetration of conductive overburden. Since the secondary field is measured directly during the primary field off time, the pulse method is free of geometrical restrictions between the transmit and receive coil positions, such as topography interference and coil alignment.

This survey was conducted with a coil separation of 50 m. Some 12.5 km of surveying was completed.

DISCUSSION OF RESULTS

The results are shown on Figures 3 - 15 inclusive. In each Figure, channel 1 illustrates the high frequency data and channel 8 the lowest frequency. Thus, Channel 1 will tend to reflect surficial conductive formations and the outer surfaces of a conductor, while the lower channels reflect the deeper portion of the conductor.

No pronounced conductors were detected by this survey. Lines 4, 5 and 6W show a small inflection between 3S and 4S.

Line 8 shows a small surficial response near 3S. This line was also tested with a pulse induced polarization system deployed in the Wenner array with an "a" spacing of 25 m. A definite correlation exists between the I.P. chargeability and channel 1 PEM data. The increased response from both systems appears to be related to a surficial conductor. The 6.4 millisecond chargeability anomaly at 3S can be considered weakly anomalous against a background of some 2 milliseconds.

Several other small peaks were obtained in channel 1 such as on lines 9W, 12W and 13W. The response on line 13W at 0 / 75N shows a slight inflection in all channels and may be of geologic interest since the small inflection is related to a gradient change in response along the line in each channel.

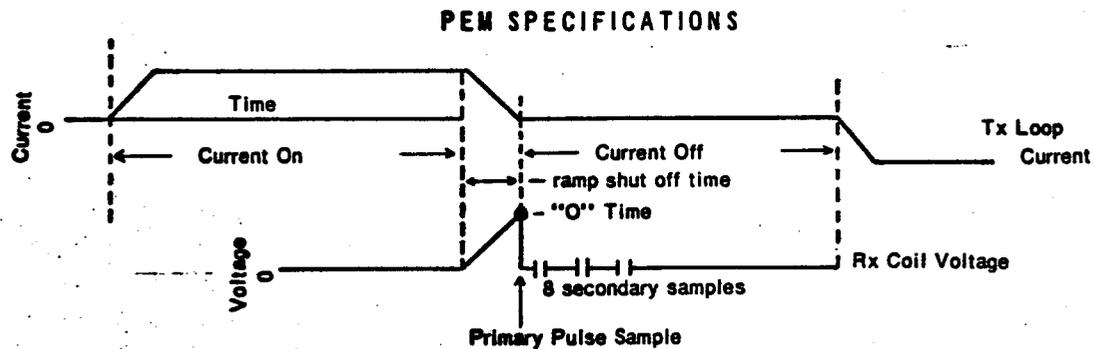
CONCLUSIONS AND RECOMMENDATIONS

A program of pulse electromagnetometer surveying was conducted over an area of geochemical interest on the PEM mineral claim. No definite conductors were detected. Thus, the mineralization may be in a disseminated form and be more amenable to the induced polarization method.

Respectfully submitted,
GLEN E. WHITE GEOPHYSICAL
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Glen E. White B.Sc.
Geophysicist



Current Off time: 9.4 ms

Current on time: 10.8 ms

Current shut off (ramp) time: 1.4 ms

Sample times (zero to centre of sample): .15ms, .45ms, .85ms, 1.45ms, 2.45ms, 3.75ms, 5.85ms, 8.85ms.

Sample width: 100 μ s

Zero time set at drop off point of primary pulse

TRANSMITTER — Transmitter power and loop size may be increased to obtain increased penetration. Weight, portability and power capabilities of the control instrument are the limiting factors. The standard transmitter is designed to be carried by two men.

Loop diameter	— minimum 4 meters (13 feet)
Loop current	— 15 to 20 amps
Loop applied voltage	— 24 volts
Loop output	— minimum 4500 amps x meter ²
Loop weight	— 11.8 kilos (26 lb)
Control unit weight	— 10 kilos (22 lb)
Control unit dimensions	— 20.5cm x 25.5cm x 36.5cm (8" x 10" x 14.5")
Battery supply weight	— 18.1 kilos (40 lb)
Battery supply	— 2 of 12 volt, 14 to 20 ampere hour
Timing control	by radio synchronization

RECEIVER

- Receive coil dimensions: 55cm x 15cm (22" x 6")
- Receive coil weight: 4.5 kilos (10 lb)
- Preamplifier in coil
- Preamplifier batteries: 2 of 9 volt
- Receive coil tripod mounted
- Receiver measuring instrument dimensions: 28cm x 18cm x 21.5cm (11" x 7" x 9")
- Receiver measuring instrument weight: 6.3 kilos (14 lb)
- Timing control by radio synchronization
- Primary sample width: 100 μ s
- Primary sample can be swept through primary pulse by means of a time calibrated pot
- Zero time set at primary pulse drop-off
- Secondary samples (eight of them) width: 100 μ s
- Secondary samples time (zero to middle of sample): (1) .15ms (2) .45ms (3) .85ms (4) 1.45ms (5) 2.45ms (6) 3.75ms (7) 5.85ms (8) 8.85ms
- Automatic sampling for 5 seconds then all samples automatically stored
- Sample read out by means of meter
- Continuous sampling possible by switching function switch to "Continuous"
- Noise can be monitored by switching function switch to "Noise"
- Battery supply: 24 volt rechargeable, 2 of 12 volt Gel GC 12-15

STATEMENT OF QUALIFICATIONS

Name: WHITE, Glen E.

Profession: Geophysicist

Education: B.Sc. Geophysics - Geology
University of British Columbia

Professional Associations: Associate member of Society of
Exploration Geophysicists.

Vice-President of B. C. Society of
Mining Geophysicists.

Experience: Pre-Graduate experience in Geology-
Geochemistry - Geophysics with Anaconda
American Brass.

Two years Mining Geophysicist with
Sulmac Explorations Ltd. and Airborne
Geophysics with Spartan Air Services Ltd.

One year Mining Geophysicist and Technical
Sales Manager in the Pacific north-west
for W. P. McGill and Associates.

Two years Mining Geophysicist and supervisor
Airborne and Ground Geophysical Divisions
with Geo-X Surveys Ltd.

Two years Chief Geophysicist Tri-Con
Exploration Surveys Ltd.

Six years Consulting Geophysicist.

Active Experience in all Geologic provinces
of Canada.

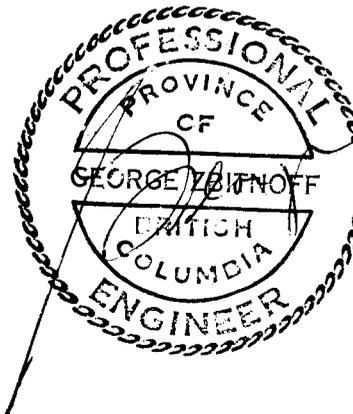
COST BREAKDOWN

<u>Personnel</u>	<u>Date</u>	<u>Wages</u>	<u>Total</u>
G. E. White, Geophysicist	Feb. 28-Mar. 12/77....	\$100.	\$1300.00
D. Berryman.....	"....."	85.....	1105.00
J. Behenna.....	"....."	80.....	1040.00
L. Durkin.....	"....."	75.....	975.00
Meals and Accomodations.....			1040.00
Instrument Lease.....			715.00
Airfare.....			552.00
Airfreight.....			136.10
Vehicle.....			70.28
Interpretation, drafting and reports.....			<u>850.00</u>
Total.....			\$7783.38

9 days were used in linecutting & Geophysics

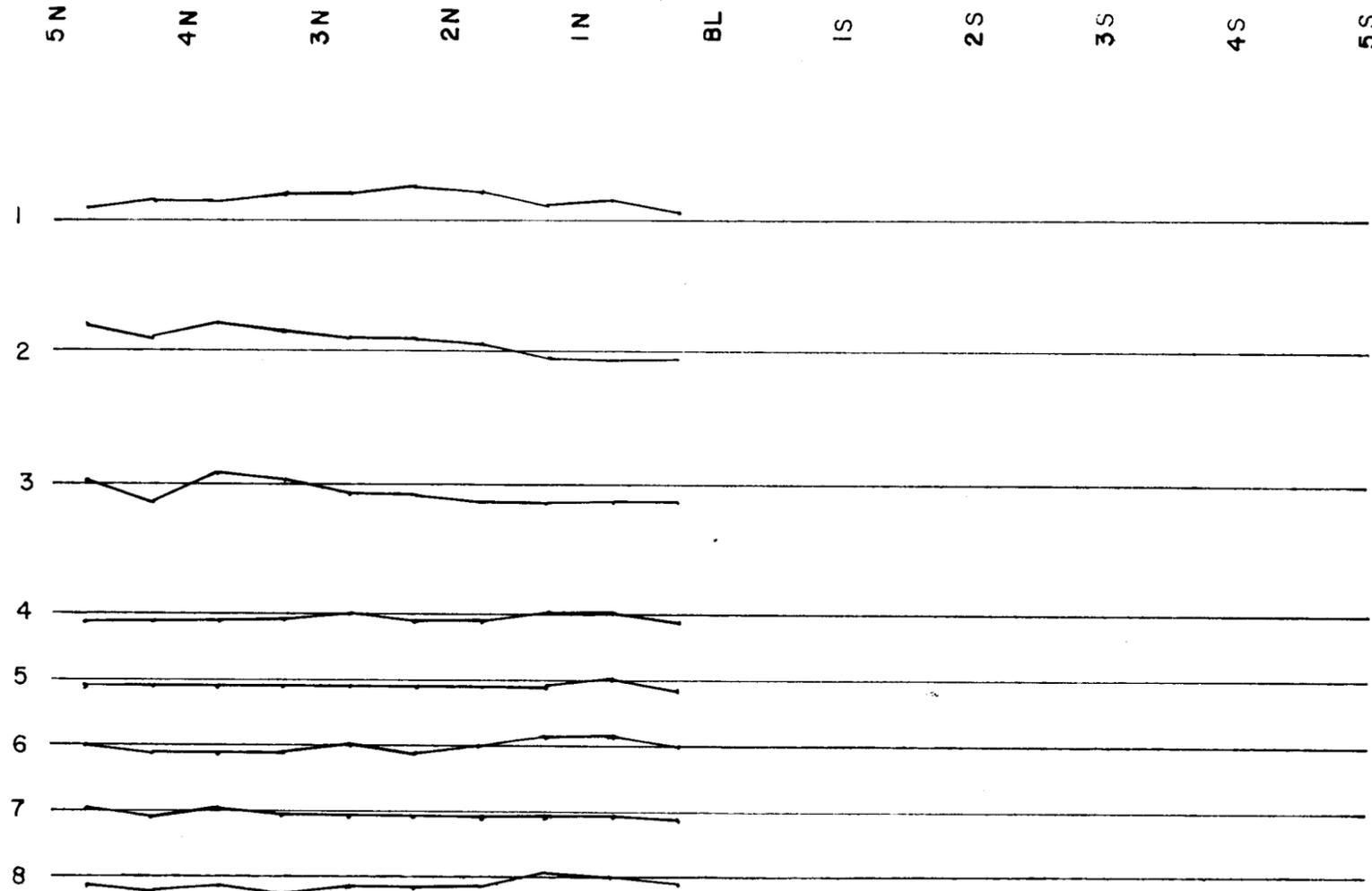
9 ⁴/₁₃ x 7783.38

5388.49.



[Handwritten signature]

CHANNELS



SCALE P.P.K.
 — 60 —
 — 20 —
 — 0 —

Instrument: Crone PEM

Seperation 50 m


 1 cm = 50 m

MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT

NO. **6384**

N.T.S. 93 F/2

GRANGES EXPLORATION AB

PROPERTY 6
 PEM CLAIM

Pulse Electromagnetometer

LINE 3W

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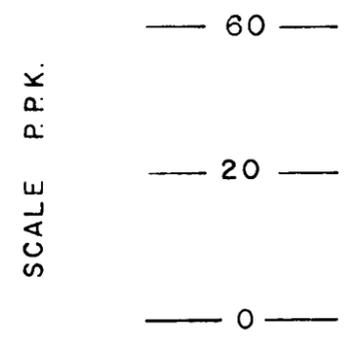
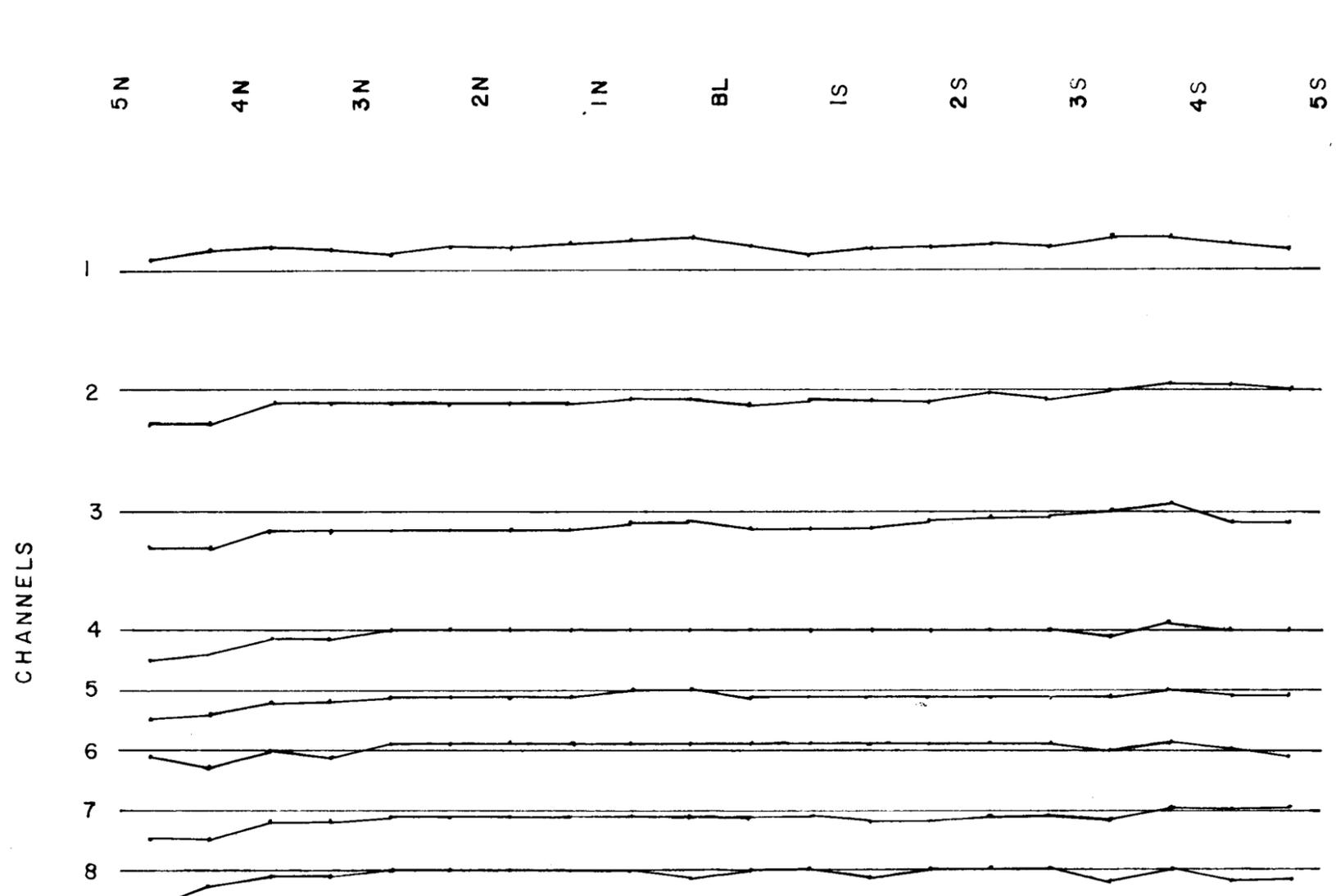
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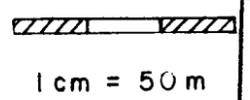
To Accompany Geophysical Report on PEM CLAIM

Date March 21, 1977

By GLEN E WHITE B.Sc. *G. White* GEOPHYSICIST



Instrument: Crone PEM
 Separation 50 m



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 No. **6384**

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GRANGES EXPLORATION AB
 PROPERTY 6
 PEM CLAIM

Pulse Electromagnetometer
 LINE 4W

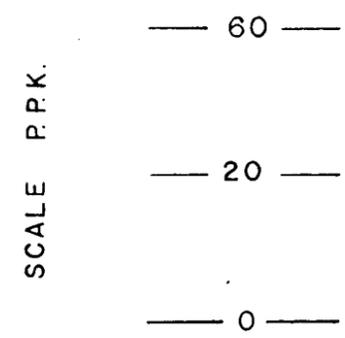
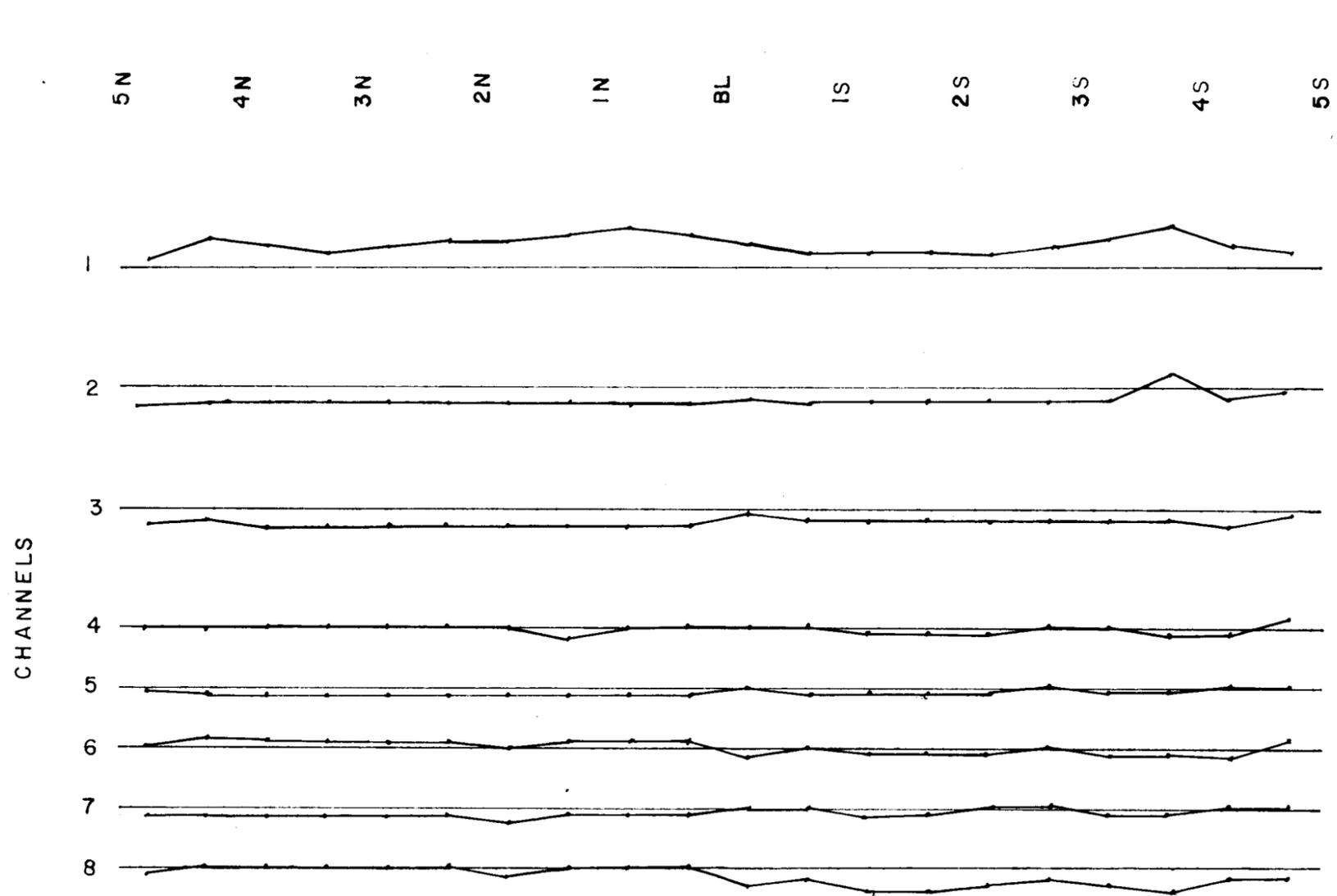
Glen E. White
 geophysical consulting
 services ltd.

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FIG No: 4

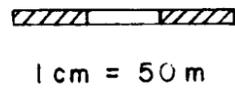
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To Accompany Geophysical Report on PEM CLAIM
 Date March 21, 1977
 By GLEN E WHITE B.Sc. *Glen E White* GEOPHYSICIST

CHANNELS



Instrument: Crone P.E.M
 Separation 50 m



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To Accompany Geophysical Report on PEM CLAIM
 Date March 21, 1971
 By GLEN E WHITE B.Sc. *[Signature]* GEOPHYSICIST

N.T.S. 93 F/2

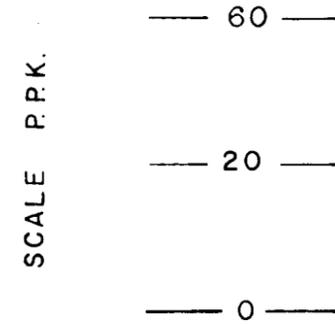
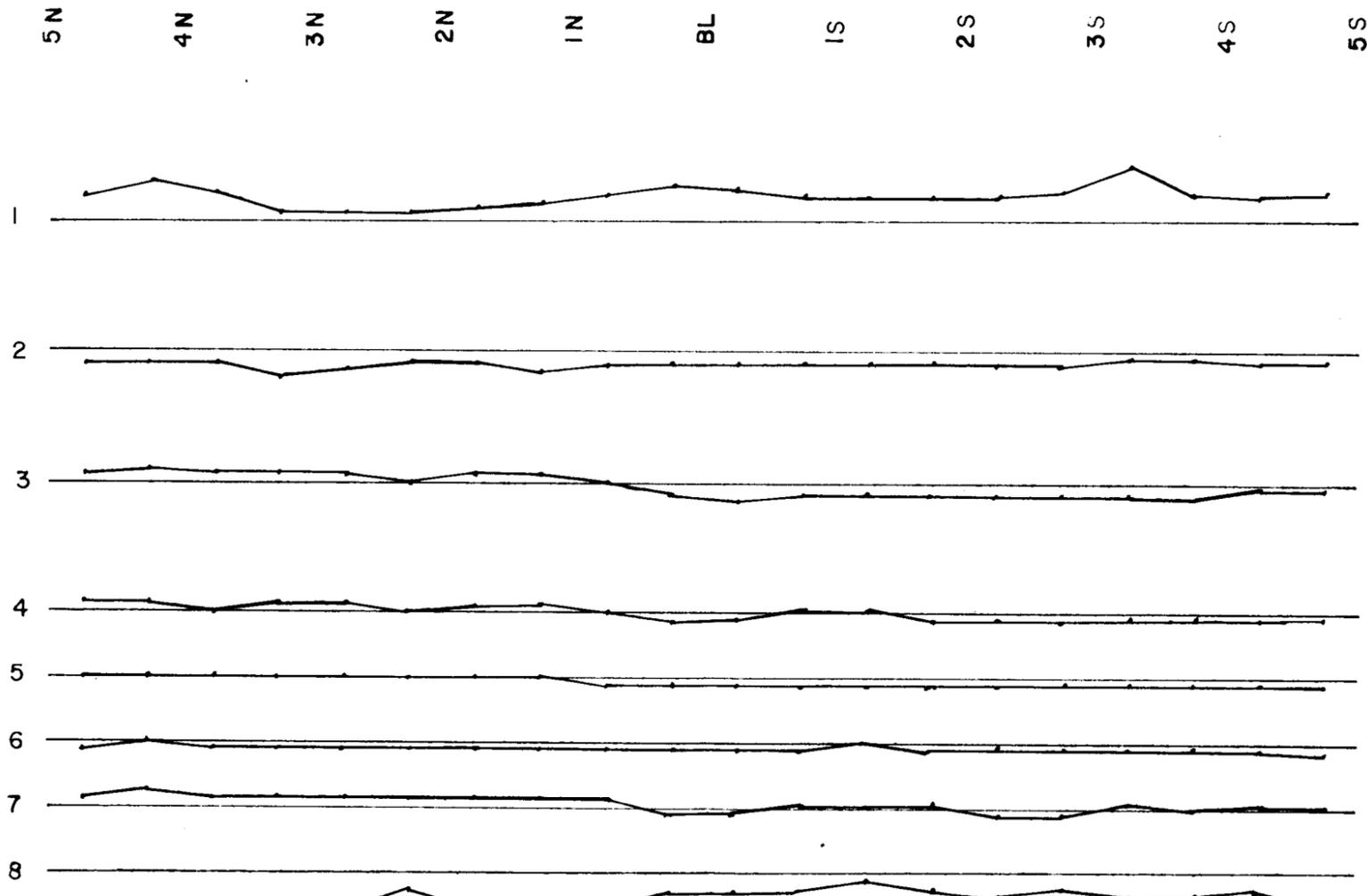
GRANGES EXPLORATION AB
 PROPERTY 6
 PEM CLAIM

Pulse Electromagnetometer
 LINE 5W

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geophysical consulting
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INTERPRETED BY:
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FIG No: 5

CHANNELS



Instrument: Crone PEM

Seperation 50 m

1 cm = 50 m

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NO. **6384**

N.T.S. 93 F/2

GRANGES EXPLORATION AB

PROPERTY 6
PEM CLAIM

Pulse Electromagnetometer

LINE 6W

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geophysical consulting
services Ltd.

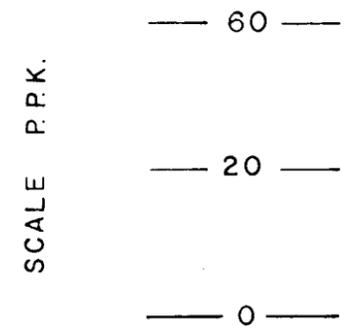
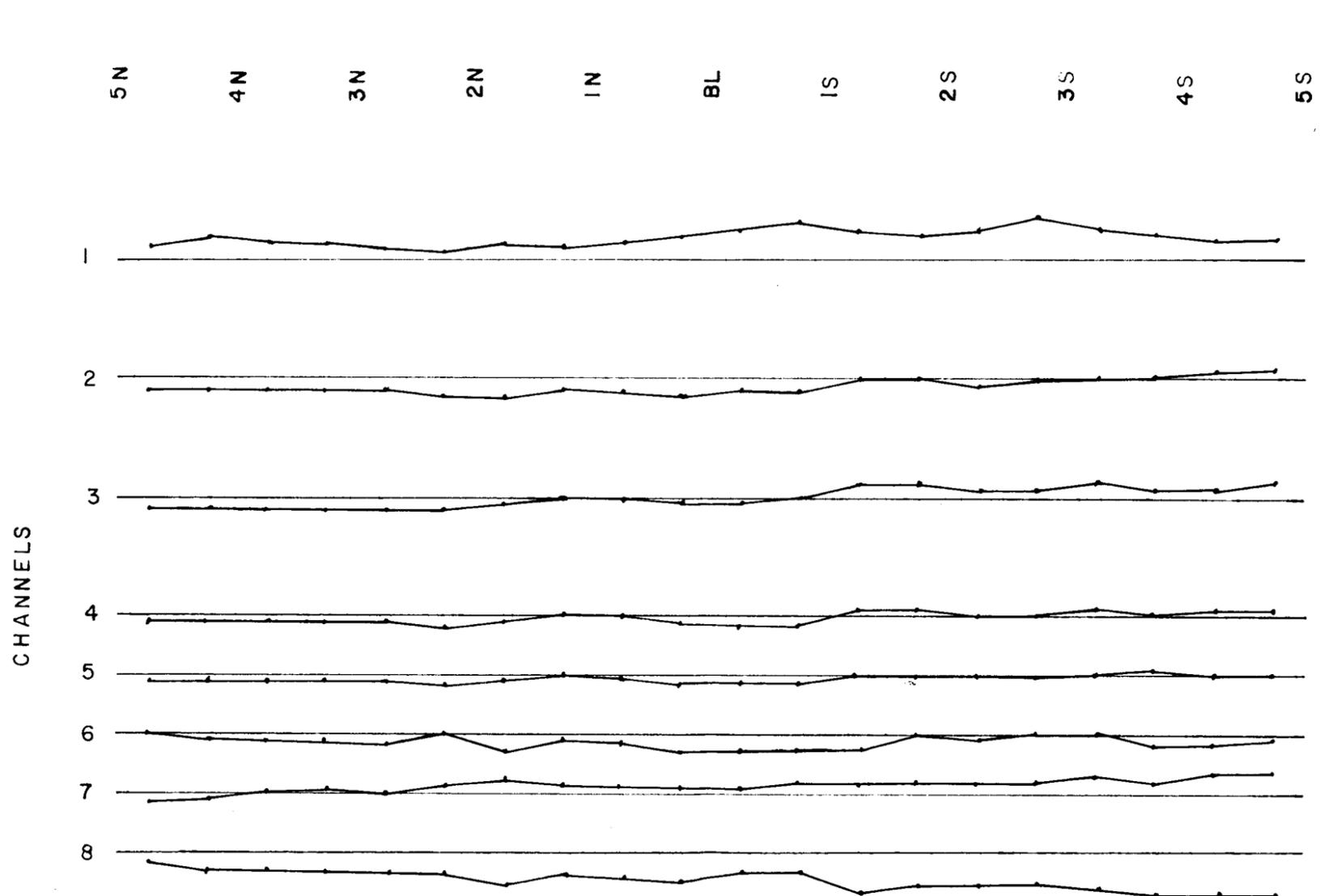
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FIG No: 6

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Date March 21, 1977

By GLEN E WHITE B.Sc. *[Signature]* GEOPHYSICIST



Instrument: Crone P.E.M
 Separation 50 m

1 cm = 50 m

MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
 No. **6384**

N.T.S. 93 F/2

GRANGES EXPLORATION AB
 PROPERTY 6
 PEM CLAIM

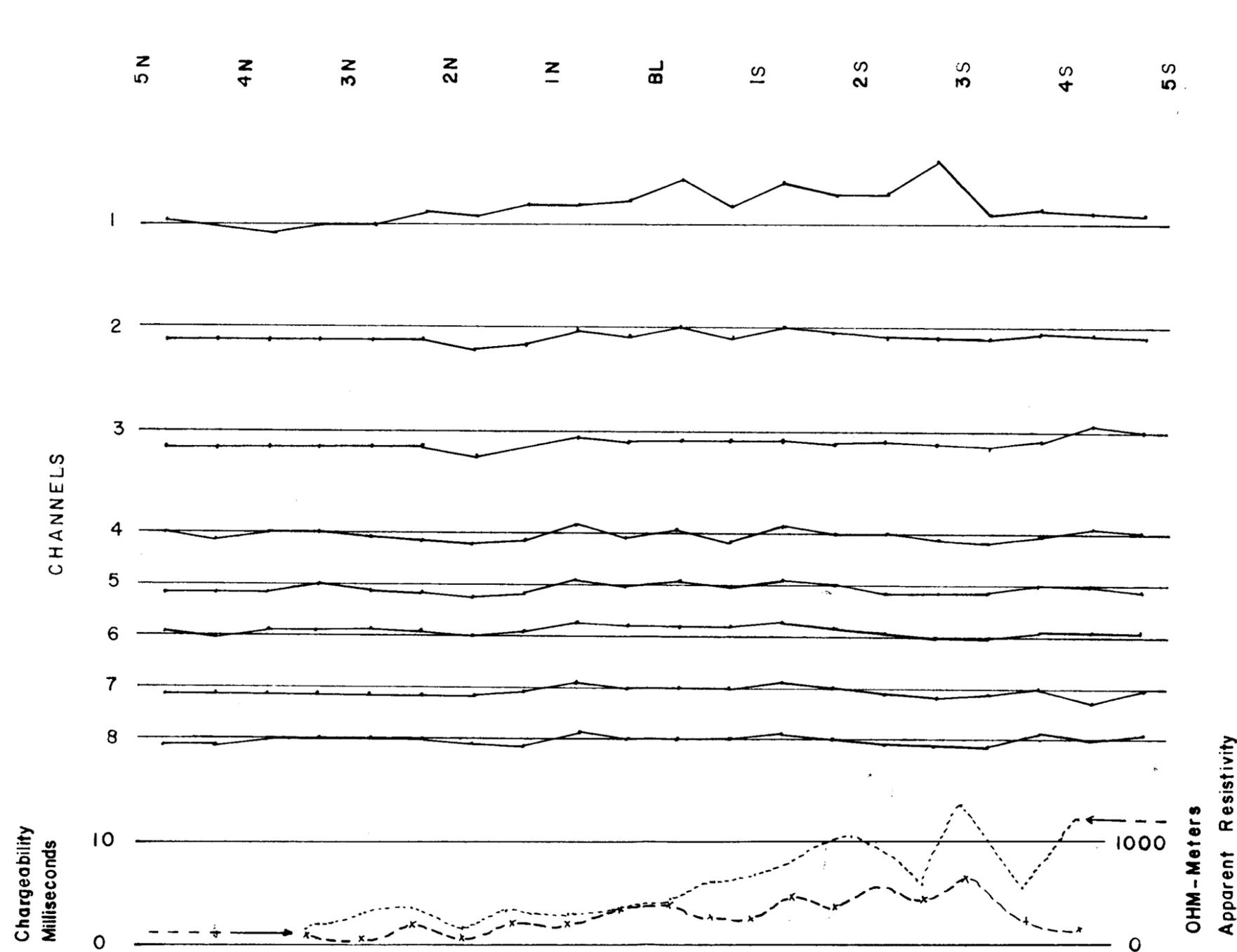
Pulse Electromagnetometer
 LINE 7W.

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FIG No: 7

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 Date March 21, 1970
 By GLEN E WHITE B.Sc. *Glen E. White* GEOPHYSICIST



SCALE P.P.K.
 — 60 —
 — 20 —
 — 0 —

Instrument: Crone P.E.M

Seperation 50 m

6384

1 cm = 50 m

MINERAL RESOURCES BRANCH
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 NO. **6384**

N.T.S. 93 F/2

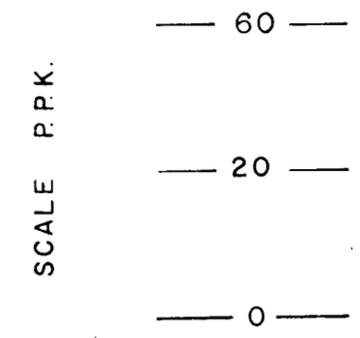
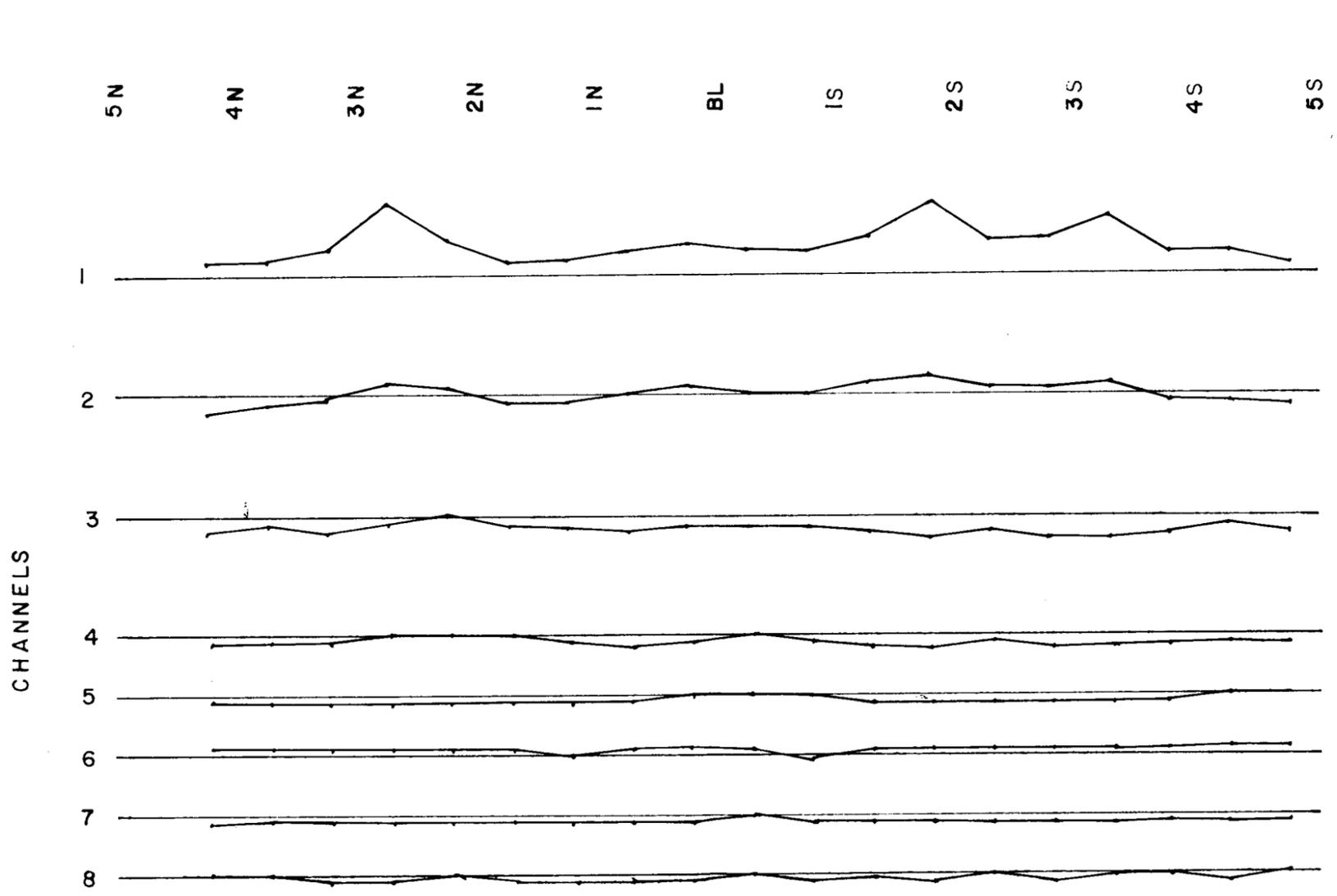
GRANGES EXPLORATION AB
 PROPERTY 6
 PEM CLAIM

Pulse Electromagnetometer
 LINE 8W

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 services ltd.

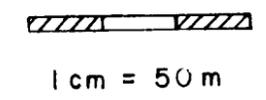
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 FIG No : 8

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 By GLEN E WHITE B.Sc. *G.E.W.* GEOPHYSICIST



Instrument: Crone P.E.M

Seperation 50 m



MINERAL RESOURCES BRANCH
ASSESSMENT REPORT
NO. 6384

N.T.S. 93 F/2

GRANGES EXPLORATION AB
PROPERTY 6
PEM CLAIM

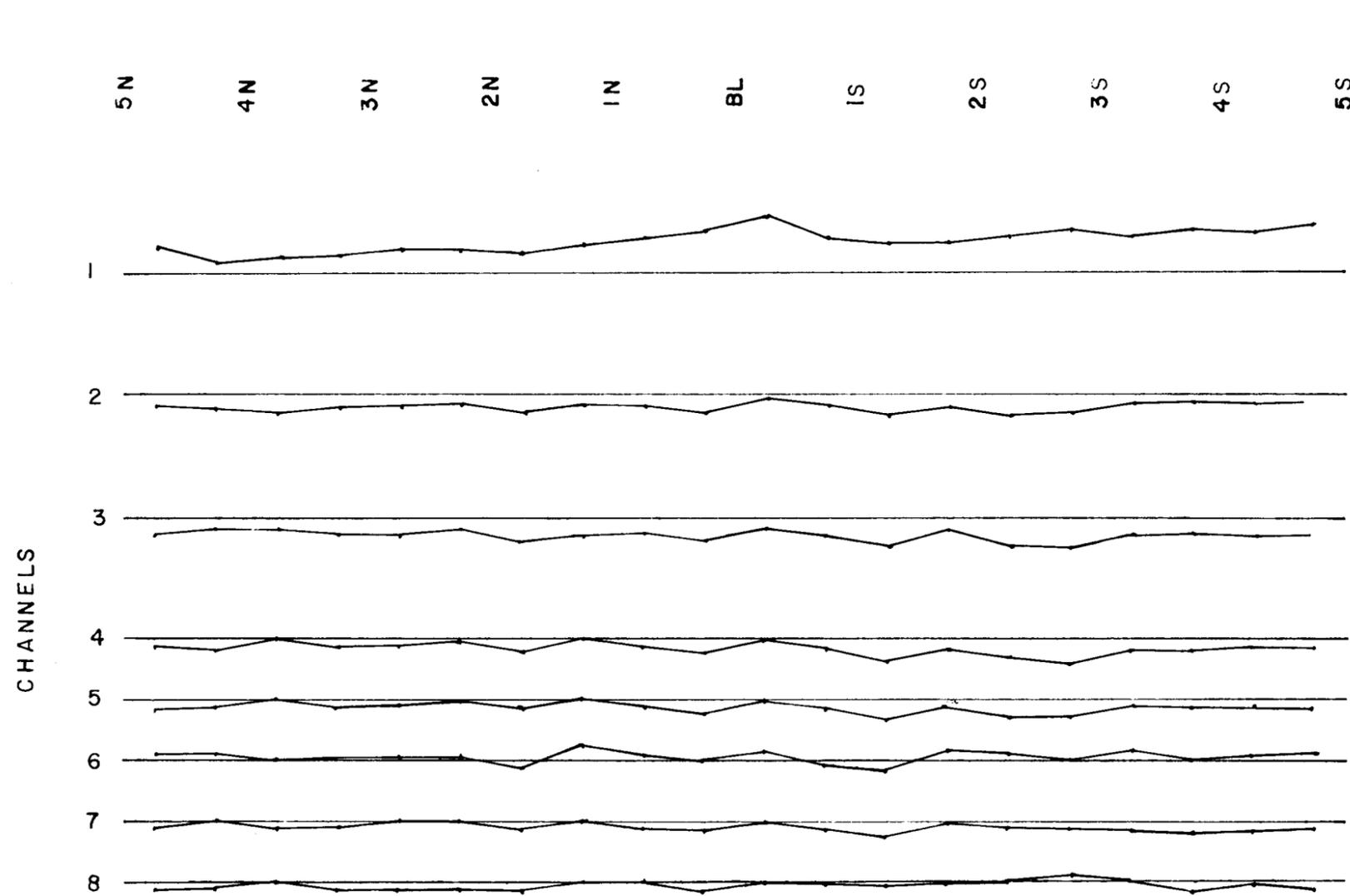
Pulse Electromagnetometer
LINE 9 W

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DATE:
FIG No: 9

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Date March 21, 1974
By GLEN E WHITE B.Sc. *G. White* GEOPHYSICIST



SCALE P.P.K.
 — 60 —
 — 20 —
 — 0 —

Instrument: Crone PEM

Seperation 50 m

1 cm = 50 m

MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
 NO. **6384**

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N.T.S. 93 F/2

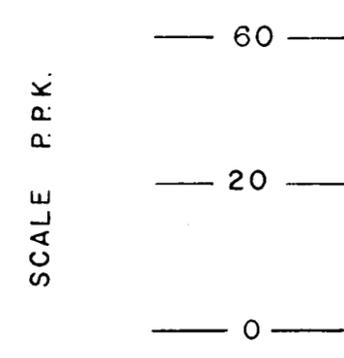
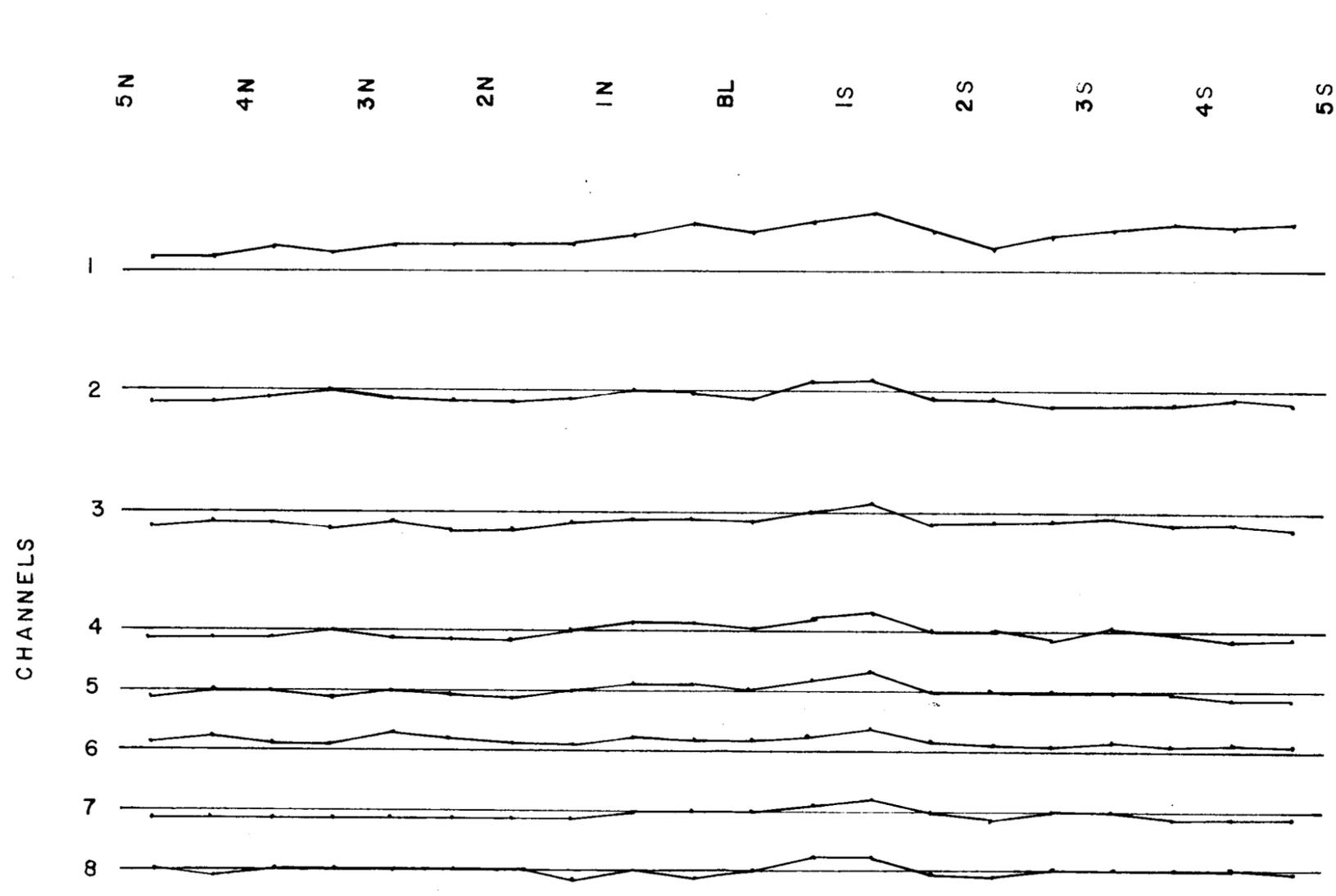
GRANGES EXPLORATION AB
 PROPERTY 6
 PEM CLAIM

Pulse Electromagnetometer
 LINE 10W

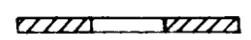
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FIG No: 10

To Accompany Geophysical Report on PEM CLAIM
 Date March 21, 1977
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Instrument: Crone PEM
 Separation 50 m


 1 cm = 50 m

MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
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GRANGES EXPLORATION AB
 PROPERTY 6
 PEM CLAIM

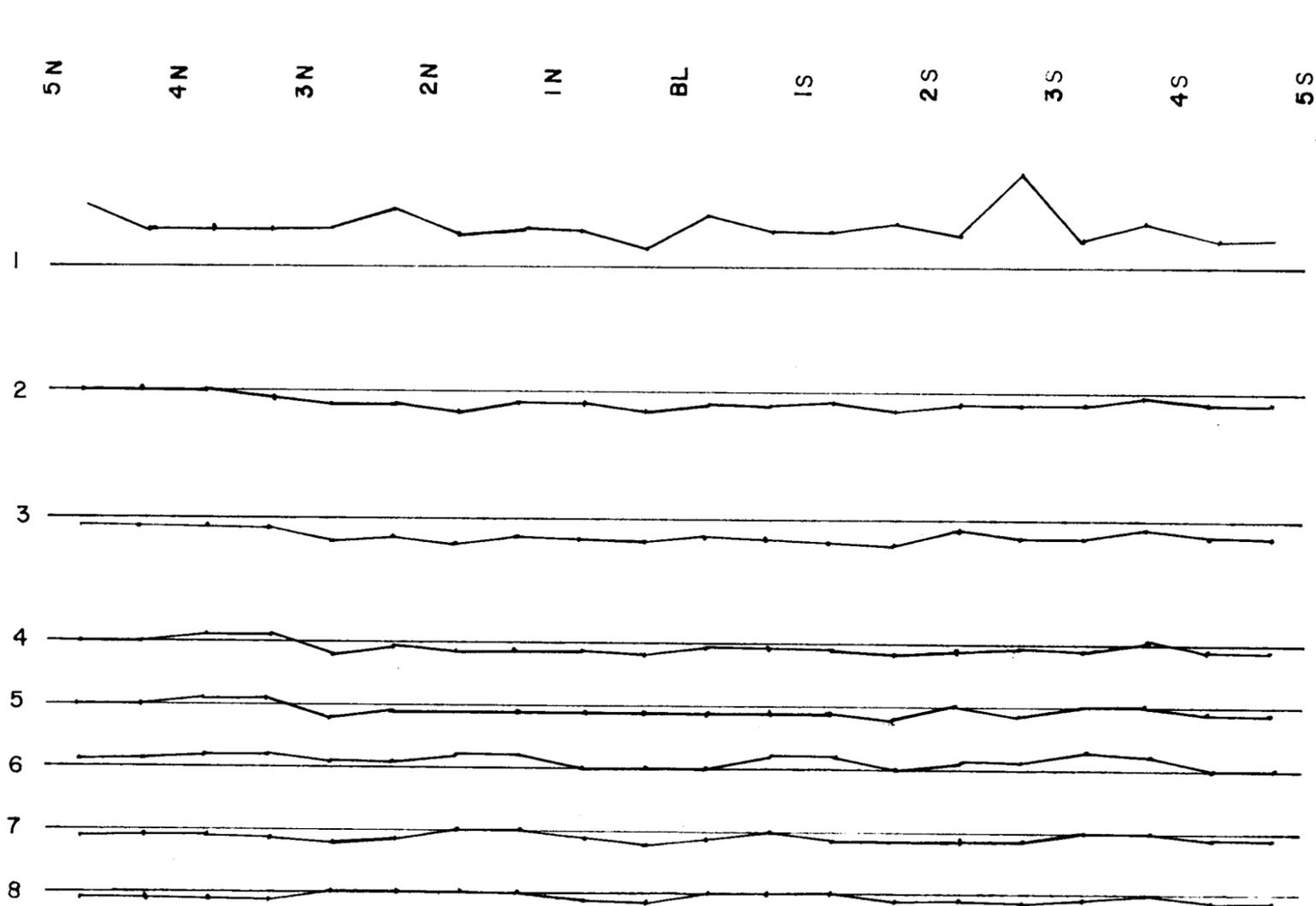
Pulse Electromagnetometer
 LINE 11W

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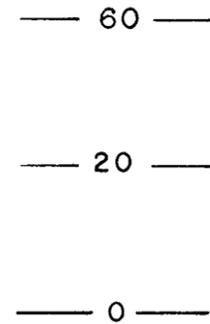
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FIG No: 11

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 Date March 21, 1977
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CHANNELS



SCALE P.P.K.



Instrument: Crone P.E.M

Seperation 50 m


1 cm = 50 m

MINERAL RESOURCES BRANCH
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N.T.S. 93 F/2

GRANGES EXPLORATION AB

PROPERTY 6
PEM CLAIM

Pulse Electromagnetometer

LINE 12W

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FIG No: 12

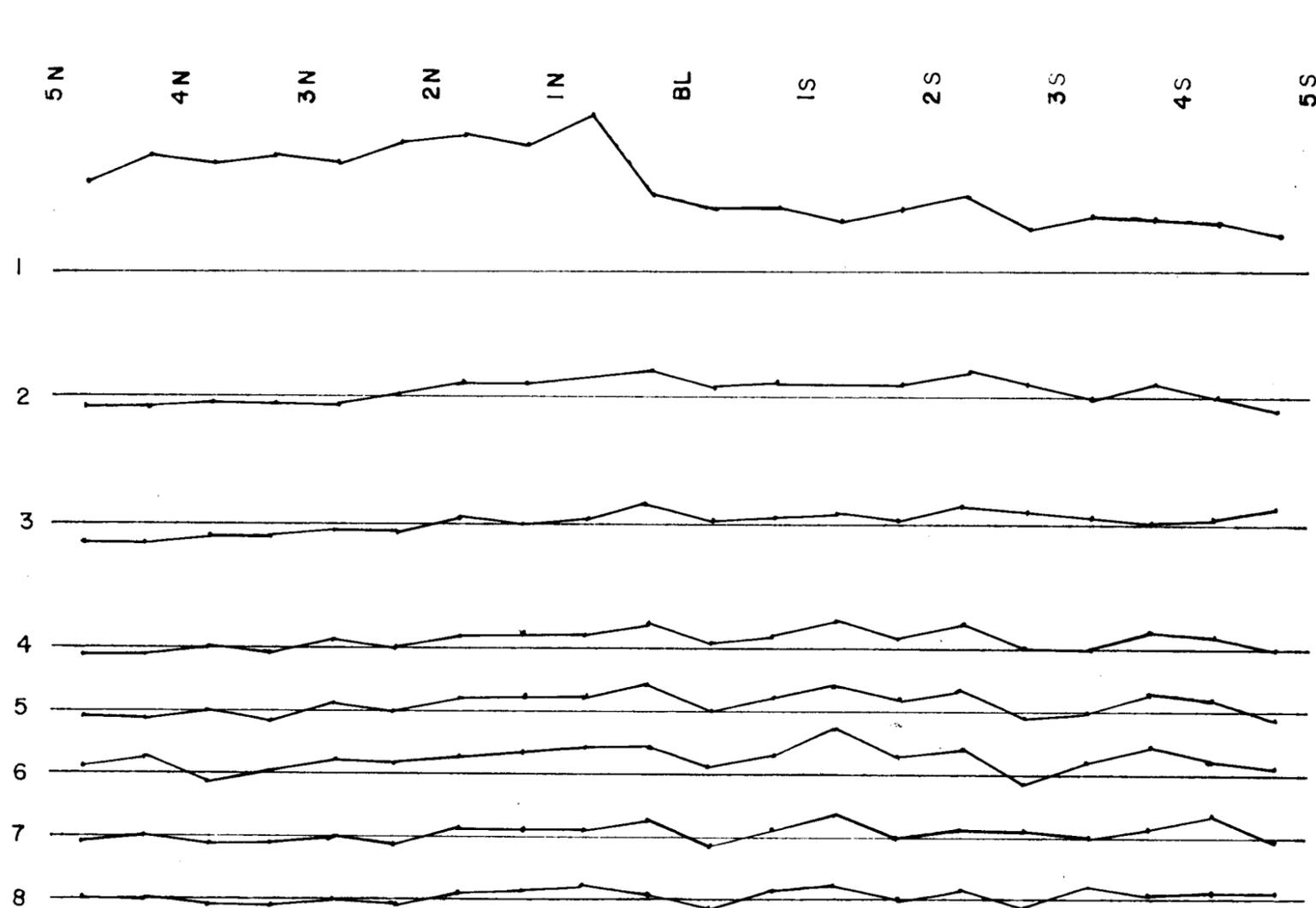
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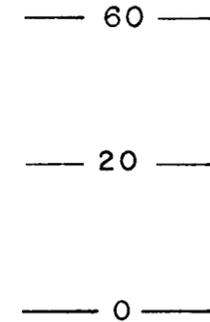
Date March 21, 1977

By GLEN E WHITE B.Sc. *G. White* GEOPHYSICIST

CHANNELS

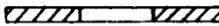


SCALE P.P.K.



Instrument: Crone P.E.M

Seperation 50 m


1 cm = 50 m

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

NO. **6384**

N.T.S. 93 F/2

GRANGES EXPLORATION AB

PROPERTY 6
PEM CLAIM

Pulse Electromagnetometer

LINE 13 W

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FIG No: 13

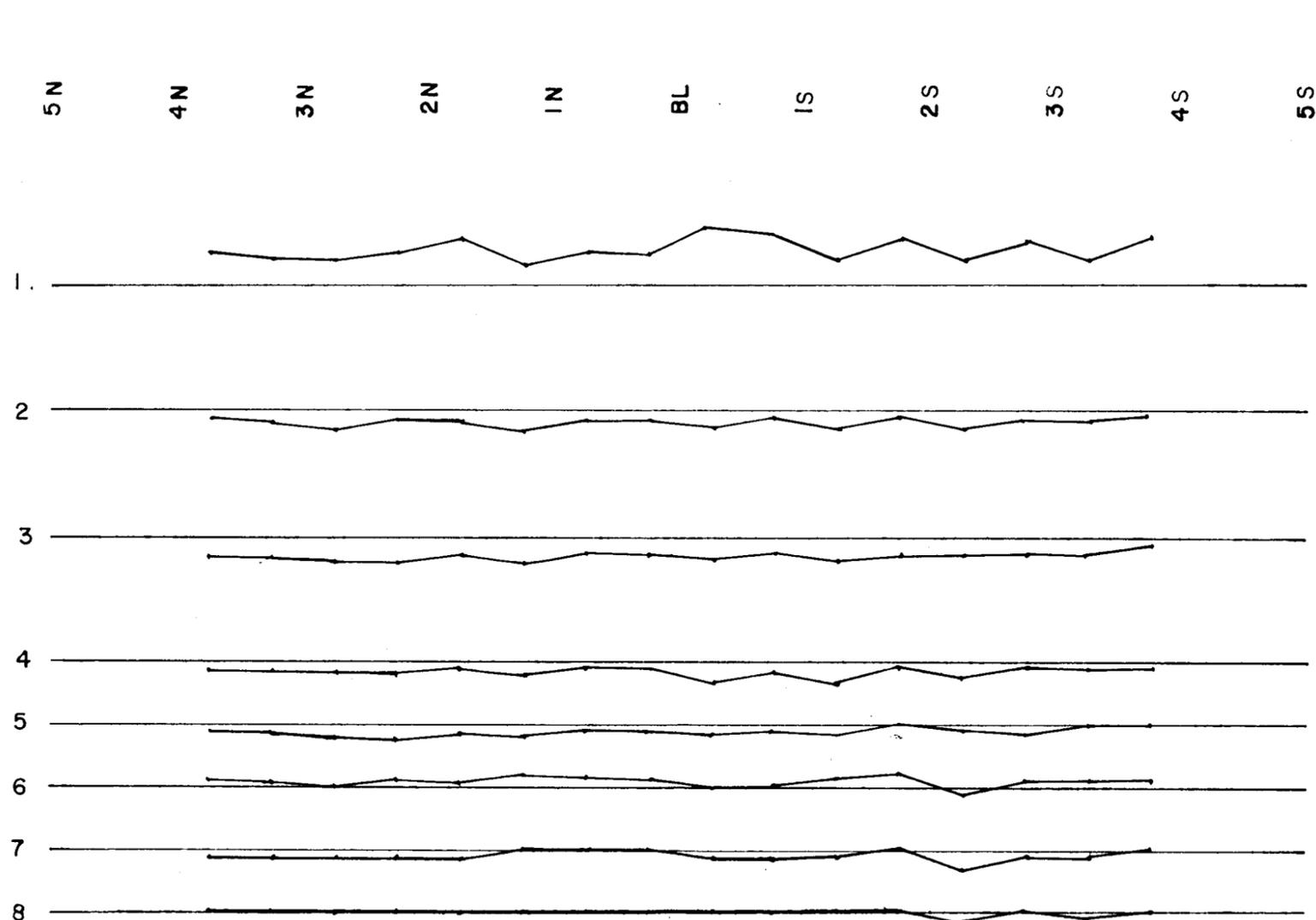
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To Accompany Geophysical Report on PEM CLAIM

Date March 21, 1977

By GLEN E WHITE B.Sc. *Glen E. White* GEOPHYSICIST

CHANNELS



SCALE P.P.K.
 — 60 —
 — 20 —
 — 0 —

Instrument: Crone P.E.M
 Separation 50 m

1 cm = 50 m

MINERAL RESOURCES BRANCH
 ASSESSMENT REPORT
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To Accompany Geophysical Report on PEM CLAIM
 Date March 21, 1977
 By GLEN E WHITE B.Sc. *Glen E. White* GEOPHYSICIST

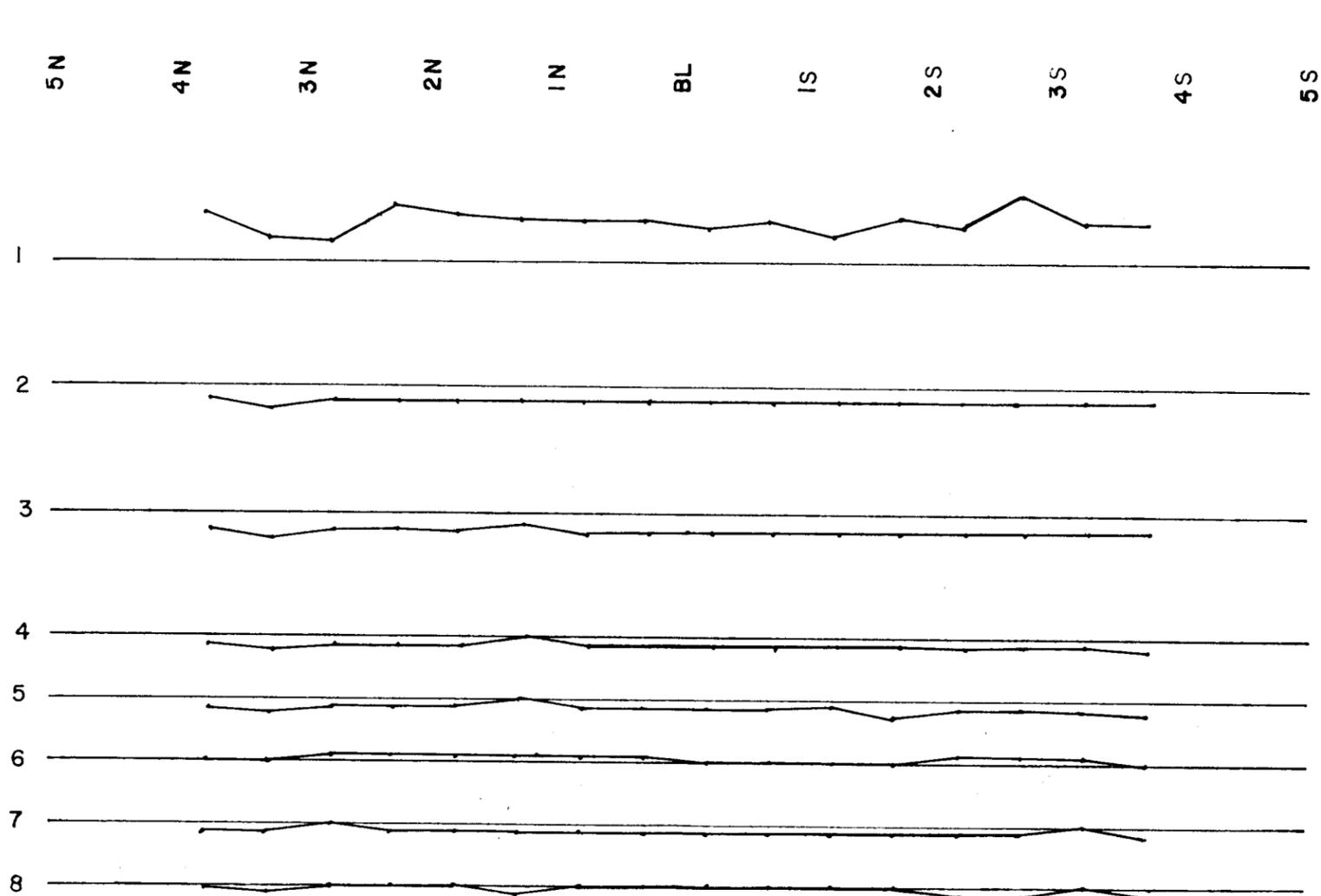
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GRANGES EXPLORATION AB
 PROPERTY 6
 PEM CLAIM

Pulse Electromagnetometer
 LINE 14W

<i>Glen E. White</i> geophysical consulting services Ltd.	INTERPRETED BY:
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	DATE:
	FIG No: 14

CHANNELS



Instrument: Crone PEM

Seperation 50 m


1 cm = 50 m

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

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N.T.S. 93 F/2

GRANGES EXPLORATION AB

PROPERTY 6
PEM CLAIM

Pulse Electromagnetometer

LINE 15W

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DATE:

FIG No: 15

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To Accompany Geophysical Report on PEM CLAIM

Date March 21, 1979

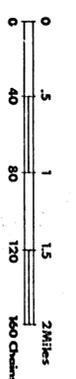
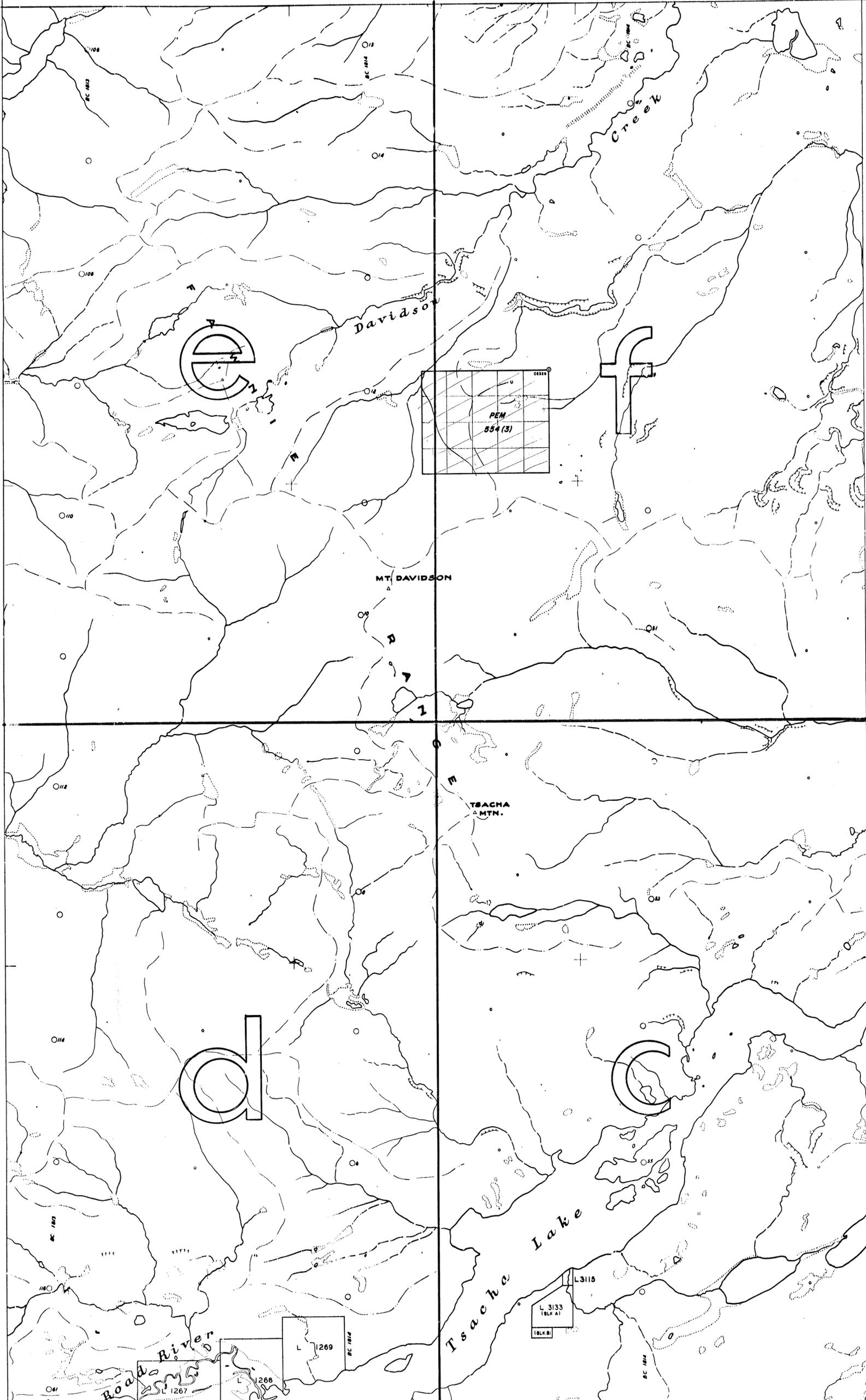
By GLEN E WHITE B.Sc. *[Signature]* GEOPHYSICIST

125 00' TO NORTH SEE MAP 93 F/7 W 124 45' 53 15'

M93F/2W

TO WEST SEE MAP 93 F/3 E

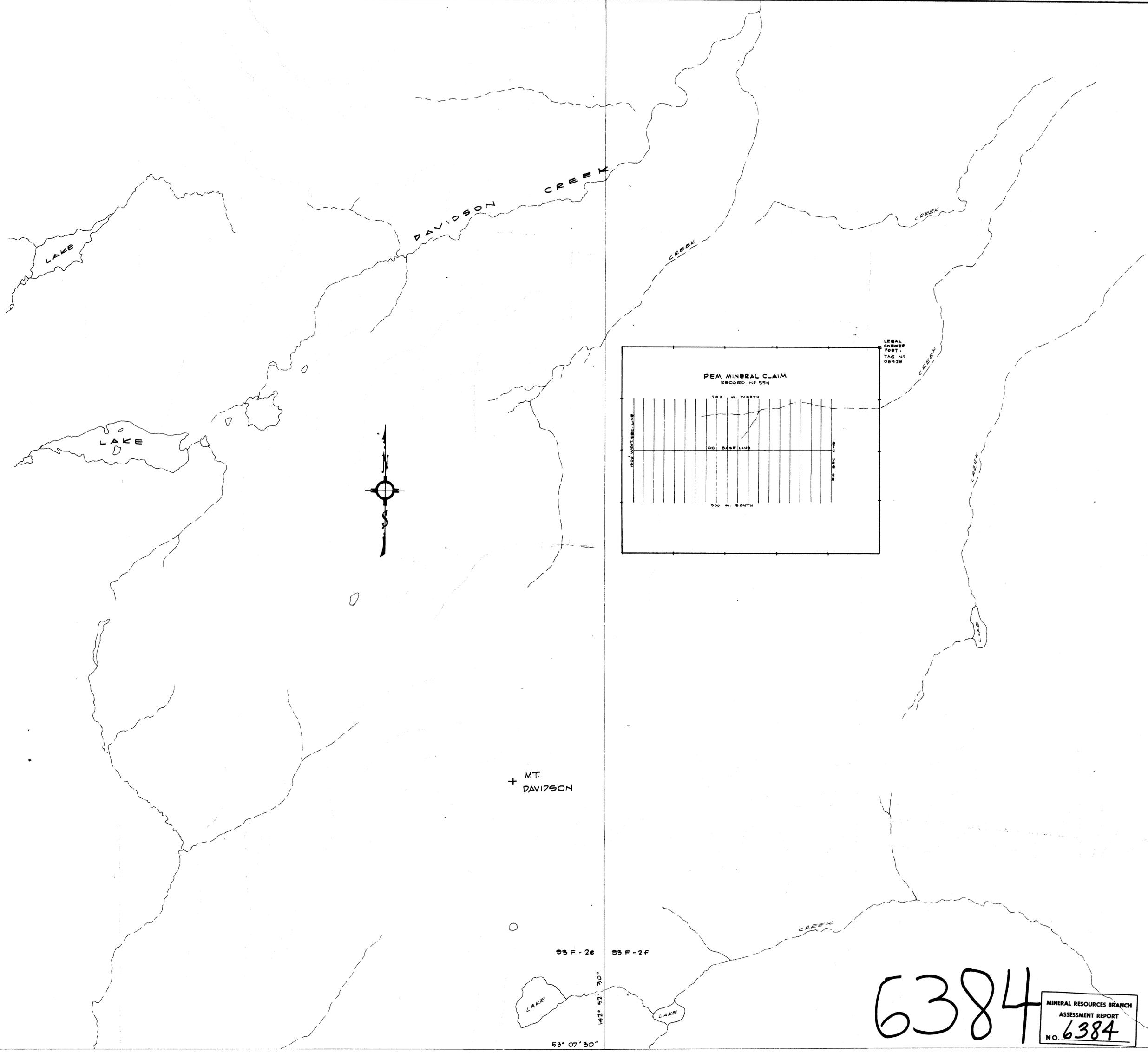
TO EAST SEE MAP 93 F/2 E



DATE OF MICROFILM
APR 28 71

M

OMINECA MINING DIVISION CARIBOO MINING DIVISION COAST LAND DISTRICT RANGE 4 COAST LAND DISTRICT RANGE 3 53 00'



DRAWN BY: M.P.
 SEPT, 1977

GRANGES EXPLORATION AB.
 CANADIAN DIVISION.
 VANCOUVER OFFICE

GRID LOCATION PLAN
 PEM MINERAL CLAIM
 (RECORD NO. 554)
 MOUNT DAVIDSON AREA, B.C.

SCALE: 1 INCH = 1/4 MILE
 PROJECT NO. 70110
 N.T.S. NO. 93 F - 2F