937

REPORT ON

AN INDUCED POLARIZATION SURVEY

CW CLAIM GROUP

STIKINE AREA, BRITISH COLUMBIA

(57°, 131°, S.E.)

FOR

CONWEST EXPLORATION COMPANY LIMITED

BY

HUNTEC LIMITED

TORONTO, ONTARIO

OCTOBER, 1966

TABLE OF CONTENTS

INTRODUCTION

Between August 30th and September 6th, 1966, an Induced Polarization (I. P.) survey was carried out by Huntec Limited for Conwest Exploration Company Limited. The survey area, covered by a group of four mineral claims (CW 139, 140, 142, and 144), adjoins an area surveyed in July, 1965, and is located on Galore Creek approximately 14 miles east of the Stikine River and 50 miles south of Telegraph Creek, British Columbia.

The geophysical crew of six men was managed by Mr. P. E. Lane, assisted by Mr. M. Samilski, both of Huntec Limited. Final drafting and report writing were done at the Toronto office of Huntec Limited.

The survey consisted of 1.52 miles of readings taken at 100 or 200 foot intervals on lines averaging 400 feet apart, using the electrode configuration known as the pole-dipole array. An electrode separation of 200 feet was used, with a measuring dipole of 100 feet. In addition, part of one line was detailed using electrode separations of 100 and 400 feet.

The reconnaissance data are presented in the form of contoured maps of apparent chargeability and apparent resistivity, at a scale of 1 inch to 200 feet. The data for the detailed line are presented in profile form, at the same scale.

SURVEY SPECIFICATIONS

The equipment used on this survey was the Huntec pulse-type I. P. unit manufactured in Toronto by Huntec Limited. Power is obtained from a JLO motor, coupled to a 2.5 kw 400 cycle three-phase generator, providing a maximum of 2.5 kw d. c. to the ground. The cycling rate is 1.5 seconds "current on" and 0.5 seconds "current off", the pulses reversing continuously in polarity. Power is transmitted to the ground through two current electrodes, C_1 and C_2, and measurements taken across two potential electrodes, P_1 and P_2.

The data recorded in the field consist of careful measurements of the current (I) in amperes flowing through electrodes C_1 and C_2, the primary voltage (V_p) appearing between electrodes P_1 and P_2 during the "current on" part of the cycle, and the secondary voltage (V_s) appearing between electrodes P_1 and P_2 during the "current off" part of the cycle.

The apparent chargeability (M_a), in milliseconds, 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, in ohmmeters, is proportional to the ratio of the primary voltage to the measured current, the proportionality factor depending on the geometry of the electrode array used. The chargeability and resistivity obtained are called "apparent" as they are values which

that portion of the earth sampled by the array would have if it were homogeneous. As the earth sampled is usually inhomogeneous, the calculated apparent chargeability and apparent resistivity are functions of the actual chargeabilities and resistivities of the rocks sampled, and of the geometry of these rocks.

For this survey the "pole-dipole array" was used throughout. For this array one current electrode (C_1) and the two potential electrodes (P_1 and P_2) are moved in unison along the survey lines, the other current electrode (C_2) remaining fixed at "infinity". In this way the flow of current from C_1 is approximately radial within the range of the three moving electrodes. The spacing between these electrodes is kept constant for each traverse, the distance between C_1 and P_1, designated 'a', being roughly equal to the depth to be explored by that traverse. Detailing is done by running subsequent traverses at different electrode separations, enabling more precise estimates to be made of depth to the top or centre of causative bodies, and more detailed information obtained on the geometry and extent of the bodies.

INTERPRETATION PROCEDURES

I. P. interpretation procedures have been most completely developed in situations of horizontal layering, approximating bodies such as porphyry coppers of large lateral extent; and spherical shapes, which can generally be applied only when the depth to the centre of a body greatly exceeds its average limensions. The complex problem of resolving the combined effects of depth, width, dip and true chargeability of steeply dipping bodies, together with the physical characteristics of overburden and country rocks, has not yet been solved theoretically. However, by judicious use of the theoretical solutions to the situations mentioned above, together with experience from other I. P. surveys, it is generally possible to locate the centre of the cause of anomalies with reasonable accuracy and, in some cases, to give an estimate of the true chargeability. In the case of bodies approximating the spherical shape, the parameters of volume and true chargeability are interdependent so far as the surface response is concerned, and it is therefore only possible to give an estimate of the combination of the two, such as a chargeability-volume factor.

An estimate of the average percentage sulphides can be made after the true chargeability of the body or bodies causing the observed anomalies has been calculated. These estimates are, of course, approximate inasmuch as the relationship between chargeability and

percentage sulphide is affected by such things as grain size, resistivity contrast, quantity and nature of absorbed water, degree of inter-connection of mineralization, and other factors. Based on past experience, 1% by volume of sulphide mineralization corresponds to between 5 and 15 milliseconds of true chargeability. In the realm of massive sulphides (say 25% by volume or greater), this relationship is still less exact since increasing quantities of sulphide may produce only minor changes in I. P. response.

INTERPRETATION

The chargeability values over this area are similar in amplitude to those obtained in an earlier survey on the east side of Galore Creek (July, 1965). The main difference lies in the lack of any discernible background chargeability level on the west side, making the term 'anomaly' meaningless for this area. In contrast, there are fairly clear anomalies in the 1965 survey area, though the boundaries cannot in all cases be pinpointed. The gap between the two areas is too great to allow any precise correlation of contours, but general trends can be traced with some confidence.

Two zones of major interest are partially outlined on the chargeability contour map, and identified by letters C and D. The edge of a third possible zone is also shown at the east end of Line 0+00, but this is not sufficiently covered to enable any assessment to be made of its significance. The indicated limits of these zones are somewhat arbitrary, because of the continuous fluctuations in chargeability over the area, and are not intended to signify that these are the only possible areas of interest. Some of the fluctuations could result from a varying thickness of low chargeability overburden, in which case moderately high apparent chargeabilities would be of equal significance to the peak values. This, however, seems unlikely since the resistivity values do not vary as the chargeability values, which would be the case if

conductive overburden were a controlling factor. It therefore seems probable that the changes in apparent chargeability reflect variations in the true chargeability of the bedrock, the latter probably being a function of the mineralization content. The peak areas shown are therefore considered to be the most favourable for further investigation.

Zone C consists of an area of readings in the 10 to 13 millisecond range. It is limited on the south side only and can, with some confidence, be correlated with Zone A of the 1965 survey. The extent of the zone to the northwest is still unknown. The lack of detailing precludes the accurate spotting of exploration drill-holes on the western side of the creek.

Zone D is still open on the south side, and consists of a fairly extensive zone of high readings comparable in amplitude to those comprising Zone A of the 1965 survey. Detailing, with electrode separations of 100, 200 and 400 feet, was done on Line 0+00 and indicates two basic sources of the high readings, as shown under the detail profiles. Only at 3+50E is there any indication of a resistivity low coinciding with the high chargeability. Massive mineralization may occur in a zone of limited extent at this point, but is not expected elsewhere.

The section of Line 0+00 surveyed on the east side of the creek does not show any features of interest.

SUMMARY AND RECOMMENDATIONS

The I. P. survey over this area showed continuously fluctuating chargeability values without any apparent background level. Two zones have been selected as being the most favourable areas for further investigation.

It is not possible to locate the source of Zone C with any accuracy, so that exploratory drill-holes cannot be recommended at this time. However, since this zone appears to be an extension of Zone A of the 1965 survey, it is possible that the identification of the source of the latter zone may provide information on the source of Zone C. If drilling targets are required on the west side of the creek it is suggested that the I. P. survey be extended to further outline the zone and to locate the source more accurately.

It is recommended that Zone D be investigated by the following exploratory drill-holes.

D. D. H. 1	Collar at 5+50E on Line 0+00 Plunge vertical Hole-length 300 feet
D. D. H. 2	Collar at 9+50E on Line 0+00 Plunge vertical Hole-length 300 feet

If the ground slopes steeply in this region, these holes should be drilled in a direction perpendicular to the slope.

Respectfully submitted,

HUNTEC LIMITED

Andrew R. Dodds

Andrew R. Dodds, B. Sc.
Geophysicist.

APPENDIX I

Claims Surveyed

The survey area was covered by a group of four mineral claims as follows: CW 139, 140, 142 and 144.

Miles Surveyed

The survey was divided into two phases: a reconnaissance phase (covering all the lines once with one electrode separation); and a detail phase (resurveying selected lines with different electrode separations). Total miles surveyed and readings taken are as follows:

	Miles	Readings
Reconnaissance	1.52	65
Detail	0.45	20
Total	1.97 miles	85 readings

Man-days Required

	Man-days
Operating geophysical equipment	30
Interpretation and Report writing	2
Drafting	4
Typing	1
	37

Qualifications of Andrew R. Dodds.

Academic

B. Sc. Degree in Geology and Geophysics, granted by Queens University, Kingston, Ontario in 1963.

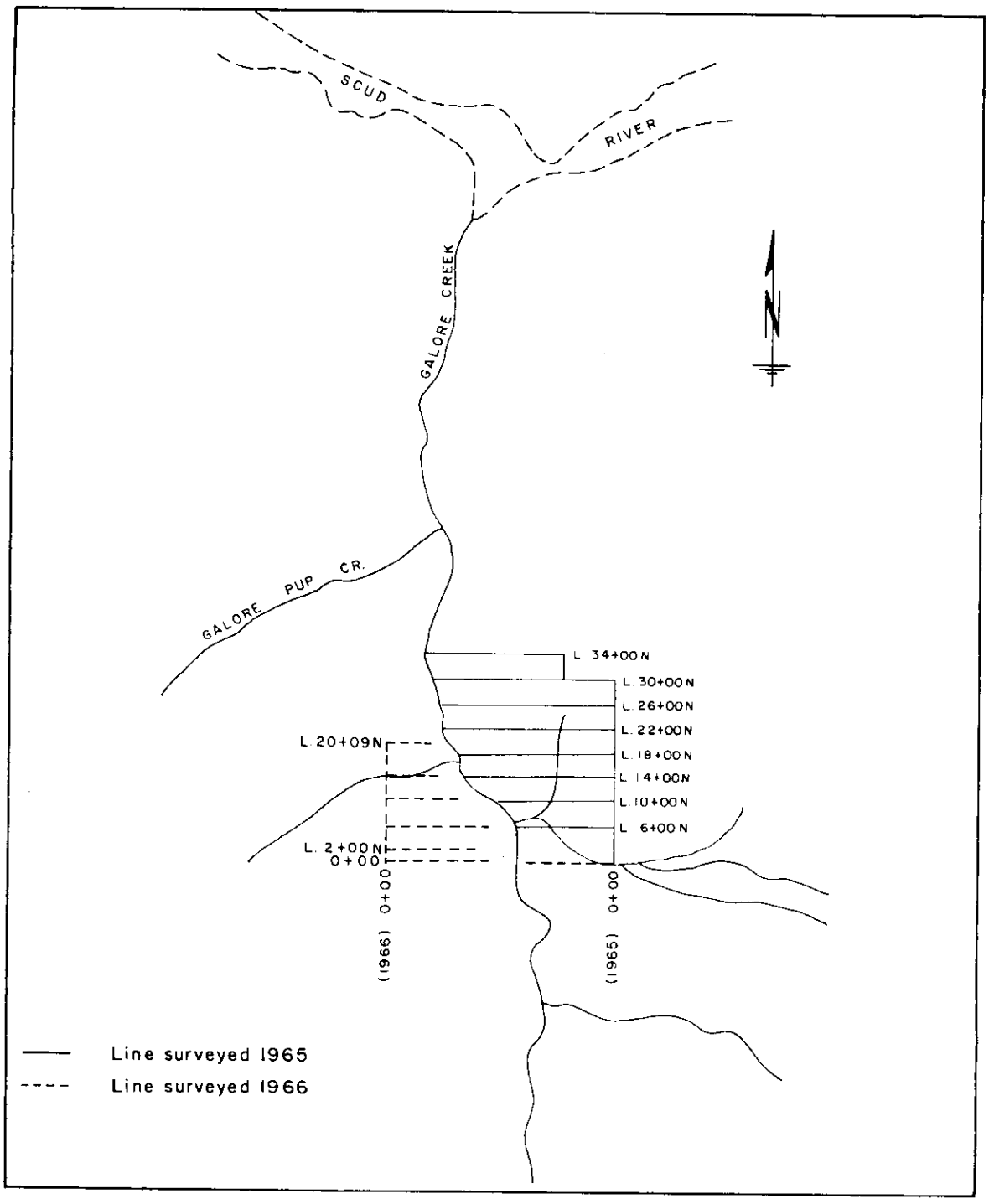
Practical

Field Geophysicist with Hunting Survey Corporation Limited and Huntec Limited from July, 1963 to date. This includes field supervision, interpretation and report writing of magnetic, electromagnetic and induced polarization surveys, being employed exclusively on the last named from January 1964 to date.

Andrew R. Dodds, B.Sc.
Geophysicist

Personnel Employed on Survey

Name	Occupation	Address	Dates
A. R. Dodds	Geophysicist	1450 O'Connor Drive, Toronto 16, Ontario	Oct. 7, 26, 28, 1966
P. E. Lane	"	"	Aug. 30 - Sept. 6, 1966
M. Samilski	Geophysical Operator	"	"
W. Callison	Helper	Conwest Exploration Co. Ltd.	"
C. Brown	"	"	"
F. Carlick	"	"	"
L. Woods	"	"	"
J. Wilson	Drafting	1450 O'Connor Drive Toronto 16, Ontario	Nov. 1, 2, 1966
P. Tapson	"	"	Oct. 26, 27, 1966
L. Brunton	Typing	"	Nov. 4, 1966



CONWEST EXPLORATION COMPANY LIMITED

SURVEY LINE LOCATION MAP

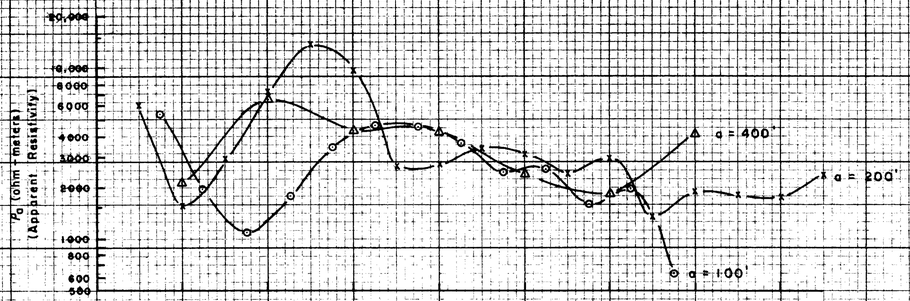
GALORE CREEK , STIKINE AREA , B.C.

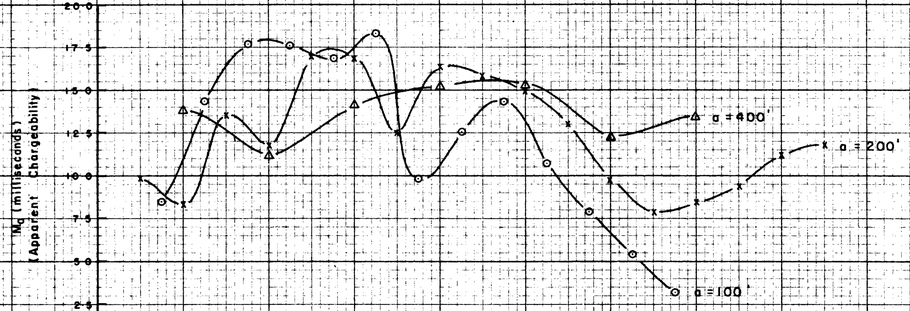
1 inch = 2640 feet approx.

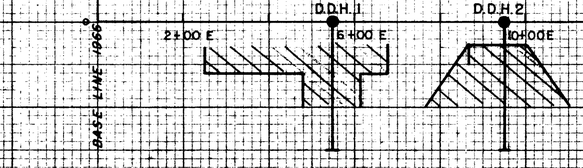
PH 250-3/65

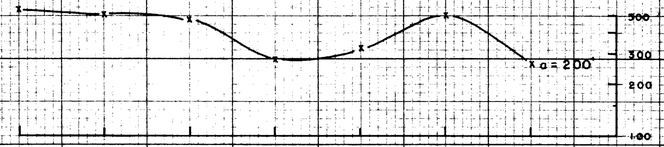
DETAIL PROFILES OF APPARENT CHARGEABILITY & RESISTIVITY WITH INTERPRETATION

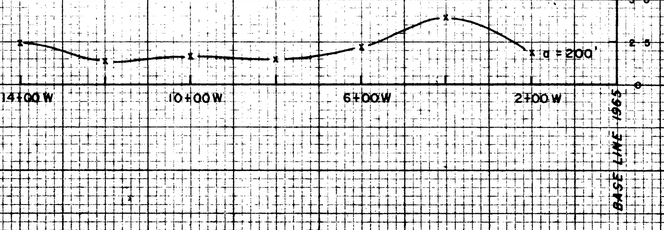
LINE 0+00











HORIZONTAL SCALE 1 inch = 200 feet

Vertical Scales :-
Chargeability 1 inch = 5.0 milliseconds
Resistivity 2 inches = 1 cycle (logarithmic)

POLE – DIPOLE ARRAY

INTERPRETATION LEGEND

Interpreted Location of Causative Body

Recommended Diamond Drill Hole

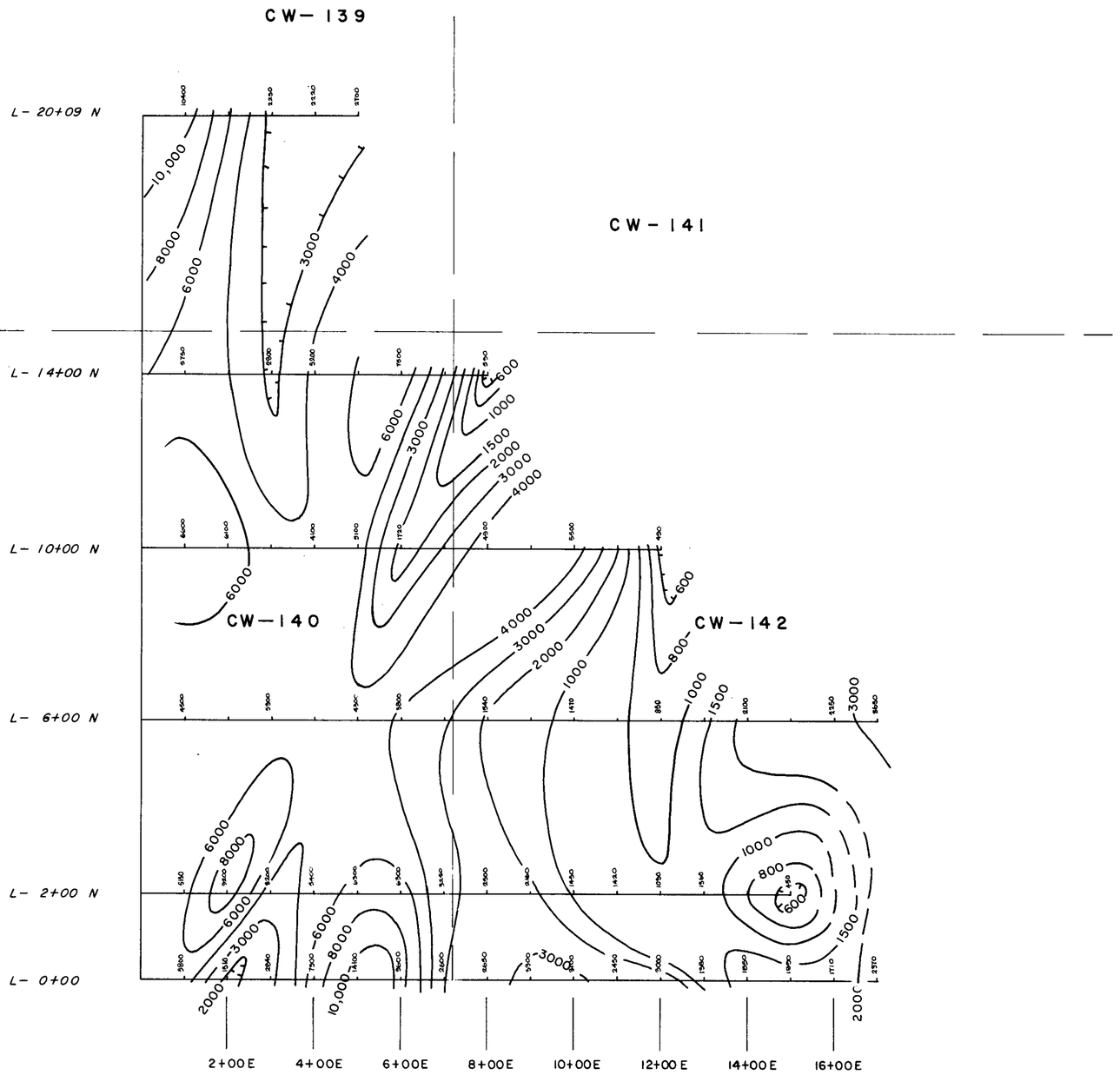
To accompany report by

A. R. Dodds, B.Sc., Geophysicist

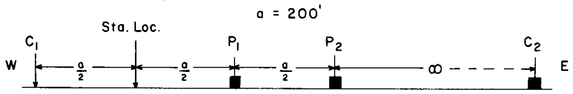
HUNTEC (1970) LIMITED, Toronto, Canada — November, 1966

937

PH. 501/65



POLE – DIPOLE ARRAY
a = 200'



CONWEST EXPLORATION COMPANY LIMITED

INDUCED POLARIZATION SURVEY

GALORE CREEK, STIKINE AREA, B.C.

APPARENT RESISTIVITY CONTOURS

Scale : 1 inch : 200 feet

Contours at (logarithmic intervals) : 200, 300, 400, 600, 800, 1000, 1500, 2000, 3000, 4000, etc., ohm-meters

To accompany report by

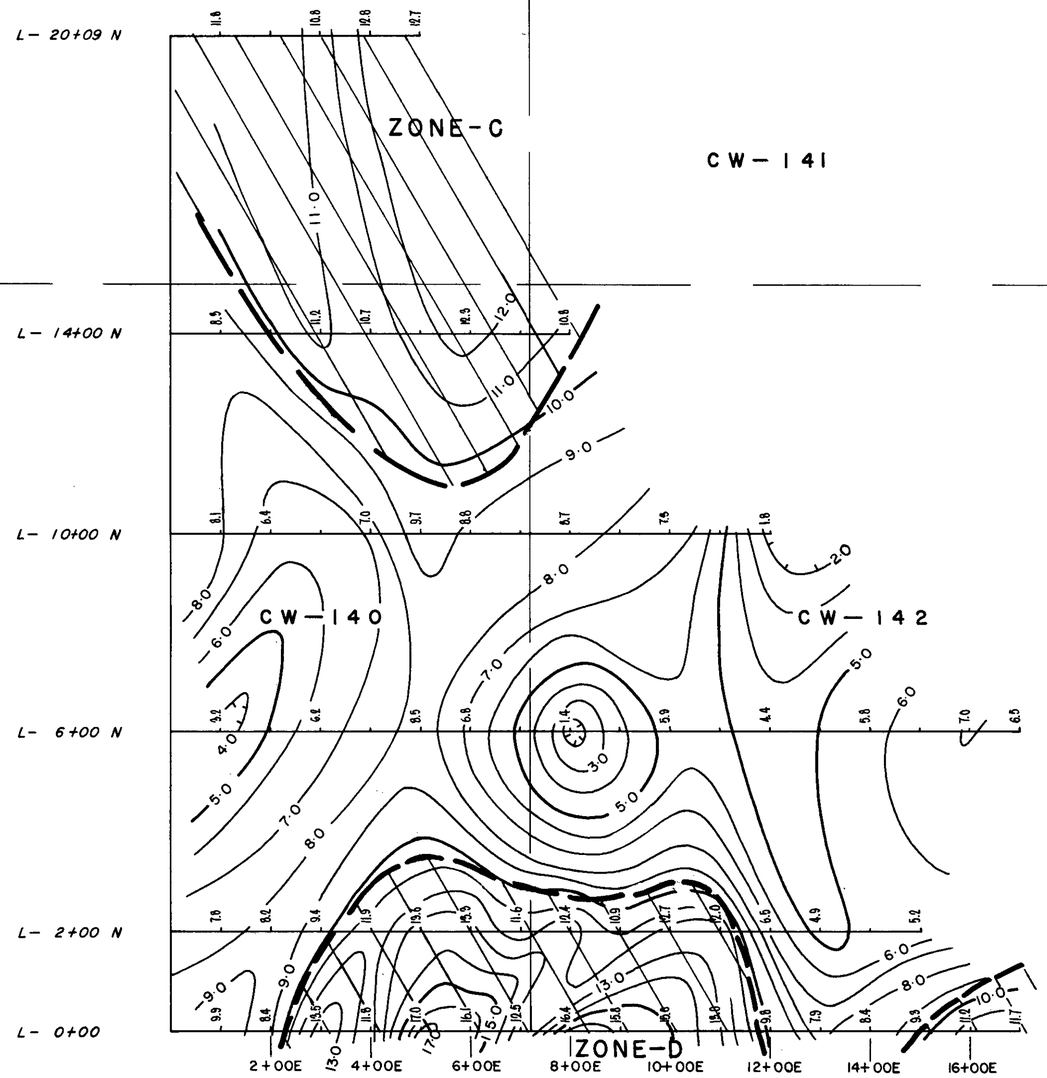
A. R. Dodds, B. Sc., Geophysicist

HUNTEC LIMITED, Toronto, Canada — November 1966

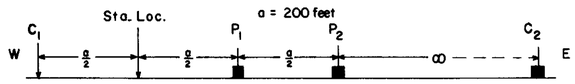
937

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 932 MAP 2

P.H.– 501/66



POLE — DIPOLE ARRAY



LEGEND

.....Zone of major interest

CONWEST EXPLORATION COMPANY LIMITED

INDUCED POLARIZATION SURVEY
GALORE CREEK, STIKINE AREA, B.C.

APPARENT CHARGEABILITY CONTOURS WITH INTERPRETATION

Contour Interval : 1.0 milliseconds

Scale : 1 inch : 200 feet

To accompany report by

Andrew R. Dodds

A. R. Dodds, B. Sc., Geophysicist.

HUNTEC LIMITED, Toronto, Canada — November, 1966

937

PH—501/66

CONWEST EXPLORATION

CW GROUP - GALORE CR. - STIKINE AREA, B.C.

IP SURVEYS, 1965 & 1966

10 APPARENT CHARGEABILITY, MILLISECONDS

AREA INTEREST - HUNTEC

CLAIM BOUNDARIES

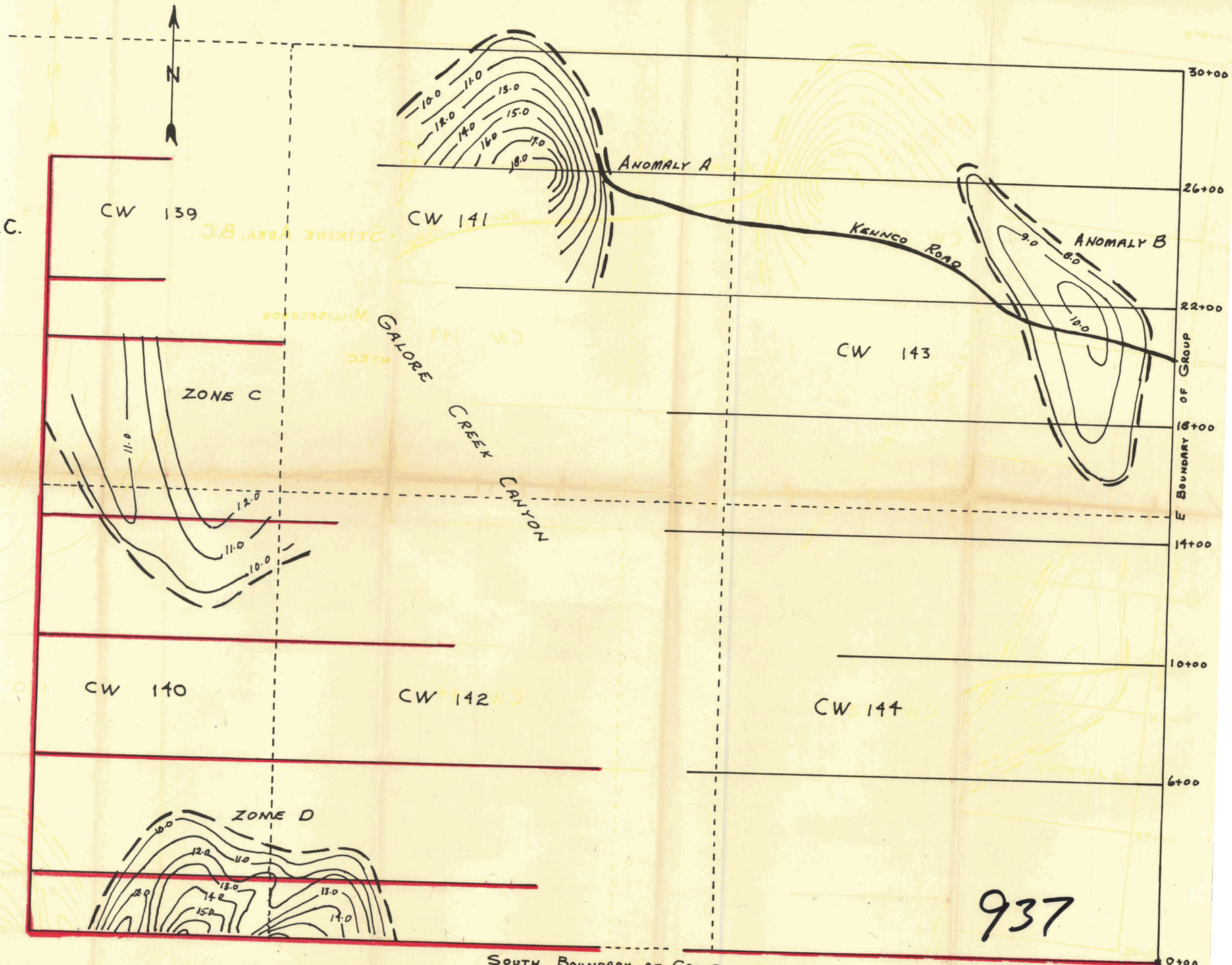
SCALE: 1":200'

CUT LINE - 1966

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 937 MAP 4

To accompany
A Geophysical Report On
An Induced Polarization Survey
Stikine Area, British Columbia.
(57°, 131°, S.E.)

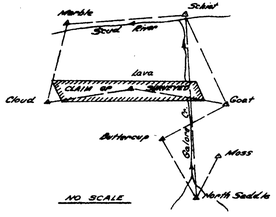
BY
R. A. DODDS.



SKETCH PLAN SHOWING POSITION OF LOCATION POSTS OF CW 1-48, 49-96, 97-144, 145-172 MINERAL CLAIMS CON WEST EXPLORATION CO. LTD. HOLDINGS VICINITY GALORE CREEK, BRITISH COLUMBIA

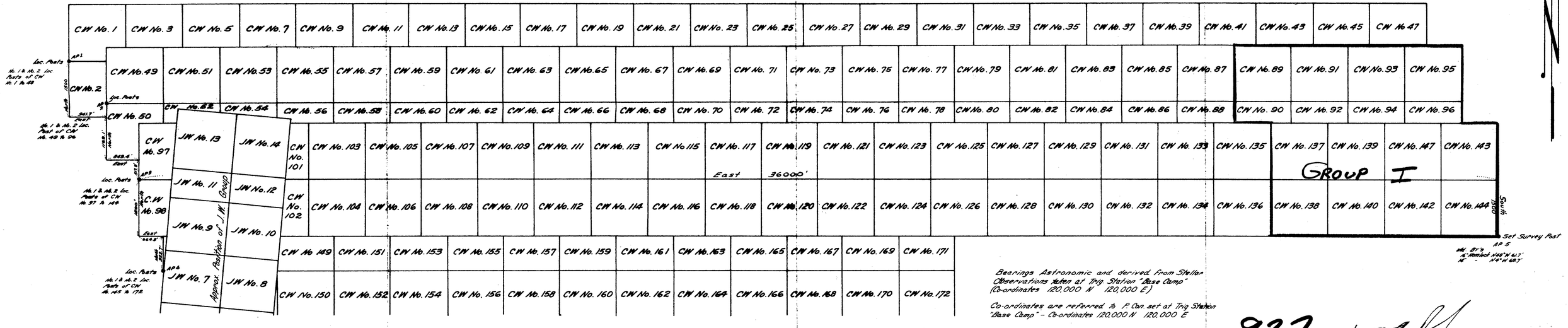
SCALE: 4 INCHES = 1 MILE

TELLUROMETER CONTROL



NO SCALE

STATION	LATITUDE	DEPARTURE	STATION	LATITUDE	DEPARTURE
TRIG STN. "MARBLE"	161,734.10	92,574.00	TRIG STN. "MOSS"	128,427.50	130,267.00
TRIG STN. "CLOUD"	141,334.40	87,002.50	AP 1	147,507.30	88,070.40
TRIG STN. "SCHIST"	163,578.70	122,413.10	AP 2	146,338.20	89,012.10
TRIG STN. "GOAT"	140,338.00	132,477.20	AP 3	144,302.30	89,861.50
TRIG STN. "BUTTERCUP"	132,148.70	117,308.20	AP 4	141,879.60	90,525.80
TRIG STN. "NORTH SADDLE"	118,490.80	125,005.60	AP 5	140,379.60	126,525.80



Bearings Astronomic and derived from Stellar Observations taken at Trig. Station "Base Camp" (Co-ordinates 120,000 N 120,000 E)

Co-ordinates are referred to P. Con set at Trig Station "Base Camp" - Co-ordinates 120,000 N 120,000 E

937

B.C.L.S.

November 27th, 1965

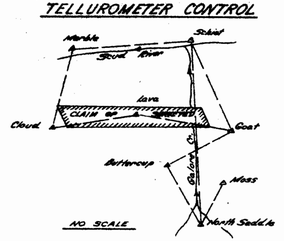
Underhill & Underhill
Engineers & Surveyors
Vancouver, B.C.

RB. 384 J-3267 62-2

SKETCH PLAN SHOWING POSITION OF LOCATION POSTS OF CW 1-48, 49-96, 97-144, 145-172 MINERAL CLAIMS CON WEST EXPLORATION CO. LTD. HOLDINGS VICINITY GALORE CREEK, BRITISH COLUMBIA

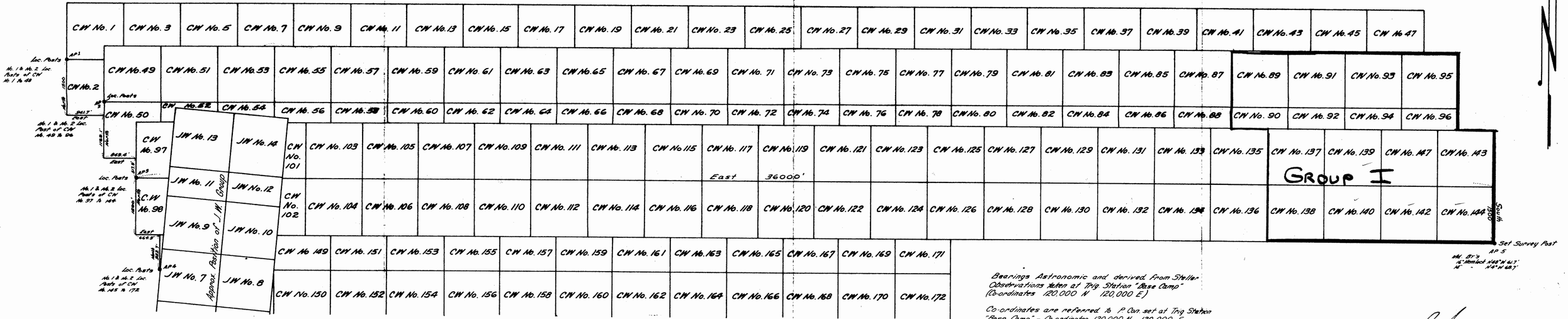
SCALE: 4 INCHES = 1 MILE

TELLUROMETER CONTROL



NO SCALE

STATION	LATITUDE	DEPARTURE	STATION	LATITUDE	DEPARTURE
TRIG STN. "MARBLE"	161,734.10	92,874.00	TRIG STN. "MOSS"	128,427.50	130,267.00
TRIG STN. "CLOUD"	141,934.40	87,002.50	AP 1	147,507.30	88,070.40
TRIG STN. "SCHIST"	163,578.70	122,413.10	AP 2	146,338.20	89,012.10
TRIG STN. "GOAT"	140,338.00	132,477.20	AP 3	144,302.30	89,861.50
TRIG STN. "BUTTERCUP"	132,148.70	117,308.20	AP 4	141,879.60	90,525.80
TRIG STN. "NORTH SADDLE"	118,490.80	125,005.60	AP 5	140,379.60	126,525.90



Bearings Astronomic and derived from Stellar Observations taken at Trig Station "Base Camp" (Co-ordinates 120,000 N 120,000 E.)

Co-ordinates are referred to P. Con. set at Trig Station "Base Camp" - Co-ordinates 120,000 N 120,000 E

937

B.C.L.S.

November 27th, 1965

Underhill & Underhill
Engineers & Surveyors
Vancouver, B.C.

KB 384 J-3267 62-2