ASSESSMENT REPORT SX CLAIM TENURE 503897 FORT STEELE MININE DIVISION P. KLEWCHUK SEPT. 2005



#### ASSESSMENT REPORT on

**!** 

# GROUND GEOPHYSICS (VLF-EM)

Tenure 503897 (SX Claim)

Tracy Creek Area Southeastern British Columbia

Fort Steele Mining Division

UTM 600300E 5514800N

#### TRIM Map 82G.072

Owner: Daniel Klewchuk

Report by: Peter Klewchuk, P. Geo. September, 2005

# TABLE OF CONTENTS

•

		Page
1.00	INTRODUCTION	1
	1.10 Location and Access	1
	1.20 Property	1
	1.30 Physiography	1
	1.40 History of Previous Exploration	1
	1.50 Purpose of Survey	1
2.00	GEOLOGY	4
3.00	VLF-EM SURVEY	4
	3.10 Introduction	4
	3.20 VLF-EM Survey	4
	3.21 Instrumentation and Survey Procedure	4
	3.22 Discussion of Results	5
4.00	CONCLUSIONS	5
5.00	REFERENCES	7
6.00	STATEMENT OF EXPENDITURES	7
7.00	AUTHOR'S QUALIFICATIONS	7

# LIST OF ILLUSTRATIONS

Figure 1. Property Location Map	2
Figure 2. Claim Map	3
Figure 3. VLF-EM Data; Dip Angle and Fraser Filter Values	6

#### 1.00 INTRODUCTION

#### 1.10 Location and Access

Tenure 503897 is located in southeastern British Columbia, approximately 28 kilometers ENE of Kimberley, B. C., in the headwaters of Tracy Creek and about 800 meters northwest of the Estella Mine workings (Fig. 1). Road access is off the Lazy Lake Road, along either an old road / ATV trail along Tracy Creek or from the Lewis Creek / Estella Mine Road.

## 1.20 Property

Tenure 503897 is approximately 62.6 Ha in size but portions of it overly some of the Estella Mine area Crown Granted Mineral Claims. Tenure 503897 is owned by D. Klewchuk of Kimberley, B. C.

## 1.30 Physiography

Tenure 503897 is on the east side of the Rocky Mountain Trench in the Hughes Range of the Rocky Mountains (Fig.1). The property is located in the upper part of Tracy Creek (Fig. 2) in relatively steep mountainous topography on the western edge of the Rocky Mountains. Elevations on the claim range from about 1650 to 2000 meters.

## 1.40 History of Previous Exploration

The Estella Mine, a small former producer of lead-zinc-silver ore, is located less than a kilometer southeast of the property. Recent exploration in the area of interest has been undertaken by Cominco Ltd. who in 1989 (AR 19,671; Jackish, 1990) carried out a ground UTEM geophysics program over part of what is now Tenure 503897.

## 1.50 Purpose of Survey

A reconnaissance ground geophysics (VLF-EM) survey was conducted on the SX property (Tenure 503897) to identify structures that may be related to base metal sulfide mineralization. Tenure 503897 is roughly on strike of the northwest-trending Estella lead-zinc-silver vein to the southeast. The Tracy Creek Fault, which also trends northwesterly and parallels the drainage of Tracy Creek, may be related to the Estella vein.

1





#### 2.00 GEOLOGY

The area of Tenure 503897 is covered by Preliminary Map 36, Geology of the Estella-Kootenay King Area, Hughes Range, by T. Hoy (1979). Hoy's map shows the property to be underlain by rocks of the Aldridge Formation which generally strike northerly and dip steeply to moderately east. Details of the stratigraphy can be found in Hoy, (1979).

#### 3.00 VLF-EM SURVEY

3.10 Introduction

Cominco's UTEM survey (1989) identified a number of anomalous conductive responses that could be interpreted as northwest-trending features, parallel to the Estella vein and the Tracy Creek Fault. A series of roads on the property were surveyed with VLF-EM to detect extensions of these (Cominco UTEM) anomalies on Tenure 503897. In addition one of Cominco's old UTEM lines (Line 1800S, oriented at  $017^{0}$ ; Figure 3) was located and re-surveyed with VLF-EM.

#### 3.20 VLF-EM Survey

## 3.21 Instrumentation and Survey Procedure

The VLF-EM (Very Low Frequency Electromagnetics) method uses powerful radio transmitters set up in different parts of the world for military communication and navigation. In radio communication terminology, VLF means very low frequency, about 15 to 25 kHz. However, relative to frequencies generally used in geophysical exploration, the VLF technique actually uses very high frequencies. A Crone Radem VLF-EM receiver, manufactured by Crone Geophysics Ltd. of Mississauga, Ontario, was used for the VLF-EM survey. Seattle, Washington, transmitting at 24.8 kHz and at an approximate azimuth of 247° from the survey area, was used as the transmitting station.

In all electromagnetic surveying, a transmitter produces an alternating magnetic (primary) field by a strong alternating current usually through a coil of wire. If a conductive mass such as a sulfide body is within this magnetic field, a secondary alternating current is induced within it, which in turn induces a secondary magnetic field that distorts the primary magnetic field. The VLF-EM receiver measures the resultant field of the primary and secondary fields, and measures this as the tilt or 'dip angle'. The Crone Radem VLF-EM receiver measures both the total field strength and the dip angle.

ļ

#### Page 5

The VLF-EM uses a frequency range from about 15 to 28 kHz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because of its relatively high frequency, the VLF-EM can detect zones of relatively lower conductivity. This results in it being a useful tool for geologic mapping in areas of overburden but it also often results in detection of weak anomalies that are difficult to explain. However the VLF-EM can also detect sulfide bodies that have too low a conductivity for other EM methods to pick up.

For control, various points on the roads and survey line were located using a Garmin 76 handheld GPS receiver. All survey lines were measured with a hip-chain with VLF-EM readings (field strength and dip angle) taken at 25 meter spacings. Results were reduced by applying the Fraser Filter and both dip angle and Fraser Filter values are shown on the survey lines in Figure 3. The Fraser Filter is essentially a 4-point difference operator which transforms zero crossings into peaks, and a low pass operator which induces the inherent high frequency noise in the data.

Thus the noisy, often non-contourable data are transformed into less noisy, contourable data. Another advantage of this filter is that a conductor which does not show up as a zero crossover in the unfiltered data quite often shows up in the filtered data.

## 3.22 Discussion of Results

The strongest VLF-EM anomaly occurs near the south end of the old Cominco UTEM line that was surveyed (Fig. 3). The anomaly is centered about 75 meters south of Tracy Creek and may reflect the Tracy Creek Fault. Weak VLF-EM anomalies occur on the reconnaissance road survey lines along a southeast projection from this anomaly. This supports the possibility of a northwest feature such as the Tracy Creek Fault, or an extension of the Estella vein, being the cause.

The second strongest VLF-EM anomaly occurs at the south end of the western reconnaissance road survey line, along the south boundary of the claim (Fig. 3).

Another weak response (Fraser Filter of 6) occurs on the eastern road line at the north boundary of the claim.

Further grid surveying is required to determine the orientation and continuity of the anomalies.

# 4.00 CONCLUSIONS

Reconnaissance VLF-EM surveying on the SX claim (Tenure 503897) in March of 2005 defined one stronger, one moderate and four weaker responses. The strongest anomaly is near the inferred trace of the Tracy Creek Fault and may be related to this structure or an extension of the west-northwest trending Estella lead-zinc-silver vein. Further exploration is warranted and should include delineation of the VLF-EM anomalies by grid surveying, as well as geologic mapping to correlate the VLF-EM anomalies with geologic features.



#### 5.00 REFERENCES

- Hoy, T., 1979, Geology of the Estella-Kootenay King area, Hughes Range, southeastern British Columbia; BCMEMPR, Preliminary Map 36, and Notes to accompany Preliminary Map 36.
- Jackish, I., 1990, Geophysical Report on the Estella Property, BC Ministry of Energy and Mines, Assessment Report 19,671.

#### 6.00 STATEMENT OF EXPENDITURES

Field work (2 days) and report (1 day); 3 days @ \$350.00/day	\$1050.00		
4X4 truck 2 days @ \$75.00/day	150.00		
ATV (Access up Tracy Creek Trail) 2 days @ \$50/day	100.00		
VLF-EM rental 2 days @ \$30/day	60.00		
Field and report supplies	47.00		
Work completed March 27-29, 2005			
Total expenditure	\$1407.00		

# 7.00 AUTHOR'S QUALIFICATIONS

As author of this report I, Peter Klewchuk, certify that:

- 1. I am an independent consulting geologist with offices at 246 Moyie Street, Kimberley, B.C.
- 2. I am a graduate geologist with a B.Sc. degree (1969) from the University of British Columbia and an M.Sc. degree (1972) from the University of Calgary.
- 3. I am a Fellow of the Geological Association of Canada and a member of the Association of Professional Engineers and Geoscientists of British Columbia.
- 4. I have been actively involved in mining and exploration geology, primarily in the province of British Columbia, for the past 30 years.
- 5. I have been employed by major mining companies and provincial government geological departments.

Dated at Kimberley, British Columbia, this 15th of	day of September, 200	5. PROVINCE
	Peter Klewchuk	P. KLEWCHUK
	P. Geo.	COCORDER / BOAR
		N Cacient M

ŧ