#### COMINCO LTD.

EXPLORATION N.T.S. 82M/13 WESTERN DISTRICT

# INDUCED POLARIZATION, VLF-EM, AND MAGNETICS SURVEY CK CLAIMS

Raft River Area, B.C., Kamloops Mining Division

Latitude: 51°55'N; Longitude 119°35'W

Work Performed: July 28 - August 8, 1978 On Claims: CK 1, 2, 3, 13, 47, 48, 81,



OCT08ER 1978

ALAN SCOTT

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#### **ATTACHMENTS**

Plate 132-78-1a 132-78-2a 132-78-3a 132-78-14 to 29	General Location Map CK Claim Map Magnetic data values and contour plan Induced Polarization and Apparent Resistivity Pseudo Sections, VLF Profiles where obtained.
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#### INTRODUCTION

The CK claims are located some 150 kilometers north of Kamloops, B.C., as indicated on the accompanying location plan, plate 132-78-1a. The lines surveyed are indicated on the claim map, plate 132-78-2a.

During the period July 28 - August 8, 1978, a Cominco geophysical crew under the direction of G. J. Niemeyer, geophysical technician, completed some 13.0 line kilometers of total field magnetics survey, some 12.6 line kilometers of VLF-Electromagnetics survey, and some 12.9 line kilometers of induced polarization survey. The surveys were an extension of work done earlier in the season, and which has been filed in an earlier report for assessment credits (June 1978).

This report describes these geophysical surveys, and discusses the results obtained.

#### LOCATION AND ACCESS

The CK claims lie at approximate geographic coordinates of 51°55'N latitude, by 119°35'W longitude and are in the Kamloops Mining Division.

Access is by Highway No. 5 some two and a half miles north of Clearwater then by logging road along the west side of Raft River to McClosky Creek.

#### GEOPHYSICAL SURVEYS

Magnetic Survey

The magnetic survey was done by Boris Lumm, and John Reader. A Scintrex MP-2 total field proton precession magnetometer was used. The instrument has a digital display that reads to the nearest gamma. The data was corrected for diurnal variation using the usual base and sub base station looping method.

Readings were normally taken at 25 meter intervals on cross lines 100 meters apart, with fill in work done in anomalous areas. The data is presented in contour plan form as accompanying plate 132-78-3a.

#### VLF Survey

The VLF survey was also conducted by Boris Lumm and John Reader. A Crone Radem VLF-EM receiver was utilized on the survey, with station NLK (Seattle, Washington at 18.6 KHz) serving as the primary VLF field. The dip angle of the resultant field and the horizontal component of the field strength were the parameters measured on the survey, and they are presented in profile form on the IP pseudo sections.

Readings were taken at 25 meter intervals. The dip angle data is plotted so as to give a "left wave crossover" over a conductor.

#### Induced Polarization

G. J. Niemeyer, geophysical technician, was the party chief/receiver operator on the IP survey.

A Scintrex IPR-8 receiver in combination with a Huntec 7.5 KW motor generator/transmitter were deployed on the survey. The equipment measures the chargeability response in the time domain, employing a 2 second current on and 2 second current off alternating polarity square wave signal. The data plotted is the  $M_{232}$  value and the units are millivolts per volt. To convert to the more usual millisecond value (such as would be obtained with the IPR-7) the values should be multiplied by 0.7 for a "typical" decay curve. The reader is referred to the Scintrex manual for a more detailed discussion of this instrument.

The pole-dipole electrode array was used on the survey, with an "a" spacing of 50 meters and "n" separations of 1,2,3, and 4. Readings were taken at 50 meter intervals on crosslines 100 meters apart. In addition, a few lines were surveyed with an "a" spacing of 25 meters to obtain a more precise location of the anomaly. The chargeability and apparent resistivity data is presented in standard pseudo section form on accompanying plates 132-78-14 to 132-78-29 inclusive.

#### DESCRIPTION OF RESULTS

#### Mangetic Survey

The magnetic data is presented in contour plan form on plate 132-78-3a. The magnetics data from the earlier survey (reported on in June 1978) is also shown on the plan, but in lighter print. The overall strike of the magnetic contoursis from south south east to north north west, and presumably this reflects the geological strike.

The strongest magnetic highs that were detected on the survey are centered at the following locations:

Line 6 + 00S; 1300 meters E. Line 0 + 50N; 350 meters E. Line 4 + 00N; 700 meters E. Line 9 + 00S; 1575 meters E.

#### VLF Survey

The VLF field strength and dip angle data is plotted in profile form on the IP pseudo sections, plates 132-78-14 to 29. The dip angle data is plotted so as to give a left wave crossover over the conductor.

Due to fairly abrupt changes in topography in the survey area, care must be taken in evaluating the VLF results. The objective of the VLF survey was that if a VLF conductor was detected coincidentally with an IP anomaly, it would assist in interpretation of that IP anomaly.

VLF conductors without coincident IP response, are not considered to be of interest.

The best defined VLF conductor of the survey is on line 7 + 00S. The dip angle crossover is located at 1350 meters east, with the field strength anomaly lying between 1350 to 1375 meters east. It is coincident with a chargeability high.

#### Induced Polarization Survey

The induced polarization (chargeability) and apparent resistivity data is presented in standard pseudo section format as plates 132-78-14 to 132-78-29.

Detail work at an "a" spacing of 25 meters was done over an anomaly detected on the earlier survey (June 1978), in particular, lines 1 + 00N, 1 + 50N, and 2 + 00N were resurveyed. The anomaly peaks at 74 millivolts/volt on line 2 + 00N (n = 2), and at 54 mv/v on line 1 + 50N.

Detail work was also done over a "new" anomaly on lines 6 + 50, 7 + 00, 7 + 50S, and 8 + 00S. This anomaly in coincident with a magnetic high and weak VLF EM conductors. The strongest IP response is on line 7 + 50S, where a reading of 55 mv/v was obtained (a = 25n, n = 4). Lower amplitude anomalies were detected both to the NNW and SSE of this central anomaly, - 4 -

and on strike to it.

A broader zone of high chargeability values strikes subparallel, and to the east of, this zone. It is characterized by higher resistivities and poorly defined chargeability highs, more indicative of high background response, than of distinct anomalies.

#### CONCLUSIONS

Geophysical survey work which was done in the early summer of 1978, was expanded upon in the late summer of 1978. The earlier work was filed for assessment credits in a separate report (June 1978).

Portions of the CK claims were surveyed by multi separation pole dipole time domain IP, total field magnetics, and VLF electromagnetics.

Two anomalous zones of coincident high chargeability, high magnetic field strength, and weak VLF conductors, were detailed with the IP method at a shorter spacing.

The overall geophysical trends, within which these anomalies lie, are open to the NNW and SSE. If encouraging results are obtained in evaluating the source of these anomalies, further survey work along this trend is warranted.

Respectfully submitted by: Alan Scott Geophysicist Endorsed for Release by: areien Manager, Exploration Western District

ARS/hmr <u>3 October 1978</u> <u>Distribution:</u> Mining Recorder (2) Western District (1) Geophysics File (1)

#### APPENDIX I

IN THE MATTER OF THE B.C. MINERAL ACT

AND IN THE MATTER OF A GEOPHYSICAL PROGRAMME

CARRIED OUT ON PORTIONS OF THE CK MINERAL CLAIMS

ON THE CK PROPERTY

LOCATED 150 KM NORTH OF KAMLOOPS IN THE KAMLOOPS MINING DIVISION

OF THE PROVINCE OF BRITISH COLUMBIA MORE PARTICULARLY

N.T.S. 82M/13

#### <u>STATEMENT</u>

I, ALAN SCOTT, OF THE CITY OF VANCOUVER IN THE PROVINCE OF BRITISH COLUMBIA, MAKE OATH AND SAY: -

- THAT I AM EMPLOYED AS A GEOPHYISICIST BY COMINCO LTD. AND, AS SUCH, HAVE A PERSONAL KNOWLEDGE OF THE FACTS TO WHICH I HEREINAFTER DEPOSE;
- THAT ANNEXED HERETO AND MARKED AS "APPENDIX II" TO THIS STATEMENT IS A TRUE COPY OF EXPENDITURES INCURRED ON GEOPHYSICAL SURVEY AND LINECUTTING ON THE CK MINERAL CLAIMS;
- 3. THAT THE SAID EXPENDITURES WERE INCURRED BETWEEN THE 28th OF JULY, AND THE 8th OF AUGUST, 1978, FOR THE PURPOSE OF MINERAL EXPLORATION OF THE ABOVE NOTED CLAIMS.

Alan Scott, Geophyisicist

### APPENDIX II

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#### CK CLAIMS

## STATEMENT OF EXPENDITURES

# (Line Cutting; IP, VLF, and Magnetic Surveys)

SALARIES: (Field work done July 28 - Au	gust 8 inclusive)		
G.J. Niemeyer11 days @ \$120.00/dayR. Grant11 days @ \$82.00/dayI. Cummings11 days @ \$82.00/dayJ. Reader11 days @ \$82.00/dayB. Lumm11 days @ \$82.00/dayT. Maurer11 days @ \$82.00/dayMaurer11 days @ \$82.00/dayMaurer11 days @ \$82.00/day	\$ 1,320.00 902.00 902.00 902.00 902.00 902.00 902.00		
		\$	6,732.00
MISCELLANEOUS:			
Food, lodging, gas, consumables			2,686.38
OPERATING CHARGES:			
(towards report, drafting, supervision) 10 survey days @ \$175.00/day			1,750.00
EQUIPMENT RENTALS AND CHARGES:			
10 survey days @ \$282.00/day 1 day truck rental only @ \$30.00/day	2,820.00 30.00		
			2,850.00
LINE CUTTING:			
13.9 kilometers @ \$330.00/km		_	4,587.00
	TOTAL: -	\$	16,855.38
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Alan Scott, Geophysicist

#### APPENDIX III

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#### CERTIFICATION

I, Alan Scott, of 4013 West 14th Avenue, in the city of Vancouver, in the Province of British Columbia, do hereby certify that: -

- I graduated from the University of British Columbia in 1970 with a B.Sc. in Geophysics.
- I am a member of the Association of Professional Engineers of the Province of Saskatchewan, the Society of Exploration Geophysicists of America, and the British Columbia Geophysical Society.
- I have been practising my profession for the past eight years.

J. Alan Scott,

Geophysicist

ARS/hmr 3 October 1978























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DWG NO 132-78-19

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DWG NO 132-78-2!

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SURVEYED BY COMINCO LTD., EXPLORATION DIVISION

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OWG NO 132-78-29

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K. PROPERTY	Alerter NTS 62 M 13
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