

A REPORT  
ON  
AN INDUCED POLARIZATION SURVEY

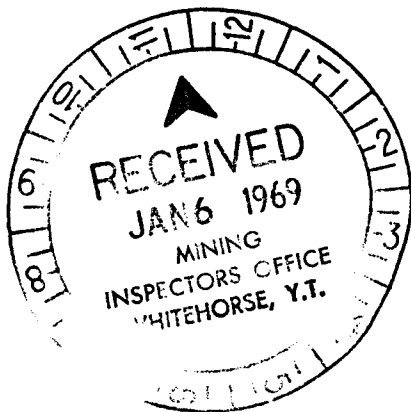
FOR

MOLY-WIN MINES LIMITED  
VANCOUVER, BRITISH COLUMBIA

BY

EAGLE GEOPHYSICS LIMITED  
VANCOUVER, BRITISH COLUMBIA

DECEMBER 1968



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

*D. B. Craig*  
RESIDENT GEOLOGIST

Approved as to cost in the amount  
of \$ 5702.59

*R. F. Heedman*  
RESIDENT MINING ENGINEER

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

*[Signature]*  
COMMISSIONER OF YUKON

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| INDUCED POLARIZATION SURVEY                        | <u>MAP POCKET</u><br>E138-1 |
| SCALE 1" = 200 FEET                                |                             |

## INTRODUCTION

AT VARIOUS TIMES BETWEEN AUGUST 22ND AND SEPTEMBER 6<sup>th</sup>, 1968, AND BETWEEN SEPTEMBER 23<sup>RD</sup> AND NOVEMBER 3<sup>RD</sup>, 1968, EAGLE GEOPHYSICS LIMITED CARRIED OUT A COMBINED LINECUTTING AND INDUCED POLARIZATION SURVEY PROGRAMME ON A PROPERTY LOCATED IN THE WHITE RIVER AREA OF THE YUKON TERRITORY AND HELD BY MOLY-WIN MINES LIMITED OF VANCOUVER.

THE PROPERTY SURVEYED CONSISTED OF 8 CONTIGUOUS, UNPATENTED MINERAL CLAIMS REGISTERED AT WHITEHORSE IN THE YUKON TERRITORY AS:

DOUG 37 TO 40 INCLUSIVE  
AND DOUG 53 TO 56 INCLUSIVE

THE CLAIMS ARE SITUATED ABOUT 2½ MILES SOUTH OF RIFLE LAKE AND ARE CLOSE TO THE JUNCTION OF THE WHITE AND GENERC RIVERS AT LATITUDE 61° 44' N AND LONGITUDE 140° 44' W. THE CLAIMS LIE SOME 15 MILES TO THE NORTH OF THE ICE FIELD RANGES OF THE ST. ELIAS MOUNTAINS AND 15 MILES WEST OF THE ALASKA HIGHWAY. GLACIAL DRIFT, VOLCANIC ASH AND SPARSE VEGETATION ENTIRELY COVER THE CLAIMS SURVEYED. OUTCROP HAS BEEN OBSERVED TO THE NORTHEAST, ON SLAGGARD RIDGE, AND TO THE SOUTHEAST OF THE CLAIM GROUP.

DURING THE COURSE OF THE PRESENT SURVEY THE PROPERTY WAS REACHED EITHER BY HELICOPTER DIRECTLY FROM WHITEHORSE, A DISTANCE OF 220 AIR MILES, OR BY HELICOPTER FROM MILE 1168 ON THE ALASKA HIGHWAY, A DISTANCE OF 15 AIR MILES. ALTERNATIVELY, THE PROPERTY CAN BE REACHED BY FIXED WING AIRCRAFT WHICH CAN LAND ON RIFLE LAKE APPROXIMATELY 2½ MILES NORTH OF THE PROPERTY, OR BY AN 18 MILE WINTER ROAD FROM THE ALASKA HIGHWAY TO THE UNITED PEMETEX CAMP WHICH IS APPROXIMATELY 4½ MILES NORTH OF THE PROPERTY.

THE SURVEY WAS CARRIED OUT OVER HANDCUT LINES WHICH WERE TURNED OFF AT RIGHT ANGLES EVERY 400 FEET FROM A N125°E BASELINE; THE LINES WERE CHAINED AND PICKETED EVERY 100 FEET.

DURING THE INDUCED POLARIZATION SURVEY, MEASUREMENTS OF APPARENT CHARGEABILITY, THE I.P. RESPONSE PARAMETER, WERE MADE OVER THE ENTIRE LINE GRID USING THE "THREE-ELECTRODE ARRAY" METHOD WITH AN ELECTRODE SEPARATION OF 200 FEET AND A STATION INTERVAL OF 200 FEET. SIMULTANEOUS READINGS OF APPARENT RESISTIVITY WERE ALSO MADE.

THE DATA FROM THE SURVEY ARE PRESENTED ON ONE MAP. THIS MAP (E138-1) SHOWS THE APPARENT CHARGEABILITY AND RESISTIVITY READINGS PLOTTED IN PROFILE FORM. THE SCALE OF THIS MAP IS 1 INCH EQUALS 200 FEET.

## GEOLOGY

IN GENERAL, GLACIAL DRIFT, A RECENT LAYER OF THICK, VOLCANIC ASH, MOSS AND A SPARSE QUANTITY OF SMALL TREES EFFECTIVELY BLANKET MOST OF THE SURROUNDING REGION WITH THE EXCEPTION OF THE EDGES OF THE HIGHER HILLS AND RIDGES.

TWO MAJOR ROCK UNITS OCCUR IN THE GENERAL VICINITY OF THE DOUG CLAIM GROUP. THESE ARE THE PERMIAN CACHE CREEK GROUP OF ALTERED ANDESITIC TUFFS AND BRECCIAS OVERLAIN IN PLACES BY COINCIDAL LIMESTONES, AND THE UPPER TRIASSIC MUSH LAKE GROUP OF PORPHYRITIC AND AMYGDALOIDAL ANDESITES.

OUTCROP OCCURS ABOUT  $1\frac{1}{2}$  MILES NORTH OF THE CLAIM GROUP ON THE PERIPHERY OF SLAGGARD RIDGE. ALTERED VOLCANICS OF THE CACHE CREEK GROUP, MOSTLY MEDIUM TO FINE GRAINED, LIGHT GREY TO LIGHT GREEN ANDESITIC TUFFS AND AMYGDALOIDAL BRECCIAS, WITH SOME GREENISH FINE GRAINED AMYGDALOIDAL FLOWS IN PLACES, OCCUR ON THE TOP OF THE RIDGE, WHILE VOLCANIC ANDESITIC ROCKS RESEMBLING THE MUSH LAKE GROUP ARE FOUND ALONG THE NORTHEASTERN PART OF THE RIDGE. THE LATTER ARE COMMONLY DARK GREEN IN COLOUR, AND ARE FINE TO MEDIUM GRAINED AMYGDALOIDAL ANDESITES. MOST OF THE VOLCANIC ROCKS CONTAIN FINELY DISSEMINATED MAGNETITE AND PYRITE.

CRINOIDAL LIMESTONES AND ALTERED EQUIVALENTS OF THE CACHE CREEK GROUP ARE FOUND ON THE CLIFF SLOPES FLANKING RIFLE LAKE ABOUT  $3\frac{1}{2}$  MILES NORTH OF THE CLAIM GROUP.

PRONOUNCED FAULTING IS EVIDENT ALONG THE RIDGE FLANK IN THE INFERRED MUSH LAKE VOLCANICS, AND IT IS OBVIOUS THAT THE ROCKS HAVE UNDERGONE SOME ALTERATION WITH THE DEVELOPMENT OF MUCH CHLORITE, EPIDOTE AND CARBONATE. THE PRESENCE OF A NORTHWEST TRENDING THRUST FAULT AT THE EASTERN BASE OF SLAGGARD RIDGE IS INDICATED BY REGIONAL GEOLOGICAL MAPPING (G.S.C. MAP 1177A). THE DEGREE OF ALTERATION AND THE PRESENCE OF MINOR FAULTING ON THE FLANK OF

THE RIDGE IS PROBABLY RELATED TO THIS MAJOR THRUST.

NATIVE COPPER AND CHALCOCITE MINERALIZATION OCCUR IN A COMPLEX FRACTURE ZONE IN DARK GREEN FLOWS OF THE MUSH LAKE GROUP ON THE UNITED PEMETEX PROPERTY APPROXIMATELY  $4\frac{1}{2}$  MILES NORTHWEST OF THE CLAIM GROUP. A DIAMOND DRILLING PROGRAMME BASED ON THE RESULTS OF MAGNETIC AND INDUCED POLARIZATION SURVEYS IS NOW IN PROGRESS ON THAT PROPERTY.

CHALCOPYRITE MINERALIZATION OCCURS IN THE CACHE CREEK GROUP VOLCANICS ON THE PROPERTY OF CANYON CITY MINES LIMITED, 11 MILES TO THE NORTHWEST.

ALTHOUGH NO OUTCROP OCCURS ON THE DOUG CLAIMS SURVEYED, THE UNDERLYING ROCKS ARE BELIEVED TO BE EITHER CACHE CREEK VOLCANICS OR MUSH LAKE VOLCANICS, OR A MIXTURE OF BOTH. SINCE ROCKS OF BOTH AGES IN THE IMMEDIATE VICINITY ARE KNOWN TO CONTAIN SIGNIFICANT QUANTITIES OF COPPER MINERALIZATION, IT IS THEREFORE TRUE TO SAY THAT THE DOUG CLAIM GROUP IS FAVOURABLY LOCATED FROM A GEOLOGICAL STANDPOINT.

## SURVEY SPECIFICATIONS

THE INDUCED POLARIZATION (I.P.) SURVEY WAS CARRIED OUT USING A PULSE-TYPE SYSTEM MANUFACTURED BY HUNTEC LIMITED OF TORONTO, ONTARIO.

THE SYSTEM CONSISTS BASICALLY OF THREE UNITS, A RECEIVER, A TRANSMITTER AND A MOTOR GENERATOR. THE TRANSMITTER, WHICH PROVIDES A MAXIMUM OF 2.5 KW D.C. TO THE GROUND, OBTAINS ITS POWER FROM THE 2.5 KW 400 CYCLE, THREE-PHASE GENERATOR DRIVEN BY A GASOLINE ENGINE. THE CYCLING RATE OF THE TRANSMITTER IS 1.5 SECONDS "CURRENT-ON" AND 0.5 SECONDS "CURRENT-OFF" WITH THE PULSES REVERSING CONTINUOUSLY IN POLARITY. THE DATA RECORDED IN THE FIELD CONSISTS OF CAREFUL MEASUREMENTS OF THE CURRENT (I) IN AMPERES FLOWING THROUGH ELECTRODES  $C_1$  AND  $C_2$ , THE PRIMARY VOLTAGE ( $V_p$ ) APPEARING BETWEEN THE POTENTIAL ELECTRODES,  $P_1$  AND  $P_2$  DURING THE "CURRENT-ON" PART OF THE CYCLE, AND A SECONDARY OR OVERVOLTAGE ( $V_s$ ) APPEARING BETWEEN  $P_1$  AND  $P_2$  DURING THE "CURRENT-OFF" PART OF THE CYCLE.

THE APPARENT CHARGEABILITY (MA) IS CALCULATED BY DIVIDING THE SECONDARY VOLTAGE BY THE PRIMARY VOLTAGE AND MULTIPLYING BY 400, WHICH IS THE SAMPLING TIME IN MILLISECONDS OF THE RECEIVER UNIT. THE APPARENT RESISTIVITY ( $\rho_a$ ) IN OHM-METRES IS PROPORTIONAL TO THE RATIO OF THE PRIMARY VOLTAGE AND THE MEASURED CURRENT; THE PROPORTIONALITY FACTOR DEPENDING ON THE GEOMETRY OF THE ARRAY USED. THE CHARGEABILITY AND RESISTIVITY OBTAINED ARE CALLED APPARENT AS THEY ARE VALUES WHICH THAT PORTION OF THE EARTH SAMPLED WOULD HAVE IF IT WERE HOMOGENEOUS. AS THE EARTH SAMPLED IS USUALLY INHOMOGENEOUS, THE CALCULATED APPARENT CHARGEABILITY AND RESISTIVITY ARE FUNCTIONS OF THE ACTUAL CHARGEABILITY AND RESISTIVITY OF THE ROCKS.

THE SURVEY WAS CARRIED OUT USING THE "THREE-ELECTRODE ARRAY" METHOD OF SURVEYING. IN THIS METHOD THE CURRENT ELECTRODE  $C_1$  AND THE TWO POTENTIAL ELECTRODES  $P_1$  AND  $P_2$  ARE MOVED IN UNISON ALONG THE SURVEY LINES.

THE SPACING BETWEEN THESE THREE ELECTRODES IS KEPT CONSTANT FOR EACH TRAVERSE AT A DISTANCE ROUGHLY EQUAL TO THE DEPTH TO BE EXPLORED BY THAT TRAVERSE. THE SECOND CURRENT ELECTRODE  $C_2$  IS KEPT FIXED AT "INFINITY".

THUS, IN A "THREE-ELECTRODE ARRAY" TRAVERSE WITH AN ELECTRODE SPACING OF 200 FEET, A BODY LYING AT A DEPTH OF 100 FEET WILL PRODUCE A STRONG RESPONSE, WHEREAS THE SAME BODY LYING AT A DEPTH OF 200 FEET WILL PRODUCE A WEAK RESPONSE. BY RUNNING SUBSEQUENT TRAVERSES AT DIFFERENT ELECTRODE SPACINGS, MORE PRECISE ESTIMATES CAN BE MADE OF DEPTH, WIDTH, THICKNESS AND PERCENTAGE OF SULPHIDES OF CAUSATIVE BODIES LOCATED BY THE I.P. METHOD.

### DISCUSSION OF RESULTS

THE INDUCED POLARIZATION SURVEY INDICATES THE AREA IS UNDERLAIN BY ROCKS HAVING A UNIFORM APPARENT CHARGEABILITY OF APPROXIMATELY  $1\frac{1}{2}$  MILLI-SECONDS. NO ANOMALOUS ZONES WERE DETECTED DURING THE COURSE OF THE SURVEY. FAIRLY LARGE CHANGES IN APPARENT RESISTIVITY WERE RECORDED. THESE ARE BELIEVED TO BE CAUSED MAINLY BY CHANGES IN OVERBURDEN THICKNESSES AT DIFFERENT LOCATIONS. HOWEVER, THE OVERBURDEN IS BELIEVED TO BE GENERALLY ABOUT 70 FEET THICK.

THERE ARE NO SPECIFIC CORRELATIONS BETWEEN THE APPARENT CHANGEABILITY AND APPARENT RESISTIVITY WHICH MAY BE CONSIDERED TO POINT TO THE PRESENCE OF SULPHIDE MINERALIZATION.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

AT VARIOUS TIMES BETWEEN AUGUST 22ND AND SEPTEMBER 6th, 1968, AND BETWEEN SEPTEMBER 23RD AND NOVEMBER 3RD, 1968, EAGLE GEOPHYSICS LIMITED CARRIED OUT A COMBINED LINECUTTING AND INDUCED POLARIZATION SURVEY PROGRAMME ON A PROPERTY LOCATED IN THE WHITE RIVER AREA OF THE YUKON TERRITORY AND HELD BY MOLY-WIN MINES LIMITED OF VANCOUVER.

THE PROPERTY, THE DOUG CLAIM GROUP, IS LOCATED SOME 220 AIR MILES NORTHWEST OF WHITEHORSE.

THE INDUCED POLARIZATION SURVEY YIELDED NO SIGNIFICANT ANOMALIES WORTHY OF FURTHER INVESTIGATION AT THE PRESENT TIME.

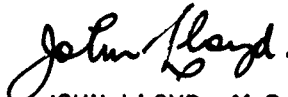
IT IS THE WRITER'S OPINION THAT NO SULPHIDE DEPOSIT OF ECONOMIC DIMENSIONS OCCURS WITHIN 200 FEET OF THE SURFACE, ON THE DOUG CLAIMS OVER WHICH THE PRESENT SURVEY WAS CARRIED OUT.

IT IS RECOMMENDED THAT YOUR COMPANY RETAIN THESE CLAIMS, PLUS THE REMAINDER OF THE DOUG CLAIM GROUP, IN GOOD STANDING PENDING THE OUTCOME OF DIAMOND DRILLING ON THE ADJOINING SHARE CLAIMS, IN WHICH YOUR COMPANY HOLDS INTERESTS.

SHOULD DIAMOND DRILLING PROVE ENCOURAGING ON THE SHARE CLAIM GROUP, A FURTHER EXPLORATION PROGRAMME IN THE FORM OF AN INDUCED POLARIZATION AND MAGNETOMETER SURVEY SHOULD THEN BE CARRIED OUT ON THOSE PORTIONS OF THE DOUG CLAIM GROUP NOT COVERED BY THE PRESENT SURVEY.

RESPECTFULLY SUBMITTED

EAGLE GEOPHYSICS LIMITED



JOHN LLOYD, M.Sc.,  
GEOPHYSICIST

VANCOUVER, B.C.

DECEMBER, 1968.

A P P E N D I X

(1)

COST OF SURVEYS

EAGLE GEOPHYSICS LIMITED UNDERTOOK THE LINECUTTING WORK ON A MILEAGE BASIS, AND THE INDUCED POLARIZATION SURVEY ON A DAILY BASIS. THEREFORE, THE TOTAL COST OF THE SERVICES PROVIDED BY EAGLE GEOPHYSICS LIMITED WAS \$3,977.50.

PERSONNEL EMPLOYED ON SURVEYS

| <u>NAME</u>    | <u>OCCUPATION</u>                  | <u>ADDRESS</u>                             | <u>DATES</u>                                   |
|----------------|------------------------------------|--|--|
| J. LLOYD       | GEOPHYSICIST                       | 815-736 GRANVILLE ST.<br>VANCOUVER 2, B.C. | 23 SEPT. TO 29 SEPT/68<br>18, 19 DEC. 1968     |
| V.R. FALLSTROM | SURVEYOR                           | "  | 29 AUG. TO 1 SEPT/68                           |
| V. PASHINAK    | GEOPHYSICAL OP.                    | "  | 23 SEPT. TO 29 SEPT/68                         |
| R. CARISSE     | " "                                | "  | 23 SEPT. TO 29 SEPT/68                         |
| E. SCURVEY     | LINECUTTER &<br>GEOPHYSICAL HELPER | GENERAL DELIVERY<br>WHITEHORSE, Y.T.       | 29 AUG. TO 1 SEPT/68<br>23 SEPT. TO 29 SEPT/68 |
| S. SCURVEY     | "                                  | "  | "  |
| P. CHARLIE     | "                                  | "  | "  |
| J. BILL        | "                                  | "  | "  |
| N. MAIER       | "                                  | "  | "  |
| H. ROY         | LINECUTTER                         |  | 29 AUG. TO 1 SEPT./68                          |
| J. WARD        | "                                  | "  | "  |
| R. WARD        | "                                  | "  | "  |
| P. NIEMANN     | COOK                               | "  | 23 SEPT. TO 29 SEPT/68                         |
| P. STEWART     | TYPING                             | 311-736 GRANVILLE ST.<br>VANCOUVER 2, B.C. | 23 DECEMBER, 1968                              |

CERTIFICATION

I, JOHN LLOYD, OF THE CITY OF VANCOUVER, BRITISH COLUMBIA,  
HEREBY CERTIFY THAT:

1. I WAS BORN IN WALES ON 10<sup>th</sup> MAY, 1938
2. I AM A GRADUATE OF THE UNIVERSITY OF LIVERPOOL, ENGLAND,  
IN 1960, WITH A B.Sc. IN PHYSICS AND GEOLOGY.
3. I OBTAINED THE DIPLOMA OF IMPERIAL COLLEGE OF SCIENCE AND  
TECHNOLOGY FROM THE ROYAL SCHOOL OF MINES, LONDON UNIVERSITY,  
IN 1961 IN APPLIED GEOPHYSICS.
4. I OBTAINED A M.Sc. IN GEOPHYSICS FROM THE ROYAL SCHOOL OF  
MINES, LONDON UNIVERSITY, IN 1962.
5. I HAVE BEEN PRACTISING MY PROFESSION FOR THE LAST EIGHT  
YEARS.
6. I HOLD NO INTEREST, DIRECT OR INDIRECT, IN THE SECURITIES  
OR PROPERTIES OF MOLY-WIN MINES LIMITED, NOR DO I EXPECT  
TO RECEIVE ANY.



J. LLOYD, M.Sc.

VANCOUVER, B.C.

DECEMBER, 1968.

REFERENCES

BESTOCK, H.S., 1952

GEOLOGY OF NORTHWEST SKAKWAK VALLEY,  
YUKON TERRITORY, G.S.C. MEM. 267

BRETT, B.D. AND  
WALCOTT, P.E.  
JULY, 1968

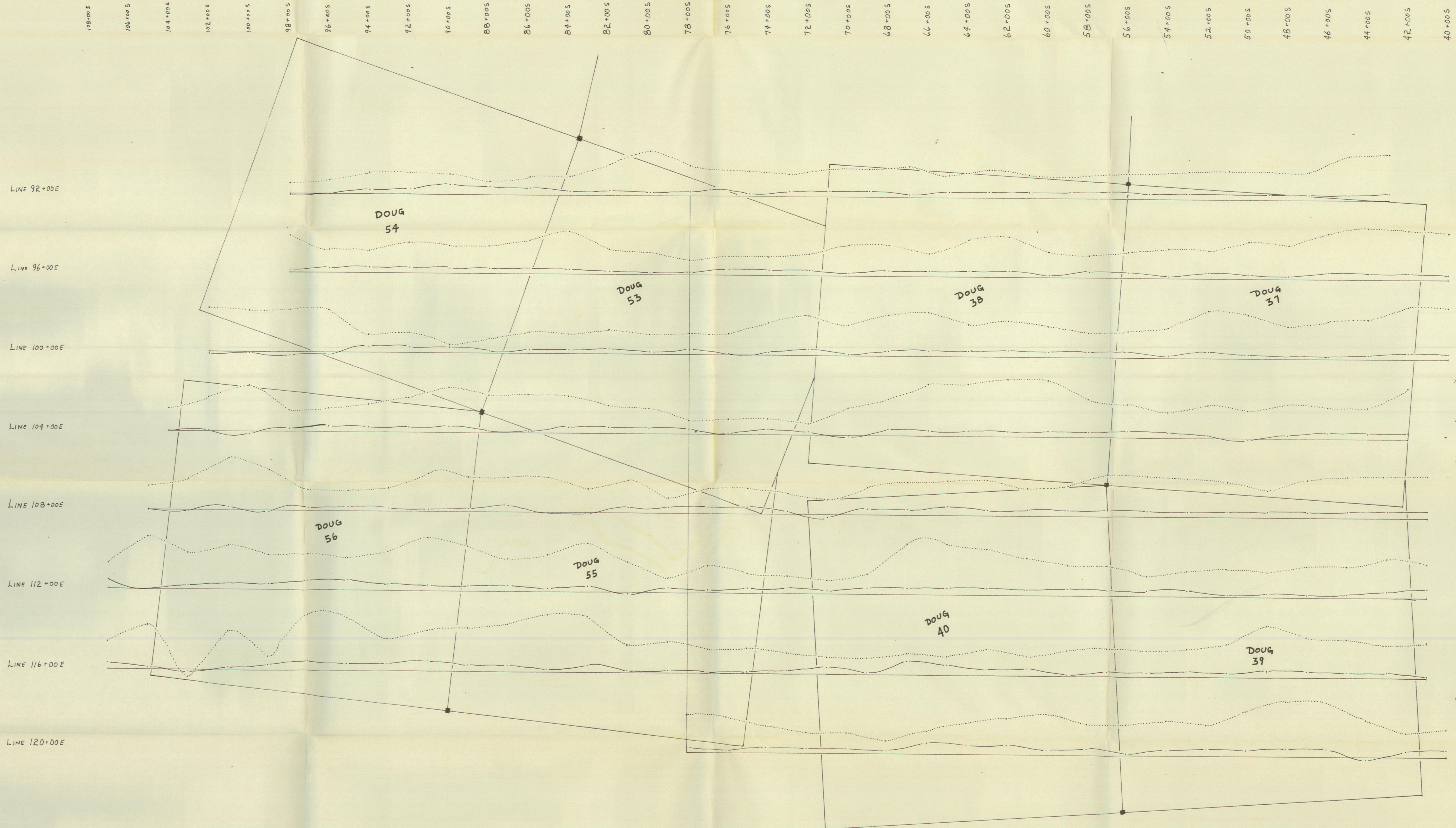
A. GEOLOGICAL REPORT ON THE NOCK CLAIM GROUP  
(UNPUBLISHED)

CAIRNES, D.D.  
1915

UPPER WHITE RIVER DISTRICT, YUKON  
G.S.C. MEM. 50, PP. 133-141

CATHRO, R.J.  
MARCH, 1968

PRELIMINARY REPORT ON NOCK 1-48 CLAIMS  
(UNPUBLISHED)



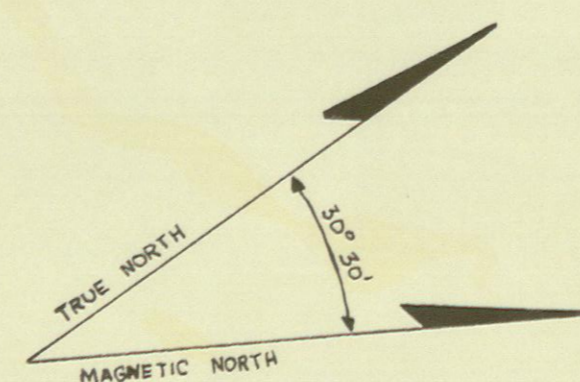
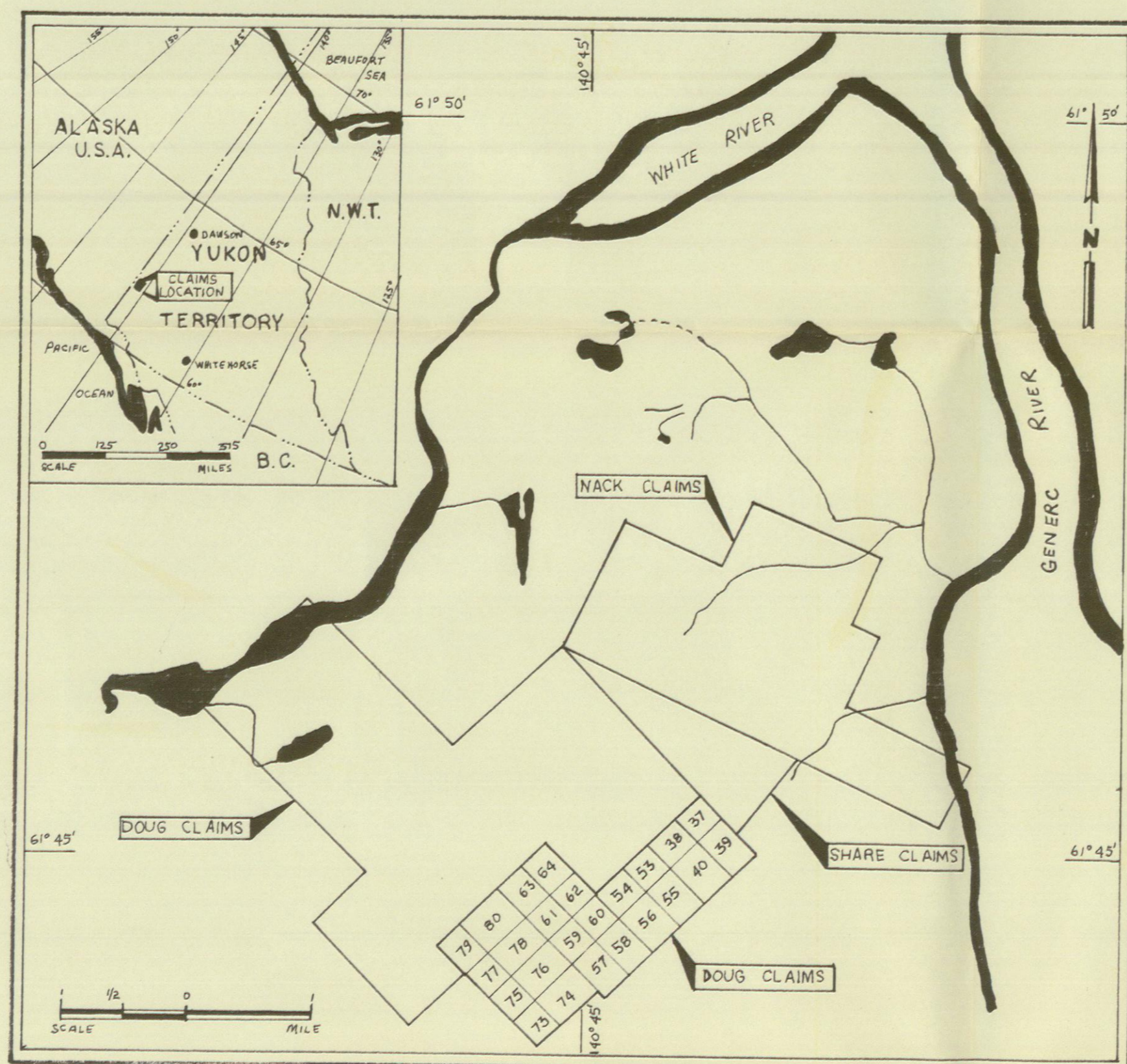
**LEGEND**

- PROFILE OF APPARENT CHARGEABILITY  
 $\delta = 200$  FEET  
 $t^* = 10$  MILLISECONDS
- - - - - PROFILE OF APPARENT RESISTIVITY  
 $\delta = 200$  FEET  
 $t^*$  PER LOGARITHMIC CYCLE

NOTE: DIRECTION OF LEADING CURRENT ELECTRODE NOT SHOWN AS TWO IP RECEIVERS WERE USED ON THE SURVEY

**MAP SYMBOLS**

- CLAIM POST AND BOUNDARY

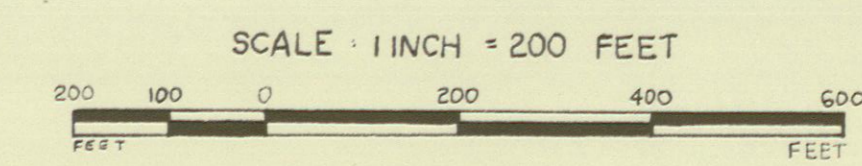


**MOLY-WIN MINES LIMITED**

DOUG CLAIMS, WHITE RIVER AREA, WHITEHORSE MINING DIVISION, YUKON TERRITORY

**INDUCED POLARIZATION SURVEY**

APPARENT CHARGEABILITY AND RESISTIVITY PROFILES



MAP No. E138-1  
 TO ACCOMPANY A REPORT  
 BY J. LLOYD M. Sc.

EAGLE GEOPHYSICS LIMITED

NOVEMBER, 1968

*John Lloyd*