019078

ENCE SERVICES DIVISION
TEXAS INSTRUMENTS
INCORPORATED

GEOPHOTO

# GEOPHOTO SERVICES, LTL.

world-wide natural resources evaluation

June 28, 1967.

To Whom it may concern:

The cost to prepare the topographic map of the Lep Group Claim area was $ 875.00. This map was prepared photogrammetrically by use of a Nistri Photomapper in which glass diapositives of existent Federal Government photography were employed. The resultant map is at a scale of 1 inch = 400 feet with a contour interval of 50 feet. The map will be used exclusively for plotting the locations and results of a series of geophysical surveys as well as surface mapping.

GEOPHOTO SERVICES, LTD.

Paul Fuenning
Executive Vice-President

# I N D E X


| | Page |
|---|---|
| INTRODUCTION | 1 |
| GEOPHYSICAL SURVEYS & ENGINEERING | 2 |
| GEOLOGY | 3 |
| MINERALIZATION | 4 |
| DRILL LOGS | 5, 6 & 7 |
| CONCLUSIONS & RECOMMENDATIONS | 8 |

115 F-15
61° 51'N Lat.
140° 33' W Long.

## INTRODUCTION

LEP groups A and B were divided for the purpose of declaring representation work according to the Yukon Quartz Mining Act but will be discussed as one for the technical discussion of work performed and results obtained.

The claims are jointly owned by Alcon Petroleums Ltd., Canadian Industrial Oil and Gas Ltd. and Imperial Oil Enterprises Ltd. and are currently held in trust for the owners by Geophoto Services Ltd. of 706, 6th St.S.W., Calgary, Alberta.

Work on the claims was done by Geophoto Services Ltd. under the direction of G. J. McGinn, B.Sc., Prof. Eng. of 2615, 11 Ave.N.W., Calgary and assisted by the following party members:

G. Raham, M.Sc., 2621 Canmore Rd.N.W., Calgary.
A. T. Foley, Prospector, Cork, Co. Cork, Ireland.
R. Nasen, Geology Student, Calgary University.
P. Paulsen, Geophysics Student, Calgary University.
C. W. Armstrong, Helicopter Pilot, Bullock Aircraft, Calgary.

The LEP claims were staked as a result of the discovery of zinc and copper showings during a reconnaisance geochemical program carried out during 1966. Published geologic information was obtained from G.S.C. Paper 58-9.

Prior to starting field work, a detailed topographic map was drawn at a scale of 1" = 400' with 50 foot contour intervals. The map was prepared by photogrammic methods using a Nistri three-dimensional plotter and government aerial photograph diapositives. This map was used as the main control for mapping, together with the use of an aneroid barometer, pace and compass surveys and triangulation shots. 16,500 feet of line were cut and chained where more exact control was necessary for geophysical surveys.

The representation work was fully supported by a Bell G3-B1 helicopter under charter from Bullock Aircraft of Calgary, Alberta.

.....2

GEOPHYSICAL SURVEYS

All crosslines were surveyed at 50 foot intervals using an M700 McPhar electronic magnetometer. A standard base station was read before and after each line. Diurnal variation was so small that it was ignored in calculations and since the instrument reads the vertical magnetic component directly in gammas, the only calculations were correcting the day-to-day variation from line to line using the base station as a standard. No significant anomalies were found in the areas of interest. The survey was useful in delineating igneous-sedimentary contacts in mantled areas.

All crosslines were surveyed to the maximum coupling distance from the zone of interest with a generator-powered, 1000-5000 cycle vertical-loop McPhar electro-magnetic unit. There were no significant conductors.

ENGINEERING

The author has no knowledge of any previous work being done within the claim groups other than by Geophoto during 1966 when geochemical reconnaisance surveys indicated anomalous amounts of zinc in sediments from two tributaries flowing into Moose Creek. Both were closely examined and one was found to have copper and zinc showings. Following staking, grab samples were taken and sent to Toronto for spectrographic analyses. A grab sample was subsequently assayed by chemical means from the copper showing and a channel sample over 8.5 feet was assayed from the zinc showing. The following results were obtained.

| | | | |
|---|---|---|---|
| Grab Sample | Cu | 4.47% | Ag 0.52 Oz/Ton |
| Channel Sample | Zn | 17.2% 8.5 ft. | |

.....3

## GEOLOGY

### Table of Units

| | | |
|---|---|---|
| CRETACEOUS | Diorite | Medium grained to coarse grained, in part grading into hornblendite. |
| | Basic Intrusive | Fine grained to medium grained; sheared and chloritized in places. |
| | Marble | Fine grained to medium grained; locally siliceous, cherty and conglomeratic. |
| | Quartzite | Fine grained, calcareous and conglomeratic in places. Includes thin bedded and massive units. |

### Description of Units

Diorite: Diorite underlies the northern one-third of the claim group. The unit is generally massive and coarse grained, although rapid changes in grain size are common. Locally, the hornblende crystals are ~~folicated~~ foliated, and the rock acquires a gneissic appearance.

Pyrrhotite is a common accessory sulphide, and when combined with the weakly magnetic hornblende, produces a distinct magnetic high which facilitates delineation of the intrusive contact in areas of overburden. Two directions of jointing are common in the diorite, one striking northwest, the other northeast.

The unit is distinctly ~~intrusive~~ intrusive into the quartzite and marble, but the relationship of the ~~diorite~~ diorite to the basic intrusive is unknown.

Basic Intrusive: This unit underlies the southern portion of the claim group. Its intrusive nature is indicated by numerous small dykes in sediments and horses of sediments visible at numerous localities. The unit is mainly fine grained, and often highly sheared and chloritized. It is the host rock for numerous small copper showings.

Marble and Quartzite: These two sedimentary rocks occupy the central portion of the claim group.

.....4

The marble exposed at the zinc showing apparently thickens rapidly to the west. Marble is the host for the main zinc showing. Generally marble occurs more frequently in the southern portion of the sedimentary belt, quartzite in the north.

Severe small scale isoclinal folding in the quartzite indicates that deformation is present in the area, but difficult to detect.

MINERALIZATION

Zinc: The main zinc showing is located on Lep 19, Elevation 4240' at the intersection of the geophysics base line and line 00. Pyrite and Sphalerite form an irregularly shaped pod 30 feet long in siliceous marble. The massive sulphides are widely conformable with the host rock. The deposit was formed by replacement of limestone, now wholly or in part silicified. The strike of the host marble varies from 120° to 140°, dipping vertically to 80°NE.

Drill hole L-1 was collared in siliceous marble about five feet south of the massive sulphides, and drilled perpendicular to strike at -45°, with the intention of intersecting the sulphide zone at depth. The hole was stopped at a depth of 32 feet, after encountering no significant mineralization.

Drillhole L-2 was collared 20 feet north of L-1, drilled perpendicular to strike at -80° to a depth of 29 feet. The hole encountered no significant mineralization.

Copper: Two copper showings were drilled, both along the same creek as the zinc showing.

Drill hole L-1 was collared in marble at elevation 4160', about 40 feet east of the creek. The hole was drilled at -45°, bearing 40°, and abandoned due to bad ground at 21 feet without encountering any significant mineralization. The drilling target was mineralized shear zone in siliceous marble, near the contact of the basic intrusive.

Drill holes L-4, 5 and 6 were collared in a basic dyke at elevation 3930'. DH L-4 and L-5 were drilled at -45°, bearing 100°. Both holes intersected sulphide mineralization, but were abandoned short of penetrating the dyke due to bad ground. L-6 was drilled at -45°, bearing approximately 190°, but encountered no sulphides. At this locality, sulphide mineralization consists of chalcopyrite, pyrite and minor

.....5

pyrrhotite in a coarse grained diorite or gabbro dyke, which has been fractured and filled with epidote and calcite. The sulphides are genetically related to the calcite fracture filling.

Numerous other small copper showings are present in the basic intrusive. These are of two types; mineralized shear zones, and small fractures and joints filled with chalcopyrite and pyrite.

DDH L-1 -45°

| | |
|---|---|
| 0-21' | Marble |
| 0-2" | Marble, foliated 45° core; chlorite along slip planes. |
| 20"-30" | Marble, foliated 60° core; knots of clorite. |
| 39" | Marble; trace sphalerite, pyrite. |
| 9'-9½ | Cave |
| 10'4"-11'4" | Cave |
| 12'6" | Cherty knots in marble |
| 17'6" | Cherty knots in marble |
| 17'6"-21'1" | Marble, foliated 45° core. |
| 21'1" | End of hole. |

DDH L-2 -45°

| | |
|---|---|
| 0-7' | Marble |
| 7-7½' | Basic dyke, fine grained |
| 7½'-12½' | Marble |
| 12½-13½' | Marble, minor sphalerite and pyrite |
| 19-20½' | Fine grained, dark grey quartzite |
| 20½-30½' | Marble |
| 30½-32' | Fine grained, green andesite? dyke with epidote veining. |
| 32' | End of hole. |

Mineralized Intersections DH L-2

1'7" Disseminated pyrite and sphalerite

.....6

| | |
|---|---|
| 4'10" | Disseminated pyrite |
| 9'10" | Disseminated pyrite and sphalerite |
| 10'6"-11'10" | Cave, ground core indicates pyrite and sphalerite |
| 11'10"-13'4" | Stringers and blebs of pyrite and sphalerite |
| 27-27½" | Narrow stringers of pyrite, pyrrhotite? and chalcopyrite. |

DDH L-4

| | |
|---|---|
| 0-6" | Medium grained basic intrusive, carbonate veining 70° core, fractured 45° core. |
| | Sulphide - chalcopyrite - est. 2-3% |
| | pyrrhotite - est. trace. |
| 6"-4' | Fine grained basic intrusive; fractured, chloritized, and veined with calcite, 45°-60° core. |
| 2'-3' | Mineralized, highly chloritized zone. |
| | Chalcopyrite est. 2-3% |
| | Pyrrhotite |
| 3'6"-4' | Sulphides, chalcopyrite along fractures unrelated to calcite veining. |
| 4' | End of hole. |

DDH L-5

| | |
|---|---|
| 0-2" | Basic intrusive, heavily impregnated with calcite. |
| 2"-2'10" | Fine grained basic intrusive, chloritized; epidote veining 45° core; carbonate veining 70° to parallel to core. |
| 6"-17" | Disseminated sulphides |
| | cpy est. 1-2% |
| | py |
| | po trace |
| 2'3"-3'2" | Sulphides |
| | cpy est. 5% |
| | py |
| | po trace |

.....7

| | |
|---|---|
| 3'10"-5'4" | Trace disseminated chalcopyrite est. 1-2% |
| 4'7"-4'10" | Heavy carbonate veining. |

Drill Hole L-6

| | |
|---|---|
| 0-2'3" | Coarse grained equigranular hornblendite Hb. crystals to ¼" diameter. |
| 2'3"-2'8" | Cave, no core. |
| 2'8"-7' | Coarse grained porphyritic diorite. |
| 7'1"-7'10" | Cave, no core. |
| 7'10"-9' | Porphyritic diorite, fine grained matrix, trace chalcopyrite. |
| 9'-10'9" | Cave, no core. |
| 10'9"-12'3" | Coarse grained porphyritic diorite. |
| 12'3"-12'10" | Cave, no core. |
| 12'10"-13'8" | Coarse grained diorite |
| 13'5"-13'8" | Fine grained intrusive |
| 13'8"-15'5" | Cave, no core |
| 15'5"-16'8" | Fine grained, heavily chloritized basic Intrusive, blocky ground. |
| 16'8" | End of hole. |

DH L-3

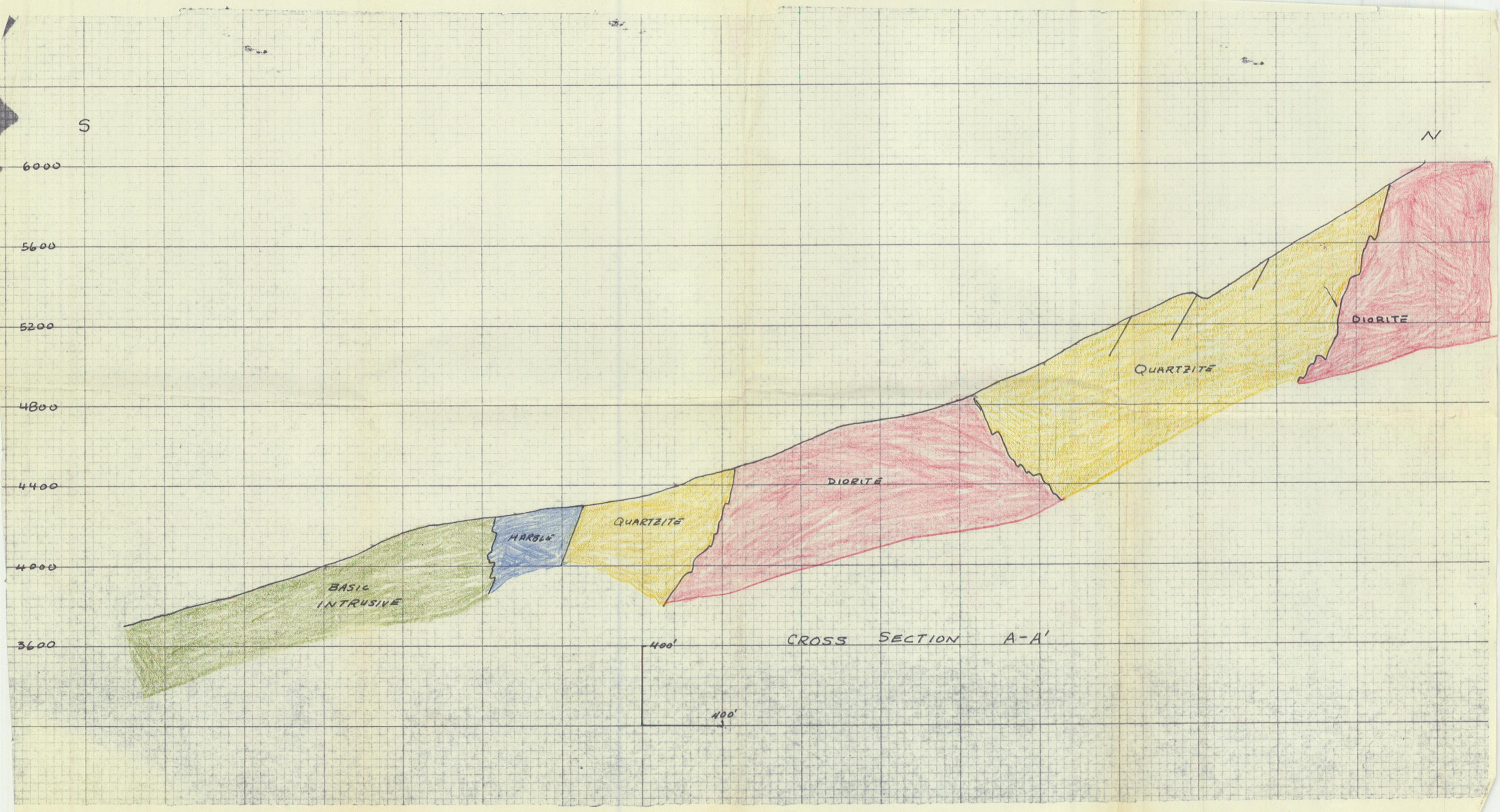
| | |
|---|---|
| 0-29' | Marble, fine grained to medium grained, folication $70^{o}$-$80^{o}$ core. |
| 1'8"-2'6" | Cave, no core. |
| 5'2"-5'10" | Cave, no core. |
| 14'-15' | Cave, no core. |
| 29' | End of hole. |

.....8

CONCLUSIONS & RECOMMENDATIONS

No conclusions have been made pending further work which will be done in the near future.

G. J. McGinn, B.Sc.
Prof. Eng.


S
N
6000
5600
5200
4800
4400
4000
3600
BASIC INTRUSIVE
MARBLE
QUARTZITE
DIORITE
QUARTZITE
DIORITE
400'
400'
CROSS SECTION A-A'

GEOPHOTO SERVICES LTD.

Magnetometer Survey Lep Property

SCALE: 1" = 100'

JULY 5, 1967

M-PHAR M-700 FLUXGATE MAGNETOMETER READING DIRECTLY IN GAMMAS

# GEOPHOTO SERVICES LIMITED

Electro-Magnetic Survey "Lep" property.

Scale 1" = 100'.

Mc. PHAR E.M. Model SS15.

△ transmitter set up.

1000 c.p.s. •———•

5000 c.p.s. •- - - - -•

DIORITE

MARBLE

QUARTZITE

BASIC INTRUSIVE
FINE GRAINED, INCLUDES SOME FELDSPAR PORPHYRY

GEOLOGIC CONTACTS
DEFINED
APPROXIMATE
INFERRED

JOINTS
INCLINED
VERTICAL
HORIZONTAL

ATTITUDE OF BEDDING
VERTICAL
INCLINED
ANTIFORM, PLUNGING

SHEARING

OUTCROP AREA

DIAMOND DRILL HOLE
8 -45°

GEOPHOTO SERVICES LTD.

LEP CLAIM

SCALE 1" = 400'
CONTOUR INTERVAL 50'
DRAWN BY G.Rennie