GEOLOGICAL REPORT

on

LEE MINERAL CLAIMS

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

GEOLOGICAL SURVEY
NOV 1968
Resident Geologist
Whitehorse, Y. T.

This report has been examined by the Geological Evaluation Unit. Approved as to technical worth by:

RESIDENT GEOLOGIST

Approved as to cost in the amount of: $ 7,340.00

RESIDENT MINING ENGINEER

Accepted as representation work under Section 53(4) Yukon Quartz Mining Act.

COMMISSIONER

TABLE OF CONTENTS

Page

Key Map .....Pocket

List of Claims 3

Introduction 4

Location and Access 4

Table of Geologic Formations 5

Geology 6

Economic Geology 7

Recommendations 8

Appendix I Summary of Costs 9

Appendix II Affidavit 10

Appendix III Personnel 11

ILLUSTRATIONS

Figure 1 Geology and Mineral Occurrences ..... Pocket

Figure 2 Geologic Map of Lee Group Grid ..... Pocket

Figure 3 Geologic Sketch Map, View Looking S20°W at Showing #1. ..... Pocket

Figure 4 Geologic Sketch Map of Showing #8..... Pocket

LIST OF CLAIMS

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

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.

TABLE OF GEOLOGIC FORMATIONS

Cretaceous (?)	6.	Fine-grained greenstone dikes
	5.	Granodiorite
Proterozoic	4.	Sandy limestone
	3.	Quartzite with interbeds of grit and minor phyllite and limestone
	2.	Grey phyllite
	1.	Graphitic well-bedded phyllite with minor limestone

GEOLOGY

The Lee group area occurs along the western margin of an extensive northwesterly trending arch of Proterozoic rocks which underlies the Logan Mountains in the eastern Yukon. As mapped on geologic sheet 105-H by the Geological Survey of Canada, the claim group area is underlain by unit 1 and 2 which are entitled Proterozoic phyllites, schists and gneiss. The Proterozoic in this region is intruded by Cretaceous granitic rocks of the Logan Patholith.

In the area of the Lee claims, a four-fold division of the Proterozoic was mapped. Descriptions of the units from the oldest to youngest is as follows:

Unit 1 crops out in the southern portion of the claim group and consists of well-bedded, medium grey to black coloured graphitic phyllite. Minor interbeds of more limy material were noted.

Unit 2 appears to conformably overlie unit 1 in the southern portion of the group and consists of highly contorted, medium-grey coloured phyllite with abundant quartz veins and lenses. Unit 2 contains pyrite, which upon weathering gives a rusty surface appearance.

Unit 3 underlies a broad east-west trending belt in the centre of the claim group and consists of massive bedded, light-grey to light-brownish grey medium-grained quartzites with minor interbeds of crystalline sandy limestone and light-grey, moderately contorted phyllite. Also major interbeds of grit, with grain sizes up to 5 mm. in diameter, occur throughout the quartzite beds.

Unit 4 was mapped as dark-grey, cyrstalline to sandy, massive bedded limestone which has no definite stratigraphic position, but appears to occur as interbeds within unit 3.

Unit 5 is medium grained, granular granodiorite which occurs in two small intrusive bodies in the northern part of the group. Also, smaller

bodies of granodiorite have been noted near skarn occurrences.

Unit 6 consists of fine-grained greenstone which occurs as broad dike-like bodies cutting quartzite in the centre of the group.

The Lee group area appears to be underlain structurally by the eastern limb of a southwesterly trending broad anticline, which has a core of units 1 and 2 to the south and a broad limb of unit #3 trending east-west through the centre of the group. Minor folds are noted throughout this major structure and at least two periods of deformation are believed to have occurred. A major northeasterly trending fault cuts the northern limb of this anticline in the northern part of the group and this direction of shearing associated with the major fault appears to have had some control upon the localization of skarn zones within the quartzite terrain. Minor faulting and shearing in the area has a northeasterly trend parallel to the major fault as well as a northerly trend.

ECONOMIC GEOLOGY

Eight main showings areas were located within the claim group. (See figure 1 for key to mineral occurrences). Only showings 1 and 8 are considered of economic significance. Showing 2 through 7 consist of various types of mineralization ranging from skarn to fracture controlled but in all cases, mineralization noted is of small size. Figure #2 is a geologic map of the Lee group grid area which shows a number of float locations west of the main showing. Some of these floats consist of material different than the main showing and indicate the existence of a variety of types of mineralization in the grid area. Figure 3 is a geologic sketch map in cross-sections of the main showing. As can be seen from the geological sketch as well as the assay returns, the bulk of a skarn zone contains only minor amounts of copper, lead and zinc. Within a high grade pocket of skarn, approximately 4 feet by 2 feet

in cross sectional area, the following assays were obtained:

7.7% Pb, 12.6% Zn, 3.08% Cu, and 10.64 oz. Ag.

This small high grade pocket turned out to be the only exposure of mineralization of significant grade in the main showing. A small amount of trenching was done in the area and little extent of the high grade section was found. It is further notable that the high grade pocket occurs immediately at a granodiorite contact where limestone has been converted to skarn.

Detailed geochemical and magnetic surveys were conducted on the grid and a generally anomalous zone of magnetics was found to trend southwesterly from the main showing. The results of this anomaly will be discussed in the report on geophysics of the Lee group. Figure 4 is a map of showing #8 which shows diopside pyrrhotite skarn bodies as replacements of limestones. These small skarns carry, in some places, significant lead-zinc-copper mineralization; however, the size of zones is too small to be of economic importance.

RECOMMENDATIONS

Although several small skarn bodies have been located in the central portion of the Lee group high grade mineralization within these skarns appears to occur in only very small portions of the bodies and it is not believed that zones of economic importance will be found. It is recommended that the claims covering the main skarns be maintained for at least one more year in order to more thoroughly assess geophysical and geochemical data in the area.

Respectfully submitted,

Clyde L. Smith,
Exploration Manager.

James S. Dodge,
Vice-President - Exploration

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. S. DODGE

Expiry Date: August 4, 1969

A P P E N D I X I

SUMMARY OF COSTS

	Costs - $	Sub Total
1. Preliminary Studies		
Wages, Salaries, Bonuses	400.00	
Ross River Base Camp	200.00	
Super Cub Support	25.00	625.00
2. Prospecting		
Wages, Salaries, Bonuses	220.00	
Supplies and Miscellaneous Equipment	20.00	
Helicopter Support	726.00	
Fuel	162.00	
Ross River Base Camp	154.00	
Super Cub Support	529.00	
Camp Support	283.00	2,094.00
3. Geological Surveys and Mapping		
Wages, Salaries, Bonuses	563.00	
Supplies and Miscellaneous Equipment	91.00	
Travel and Accomodation	72.00	
Petrographic Studies	5.00	
Helicopter Support	488.00	
Fuel	140.00	
Ross River Base Camp	386.00	
Super Cub Support	36.00	
Camp Support	704.00	2,485.00
4. Expediting		
Consultants Fees and Management	60.00	
Ross River Base Camp	40.00	
Super Cub Support	15.00	115.00
5. General Supervision		
Wages, Salaries, Bonuses	150.00	
Consultants Fees and Management	15.00	
Ross River Base Camp	110.00	
Super Cub Support	160.00	440.00
6. Exploration Planning		
Wages, Salaries, Bonuses	300.00	
Consultants Fees and Management	250.00	
Travel and Accomodation	25.00	
Ross River Base Camp	350.00	
Super Cub Support	20.00	
Camp Support	30.00	975.00
GRAND TOTAL		$6,734.00

APPENDIX II

AFFIDAVIT

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 Appendix 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

APPENDIX III

PERSONNEL

Name	Position	Address
C.L. Smith	Exploration Manager	West Vancouver, B. C.
W. Roberts	Geologist	Vancouver, B. C.
M. Wolfhard	Geologist	Vancouver, B. C.
A. MacKillop	Prospector	North Vancouver, B. C.
A. John	Prospector	Ross River, Yukon Territory

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

LEE CLAIM GROUP

KEY MAP

62°00' LAT.

129°30' LONG.

RIVER

MCPHERSON LAKE

AST. RD

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

FIG. 1

KEY TO MINERAL OCCURRENCES

1. Main showing of mainly pyrrhotite - chalcopyrite skarn with a high grade segregation, approximately 3 feet in diameter, of galena, sphalerite, chalcopyrite and silver.
2. Skarn with a pod about 2 feet square of mainly pyrrotite with minor chalcopyrite. Remainder of skarn is almost barren. Limestone interbed in quartzite is + feet thick.
3. Highly sheared area with minor galena, arsenopyrite, chalcopyrite and pyrite in brecciated mixture of quartzite and limestone. Also local pods of skarn with massive fine grained pyrrhotite, shear zone ~ 30' wide.
4. Interbed of limestone approximately 10' thick with a segregation of pyrrhotite - chalcopyrite skarn. Also minor arsenopyrite in quartz veinlets in nearby quartzite.
5. Highly sheared portion of 2 foot thick limestone, resulting in pyrrhotite skarn with minor chalcopyrite. Contact with quartzite contains vein quartz plus chalcopyrite.
6. Fine disseminated grains of galena in discordant quartz veins up to 2 inches thick in massive quartzite.
7. Massive fine grained pyrrhotite skarn with minor chalcopyrite in 5 foot thick limestone interbed in massive quartzite.
8. Massive pyrrhotite skarn in 10 foot thick limestone interbed in quartzite. Two high grade segregations contain nearly 75% pyrrhotite with minor galena, sphalerite, and chalcopyrite.

LEGEND

- Hornfels, and or mineralized skarn.
- 6 — Fine grained greenstone dykes.
- 5 — Medium - fine grained hypidiomorphic granular granodiorite.
- 4 — Dark grey crystalline to sandy massive limestone.
- 3 — Massive light grey quartzite with interbeds of grit. Also minor interbeds of folded light grey phyllite and sandy limestone.
- 2 — Highly folded and contorted medium grey phyllite with pods and lenses of quartz.
- 1 — Light grey, medium grey, light green, graphitic well bedded phyllite. with minor limy interbeds.

~ Limit of outcrop.

Geological contacts

Assumed faulting.

Boundary of claim group

① Observed mineral occurrence.

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ROSS RIVER YUKON

LOGAN PROJECT

LEE MINERAL CLAIMS

GEOLOGY & MINERAL OCCURRENCES

GEOLOGY & SAMPLING : W. ROBERTS.

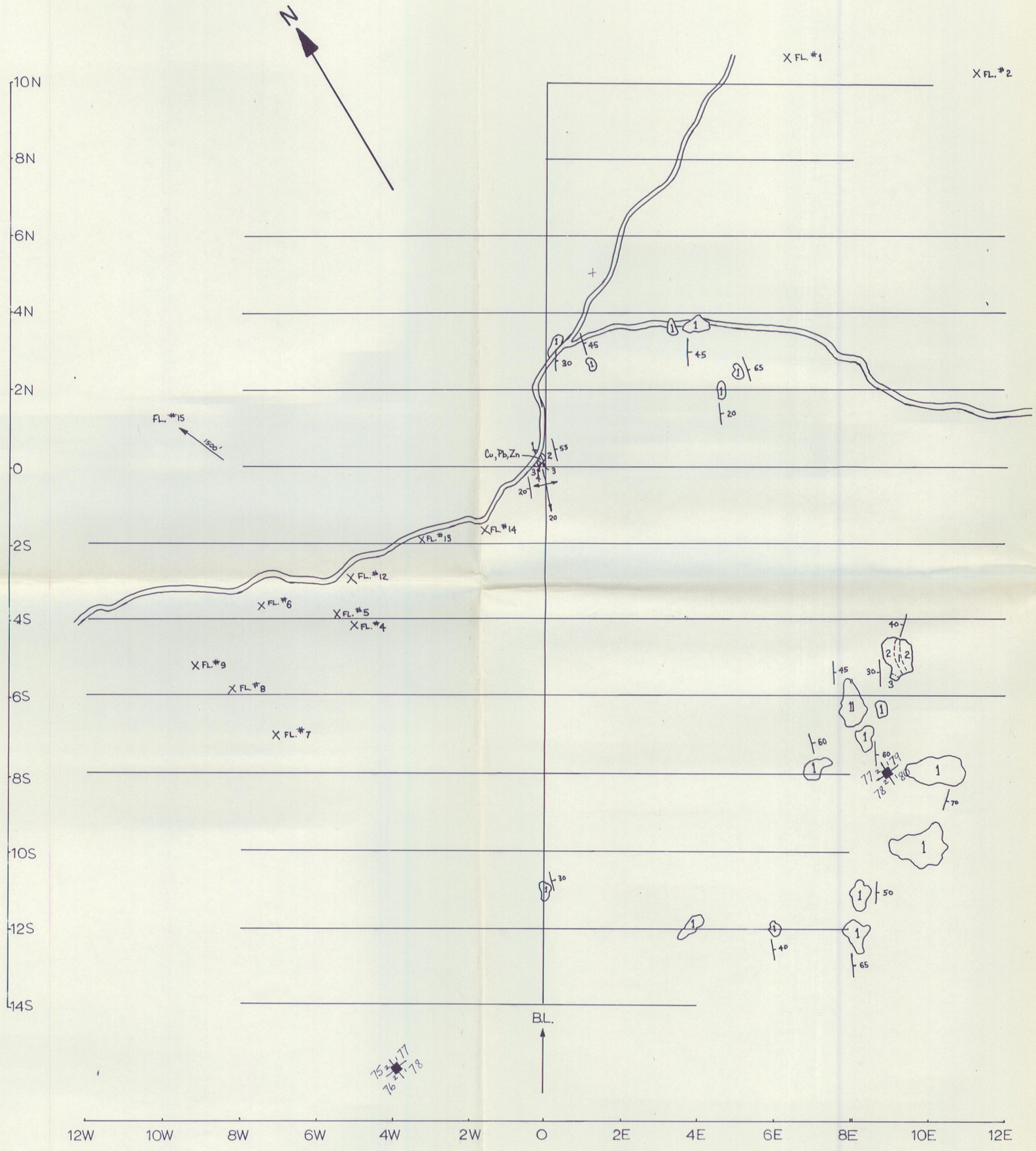
DRAWN BY : N.H.SIMMONS.

DATE : JULY 9, 1968.

1500 0 1500 3000 4500 6000 7500

Scale in feet.

FIG. 2



LEGEND

4 — GRANODIORITE.

3 — DIOPSIDE – PYRRHOTITE SKARN MAIN SHOWING OF Cu.-Pb.-Zn. IN SKARN.

2 — DARK GREY QUARTZOSE LIMESTONE.

1 — MASSIVE QUARTZITE AND GRIT.

Bedding Attitude.

Contact.

XFL.#1 FLOAT LOCATION.

FLOAT DESCRIPTIONS

FL #1 – PYRITE IN FINE - GRAINED QUARTZITE.
FL #2 – PYRITE – CHALCOPYRITE – PYRRHOTITE IN QUARTZITE.
FL #4 – CHALCOPYRITE AND MINOR SPHALERITE – GALENA IN DIOPSIDE – PYRRHOTITE SKARN.
FL #5 – CHALCOPYRITE – GALENA – SPHALERITE – NATIVE COPPER IN BLACK QUARTZITE.
FL #6 – SPHALERITE – CHALCOPYRITE – SCHEELITE IN PYRRHOTITE SKARN BRECCIA.
FL #7 – SPHALERITE – CHALCOPYRITE – PYRRHOTITE IN GRIT BRECCIA.
FL #8 – SPHALERITE – CHALCOPYRITE – IN COARSE GRIT.
FL #9 – CHALCOPYRITE IN FRACTURE FILLINGS IN COARSE GRIT.
FL #12 – SPHALERITE – CHALCOPYRITE – PYRRHOTITE IN GRIT BRECCA.
FL #13 – GALENA – SPHALERITE IN SKARN AND GRIT.
FL #14 – SPOT OF GALENA – SPHALERITE IN GRIT.
FL #15 – MINOR CHALCOPYRITE – SPHALERITE IN 30 FOOT BAND (?) OF BANDED CHERT.

ASSAYS

	Cu	Ag
FL #9 – 6601		
FL #15 – 6602		

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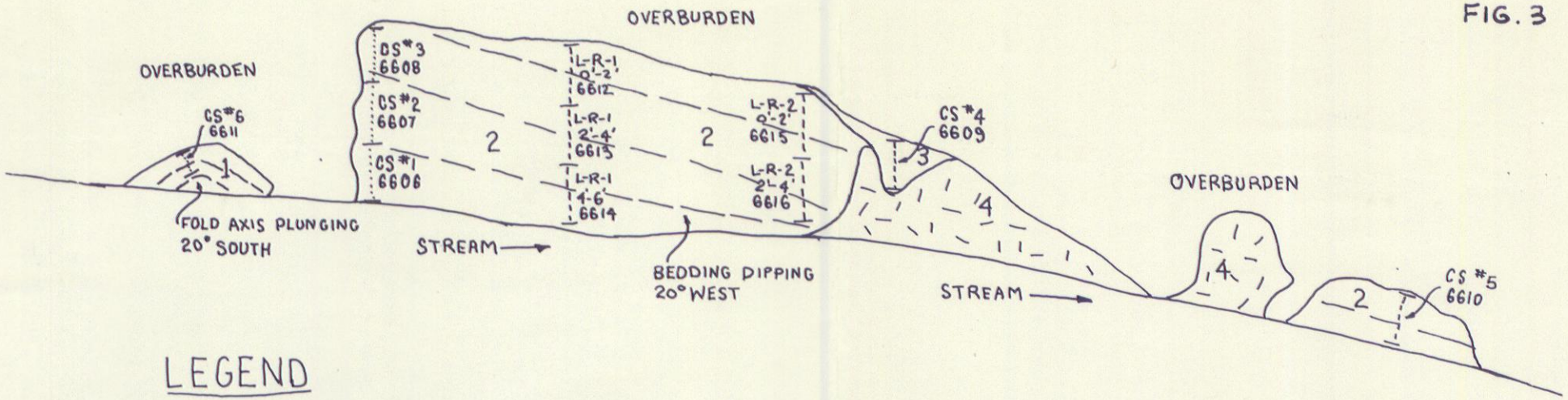
ROSS RIVER YUKON
LOGAN PROJECT
LEE MINERAL CLAIMS
GEOLOGIC MAP OF LEE GROUP GRID

GEOLOGY : W. ROBERTS.

DRAWN BY : N.H.SIMMONS.
DATE : JUNE 24, 1968.

200 100 0 200 400
Scale in feet

FIG. 3



LEGEND

- 4 — GRANITIC INTRUSIVE
- 3 — HIGH GRADE SKARN – Pb, Zn, Cu, Ag.
- 2 — DIOPSIDE – PYRRHOTITE SKARN – Cu.
- 1 — LIMESTONE WITH SKARN BANDS

---- BEDDING

I SAMPLE INTERVAL – ALL SAMPLES TAKEN AS CHIPS AT 2" SPACINGS OVER 1' OR 2' INTERVALS

ASSAYS

	Pb	Zn	Cu	Ag	Au
CS*1 – 6606 ----	.05	-.015	-.15	-.10	-
CS*2 – 6607 ----	Tr	- Tr	-.21	-.55	-
CS*3 – 6608 ----	.01	-.015	-.01	-.06	-
CS*4 – 6609 ----	7.7	-12.6	-3.08	-10.64	-Tr
CS*5 – 6610 ----	.01	- .03	- .15	- .02	-
CS*6 – 6611 ----	.27	- .23	- .04	- .74	-
L-R-1 0'-2' – 6612 –	.02	- .03	- .23	- .08	-
L-R-1 2'-4' – 6613 –	Tr	- .01	- .11	- .02	-
L-R-1 4'-6' – 6614 –	Tr	- .01	- .20	- .06	-
L-R-2 0'-2' – 6615 –	.01	- .01	- .10	- .02	-
L-R-2 2'-4' – 6616 –	.01	- .01	- .25	- .10	-

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LOGAN PROJECT

LEE MINERAL CLAIMS

GEOLOGIC SKETCH MAP

VIEW LOOKING S20°W AT SHOWING NO.1

GEOLOGY: C.SMITH

SAMPLING: W. ROBERTS, C.SMITH.

DRAWN BY: N.H.SIMMONS

DATE: JUNE 22, 1968.

Scale 1in = 5ft

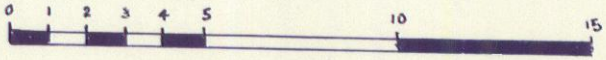
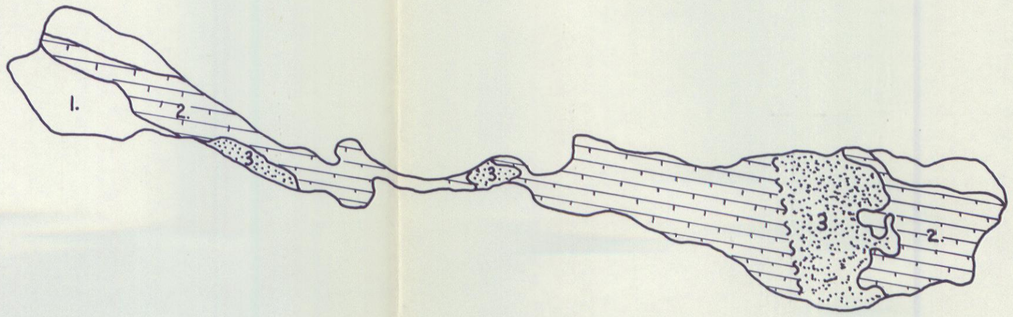
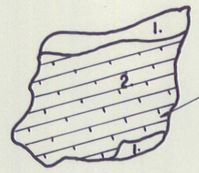


FIG. 4

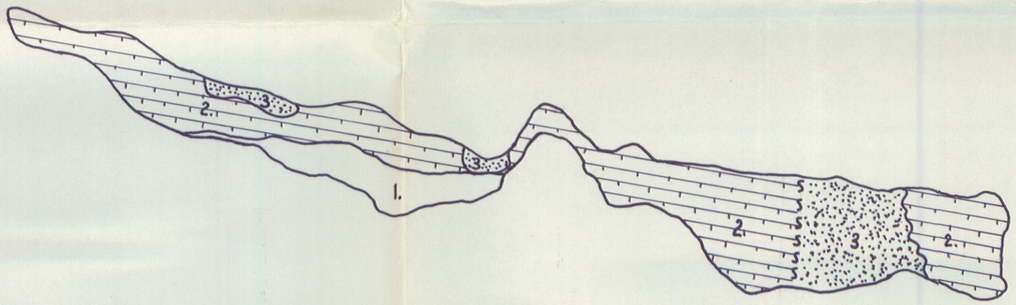
PLAN VIEW OF SHOWING No.8.



END ELEVATION LOOKING
120° AT SHOWING.



Limestone dips 55° South



SIDE ELEVATION OF SHOWING LOOKING 210°

LEGEND

3. DIOPSIDE – PYRRHOTITE – SKARN, MINOR Cu AND Pb.

2. DARK GREY CRYSTALLINE LIMESTONE, WITH SANDY INTERBEDS OUTLINEING BEDDING.

1. MEDIUM GRAINED LIGHT GREY MASSIVE QUARTZITE WITH MINOR INTERBEDS OF PHYLLITE

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LOGAN PROJECT

LEE MINERAL CLAIMS

Sketch map of showing No. 8.

GEOLOGY & SAMPLING : W. ROBERTS.

DRAWN BY : N. H. SIMMONS.

DATE : JULY 9, 1968.

10 5 0 10 20

Scale 1" = 10'