GEOPHYSICAL & GEOLOGICAL EXPLORATION

OF

THE LEE & M & W MINERAL CLAIMS

Located on Claim Map #105K-6

at

62° 22' N. - 133° 25' W.

FARO AREA, YUKON TERRITORY

by

R.A. Granger

Supervised by

Albert F. Reeve, P.Eng.,
Geological Engineer

August to October, 1966

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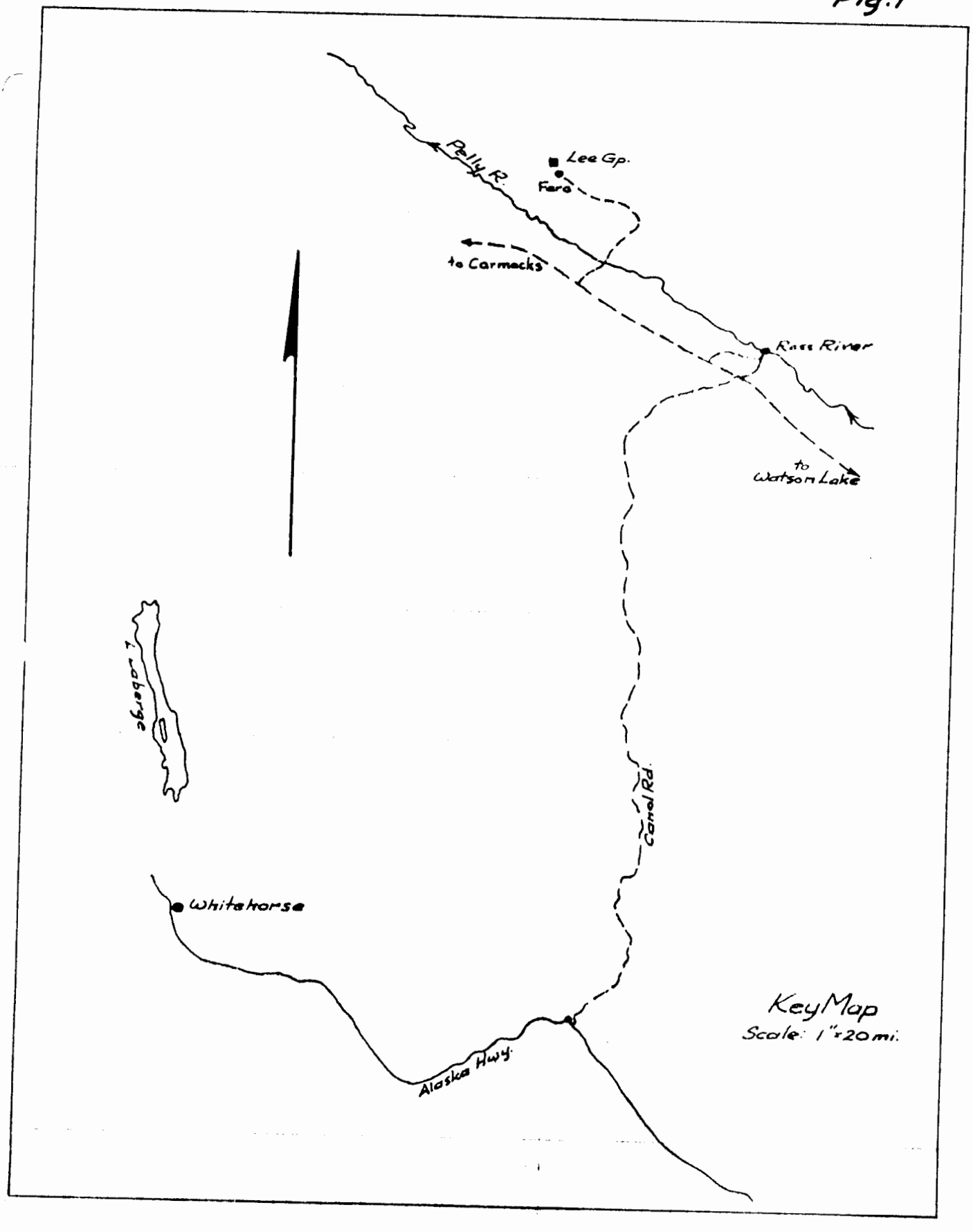
Fig. 1


Pelly R.
Lee Gp.
Fare
to Carmacks
Ross River
to Watson Lake
Canol Rd.
Whitehorse
Alaska Hwy.
Key Map
Scale: 1" = 20 mi.

INTRODUCTION

This report is based on a program of geological and geophysical investigations carried out by Flagstone Mines Ltd. on a portion of a group of 32 claims in the Faro area of the Yukon Territory in 1966. It has been compiled and written by R.A. Granger under the general supervision of Albert F. Reeve, P.Eng., geological engineer. It is submitted to the Mining Recorder of the Whitehorse Mining District to satisfy assessment work requirements on the claims stipulated for a period of at least one year. A set of geological and geophysical maps are enclosed in the back cover and a certificate of the supervising engineer's qualifications is included in the appendix.

This work was carried out during the period of August to October, 1966 by the following persons:

- Granger, R.A. - Geophysical Contractor 400, 837 W. Hastings St., Vancouver 1, B.C.

- Hay, R.G., B.Sc. - Geologist, c/o R.A. Granger

- Winton, John - Geophysical Technician c/o R.A. Granger

- Coyne, J.W., B.A. - Geophysical Technician c/o R.A. Granger

WORK DONE

1. Line cutting and surveying

   a) 12,000' of base line was cut

   b) 105,000' of picket line was cut and chained.

   c) All claim posts were tied to points on the line grid.

2. Geology - all prominent outcrops in the area were examined and tied to the grid system.

3. Geophysics

   a) Magnetic Survey - 119,600' of magnetic observations were taken at 100' intervals on lines 400' apart.

   b) Electromagnetic Survey - 121,500' of electromagnetic observations were taken at 100' intervals on lines 400' apart.

PROPERTY

Claim Name	Number	Record Date
Dick 11	96295	Dec. 16/65
" 13	96297	"
" 15	96299	"
" 17	96669	Dec. 28/65
" 19	96671	"
" 21	96673	"
HW #1 & 2	Y 10773 & Y 10774	Oct. 5/66
Lee #1 to 16	96733 to 96748	Dec. 28/65
Lee 17	96749	Dec. 28/65
" 19	96751	"
" 21	96753	"
" 23	96755	"
" 24	96756	"
" 25	96757	"
" 26	96758	"
" 28	96760	"

Total Number of Claims 12

All of the above claims are held on behalf of Flagstone Mines Ltd.,
809, 525 Seymour Street,
Vancouver, B.C.

These claims have been grouped in two blocks of 16, Form E, Sect. 52; Yukon Quartz Mining Act, and applications have been made for Certificates of Work, Form C, Sect. 53.

LOCATION

The claims are located 56 miles N.W. of the community of Ross River, at approximately 62° 22' N. latitude and 133° 28' W. longitude and between 4500' ASL and 6000' ASL. The property lies on the upper flank and astride a peak of the range rising northerly from Rose Creek. It is approximately 1.5 miles N.W. of the Faro orebody of Anvil Mining Corporation.

ACCESS

Ross River is accessible from Whitehorse via the Alaska Highway and Canol Road, a distance of 220 miles.

A new all-weather road is followed for 30 miles along the south side of the Pelly River in a N.W. direction at which point a mine access road of all-weather construction turns north, crosses the Pelly River and proceeds via the valleys of Blind and Rose Creeks to the Faro campsite. Helicopters, chartered at Ross River, then ferry the remaining three miles.

TOPOGRAPHY

The higher portions of the property cover a pair of rounded, alpine sub peaks while the remainder covers moderately steep slopes falling to Rose Creek with scrubby conifers abundant.

REGIONAL GEOLOGY

The geology of the surrounding region is described on G.S.C. Map #13 - 1961 - "Tay River".

The structural and stratigraphic relationships of the various rock units are described as follows:

Table of Formations

Quaternary	-	unconsolidated glacial and alluvial deposits - unconformity -
Tertiary	-	felsic to intermediate volcanic flow rocks, flat lying.
Tertiary	-	intermediate plutonic rocks - intrusive contact
Paleocene	-	clastic sediments - unconformity -
Cretaceous	-	intermediate plutonic rocks - intrusive contact -
Mississippian **	-	Meta sediments and minor volcanic rocks. Included in this assemblage are a group of meta sediments in which a number of important PbZn sulphide occurrences have been found. These consist of banded skarn and quartz granulites, micaceous and chloritic phyllites, hornfels and minor andesite and crystalline limestone. (Unit 7 G.S.C.)
Devonian, Silurian, Ordovician and Cambrian		sedimentary and meta sedimentary rocks.
Proterozoic	-	meta sediments and minor volcanic rocks.

LOCAL GEOLOGY

Table of Formations:

1. Feldspar Porphyry

- intrusive contact? -

2. Granodierite and/or syenite

- intrusive contact -

3. Meta sediments - quartz mica schists with calcareous schist bands in places.

LITHOLOGY

1. Taken as a whole, the feldspar porphyry has all of the outward appearances of a plutonic rock though no contacts were observed. Texture is variable but in general the plagioclase phenocrysts are between 1 mm. and 3 mm. in length and set in a finer, grey ground mass. Some specimens are marked by blades of hornblende to 15 mm. in length. The rock is quite fresh in appearance with perhaps a very little chloritization of the hornblende in places.

2. No effort was made to separate or classify the granitic rocks underlying the northern part of the property and was referred to as granodiorite for field purposes. It is somewhat altered due, perhaps, to the emplacement of the porphyry.

3. Quartz mica schist is the oldest rock in the area and is highly deformed. Some zones containing moderate calcareous material were noted. Biotite increases toward Unit 2. Weakly disseminated magnetite and pyrrhotite is general and a little disseminated chalcopyrite was noted in several places in the S.E. portion.

Structure

Due to general overburden cover no definite comments can be made regarding faulting although it is possible that the small NE trending creek occupies such a feature.

Strikes in the meta sediments average about N 70 W while the dips of about 25° to the south in the lower reaches increase to near vertical as the granitic contact is approached.

GEOPHYSICS

Method

A. **Magnetic Survey**

A Sharpe MF-1 fluxgate magnetometer was used to observe the vertical component of the total magnetic field.

An arbitrary instrument datum of about 300 gammas was chosen after making a trial reconnaissance traverse over an area known to be underlain by quartz mica schist. The latitude of the instrument was then mechanically adjusted to the datum. Magnetic observations were then taken at 100' intervals on grid lines 400' apart.

The magnetic data was corrected for diurnal and daily variations with respect to time, by referring to a system of base stations. Corrections were made to the nearest ten gammas.

Sample Calculation

Station	Reading	Diurnal Correction	Daily Correction	Result	Time
base	280	+ 0	- 40	240	2:00 p.m.
1	300	+ 0	- 40	260	
2	350	+ 10	- 40	320	
3	370	+ 10	- 40	340	
4	410	+ 20	- 40	390	
5	390	+ 20	- 40	370	
6	340	+ 30	- 40	330	
base	250	+ 30	- 40	240	2:30 p.m.

The corrected magnetic results were plotted and contoured on a 1" = 400' plan (see Fig. 3).

B. Electro Magnetic Survey

Sharpe SE 300 electro magnetic survey equipment was used to make EM observations at 100' intervals on lines 400' apart.

This equipment consists of two identical units, each having a coil capable of transmitting and receiving oscillating electro-magnetic field signals of 400 c.p.s. and 1600 c.p.s.

There are several ways (or configurations) in which the two units can be used to produce useful EM data.

In this case a reconnaissance method known as the "broadside" configuration was employed. This method is illustrated on Fig. 1A. Operator B generates a cyclic electro-magnetic field signal with the transmitting coil. Operator A receives this signal and "nulls" it by tilting the receiver coil. If there are no conductors, such as sulphide bodies, graphite zones, or confined ionic waters, in the near vicinity of the operators, the angle of tilt of the receiving coil will be near 0°. However, if such a conducting body is cut by the varying magnetic component field of the transmitter, electrical currents will be produced which in turn will set up a secondary electro-magnetic field of like frequency. When this occurs the resultant of the original and secondary fields will cause the receiver coil to null at anomalous $\pm$ tilt angles.

In the broadside method the operators traverse in parallel directions, successively occupying directly opposite stations. At each station operator B transmits and A receives, then the procedure is reversed.

Tilt angles are recorded and plotted at the receiving station. In this way two lines of data are received on a single traverse. Anomalous results indicating a conductor consist of a series of high positive tilt angles followed by a "crossover" and a group of negative angles.

Fig 1-A

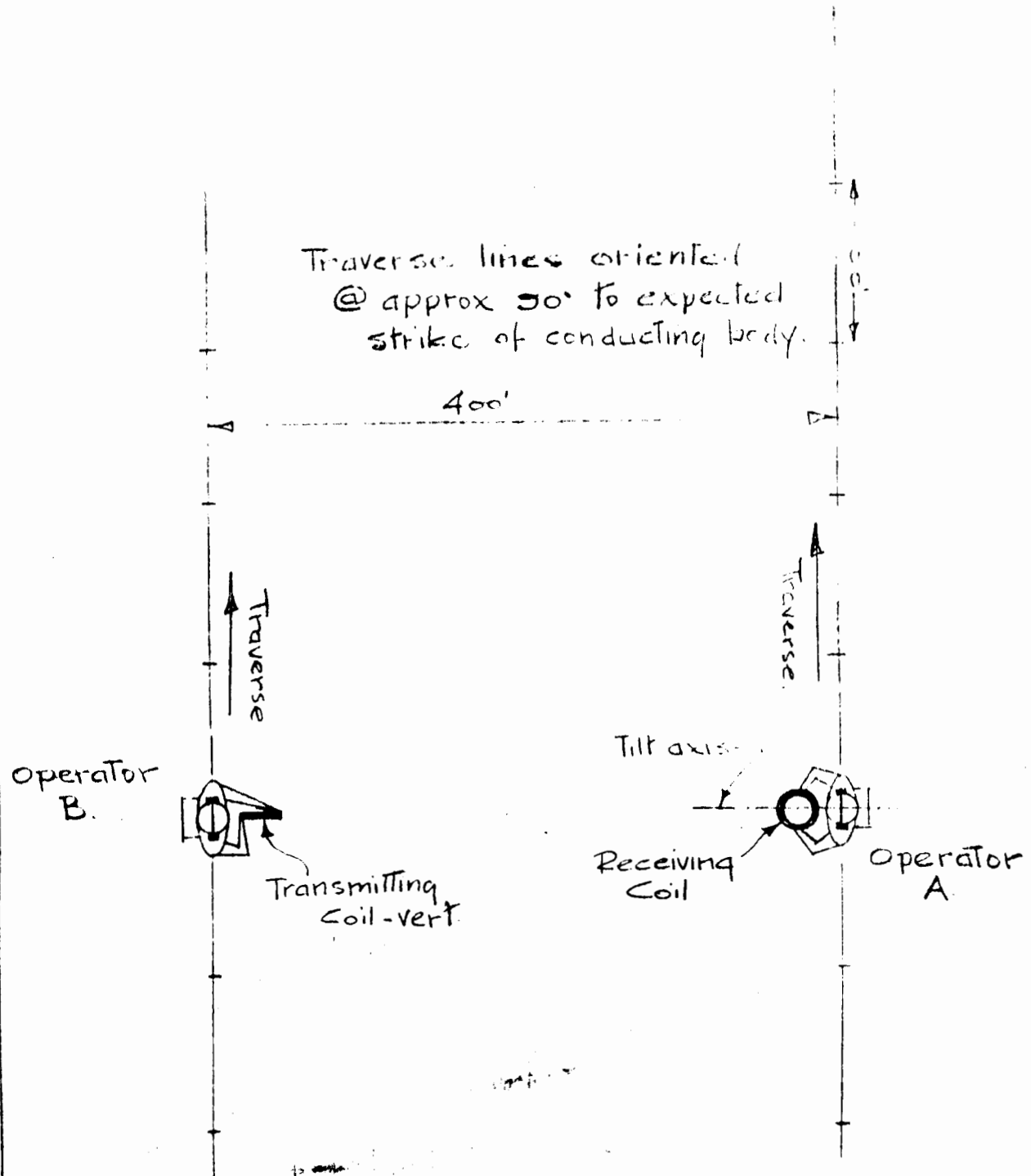
ORIENTATION DIAGRAM

for

SHARPE SE-300 E.M. EQUIPMENT

"BROADSIDE" RECON. METHOD

Scale 1" = 400'



Tilt angles in this case were plotted directly and did not require mathematical seduction. The 1600 c.p.s. frequency was used for this work.

Tilt angle profiles are shown on Fig. 4, 1" = 400' scale electro magnetic survey plan.

Anomalous areas indicated by the reconnaissance method were checked by using more detailed procedures.

RESULTS Results of the integrated geological and geophysical investigations are described below as A - Geological, and B - Economic.

A. The results of outcrop mapping and magnetic survey work are shown on Fig. 2. This indicates a structural fabric striking N 70 W and dipping at about 25° to the south except where dips have been progressively steepened by the introduction of the intrusive batholithic rock. Magnetic data indicates that the three rock units involved are remarkably similar in their magnetic signatures. No graphitic zones were found outcropping on the area surveyed.

B. A number of EM and magnetic anomalies suggest areas of interest for further exploration work. In general, these follow a line between the SW corner and mid-east side of the map area. These extremities are marked by magnetic highs (+1000 γ and + 1500 γ) with closely associated but not coincident conductive zones. The interval between these positions is more or less continuously marked by moderate conductors.

Reconnaissance EM work indicated a bread area of anomalous readings north of the SW corner and check traverses run on the alternate spacings confirmed this.

It is of interest that the magnetic highs recorded on L 28E appear to occur within the feldspar porphyry.

CONCLUSIONS

1. Rock unit 3 which forms the core of the mapped area is a member of the meta sedimentary series which hosts the important PbZn deposits of the area and is removed, on strike, by about 1-1/2 miles from the Faro deposit for which a tonnage estimate of 40,000,000 T. has been made.

2. EM conductors of the general amplitude associated with sulphide bodies have been located and mapped.

3. Magnetic anomalies, though not coincident, are closely associated with the conductors.

4. Disseminated chalcopyrite occurs in small amounts in outcrops near these anomalous zones. Chalcopyrite is an important constituent in the Faro #2 deposit which gave no results in magnetic surveys.

5. The occurrence of feldspar porphyry on the property is possibly of importance as some depositional theories for the area credit this rock type as a localiser for ore solutions. The anomalous readings, both EM and magnetic, which appear to cut through an area underlain by porphyry would indicate a period of intrusive activity in the mapped area following the emplacement of the porphyry.

RECOMMENDATIONS

It is recommended that the aforementioned zone of anomalous results be selectively investigated in the following manner:

1. Take detailed soil sections and analyze the samples quantitatively for copper, zinc and manganese.

2. Make accurate, detailed EM surveys over the conductors in the aforementioned anomalous zone.

3. Run at least one gravimetric section over each significant conductor.

4. The above procedure would be followed by drilling or mechanical stripping, if warranted.

Respectfully submitted,

R. A. Granger

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
A. F. REEVE

Albert F. Reeve, P.Eng.
Geological Engineer

APPENDIX A

APPENDIX A.

ESTIMATED COST OF

GEOLOGICAL AND GEOPHYSICAL INVESTIGATIONS

LEE AND H & W CLAIMS

1966

1.	Line cutting (contracted) 22.1 miles of chained lines @ $90.00	$1,989.00
2.	Magnetic survey (contracted) 22.7 line miles @ $50.00	1,135.00
3.	Electro magnetic survey (contracted) 23.0 line miles @ $50.00	1,150.00
4.	Geological mapping (contracted) 20 line miles @ $20.00	400.00
5.	Camp maintenance (including meals & supplies) 60 man-days @ $5.00	300.00
6.	Transportation	
	Jeep 480 mi. @ $0.18	86.00
	Helicopter 9:10 hrs. @ $136.50	1,251.00
	1:30 hrs. @ 121.50	182.00
7.	Supervision 2 days @ $60.00	120.00
8.	Office and miscellaneous costs	270.00
	Total Cost	$6,883.00

APPLICATION OF ASSESSMENT WORK

A grouping sketch showing the survey work area (fig. 5) is enclosed.

The survey work was done on 24 claims 8 in "Group 2" and 16 in "Group 1".

This work is to be applied in the following manner:

(Total Value of Work = $ 6,883.00)

Group 1: $\frac{16}{24}$ x $6883 = $4,550.00 (approx.)

Lee	12,14,16,23,24,25,26,28 - 1 year's credit each: 8 x 100	= $ 800.00
Lee	5, 7, 13 - 4 years credit each: 3x400	= 1,200.00
Lee	6, 8, 15)	
MW	1 & 2) - 5 years' credit each: 5x500	= 2,500.00

Group 2: $\frac{8}{24}$ x $6883 = $2,300.00 (approx.)

Lee	3,17,19,21 - 1 year credit each 4x100	= 400.00
Dick	11,13,15,17,19,21-1 yr. " " 6x100	= 600.00
Lee	1,2,4,9,10,11 - 2 years'" " 6x200	= 1,200.00
	Total assessment credit:	$ 6,700.00

or

67 claim years

Lee 28 Lee 26 Lee 24 Lee 21
Lee 27 Lee 25 Lee 23
Lee 16 Lee 14 Lee 12 Lee 10
Lee 15 Lee 13 Lee 11 Lee 9
Lee 8 Lee 6 Lee 4 Lee 2
HEW 1 HEW 2 Lee 7 Lee 5 Lee 3 Lee 1

L28W L24W L20W L16W L12W L8W L4W L0 L4E L8E L12E L16E L20E L24E L28E
Base Line 0

granodiorite

schists

porphyry

Tie Line

minor calcareous bands

minor cupy

comp. pad

#1, Hill 13, 14

#2, Faro 187, 188

#2, Faro 171, 172

#1, Joe 39, 40 Sept. 15/66

N

3 feldspar porphyry (diorite) int. contact?

2 granodiorite int. contact

1 schists: quartz-mica, mica increases to granite; minor magnetite, pyrr. small calcareous bands in places.

strike & dip of schistosity

contact; assumed

area of outcrop & float

area of outcrops

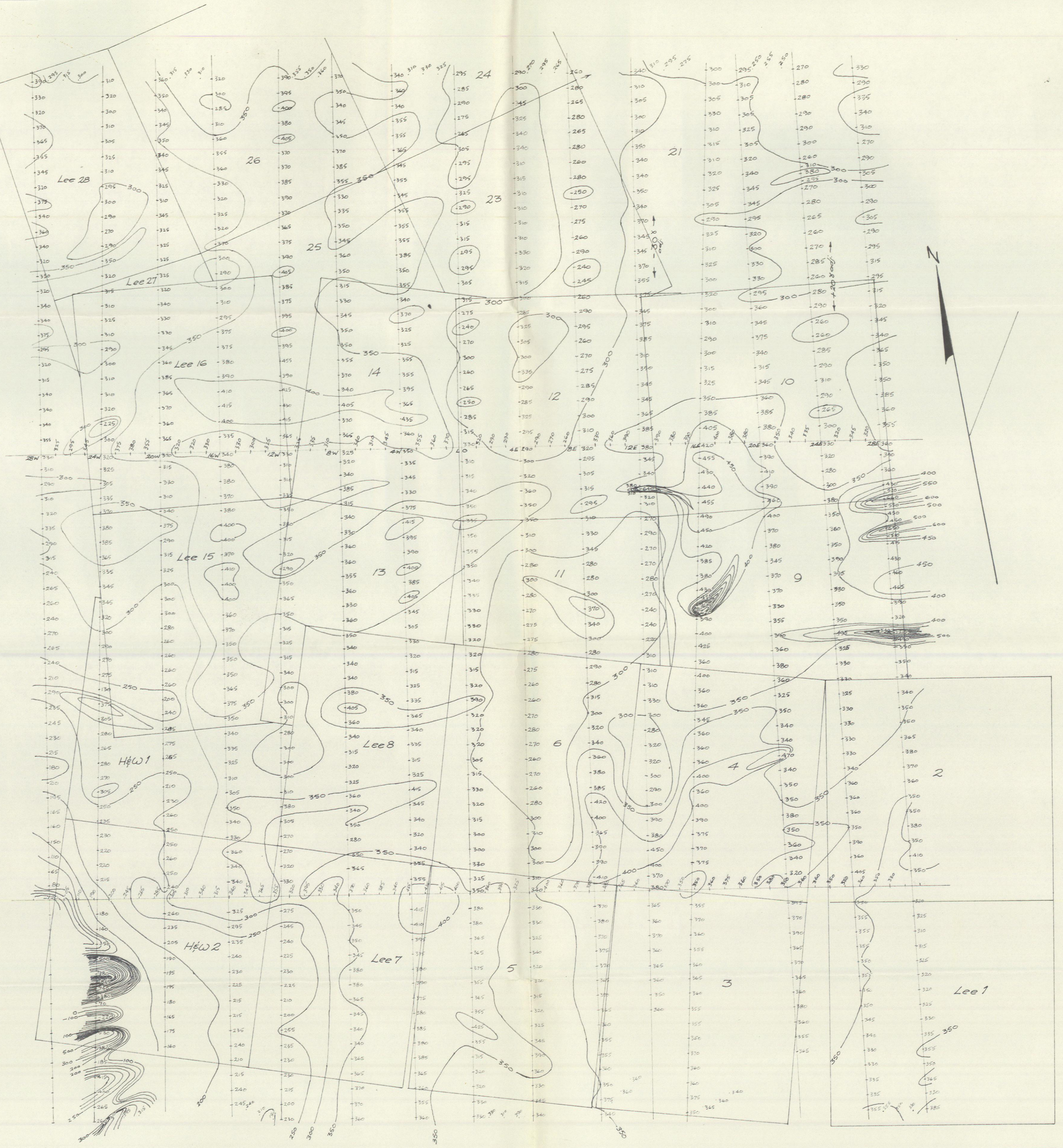
FLAGSTONE MINES LTD.

Lee Group ~ Faro Area ~ Yukon Terr.

Geological Plan

Scale: 1"=400'	Date: Oct. 12, 1966	mapped by: R.G. Hay drawn by: RGH

Fig. 2



FLAGSTONE MINES LTD.

Lee Group ~ Faro Area ~ Yukon Terr.

Magnetometer Survey

Scale: 1"=400'	Date: Oct. 13, 1966	operator: J.W. Coyne
corr.: 108	int.: 50δ inst: MF-1	map:

Fig. 3

Lee 28
Lee 27
Lee 16
Lee 15
Lee 8
Lee 7
Lee 1
HEW 1
HEW 2
A-1
A-2
A-3
Tie Line
26
25
24
23
21
14
12
10
13
11
9
6
4
2
5
3
L 28W
L 24W
L 20W
L 16W
L 12W
L 8W
L 4W
L 0
L 4E
L 8E
L 12E
L 16E
L 20E
L 24E
L 28E
N

"recon contour"
"detail contour"
conductor
contour by correction
conductive area

N 10° 10° S

FLAGSTONE MINES LTD.

Lee Group ~ Faro Area ~ Yukon Terr.

Electromagnetic Recon Survey

Scale: 1"=400' inst: SE-300 freq. 1600	Date: Oct. 14, 1966	oper's: J. Winton R.G. Hay map: RHH

Fig. 4

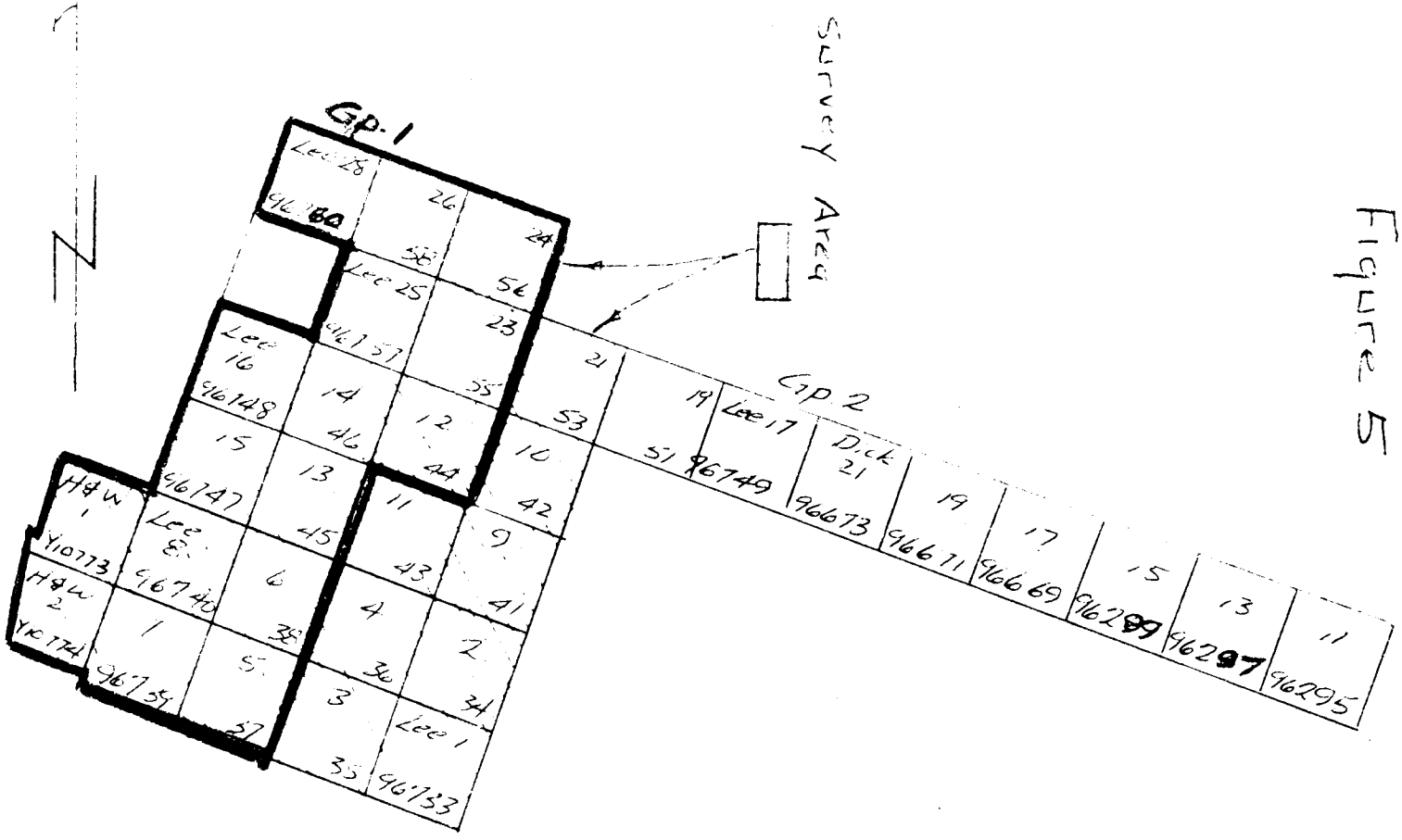


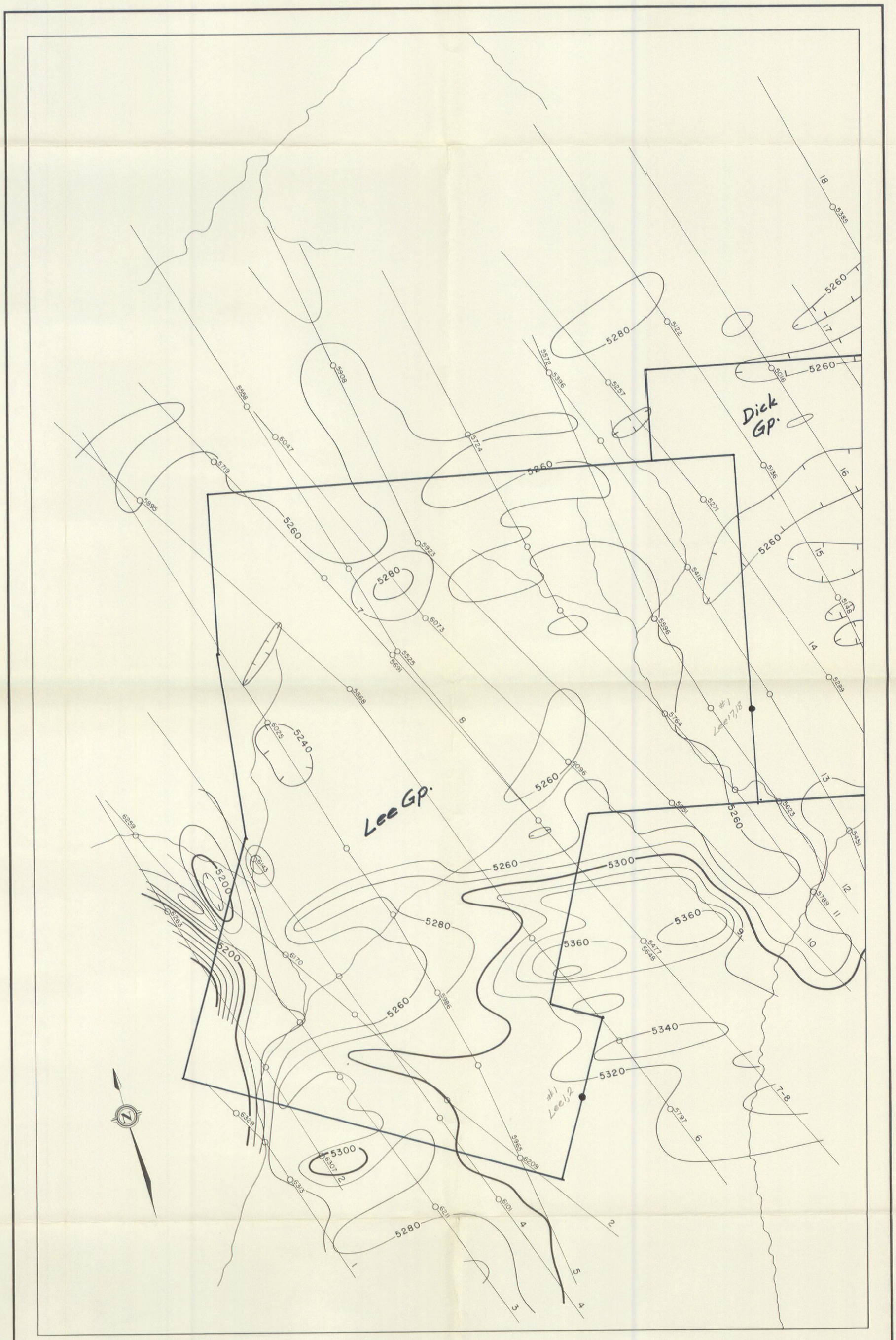
Figure 5

Grouping Sketch
Lee Claims
Scale: 1" = 1/2 mi.

105K-6

FLAGSTONE MINES LIMITED

AIRBORNE GEOPHYSICAL SURVEY



CONTOUR INTERVAL ..... 20 GAMMA
MEAN FLIGHT LINE SPACING ..... 1000 FEET
MEAN TERRAIN CLEARANCE ..... 200 FEET
500 GAMMA CONTOUR .....
100 GAMMA CONTOUR .....
20 GAMMA CONTOUR .....
MAGNETIC LOW .....
FIDUCIAL POINTS 3690
FLIGHT LINES .....

LEE GROUP

YUKON TERRITORY

SCALE

1000 0 1000 2000 3000 4000 5000
FEET FEET

1 Inch to 1320 Feet

(Approx.)

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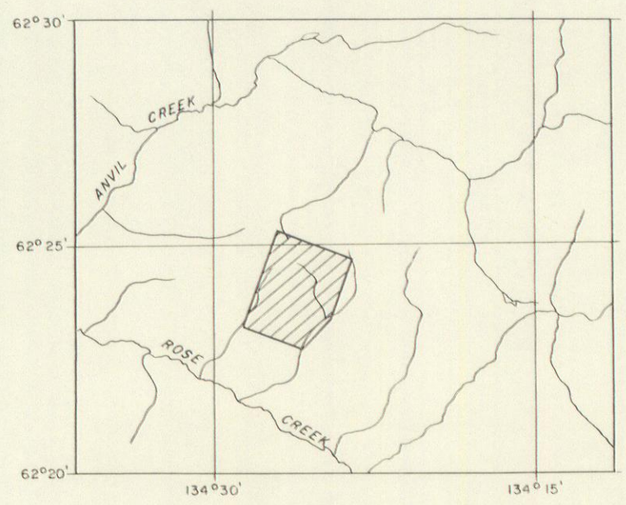
TORONTO, CANADA

1966

AEROMAGNETIC MAP



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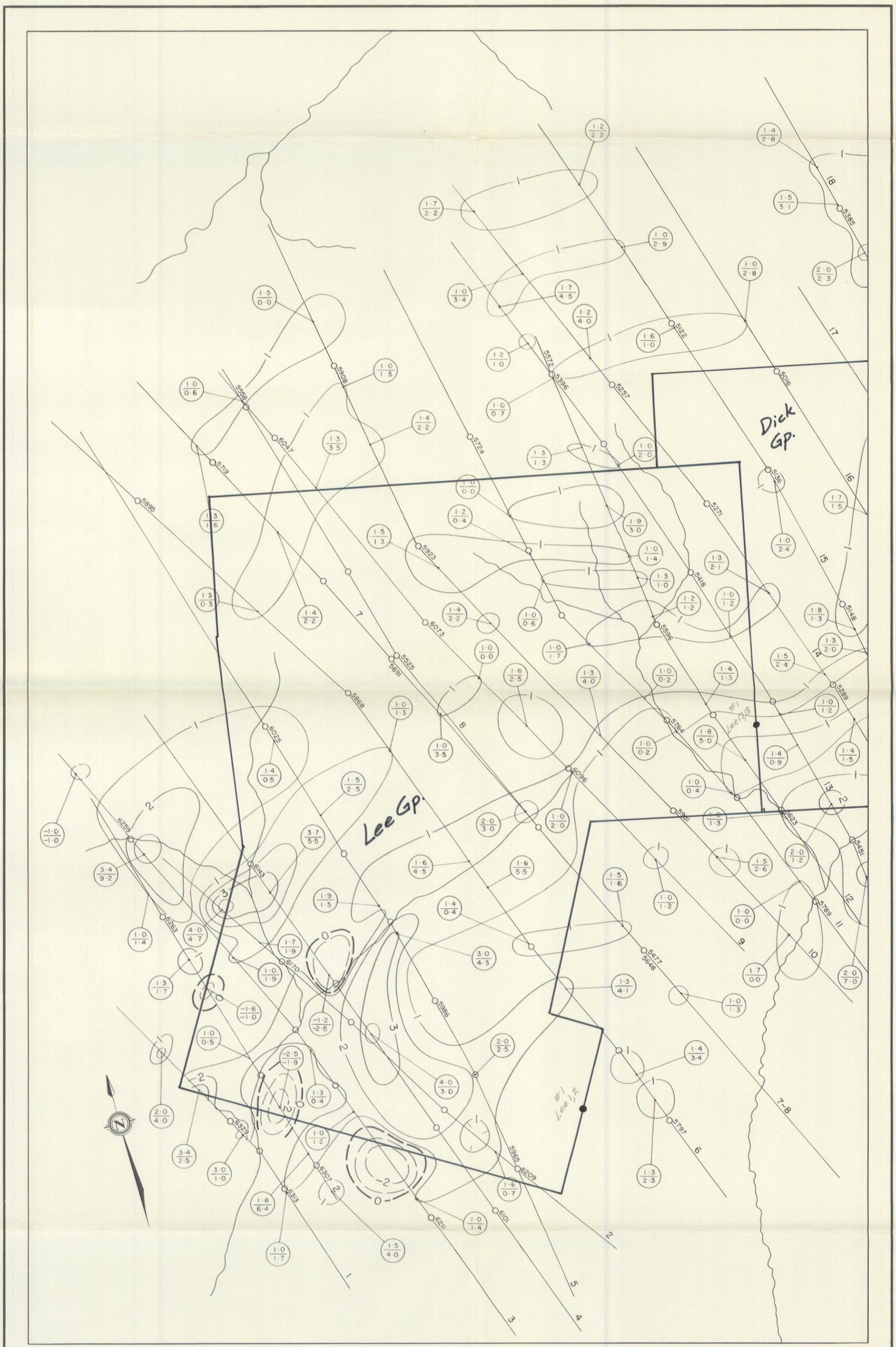
AIRBORNE GEOPHYSICAL SURVEY



MEAN FLIGHT LINE SPACING ..... 1000 FEET
MEAN TERRAIN CLEARANCE ..... 200 FEET
ELECTROMAGNETIC CONTOURS 5, 10, 15 etc. .....
1, 2, 3, 4 etc. .....
NEGATIVE CONTOURS -5, -10 etc. .....
-1, -2, -3, -4 etc. .....
FIDUCIAL POINTS ..... O 3690
FLIGHT LINES .....

The contours represent amplitude of in phase response of the resultant field expressed in parts per million of the primary. The figures $\frac{2.3}{0.2}$ represent amplitude $\frac{\text{in phase component}}{\text{quadrature component}}$
The frequency of the primary current is 4000 cycles per second.

LEE GROUP

YUKON TERRITORY

SCALE

1000 0 1000 2000 3000 4000 5000
FEET FEET

1 Inch to 1320 Feet

(Approx.)

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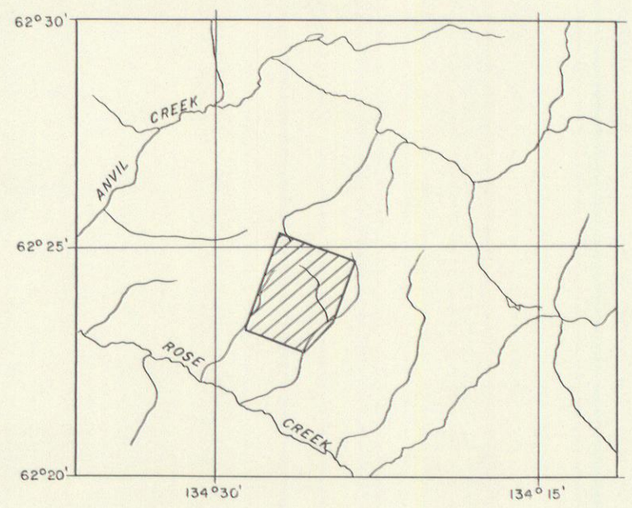
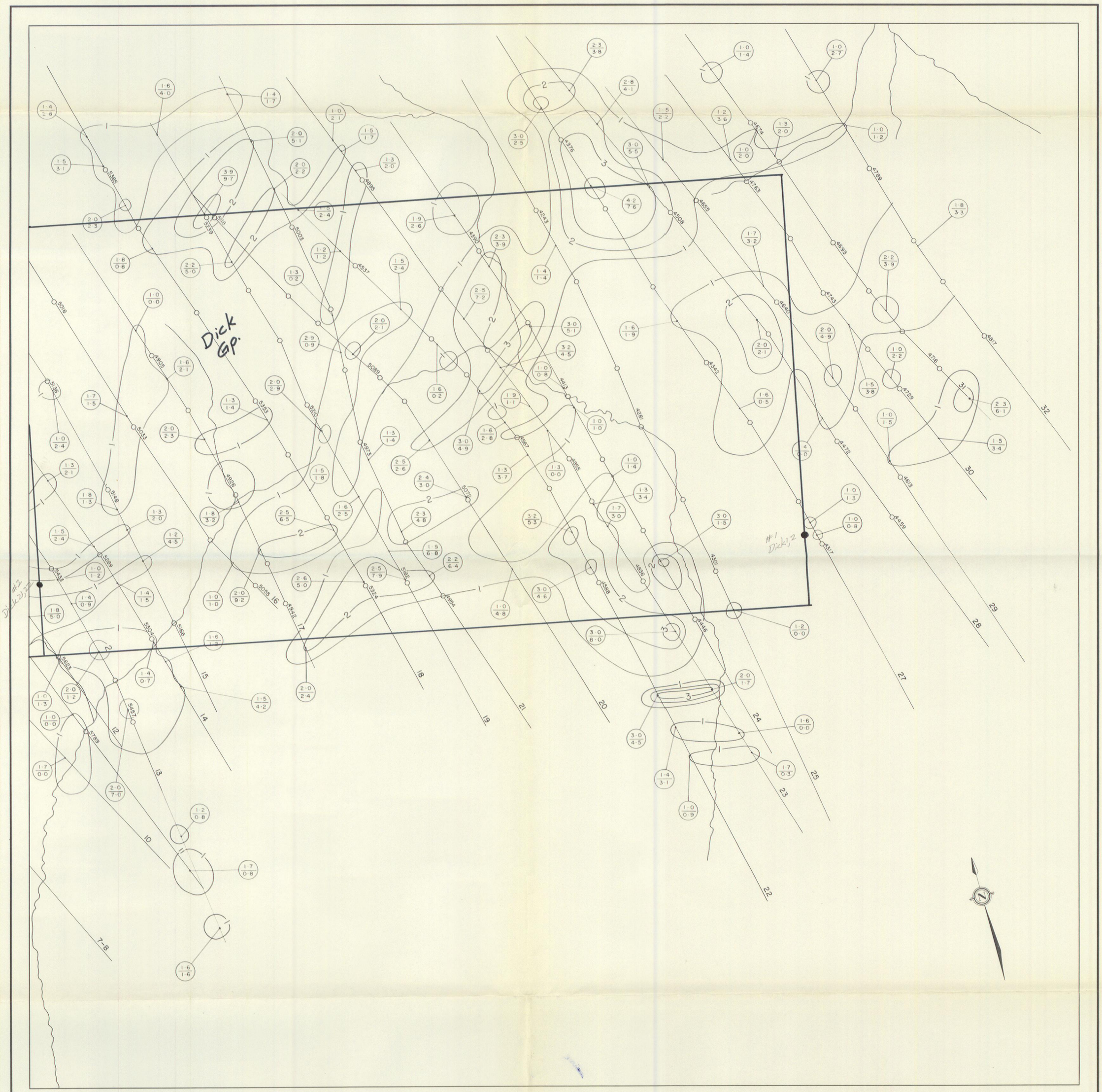
ELECTROMAGNETIC MAP



FLAGSTONE MINES LIMITED

AIRBORNE GEOPHYSICAL SURVEY



MEAN FLIGHT LINE SPACING ..... 1000 FEET
MEAN TERRAIN CLEARANCE ..... 200 FEET
ELECTROMAGNETIC CONTOURS 5,10,15 etc. ----
1,2,3,4 etc. ----
NEGATIVE CONTOURS -5,-10 etc. ----
-1,-2,-3,-4 etc. ----
FIDUCIAL POINTS ..... O 3690
FLIGHT LINES .....

The contours represent amplitude of in phase response of the resultant field expressed in parts per million of the primary. The figures $\frac{2.3}{0.2}$ represent amplitude $\frac{\text{in phase component}}{\text{quadrature component}}$
The frequency of the primary current is 4000 cycles per second.

DICK GROUP

YUKON TERRITORY

SCALE

1000 0 1000 2000 3000 4000 5000
FEET FEET

1 Inch to 1320 Feet

(Approx.)

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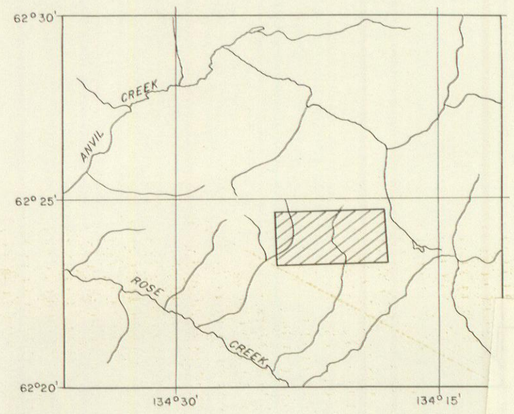
ELECTROMAGNETIC MAP



FLAGSTONE MINES LIMITED

AIRBORNE GEOPHYSICAL SURVEY

CONTOUR INTERVAL ..... 20 GAMMA
MEAN FLIGHT LINE SPACING ..... 1000 FEET
MEAN TERRAIN CLEARANCE ..... 200 FEET
500 GAMMA CONTOUR
100 GAMMA CONTOUR
20 GAMMA CONTOUR
MAGNETIC LOW
FIDUCIAL POINTS 3690
FLIGHT LINES

DICK GROUP

YUKON TERRITORY

SCALE

1000 FEET 0 1000 2000 3000 4000 5000 FEET

1 Inch to 1320 Feet

(Approx.)

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TORONTO, CANADA

1966

AEROMAGNETIC MAP