

#### A GEOPHYSICAL REPORT

ON

#### AN INDUCED POLARIZATION SURVEY

Taseko Lake Area, B.C. 51° 30'N, 123° 37' W N.T.S. 92 0/5 & 12

CLAIMS SURVEYED:

MIKE 2, TASK 9, 10 & 11

SURVEY DATES:

October 15th - 23rd, 1992

OWNER/OPERATOR:

PIONEER METALS CORPORATION

Vancouver, B.C.

GEOLOGICAL BRANCH ASSESSMENT REPORT

<sup>BY</sup>22,775

PETER E. WALCOTT & ASSOCIATES LIMITED

Vancouver, British Columbia

JANUARY 1993

### TABLE OF CONTENTS

			Page
INTRODUCTION			1
PROPERTY, LOCATION & ACCESS			2
PURPOSE			3
PREVIOUS WORK			4
GEOLOGY			5
SURVEY SPECIFICATIONS			6
DISCUSSION OF RESULTS			7
SUMMARY, CONCLUSIONS & RECOMMENDATION	1S		8
APPENDIX			
COST OF SURVEY			i
PERSONNEL EMPLOYED ON SURVEY			íí
CERTIFICATION			iii
CLAIM & GRID LOCATION MAP			
ACCOMPANYING MAPS - Scale 1:5,000		<u>M.</u>	AP POCKET
CONTOURS OF APPARENT CHARGEABILITY	a = 75m	n = 3	W-500~1
CONTOURS OF APPARENT RESISTIVITY	a = 75m	n = 3	W-500-2

#### INTRODUCTION.

Between October 15th and 23rd, 1992, Peter E. Walcott & Associates Limited undertook a reconnaissance induced polarization (I.P.) survey over parts of a property, located in the Taseko Lake area of British Columbia, for Pioneer Metals Corporation.

The property is situated adjoining and encompassing the northern half of the Fish Lake property of Taseko Mines Limited where advanced stage definition drilling has reportedly confirmed preliminary reserves of 1.2 billion tonnes of 0.52% copper equivalent - 0.23% copper and 0.012 ounces of gold per tonne.

The survey was carried out over five east-west flagged "chain and compass" lines established by the geophysical crew at 400 metre intervals from a handcut north-south baseline.

Measurements (first to fourth separation) of apparent chargeability and resistivity were made every 75 metres along the lines using the pole-dipole method of surveying with a 75 metre dipole.

The I.P. data is presented in contour form on individual pseudo-sections bound in this report. In addition the third separation chargeability and resistivity readings are shown on plan maps of the line grid - Map W-500-1 & 2 - that accompany this report.

#### PROPERTY, LOCATION & ACCESS.

The property is located in the Clinton Mining Division of British Columbia and consists of the following claims:

Claim Name	Record No.	No. of Units	Anniversary
TASK 6	2436	10	October 26th
TASK 8	2438	20	October 26th
TASK 9	2439	20	October 26th
TASK 10	2440	20	October 26th
TASK 11	2441	20	October 26th
MIKE 1	2460	20	November 13th
MIKE 2	2461	20	November 13th
MIKE 3 Fr	2488	1	December 8th

The claims are situated on the western extreme of the Chilcotin Plateau east of the Taseko River between Cone Hill and Fish Lake, some 130 kilometres southwest of the town of Williams Lake, British Columbia.

Access was obtained from Williams Lake by paved highway (90 kilometres) to the settlement of Hanceville, then by good all weather gravel road - Taseko Lake - Nemaiah Valley road - for some 70 kilometres to the Davidson Bridge, and thence south along the east side of the river on the Fish Lake access road.

- 3 -

#### PURPOSE.

The purpose of the survey was to (a) carry out sufficient work to meet the necessary work requirements to keep the property in good standing for another year and (b) in view of its geological setting to test its potential to host porphyry style copper mineralization such as at Fish Lake 2 kilometres to the south by conducting first pass widely spaced induced polarization traverses.

- 4 -

#### PREVIOUS WORK.

Previous work on the property and in the immediate area has consisted of airborne magnetic, VLF electromagnetic surveying, prospecting and mapping, geochemical surveying, induced polarization surveying and diamond drilling.

Work on the property itself, apart from the airborne coverage, has been limited to geochemical surveying and some rotary hole drilling to the best of the writer's knowledge.

For further detail the reader is referred to numerous reports on the above held by Pioneer Metals Corporation.

- 5 -

#### GEOLOGY.

The reader is referred to the previously mentioned numerous published and unpublished reports on the Fish Lake deposit and surrounding area.

Generally the area is underlain by a northwesterly trending Cretaceous volcanic and associated clastic sequence intruded by porphyries and diorites of probable Tertiary age. In some places flat-lying younger Tertiary mafic volcanic flows and tuffs cover the earlier sequences.

Mapping by Tipper (1978) shows the centre of the pluton that hosts the Fish Lake deposit to underlie the northern central portion of the property, with conglomerates and siltstones of the Kingsvale Group to the west.

Mineralization found on the property to date has been limited to pyrite with scattered copper mineralization in quartz diorite obtained in a short diamond drill hole collared in the southwest corner of the TASK 9 claim during the 1991 work assessment programme. Assays up to 0.41% copper were obtained from this zone.

- 6 -

#### SURVEY SPECIFICATIONS.

The induced polarization (I.P.) survey was conducted using a pulse type system, the principal components of which are manufactured by Huntec Limited of Metropolitan Toronto, Ontario, and BRGM Instruments of Orleans, France.

The system consists basically of three units, a receiver (BRGM), a transmitter and a motor generator (Huntec). The transmitter, which provided a maximum of 2.5kw d.c. to the ground, obtains its power from a 2.5 kw 400 c.p.s. three phase alternator driven by a gasoline engine. The cycling rate of the transmitter is 2 seconds "current-on" and 2 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 the current electrodes  $C_1$  and  $C_2$ , the primary voltages (V) appearing between any two potential electrodes,  $P_1$  through  $P_7$ , during the "current-on" part of the cycle, and the apparent chargeability, (Ma) presented as a direct readout in millivolts per volt using a 200 millisecond delay and a 1000 millisecond sample window by the receiver, a digital receiver controlled by a micro-processor - the sample window is actually the total of ten individual windows of 100 millisecond widths.

The apparent resistivity ( $\lceil_a$ ) 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 are called apparent as they are values wich 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 "pole-dipole" method of surveying. In this method the current electrode,  $C_1$ , and the potential electrodes,  $P_1$  through  $P_2$ , are moved in unison along the survey lines at a spacing of "a" (the dipole) apart, while the second current electrode,  $C_2$ , is kept constant at "infinity". The distance, "na" between  $C_1$  and the nearest potential electrode generally controls the the depth to be explored by the particular separation, "n", traverse.

On this survey a 75 metre dipole was employed and first to fourth separation readings were obtained.

In all some 24.3 kilometres of line were established, and some 20.1 kilometres of I.P. traversing were completed using the above method.

-7-

#### DISCUSSION OF RESULTS.

The I.P. surveys conducted on the property and surrounding areas showed them to exhibit a low chargeability background - 3 to 7 millivolts/volt - similar to those obtained on the 1980 surveys by Cominco over the Fish Lake property.

This background is seen on the eastern extremities of the five traverses but is particularly apparent on the eastern extension of Line 4300 N where previously drilled bedrock investigation rotary holes encountered mostly fresh intrusive rocks.

Above this a complex area of high chargeability, some 3000 by 1600 metres in dimension, is clearly discernible striking across the area surveyed as outlined by the 10 millivolt/volt contour on Map W-500-1, the contour plan of the third separation data. In fact this zone is best outlined by the area above by the 12.5 millivolt/volt plateau on the plot of the Fraser filtered chargeability profiles - 10 point moving average - shown on the respective pseudosections.

This zone encompasses the postulated intrusive-sediment contact on the west and was undefined there except on Line 4300 N where higher chargeability and lower resistivity suggest the occurrence of graphitic argillaceous material due to the steepness of the terrain and heavy snow conditions which made passage treacherous.

Within the zone two areas exhibiting chargeabilities greater than 30 millivolt/volt form a halo around a central core with chargeabilities in the high teens and low twenties, a pattern not unlike that seen over Fish Lake deposit, where the disseminated sulphide content of the rocks appears reflected in the chargeability strength.

The area overlying the western half of the zone was covered by 400 metre <u>spaced geochemical traverses</u> by Cominco in the early 80's where a weak copper anomaly trending northwards for some 1200 metres and open to the north was obtained on the eastern side of the coverage. This area incidentaly is underlain mostly by swamp which could be indicative of recessive weathering.

#### SUMMARY, CONCLUSIONS & RECOMMENDATIONS.

Between October 15th and 23rd, 1992, Peter E. Walcott & Associates Limited carried out a large separation pole-dipole induced polarization reconnaissance work assessment programme on a property, located adjoining one hosting the Fish Lake deposit in the Taseko Lake area of British Columbia, for Pioneer Metals Corporation.

PETER E. WALC

The five east-west traverses revealed a large moderate to high intensity chargeability zone trending undefined across the property believed by the writer to be the signature of a sulphide system similar to the one hosting the Fish Lake deposit.

As a result he recommends that further work be carried out on the property to better investigate this potential sulphide system. To this end he suggests that the following programme be implemented:

- (1) Extend the baseline southwards to the Taseko border and establish fill in lines 200
  - metres apart with appropriate extensions to the west.
- (2) Complete the I.P. coverage on these lines.
- (3) Conduct geochemical surveying on the grid with systematic geological mapping.
- (4) Diamond drill test the targets resolved by the first three phase one.

A budget of some \$60,000.00 is envisaged for phase one, whereas one of upwards of \$300,000.00 should be considered for the borehole investigation phase.

Respectfully submitted,

PETER E. WALCOTT & ASSOCIATES LIMITED

Peter E. Walcott, P.Eng.

Geophysicist

Vancouver, B.C. January 1993

APPENDIX

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- i -

#### COST OF SURVEY.

Peter E. Walcott & Associates Limited undertook the survey on a daily basis. Mobilization and reporting costs were extra so that the total cost of services provided was \$25,740.00.

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\$25,740.00 =======

### COST OF SURVEY.

Peter E. Walcott & Associates Limited undertook the survey on a daily basis. Mobilization and reporting costs were extra so that the total cost of services provided was \$25,740.00. This was broken down as follows:

PETER E. WALCOTT & ASSOCIATES LTD

1. Wages					
G. MacMillan	10 0	days	@\$300/day	\$3,000.00	
R. Summerfield	9	11	@\$250/day	\$2,250.00	
P. Charlie	9	11	@\$200/day	\$1,800.00	
M. Kilby	10 0	days	@\$200/day	\$2,000.00	
G. Karakunte	9	11	@\$180/day	\$1,620.00	
S. Lehman	9	11	@\$180/day	\$1,620.00	
D. MacDougall	9	11	@\$180/day	\$1,620.00	
A. Walcott	3	11	@\$250/day	\$750.00	
					\$14,660.00
2. Equipment rentals					2,950.00
3. <u>Vehicles</u> : 10 days at \$223.00 per day				2,230.00	
4. Accommodation: 54 man days at \$40.00 per man day				Ţ	2,160.00
typing, reproduction & collating			750.00		
					\$2,056.07
GST					\$1,683.93

- ii -

#### PERSONNEL EMPLOYED ON SURVEY.

Name	Occupation	Address	<u>Dates</u>
Peter E. Walcott	Geophysicist	Peter E. Walcott & Assoc. 605 Rutland Court, Coquitlam, B.C. V3J 4T8	Oct. 17 - 18, 92 Jan. 20 - 22, 93
G. MacMillan	Geophysical Operator	11	Oct. 15 - 23, 92
P. Charlie	11	Ħ	**
G. Karacunte	Ħ	11	***
M. Kilby	11	<b>H</b>	11
A. Walcott	11	11	Oct. 23, Nov. 20 - 24, 92, Jan. 20, 93
S. Lehman	Geophysical Helper	11	Oct. 15 - 23, 92
D. MacDougall	11	н	
J. Walcott	Typing	Ħ	Jan. 22nd, 1993

#### CERTIFICATION.

I, Peter E. Walcott, of the City of Coquitlam, British Columbia, hereby certify that:

- 1. I am a graduate of the University of Toronto in 1962 with a B.A.Sc. in Engineering Physics, Geophysics Option.
- 2. I have been practising my profession for the last thirty years.
- 3. I am a member of the Association of Professional Engineers of British Columbia and Ontario.

Peter E. Walcott, P.Eng.

Vancouver, B.C. January 1993















