2321

GEOPHYSICAL REPORT

on the

HI CLAIM GROUPS I, II and III

TCHENTLO LAKE

55° 125° SE

OMINECA MINING DIVISION

by

W.R. BACON, Ph.D., P.Eng.

April 15, 1970

for

N.B.C. SYNDICATE

Work done between
February 16th and April 10th, 1970.

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INTRODUCTION

The HI claim groups described in this report are situated north of Tchentlo Lake in the Omineca Mining Division. They are between the northwest portion of the lake and Mount Nation. Access is by fixed wing aircraft to Tchentlo Lake. A helicopter is used to supply camps located in the central part of the claim group.

Figure I shows the outline of each claim group listed below as well as the picket line grid used for control.

Claim Group	Claim Name	Record Numbers	Recording Date
HI No. 1	HI 1-10	63622-63631	Sept. 16, 1968
	11-26	63831-63846	Oct. 11, 1968
	27, 28 Fr.		
	29, 30	63983-63986	Oct. 21, 1968
HI No. 2	HI 100-117	76048-76065	June 17, 1969
	132-135	76080-76083	June 17, 1969
	201-208	75861-75868	July 7, 1969
	HI 31 Fr.		April 6, 1970
HI No. 3	HI 118-131	76066-76079	June 17, 1969
	136-147	76084-76095	June 17, 1969
	148-155	75869-75876	July 7, 1969
	HI 32 Fr.		April 6, 1970

The claims cover an area of low relief southwest of Mount Nation. Outcrop is rare in the northern two thirds of the claim groups and in the southeastern 14 claims. The south central portion of the claim group shows scattered rock outcrop. Figure II shows the general geology as presently known.

MT. NATION

N

TCHENTLO

LAKE

LEGEND

- 7 - SANDSTONE CONGLOMERATE
- 6 - LIMESTONE
- 5 - SYENITE
- 4 - GRANODIORITE
- 3 - DIORITE
- 2 - GABBRO
- 1 - VOLCANICS

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 2321 MAP #2

N.B.C. SYNDICATE

TCHENTLO LAKE AREA

93/N-3

GEOLOGY

SCALE 1" = 1/2 MILE OCT. 1969

FIGURE 11

The picket line grid was originally planned to cover the whole of the claim groups. However, snow and windfall conditions made linecutting in the burned areas very hazardous under winter conditions and the resulting lines therein are wholly impractical for summer use. As a result most of the useful linecutting is confined to the area north of the burn.

Base lines were established 2800' apart parallel to the long axis of the claim groups. Cross lines were turned off at 800 foot intervals.

The geophysical survey was confined to the swampy areas which could not easily be done during the summer.

The reader is referred to "Geochemical, Geophysical and Geological Report on the HI No. 1 Claim Group" dated August 19th, 1969, by W.R. Bacon, P.Eng., for a description of previous work done on the property.

MAGNETOMETER SURVEY

PURPOSE

Prospecting in this area indicated complex geology with very sparse outcrop. Mineralized float carrying chalcopyrite and magnetite was found. The magnetometer survey was intended to outline the broad geological structure and, hopefully, to discover magnetic anomalies from which the mineralized float might have come.

METHOD

A Sharpe MF-1 fluxgate magnetometer was used to take readings along the chained cross lines at 100 foot intervals. Readings were also taken at 200 foot intervals along the base lines. Repeat readings were taken at short intervals of time on base line stations to check for possible magnetic changes. Minor diurnal changes are not compensated for as they are entirely insignificant in view of the amplitude of the anomalies encountered.

Strong magnetic variations were encountered on March 26th. These variations were compensated for by constructing a curve from base line checks and subtracting amounts from the readings recorded in proportion to the time of recording. Results are plotted on Plate I "Magnetometer Sruvey". By chance, one of these lines which required rather large adjustments is in practically the same location as a line read with the Minimag magnetometer during the summer of 1969. Comparison of the profiles shows no significant differences.

RESULTS AND INTERPRETATION

Aeromagnetic maps 93N-3 and 93N-6 for Tchentlo Lake and Indata Lake were published during the time this survey was proceeding and these maps have been consulted in compiling and interpreting the results of this survey.

Plate I "Magnetometer Survey" shows three zones of different magnetic contrast. Zone I in the bottom right portion of the plan shows a relatively smooth magnetic field on lines 160 NW, 168 NW and 176 NW. A single limestone outcrop to the northwest, shown on the plan, and an outcrop of massive dark green volcanics immediately

to the southeast of the plan area would appear to indicate that this magnetically smooth zone is underlain by limestone and greenstone.

Zone II is indicated by strong magnetic variations generally along the base line 58 NE. The zone appears to consist of a series of lens shaped bodies to about 1000 feet in width. This zone is a portion of the relatively long, magnetic high shown on aeromagnetic map 93N-3 Tchentlo Lake. Figure II shows the geology known along strike to the southeast of Zone II. Although no outcrop exists in the vicinity of the magnetic highs shown on Plate I, the geology of the region as well as the shape and intensity of the anomalies suggest they are due to basic intrusives. Sharp changes in magnetic intensity noted in the vicinity of 176 NW 58 NE indicate relatively shallow overburden, probably about 20 feet in depth.

Zone III occupies the northeast half of the area shown on Plate I. Only one outcrop (granodiorite) is known; this is at the northeast end of Line 192 NW. It is presumed this zone is underlain by rock of about granodiorite composition. The magnetic profile is not smooth, probably reflecting variations in composition and magnetite content. Although this zone underlies extensive swamp, flat pine and spruce forested area, the sharp magnetic variations on lines 200 NW and 208 NW suggest that overburden depths may be moderate. Smoother profiles on lines to the southeast may indicate deeper overburden.

CONCLUSION

Some indication of the general geologic structure of the area is provided by the magnetometer survey and it should be expanded to cover the remainder of the claim group.

During the summer of 1969, gabbroic float mineralized with chalcopyrite and magnetite was found southeast of the area surveyed. The magnetic highs of Zone II represent a possible source area for this material.

ELECTROMAGNETIC SURVEY

PURPOSE

The presence of limestone, together with the development of magnetite and specularite to the southeast, suggested the possibility of a Craigmont type environment. This possibility and the excessive cost of an extensive IP survey helped decide in favour of a relatively cheap method of electrical prospecting. A McPhar 1000/5000 vertical loop electromagnetic unit (SS-15) was chosen because of (1) its relatively great power of penetration, (2) its dual frequency and (3) its independence from topographic effect so long as good picket lines are provided to ensure proper orientation.

The survey was to prospect for conductive zones associated with magnetic anomalies which might be caused by relatively massive sulphide bodies. Weaker conductive effects are also useful in interpretation of structure.

METHOD

The McPhar SS-15 unit is capable of transmitting either a 1000 cps or a 5000 cps signal and will transmit an alternating signal of these two frequencies. For this survey, the alternating signal was used throughout to give the most information in the least time.

Since ground magnetometer results were not yet available and the linecutting crew was only a short distance ahead of the EM crew, transmitter stations were placed arbitrarily at 1600 foot intervals to give the most rapid coverage of the swamp area (which could not be done after spring break-up).

Readings were taken for each frequency at 100 foot intervals on lines 800 feet on either side of the transmitter. These readings were recorded as east or west dips and plotted with east angles positive, west angles negative, to provide the classic type of cross-over.

Results are shown on Plate II "EM Survey".

RESULTS AND INTERPRETATION

In addition to plotting the EM results as shown on Plate II, a series of profiles were plotted to aid interpretation. These profiles were constructed for each line surveyed and show the 1000 cps and 5000 cps EM results as well as the magnetometer results.

Each cross-over, as well as each significant inflection which might suggest a weak conductive zone, was subjectively classified and each suggested conductor was compared with the corresponding magnetic expression.

Two major points were noted during this interpretation:

(a) An EM conductive zone is not necessarily associated with highs of magnetic Zone II.

(b) Although some conductivity is suspected to be due to swamp conditions, only one conductor shown on Plate II is thought to be due to this cause. Other conductors are probably due to bedrock sources.

The conductive zones resulting from this process are shown on Plate II and are listed below:

Conductor	Interpretation
A	Cross-overs on lines 184 NW and 192 NW are interpreted to be from the same source. This source is associated with the peak of a magnetic anomaly. Good correlation between 1000 cps and 5000 cps results from transmitter location T10 indicate the zone, in part, is a good conductor. This anomaly warrants detailed work on more closely spaced lines.
B	A very weakly anomalous zone occurs on lines 176 NW, 184 NW and 192 NW at the east base of a strong portion of magnetic Zone II. The anomaly is weakly expressed on the 5000 cps profile and is practically negligible at 1000 cps. It is therefore a poor conductor. Its position with regard to the magnetic anomaly suggests it warrants further investigation, possibly by means of an IP survey. It could be caused by a shear zone at the contact of the inferred basic intrusive and whatever intruded rocks underlie the valley.

C The cross-over at 88 NE on line 176 NW is the best defined and strongest encountered during this survey. The two frequencies show relatively good correlation although the 5000 cps results are stronger than the 1000 cps. The anomaly occurs on the east side of a local magnetic low and its position correlates well from both transmitter locations T4 and T8. This anomaly should be investigated by soil sampling, careful prospecting and probably an IP survey.

C_1 A sharp change in readings at the end of line 192 NW suggests a possible conductor which should be investigated in conjunction with anomaly C.

D This is a very weak but persistent conductor occurring at about 80 NE from line 168 NW to line 216 NW, a distance of nearly a mile.

On most lines the conductor is inferred from relatively indefinite inflections in the EM profiles. On lines 192 NW and 208 NW, however, distinct, weak cross-overs occur with good correlation between the two frequencies.

On lines 168 NW and 176 NW there is no apparent magnetic expression. On all other lines, however, the anomaly appears in, or on the side of, a shallow magnetic low. This zone lies along a magnetic low on the aeromagnetic survey which is interpreted as due to a fault.

This conductor is assumed to be due to a strong shear zone of some considerable width. The EM cross-overs may occur

over the most conductive part of the zone and the trace of conductor D may in fact be much more irregular than the nearly straight (?) underlying fault zone.

The following are minor anomalies which do not warrant individual investigation at this time:

Line 160 NW

62 NE — A weak inferred cross-over in a zone of sharp magnetic changes near the east side of magnetic Zone II.

93 NE — Suggested conductor at end of line, no magnetic expression.

Line 200 NW

52 NE — Weak 1000 cps expression with 5000 cps profile suggesting conductive material to the west. No magnetic expression.

76 NE — Inflections in EM profiles suggest possible poorly conductive material. Lies on strike of magnetic low - possibly due to shearing.

Line 208 NW

53 NE — Weak indications on both frequencies near west base of magnetic Zone II.

59 NE — Very weak indication on both frequencies from transmitter T13. Occurs at end of line. This corresponds with the peak of the magnetic anomaly.

90 NE — Sharp change in EM readings at the northeast end of the line suggest a possible conductive zone to the east. This is close to a sharp local magnetic low.

Line 216 NW

68 NE — This is a very poor and very doubtful conductor. It appears as a sharp change in 5000 cps readings from T14 only. It is noted because it is in a similar location with regard to the magnetic Zone II as is occupied by conductor B.

Line 224

90 NE — Relatively strong changes in the EM results at the northeast end of this line suggest a possible conductor. This zone lies near an apparent magnetic low and occupies a very similar position to inferred conductors at the end of lines 208 NW, 192 NW and possibly conductor C.

Further investigation may show these indications to be part of a single zone and may be due to a fault. Conductivity, however, is relatively good and the zone should be carefully investigated.

Line 232

70 NE — This is a very flat broad cross-over somewhat stronger on 5000 cps than on 1000 cps. It may be due to swamp conditions. No magnetic readings are available.

CONCLUSION

The EM survey has indicated several weak conductive zones. Three of these, A, B and C warrant careful investigation.

This survey has assisted in interpretation of the local structure and effectively reduced the area which might be required to be prospected by much more expensive means, i.e. Induced Polarization.

COSTS

Due to very difficult and hazardous conditions in the burn area and, later, to soft wet snow conditions, linecutting proved very expensive. Only a portion of the proposed grid was in fact completed.

Costs are listed in the following "Table of Expenditures". Due to the excessive cost incurred for the amount of work actually completed, only about 80% of these expenditures are claimed for assessment work.

W.R. Bacon, Ph.D., P.Eng.

TABLE OF EXPENDITURES

LINECUTTING

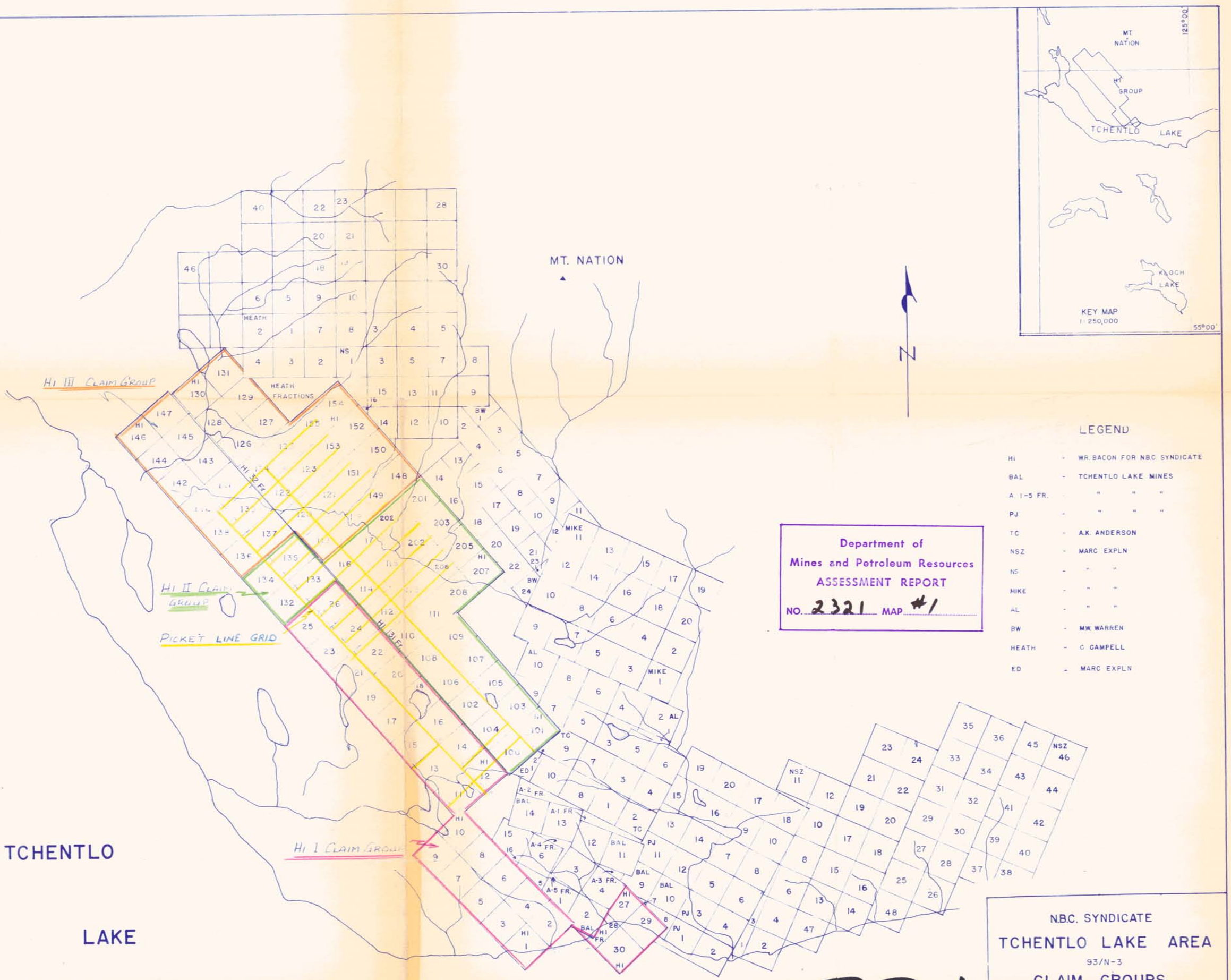
Name		Dates	Rate	Amount
J.C. Stephen,	Exploration Supt.	Mar. 17, 18, 19, 20	$40/day	$160
C. McNeill	Foreman	Feb. 16 - Mar. 5	$30/day	540
M. Wesley	Linecutter	Feb. 16 - Mar. 27	$20/day	800
P. Evans	"	Feb. 16 - Mar. 16	"	580
K. Prince	"	Feb. 25-28, Mar. 3-27	"	560
Joe Bob	"	Mar. 16-21, 23-25	"	180
T. Dominic Jr.	"	Mar. 16-27	"	240
D. Douglas	"	Feb. 20 - Mar. 21	$475/month	540
J. Clarke	"	Feb. 20 - Mar. 20	"	505
P. Stevenson	"	Feb. 20 - Mar. 16	"	450
J. Bilton	"	Feb. 20 - Mar. 16	$450/month	425
		Total		$4980

MAGNETOMETER SURVEY

J. Clarke, Instrument Man	Mar. 21, 22, 26, 27	$475/month	$65
J.C. Stephen, Exploration Supt.	April 2, 3		80
MF-1 magnetometer rental	Mar. 15 - 27	$312/month	120
	Total		$265

EM SURVEY

J.C. Stephen, Exploration Supt.	Mar. 22-27, Apr. 6-8		$360
J. Clarke, Assistant	Mar. 23-25		50
D. Douglas "	Mar. 22-27		100
J. Bob "	Mar. 22, 26, 27		60
McPhar SS-15 rental	Mar. 15-27	$18/day	215
	Total		$785
Equipment and camp supplies including snowshoes, power saws, groceries, gas & oil	278 manshifts @	$4/shift	$1110
Northern Mountain Airlines	Feb. 18, 19, 20, Mar. 16, 27		
	Fixed Wing - total $851.00		
	Helicopter - total 1301.00		$2152
	Overall Total Cost		$9292



LEGEND

HI	-	WR. BACON FOR NBC SYNDICATE
BAL	-	TCHENTLO LAKE MINES
A 1-5 FR.	-	" " "
PJ	-	" " "
TC	-	A.K. ANDERSON
NSZ	-	MARC EXPLN
NS	-	" "
MIKE	-	" "
AL	-	" "
BW	-	M.W. WARREN
HEATH	-	C. CAMPELL
ED	-	MARC EXPLN

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TCHENTLO LAKE AREA

93/N-3

CLAIM GROUPS

SCALE 1" = 1/2 MILE OCT. 1969
APRIL 1970

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FIGURE 1

HI 154 HI 152 HI 150 HI 148 HI 201 HI 203 HI 205

HI 155 HI 153 HI 151 HI 149 HI 202 HI 204 HI 206

HI 125 HI 123 HI 121 HI 119 HI 117 HI 115 HI 113

HI 124 HI 122 HI 120 HI 118 HI 116 HI 114 HI 112

HI 141 HI 139 HI 137 HI 135 HI 133 HI 26 HI 24

HI 140 HI 138 HI 136 HI 134 HI 132 HI 25 HI 23

Granodiorite

C1

C

?

D

B

A

CREEK

CREEK

CREEK

Spring

Spring

Spring

Limestone

58NE B.L.

58NE B.L.

30NE B.L.

HI 32 Fr.

HI 31 Fr.

240 N.W. 232 N.W. 224 N.W. 216 N.W. 208 N.W. 200 N.W. 192 N.W. 184 N.W. 176 N.W. 168 N.W.

LEGEND

T2 SSI5 TRANSMITTER LOCATION

T2 LINE OF READINGS FROM T2

5000'1000 cps DIP ANGLE READINGS

INDICATED CONDUCTOR INFERRED, WEAK OR NORMAL

.32 SOIL SAMPLE TOTAL COPPER P.P.M.

N.B.C. SYNDICATE

HI CLAIM GROUP

TCHENTLO LAKE 93N-3

E.M. SURVEY

MCPHAR SSI5

Scale 1"-200' April 1970

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To accompany Geological Report by W.R. Bacon, P.Eng. on the HI 1, 11 & 111 Claim Groups Tchentlo Lake 93N-3 Omineca Mining Division Dated April 15/70

W.R. Bacon, P.Eng.

PLATE II

Granodiorite

ZONE III

ZONE II

ZONE I

Limestone

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TO ACCOMPANY GEOPHYSICAL REPORT
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OMINECA MINING DIVISION
DATED April 15/70.

N.B.C. SYNDICATE
HI CLAIM GROUP
TCHENTLO LAKE 93N-3
MAGNETOMETER SURVEY
4500 Reading in gammas
Contour interval 100 gammas.
Scale 1"-200' April 1970

PLATE I