

LEP CLAIMS 1-30

MAGNETOMETER SURVEY
JUNE 22-26, 1971

(N. Lat. 61° 50', W. Long. 140° 33')

Claim Sheet 115-F-15

Whitehorse M.D.

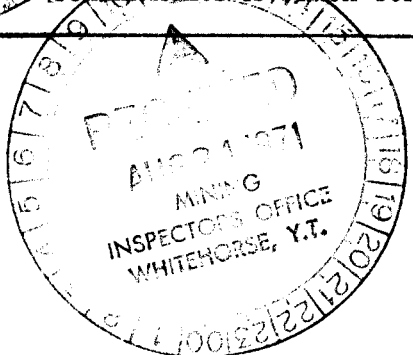
This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of \$2,721.00

J.B. Craig
Resident Geologist or
Resident Mining Engineer

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

By *[Signature]*
Richard W. Oddy, F.R.S.

Commissioner of Yukon Territory



I hereby certify that the within instrument is a true and correct copy of the instrument of which it purports to be a copy, and which was registered in the Office of the Mining Recorder at Whitehorse, Y.T.,

this..... day of.....
19..... under number.....
Dated at Whitehorse, Y.T. this.....
day of..... 19.....

Mining Recorder,
Whitehorse Mining District

August 1971

Imperial Oil Enterprises Ltd.
500 - 6th Avenue S.W.
Calgary 1, Alberta

TABLE OF CONTENTS

	<u>Page</u>
I. Introduction	1
II. Location and Access	2
III. General Geology	2
IV. Magnetometer Survey	4
V. Conclusions	6
VI. Recommendations	6

Appendix 'A' - Assessment Details

Appendix 'B' - Declaration of Expenditures

Appendix 'C' - Statutory Declaration

Appendix 'D' - Certificate of Qualifications

Illustrations:

Fig. 1 - Index Map - Lep Claim Group	Following Page 2
Fig. 2 - Geological Map	Rear Pocket
Fig. 3 - Magnetometer Survey, Values and Contours	Rear Pocket
Fig. 4 - Magnetometer Survey, Profiles	Rear Pocket

LEP CLAIMS 1-30
MAGNETOMETER SURVEY

R.W. Oddy

June 22 - 26, 1971

I. INTRODUCTION

The Lep claim group, located in the White River area of Whitehorse Mining Division, was staked in July, 1966, after zinc and copper mineralization was discovered during regional geochemical exploration of the Kluane Mountain Ranges. Since that time some of the original claims were allowed to lapse but these were re-staked in June and August, 1970.

In 1967 limited geological mapping, magnetic and electromagnetic surveying was carried out. This work was submitted for assessment at that time. In 1970 exploration was renewed on the Lep claims and a geochemical soil survey was completed. This work was also submitted for assessment.

Detailed geological mapping, magnetic and induced polarization surveys were carried out in 1971 between June 22 and July 2. The results of the magnetic surveying are described in this report. A separate report has been prepared for the induced polarization survey.

Prior to carrying out the geophysical surveys and geological mapping, a carefully controlled grid was established. This work was done between June 7 and June 16. A surveyed 6,800 foot base line and 91,200 feet of cross lines were cut and picketed at 100 foot intervals.

The cross lines are spaced at 400 foot intervals and are oriented at right angles to the base line. The total amount of cut line is about 17.5 miles. Once established, the grid was used for control of the geological and geophysical surveying.

The 30 Lep claims are jointly owned by Imperial Oil Enterprises Ltd. (50%), Bow Valley Industries Ltd. (25%), and Canadian Industrial Gas and Oil Ltd. (25%).

II. LOCATION AND ACCESS

The Lep claims are located on Moose Creek, 10 miles directly south of Mile 1169 on the Alaska Highway (see Index Map, Fig. 1). The claims lie on a steep southwest facing slope which rises from 3,500 feet elevation to 5,500 feet on the northeast side of the claim group. Several small creeks, located in deep, narrow valleys, flow south-westerly to Moose Creek. Only the portion of the property below 4,000 feet elevation along Moose Creek is timbered. Most rock exposures are found along the creeks and on sharp ridges between the narrow valleys.

Access to the property is via helicopter from Mile 1169 on the Alaska Highway, which point is 250 road miles from Whitehorse.

III. GENERAL GEOLOGY

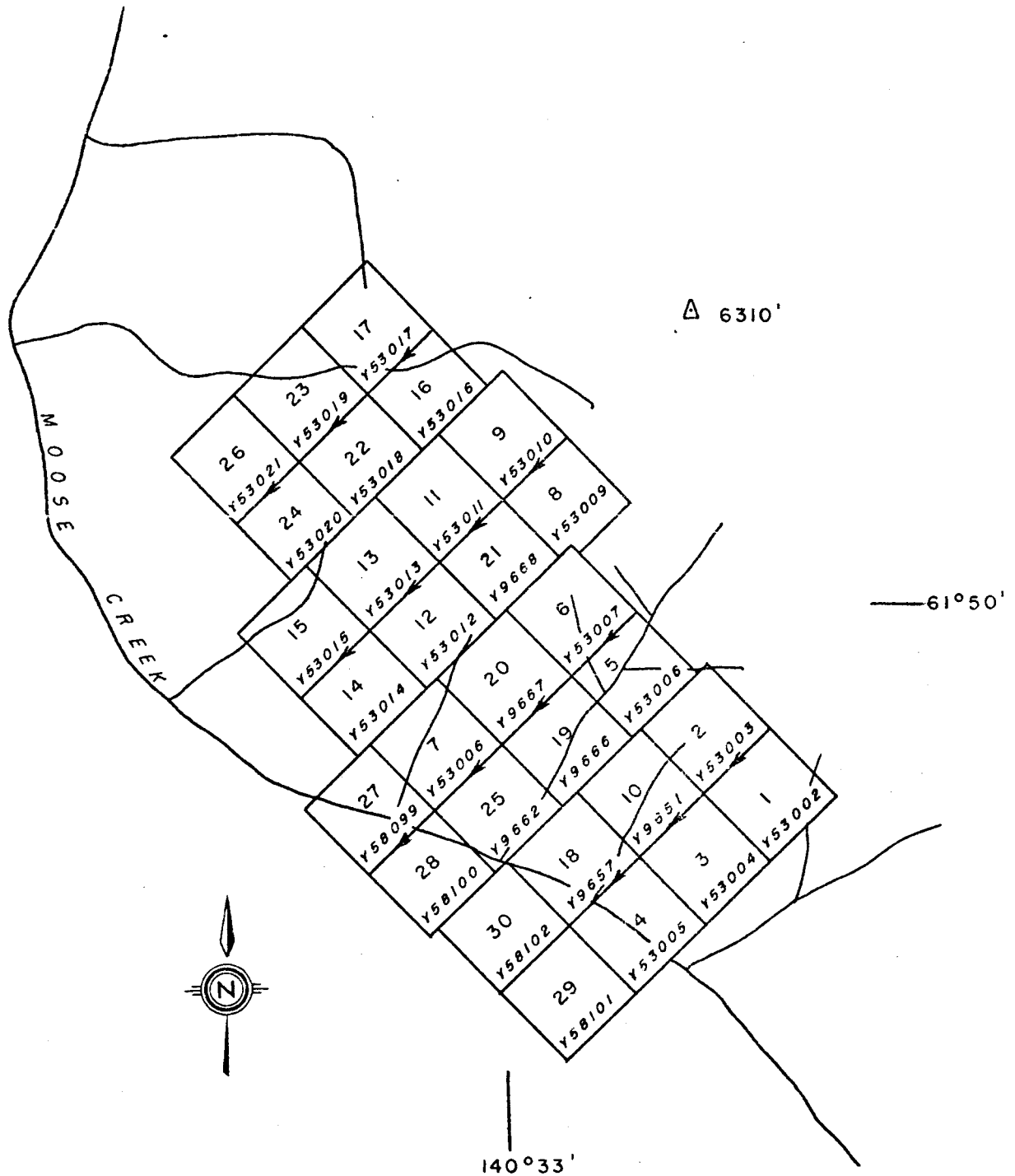
The Lep claim area is underlain by a series of bedded volcanic and sedimentary rocks intruded by a large diorite body, small mafic bodies, and numerous diabase dykes. The bedded flows and sedimentary rocks trend northwesterly and dip steeply to the southwest, although

INDEX MAP

LEP CLAIM GROUP

WHITEHORSE M.D. SHEET 115-F-15

SCALE: 1 inch = 1/2 mile



IMPERIAL OIL ENTERPRISES LTD.

FIGURE 1

some reversals of dip are noted in the sedimentary rocks.

Andesitic flows and interbedded rhyolites underlie the western portion of the property. The andesites are generally fine-grained and massive, although a few porphyritic varieties are observed. Minor disseminated magnetite and pyrite occur in the andesites. Several isolated zones of disseminated chalcopyrite are also found in the andesites. The rhyolite unit includes flow banded rhyolite, rhyolite breccia and rhyolite porphyry. Some of the rhyolites may be intrusive into the andesite. Disseminated pyrite, pyrrhotite and minor chalcopyrite occur in the rhyolite.

Limestone, chert, quartzite and rusty shales and siltstones lie conformable with and topographically above the volcanic rocks. The light grey, massive limestone has been altered to marble in places. Several small lenses of sphalerite, pyrite and minor galena occur in the limestone. The chert and quartzite are light coloured, fine-grained, siliceous rocks. The thinly bedded shales and siltstones owe their rusty appearance to finely disseminated pyrite.

A large body of medium to coarse-grained diorite lies to the east and north of the property and a protrusion of diorite cuts the sedimentary rocks on Lep 2, 5 and 6. The diorite contains disseminated pyrite, pyrrhotite and magnetite.

Several small mafic bodies (lamprophyre and pyroxenite) intrude the volcanic and sedimentary rocks. Numerous black, fine-grained, diabase dykes cut all rock types except the mafic bodies.

A prominent topographic lineament striking southwesterly across Lep 10, 3, 4 and 29 marks the presence of a major fault. The fault is confirmed by detailed mapping and by the magnetic and induced polarization surveys.

Two varieties of mineralized showings are found on the property. Small, narrow lenses of massive sphalerite, pyrite and minor galena occur in the limestone on Lep 19. Disseminated chalcopyrite is found in the andesites and rhyolites at six widely spaced localities on Lep 14, 19, 18, 4 and 30.

IV. MAGNETOMETER SURVEY

A ground magnetometer survey was conducted on the Lep claims from June 22 to 26, 1971. A grid with lines spaced 400 feet apart and stations marked at 100 foot intervals was used for control. Readings were taken at approximately 900 stations with a McPhar Fluxgate Vertical Field Magnetometer. Diurnal variations were determined by base station check-ins at regular intervals at a selected base station located at 16+00 S on the base line. The magnetometer was set at 550 gammas at the base station, so that all readings are relative to that point. The raw field readings were corrected for diurnal variation with the use of a curve showing base station readings plotted against time. The magnetic contour map, using a 500 gamma contour interval, is included as Figure 3 and magnetic profiles are illustrated in Figure 4.

In general the magnetic map can be related to the observed

outcrop geology. Most of the area underlain by volcanic rocks gives rise to a pattern of high magnetic relief. Several magnetic high 'anomalies' occur over the volcanic rocks; for example, at 18+00 W on Line 24+00 N, and in the vicinity of 7+00 W on Line 8+00 N. These 'anomalies' are not explainable from surface geology. A large area of low magnetic readings occurs near the western edge of the grid. This area is also underlain by volcanic rocks but, for some unexplained reason, they give rise to an entirely different magnetic response.

The contact between volcanic rocks and sedimentary rocks is closely defined by a sharp change from high magnetic relief over the volcanics to low magnetic relief over the sedimentary rocks. A few magnetic high 'anomalies' occur over the sedimentary rocks, particularly at 4+00 W on Line 32+00 N and at 5+00 E on Line 24+00 N. These 'anomalies' are not explained by surface geology.

Magnetic highs near the east end of Line 16+00 N are related to the area of diorite intrusion. The lamprophyre in the vicinity of 18+00 E on Line 36+00 N, and the pyroxenite body at 2+00 W on Line 16+00 S, give rise to magnetic highs.

The area of high magnetic relief over the volcanic rocks is terminated abruptly along a line from 0+00 on Line 20+00 S to 10+00 W on Line 24+00 S. This abrupt change in magnetic pattern corresponds closely to the position of a major fault and furnishes further evidence of offset along the fault. The magnetic highs along Lines 28+00 S and 32+00 S are related to diorite and pyritic shales which apparently

have been displaced by movement along the fault.

V. CONCLUSIONS

1. Magnetic highs over the diorite intrusion and volcanic rocks are probably due to disseminated magnetite and pyrrhotite in the diorite and magnetite in the andesites.
2. The majority of magnetic high 'anomalies' are single station 'anomalies' and are probably not significant.
3. The magnetic low 'anomaly', near the western edge of the grid, is difficult to explain from known surface geology. It may be due to a significant decrease in magnetite content in the andesites. *(or reversal in magfield? m.w.m. 1972)*
4. The volcanic-sedimentary contact and the offsetting fault are the most striking geological features shown by the magnetic map.
5. None of the magnetic features can be directly related to economic mineralization.

VI. RECOMMENDATIONS

No further magnetic surveying can be recommended.

August 20, 1971

Imperial Oil Enterprises Ltd.
Richard W. Oddy, P. Geol.

Richard W. Oddy

APPENDIX 'A'

Assessment Details

PROPERTY: Lep Claims 1-30

MINING DIVISION: WHITEHORSE

OWNERS: Imperial Oil Enterprises Ltd. (50%)
Bow Valley Industries (25%)
Canadian Industrial Gas & Oil Ltd. (25%)

CLAIMS: Lep 1-9, 11-17, 22-24, 26 Y 53002 - Y 53021
Lep 10 Y 9651
Lep 18 Y 9657
Lep 19-21 Y 9666 - Y 9668
Lep 25 Y 9662
Lep 27-30 Y 58099 - Y 58102

DATES RECORDED: Lep 10, 18-21, 25 July 18, 1966
Lep 1-9, 11-17, 22-24, 26 June 26, 1970
Lep 27-30 August 31, 1970

TYPE OF SURVEYS: Linecutting, Magnetometer, and Induced Polarization

DATES: Linecutting - June 7-16, 1971
Magnetometer Survey - June 22-26, 1971
I.P. Survey - June 27 - July 2, 1971

TOTAL MEN EMPLOYED: 12 TOTAL MAN DAYS: 86

NAMES OF PERSONNEL: Richard W. Oddy, Calgary, Alberta - Geologist-Supervisor
Martin G. Morrice, Winnipeg, Manitoba - Graduate Student
George Ongyerth, Chilliwack, B.C. - Student
Walter D. Melnyk, Krydor, Saskatchewan - Student
William A. Metner, Moosehorn, Manitoba - Student
Peter E. Walcott, Coquitlam, B.C. - Geophysicist
Vic Pashnick, Vancouver, B.C. - Geophysical
Technician
M. Barker, Whitehorse - Surveyor
R. Bruce, Whitehorse - Linecutter
D. Eastman, Whitehorse - Linecutter
C. MacIntosh, Whitehorse - Linecutter
J. Johnston, Whitehorse - Linecutter

TOTAL EXPENDITURE: \$12,512.00

WORK CREDITS REQUESTED: Lep 1-30 4 Yrs ea. TOTAL YEARS: 120

DATED: 20 AUGUST 1971

IMPERIAL OIL ENTERPRISES LTD.

Richard W. Oddy
RICHARD W. ODDY, P.GEOL.

APPENDIX 'B'


DECLARATION OF EXPENDITURES

1. <u>Linecutting Contract</u> - June 8-16, 1971	
White, Hosford & Impey Limited	\$ 1,965.00
2. <u>Magnetometer Survey</u> - June 22-26, 1971	
Salary: W. Melnyk @ \$600/month - 5 days	\$ 136.00
3. <u>Induced Polarization Survey</u> - June 27-July 2, 1971	
Peter E. Walcott & Assoc. Ltd. Contract	\$ 3,755.00
Helpers Salaries:	
M. Morrice @ \$800/month - 6 days	\$ 216.00
G. Ongyerth @ \$625/month - 6 days	\$ 188.00
W. Melnyk @ \$600/month - 6 days	\$ 162.00
W. Metner @ \$500/month - 6 days	\$ 135.00
4. <u>Transportation</u> - Helicopter Mobilization & Camp Support	
Bell 47G-B1; June 7, 12 & 26 - 18.8 Hrs. @ \$150/Hr.	\$ 2,820.00
Bell 47G-2; June 17 & 19 - 7.1 Hrs. @ \$140/Hr.	\$ 994.00
Bell 206-A Jet Ranger; July 2 & 3 - 6.5 Hrs. @ \$250/Hr.	\$ 1,625.00
5. <u>Living Costs</u>	
Camp costs for 86 man-days at \$6.00/man/day	\$ 516.00
 TOTAL EXPENDITURES	 \$ 12,512.00

Work credit requested for 30 claims for 4 years each -
Total Claim years - 120.

DATED: 20 AUGUST 1971

IMPERIAL OIL ENTERPRISES LTD.


RICHARD W. ODDY, P.GEOL.

Canada
Province of Alberta

TO WIT:

In the Matter Of an Application by Imperial Oil Enterprises Ltd. to the Department of Indian Affairs & Northern Development, pursuant to the Yukon Quartz Mining Act, Section 53 for Certificates of Work for the Lep Mineral Claims, Whitehorse N.D., Yukon.

I, RICHARD W. ODDY

of the CITY OF CALGARY

in the Province of Alberta, PROFESSIONAL GEOLOGIST

do solemnly declare that

- During the period June 7, 1971 to July 2, 1971 Imperial Oil Enterprises Ltd. carried out linecutting, magnetometer and induced polarisation surveys on the Lep Mineral claims and incurred the following costs while carrying out these surveys:

Linecutting		\$ 1,965.00
Magnetometer Survey		136.00
I.P. Survey		4,456.00
Contract Price	\$ 3,755.00	
Helpers Salaries	\$ 701.00	
Transportation		5,439.00
Living Costs		516.00
		<hr/>
TOTAL COSTS		\$ 12,512.00
		<hr/>

- This declaration is made for the purpose of obtaining Certificates of Work for the Lep Mineral claims.

AND I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of "The Canada Evidence Act."

DECLARED before me at the CITY

of CALGARY

in the Province of Alberta,

this 20th day of AUGUST

A.D. 1971 .

Richard W. Oddy

Fred Kelly

APPENDIX 'D'

CERTIFICATE OF QUALIFICATIONS

I, Richard William Oddy, of the City of Calgary, Province of Alberta, do hereby certify that:

1. I am a geologist residing at 10019 Maplecreek Drive, Calgary, Alberta.
2. I am a graduate of the University of British Columbia with a B.Sc. in Geology (1962), and of the University of Manitoba with a M.Sc. in Geology (1969).
3. I am a Fellow of the Geological Association of Canada and a member of the Association of Professional Engineers of Alberta.
4. I have been practicing my profession for eight years.
5. I am an employee of Imperial Oil Enterprises Ltd., and have worked for Imperial for five years.
6. The statements made in this report are based on field examinations at the property, study of published geological literature and unpublished private maps and reports.
7. Permission is granted to use in whole or in part for assessment requirements but not for advertising purposes.

Richard W. Oddy

DATED: 20 AUGUST 1971

RICHARD W. ODDY, M.Sc., P.Geol.



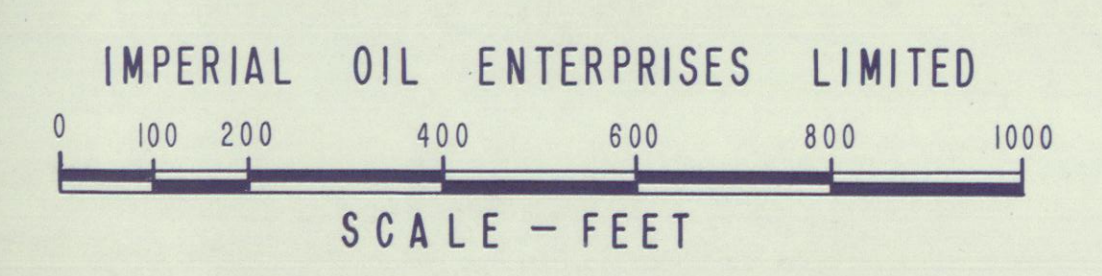
LEGEND

- 11 Diabase
- 10 Pyroxenite (10a fine-grained, 10b coarse-grained)
- 9 Amphiphyre-diabase
- 8 Diorite
- 7 Monzonite
- 6 Quartzite
- 5 Siltstone, Shale
- 4 Chert
- 3 Limestone
- 2 Rhyolite
- 1 Andesite, Basalt

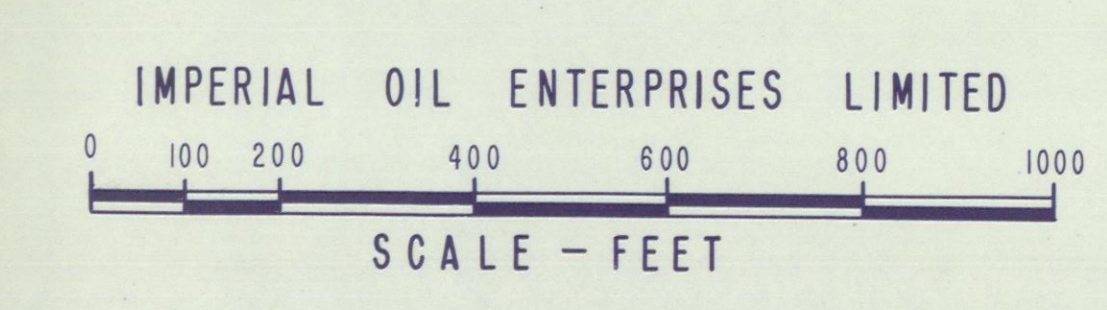
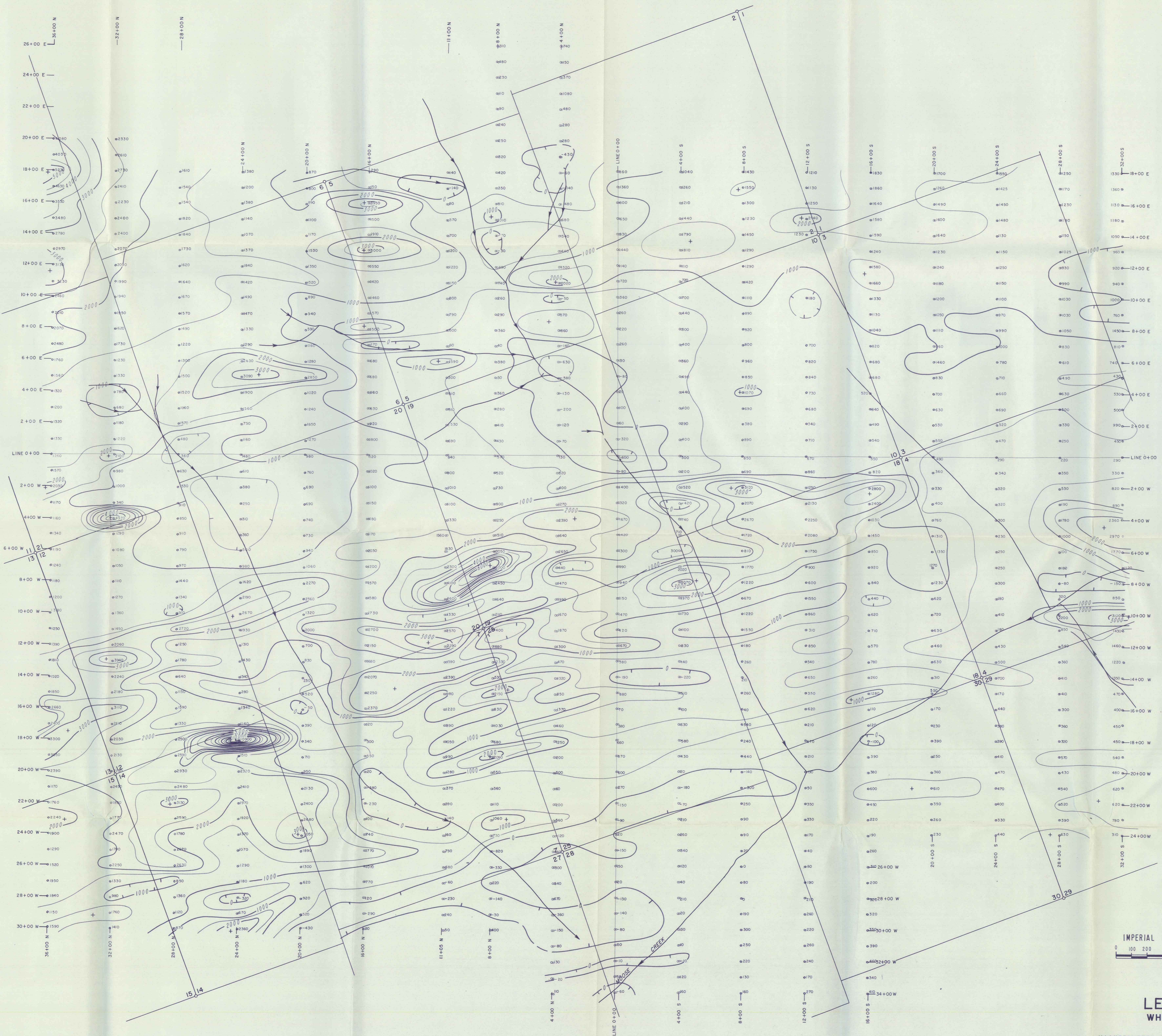
NOTE: The Age Relationships of These Rock Units is Unknown in The Main.

- Outcrop area
- Talus area
- Drainage
- Bedding: inclined, vertical
- Jointing: inclined, vertical
- Fault (interpreted)
- Shear zone, dipping
- Contact: observed, interpreted
- Claim post
- Assay site
- ep Alteration: epidote
- Mineral Occurrences
- py Pyrite cp Chalcopyrite
- po Pyrrhotite mt Magnetite
- Cu Copper Zn Zinc

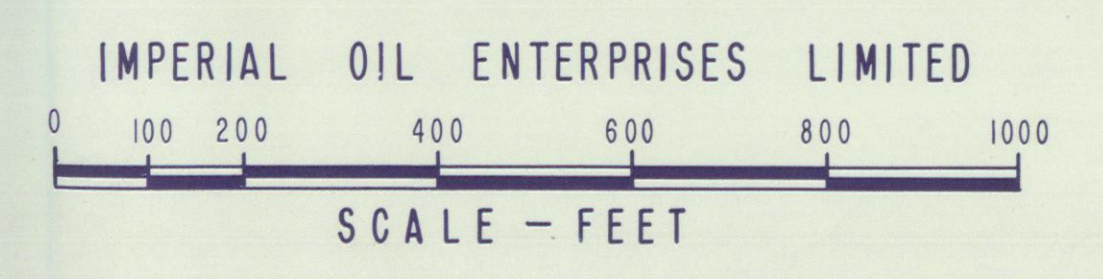
GEOLOGY BY: M. MORRICE
G. ONGYERTH
W. MELNYK
W. METNER
(SUPERVISED BY: R.W. ODDY)



LEP CLAIMS
WHITEHORSE, M.D.
115-F-15
GEOLOGICAL MAP



LEP CLAIMS
 WHITEHORSE M.D.
 115-F-15
 MAGNETOMETER SURVEY, VALUES AND CONTOURS
 CONTOUR INTERVAL 500 GAMMAS



LEP CLAIMS
 WHITEHORSE M.D.
 115-F-15
 MAGNETOMETER SURVEY, PROFILES
 VERTICAL SCALE 100GAMMAS,