REPORT OF GEOPHYSICAL SURVEYS IN THE VICINITY OF GROUNDHOG LAKE, KEITH TOWNSHIP, ONTARIO

David S. Robertson & Associates Limited
Consulting Geologists & Mining Engineers
Toronto 1, Canada

Earl J. Lalonde

29 August 1966.

GENERAL

The geophysical surveys were run on nine adjoining claims (S 131954-9 inclusive and S 131961-3 inclusive) in Keith Township, Sudbury Mining Division, Ontario. This block of claims in the northeast quarter of Keith Township lies north of Groundhog Lake, west of the north flowing Groundhog River, and south of the Canadian National Railway's main line to Western Canada.

The claim block is accessible by CNR to Mileage 136 and then by foot over an old tote road, or by Highway 101 to the vicinity of Palomar and then by foot over a newly bulldozed bush road and an old tote road.

The surveys were controlled by a baseline cut across the claim block at an astronomic bearing of N84°00'E, and by grid lines which were run at astronomic bearings of N6°00'W and S6°00'E every 200 feet along the baseline. The base and grid picket lines were cut and chained by Leon Gaudreau and Adam Niganiwina during the last three weeks of February, 1966.

From February 22 to March 10, 1966, Leon Gaudreau, Adam Niganiwina and the writer investigated about 13.77 line miles with a Sharpe M.F.-1 fluxgate magnetometer, and a Crone dual frequency electromagnetic unit. The Sharpe M.F.-1 fluxgate magnetometer has a 20 gamma per scale division sensitivity on the 1000 gamma range. The horizontal loop method with a 200 foot separation between identical coils was employed when conducting the electromagnetic survey with the Crone dual frequency electromagnetic unit. The Crone instrument has a high frequency of 1800 cps, and a low frequency of 480 cps.

No stations given

PREVIOUS WORK

Between 1928 and 1930 a few prospect pits and trenches were put down for gold in the vicinity of sulphide mineralization in the eastern portion of the claim block.

Within two years after the discovery of the Joburke showing in Keith Township in June, 1946, samples were taken for gold assays, prospecting was carried out, and the area was mapped by the Ontario Department of Mines. Hoodoo Lake Mines Limited staked the area of the claim block in 1946, and carried out some stripping, trenching and diamond drilling about a quarter of a mile north of the map area.

During July and August, 1964, Maurice Macknight and the writer ran a reconnaissance electromagnetic survey across the claim block and located several interesting anomalies.

TOPOGRAPHY

Much of the bedrock of the area is covered by an extensive though shallow mantle of glacial drift which has produced a surface of very low relief. A north striking esker chain lies along the west bank of the Groundhog River.

A heavy mixed growth of poplar, birch, spruce, jackpine, alder, hazelnut and moose maple covers the region of the claim block.

Drainage in the area by minor streams is to the southeast and south into Groundhog Lake. Water for drilling operations would be a problem during a dry summer.

GENERAL GEOLOGY

The claim block area is underlain by andesite volcanics with interbedded dioritic lavas, tuffs and amphibolitized volcanics which strike about east-west and have a near vertical dip. Interbedded with the volcanics is a sill-like, east-west trending body of serpentinite. Granite occurs along the eastern portion of the south boundary of the claim block.

Geophysical Map 2263G, entitled "Groundhog Lake" suggests that a small body of intermediate to basic composition occurs within the claim block.

DISCUSSION OF THE ELECTROMAGNETIC RESULTS

The detail electromagnetic survey was carried out to delineate conductors which were discovered by a previous reconnaissance electromagnetic survey. These conductors may be indicative of zones of sulphide mineralization.

The results of the survey are shown as profiles with a vertical scale of 1" = 20°. Resultant positive dip angles were plotted on the west side of the grid line, whereas resultant negative dip angles were plotted on the east side of the grid line.

Anomalies as indicated by resultant readings greater than plus or minus 4 degrees, and 5 conductors (A to E) were located on the nine claim block by the detail electromagnetic survey. Most of the weak positive and negative electromagnetic anomalies coincide with an area of high magnetic relief and lay over an area mapped as serpentinite by V. K. Prest of the Ontario Department of Mines.

Conductors A, B, C and E lie within an area of moderate magnetic relief, and the ratio of low/high frequency resultant readings indicate that they are fair to good conductors, probably the result of fracture filling or massive sulphides. The shape of the profiles over A, B, C and E indicate that the conductors are from 10 ft to 75 ft wide, near vertical and come to within less than 50 ft of surface. A, B and C could possibly be the same conductive body which was contorted and displaced by drag folding and/or minor faulting, similar to that which occurs to the north within Joburke Gold Mines Limited's property.

Although the ratio of low/high frequency resultant readings indicate that D is a good conductor, the magnetic high over which it is located suggests that D is probably due to a conductive lens of magnetite within the serpentinite body.

DISCUSSION OF THE MAGNETIC RESULTS

The vertical magnetic field ground survey was carried out to aid in delineating areas of different rock types, to locate geological structure, and to help in interpreting the results of the electromagnetic survey.

The results of the survey are shown in the form of a contour map with 1000 gamma intervals. The apparent regional zero appears to be about 500 gammas.

The general pattern of the contour map seems to correspond to the geology of the area. The region of high magnetic relief which trends about east-west across the central portion of the map area from L22+00E coincides

with a sill-like body of serpentinite. The areas of low to moderate magnetic relief which lie on either side of the region of high magnetic relief are associated with rocks mapped as intermediate to basic volcanics by Prest.

A break and about a 100 foot displacement of the region of high magnetic relief between L6+00E and L8+00E is indicative of a fault which trends across the map area at about N15°00'W.

CONCLUSIONS AND RECOMMENDATIONS

The detail electromagnetic survey delineated four fair to good conductors which may be associated with sulphide mineralization of commercial importance, one good conductor which was associated with a magnetic high indicative of conductive magnetite, and several weak anomalies which coincide with an area of high magnetic relief and lay over serpentinite.

The vertical magnetic field ground survey outlined some of the areas of different rock types, helped locate and interpret some geological structure, and aided in the interpretation of the results of the detail electromagnetic survey.

Since the detail electromagnetic and vertical magnetic field ground surveys indicate that conductors A, B, C and E are of primary importance, the writer recommends that the conductors be probed with a diamond drill for possible sulphide mineralization which may be of commercial importance.

63.2025 (249)

OFFICE OF MINING RECORDER

ONTARIO
DEPARTMENT OF MINES

SUDBURY MINING DIVISION
SUDBURY, ONTARIO

Sept. 14/66

42B01NE0163 63.2025 KEITH

900

Mr. R. V. Scott,
Director, Mining Lands Branch,
Parliament Buildings,
Toronto, Ontario.

Dear Sir:

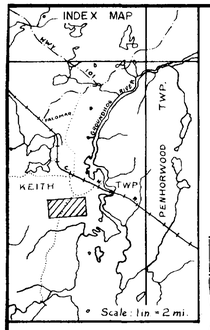
We wish to advise that we have placed on Record, geophysical survey work credits of 42.9 days on each of claims S.131954-59 inclusive, S.131961-3 inclusive, Keith Township, in the name of David S. Robertson.

Yours very truly,

K. M. Hallock
Mining Recorder

/rd

DEPARTMENT OF MINES
SEP 15 1966
TO.....



S-131961

S-131954

S-131956

S-131958

S-131963

S-131962

S-131955

S-131957

S-131959

S-129308

BASE LINE N84° 00E

A

B

C

D

E

L 20+00 W

L 10+00 W

L 0+00 E

L 10+00 E

L 20+00 E

LEGEND

HIGH FREQUENCY PROFILE

LOW FREQUENCY PROFILE

CONDUCTOR

SYMBOLS

CLAIM POST & LINES

TOTE ROAD

DAVID S. ROBERTSON & ASSOCIATES
TORONTO CANADA

KEITH TOWNSHIP
ELECTROMAGNETIC SURVEY

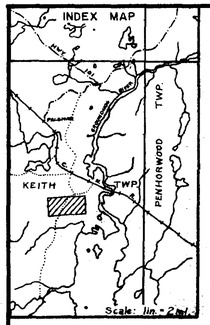
1" = 200' OR 20°

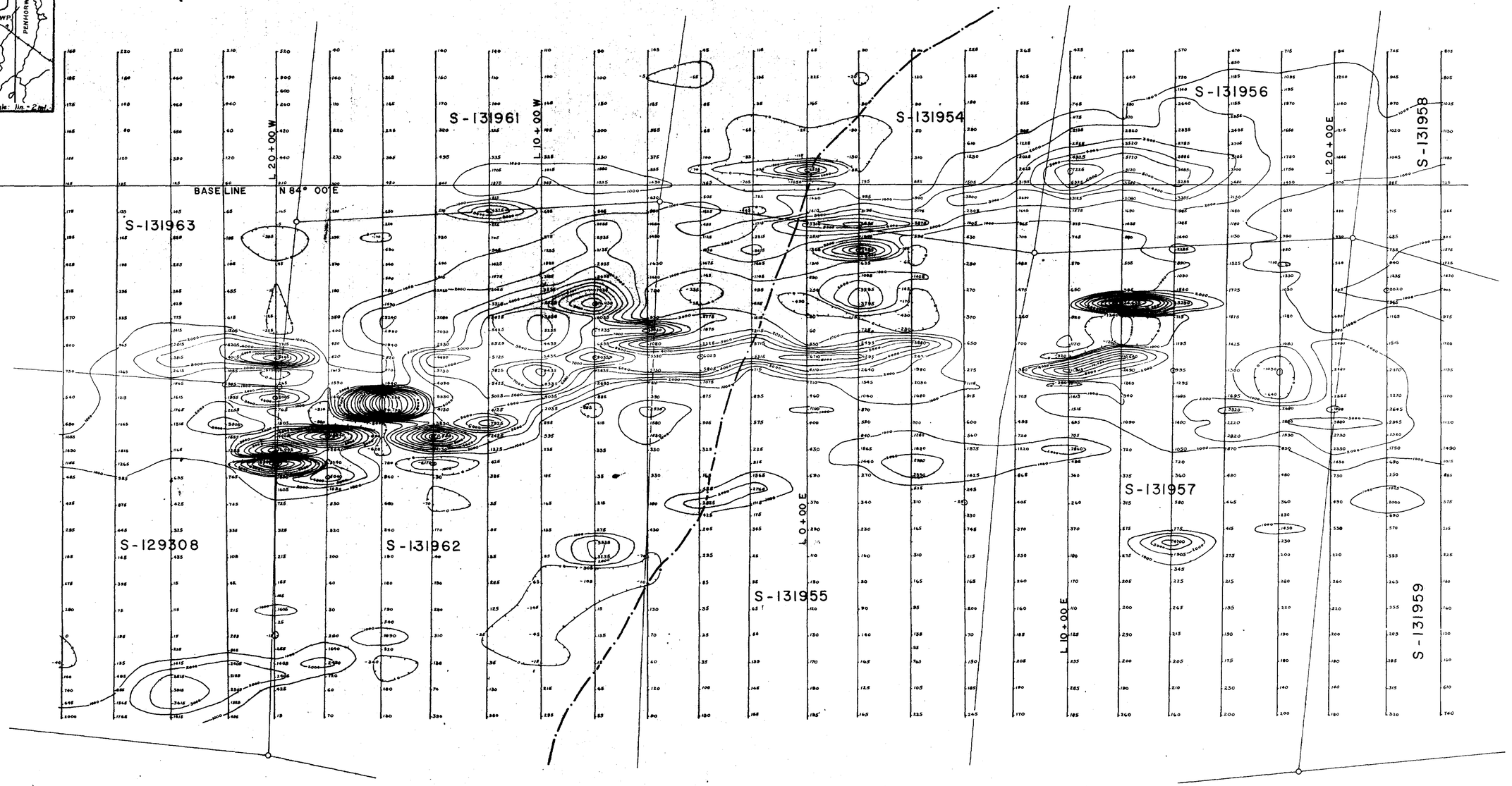
DATE JUNE 28, 1966

42B01NE0163 63.2025 KEITH

200

63.2025





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LEGEND

- 2000 — 1000 GAMMA ISOMAGNETIC CONTOUR
- 10000 — MAGNETIC DEPRESSION

SYMBOLS

- A 100 — BASE STATION
- CLAIM POST & LINES
- TOTE ROAD

REGISTERED PROFESSIONAL ENGINEERS — MINING — EARL J. LALONDE — PROVINCE OF ONTARIO

42B01NE0163 63.2025 KEITH

210

DAVID S. ROBERTSON & ASSOCIATES
TORONTO CANADA

KEITH TOWNSHIP
MAGNETIC SURVEY

SCALE 1" = 200'
DATE JUNE 30, 1966

63.2025