

919

GEOPHYSICAL REPORT

ELECTROMAGNETIC SURVEY AIR SUPPORT
PR, SQ, JOKER CREEK & GOAT GROUPS
SMITHERS, B.C.

for

NORCAN MINES (NPL)
VANCOUVER, B.C.

by

GEO CAL LIMITED
WEST VANCOUVER, B.C.

August 3 to August 19, 1966

Geophysicist:

C. B. Selmsler, P. Eng.

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| # 25 | " | " | Line 5S 6S | " " |
| # 26 | " | " | Line 7S 8S | " " |
| # 27 | " | " | Line 9S 10S 11S | " " " |
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GEOPHYSICAL REPORT
PR, SQ, JOKER, CREEK & GOAT GROUPS
SMITHERS, B. C.

INTRODUCTION:

The area over which this air support electromagnetic survey was flown is as shown on the Location Map, Figure 5. It is some 24 miles southwest of Smithers, B. C. at the headwaters of Howson Creek.

There is no direct access to the property by road. The nearest road being about 9 miles distant in the valley of the Talkwa River. Movement into the area from Smithers was made by helicopter, and the crew was based at a tent camp above Moosakin Johnny Lake.

This report covers, besides the preliminary airborne EM survey of the Howson Creek Basin, several detailed surveys. These include an induced polarization survey made by Sulmac Exploration Ltd., at Santa Maria and War Eagle properties, as well as ground EM and SP surveys carried out by Geo Cel Limited.

These surveys have all been interpreted by the author in order to outline possible drill sites and areas for bulldozing to bedrock. The interpretation made of geophysical data will further be coordinated by any geological determinations made by survey of outcrops, drill core, or exposed by bulldozing. A geochemical survey being conducted by Norcan Mines (NPL) is also to be coordinated with other data including any geological or geophysical interpretation.

CLAIM GROUPS:

These are outlined on the Claim Map, Figure 2. At the time of the survey 232 claims had been recorded in this area. They occupy an area west of Moosakin Johnny Lake, south of Scallon Creek, and northeast of Starr Creek.

These groups cover the area occupied by both Santa Maria and War Eagle properties, which date back to 1916. Underground workings exist at Santa Maria property, where the base camp was located and trenching had been carried out on the War Eagle property.

In addition to the ground geophysical work carried out on Santa Maria and War Eagle locations anomalies were found by the airborne EM receiver at locations in the south and west sectors of the claim groups. Also several anomalies indicated conductors north of the claim groups at higher elevation and in somewhat less accessible situations.

WORK SUMMARY:

This survey was organized and mobilized on August 1, 1966 at Smithers, B. C. Due to adverse weather the airborne survey was not launched until August 3. This entailed about 4 to 5 days survey time with one operator. At this time the Sulmac crew had finished work at Santa Maria property and were working at the War Eagle location.

After completion of the Airborne EM survey, the operator with one helper did the ground electromagnetic and self potential survey work. The author was present during the start of the Airborne EM survey and inspected the Sulmac IP survey. He also returned to direct the ground support geophysical work and to coordinate all 3 types of surveys being carried out on the property. All survey work was completed on August 19 and the personnel returned to Vancouver on August 20.

Living accommodation was provided for at the main camp, while the survey was taking place. Mobilization was afforded by public carrier plane to Smithers and by private aircraft to the area.

A Hiller 12E helicopter was used as transport for the Airborne EM survey. The theory and method of this survey will be found included with this report. The helicopter was piloted and rented from Okanagan Airways Ltd., of Smithers, B. C.

GENERAL GEOLOGY AND PHYSIOGRAPHY:

The area surveyed was mountainous with alpine erosional features, such as cirques and tarn lakes very evident. Santa Maria property is in a creek bed at 4000 feet elevation, while War Eagle is mostly on a plateau at 5000 feet. The eastern portion of the War Eagle survey was partly on steep sloping terrain.

Outcrops are more prominent at War Eagle property and some trenching has penetrated the till on the plateau surface. Outcrops are almost non-existent on the Santa Maria property with only the underground workings revealing any significant geology.

The immediate area is underlain by andesitic or rhyolitic flows, tuffs and breccias. These are in close relationship with the Hazelton group, which is Cretaceous and Jurassic in age.

Some intrusive rocks are found west of this area and in all probability some satellitic bodies from this mass may occur in the immediate area. These are upper Cretaceous or later in age and consist of granites and diorites.

Shearing is evident at War Eagle property and strikes northwest to southeast and dips 60 degrees toward the southwest. This alignment may also exist at the Santa Maria property as well.

Mineralization observed in trenches and at workings was associated with bedding or sheeted structures in a quartz porphyry with much silification.

ion and carbonitization. Calcopyrite was the main mineral with secondary enrichment providing malachite and azurite in significant green and blue colorations.

ELECTROMAGNETIC SURVEY:

This survey was carried out on the ground using a Sharp 250 Electromagnetic instrument. On the War Eagle property the transmitter and receiver were moved together up parallel lines with 200 foot separation. Readings were taken at stations 100 feet apart.

At the Santa Maria property the transmitter and receiver were in line with a separation of 200 feet. Stations were read at 100 foot intervals.

The Sharp instruments employ an audio frequency signal of 1000 cycles per second. This signal is amplified by the transmitter and receiver so that the two coils may be held up to 1000 feet apart without too much attenuation of the signal strength. Power is generated by storage batteries and both coils may be employed independently.

The electromagnetic field of the transmitting coil couples with any conductors within the field area producing secondary fields. These fields interacting with the primary field give a new orientation. This is measured by the null method on the receiver coil in degrees of dip off the horizontal direction. These angular dips are read as right and left directions. Points where the direction changes from left to right are cited as cross-over positions.

SELF POTENTIAL SURVEY:

This survey uses a sensitive current meter with a multiplier resistant circuit. The multiplier enables the meter to be read for larger potentials. It in effect adds 10,000 ohm resistance to the circuit enabling the meter to read higher current values. In order to promote sensitivity a reverse switch is also employed to give a difference of current reading from reverse swings of the needle on the micro-ammeter.

The resistance of the circuit in each case is read on an ohmmeter. Knowing the resistance of the ground circuit and the amount of current the potential is calculated in millivolts. In each case any reversal in polarity is observed and noted.

Since a sulphide body has a difference of electrical potential from a point within the ground water table and a point below the ground water table, a current will be generated about these areas. This gives a polarity reversal on lines crossing the sulphide body. Where this reversal entails enough potential (about 100 millivolts or more) the presence of a sulphide body can be detected; that is provided it is not buried too deeply by overburden.

AIR SUPPORT SURVEY:

The map showing the Howson Creek Basin, Figure 1, gives the location of the anomaly conductors found with the Airborne EM survey. Lines were flown over this in a contour pattern with the rotor of the helicopter furnishing the primary field. The aircraft was flown at a height of 100 feet above the terrain and over lines about 200 feet apart.

When a conductor was passed over the normal harmonics heard in the receiver are displaced by a clear signal with a distinctive tone. Wherever this occurred the spot was noted by the operator. These are marked on the

map by a cross check mark and the anomalies are numbered consecutively. In addition to a broad effect over the Santa Maria location, some 25 of these anomalous locations were observed.

The conductive lineaments drawn from inference and ground support show an almost universal strike direction, which is NNW by SSE. This maybe a regional structural alignment.

INDUCED POLARIZATION SURVEY:

The notes furnished by Sulmac's operator have been used to plot a series of sections, Figures 6 to 29. These show the apparent chargeability curves in solid lines. The unit vertical scale is 1 inch equals 1 milli-second in most cases. They also show the apparent resistivity curves in dashed lines. The vertical unit scale is 200 ohmeters to the inch for the apparent resistivity curves.

The electromagnetic values have also been plotted on the same sections as the induced polarization values. The vertical unit scale is 20 degrees to the inch for the EM curves.

This survey was made without any difficulty as regards the Santa Maria location. At the War Eagle location, however, the ground circuit resistance was very high. This was overcome by moving the far electrodes nearer to the survey position.

The sections as plotted were used for interpretation and inspection for survey miscalculations. They were also replotted for chargeability on the area maps. These provide correlation sequence and a comparison with both the self potential survey and the electromagnetic survey.

SANTA MARIA LOCATION:

This map, Figure 3, shows all of the geophysical support surveys on one map. The chargeability values are contoured and each heavy contour line equals 1 millisecond.

The EM values are plotted in profile and duplicate those on the IP sections. The SP values are plotted along the survey lines with an "R" denoting a reversed reading while "N" denotes a normal reading. An arrow check denotes an EM cross-over. These are correlated with a dotted line. The contoured IP values on the other hand are correlated with dashed lines.

The most significant anomaly is the IP anomaly between L4S and L5S. This builds up to 5 milliseconds of chargeability. The apparent resistivity, however, is not appreciably lowered. This position also coincided with the largest EM anomaly and has several low SP reversed readings.

Two series of smaller anomalies have been projected. One traverses the large IP anomaly and the other is near the west border of the map. A crossing trend may also be projected through the shaft mineralized zone.

WAR EAGLE LOCATION:

This area is much more complicated structurally than the Santa Maria location. It also has much more intense anomalies with greater prospect of mineralization.

The most significant anomaly is that in the east part of the area, which contains an IP anomaly of 30.0 milliseconds. This zone, which is known to be highly mineralized has high EM anomalies as well as high SP reversals. This would indicate both shallow and deep mineralization.

The other prominent IP anomaly lies along the cirque wall on the north side of the map area. It has anomalies above 5 milliseconds, but does not show significant EM values. This would indicate shallow mineralization that does not continue to any great depth.

The lineaments for the structural sequence show that the bedrocks are broken up into a blocky pattern. This might indicate tension as the essential structural ingredient at this location.

CONCLUSIONS AND RECOMMENDATIONS:

It is recommended that the following anomalies be examined thoroughly by diamond drilling:

| <u>Area</u> | <u>Location</u> | <u>Remarks</u> |
|-------------|-----------------|--|
| Santa Maria | 4E-4S | Enough holes be drilled to adequately determine geological structure and mineralization. |
| Santa Maria | 1E-7S | |
| War Eagle | BL-22E | |
| War Eagle | IN-20E | |

It is also recommended that all other anomalies and conductive lineaments be followed up with bulldozing and geological mapping. In this respect a clearer picture may be built up of both the structural and mineralogical aspect of these areas.

Respectfully submitted,

Geo Cal Limited

C. B. Selmsier

C. B. Selmsier, P. Eng.
Chief Geophysicist.

CERTIFICATE OF QUALIFICATIONS

The formal education of the author consists of undergraduate studies at Union College, Schenectady, N. Y., in engineering and science, with a degree conferred as B. Sc. Graduate study was taken at McGill University and at the University of Toronto in mining geology and geophysics with a degree conferred as M. Sc. He is qualified both in engineering geology and geophysics as a professional engineer.

The author has had some twenty years' experience in the fields of geology and geophysics doing exploration work throughout Canada. He has also worked for a short period of time in the Transvaal region of South Africa.

The author has been a member of the Association of Professional Engineers of Ontario, Alberta and British Columbia for the past 14 years. He is at present an active member of the Association of Professional Engineers of British Columbia with certificate number 4683.

His knowledge of the property outlined in this report has been gained from the surveys. Reference has also been made to government reports and pertinent texts.

The author has no financial interest in this property other than the survey work, and is acting wholly as a consultant to the interested principal. Any remuneration received has been for expenses incurred during the survey and for his professional services.

C. B. Selmsor, P. Eng.

C. B. Selmsor

PRIMARY FIELD FROM ROTOR BLADES
OF A 47G-38-1 BELL HELICOPTER

INTRODUCTION:

The author while making installation tests on a 47G-38-1 Bell helicopter discovered an interesting primary field developed by the rotors on this aircraft. It was found that this field is adequate for searching near the surface of the ground with an operator using an electromagnetic search coil.

This primary field has an effective size to reach at least 150 feet below the elevation of the search coil. It also has an approximate frequency of 100 cycles per second, which provides maximum penetration into overburden and rock material to a depth of about 100 feet.

Search is made in mountain country by flying lines along contour levels and on more level terrain with a parallel configuration. With the aircraft at a 50 to 75 foot elevation above the terrain the path covered is about 100 feet wide.

PRACTICAL THEORY:

A careful examination of figures 1 and 2 will show that because of the shape of the rotor blades on the aircraft, two distinctive fields are generated when the rotor is turning. These fields are generated from eddy currents in the rotors as they turn rapidly across the earth's magnetic field, which in northern latitudes is nearly vertical to the earth's surface.

An elementary study of physics tells us that a conductor cutting across a magnetic field will generate electric current. If this current is not drawn off then eddy currents will form and a secondary field which has a frequency depending on the speed of the rotors will be developed.

Since the two blades are turning and will reach opposite sides of the shaft, the currents and thus the field will be changing direction with every revolution of a blade. The blades rotate at a speed of 320 R.P.M. and since there are two blades the primary rotor field has a frequency of approximately 100 cycles per second.

The blades which are made of aluminum alloy are long and thin. This shape promotes a rotor field, which is normal to the flat surface of the blade. As the blade turns, the field which is effectively about 150 feet in radius, forms a conical shape. A second field is built up transverse to the rotor field. This field as it turns with the blades forms a sphere shaped configuration.

When the rotor field comes in contact with a tabular ore body it sets up a secondary field from the conducting ore body. This field then joins the transverse field to give a resultant field direction that is quite different from the original and now no longer perpendicular to the axis of the search coil.

THE DETECTOR COIL:

The operator sits in the seat beside the pilot and holds a search coil with its axis vertical. Attached to the tuned coil is an audio amplifier. This is in turn attached to a pair of head phones, which the operator wears over his ears.

The audio amplifier, which is tuned to a signal of 100 C.P.S. has a gain

switch and a feed back squelcher switch. The gain switch is regulated so that the signal is just audible when the coil is held with its axis vertical. The squelcher circuit is adjusted so that only the 100 C.P.S. signal goes through the amplifier.

When the aircraft is flown close to the surface of the ground without a conductor present the field signal will have minimum amplitude. When a conductor is present in the rotor field the signal strength will suddenly increase in amplitude warning the operator that he is crossing a conductor. The aircraft then hovers over the spot until the observer has investigated the change in orientation.

TESTS MADE IN THE FIELD:

- (1) Tests were made for extraneous fields inside and outside of the aircraft.
- (2) Tests were made of the rotor and transverse fields inside and outside the bubble.
- (3) The aircraft was flown at various elevations over the observer so that he could measure the amplitude of the rotor field at the various levels.
- (4) A known external field was mounted below the rotor using a motor generator set for power. Tests were made both on the ground and in the aircraft, and while the aircraft was airborne. This enabled the author to study the relative strength of the magnetic field.
- (5) Tests flown over Keno Hill ore bodies gave positive verification with orientation changes of 10 degrees.

CONCLUSION:

The primary field generated by the 47C-38-1 Bell aircraft may be used for reconnaissance electromagnetic surveys. The search is not as deep as some ground methods, but is deep enough for bodies exposed in outcrops or under light overburden. The method is as effective for finding conductors as the self potential method, but with greater speed and mobility.

It is obvious that since the method can be used in an aircraft such as this it is very adaptable to surveys over all kinds of terrain. The survey requires no line cutting and coverage may be done rapidly and with as much detail as required.

COST RELATIVE TO GROUND METHODS:

The survey which is continuous in nature may be flown at a cost of \$12.50 per mile. Surveys on the ground could cost as much as \$100.00 per mile in very rough and inaccessible locations.

The cost of the aircraft, which in most cases amounts to \$3.00 per mile is much less than that for line cutting. Line cutting and marking costs usually \$40.00 per mile.

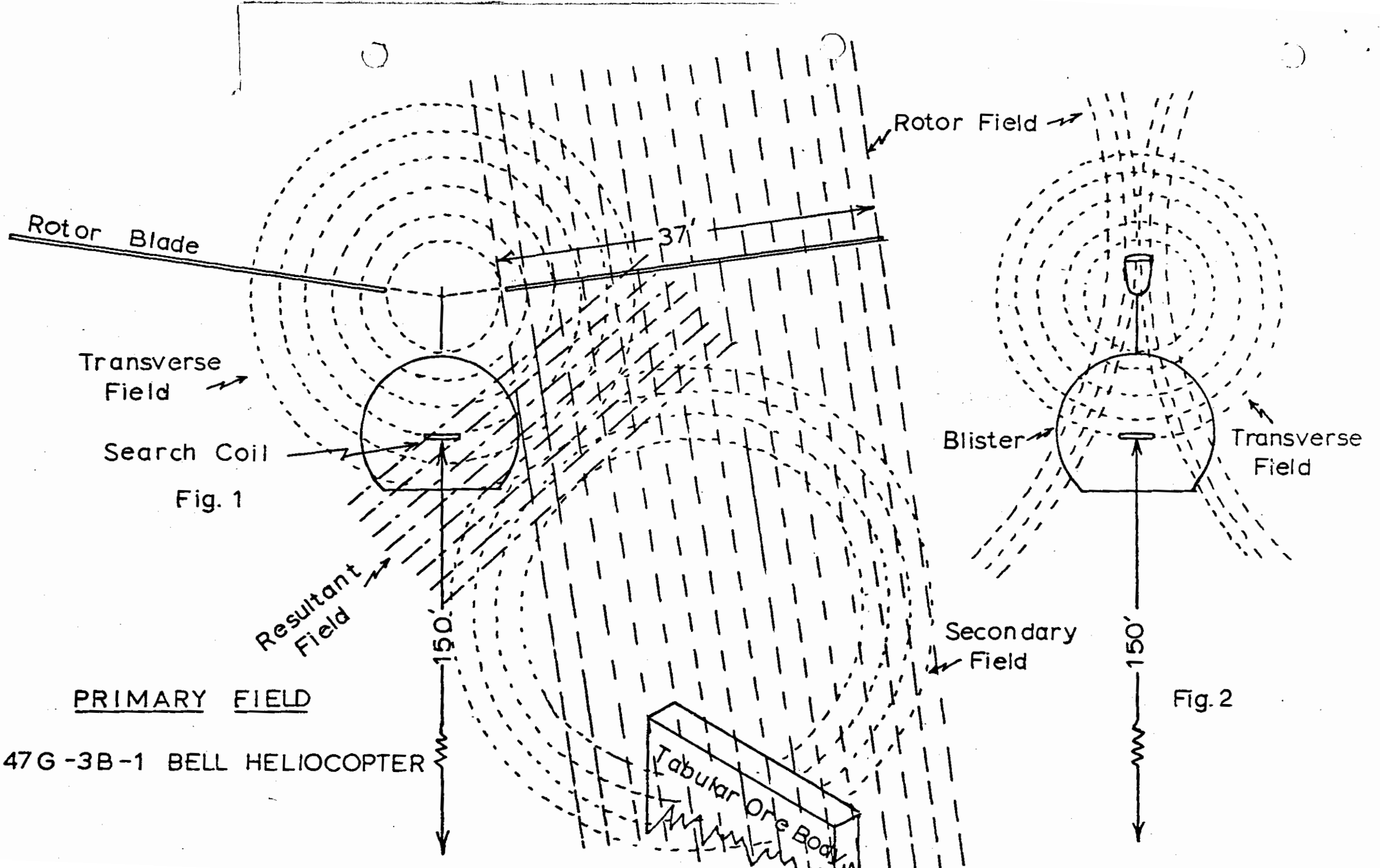
The total cost of the survey then is \$15.50 per mile. This means that the claim is totally covered with continuous reading on lines 100 feet apart. The equivalent cost on the ground would be \$250.00 with readings 100 feet apart and lines having a 200 foot separation.

Respectfully submitted,

GEO CAL LIMITED

C. B. Selmsar

C. B. Selmsar, P. Eng.

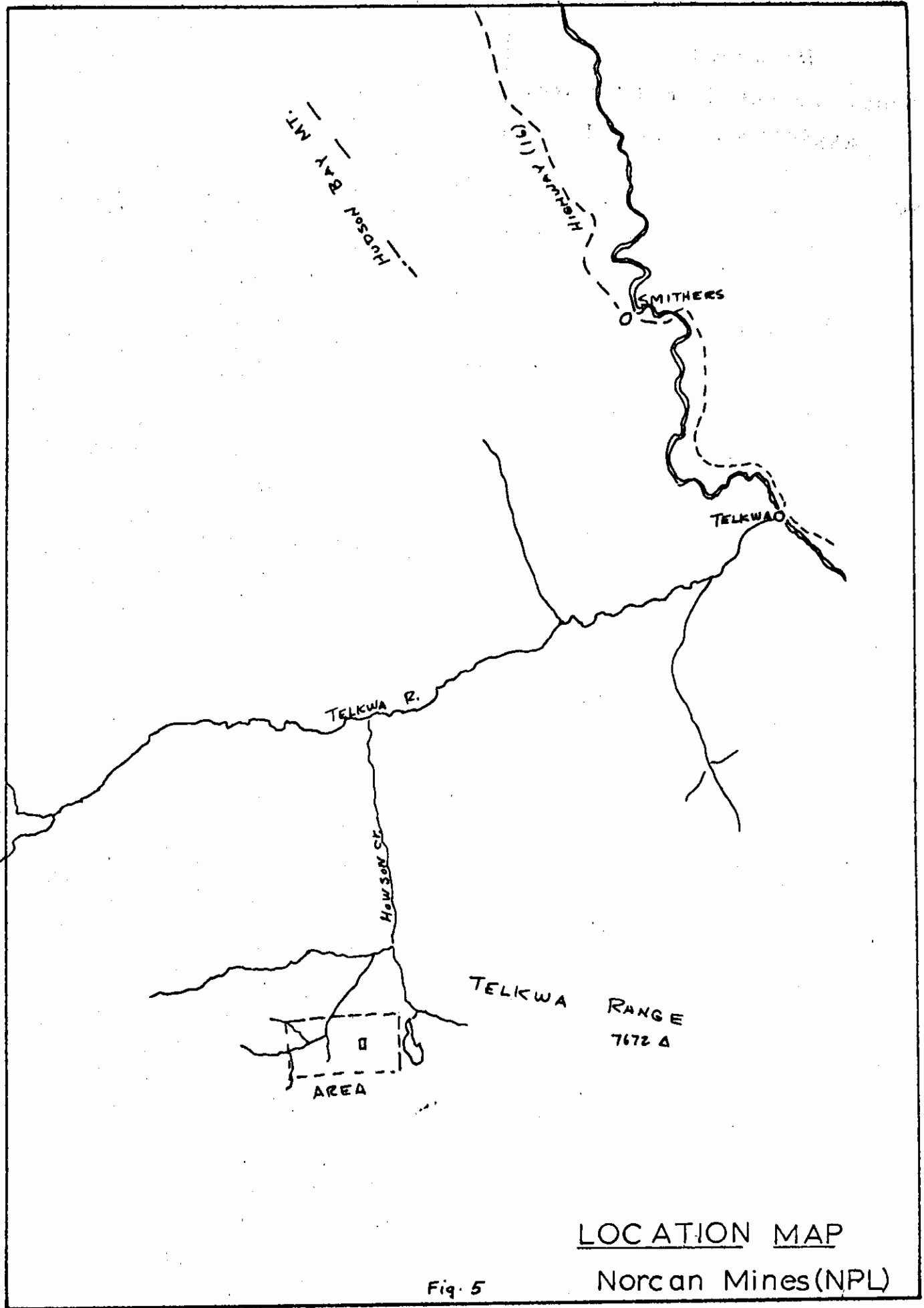


47G-3B-1 BELL HELICOPTER

PRIMARY FIELD

Fig. 2

Fig. 1

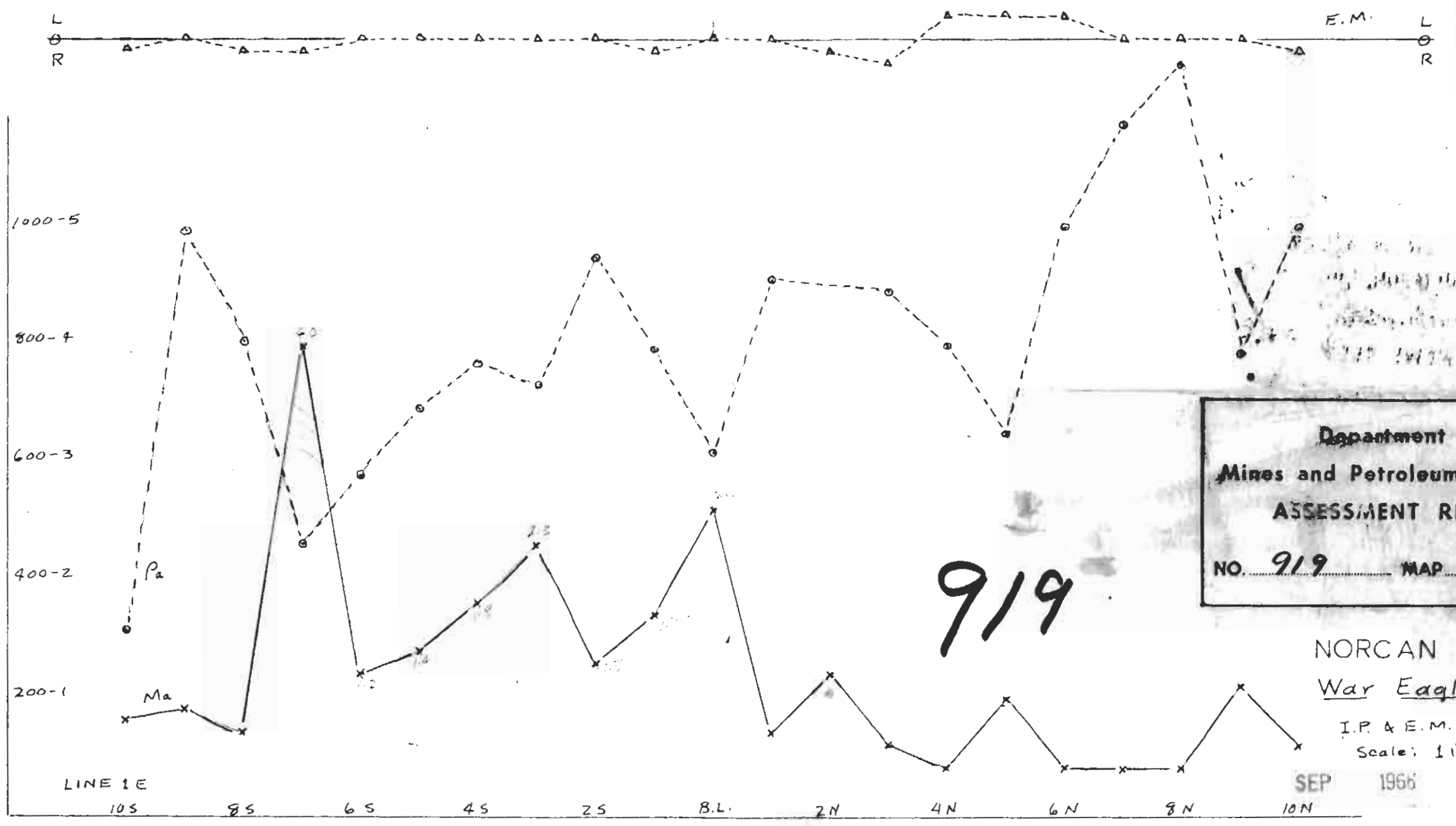


LOCATION MAP
Norcan Mines(NPL)

Fig. 5

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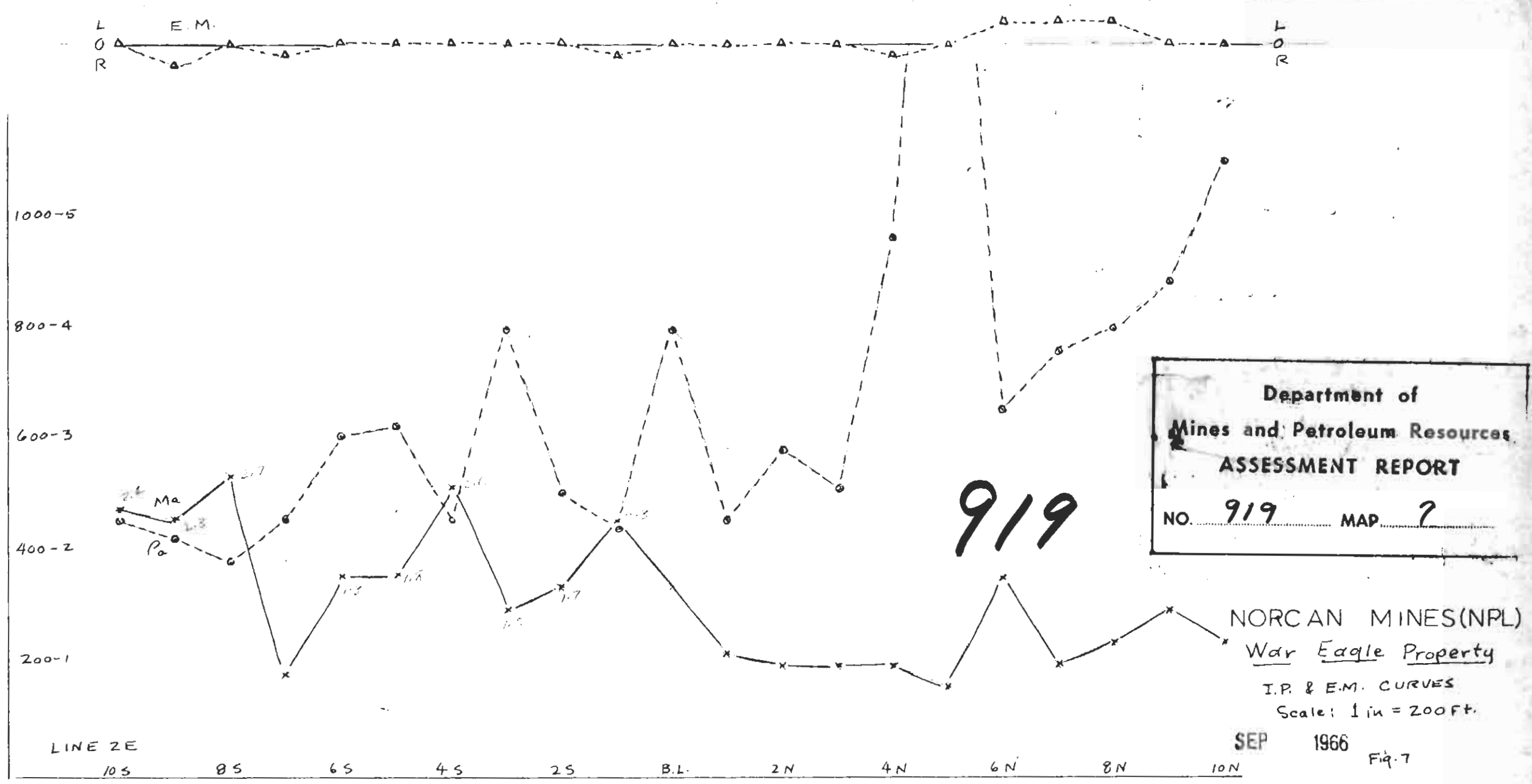
Department of
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 ASSESSMENT REPORT
 NO. 919 MAP 6

NORCAN MINES(NPL)
 War Eagle Property
 I.P. & E.M. CURVES
 Scale: 1 in. = 200 ft.

SEP 1966 Fig. 6

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NORCAN MINES (NPL)
War Eagle Property
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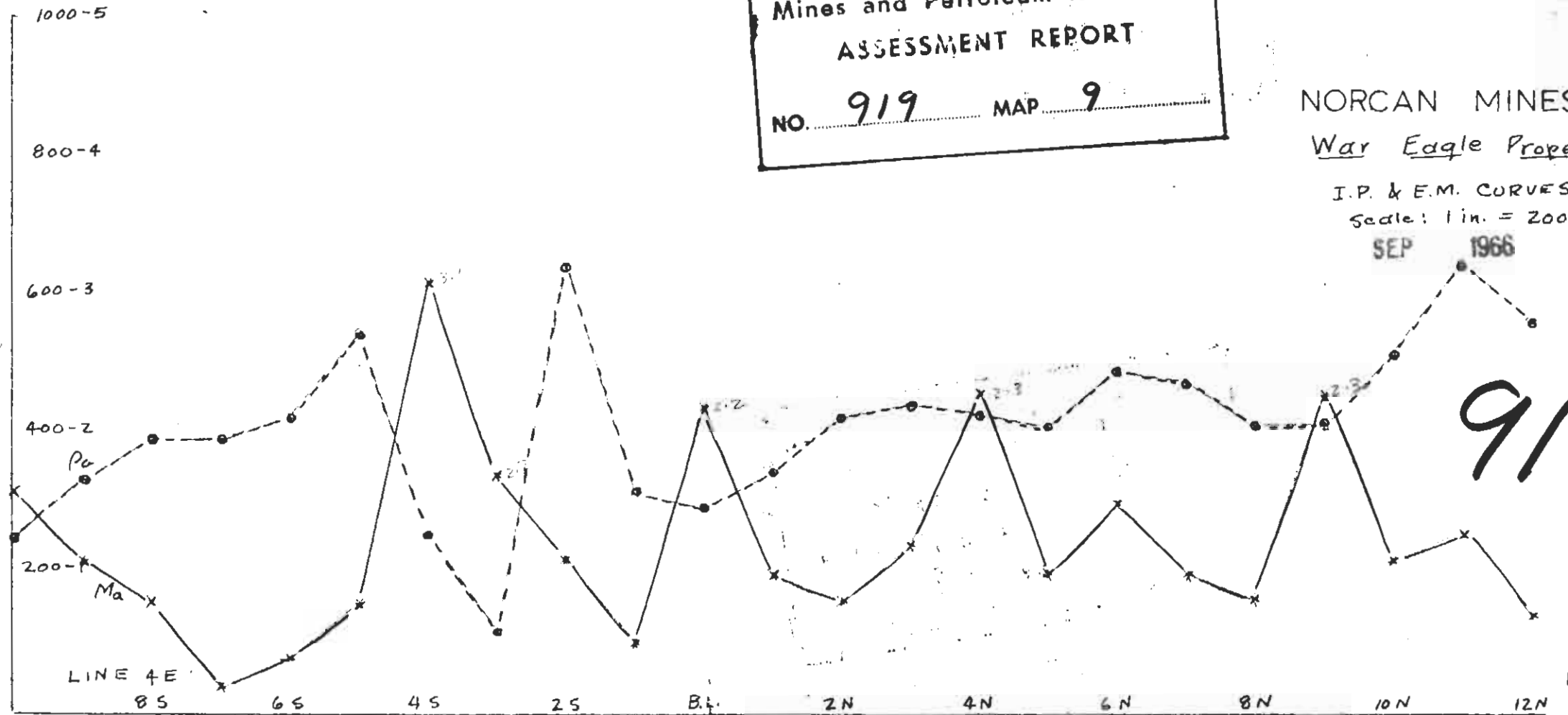


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NORCAN MINES(NPL)
War Eagle Property

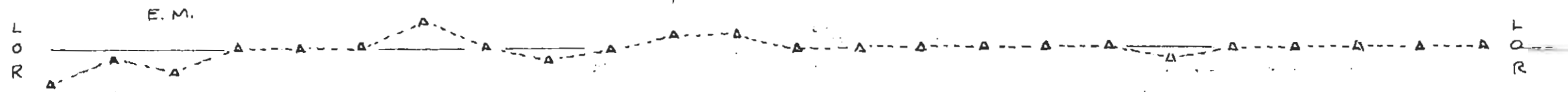
I.P. & E.M. CURVES
Scale: 1 in. = 200 ft.

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NORCAN MINES(NPL)

War Eagle Property

I.P. & E.M. CURVES

Scale: 1 in. = 200 Ft.

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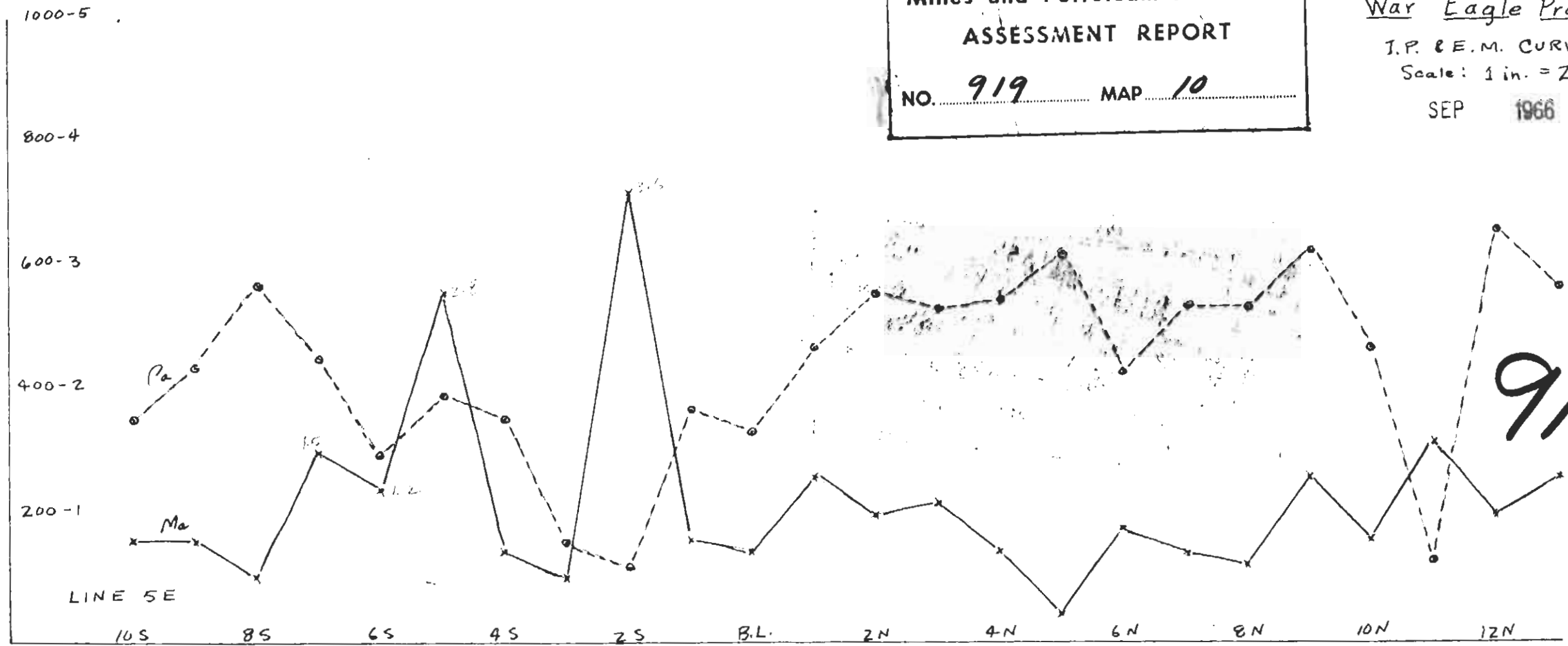


Fig. 10

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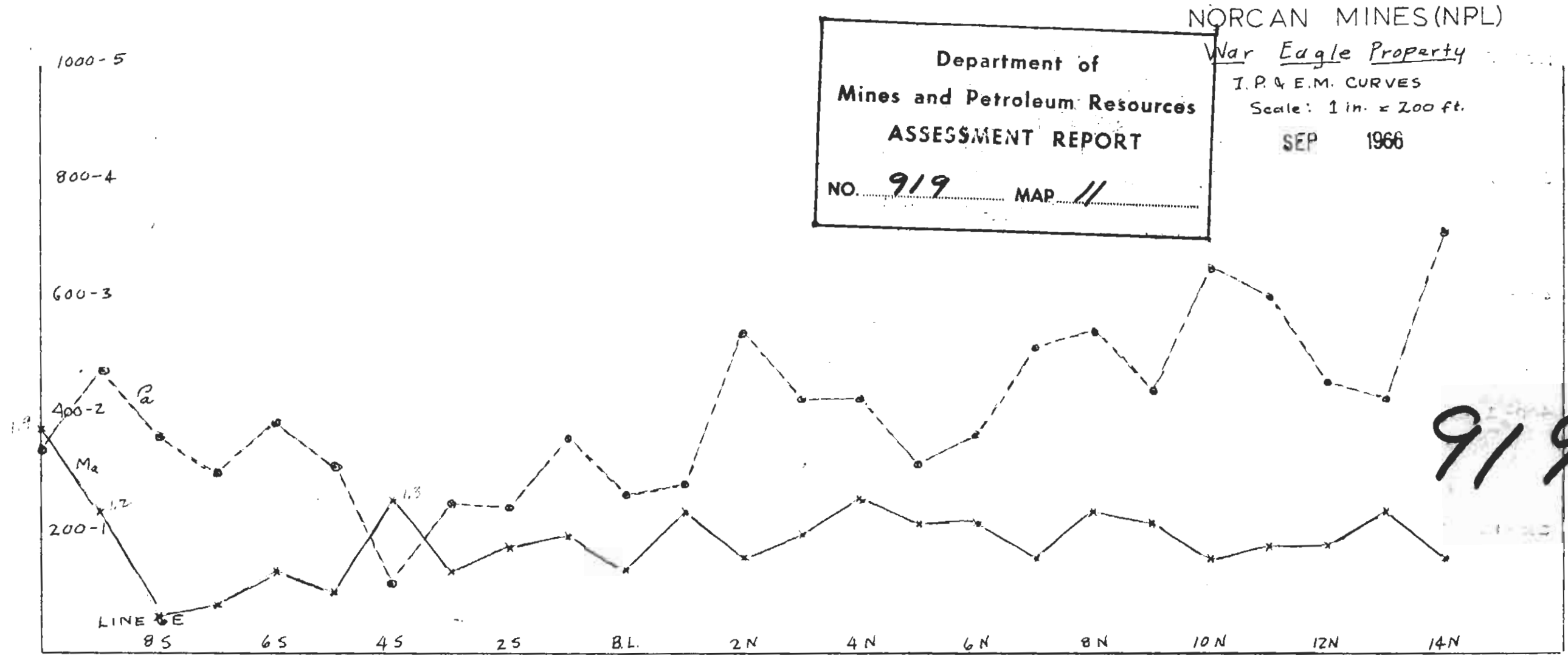
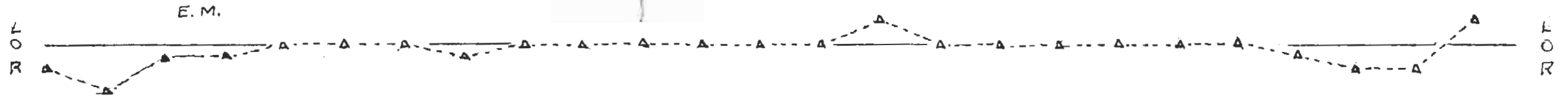


Fig. 11

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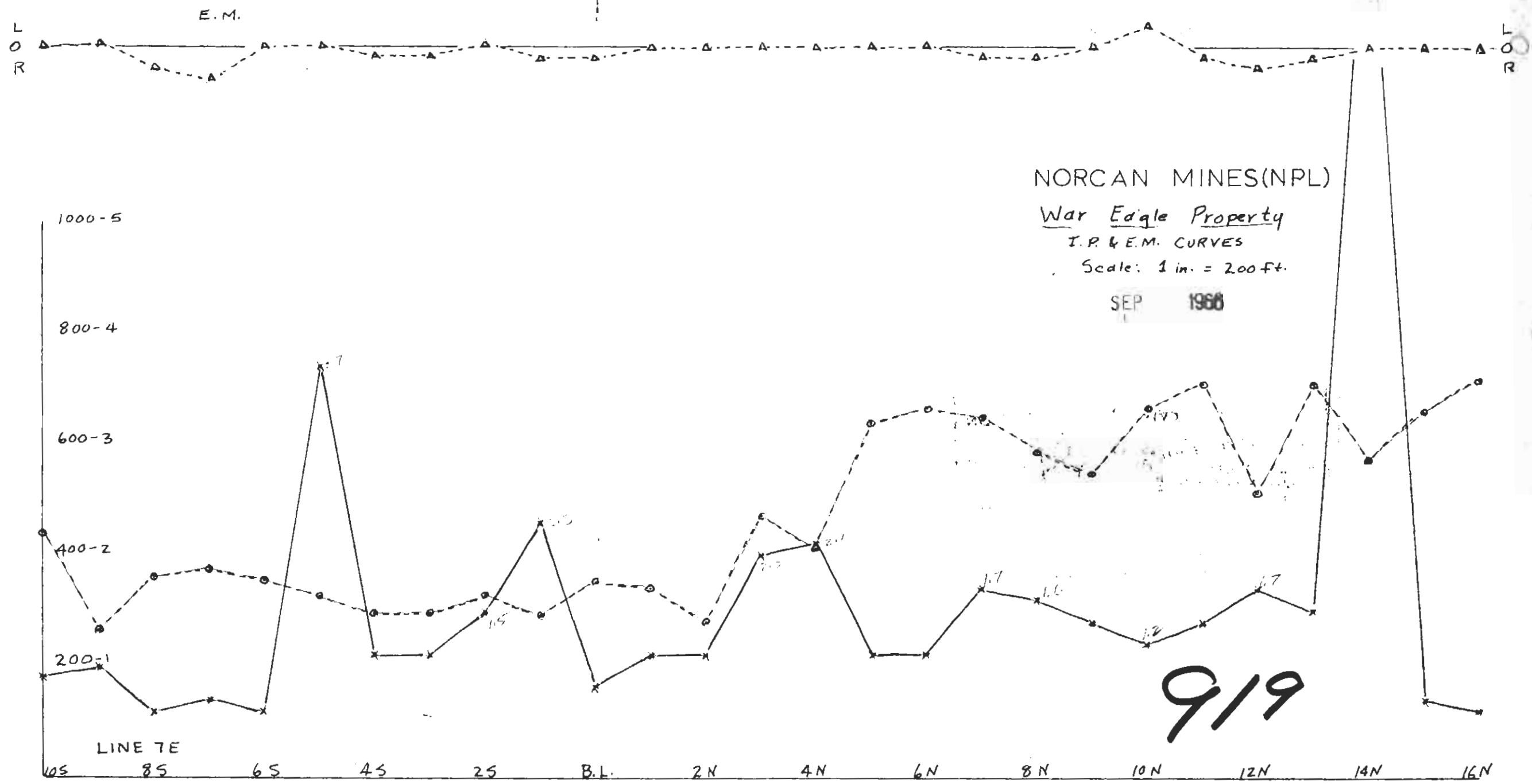
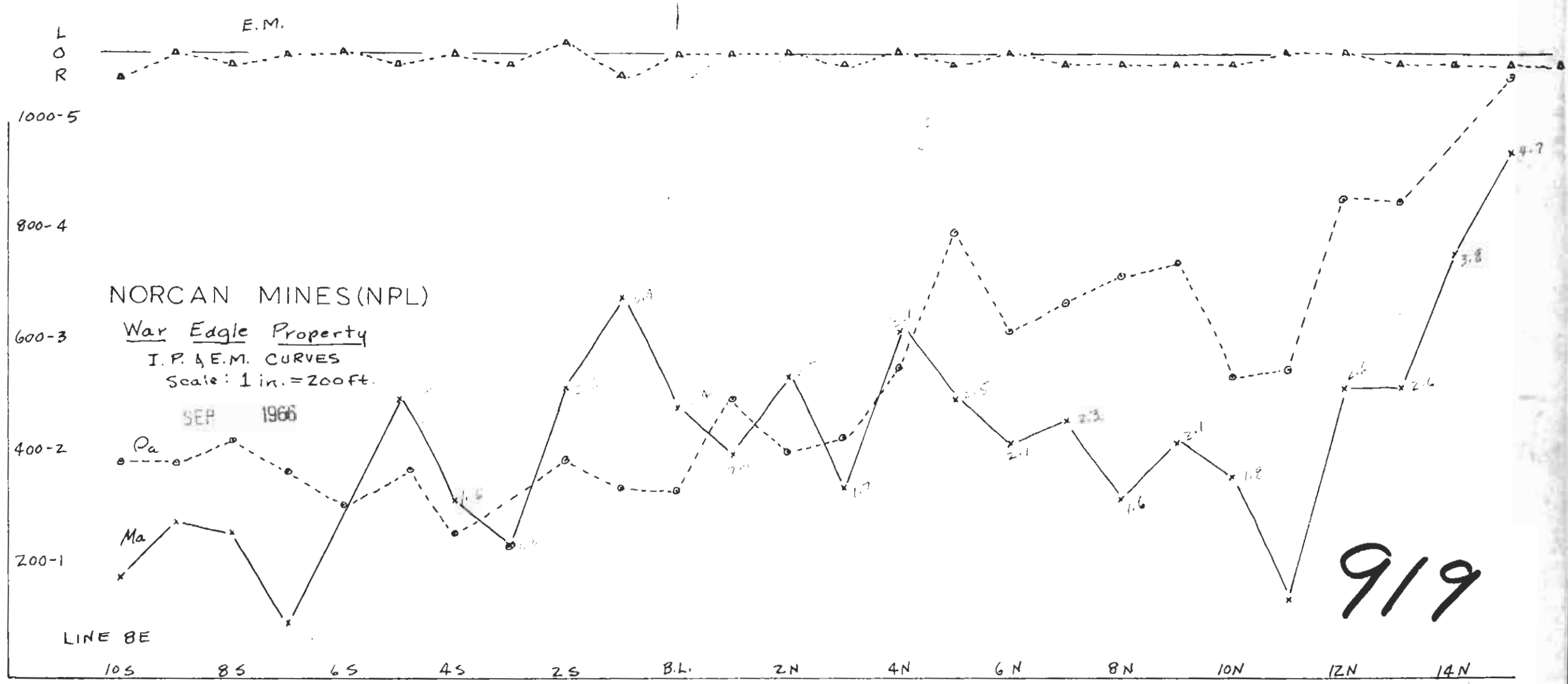


Fig. 12

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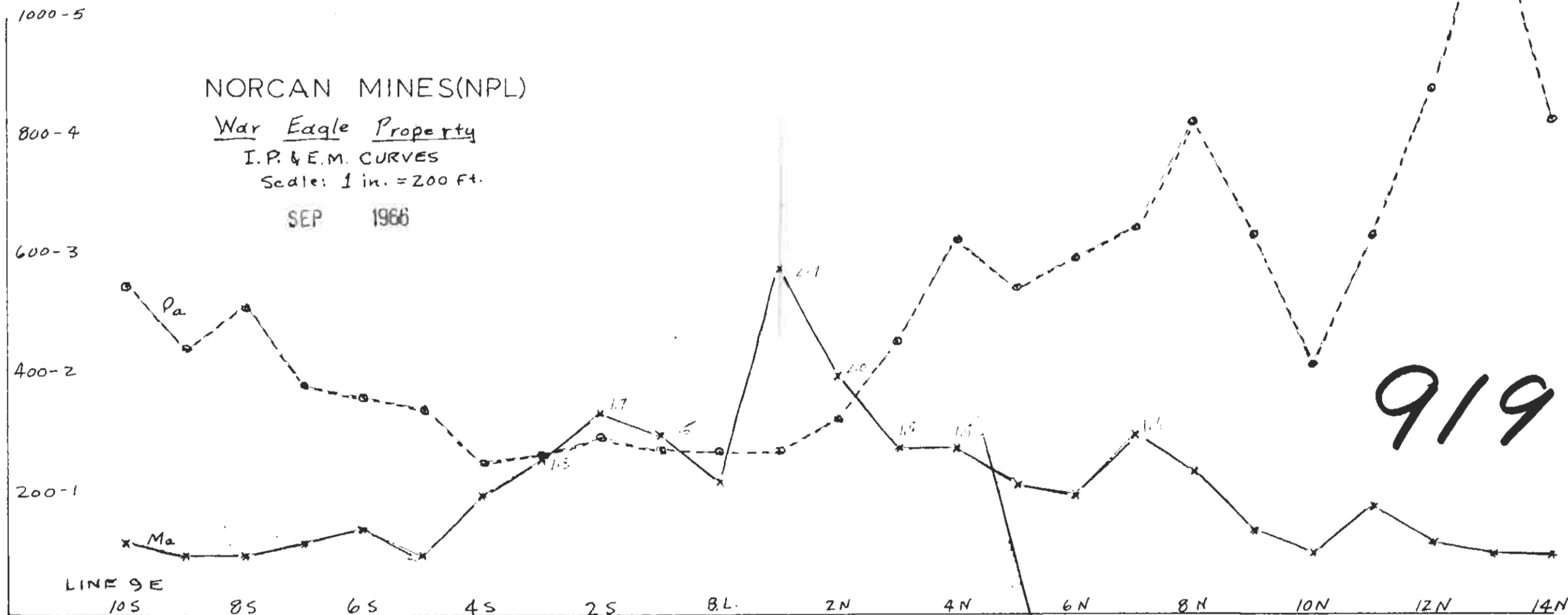
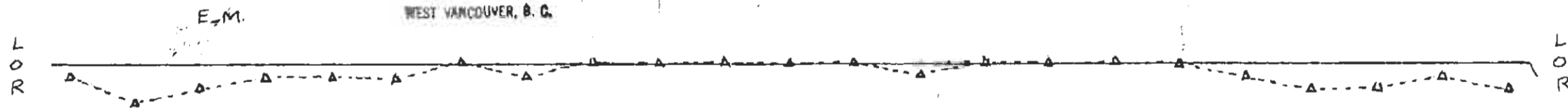
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Fig. 13

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Fig. 14

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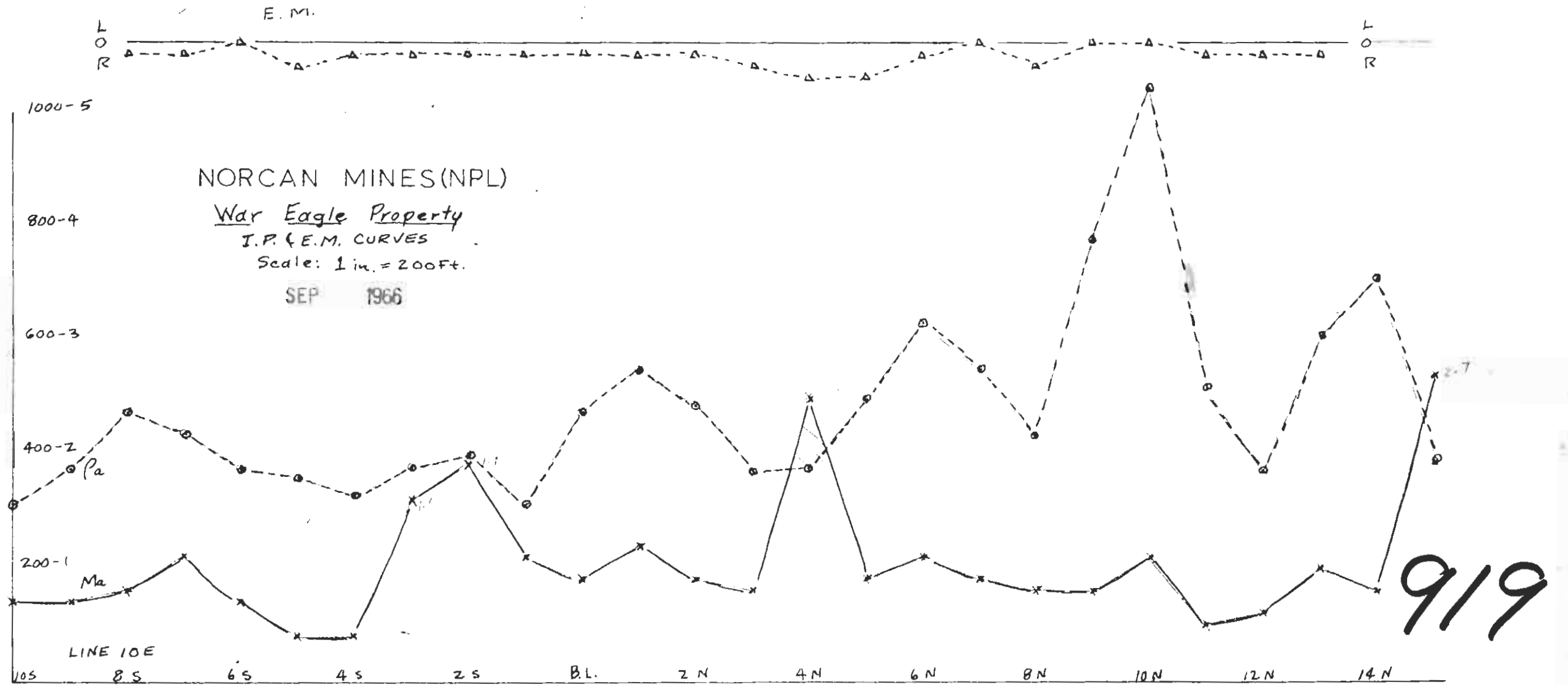


Fig 15

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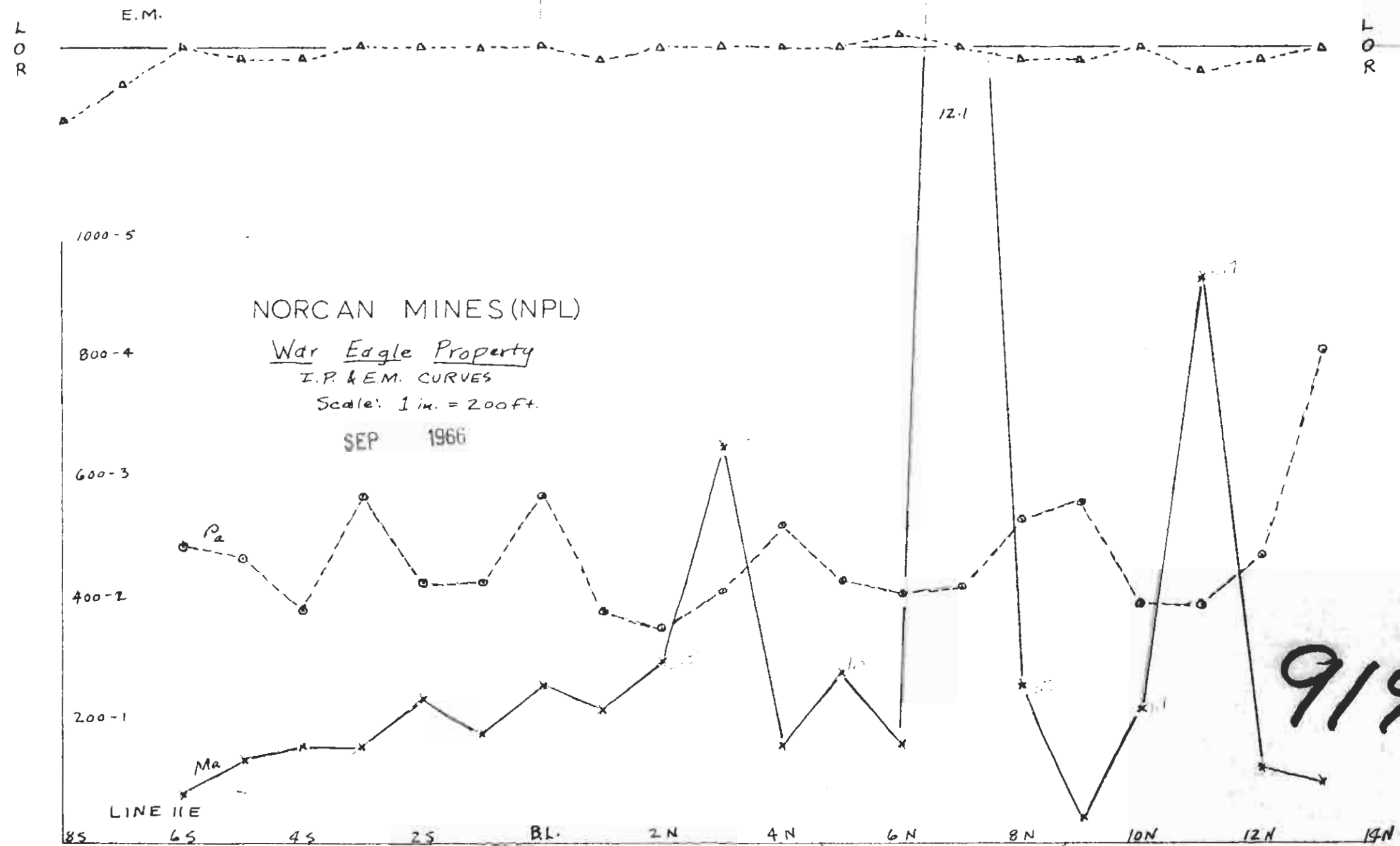
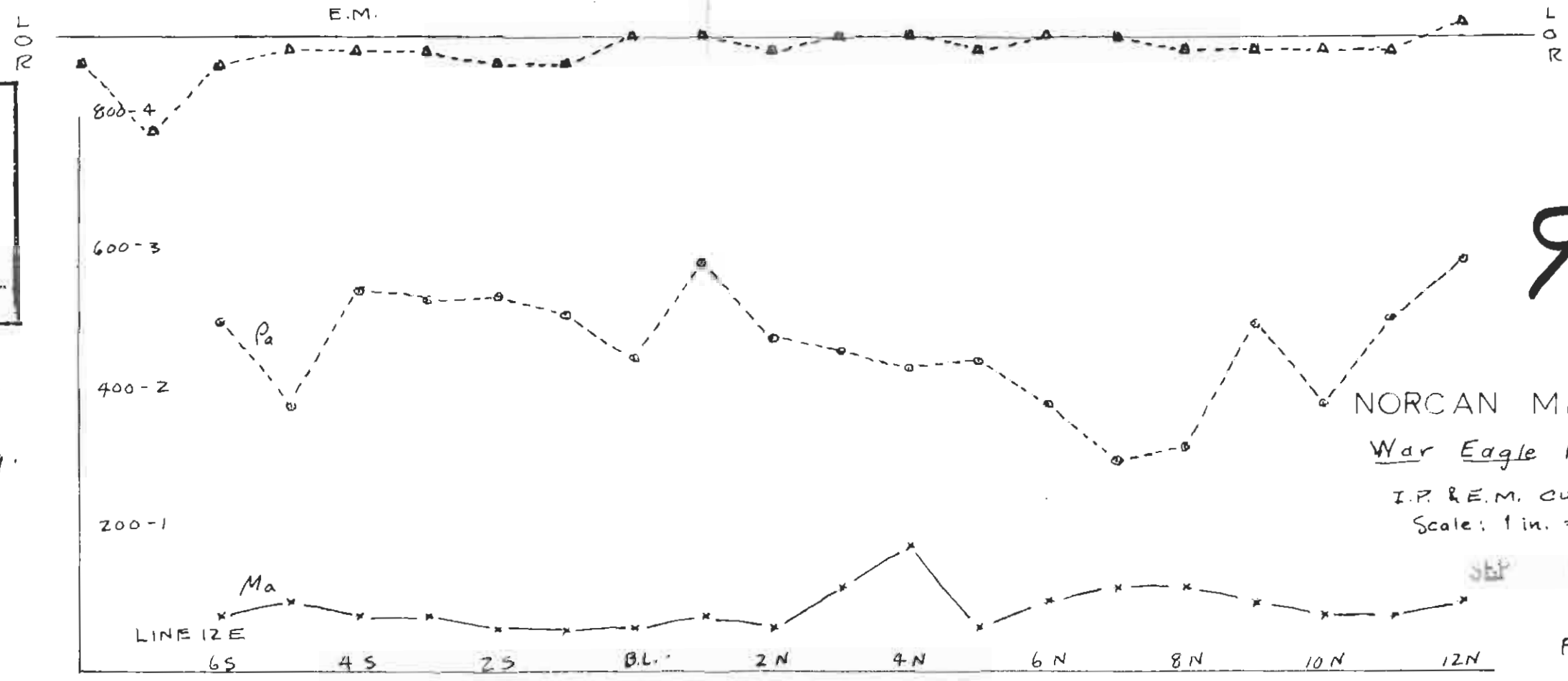
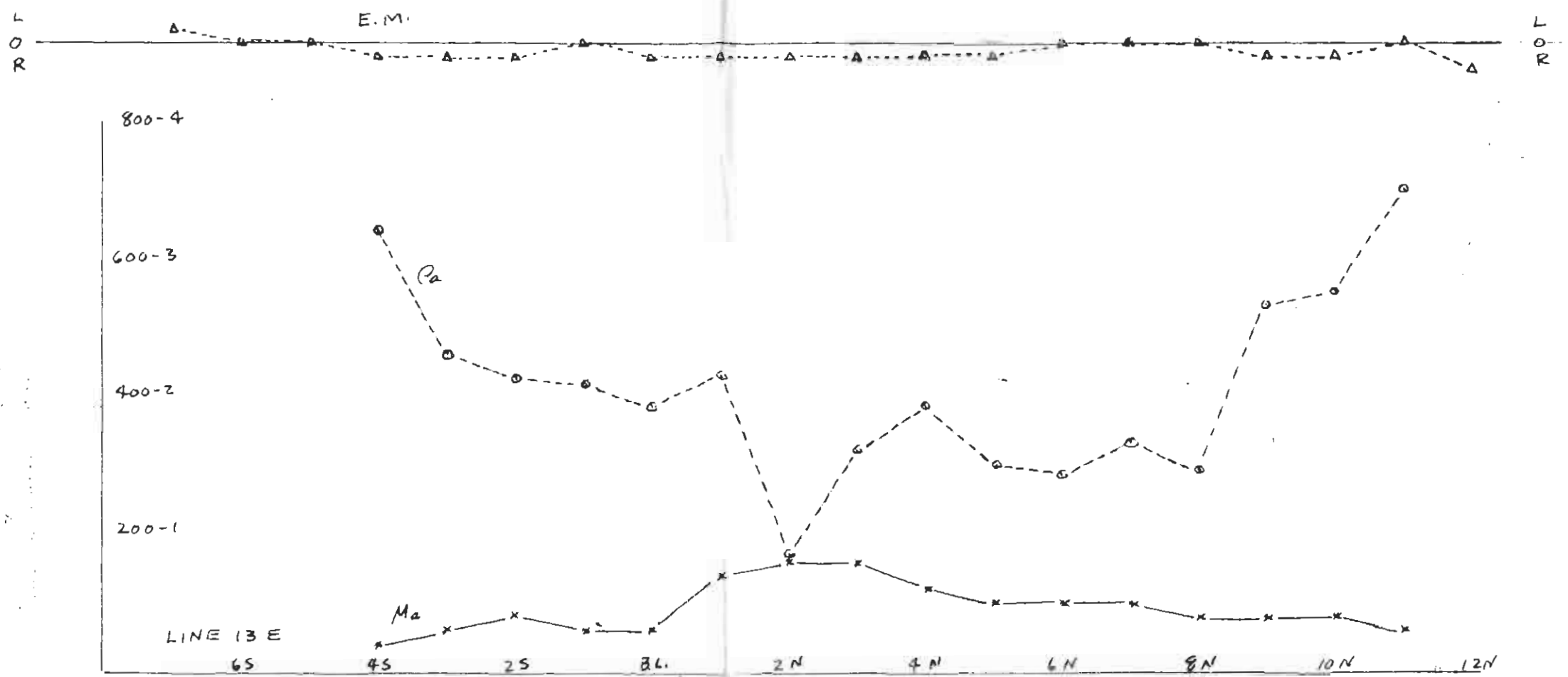


Fig. 16

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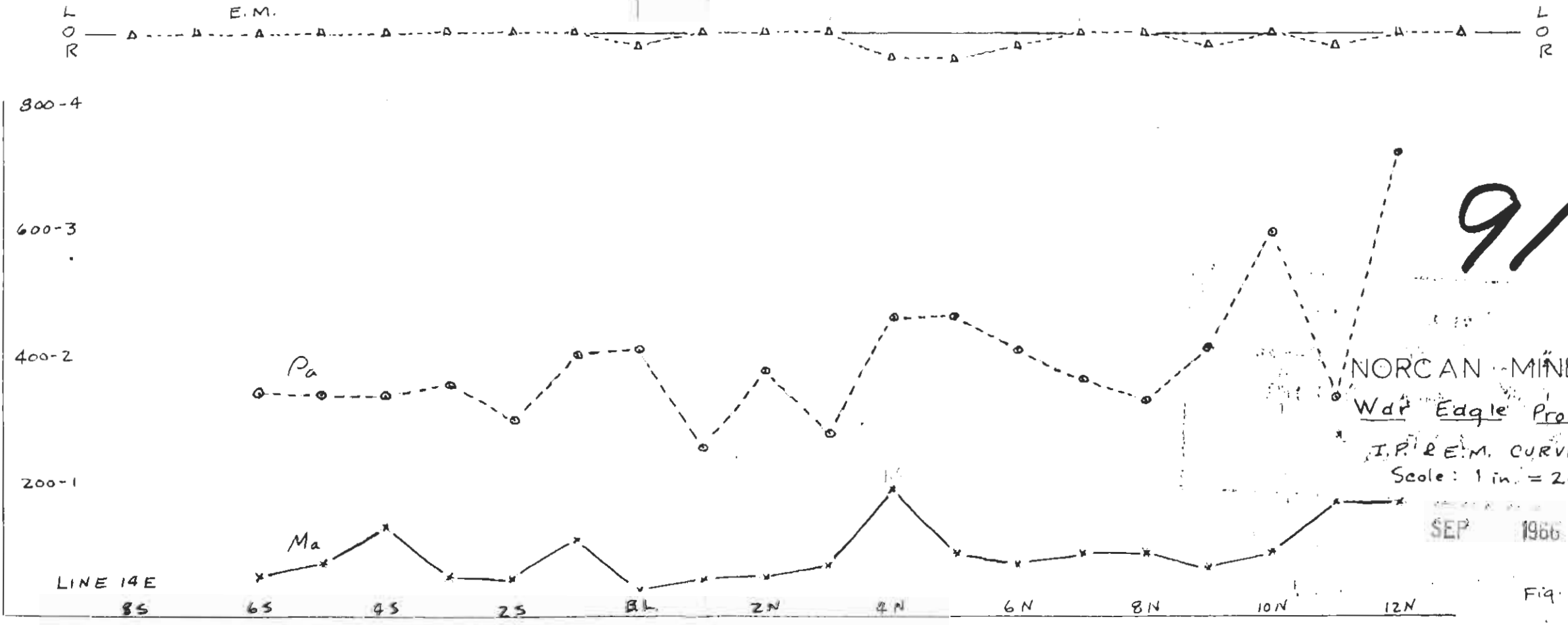
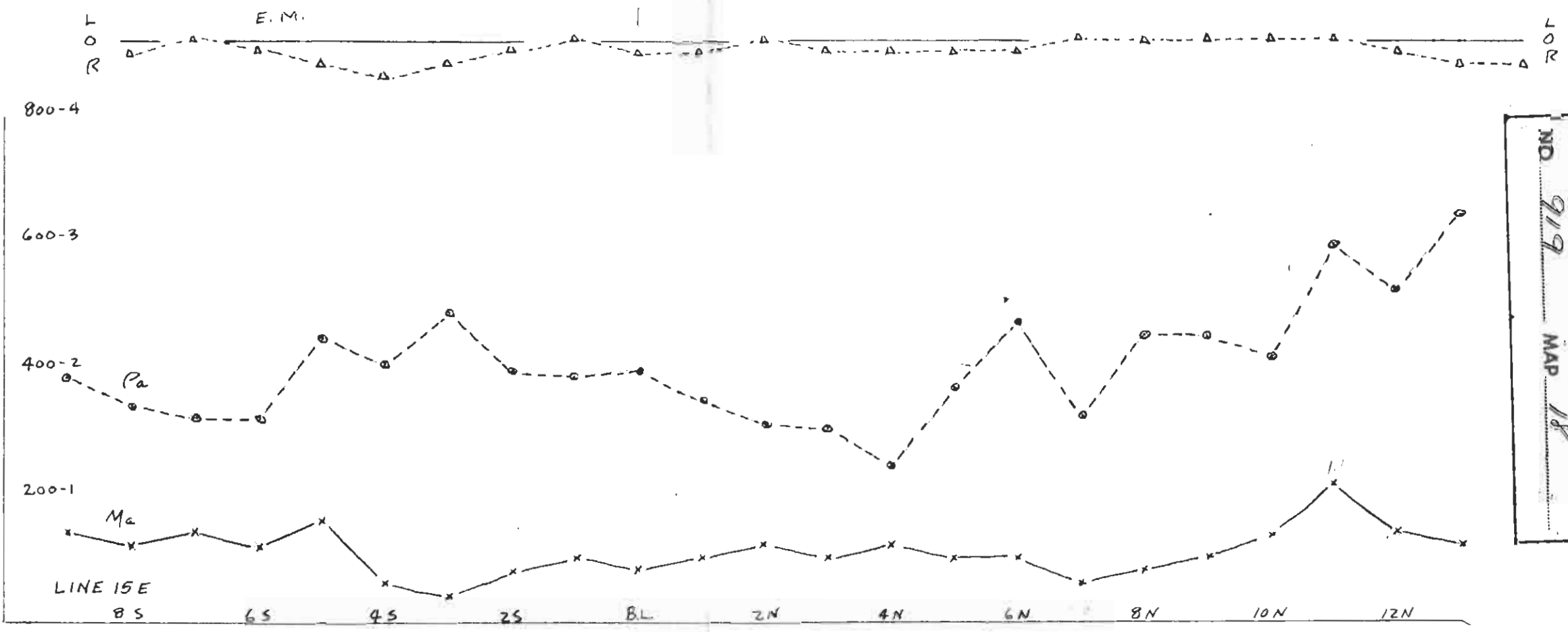


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NORCAN MINES (NPL)
 War Eagle Property
 I.P. & E.M. CURVES
 Scale: 1 in. = 200 ft.

Fig. 17

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NORCAN MINES (NPL)
Wdr Edgle Property
I.P.R. E.M. CURVES
Scale: 1 in. = 200ft.

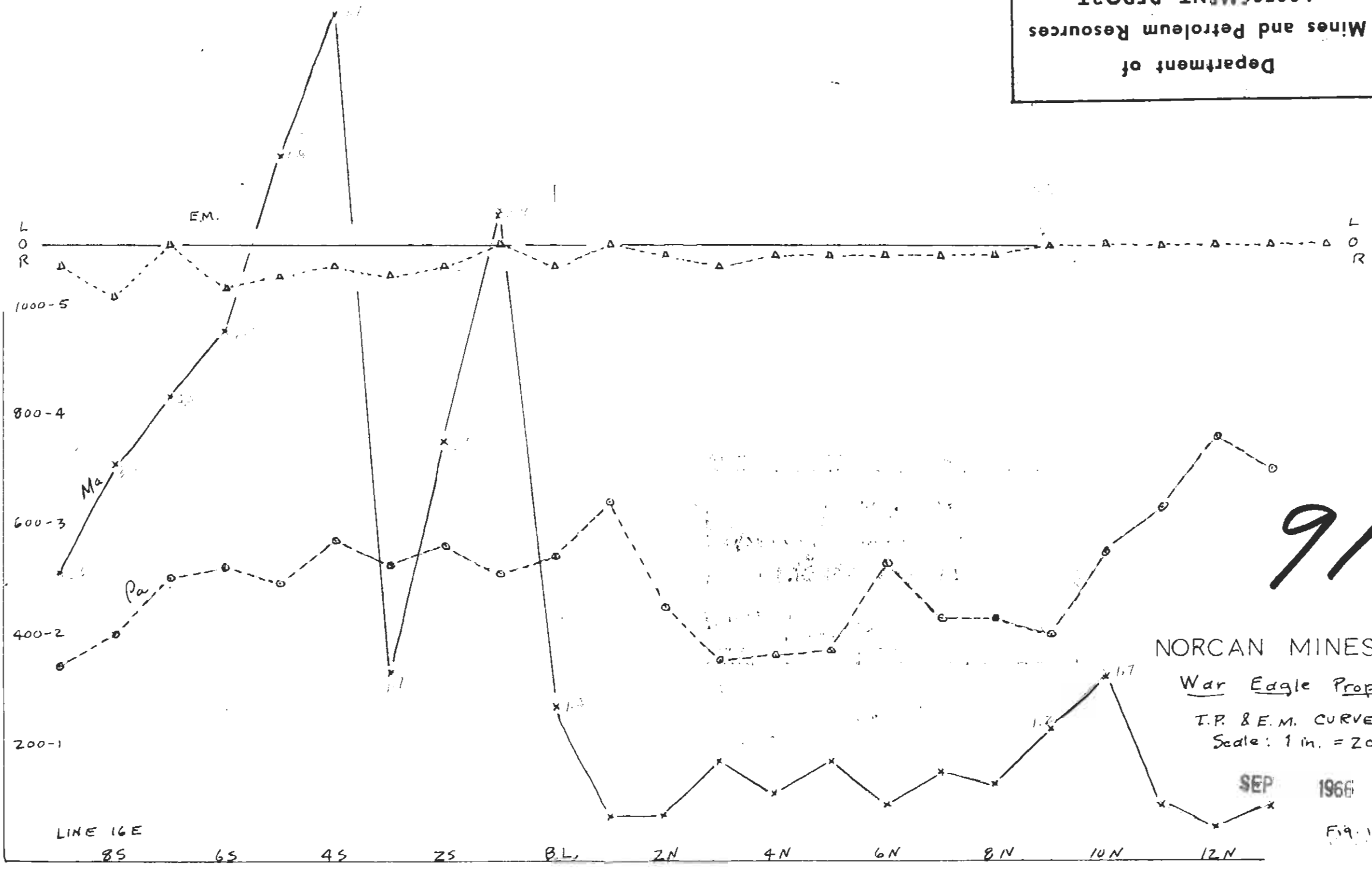
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Fig. 18

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 MAP 19



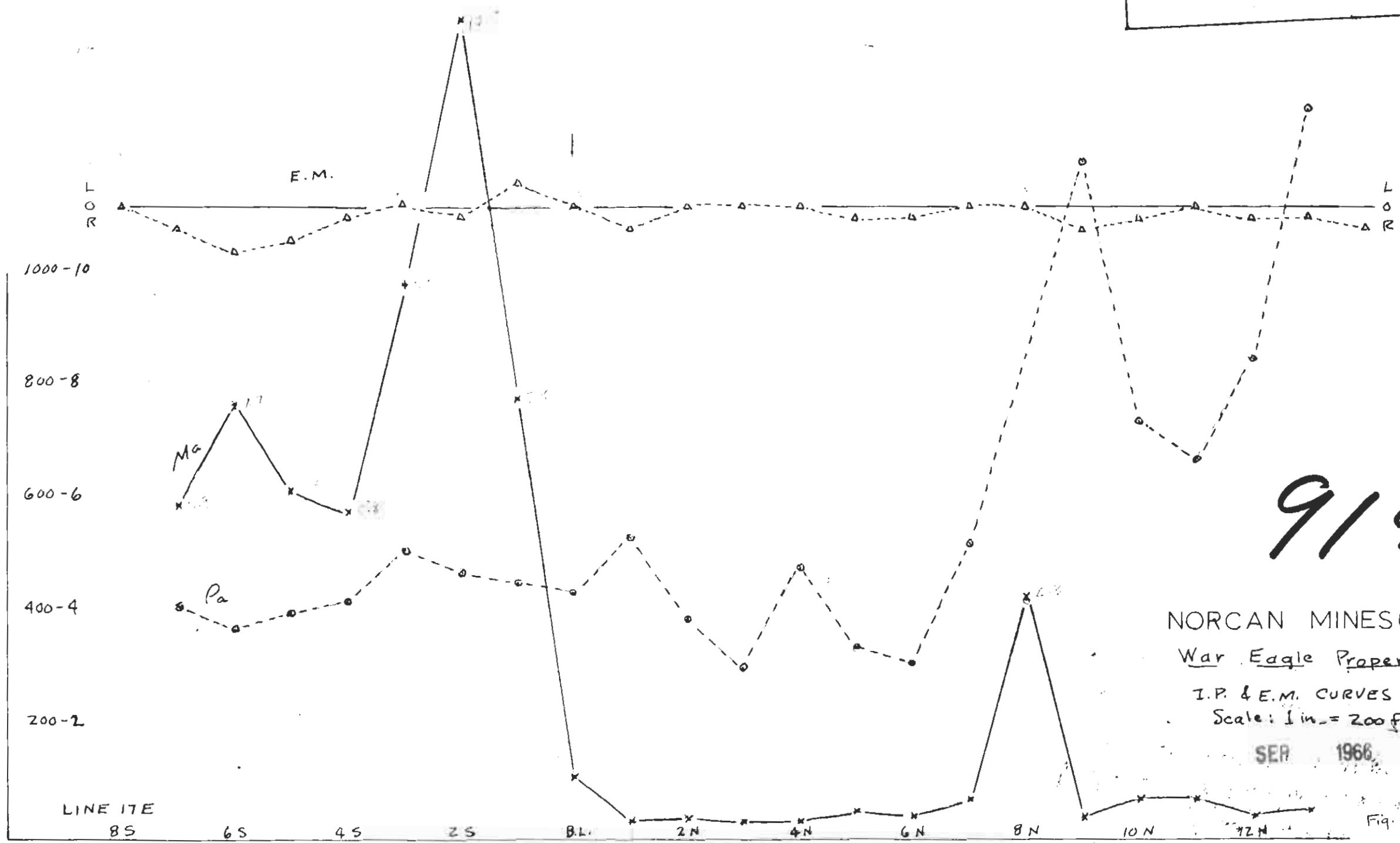
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 Fig. 19

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 919 MAP 20



919

To accompany a
 report by:
 C. B. Delmer
 P. Eng.

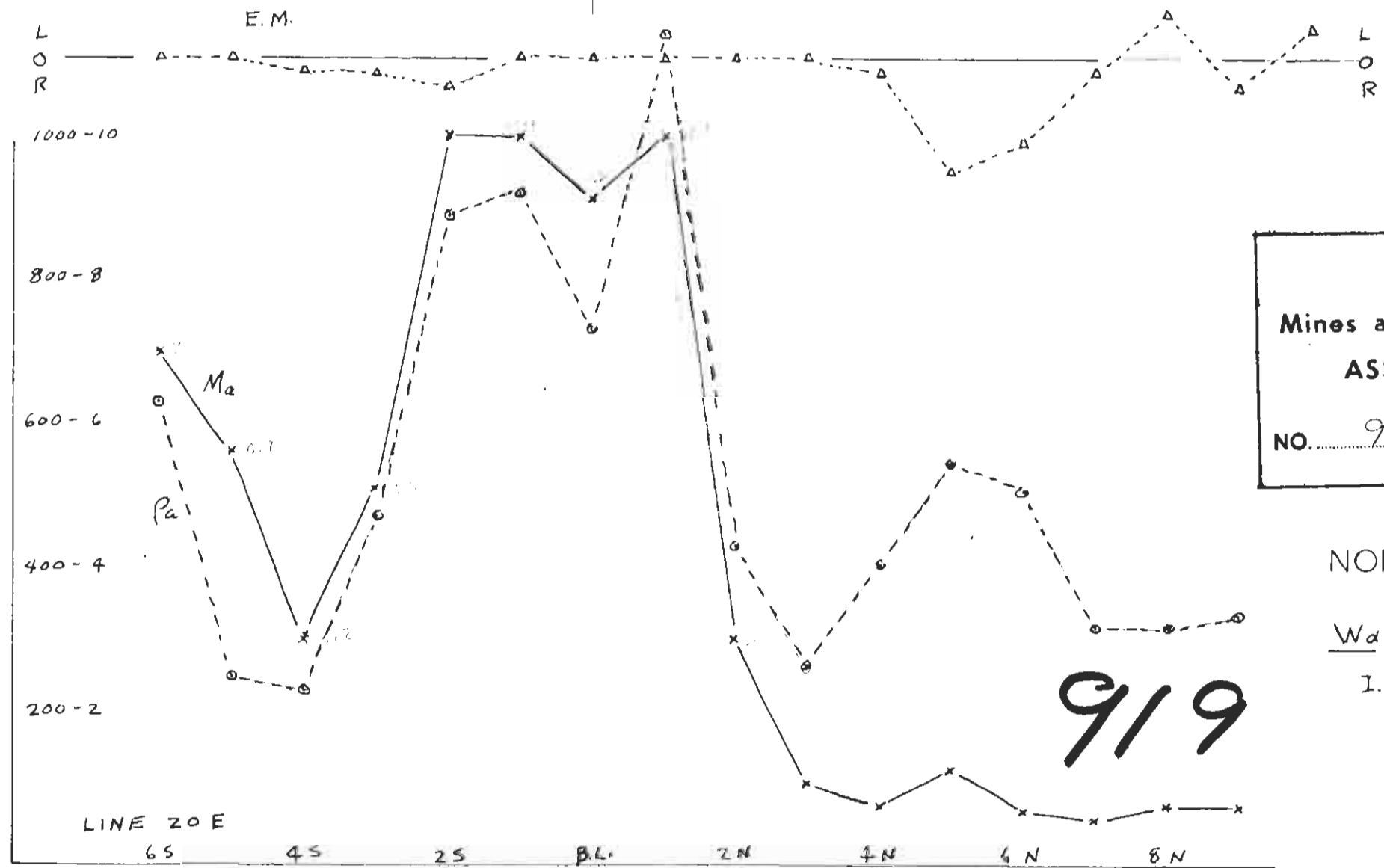
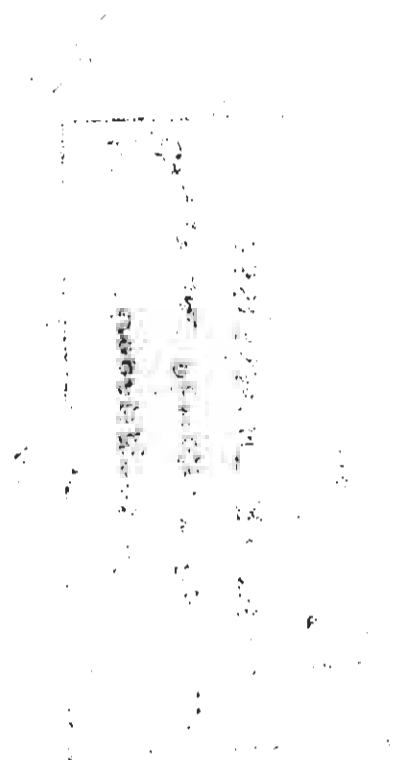
GEO CAL LIMITED
 2638 NELSON AVE.
 WEST VANCOUVER, B.C.

NORCAN MINES (NPL)
 War Eagle Property
 I.P. & E.M. CURVES
 Scale: 1 in. = 200 ft.

SEP 1966

LINE ITE
 8S 6S 4S 2S BL 2N 4N 6N 8N 10N 12N

Fig. 20



**Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT**
 NO. 919 MAP 21

NORCAN MINES (NPL)

War Eagle Property

I.P. & E.M. CURVES
 Scale: 1 in. = 200 Ft.

SEP 1968

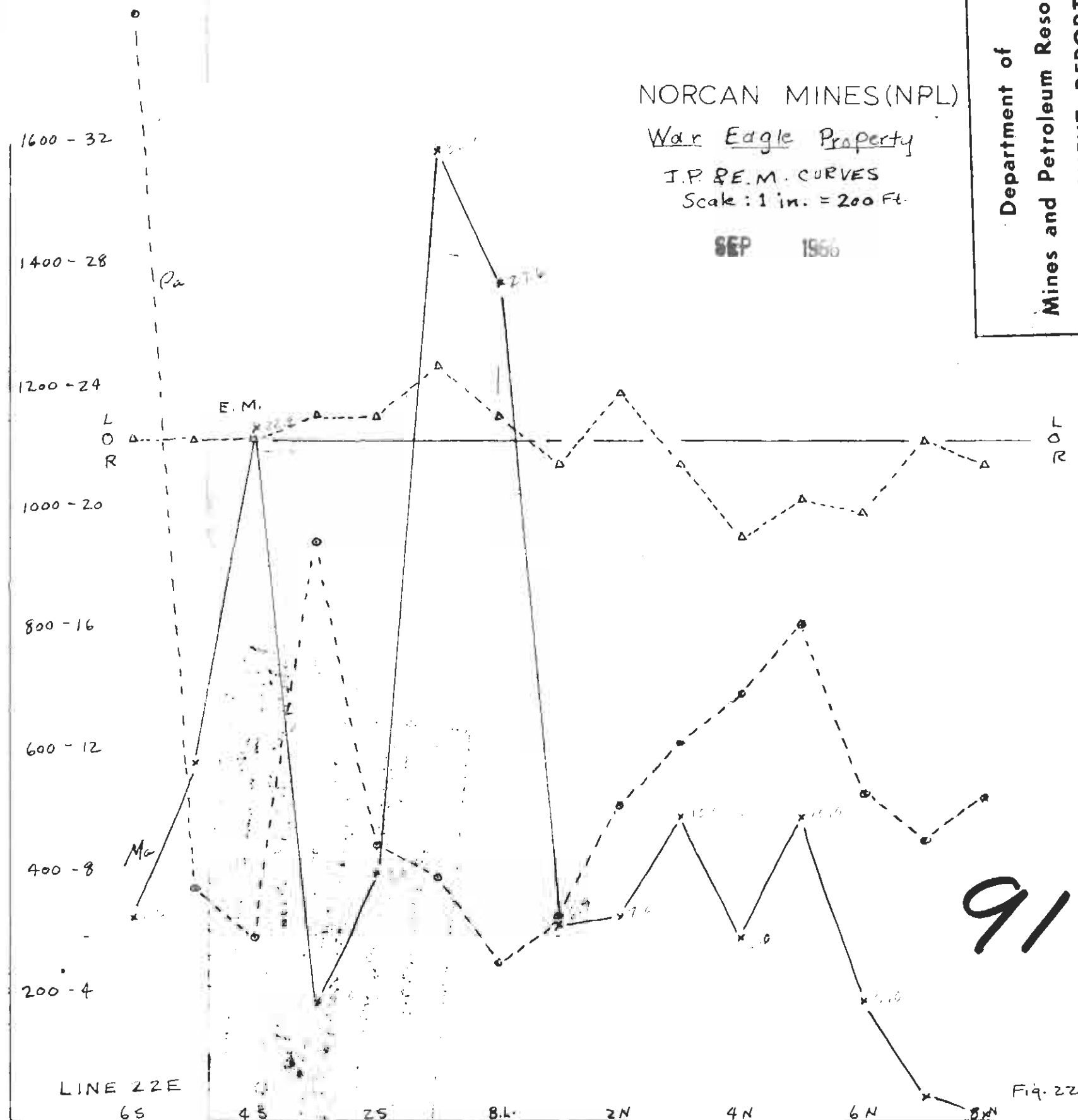
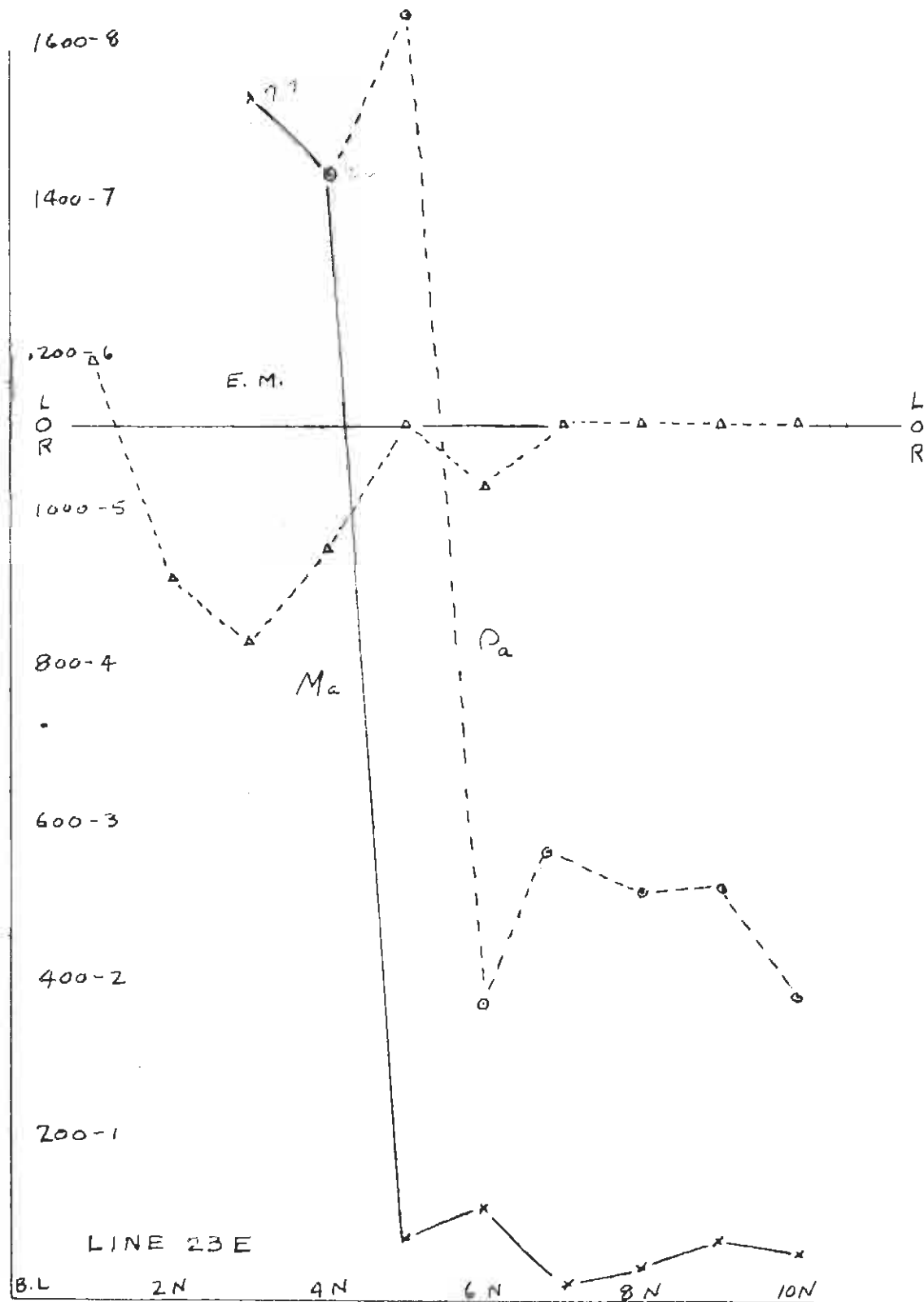
919

To accompany a report by
 C. B. Selmsler, P. Eng.

GEO CAL LIMITED
 2656 HILSON AVE.
 WEST VANCOUVER, B. C.

To accompany a report by:
C. B. Selinger, P. Eng.

GEO CAL LIMITED
 2558 NELSON AVE.
 WEST VANCOUVER, B. C.



NORCAN MINES (NPL)

War Eagle Property

I.P. & E.M. CURVES

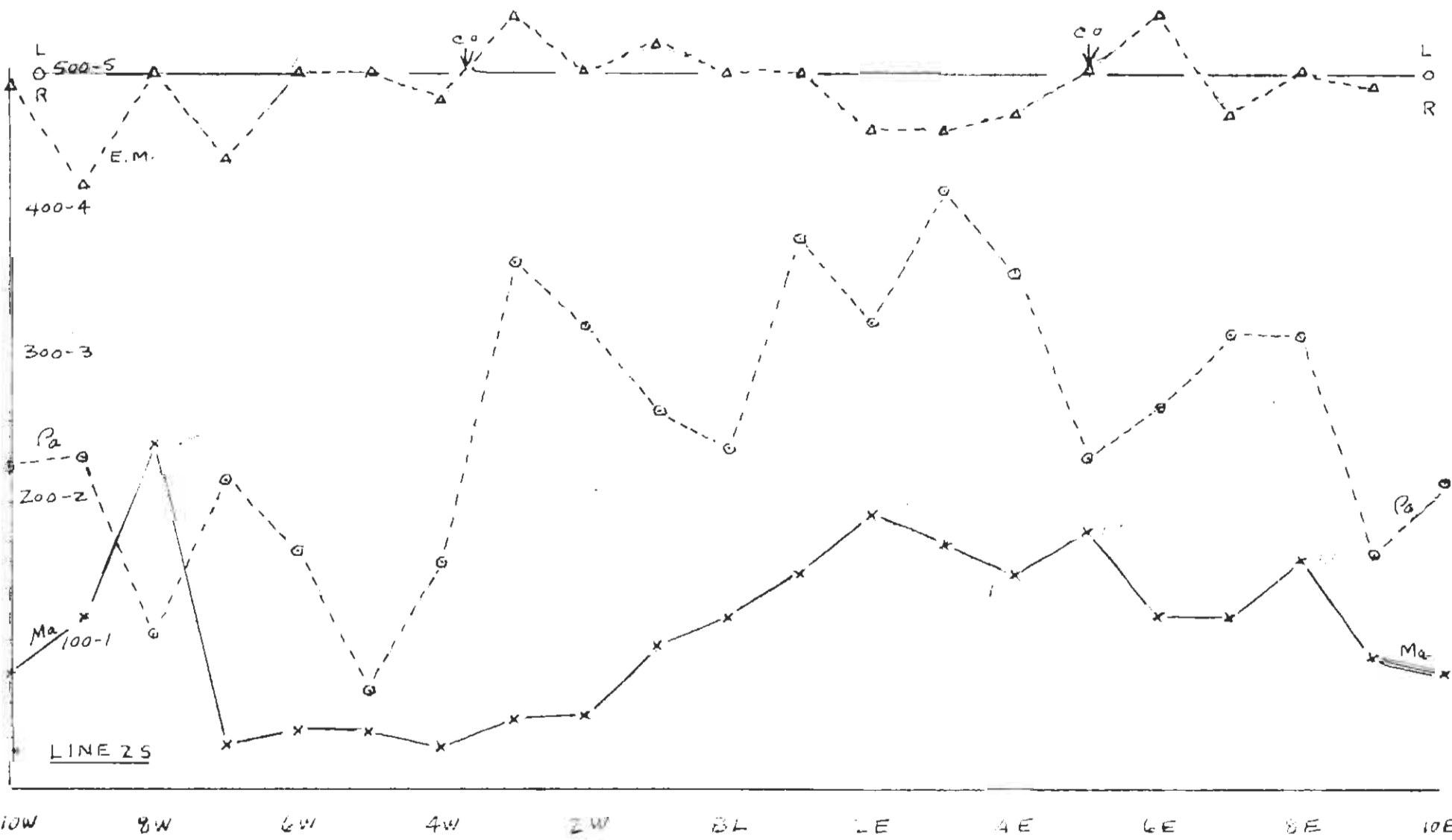
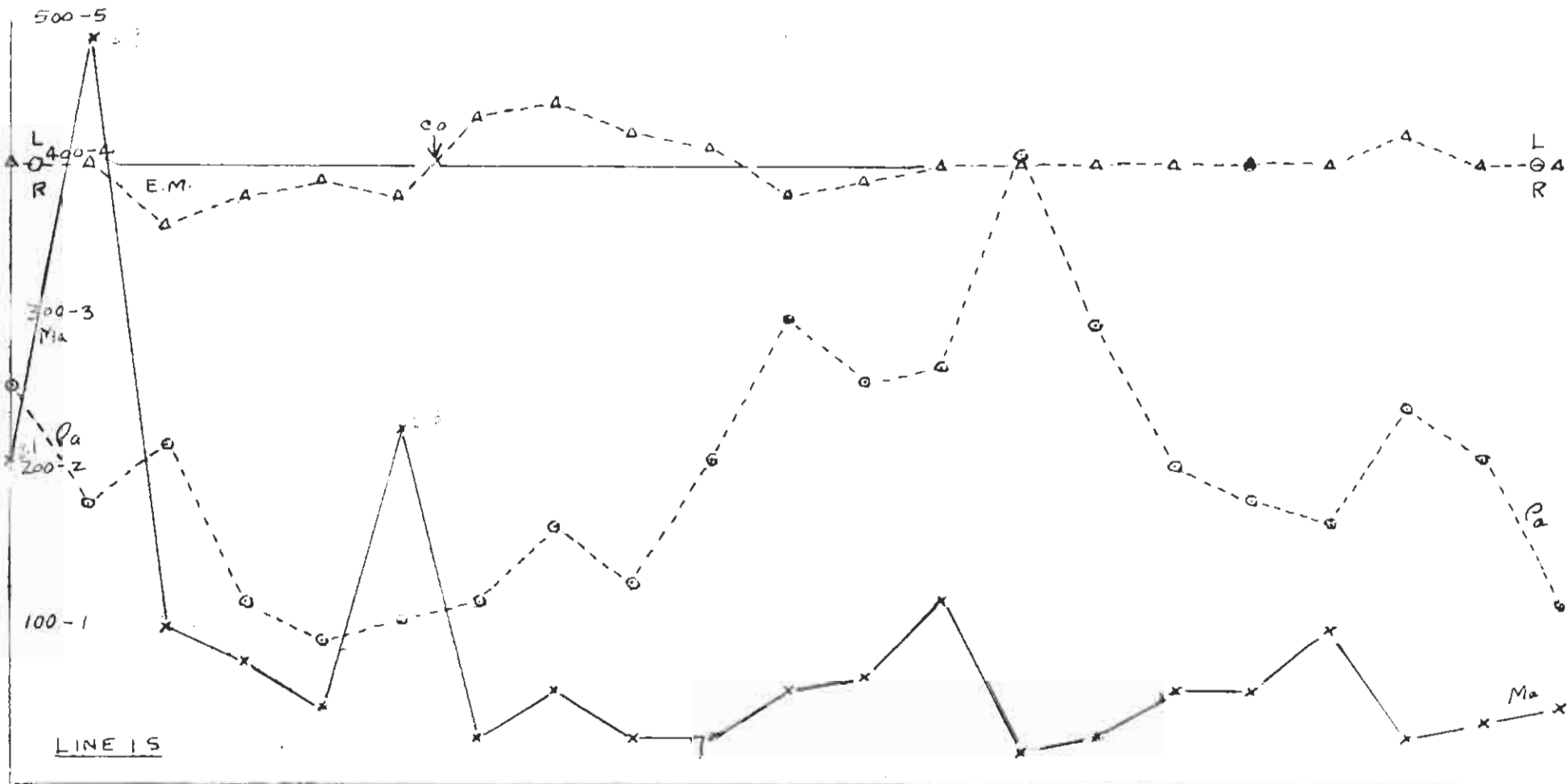
Scale: 1 in. = 200 Ft.

SEP 1966

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 919 MAP 22

919

Fig. 22



To accompany a report by:
 C. B. Selmsler, P. Eng.

GEO. CAL LIMITED
 2458 NELSON AVE.
 WEST VANCOUVER, B. C.

NORCAN MINES(NPL)
 Santa Maria Property

I.P. & E.M. CURVES

Scale: 1 in = 200 Ft.

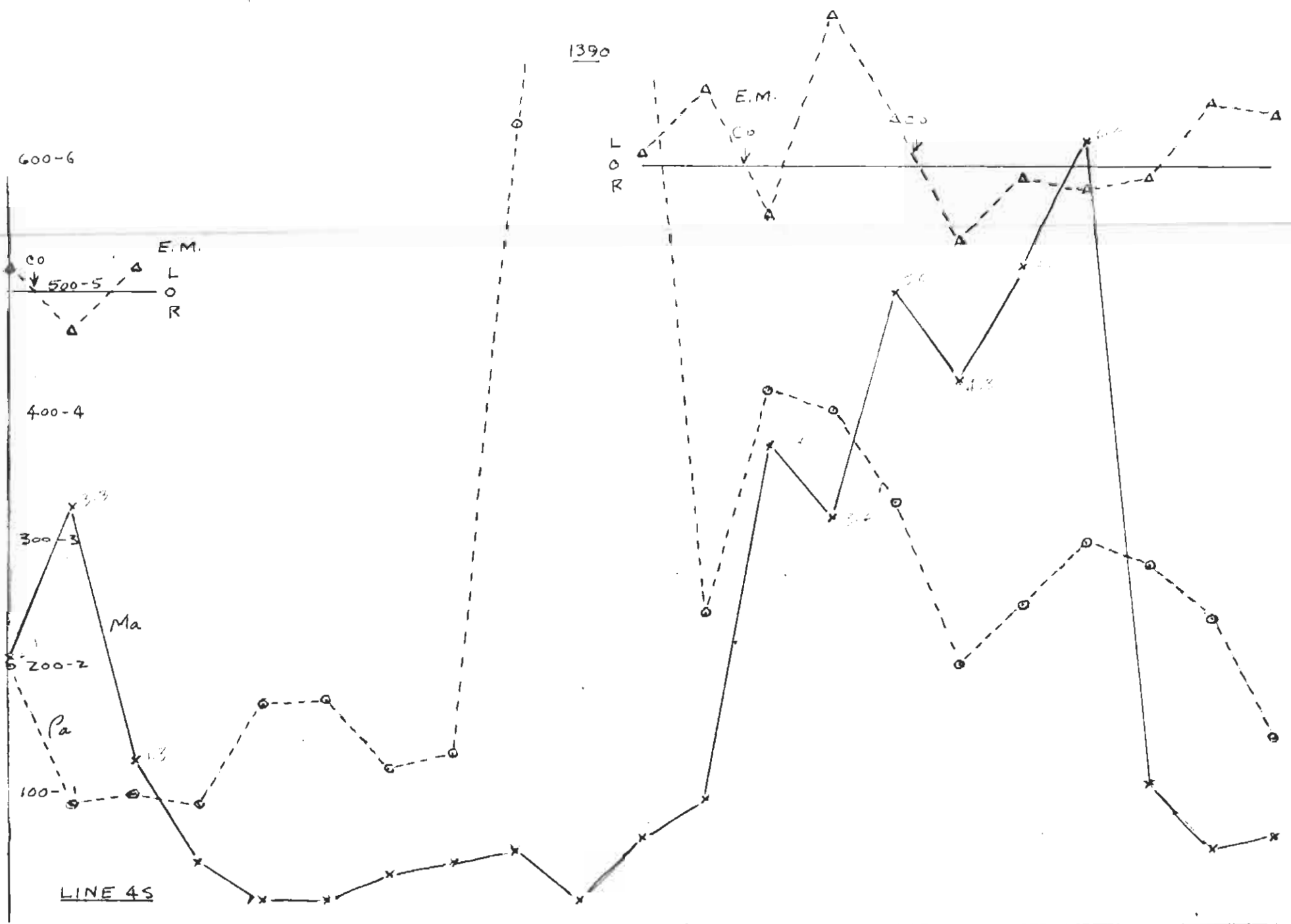
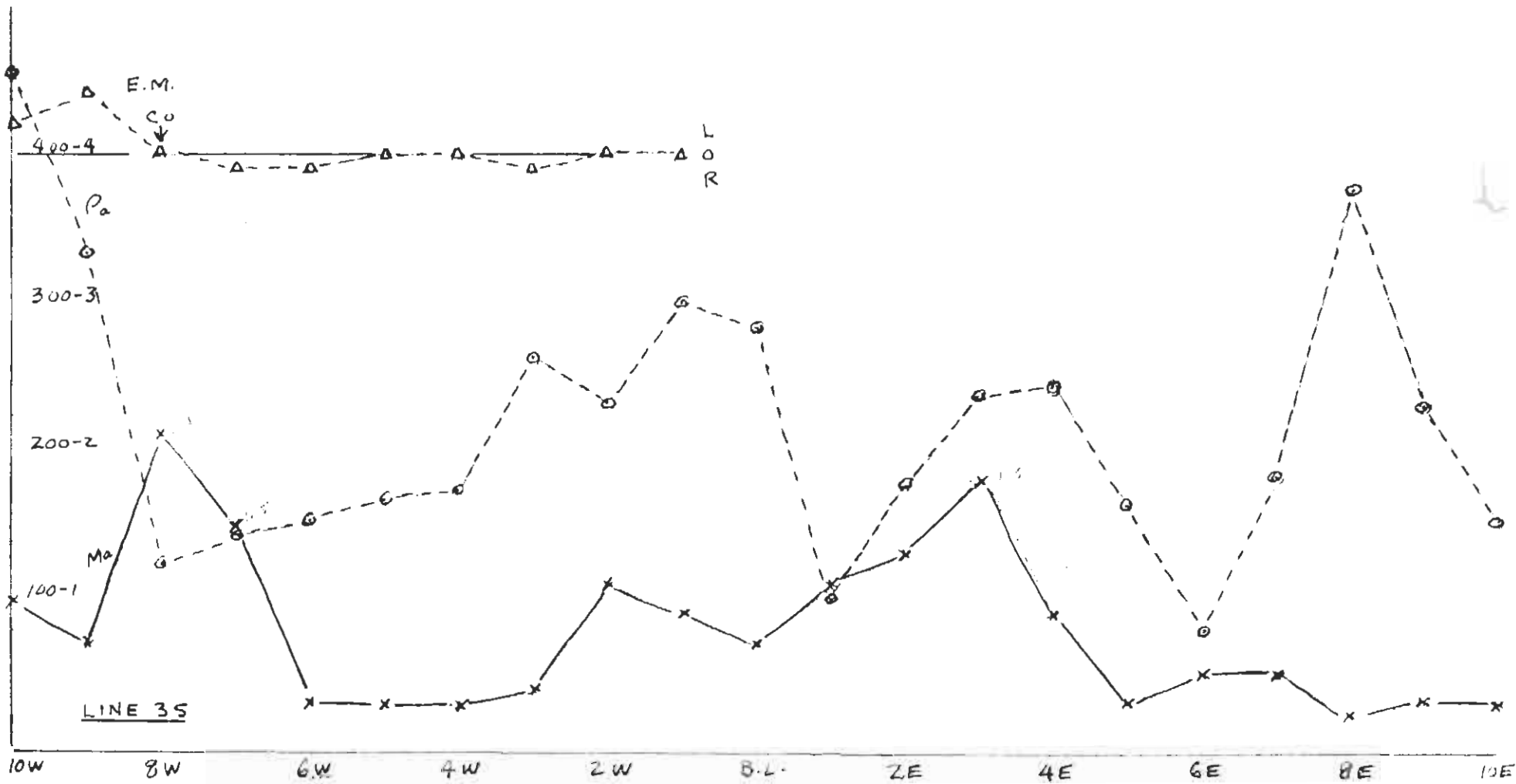
SEP 1966

919

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT

NO. 919 MAP 23

Fig. 23



To accompany a report by:
C. B. Selmsler, P. Eng.

CEI CAL LIMITED
2658 NELSON AVE.
WEST VANCOUVER, B.C.

NORCAN MINES(NPL)
Santa Maria Property

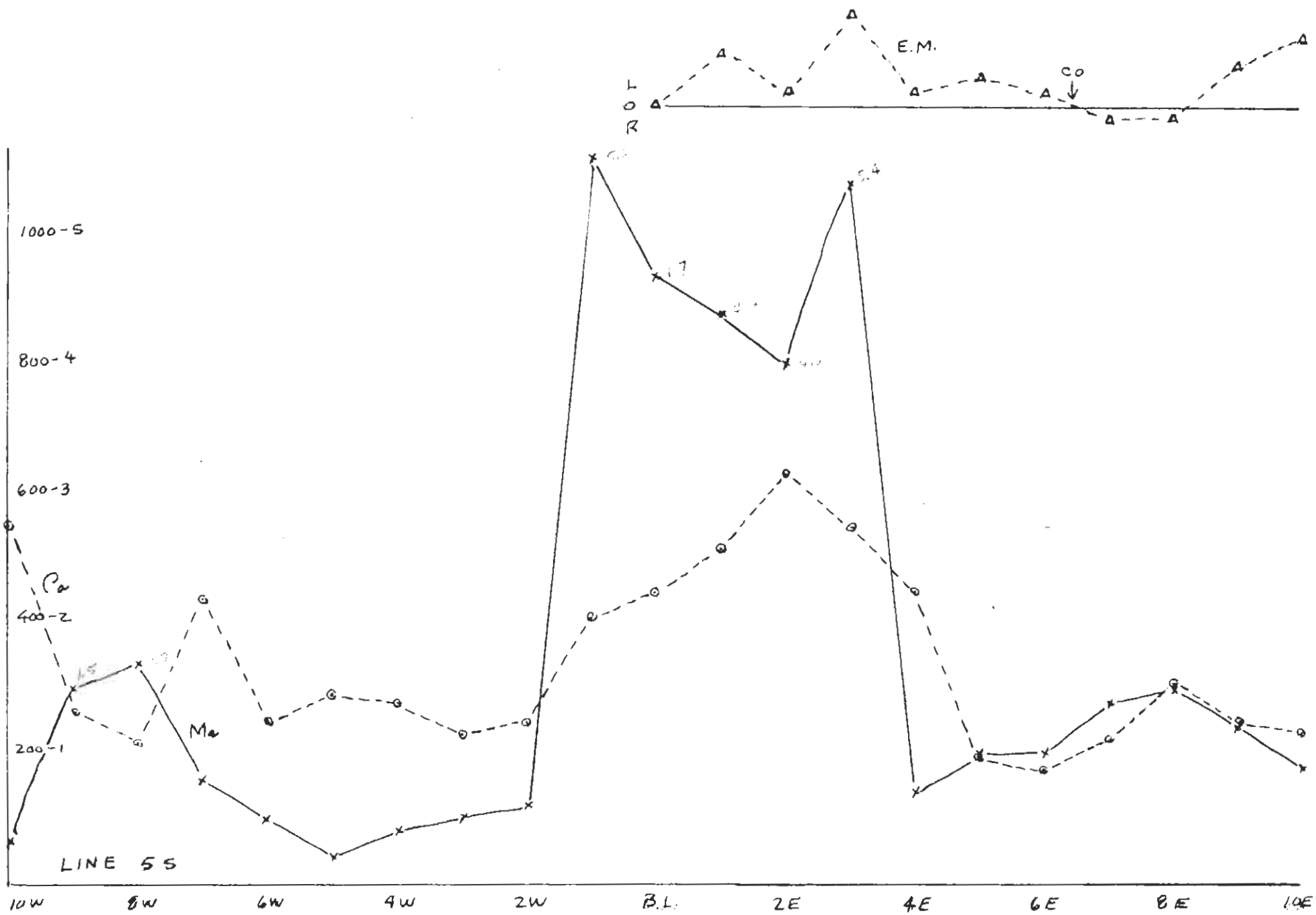
I.P. & E.M. CURVES

Scale: 1 in. = 200 Ft.

919

SEP 1968

Fig. 24



To accompany a report by:
 C. B. Delmar, P. Eng.

GEO CAL LIMITED
 2658 NELSON AVE.
 WEST VANCOUVER B. C.

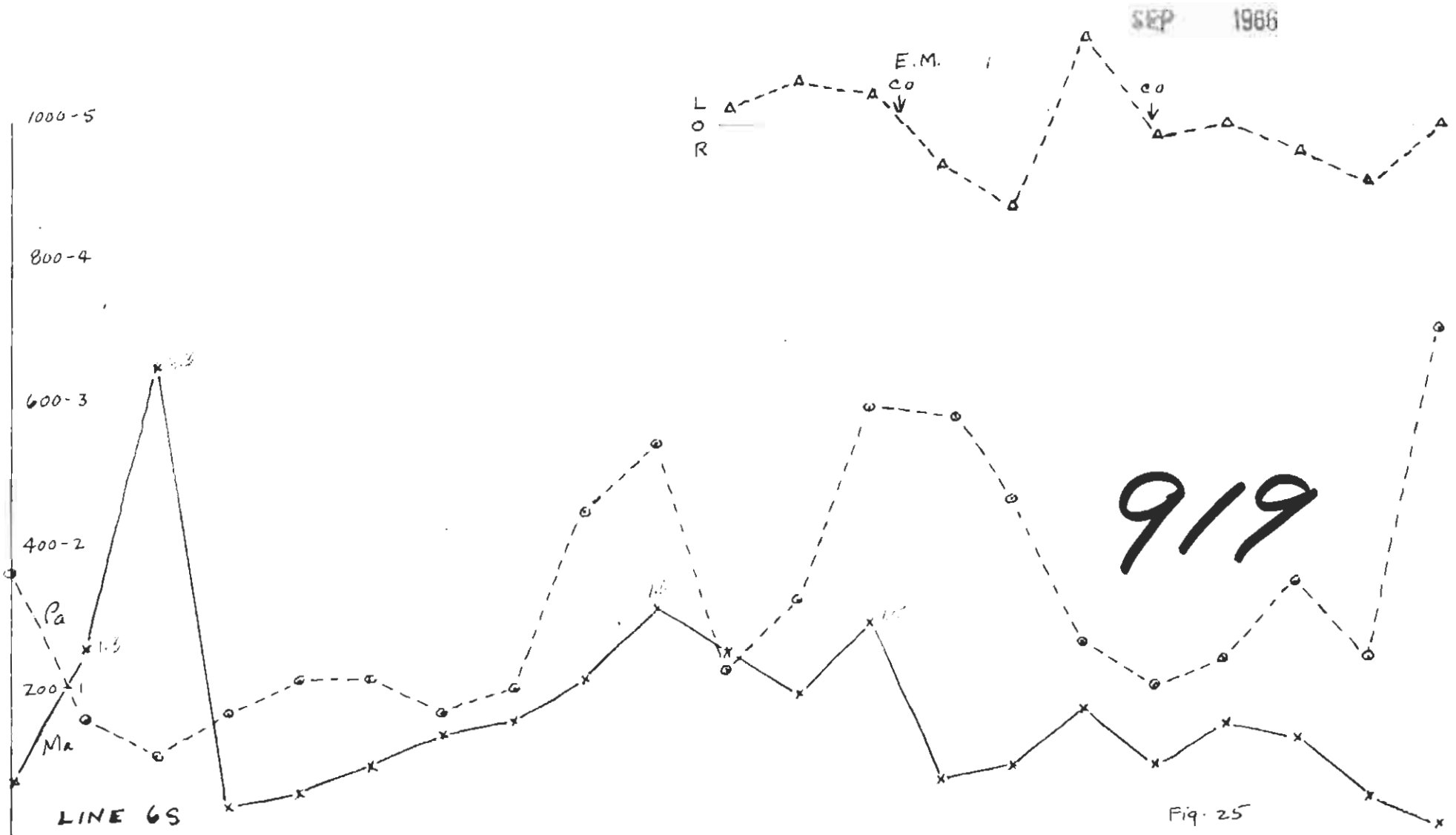
NORCAN MINES (NPL)

Santa Maria Property

I.P. & E.M. CURVES

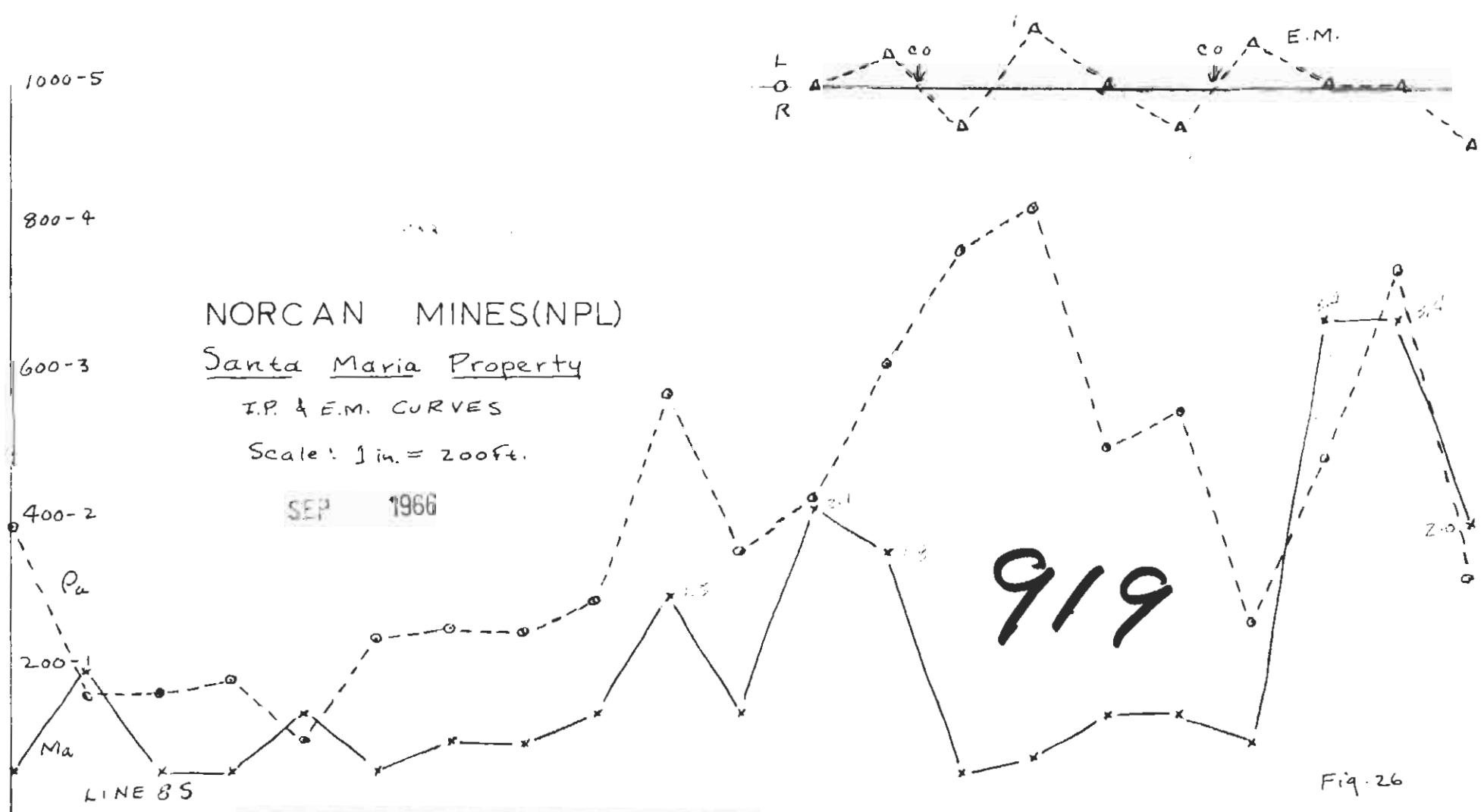
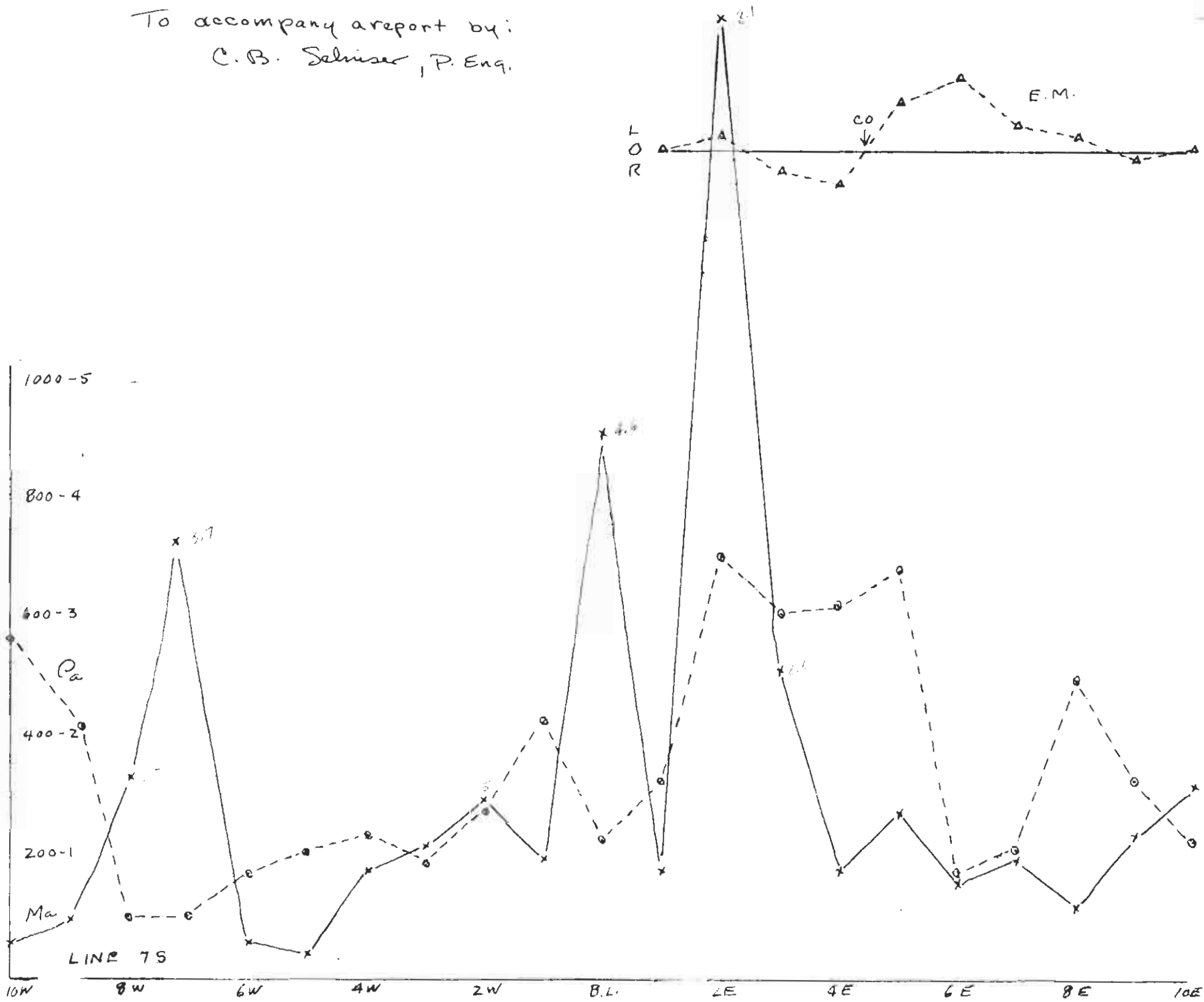
Scale: 1 in. = 200ft.

SEP 1966



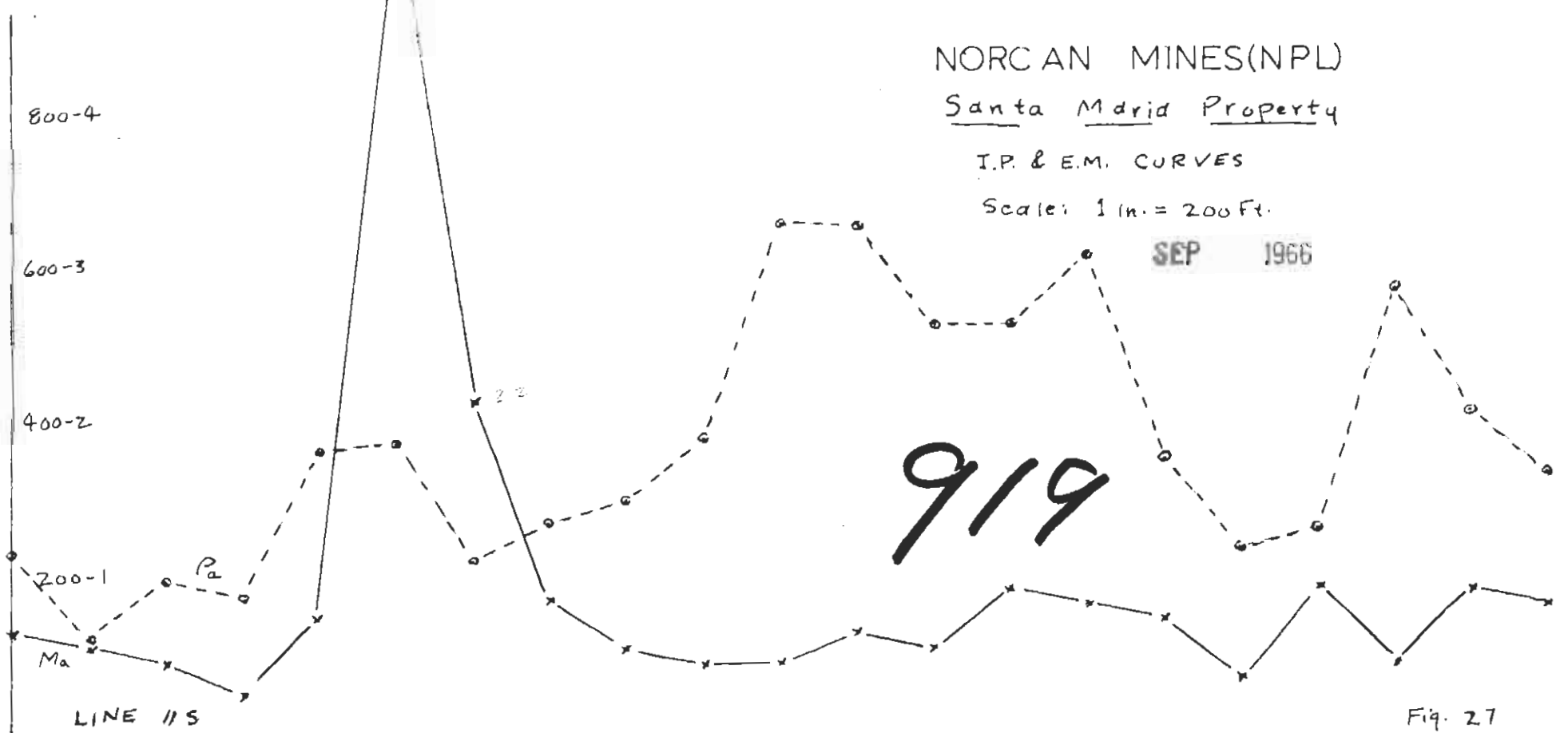
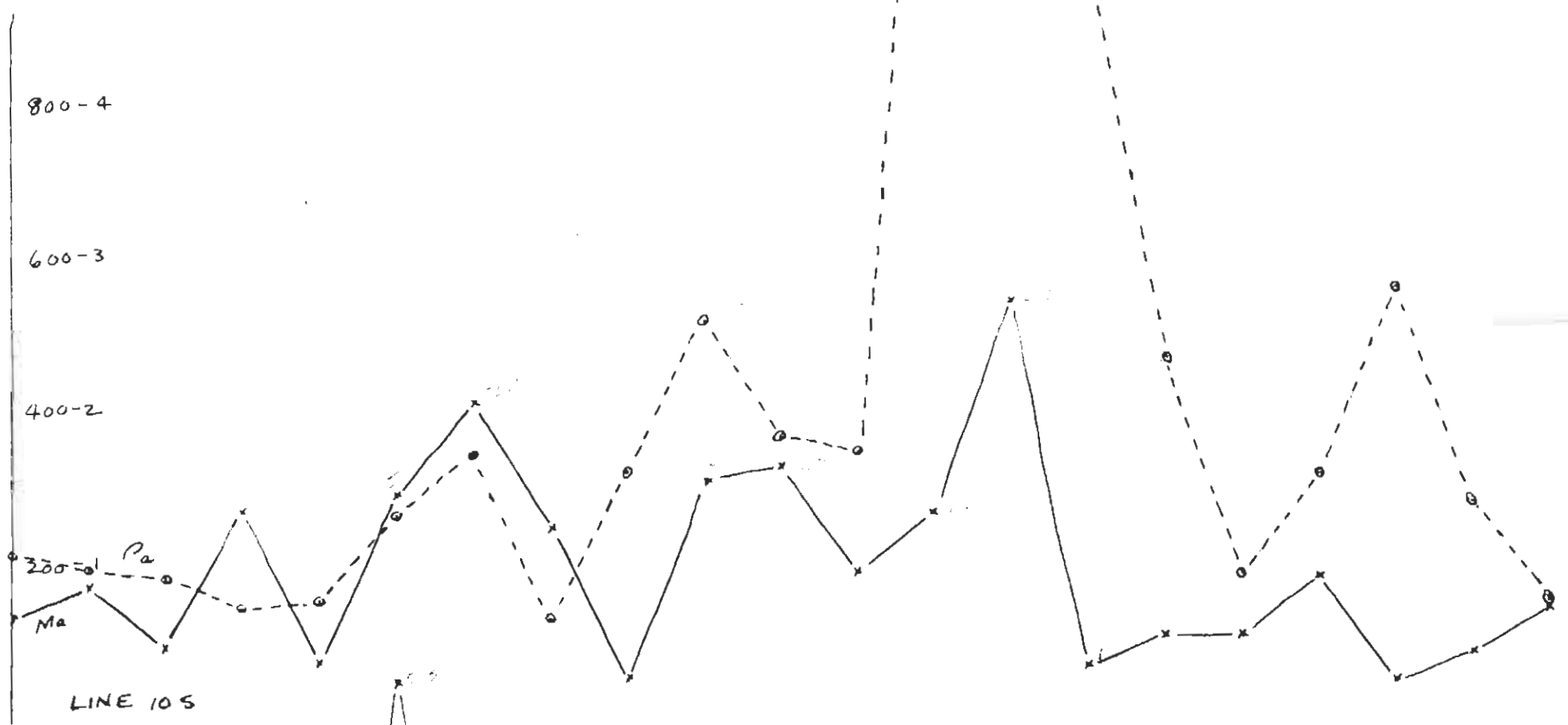
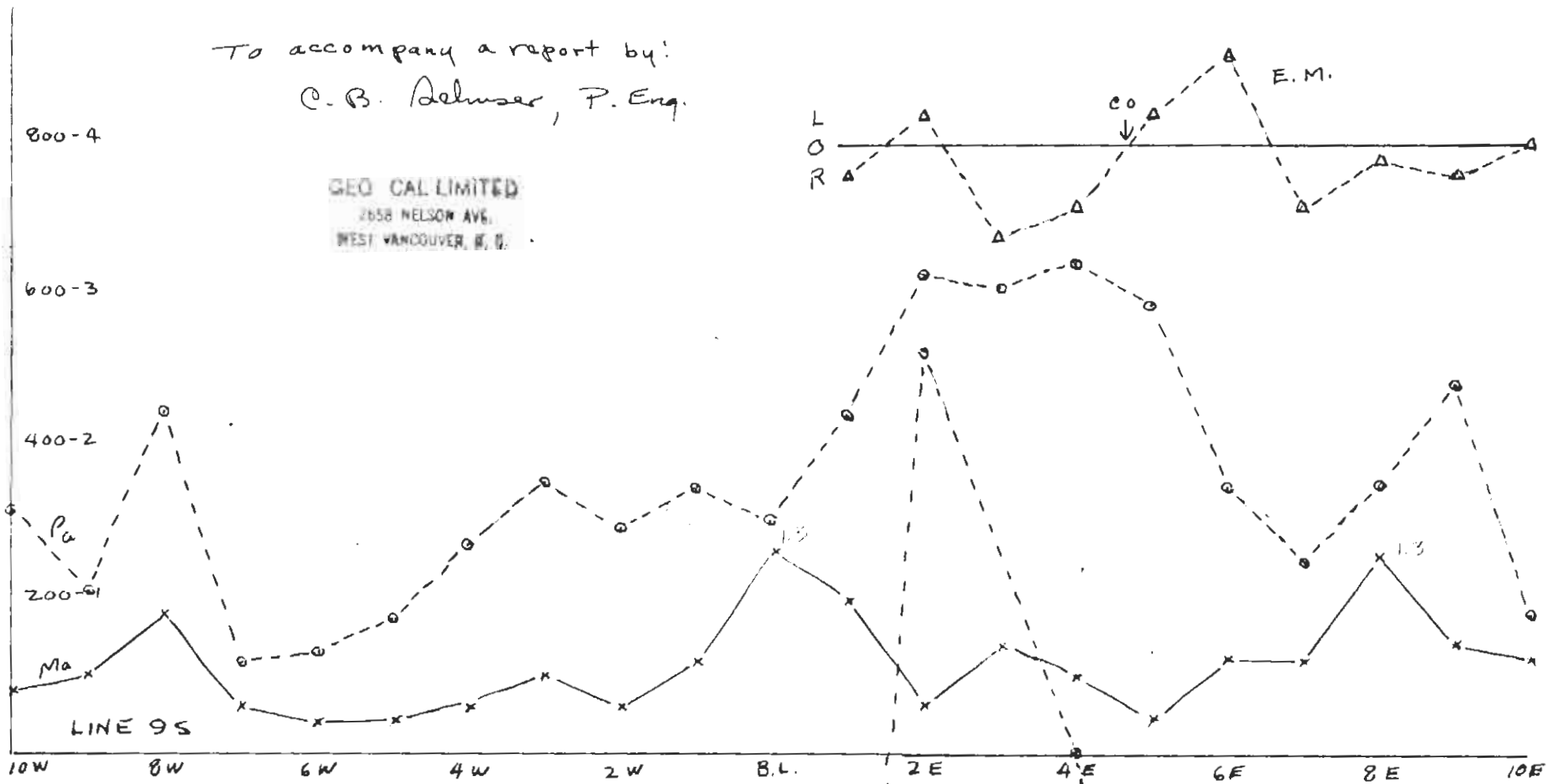
GEO CAL LIMITED
 2658 NELSON AVE.
 WEST VANCOUVER, B. C.

To accompany a report by:
 C. B. Selinger, P. Eng.



To accompany a report by:
 C. B. Deluser, P. Eng.

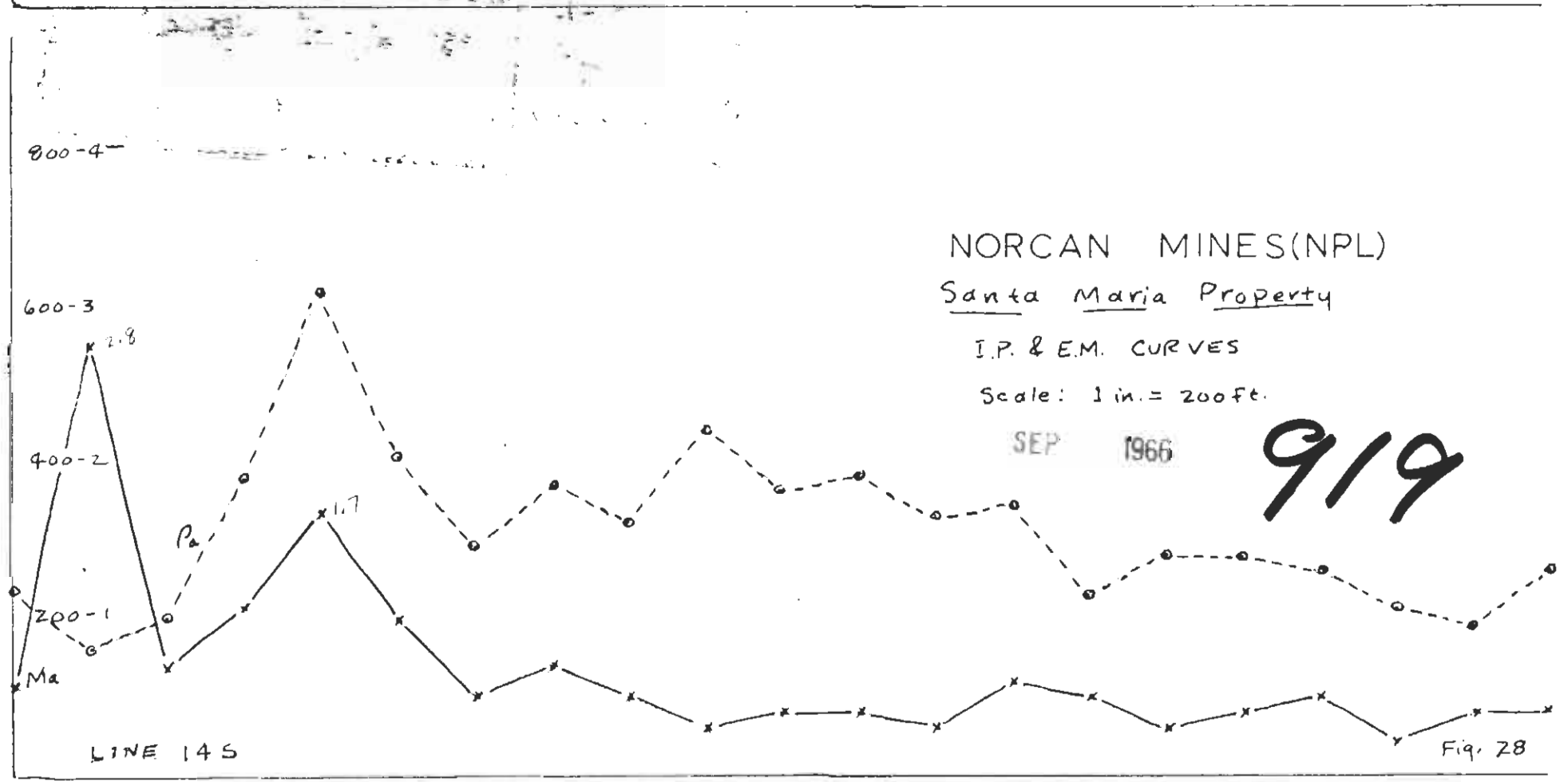
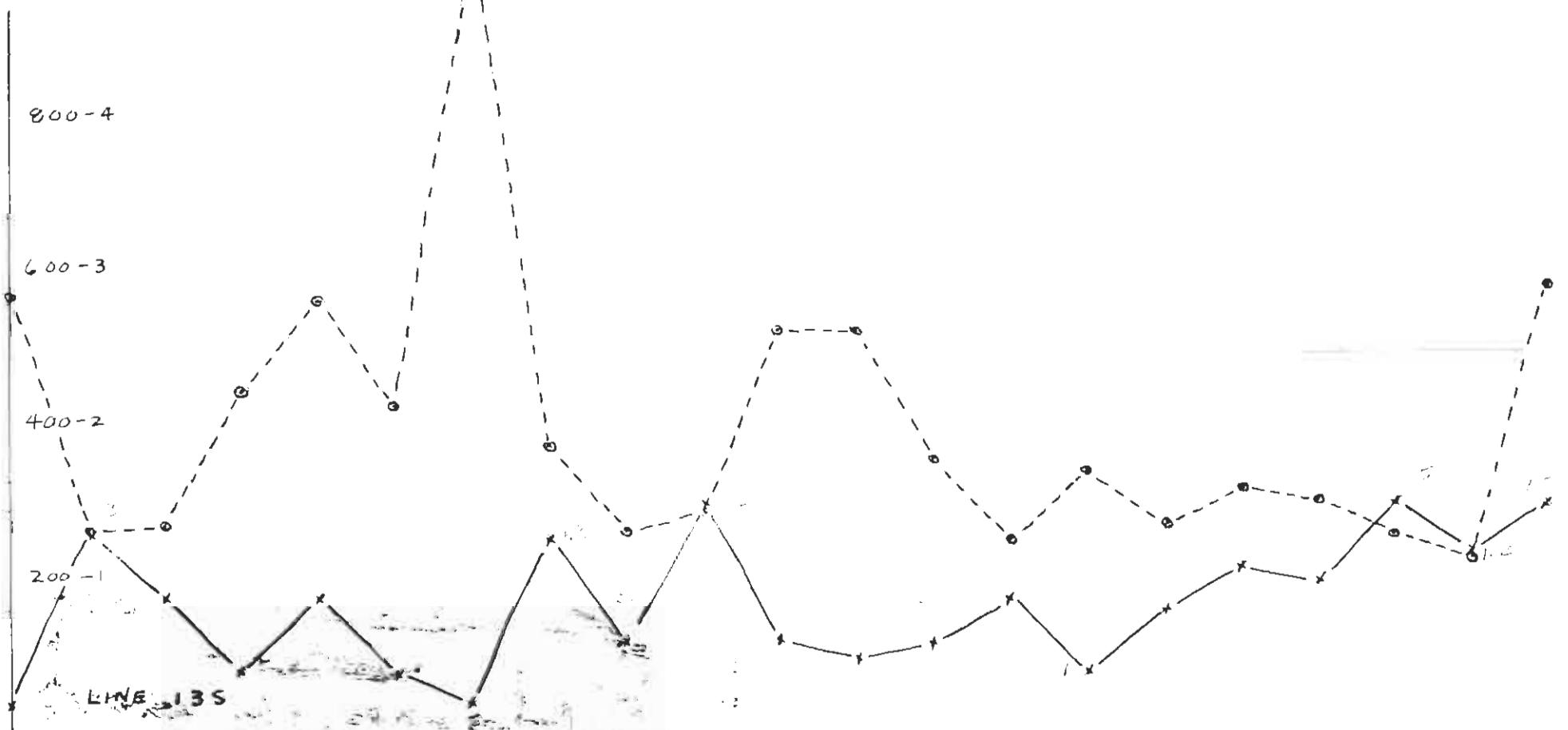
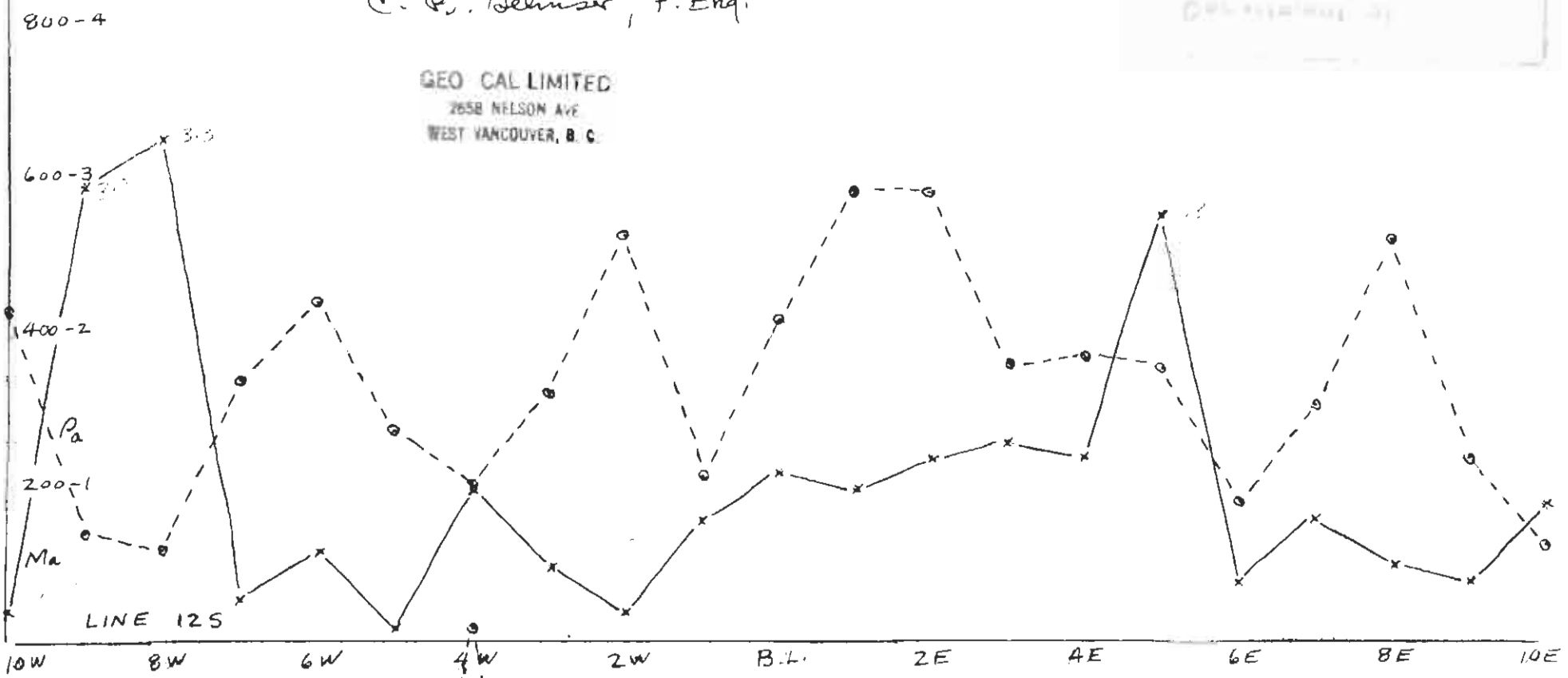
GEO CAL LIMITED
 2658 NELSON AVE.
 WEST VANCOUVER, B. C.



To accompany a report by:
 C. P. Belmer, P. Eng.

GEO CAL LIMITED
 2658 NELSON AVE
 WEST VANCOUVER, B. C.

RECEIVED
 SEP 14 1966
 DEPARTMENT OF
 MINES



NORCAN MINES (NPL)
 Santa Maria Property

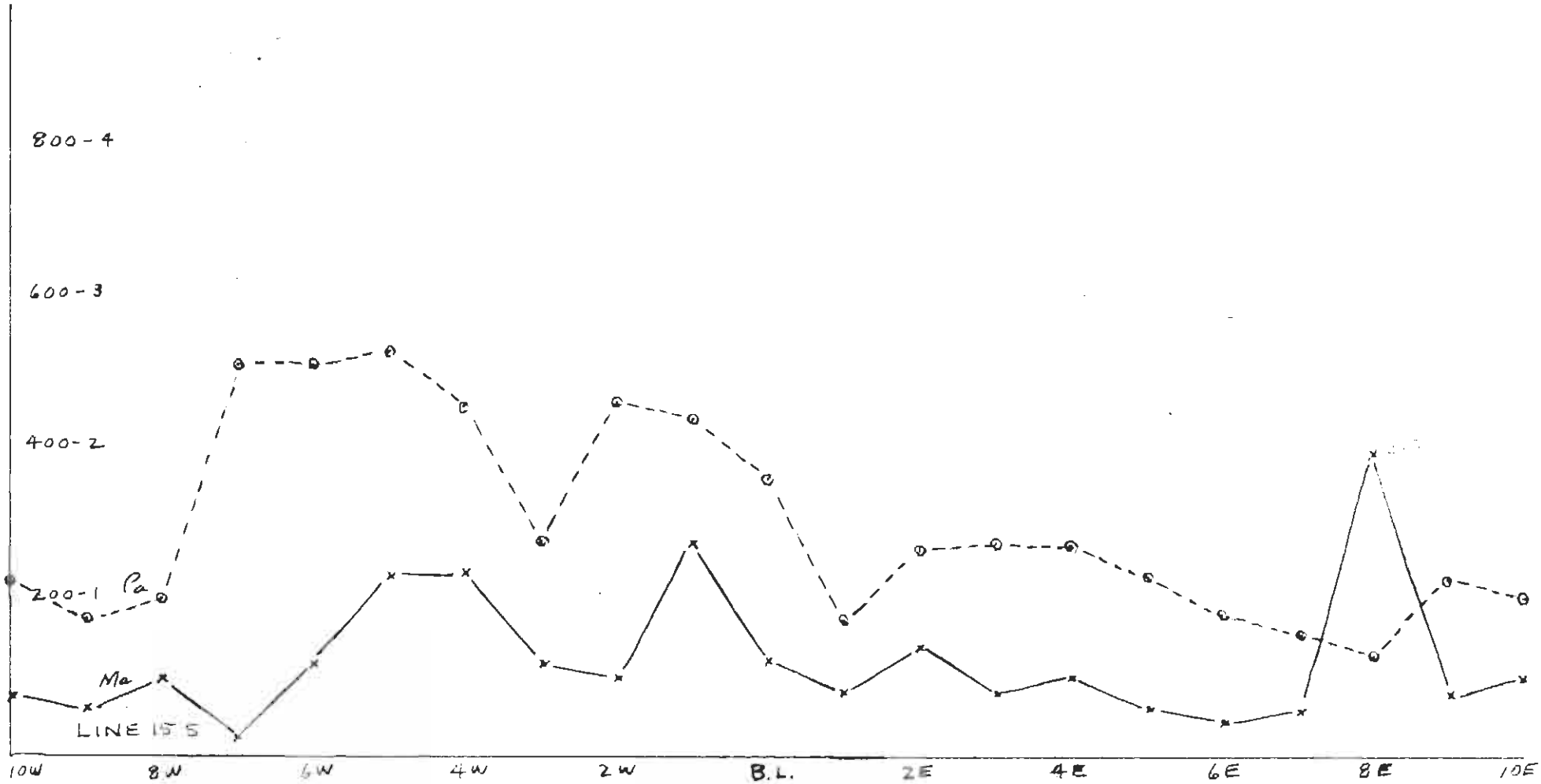
I.P. & E.M. CURVES
 Scale: 1 in. = 200 ft.

SEP 1966

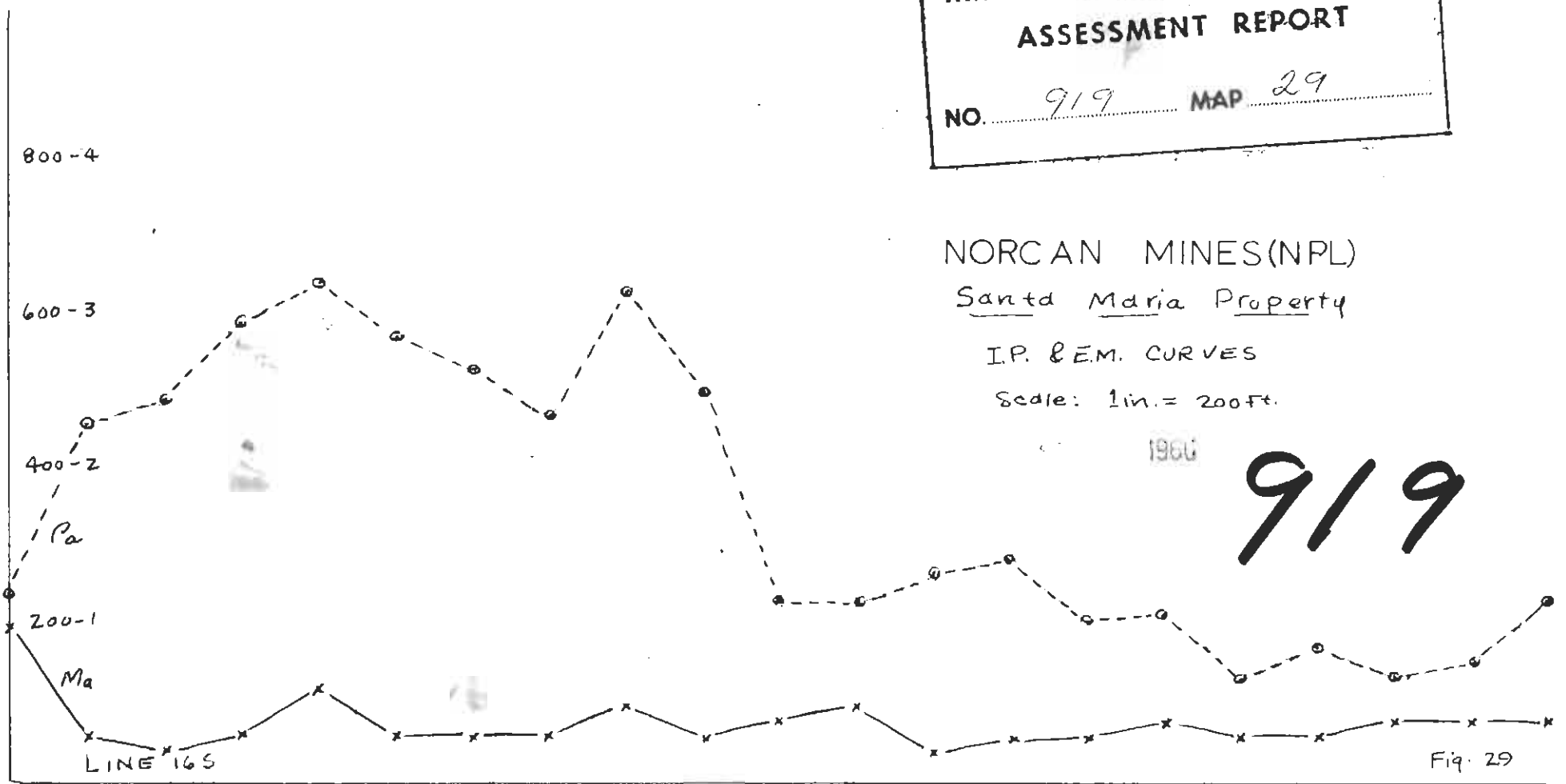
919

To accompany a report by:
 C. B. Delmer, P. Eng.

GEO CAL LIMITED
 1158 NELSON AVE.
 WEST VANCOUVER, B. C.



Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 919 MAP 29



NORCAN MINES (NPL)
 Santa Maria Property
 I.P. & E.M. CURVES
 Scale: 1 in. = 200 ft.

1966

919

Fig. 29

SUMMARY COSTS - EM AND SP SURVEYS, AERIAL EM

Details of Costs:

Wages - Norcan Mines Ltd.(NPL) to surveying and linecutting

| <u>Personnel</u> | <u>Period</u> | <u>Rate</u> | <u>Total</u> |
|-------------------|------------------|-------------|---------------|
| A. Crout | July 1-Aug 21/66 | \$700/mo. | \$ 850 |
| M. Pete | July 1-Aug 21/66 | 700/mo. | 1147 |
| T. Kellis | July 1-Aug 21/66 | 650/mo. | 800 |
| R. Finn | Aug 1-21/66 | 600/mo. | 278 |
| G. Huck | July 1-31/66 | 450/mo. | 425 |
| W.D. Thompson 111 | Aug 1-31/66 | 500/mo. | 500 |
| | | | <u>\$4000</u> |

Contractor:

Geo Cal Ltd. \$4050

| <u>Personnel</u> | <u>Period</u> | <u>Rate</u> | |
|------------------|---------------|-------------|------|
| C. Selmsler | Aug 1-21/66 | \$100/day | 465 |
| I. Poyntz | Aug 1-21/66 | 700/mo. | 1200 |

Helicopter Charges:

10 hr. at \$130 per hour 1300

Total Charges \$9350



Phone X69X7225
922-5477

STATEMENT GEO CAL LIMITED

X330X330X AVENUE X330X
2658 Nelson Ave., West Vancouver, B. C.
Calgary, Alberta Sept. 3, 1966

Name Norcan Mines Ltd.

Address 14th Floor, 675 W. Hastings, Vancouver, B. C.

To Professional Services 19 days @ \$150.00 per-day \$...2850.00...

| | |
|-------------------------------|-------------------|
| CBS - 3 days @ 100.00 | 300.00 |
| CBS - 1 day plotting @ 100.00 | 100.00 |
| CBS - 8 days on the property | 800.00 |
| | <u>\$ 4050.00</u> |

Less advance - July 22 of \$1000.00 3050.00

Expenses:

| | |
|----------------------------|-------------------|
| Telephone calls | \$8.00 |
| Taxi, 1st trip | 12.50 |
| " 2nd trip | 8.25 |
| Hotel - Smithers | 21.65 |
| Meals - 2 men @ \$5. each | 10.00 |
| " " " " | 10.00 |
| Avis Rental Service | 24.21 |
| Air fare - 1st trip (2) | 180.00 |
| " - J.F.S. | 90.00 |
| Overweight \$6.00 each way | 12.00 |
| Map printing | 14.95 |
| | <u>391.56</u> |
| Total | <u>\$ 3441.56</u> |

*to ledger 8
trip 5/66
C.F.S.*

Per C. B. Delrose

RENTANCES MUST SHOW THIS RENTAL AGREEMENT NUMBER

NEWS OTHER

MISER
ON AVE.
VANCOUVER
BC

DATE AND TIME IN
20/06/66 4:30

DATE AND TIME OUT
9 AM

| | |
|-------|-------|
| 12 | 1776 |
| 12 | |
| 10.00 | 10.00 |
| | |
| | 2776 |
| | |
| | 555 |
| | |
| | 2221 |

13. TAX

DAYS 2.00
WKS. @ 10.00
MOS. @ 10.00

21. DAMAGES

22. TOTAL CHARGES

23. LESS CREDITS

24. NET AMOUNT DUE 24-21

25. RECEIVED REFUND (TO BE INITIALED BY RENTER)

21. THE LESSOR HEREBY LEASES TO THE RENTER... (Bilingual text)

21. COLLISION... (Bilingual text)

ACCEPTS DECLINES

INITIALS EPD

26. DEPOSIT OR OTHER SPECIFIED CREDIT

27. LOCAL ADDRESS

28. LOCAL TEL. NO.

29. CHECK IN STATION

30. IN BY

31. IN BY

32. RECEIVED REFUND (TO BE INITIALED BY RENTER)

FORM GPO 54 (49) (REV) 1966

ALL CORRESPONDENCE MUST SHOW THIS NUMBER. CE NUMERO DOIT APPARAÎTRE SUR TOUTE CORRESPONDENCE. **No. C 586851**

CUSTOMER'S COPY - THIS IS NOT YOUR INVOICE COPIE DU CLIENT - CECI N'EST PAS VOTRE FACTURE

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 919 MAP

DOMINION OF CANADA:
 PROVINCE OF BRITISH COLUMBIA.

To Wit:

In the Matter of costs applying to assessment work on the Howson Basin property of Norcan Mines Ltd. (N.M.L.) incurred in 1966 for ground EM & SP surveys & aerial EM surveys.

I, Stanley John Hunter

of 6476 Churchill Street, Vancouver, B.C.

in the Province of British Columbia, do solemnly declare that the following charges were incurred in geophysical surveys using ground EM, ground SP, aerial geophysics on the Howson property of Norcan Mines Ltd. (N.M.L.)

| | | | | |
|------------------------|----------------|--------------|----------------|------------|
| charges - geo col. Rd. | 4050.00 | Distribution | | |
| Norcan Mines labour | 4000.00 | | Ground EM & SP | \$ 8350.00 |
| Helicopter | 1300.00 | | Aerial EM | 1000.00 |
| | <u>9350.00</u> | | | |

ground survey EM & SP.

| LINE | FOOTAGE | COSTS | CLAIMS | GROUP |
|--------|---------|---------|----------------------------|------------------|
| 5.000 | | \$ 1240 | PR 76FR, PR 74 | DUNHES |
| 6.000 | | 930 | PR 73, PR 71FR, PR 75 | SANTA MARIA |
| 10.000 | | 1540 | CRAY 14, CRAY 13, SA 9FR | MOOSESKIN JOHNNY |
| 30.000 | | 4640 | SA 20, SA 19, SA 18, SA 17 | WAR EAGLE |

54,000 FT. \$ 8350

Aerial survey

| CLAIMS | COST | CLAIMS | COST |
|-----------|--------|---------|--------|
| PR 125 FR | \$ 100 | PR 66 | \$ 100 |
| SA 31 | 100 | PR 35FR | 100 |
| SA 32 | 100 | PR 33 | 100 |
| PR 128 | 100 | PR 34 | 100 |
| SA 31 | 100 | PR 1 | 100 |

Payroll - Survey & Finishing

| PERSONNEL | PERIOD | RATE | TOTAL |
|------------------------------|------------------|------------|---------|
| Geol. { I. POYNTZ OPERATOR | AUG 1-21/66 | \$ 780/MO. | 465.00 |
| | AUG 1-21/66 | \$ 180/Day | 1200.00 |
| Norcan Mines Ltd. { A. CROFT | JULY 1-AUG 21/66 | 700/MO. | 850.00 |
| | JULY 1-AUG 21/66 | 700/MO. | 1147.00 |
| M. PETE | JULY 1-AUG 21/66 | 650/MO. | 800.00 |
| | JULY 1-21/66 | 600/MO. | 275.00 |
| R. FINN | JULY 1-31/66 | 450/MO. | 425.00 |
| | AUG 1-31/66 | 500/MO. | 500.00 |

Summary of charges

| | |
|----------------------------|-------------------|
| Norcan Labour as itemized | 4000.00 |
| Helicopter 10 hr. at \$130 | 1300.00 |
| New line Road | 4050.00 |
| Total | \$ 9350.00 |

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 13th day of March, 1967, A.D.

Stanley John Hunter

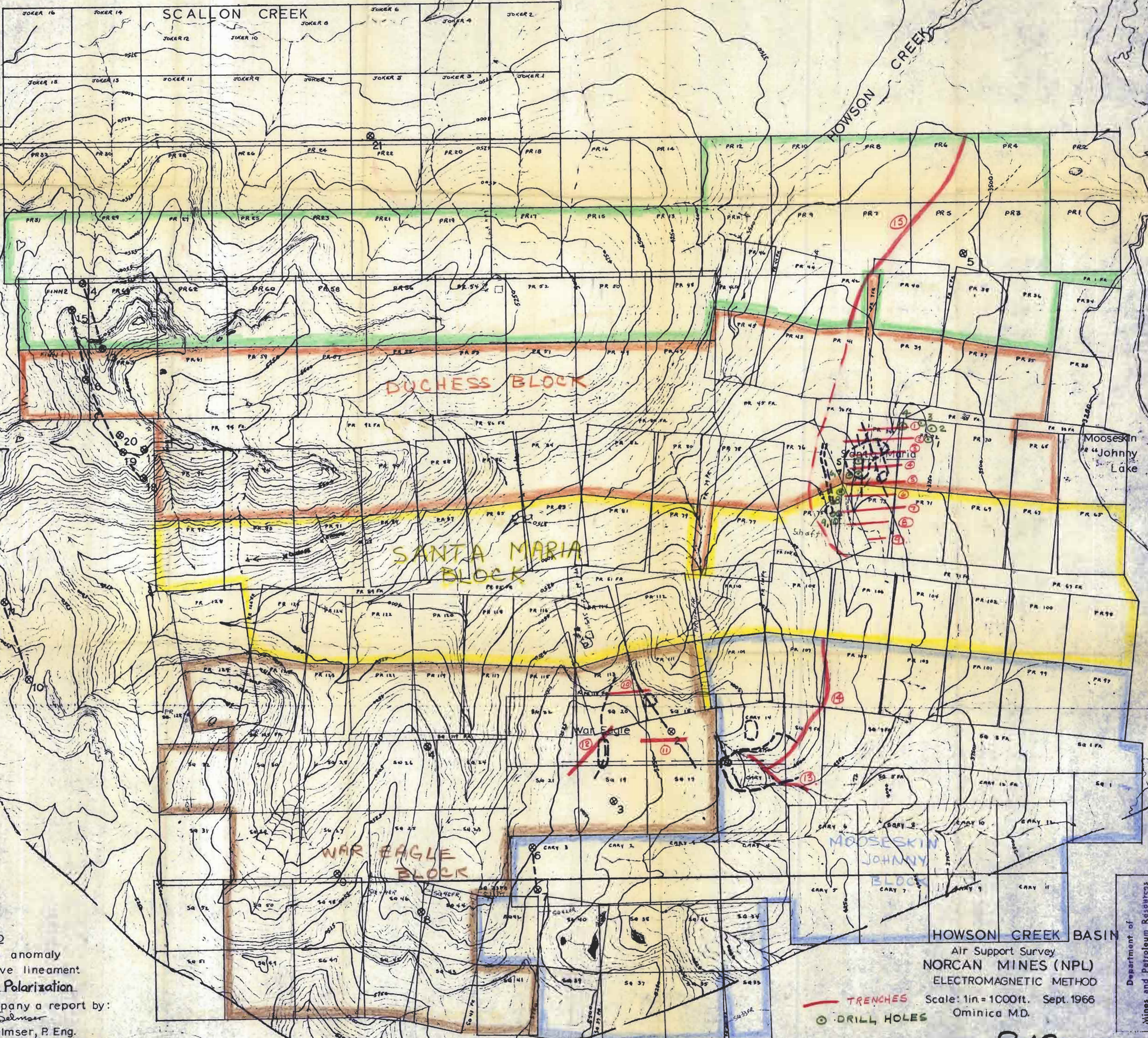
[Signature]
 A Commissioner for taking Affidavits within British Columbia or
 A Notary Public in and for the Province of British Columbia.

S.J. HUNTER & ASSOCIATES LTD.
 CONSULTING ENGINEERS
 VANCOUVER-BRITISH COLUMBIA

CLAIM PLAN & ANOMALIES
HOWSON BASIN PROPERTY
 NORCAN MINES LTD.

SCALE 1" = 1000' DATE OCT. 14/66
 PROJECT No. 45 EXAMINED BY S.J. HUNTER P. ENG.

5530



LEGEND

- ⊗ Airborne anomaly
- Conductive lineament
- ⊕ Induced Polarization

To accompany a report by:
 C. B. Selmsier
 C. B. Selmsier, P. Eng.

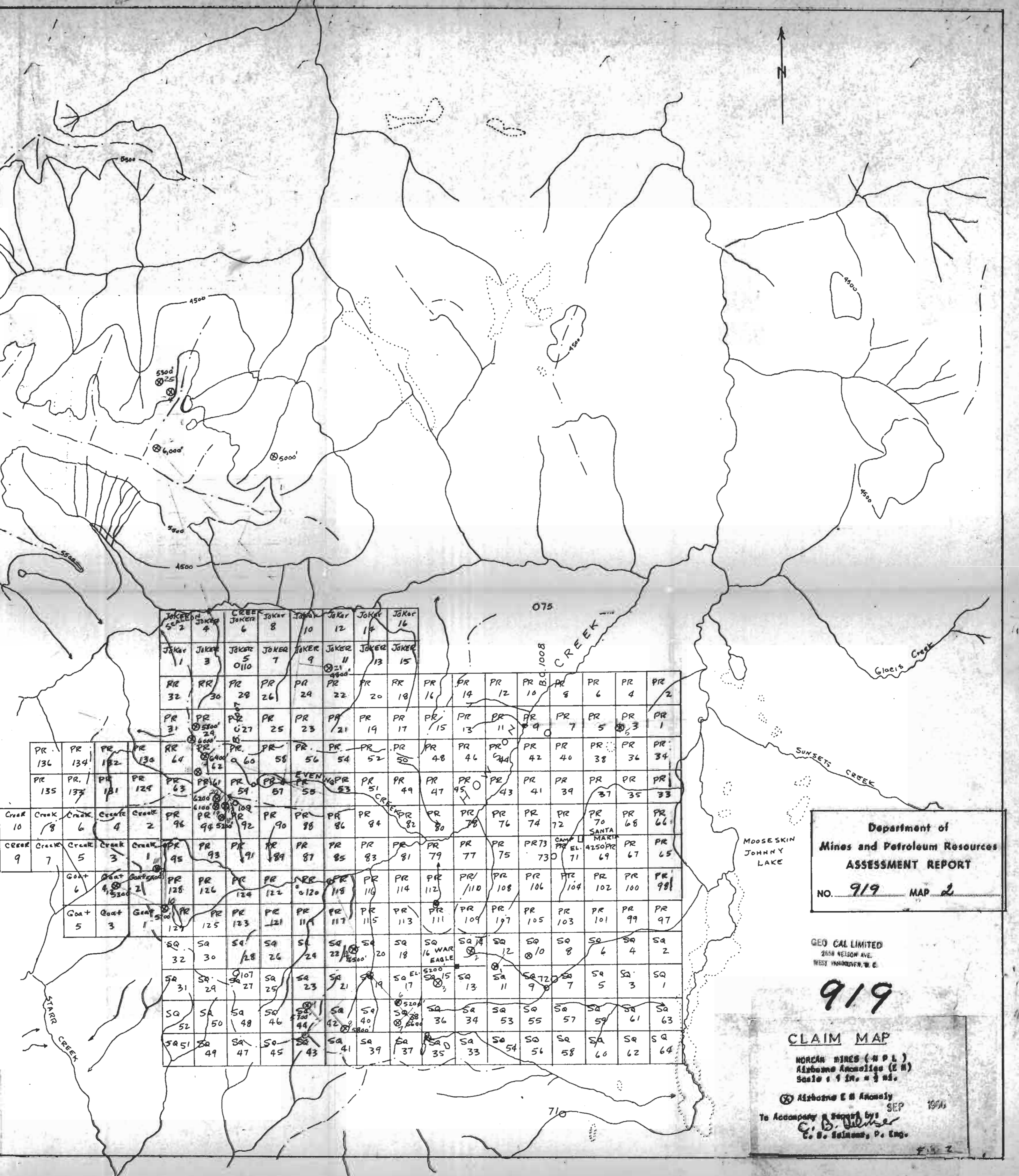
HOWSON CREEK BASIN
 Air Support Survey
 NORCAN MINES (NPL)
 ELECTROMAGNETIC METHOD
 Scale: 1in = 1000ft. Sept. 1966
 Ominica M.D.

— TRENCHES
 ⊙ DRILL HOLES

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 919 Map 1

919

54°, 126', SW



| | | | | | | | | | | | | | | | | | | | | |
|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |
| Creek 10 | Creek 9 | Creek 8 | Creek 7 | Creek 6 | Creek 5 | Creek 4 | Creek 3 | Creek 2 | Creek 1 | PR 96 | PR 95 | PR 94 | PR 93 | PR 92 | PR 91 | PR 90 | PR 89 | PR 88 | PR 87 | PR 86 |
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |
| PR 136 | PR 134 | PR 132 | PR 130 | PR 128 | PR 126 | PR 124 | PR 122 | PR 120 | PR 118 | PR 116 | PR 114 | PR 112 | PR 110 | PR 108 | PR 106 | PR 104 | PR 102 | PR 100 | PR 98 | PR 97 |
| PR 135 | PR 133 | PR 131 | PR 129 | PR 127 | PR 125 | PR 123 | PR 121 | PR 119 | PR 117 | PR 115 | PR 113 | PR 111 | PR 109 | PR 107 | PR 105 | PR 103 | PR 101 | PR 99 | PR 97 | PR 97 |

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. **919** MAP **2**

GEO CAL LIMITED
 2858 NELSON AVE.
 WEST VANCOUVER, B.C.

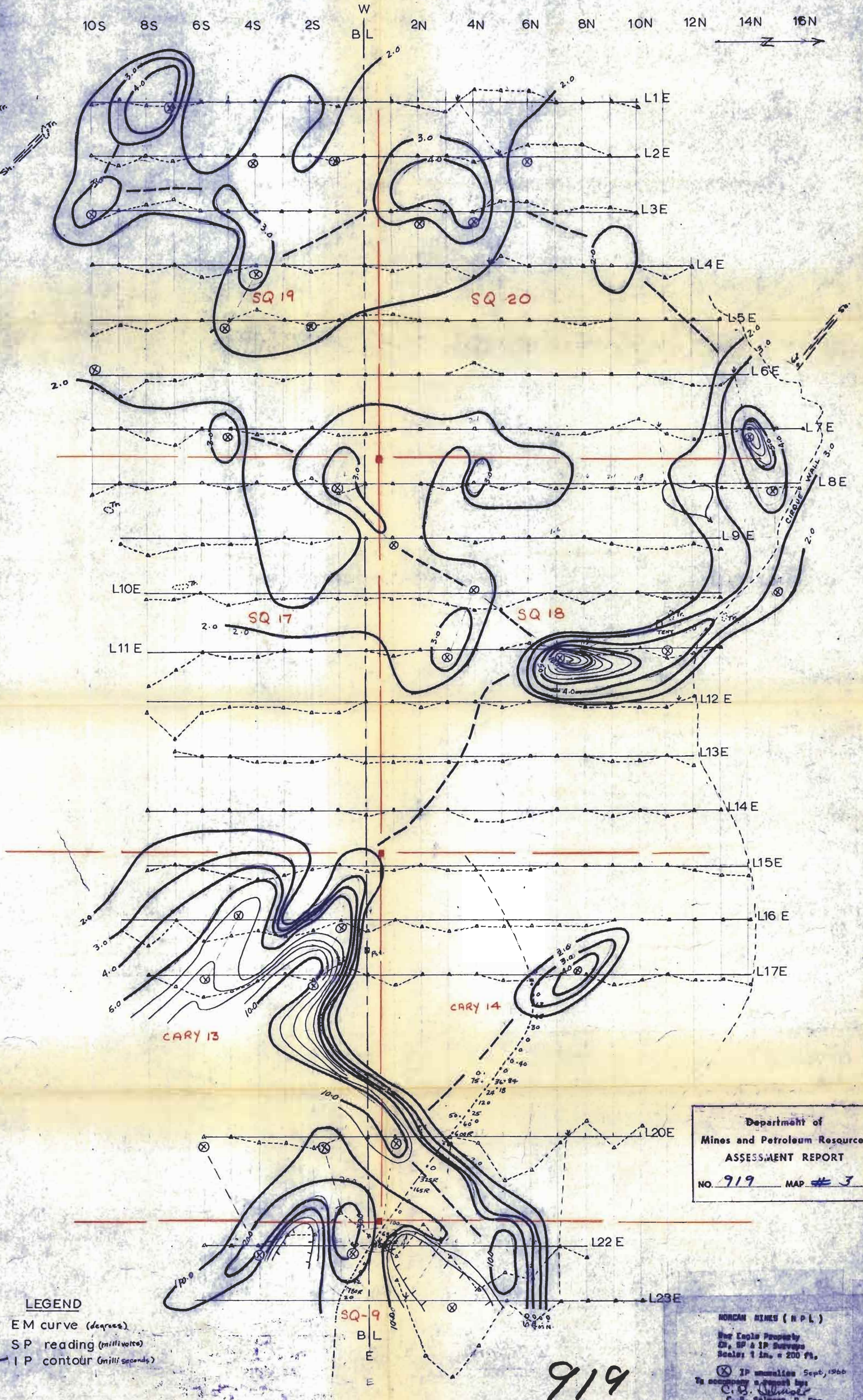
919

CLAIM MAP

NORCAN MINES (N.P.L.)
 Alberta Anomalies (E.M.)
 Scale: 1 in. = 1/2 mi.

⊗ Alberta E.M. Anomaly
 To Accompany Report by: **SEP 1996**
C. B. Wilner
 C. B. Wilner, P. Eng.
 F. 2

10S 8S 6S 4S 2S W 2N 4N 6N 8N 10N 12N 14N 16N



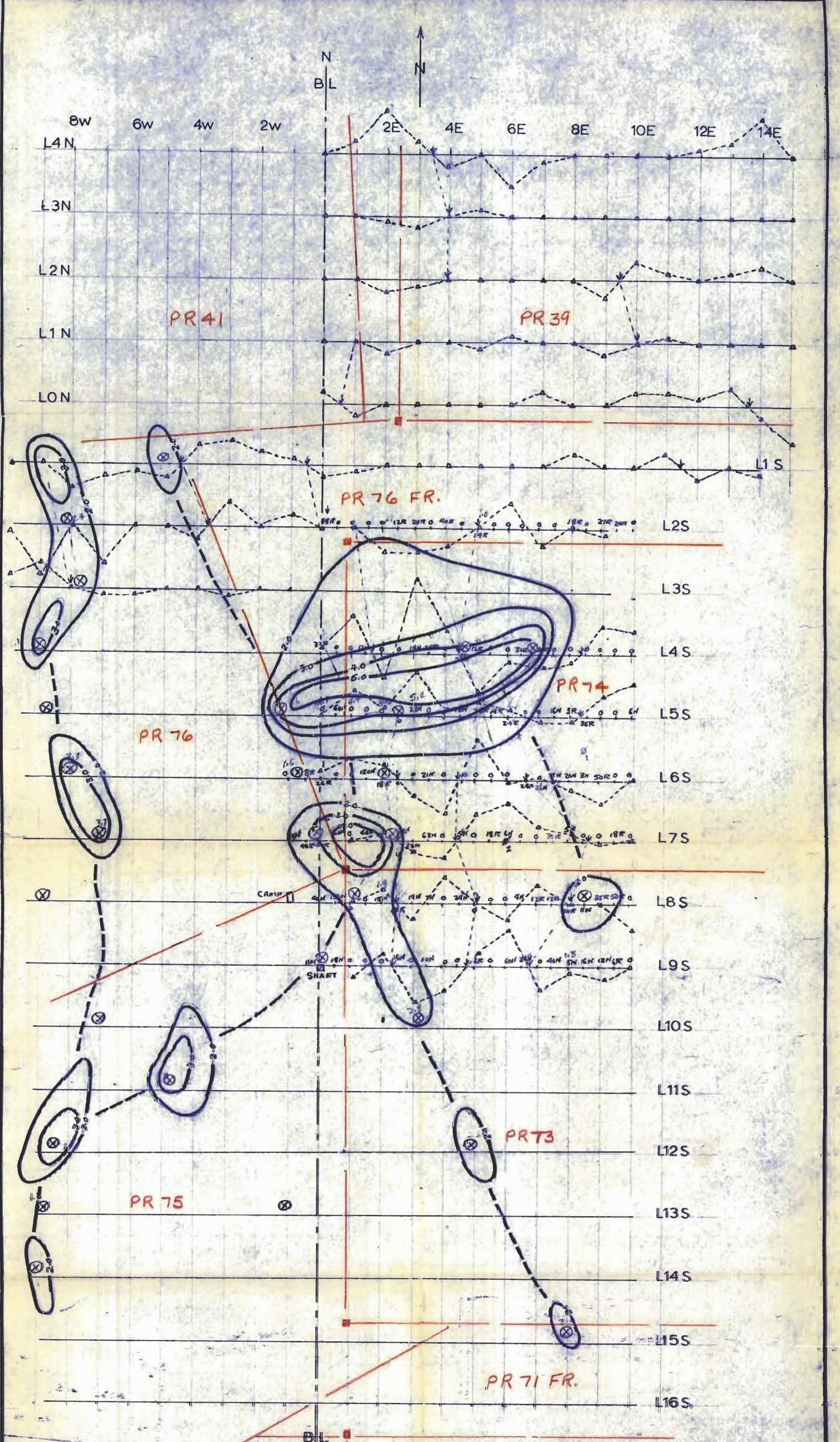
LEGEND

- EM curve (degrees)
- 780R SP reading (millivolts)
- 2.0 IP contour (milli seconds)

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 919 MAP # 3

MINING (N.P.L.)
The Eagle Property
EM, SP & IP Surveys
Scale: 1 in. = 200 ft.
IP anomalies Sept, 1966
To accompany a report by
C. D. Salmer, P. Eng.
C. D. Salmer, P. Eng.

919



LEGEND
 - - - - - EM curve (degrees)
 70R SP reading (millivolts)
 200 IP contour (milli seconds)

919

NORCAN MINES (INCL.)
 Santa Maria Property
 EM, SP & IP Surveys
 Scale 1" = 200 Ft.
 IP anomalies Sept. 1966

To accompany a report by:
C.B. Welmsler
 C.B. Welmsler, P. Eng.

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 919 MAP 4