INTRO

A ground magnetometer and Turam electromagnetic survey was carried out over a property held by Kam-Kotia Porcupine Mines Limited and located in Sheraton Township, Larder Lake Mining Division, Ontario. The survey was carried out by Huntec Limited during the period April 12th to May 19th, 1965. A total of 30.04 line miles was surveyed by Turam and 32.27 line miles by magnetometer, and the results of the survey are shown on the maps accompanying this report.

The survey was divided into two separate properties. The first property is located in Concession 4 of Sheraton Township and consisted of Claims L86837 to 39, L86841, L86845, L85884 to 886 inclusive. The second area is located south of the first and ran diagonally across the concession lines occupying part of Concessions 2 and 3. All or parts of the following claims were included in this area: L81423 and L81424, L81428 to L81434, L86846 and L86847, L87505 to L87507, and L87575. Figure 1 shows the locations of these two properties.

The line cutting phase of the survey was carried out to the specifications of Kam-Kotia Porcupine Mines Limited as part of a separate contract. Traverse lines at 200-foot intervals were turned off at right angles to the base line which was established to the center of each property. Readings for both the magnetometer and Turam survey were made at 100-foot station intervals. For the magnetometer survey, fill-in readings at 50-foot station intervals were taken on steep magnetic gradients.

INSTRUMENTS

A Jalander fluxgate vertical field magnetometer was used for the magnetic survey. This instrument measures the vertical magnetic field to an accuracy of ± 10 gammas. Corrections for diurnal variations were made by tying in to previously established base stations at intervals not exceeding two hours.

For the electromagnetic, an ABEM, Type 1182 Turam electromagnetic prospecting unit was used. This unit makes use of the fact that when an electrical conductor is subjected to a primary alternating electromagnetic field, a secondary current is induced in the conductor. This in turn produces a secondary alternating electromagnetic field which, together with the primary field, produces at the surface of the ground a resultant field of different amplitude and phase from the applied primary field. These differences indicate the presence of a subsurface conductor. The primary field is set up by an alternating current flowing in either a long grounded cable or a closed inductive loop laid out on the ground.

Two receiver staffs which are in effect horizontal search coils, connected by a lightweight shielded cable to a compensator-amplifier are used to measure the distortion in the electromagnetic field. The quantities measured are:

(a) the ratio of the field strength detected at each coil, and

(b) the phase difference in the field at the two coils.

In order to minimize the galvanic effects from the conductive clay overburden and similar effects from open faults and shear zones that may be present within the bedrock, an inductive primary loop was used exclusively as the exciting source for this particular survey.

Readings were taken outside the loop and along the traverse lines at 100-foot station intervals, using a coil separation of 100 feet. Readings are plotted at the center of the 100-foot coil spread. The equipment was operated at 660 cycles per second for the whole of the survey.

To complete the survey, two cable loops were used for each property. The coordinates of their corners are as follows:

Area No. 1

(1) 2S, 4W, 2S, 24E, 27S, 24E and 27S, 4W

(2) 2S, 24E, 2S, 52E, 27S, 52E and 27S, 24E (Loop Size 2500' x 2800')

Area No. 2

(1) Loop Size 3200' x 2500' - 15S, 8E, 15S, 40E, 40S, 40E, 40S and 8E

(2) Loop Size 3600' x 2500' - 15S, 8E, 40S, 8E, 40S, 28W, 15S and 28W

Where these coordinates do not exist as picket points, they were located by the method of compass and pace.

Six maps accompany this report. The results of the magnetic survey and of the Turam survey are shown on separate maps for each property. An interpretation of both the Turam and magnetic data is shown on a separate copy of the magnetic maps. All maps are at a scale of 1 inch to 200 feet.

RESULTS AND INTERPRETATION

Magnetic Survey

Area No. 1

From the ground magnetometer survey, the area can be divided into two areas of different magnetic characteristics. In the first case, there are three zones in Area 1 which are characterized by rapidly varying magnetic relief with changes of some 2000 to 6000 gammas occurring over several hundred feet. The survey area has been previously mapped by Federal and Provincial mapping surveys and diabase dikes have been reported in the literature which correspond to the areas of high magnetic activity. The eastern magnetic zone in Area 1 is interpreted as being very shallow and indeed large regions of outcrop were observed by the survey crew. There are two anomalous zones on the west side of Area 1 in which the magnetic activity is much reduced and which is interpreted as diabase covered by up to possibly 100 feet of overburden. The rock type between the diabase has been mapped previously as basic extrusive. These areas are characterized by relatively low magnetic relief, with variations of only 500 or 600 gammas. It should be noted that the contouring on the diabase is probably incorrect, owing to the fact that the survey lines run parallel to the direction of the diabase. The anomalies should in all probability be elongated in a north-south direction.

Area No. 2

This area has similar characteristics from a magnetic standpoint as Area 1. Five or six diabase bodies are seen crossing the area in a north-south direction. Most of these diabase occurrences outcrop or are covered by very little overburden. An exception to this rule is a west arm of the eastern-most diabase dike which appears at least 150 feet deep.

From discontinuities in the linear anomalies, some faults have been interpreted. These mainly trend in a north-south direction, but inasmuch as the interpretation is based on a relatively small amount of information, it is not felt that these faults are definite enough to establish any particular trend.

Turam Survey

Area No. 2

A complex system of anomalies lies at the north half of lines 6E to 30E. About one half of the area covered by these anomalies is underlain by a magnetic anomaly which is interpreted as a diabase intrusion. Most of the better conductor axes lie in the diabase and strike East-West. The anomalies undoubtedly are due in part to the magnetite, but some indicate fair conductivity and it is believed that they warrant further investigation. The ratio of the ratio response to the phase response (Q) is a measure of conductivity times width of the causative body. This factor has been calculated for some of the anomalies and is shown on the interpretation map. Due to the complex nature of these anomalies, the Q value is not very reliable and its usefulness in the interpretation is somewhat limited.

Anomaly A is about 1000 feet long with a Q factor greater than 1.0 across its entire length, and is considered to be the most favourable in the area. It is recommended that the anomaly be examined by a drill hole located at 11+50 North on line 18+00 East, dipping 45° to the South and extending about 450 feet.

Anomaly E lies outside the diabase in what has been generally described in previous reports as basic extrusives. This anomaly is short in length but has a fair conductivity-width index on line 8+00E. A drill hole located 100 feet north, dipping to the south and extending

500 feet, would examine the cause of this anomaly and also the material underlying the broad anomaly (D) lying to the south. Further work on the remaining anomalies should only be done if the recommended drilling results are favourable.

It is of interest to note that almost the entire length of the east contact of one of these magnetic diabase dikes is weakly conductive (anomaly F). This anomaly has out-of-phase response only and is probably due to a combined magnetic and geometric effect rather than sulphides.

Area No. 1

Almost all of the anomalies in this area are associated with the magnetically active zone, which are interpreted as diabase. Anomaly G has a relatively high conductivity-width factor of 17 and corresponds directly with the strong magnetic high. The Q factor is too high for the anomaly to have been caused by magnetite alone, and it is believed that there is a fair chance that sulphide mineralization is the cause. The remaining anomalies H, J, and K in the diabase area are of doubtful quality and should only be investigated if anomaly G looks promising as a result of further investigation.

Anomalies L and M have a very unusual characteristic in that they show a good ratio response but the phase response is negative. There are no models known to us which can produce this peculiar condition. They may possibly be a result of extreme relief on the bedrock. It is felt that further investigation is not warranted.

SUMMARY

1. A combined magnetic and electromagnetic Turam survey was carried out on approximately 32 line miles on two claim groups in Sheraton Township, Ontario.

2. The magnetic survey outlined several diabase dikes and a few faults in area No. 2.

3. The Turam electromagnetic anomalies generally were associated with magnetic rock and are of a complex nature that does not lend itself to accurate interpretation. It is probable that the magnetite contributes somewhat to the response but at least one anomaly in each area has a conductivity width-factor that indicates possible sulphides. It is recommended that these be examined by drilling and that a decision to examine the remaining anomalies be based on the results of this drilling.

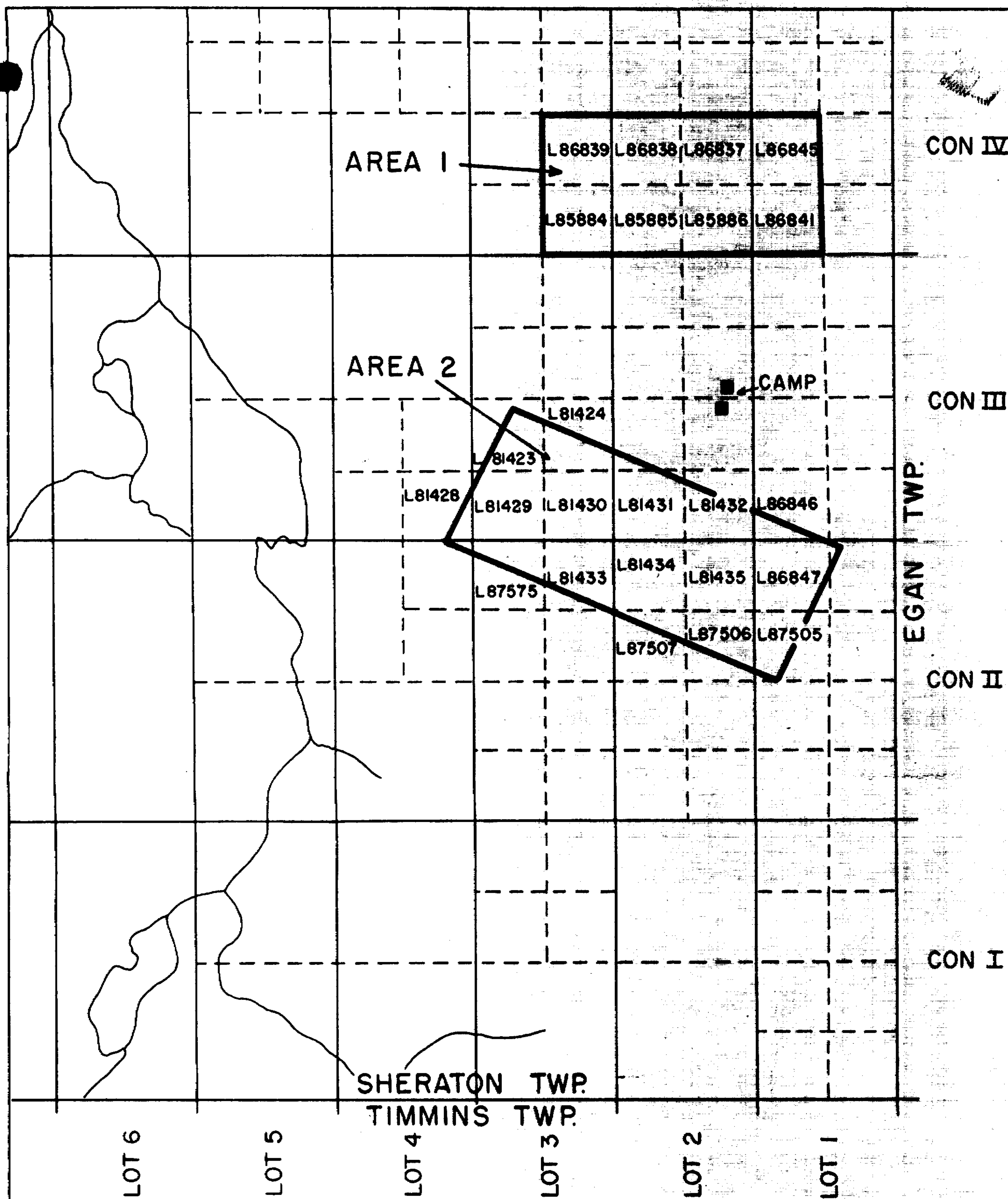
HUNTEC LIMITED

R. K. Watson

R. K. Watson, B.A.Sc.
P. Eng.

REGISTERED PROFESSIONAL ENGINEER
R. K. WATSON
PROVINCE OF ONTARIO

Toronto, Ontario
July, 1965



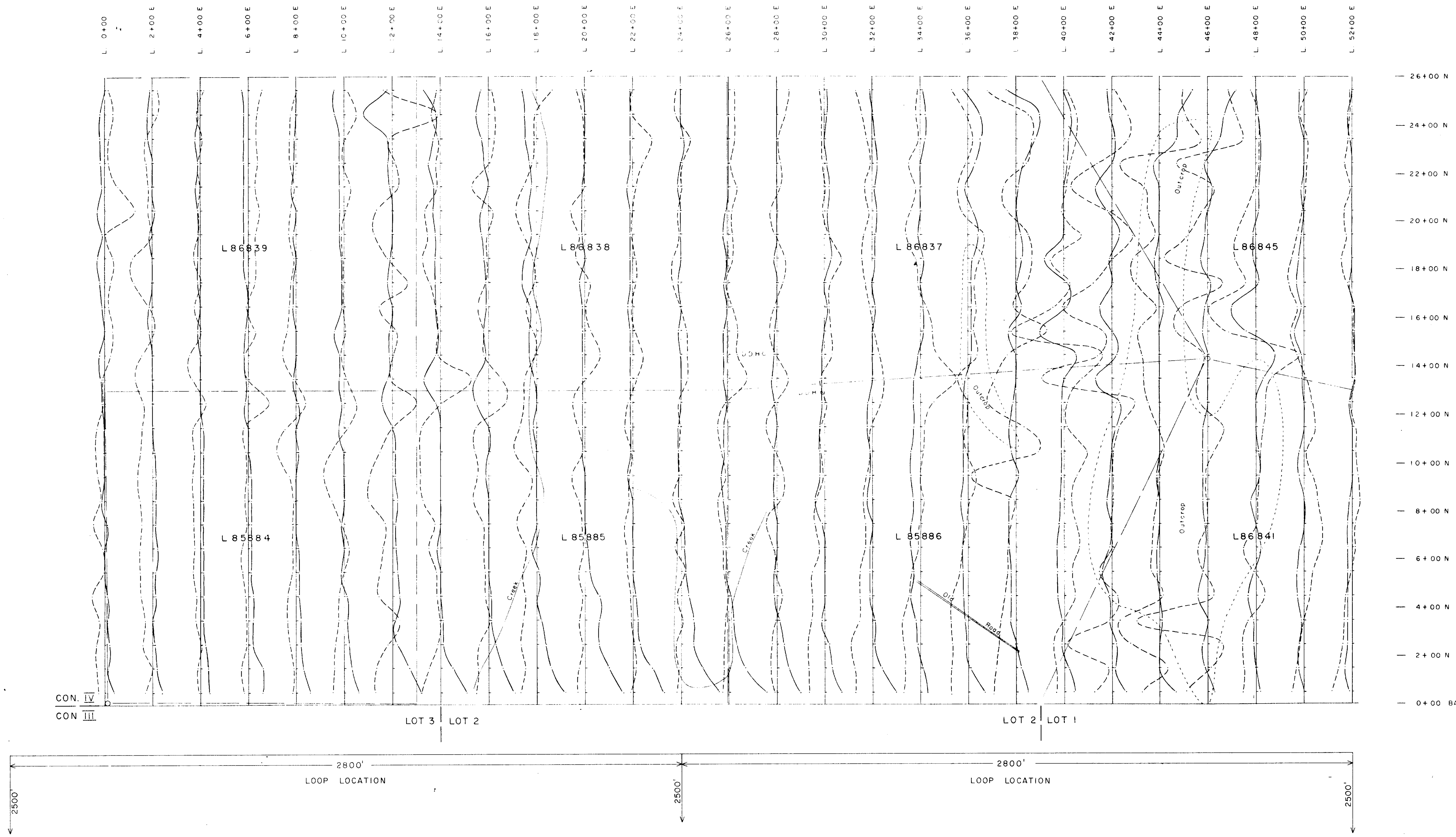
LOCATION OF AREAS SURVEYED

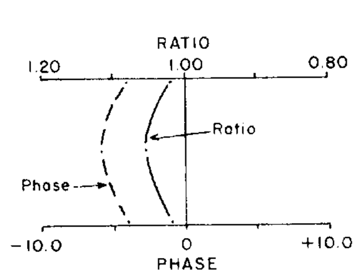
SHERATON TOWNSHIP

LARDER LAKE MINING DIVISION, ONTARIO

Scale: 1 inch = 1320 feet

Figure 1





Coil separation - 100'

Frequency - 660 c.p.s.

KAM-KOTIA PORCUPINE MINES LIMITED

TURAM ELECTROMAGNETIC SURVEY

SHERATON TOWNSHIP

LARDER LAKE MINING DIVISION, ONTARIO

AREA I

Scale: 1 inch = 200 feet

HUNTEC LIMITED, Toronto, Canada - July, 1965

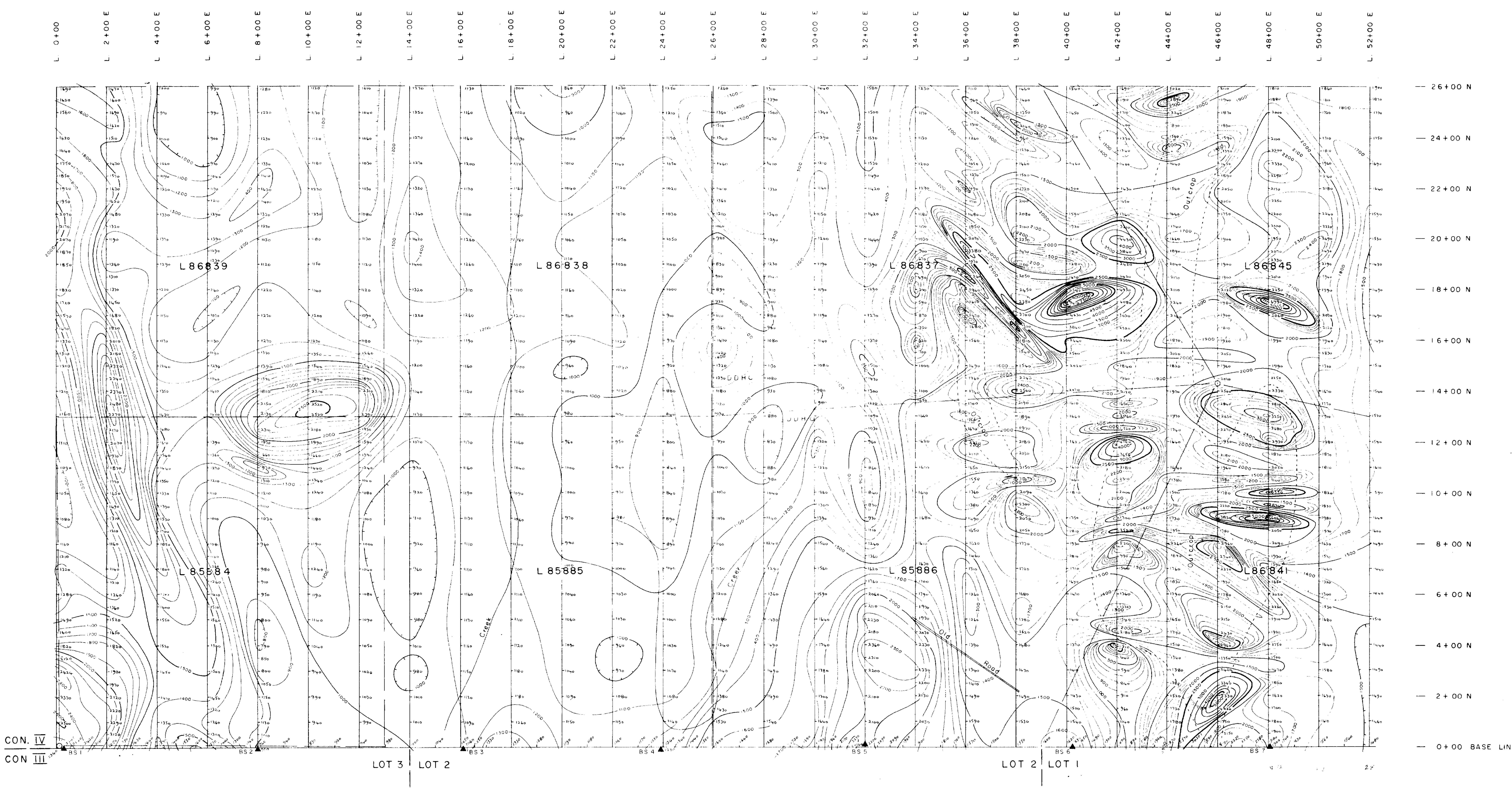
R K Watson

Roger K. Watson, B.A.Sc., P.Eng., Geophysicist.

42A07NE0237 63.1911 SHERATON

200

PH 233/65



100, 200, 300, 400, 600 etc gamma contour

500, 1000, 1500, 2000 etc gamma contour

0, 2500, 5000, 7500 etc gamma contour

Magnetic low

KAM-KOTIA PORCUPINE MINES LIMITED

GROUND MAGNETOMETER SURVEY

SHERATON TOWNSHIP

LARDER LAKE MINING DIVISION, ONTARIO

AREA I

Contour Interval: 100 gamma

Scale: 1 inch = 200 feet

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Roger K. Watson, B. A. Sc., P. Eng., Geophysicist

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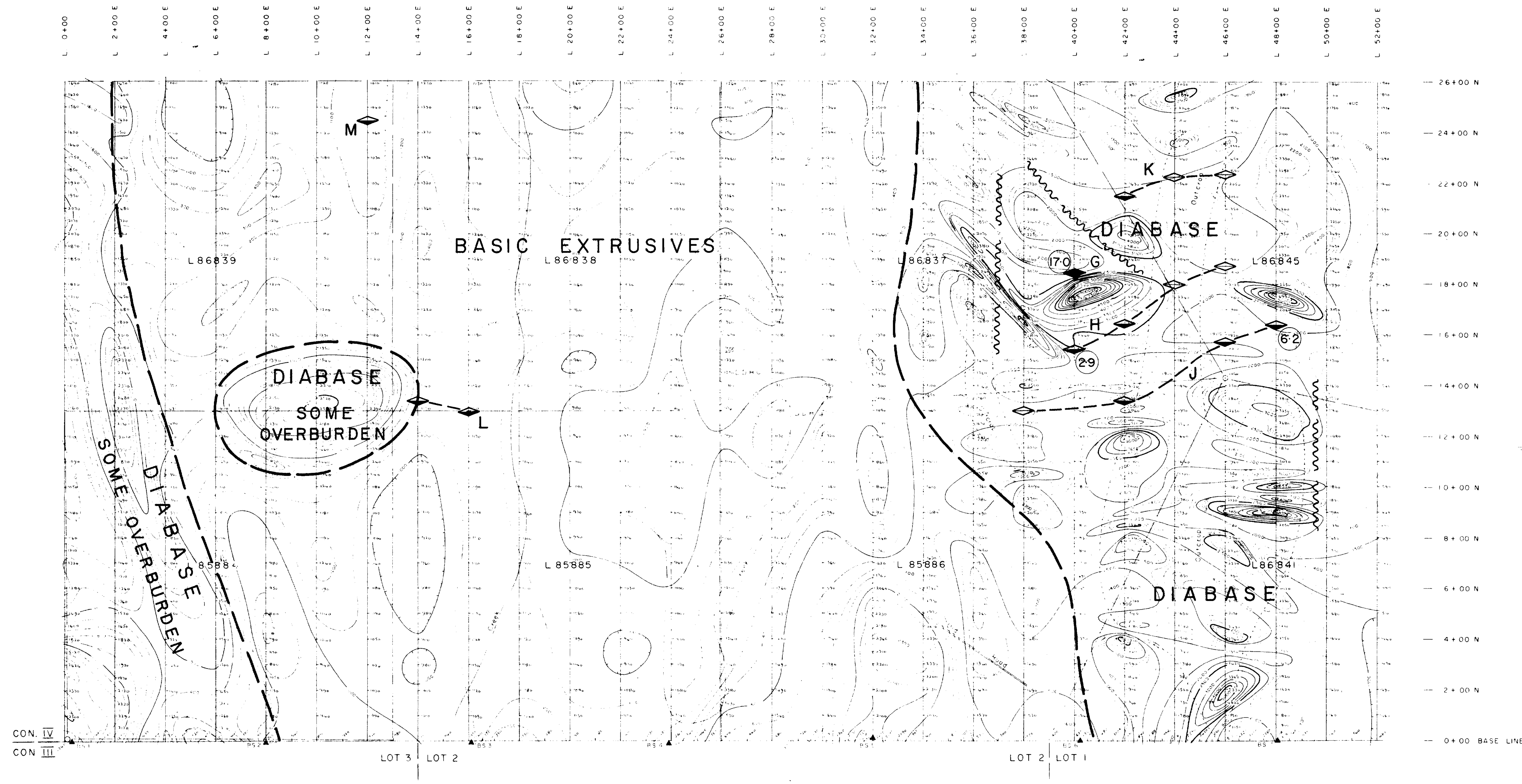

INTERPRETATION LEGEND

Boundary of observed outcrop

Contact interpreted from Magnetics

Interpreted fault

3.0 Conductivity - width index

A Good conductor axis, probably in bedrock

Medium conductor axis

Weak conductor axis, probably overburden

Very weak conductor, associated with diabase contact

200 100, 200, 300, 400, 600 etc gamma contour

1500 500, 1000, 1500, 2000 etc gamma contour

5000 0, 2500, 5000, 7500 etc gamma contour

Magnetic low

KAM-KOTIA PORCUPINE MINES LIMITED

GROUND GEOPHYSICAL SURVEYS

SHERATON TOWNSHIP

LARDER LAKE MINING DIVISION, ONTARIO

AREA I

INTERPRETATION

Contour Interval 100 gamma

Scale: 1 inch = 200 feet

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42A07NE0237 63.1911 SHERATON

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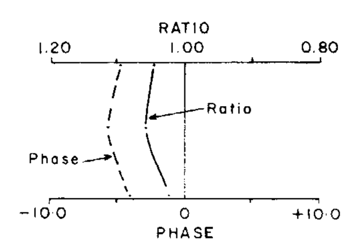

Coil separation = 100'

Frequency = 660 c.p.s.

KAM-KOTIA PORCUPINE MINES LIMITED

TURAM ELECTROMAGNETIC SURVEY

SHERATON TOWNSHIP

LARDER LAKE MINING DIVISION, ONTARIO

AREA 2

Scale: 1 inch = 200 feet

HUNTEC LIMITED, Toronto, Canada – July, 1965

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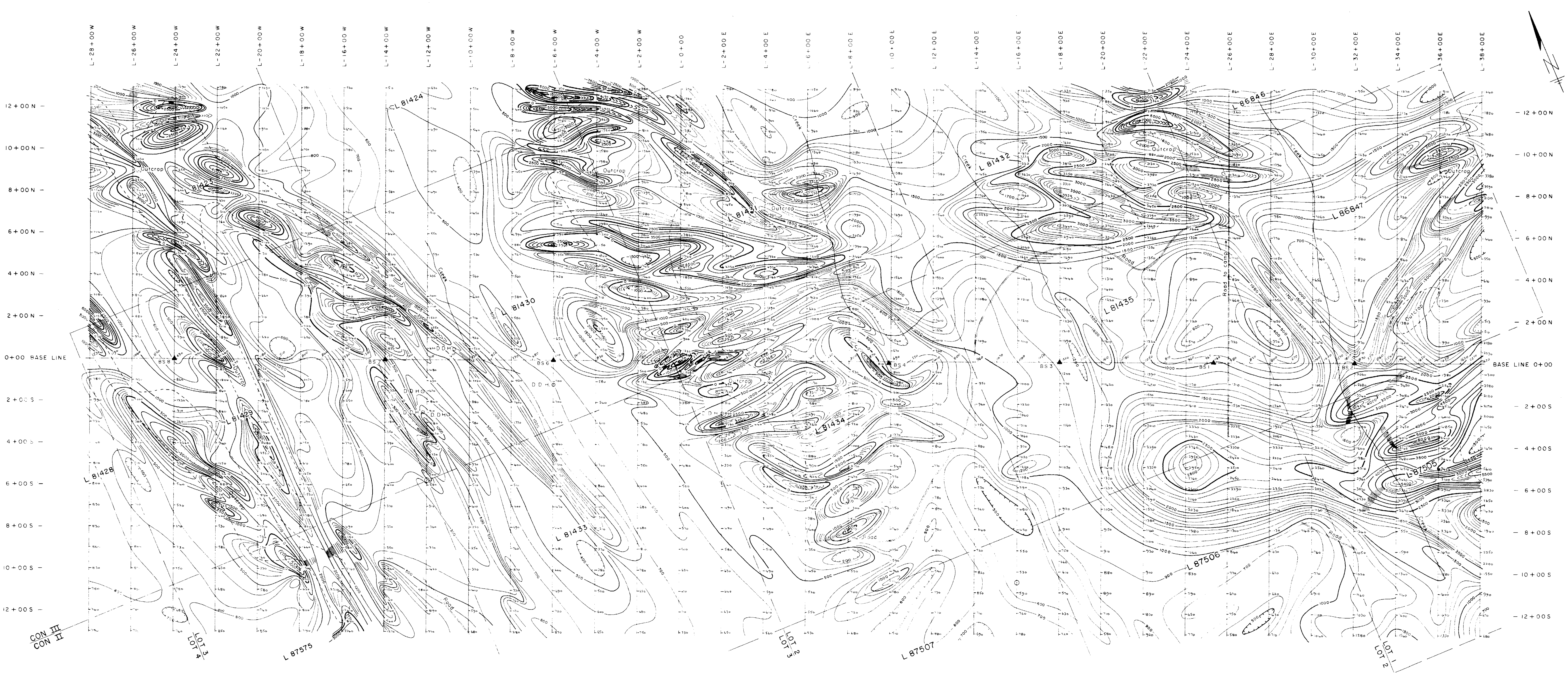
42A07NE8237 63.1911 SHERATON

230

PH-233/65



- 100, 200, 300, 400, 600 etc gamma contour
- 500, 1000, 1500, 2000 etc gamma contour
- 0, 2500, 5000, 7500 etc gamma contour
- Magnetic low

KAM-KOTIA PORCUPINE MINES LIMITED

GROUND MAGNETOMETER SURVEY

SHERATON TOWNSHIP

LARDER LAKE MINING DIVISION, ONTARIO

AREA 2

Contour Interval: 100 gamma

Scale: 1 inch = 200 feet

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42A07NE0237 63.1911 SHERATON

240

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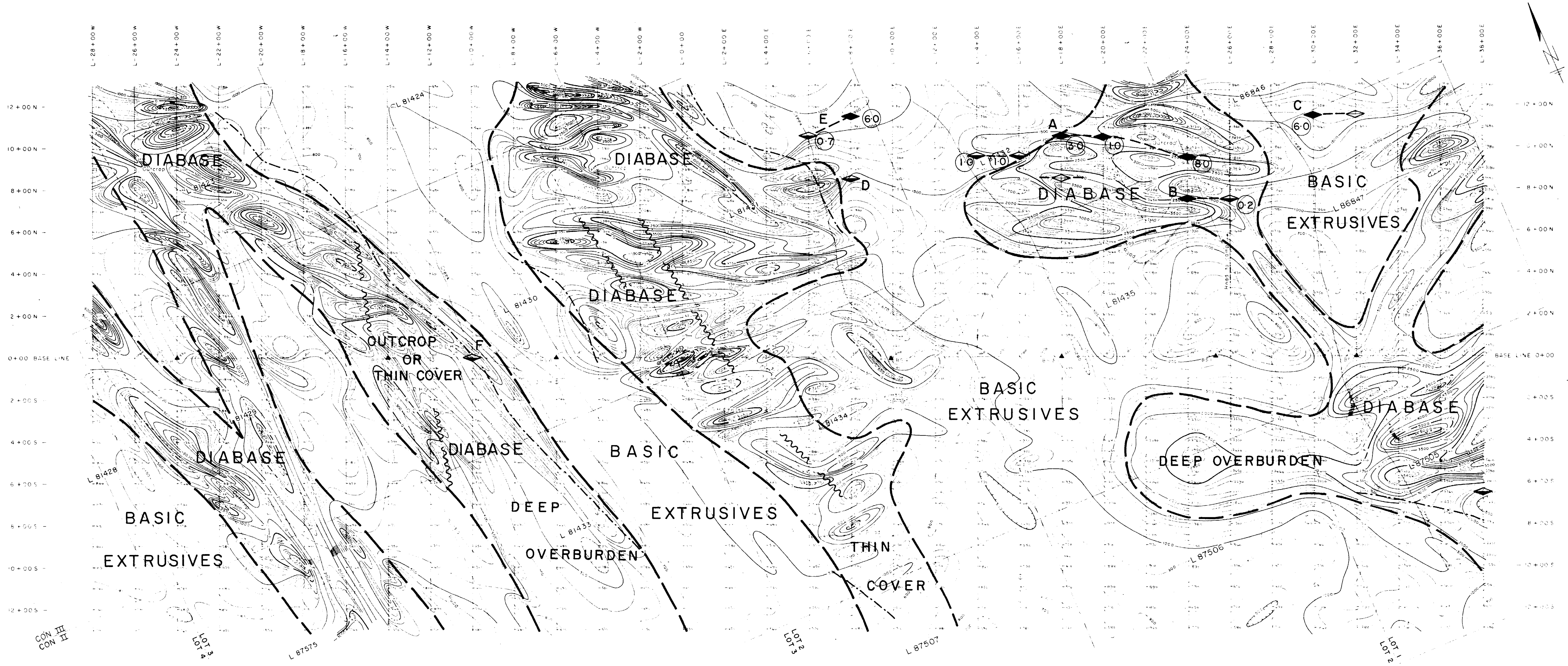

INTERPRETATION LEGEND

- Boundary of observed outcrop
- Contact interpreted from Magnetics
- Interpreted fault
- 3·0 Conductivity - width index
- A Good conductor axis, probably in bedrock
- Medium conductor axis
- Weak conductor axis, probably overburden
- Very weak conductor, associated with diabase contact

- [illegible], 200, 300, 400, [illegible] etc gamma contour
- 500, 1000, 1500, 2000 etc gamma contour
- 0, 2500, 5000, 7500 etc gamma contour
- Magnetic low

KAM-KOTIA PORCUPINE MINES LIMITED

GROUND GEOPHYSICAL SURVEYS

SHERATON TOWNSHIP

LARDER LAKE MINING DIVISION, ONTARIO

AREA 2

INTERPRETATION

Contour interval 100 gamma

Scale 1 inch = 200 feet

HUNTEC LIMITED, Toronto, Canada - July, 1965

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63.1911

250

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