



*Osilinka R area  
Near Lorraine Cu*

675808  
QAT  
93N/13

MEMORANDUM

Date: 23 November 1989

To: The Directors,  
Lysander Gold Corporation

From: D.K. Mustard, Director

Subject: Alkali Porphyry Au/Cu Deposits in British Columbia with special reference to the Cat Mountain property.

The alkali porphyry Au/Cu deposits of British Columbia occur in a very specific geological setting, the Quesnel Trough, a linear belt of volcanic rocks and coeval intrusive rocks. Their importance as a source of gold is being increasingly recognised, especially in view of developments at Mt. Polley and Mt. Milligan. It may not be too much to say that these porphyry deposits as a source of gold in British Columbia may eventually rank in importance with the Carlin Trend in Nevada.

Historically, these porphyries were identified and mined as copper deposits with precious metals search excluded during exploration. In spite of this, significant amounts of gold were recovered as a by-product of the copper concentrates.

Figures for the two properties of this type that were mined in British Columbia are as follows:

PROPERTY	<u>AU/CU PORPHYRY - MINES</u>		TOTAL Au (thou. oz.) (Prodn. + Reserves)
	<u>BRITISH COLUMBIA</u>		
	----- PRODUCTION ----- Cu (mil. lbs)	Au (thou. oz.)	
PRINCETON (Cassiar):			
Copper Mountain/ Ingerbelle	1,600	610	910
AFTON (Teck):			
Afton/Ajax	680	380	970

Alkali Porphyry Au/Cu Deposits in B.C. (cont.):

Further to the north, three properties have reached the feasibility stage:

AU/CU PORPHYRY - FEASIBILITY  
BRITISH COLUMBIA

PROPERTY	Number of Ore Bodies	----- MINERAL INVENTORY -----	
		Cu (mil. lbs)	Au (thou. oz.)
MT. POLLEY (Imperial/Teck)	5	875	2,000
Q.R. (QPK)	4	--	200
MT. MILLIGAN (Continental/BP)	4	2,000	5,000

A number of such properties exist that were explored in the past mainly for their copper content and are increasingly being re-examined for their gold content. These are apart from new discoveries that derive from the more recent activity, some of which are as follows:

AU/CU PORPHYRY - EXPLORATION  
BRITISH COLUMBIA

PROPERTY	Number of Ore Bodies	----- MINERAL INVENTORY -----	
		Cu (mil. lbs)	Au (thou. oz.)
LORRAINE (Kennecot)	2	150	100
RED CHRIS (Noranda)	2	550	450
GALORE CREEK (Hudsons Bay et al)	8	3,000	1,750
SULPHURETS (Newhawk/Corona)	3	900	3,500
KERR (Placer Dome)	?	1,600	1,500

It is anticipated that substantial additional reserves of gold will be established. New programs have commenced, for example, on the Chuchi, Tas and Col properties in the Mt. Milligan area and on Cat Mountain near Lorraine.

The Cat property was first examined for lode gold in the 1950's and for copper in the 1970's. However, the first discovery of widespread gold was made in 1984 by Dr. S.J. Hoffman and exploration of these gold anomalies was commenced by Lysander during the current year.

These deposits have very specific characteristics in British Columbia which provide good exploration targets.

Alkali Porphyry Au/Cu Deposits in B.C. (cont.):

Some of these characteristics are listed below:

	<u>Polley</u>	<u>Milligan</u>	<u>Cat</u>
1. Age:			
- Upper Jurassic-Lower Triassic volcanism	*	*	*
2. Geology:			
(a) Fragmental volcanic rocks	*	*	*
(b) Subvolcanic alkalic stocks and dykes diorite, syenite, monzonite	*	*	*
3. Alteration:			
(a) Potassic (K-feldspar+biotite+magnetite)	*	*	*
(b) Propylitic (chlorite, epidote, carbonate and pyrite)	*	*	*
(c) Albite (sodium silicate)	*	*	*
(d) Carbonate (ankerite)	*	*	*
4. Magnetics:			
- Strong discrete magnetic anomalies, (air and ground)	*	*	*
5. Geochemistry:			
- Good multi-element geochemical expression, including Au and Cu	*	*	*
6. Multiple Ore Bodies:			
- often large (>100 million tons)	*	*	*
7. Peripheral gold/magnetite replacement lodes	*	*	*
8. Sulphide systems - good I.P. response	*	*	*

Following discovery, development can be very rapid. For instance, in about one year Continental has drilled out in excess of 300 million tons. It has been a superb effort for which the Continental staff must be congratulated.

These are large systems and an extensive land situation must be acquired at an early stage. Mt. Milligan, Mt. Polley and Lysander's Cat Mountain land holdings are all in excess of 30 square miles and in each case extensive competitor land acquisition has followed discovery.

CAT PROPERTY

A few general comments on the Cat property, which is still at a relatively early stage of exploration:

1. It has all the classic geological features.

Cat Property (cont.):

2. It shows the strong magnetic characteristics of this type of gold porphyry.
3. There is an outstanding geochemical response in copper and gold and other trace elements.

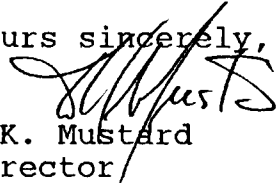
Trenching of gold/copper geochemical anomalies has demonstrated ore grade material in bedrock underlying these anomalies. The results from a small drill program at the end of the season will be useful in guiding planning for a major program next year.

The program on the Cat Mountain property for 1990 is anticipated to cost in excess of \$1 million, and will include a substantial drilling component.

In an introductory paper to the CIMM Porphyry Volume, I described the explosion of exploration that turned Vancouver into a world centre in the 1960's and 1970's. The success at Mt. Milligan has provided the impetus for another great surge in porphyry exploration in B.C., this time for gold and copper. Substantial new reserves of gold will be established during the next few years. The BP/Lysander property will be part of these reserves.

Finally, some years ago I was quoted as saying, "exploration is for racehorses, not carthorses". I would like to thank Lysander for allowing an old horse one last gallop to the winning post.

Yours sincerely,

  
D.K. Mustard  
Director