42A10NW0532 63.280 CLERGUE

010

DETAILED GEOLOGY

63.280
Autopositives in
N.T.S. DRAWER

DETAILED GEOLOGY OF A PORTION

OF THE

CLERGUE CLAIM-GROUP

INTRODUCTION

During July of 1951, the writer conducted a detailed geological investigation of part of the Clergue claim-group. In all, four days were spent on that part of the claim-group covered by this report - claims L57167 to 57176 inclusive, consisting of portions of Lots 10, 11 and 12, concessions 3 and 4, Clergue Twp., in the Larder Lake Mining Division, District of Cochrane.

TOPOGRAPHY

The ground under consideration consists mainly of jackpine and poplar-covered sandy country, sloping away from a horseshoe-shaped outcrop some hundred feet in height, the eastern flank of which is included in the western parts of claims L-57175 and 76.

MAPPING CONTROL

Mapping control consisted of picket-lines spaced 400 feet apart, in addition to 400 scale aerial photographs. The picket lines were cut and chained by men under the supervision of the Dominion Gulf ground-magnetometer section. As the magnetic attraction is striking and variable within the area, sun-shots were taken with all compass readings, and the readings referred to solar tables for correction.

GEOLOGY

(a) Structural

Folding - The horseshoe-shaped outcrop is the expression of a synclinal nose, plunging to the southwest. The syncline has been verified farther to the east, off the claim-group and the nose structure of the horseshoe outcrop is evident from a study of the pillow attitudes, as seen on the accompanying map.

Faulting - The contact between the ultrabasics and the dacitic lavas is frequently offset by tight cross-faults, usually at right-angles to the strike of the formations, and having up to several hundred feet displacement.

(b) Rock Formations

The rock formations encountered on claims 57175 and 76 consist of dacitic pillow-lava and an ultrabasic sill complex.

The pillow lava forms the main mass of the horseshoe outcrop, is hard and

Rock Formations cont'd.

resistent, with well-formed pillows. The rock is usually a light greyish-green on a freshly-broken surface.

Intruding the dacite is an ultrabasic sill-complex, believed to have been intruded prior to or during folding. The attitude of the sill conforms with the strike of the lava. The sill-complex may be further broken down into a pyroxenite now altered to amphibolite, and a poikilitic pyroxene-peridotite which intrudes the amphibolite to give a banded effect to the contact phase of the peridotite and pyroxenite, forms the inner boundary of the ultrabasics, contacting the pillow-lava sharply and is well defined where not covered by local patches of shallow drift. Where determinations could be made, the contact was found to dip in towards the centre of the synclinal nose, usually steeply.

The peridotite forms the outer section of the sill-complex and disappears to the east under drift.

CONCLUSIONS

The horseshoe-shaped outcrop, part of which lies on claims L57175 and 76 has been proven by geological investigation to be the expression of a synclinal nose, the syncline pitching to the south-west.

T. PARKS

/dc

42A10NW0532 63.280 CLERGUE

020

DOMINION GULF COMPANY

REPORT ON GROUND MAGNETOMETER SURVEY

PART OF CLERGUE TOWNSHIP CLAIMS GROUP I

Larder Lake Mining Division
Province of Ontario

J. H. Ratcliffe

January 23, 1952

63.280

Report of Ground Magnetometer Survey

Part of Clergue Township Claims Group I

INTRODUCTION

During the summer of 1951 a ground magnetometer survey was run over a block of ten claims in Clergue township, Larder Lake Mining Division, Province of Ontario. The survey, using a Schmidt-type Askania magnetic balance with a scale constant of about 25 gammas per scale division, was under the supervision of Mr. B. M. Middleton, a Company geophysicist. A total of 474 stations were read along 9.17 miles of picket line. Stations were read at 100-foot intervals, along picket lines 400 feet apart. The data were reduced in the field and sent to the Toronto office of the Dominion Gulf Company for contouring and interpretation. Results of the survey are shown on the accompanying map, along with contours and interpretation.

INTERPRETATION

A highly magnetic zone appears to out a mass of relatively low magnetic relief, probably rhyolite. The highly magnetic mass follows a smooth curve through the heart of the claim block, the north limb striking easterly in the western portion of the claim block, and southeasterly in the eastern end of the group. The south limb appears to trend south of west. Thus it appears that the highly magnetic mass, believed to be peridotite, has been subjected to major folding, the nose of the fold falling just east of claims L-57175 and L-57176. Geological evidence suggests that the fold is a syncline plunging to the west.

The peridotite intrusion is rather complex particularly in the four westernmost claims. Several 'noses' suggest interesting re-entrants, particularly in the centre of claim L-57169 and the southern portion of claim L-57168. Whether these re-entrants were formed at the time of intrusion, or later during the period of folding, cannot be determined.

Outcrop occurs only along the western boundaries of claims L-57175, and L-57176, and as a result geophysical surveys must be used to outline possible ore-bearing areas. Overburden appears to be fairly shallow in the eastern portion of the claims but deepens considerably towards the west.

Geological evidence indicates minor faulting in claims L-57175 and L-57176 probably due to compression near the nose of the syncline. Since the picket lines in this area are 400 feet apart, with station spacing 100 feet, both dimensions being much greater than the known fault movements, none of the faults can be picked up directly. The magnetics do suggest, however, by their 'chopped-up' appearance in this area, that a considerable amount of minor faulting has occurred.

RECOMMENDATIONS

Since this claim block is almost entirely covered with overburden, no direct evidence of ore bodies will be found without expensive diamond drilling. It is therefore suggested that the most likely-looking spots for

ore deposition be found using other geophysical methods, prior to embarking on a drilling program.

The area is particularly intriguing due to the proximity of the Alexo nickel mine, to the west. With this in mind, it would appear that the most likely mineralization would be massive pyrrhotite. It is therefore suggested that an electromagnetic survey of the property be undertaken. If any conductors are obtained along the margins of the peridotite mass, a diamond drilling program might be worthwhile.

"John H. Ratcliffe"

:C
Attach map

42A10NW0532 63.280 CLERGUE

IEM SURVEY

63.280

Electromagnetic Survey

Clergue Township Claims

INTRODUCTION:

An electromagnetic survey of 9 claims held by the Dominion Gulf Company in Clergue Township was carried out by a Company crew under the supervision of Mr. D. W. Smellie, during the month of November, 1951. The data were sent to Toronto on completion of the survey, where they were processed and interpreted by the Toronto staff of the Dominion Gulf Company.

The equipment used was standard vertical coil apparatus. A 16-foot-diameter, hexagonal transmitting coil was powered by a portable gasoline motor generator set of intermediate frequency. Signals were picked up by a 14-inch-diameter receiving coil mounted on a tripod. A simple electronic amplifier connected to the receiving coil and a set of ear phones amplified the signal for aural detection.

Two separate types of coil configuration were used. In type "A" the transmitter was sighted along a picket line, and the receiving coil was moved along the picket line from station to station, in the plane of the receiving coil. In type "B", essentially the same conditions existed, the transmitting coil and the receiving coil being coplanar, but the picket line being surveyed did not lie in the plane of the transmitting coil. Such a system requires that the transmitter be rotated about a vertical axis as each separate station is read.

Readings were obtained by aligning the horizontal axis of the receiving coil so that it was normal to the electromagnetic field at the station being surveyed. The receiving coil was then rotated about this horizontal axis until a null point was obtained in the earphones. Under normal conditions, the null point is obtained when the receiving coil has zero dip. Any variation from zero dip indicates the presence of anomalous electromagnetic field conditions.

Using survey type "A", seventeen transmitter set-ups were required, 428 stations were read, and 36,300 feet of picket line were covered. Survey type "B" required seven transmitter locations, 388 stations read, with a picket line coverage of 29,400 feet. Station spacing was 100 feet, along picket lines 400 feet apart. Since each transmitter location sets up new field conditions, overlap of stations is inherent in the method.

RESULTS:

The primary purpose of an electromagnetic survey is to locate electrically conducting bodies, or horizons, in the bedrock. Whether these conductors are of economic importance or not, cannot be determined. Electrical conductors located by electromagnetic surveys generally turn out to be either massive metallic sulphide mineralization, or graphite. Graphite is of little interest, but metallic sulphides, particularly pyrrhotite (with associated pentlandite) and chalcopyrite, may be of considerable interest. Due to the presence of the Alexo nickel mine in the vicinity of the claim group, it was believed that other nickeliferous ore bodies might exist in the area, under a substantial overburden cover. Such bodies could not be discovered by ordinary surface prospecting methods. As a result, an

electromagnetic survey was attempted, in order to facilitate the intelligent planning of a diamond drilling program.

Survey type "A", a reconnaissance method, revealed the presence of electrical conductors on the property. The first anomalous zone was located in the eastern portion of the claim block, about 1900 feet south of the base line on lines 16E, 20E and 24E. A second zone of electromagnetic anomalies was shown to run northwesterly from the intersection of the base line and line 16E. Weak indications of conductors were dotted across the western portion of the claims.

Survey type "B" gives a more definite indication of the anomalies already described. The southeastern anomaly zone appears to be shifted about 200 feet north of that indicated previously. The reason for this is unknown. Coincidence between the two survey types is much better on the northwesterly trending anomaly which crosses the base line of 18E. Survey type "B" indicates this conductor axis very clearly.

A third conductive zone is weakly indicated in the vicinity of 1700 feet north on line 8W. Two axes are indicated in this region. Apparently the indication obtained is a function of the transmitter location. Throughout the western portion of the claims minor isolated indications of conductors have been found. It is quite possible that deeper overburden in this area is attenuating the electromagnetic field in and around the conductive bodies.

CONCLUSIONS:

Three interesting conductive horizons have been indicated by this survey. It must be emphasized, however, that the mere location of conductive bodies does not mean that economic mineralization is present. If further exploration is believed warranted, expensive diamond drilling must be undertaken. Overburden appears to be deep, particularly in the western portion of the claim group, thereby increasing drilling costs.

J. H. RATCLIFFE

/dc

TO PORQUIS JUNCTION → 3 MILES

ONT. NORTHLAND R.

CON. IV

CON. III

DUNDONALD TWP.

CLERGUE TWP.

L-57172

Jackpine & Poplar

Alders & Spruce

Poplar & Jackpine

Alders

L-57171

Poplar & Spruce

Alders

L-57173

Spruce & Alders

Spruce & Alders

Cedar Spruce Balsam

L-57169

L-57170

Brule

Brule

Brule

Sand

Jackpine

Jackpine

Jackpine

Jackpine

Sand

L-57168

Gentle Slope Towards West.

Jackpine

Jackpine & Poplar

Jackpine & Poplar

Jackpine

L-57167

Jackpine & Poplar

Jackpine & Poplar

Poplar Birch & Jackpine

Sand

L-57174

Poplar Birch

Willows & Ash

Mixed Growth

L-57175

Poplar & Birch

Willows & Alders

Alders

Poplar & Birch

Alders

Pillow lava

OUTCROP AREA

Serp. Perid.

Gabbro

Serp. Perid.

Willows

Gabbro

Jackpine

Pillow lava

Gabbro

Poplar Birch Willows & Ash

Serp. Perid.

Gulley with steep sides

L-57176

Jackpine

Jackpine & Spruce

Alders & Spruce

L-57177

Jackpine

LEGEND

- SERPENTINIZED PERIDOTITE
- GABBRO
- PILLOW LAVA
- EXPOSURE BOUNDARY
- HIGH HILL OR RIDGE
- SYNCLINAL AXIS
- MINOR FAULT
- STRIKE & DIP OF PILLOWS

DOMINION GULF COMPANY

GEOLOGICAL PLAN

PART OF CLERGUE TWP. CLAIMS

GROUP I

CLERGUE TWP. – PROV. OF ONT.

SCALE: 1" = 400' JAN. 18, 1952

LOT 12

LOT 11

LOT 10

200

42A10NW0532 63.200 CLERGUE

28W 24W 20W 16W 12W 8W 4W 0 4E 8E 12E 16E 20E 24E 28E 32E 36E

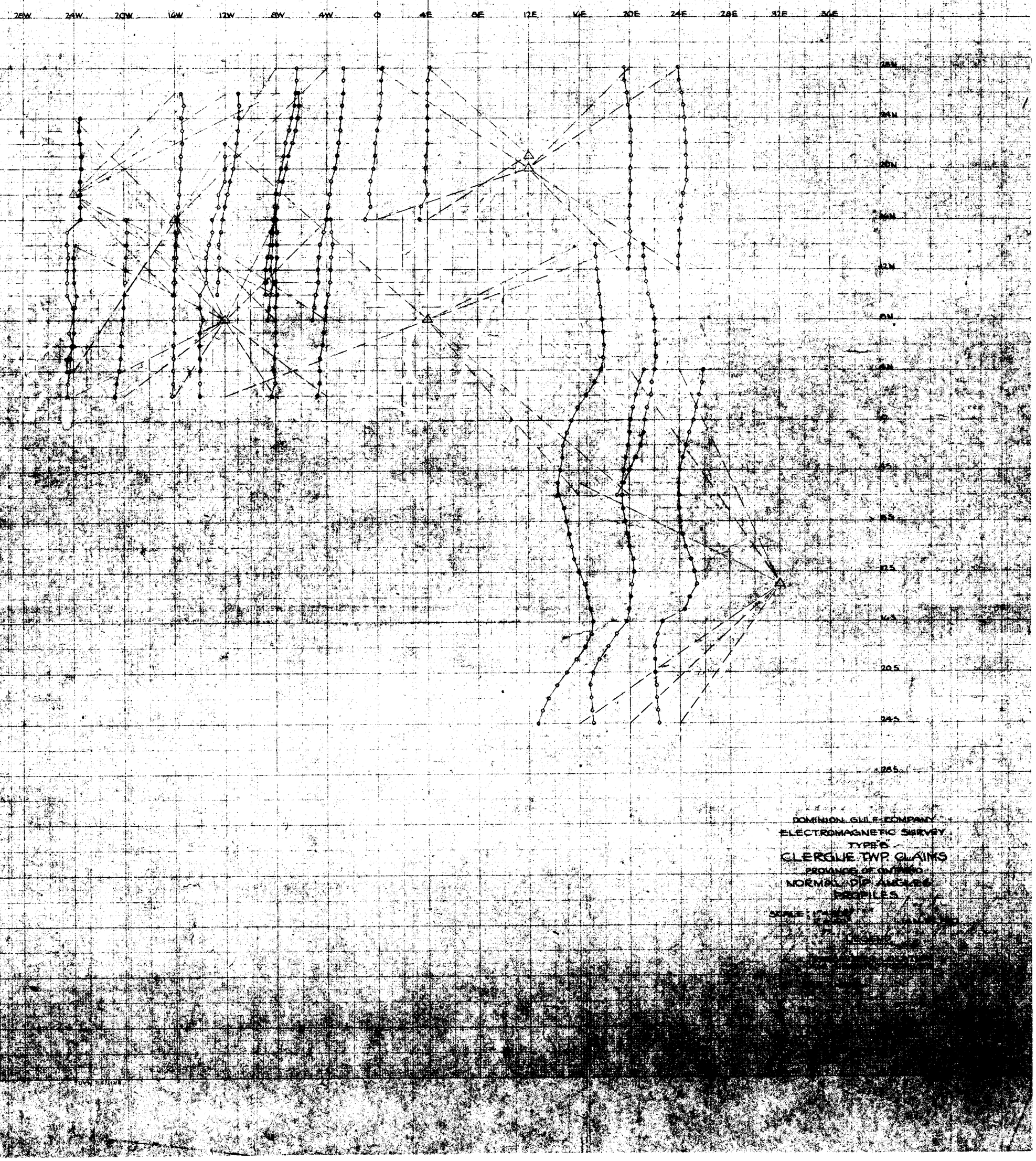
7SN
2SN
2ON
16N
12N
8N
4N
0
4S
8S
12S
16S
20S
24S
28S

DOMINION GULF COMPANY
ELECTROMAGNETIC SURVEY
TYPE "A"
CLERGUE TWP CLAIMS
PROVINCE OF ONTARIO
NORMAL DIP ANGLES
VALUES
SCALE 1"=400' JAN. 24, 1952

LEGEND

△ TRANSMITTER LOCATION

42A10NW0532 63.280 CLERGUE



DOMINION GULF COMPANY
ELECTROMAGNETIC SURVEY
TYPE 'B'
CLERGUE TWP. CLAIMS
PROVINCE OF ONTARIO
NORMAL DIP ANGLES
PROFILES

SCALE: 1" = 400'

LEGEND

42A10NW9532 63.288 CLERGUE
220

28W 24W 20W 16W 12W 8W 4W 0 4E 8E 12E 16E 20E 24E 28E 32E 36E

28N
24N
20N
16N
12N
8N
4N
0
4S
8S
12S
16S
20S
24S
28S

DOMINION GULF COMPANY
ELECTROMAGNETIC SURVEY
TYPE "A"
CLERGUE TWP. CLAIMS
PROVINCE OF ONTARIO
NORMAL DIP ANGLES
PROFILES

SCALE: 1"=400'
1"= 40°

JAN. 24, 1952

LEGEND

△ TRANSMITTER LOCATION
o DIP ANGLE

42A10NW0532 63.280 CLERGUE

28W 24W 20W 16W 12W 8W 4W 0 4E 8E 12E 16E 20E 24E 28E 32E 36E

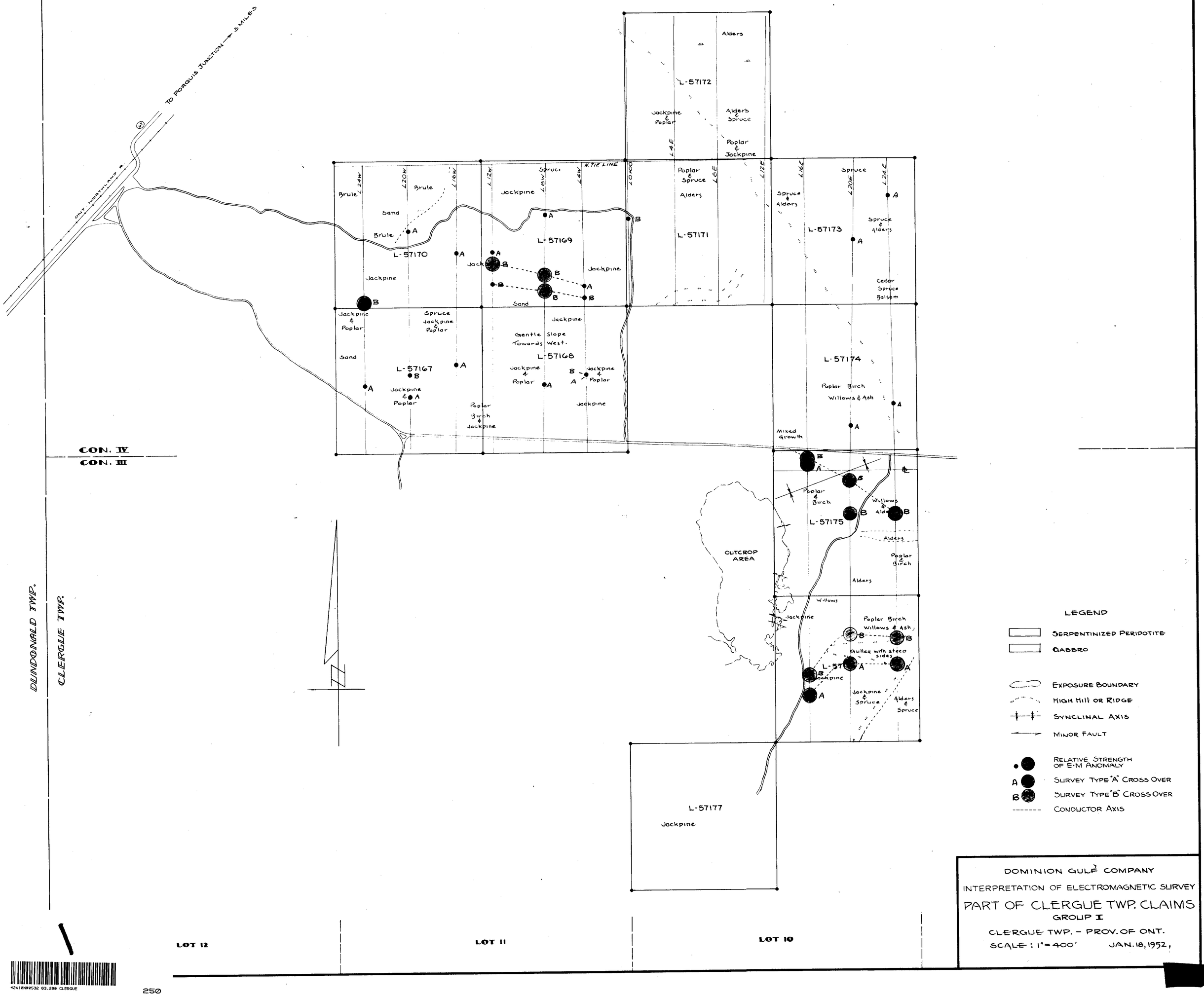
28N
24N
20N
16N
12N
8N
4N
0
4S
8S
12S
16S
20S
24S
28S

DOMINION GULF COMPANY
ELECTROMAGNETIC SURVEY
TYPE 'B'
CLERGUE TWP. CLAIMS
PROVINCE OF ONTARIO
NORMAL DIP ANGLES
VALUES
SCALE: 1"=400' JAN. 24, 1952

LEGEND

△ TRANSMITTER LOCATION FOR INDICATED PROFILE

42A10NW0532 63.200 CLERGUE



LEGEND

- SERPENTINIZED PERIDOTITE
- GABBRO
- EXPOSURE BOUNDARY
- HIGH HILL OR RIDGE
- SYNCLINAL AXIS
- MINOR FAULT
- RELATIVE STRENGTH OF E·M ANOMALY
- A — SURVEY TYPE "A" CROSS OVER
- B — SURVEY TYPE "B" CROSS OVER
- CONDUCTOR AXIS

DOMINION GULF COMPANY

INTERPRETATION OF ELECTROMAGNETIC SURVEY

PART OF CLERGUE TWP. CLAIMS

GROUP I

CLERGUE TWP. – PROV. OF ONT.

SCALE: 1"=400' JAN. 18, 1952.

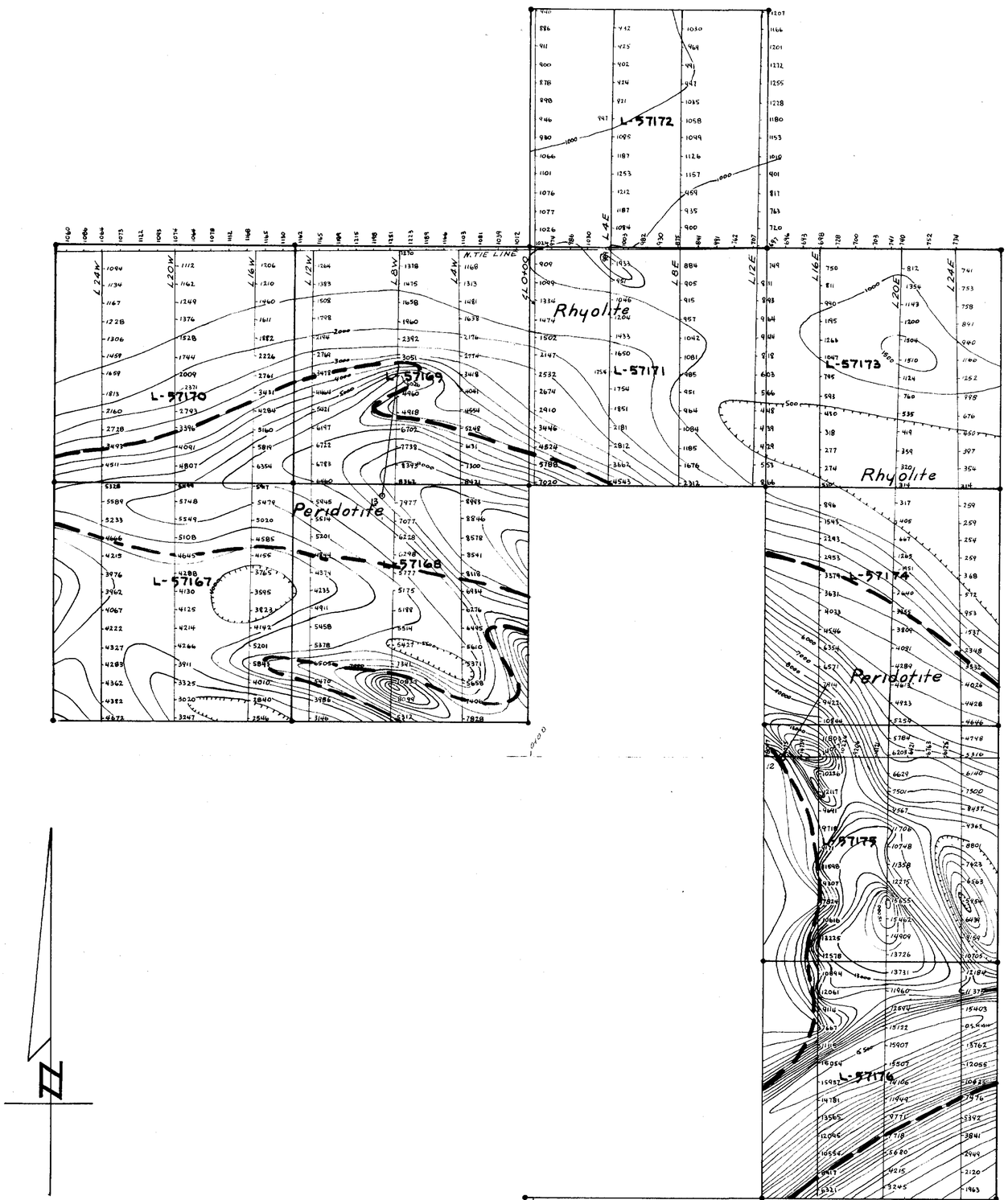
42A10NW0532 63.280 CLERGUE

CON. IV

CON. III

DUNDONALD TWP.

CLERGUE TWP.



LOT 12

LOT 11

LOT 10

DOMINION GULF COMPANY

GROUND MAGNETOMETER SURVEY

PART OF CLERGUE TWP. CLAIMS

GROUP I

CLERGUE TWP. - PROV. OF ONT.

SCALE : 1"= 400' JAN. 18, 1952.

CONTOUR INTERVAL - 500 GAMMAS

42A10NW0532 63.280 CLERGUE

63-280