MAGNETIC AND ELECTROMAGNETIC

GEOPHYSICAL SURVEYS

LEE MINERAL CLAIM GROUP

TILLEI LAKE AREA

Watson Lake Mining Division
Yukon Territory

Longitude 129° 25'W.
Latitude 61° 56'N.
Map Sheet 105-H-14

by

Clyde L. Smith,
Exploration Manager,

Spartan Explorations Ltd.

June 5 - August 1, 1968

TABLE OF CONTENTS

ILLUSTRATIONS

LIST OF CLAIMS

Claim Numbers	Grant Numbers	Date Received
LEE 1-192	Y19118 - Y19309	September 6, 1967
193-232	Y22187 - Y22226	October 6, 1967

SPARTAN EXPLORATIONS LTD. (N.P.L.)

LEE CLAIM GROUP

KEY MAP

62°00' LAT.

129°30' LONG.

RIVER

YUSEZYU

McPHERSON LAKE

ASTRO

LEE 1 - LEE 192 INCLUSIVE

LOCATION LINES —: EAST 90° ASTRONOMIC

LEE 193 - LEE 232 INCLUSIVE —: LOCATION LINES NORTH ASTRONOMIC

SCALE 0 ½ 1 1½ MILES

INTRODUCTION

The LEE 1-192 claim group was staked in early September of 1967, to cover an area of showings discovered by primary prospecting in a broad area east and south of McPherson Lake in the eastern Yukon. The most important showing discovered is located in the area of the LEE 77-79 claims and consists of a small exposure of copper, zinc, and lead bearing skarn in a limestone bed folded into a small, northerly-plunging anticline. This showing occurs in an area of quartzite near a major east-west trending fault south of an area of granitic intrusives. Several other small skarn bodies were located east of the main showing and the staking was done to cover these showings as well as a broad area of apparently favourable geology.

Claims LEE 193-232 were staked in early October on the western margin of the 1-192 block, to cover an area of anomolous zinc geochemical results discovered after the original staking.

LOCATION AND ACCESS

The LEE group is centered roughly at longitude 129° 25'W and latitude 61° 56'N. The main showing is located about 4 miles east of the northeastern end of McPherson Lake in the northwestern corner of claim sheet 105-H. Access to the property is by float or ski aircraft landing on McPherson Lake. The claims may be reached from the eastern end of McPherson Lake by traversing up a westerly flowing creek which flows from the centre of the claim group into the northern end of the lake. Also, two helicopter pads are located on the claims.

METHOD OF SURVEY

Instruments Used - For the magnetometer survey a sharpe F-1 magnetometer was used; the instrument is hand held and measures the vertical magnetic component by use of a fluxgate which automatically levels itself in the direction of vertical field. The range of this instrument is 200,000 gammas on a plus and minus scale and the readability is plus or minus 5 gammas. The magnetometer is of light-weight and readings can be obtained quickly; a conversion factor is necessary before gamma values can be determined.

The electromagnetic survey was carried out with a Sharpe SE 300 dual frequency unit. The instrument is of the inductive type and may be used as either a horizontal or vertical loop apparatus. Measurements are made of the resultant dip angle of the field and the width of null or out-of-phase component. It is designed to be operated with a maximum coil spread of 400 feet on frequencies of 400 and 1600 cycles per second with no inter-connecting cables. The effective depth penetration is a function of coil spacing.

Line Cutting - Soil sampling surveys were conducted on a grid consisting of a total of 25,300 feet of cut line. The grid is made up of a base line of 2,400 feet trending northeasterly. Cross lines are at right angles to the base line and are of variable lengths, averaging about 1,800 feet, and are spaced at 200 foot intervals along the base line.

Magnetometer Surveys - Prior to the actual magnetometer survey, readings were taken along the central base line at cross line intersection points. These stations were looped and re-read every hour, as a means of controlling drift and diurnal variations. A rapid and precise check was kept on magnetic variations and the entire survey was kept in a relative basis during day to day operation. Each cross line was read with re-checks at the base stations within every hour. This method provides an internal control for detecting diurnal and drift variations. The survey was conducted by one operator using the same instrument.

Electromagnetic Survey - All surveys were run with horizontal loop configurations using the parallel line method. In this method cross lines spaced at 200 feet were traversed by each operator. At stations spaced 100 feet apart along the cross lines each operator transmitted and received from the other operator on both frequencies. After readings were taken, the two operators moved down along the lines to the next corresponding 100 foot station and repeated the readings.

TREATMENT OF DATA

Magnetic Results - Magnetic results were corrected for diurnal and drift and final gamma values were plotted on a 200 foot to 1 inch scale map. From the magnetic values map a contour map was made using an interval of 200 gammas.

Electromagnetic Results - Electromagnetic results were plotted by the operators on a 200 foot to 1 inch scale map. Because of an operational problem with one of the dual frequency units only the higher frequency results were believed reliable, and therefore, only these results were plotted on the values map. Figure 4 is a profile map giving high frequency values.

GEOLOGY

The Lee claim group area is underlain by the northern limb of a westerly-trending major anticline within which Proterozoic phyllites, quartzites and minor limestones are exposed. The stratigraphic section is locally cut by granodiorite intrusives of probable Cretaceous age as well as fine-grained greenstone dikes. The beds are disturbed by northeasterly-trending fractures and minor northerly-trending fractures. The Lee grid area is underlain by quartzites along the eastern side of the grid area and minor limestone bands locally converted to skarn have been noted in small outcrops and float. The grid was laid out to cover possible on-strike extensions of a copper, lead, and zinc mineralized skarn zone located in a creek exposure near the point where the

base line crosses line 0.

GEOPHYSICAL RESULTS

On the ground magnetic contour map it is notable that a northeasterly trending zone of small isolated anomalies of about 1600 gamma anomaly occurs on the base line at line 0. This small anomaly is believed to reflect a diopside pyrrhotite skarn which is exposed in the creek bed and has been labelled showing #1 in the geological report of the Lee group. The skarn at this location contains low grade copper mineralization as well as a small pocket of lead-zinc-silver. Assuming that the magnetic anomaly over this showing reflects the skarn it is reasonable to assume that the elongate anomaly mentioned above reflects sporadically distributed skarn material of similar nature. The peak of the magnetic zone occurs at about 300 east on line 400 south; the peak value here is in excess of 2400 gammas. The ground electromagnetic profile map (figure 4) shows similar areas of strong negative high frequency dip angles as well as several cross-over points. It is believed that most of the profiles having high frequency negative dip angles indicate variations in the conductivity between bedrock formations. However, at point 200 south, 500 east, and at 400 south, 400 east, prominent cross-overs occur. The relationship between these cross-over points and the above described magnetically anomalous zone is very close and it is assumed that these coinciding anomalies reflect a pyrrhotite bearing skarn zone. The EM cross-overs noted do not appear to continue along strike and therefore the zone of conductivity is believed to be limited in a northeast-southwest direction. Again, this corresponds closely with the magnetic picture. An attempt was made to sink a pit on the peak of the magnetic anomaly and 14 feet of overburden was penetrated; bedrock was not exposed in the pit and it was given up because of collapse of the walls. In summary, the geophysical picture has not been adequately explained. However, due to the abundance of skarn mineralization in the grid area, and the proximity of the main anomalous zone to known mineralization (which is also

reflected magnetically) it is believed that the geophysics are reflecting a pyrrhotite-rich section within the skarn. It has been further noted in the Lee group area, as well as several other locations in the Logan Mountains, that an inverse relationship appears to exist between abundance of pyrrhotite and presence of lead-zinc-silver. Pyrrhotite-rich sections seldom appear to occur with abundant lead-zinc-silver.

CONCLUSIONS AND RECOMMENDATIONS

Because the geophysical data on the Lee grid appear to reflect a pyrrhotite-rich section in a skarn zone, and because pyrrhotite does not appear to occur in abundance with lead-zinc-silver in skarns in the area, it is recommended that no further work be done on this particular anomalous zone.

Respectfully submitted,

Clyde L. Smith,
Exploration Manager.

James S. Dodge,
Vice-President - Explorations

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. S. DODGE

Expiry Date: August 4, 1969

APPENDIX I

SUMMARY OF COSTS

	Costs - $	Sub Total
1. Preliminary Studies		
Wages, Salaries, Bonuses	350.00	
Supplies and Miscellaneous Equipment	209.00	
Ross River Base Camp	28.00	587.00
2. Line Cutting		
Wages, Salaries, Bonuses	91.00	
Ross River Base Camp	78.00	
Super Cub Support	18.00	
Camp Support	126.00	308.00
3. Geophysical Surveys		
Wages, Salaries, Bonuses	327.00	
Helicopter Support	588.00	
Fuel	181.00	
Ross River Base Camp	230.00	
Super Cub Support	16.00	
Camp Support	422.00	1,764.00
4. Expediting		
Consultants Fees and Management	56.00	
Ross River Base Camp	45.00	
Super Cub Support	21.00	122.00
5. Exploration Planning		
Wages, Salaries, Bonuses	638.00	
Consultants Fees and Management	545.00	
Travel and Accomodation	58.00	
Ross River Base Camp	831.00	
Super Cub Support	36.00	
Camp Support	64.00	2,172.00
	GRAND TOTAL	$4,953.00

A P P E N D I X II

A F F I D A V I T

Supporting Summary of Costs

I, Clyde L. Smith, Exploration Manager, Spartan Explorations Limited, of Vancouver, B. C., do hereby state that to the best of my knowledge and belief the statement of costs as presented in Appedix I of this report "Geological Report on Lee Mineral Claim Group" is both true and correct.

DATED AT Vancouver, British Columbia, this thirtieth day of August, A.D. 1968.

SWORN BEFORE ME at Vancouver, British Columbia, this 30th day of August, A.D. 1968

A Commissioner for taking Affidavits in the Yukon Territory

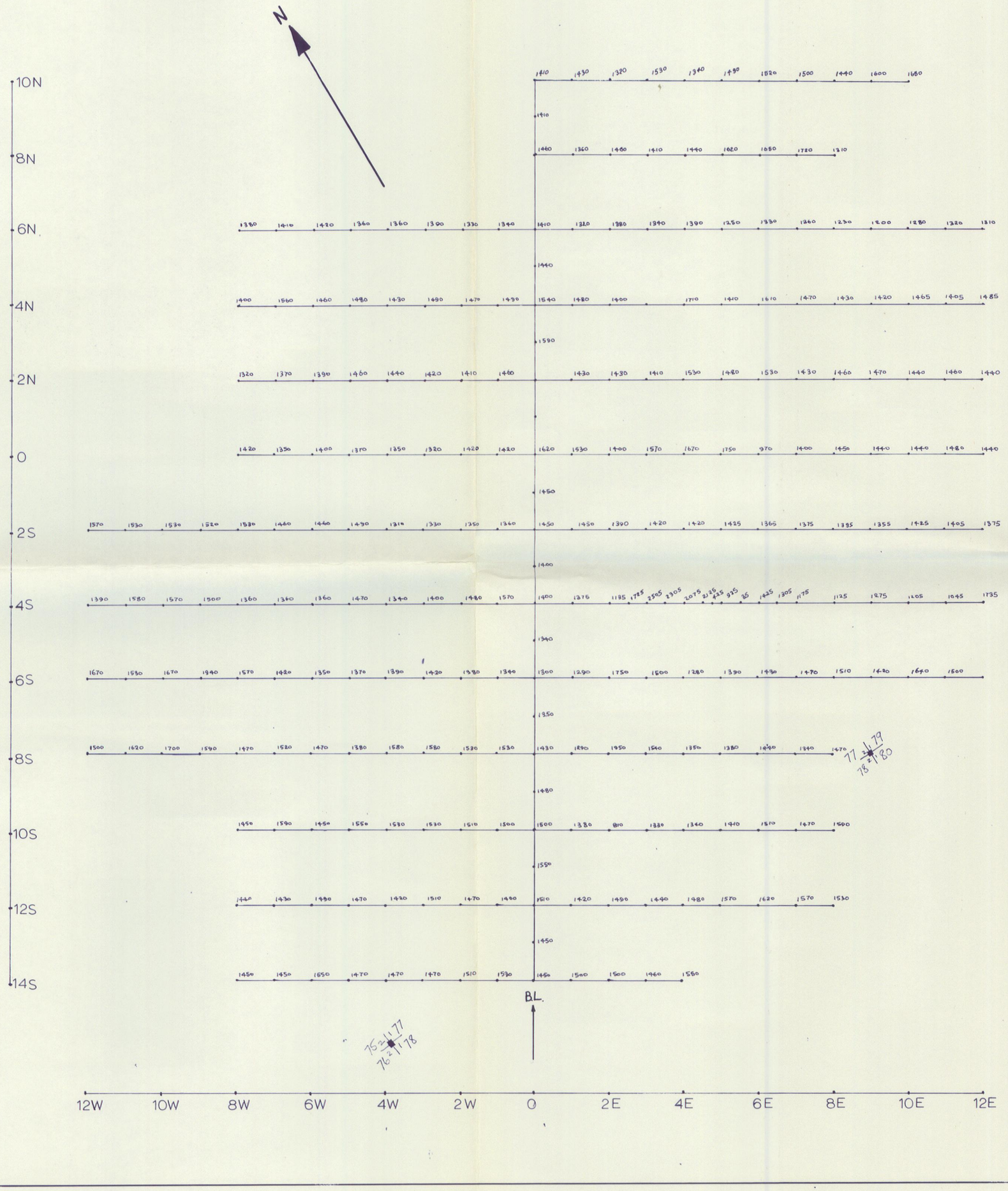
Clyde L. Smith

A P P E N D I X III

PERSONNEL

Name	Position	Address
G. James	Geophysical Operator	Hedley, B. C.
A. Carlos	Prospector	Viscount, Saskatchewan
W. Roberts	Geologist	Vancouver, B. C.

FIG. 1

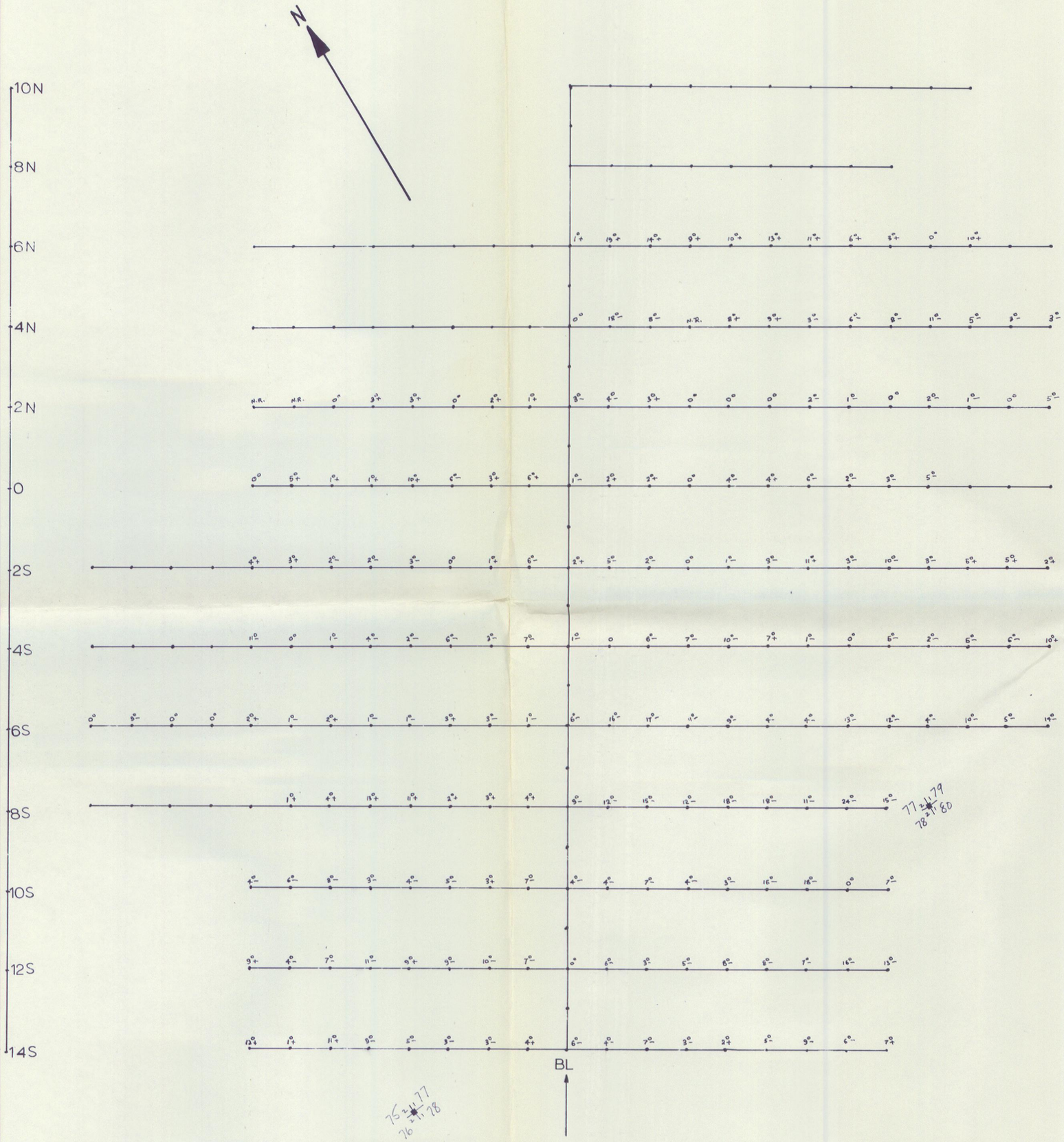


SPARTAN EXPLORATIONS LIMITED
ROSS RIVER YUKON
LOGAN PROJECT
LEE MINERAL CLAIMS
GROUND MAGNETIC MAP
Values in Gammas

INSTRUMENT : SHARPE MF-1
OPERATOR : G.JAMES
DATE: JUNE 21, 1968.
DRAWN BY : N.H.SIMMONS

200 100 0 200 400
Scale in feet.

FIG. 2



SPARTAN EXPLORATIONS LTD.

ROSS RIVER YUKON

LOGAN PROJECT

LEE MINERAL CLAIMS

GROUND E.M. SURVEY.

Values in degrees (+E,-W)

INSTRUMENT : SHARPE SE 300.

OPERATORS : A CARLOS , G JAMES.

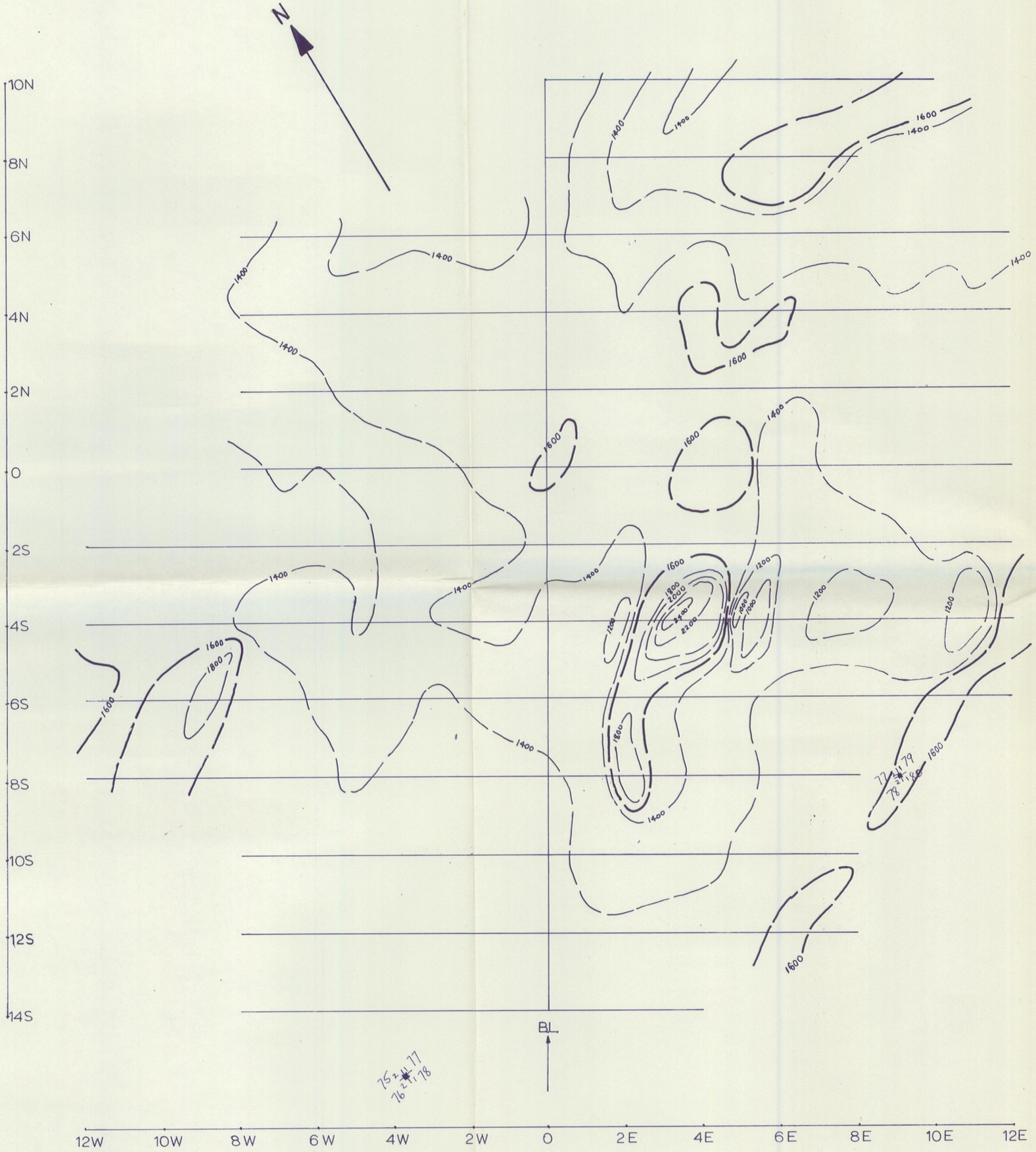
DRAWN BY : N H SIMMONS.

DATE : JUNE 25, 1958.

200 100 0 200 400

Scale in feet.

FIG. 3



SPARTAN EXPLORATIONS LTD.

ROSS RIVER YUKON

LOGAN PROJECT

LEE MINERAL CLAIMS

GROUND MAGNETIC CONTOUR MAP

Contour interval 200 Gammas.

INSTRUMENT : SHARPE MF-1

OPERATOR : G.JAMES

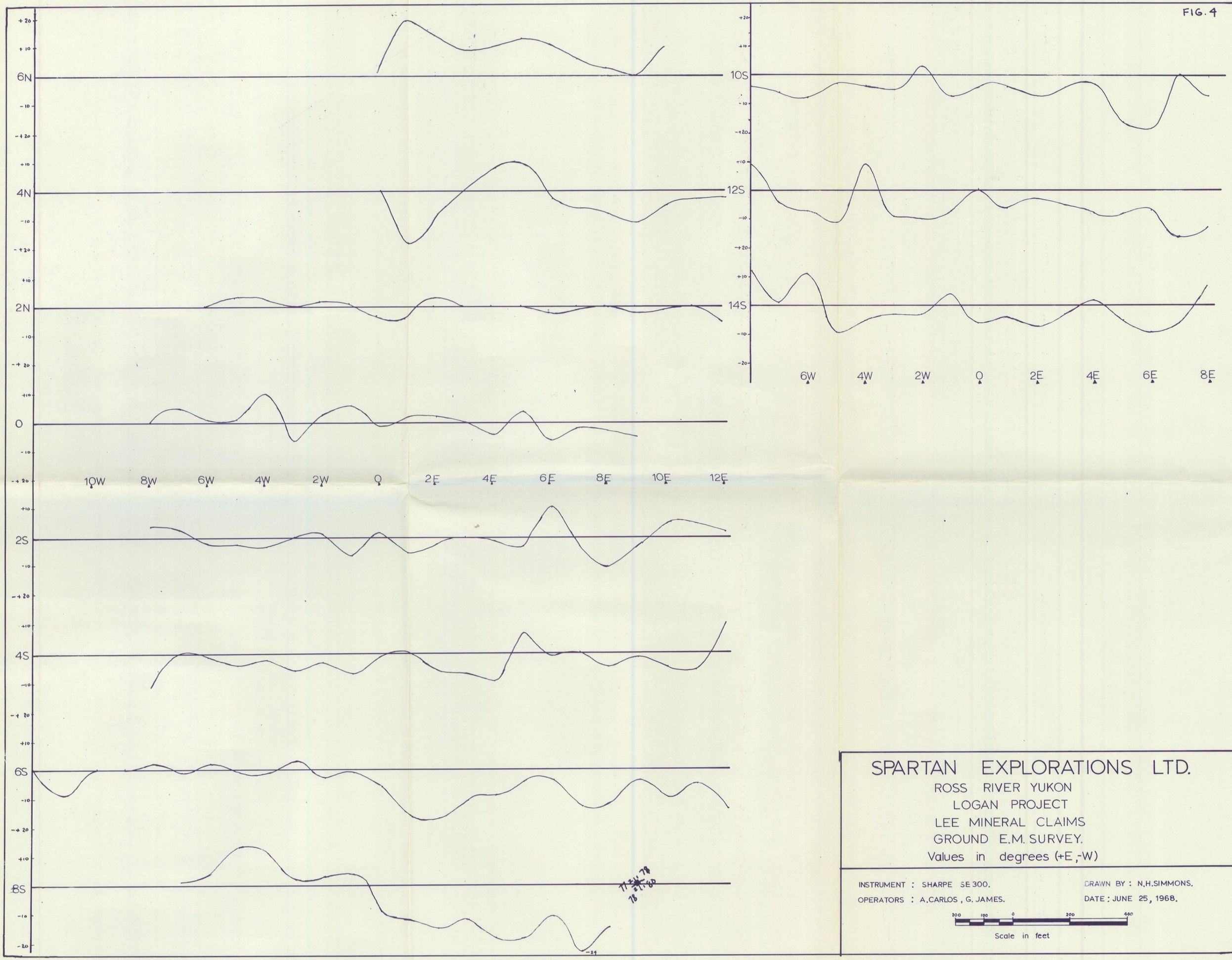
DRAWN BY : N.H.SIMMONS

DATE : JUNE 23, 1968.

200 100 0 200 400

Scale in feet

FIG. 4



SPARTAN EXPLORATIONS LTD.

ROSS RIVER YUKON

LOGAN PROJECT

LEE MINERAL CLAIMS

GROUND E.M. SURVEY.

Values in degrees (+E, -W)

INSTRUMENT : SHARPE SE 300.

OPERATORS : A. CARLOS, G. JAMES.

DRAWN BY : N.H. SIMMONS.

DATE : JUNE 25, 1968.

200 100 0 200 400

Scale in feet