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REPORT ON

ORE CONTROLS

OF THE HIGHLAND VALLEY

BRITISH COLUMBIA

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VANCOUVER, B.C.
NOVEMBER 22ND, 1968

ROSS KIDD
CONSULTING MINING ENGINEER

INTRODUCTION

THIS REPORT IS THE RESULT OF AN OFFICE STUDY OF THE ORE DEPOSITS OF THE HIGHLAND VALLEY.

THE SOURCES OF THE DATA STUDIED ARE SHOWN IN AN APPENDIX.

MUCH OF THE INFORMATION IS ALSO SHOWN ON THE SET OF 3 OVERLAY MAPS WHICH ACCOMPANY THIS REPORT.

RESULTS OF STUDY

THE COPPER DEPOSITS OF MAJOR SIZE KNOWN TO DATE ARE:

CRAIGMONT, BETHLEHEM, LORNEX, VALLEY COPPER, AND HIGHMONT.

CRAIGMONT AND BETHLEHEM ARE IN SUCCESSFUL PRODUCTION, AND THE REMAINING THREE ARE UNDER DEVELOPMENT.

THE STUDY HAS SHOWN THAT ALL FIVE DEPOSITS HAVE COMMON GEOLOGICAL DENOMINATORS. THESE COMMON FACTORS ARE:

1. ALL ARE LOCATED ON CONTACTS BETWEEN PHASES OF THE GUICHON BATHOLITH.
2. ALL ARE ACCOMPANIED BY A MAGNETIC LOW LOCATED IN THE INNER (YOUNGER) PHASE, AND A MAGNETIC HIGH OR HIGHER GRADIENT IN THE OUTER (OLDER) PHASE. THIS COMBINATION IS REVERSED IN THE CASE OF CRAIGMONT,

WHERE THE LOW IS LOCATED IN THE OUTER PHASE, AND THE HIGH IS ASSOCIATED WITH THE OREBODY ITSELF.

IF A LINE IS DRAWN BETWEEN THE COUPLED MAGNETIC HIGH AND LOW, IN EACH CASE, THE OREBODY LIES VERY CLOSE TO THE POINT WHERE THIS LINE CROSSES THE PHASE CONTACT.

3. ALL ARE LOCATED $\frac{1}{2}$ MILE FROM POINTS ON THE CONTACT WHERE THE STRIKE OF THE CONTACT CHANGES.
4. ALL ARE LOCATED ON THE EAST OR SOUTH MARGINS OF THEIR HOST PHASE.

THESE COMMON FEATURES MAY BE REVIEWED ON THE ACCOMPANYING OVERLAY MAPS.

DISCUSSION OF RESULTS

IT IS REALIZED, OF COURSE, THAT THE ABOVE CONCLUSIONS DO NOT REPRESENT A SCHOLARLY APPROACH TO THE SUBJECT OF ORE CONTROLS. INSTEAD THE APPROACH IS A PRACTICAL, EMPIRICAL, PRAGMATIC ONE. NEVERTHELESS, THE OBSERVED COMMON FEATURES ARE FACTS, AND AT THIS STAGE OF KNOWLEDGE THE EMPIRICAL APPROACH IS REALLY THE ONLY FEASIBLE ONE.

WITH THIS IN MIND, THE REMAINDER OF THE BATHOLITH HAS BEEN EXAMINED, WITH THE OBJECT OF LOCATING SIMILAR SETS OF ORE CONTROLS WHICH MAY BE INDICATORS OF NEW OREBODIES.

APPLICATION OF RESULTS

THREE SIMILAR SETS HAVE BEEN FOUND, AND THESE ARE SHOWN ON THE OVERLAY MAPS AS AREA "A", "B", AND "C", MARKED AS YELLOW CIRCLES.

AREA "A" IS THOUGHT TO BE THE MOST INTERESTING, SINCE IT FOLLOWS IN LOGICAL PROGRESSION DOWN THE CONTACT FROM VALLEY COPPER, LORNEX, AND HIGHMONT.

AREA "B" HAS NEXT PRIORITY, ONLY SLIGHTLY LESS INTERESTING THAN AREA "A".

AREA "C" IS THOUGHT TO BE LEAST PRIORITY, BECAUSE IT IS ON THE WEST SIDE OF THE BATHOLITH.

FURTHER DISCUSSION OF RESULTS

THE FOLLOWING SPECULATIONS ON THE REASONS FOR THE FOUR APPARENT ORE CONTROLS ARE ADVANCED:

CONTROL 1: OREBODIES LOCATED ON ROCK CONTACTS ARE VERY COMMON, AND IT IS PROBABLY NOT FRUITFUL TO DWELL ON THIS CONTROL AT THIS STAGE.

CONTROL 2: THE PRESENCE OF THE SAME AEROMAGNETIC COUPLE IN EACH CASE IS REMARKABLE. REDISTRIBUTION OF MAGNETITE SEEMS INDICATED, WHEREBY RE-ALIGNMENT OF THE MAGNETIC MATERIAL INTO A RUDE BAR MAGNET SHAPE TAKES PLACE, WITH THE POSITIVE POLE AT ONE SIDE OF THE OREBODY AND THE NEGATIVE AT THE OTHER. THE CRAIGMONT OREBODY CONTAINS SOME 25% MAGNETITE, WHICH DOES NOT EXTEND BEYOND THE ORE, AND THIS IS TAKEN AS GOOD EVIDENCE THAT MAGNETITE REDISTRIBUTION HAS ACCOMPANIED SULFIDE DEPOSITION.

CONTROL 3: FLEXURES IN THE ROCK PHASE CONTACTS

PRESUMABLY GIVE RISE TO TENSION OPENINGS WHILE THE PHASE IS BEING EMPLACED OR WHILE SULFIDES ARE BEING INTRODUCED. THE FLEXURES MAY ALSO BE A PRODUCT OF SULFIDIZATION. IN ANY CASE THIS IS A COMMON CONTROL OF SULFIDE BODIES, AND THE LOCUS OF THE BODY IS USUALLY AT SOME DISTANCE FROM THE FLEXURE.

CONTROL 4: THE EAST SIDE OF THE BATHOLITH DISPLAYS A HIGHER GRADE OF METAMORPHISM THAN THE WEST SIDE, ACCORDING TO DR. K. NORTHCOTE. IF SULFIDE DEPOSITION IN QUANTITY HAS TAKEN PLACE ONLY ON THE EAST SIDE, IT MIGHT BE EXPECTED THAT THE EXTRA METAMORPHISM IS A RESULT OF THIS.

IF ONLY ONE OR TWO OF THE KNOWN OREBODIES HAD THE FOUR ORE CONTROLS, IT MIGHT BE SAID THAT THESE WERE ONLY COINCIDENTAL ASSOCIATIONS. WHEN ALL FIVE OREBODIES HAVE THE SAME CONTROLS ANY POSSIBILITY OF COINCIDENCE IS, IN MY OPINION, EFFECTIVELY REMOVED.

IT FOLLOWS, THEN, THAT THE FOUR APPARENT ORE CONTROLS ARE VALID AND MAY BE EXPECTED TO PROVIDE A SOUND BASIS FOR SEARCHING OUT NEW OREBODIES.

ASSESSMENT WORK SEARCH

FOLLOWING UPON THE FOREGOING STUDY, A SEARCH WAS MADE OF THE VICTORIA FILES OF THE DEPARTMENT OF MINES AND PETROLEUM RESOURCES FOR RECORDS OF THE WORK DONE ON THE CLAIMS COVERING THE THREE AREAS OF INTEREST.

THE RESULTS ARE:

AREA "A"

THIS AREA IS COVERED BY CLAIMS BELONGING TO STELLAKO MINING Co. LTD. AND CHATAWAY EXPLORATION Co. LTD.

STELLAKO MINING Co. LTD. HAVE NOT FILED ANY GEOLOGICAL, GEOPHYSICAL, OR GEOCHEMICAL WORK (OR ANY OTHER WORK) AT VICTORIA.

CHATAWAY EXPLORATION Co. LTD. HAVE FILED SEVERAL WORK REPORTS, ONE OF WHICH (No. 611), COVERS THEIR PART OF THE "A" AREA. THIS IS A REPORT, WITH MAPS, ON AN ELECTROMAGNETIC SURVEY CARRIED OUT BY GEOCAL LTD., AND SOME LIMITED IP WORK. THE EM WORK HAS BEEN VERY BADLY INTERPRETED BY CALBERT B. SELMSER. IN ANY CASE, THE WORK WAS DONE WITH 1000 CPS EQUIPMENT, AND IT IS MOST UNLIKELY THAT SULFIDE MINERALIZATION OF THE HIGHLAND VALLEY TYPE WOULD BE DETECTED BY THIS EQUIPMENT. THE IP WORK DOES NOT EXTEND INTO THE "A" AREA. THE RESULTS ARE THEREFORE CONSIDERED TO BE ESSENTIALLY INAPPLICABLE.

COPIES OF THIS REPORT AND MAPS HAVE BEEN ORDERED.

*Interpretation
Results
reversed?
R.K.*

AREA "B"

NO INFORMATION WAS FOUND CONCERNING THE INTERESTING AREA. THE SOUTH CLAIM GROUP OF ORO MINES LIMITED, ABOUT 2 MILES TO THE NORTHEAST, HAS BEEN COVERED BY A GEOCHEMICAL SURVEY. NO SIGNIFICANT ANOMALIES WERE OUTLINED. MR. RAE G. JURY SAYS A MAJOR FAULT STRIKES NE THROUGH THE CENTRE OF THE CLAIM GROUP.

NO WORK HAS BEEN FILED ON THE NEARBY HIGHLAND QUEEN OR B. I. NESBITT CLAIM GROUPS, ALTHOUGH I UNDERSTAND THAT SOME WORK HAS BEEN DONE ON THE NESBITT CLAIMS.

AREA "C"

NO WORK HAS BEEN FILED ON THE B. I. NESBITT OR LITTLE PINE-TEX OR HIGHLAND CHIEF CLAIM GROUPS. SEVERAL REPORTS HAVE BEEN FILED BY T. C. EXPLORATIONS LTD. ONE OF THESE, NO. 853, COVERS THE SOUTH CLAIMS WHICH PARTLY LIE IN AREA "C". MAGNETOMETER AND GEOCHEMICAL SURVEYS WERE CONDUCTED, UNDER THE DIRECTION OF A. F. ROBERTS, P. ENG. SEVERAL GEOCHEMICAL HIGHS (COPPER) WERE LOCATED WITHIN AREA "C". THE WORK WAS DONE IN LATE 1966, AND I HAVE NOT LEARNED WHETHER ANY FOLLOW-UP WORK WAS DONE.

AT THE MOMENT THE WORK RESULTS IN AREA "C" ARE NOT UNFAVORABLE.

COPIES OF THE WORK RESULTS HAVE BEEN ORDERED.

CONCLUSIONS

1. FOUR QUITE DEFINITE ORE CONTROLS FOR THE FIVE KNOWN MAJOR DEPOSITS OF THE HIGHLAND VALLEY HAVE BEEN FOUND.
2. THREE NEW AREAS FOR ORE SEARCH ARE SUGGESTED THROUGH APPLICATION OF THESE CONTROLS OR INDICATORS.
3. THESE CONTROLS ARE CONSIDERED TO BE ENTIRELY VALID, AT THE PRESENT STAGE OF KNOWLEDGE, AND CAN BE USED AS THE BASIS FOR EXTENSIVE EXPLORATION PROGRAMS.

RECOMMENDATIONS

1. THE CLAIMS NEEDED TO ADEQUATELY COVER THE THREE INTERESTING AREAS SHOULD BE ACQUIRED. THE COST MAY BE SUBSTANTIAL.
2. THE AREAS SHOULD THEN BE CAREFULLY PROSPECTED.
3. PICKET LINES SHOULD BE CUT, OR RE-CUT, AND THE AREAS SHOULD BE MAPPED GEOLOGICALLY.
4. TEST GEOPHYSICAL WORK SHOULD BE DONE ON THE KNOWN DEPOSITS, OR DERIVED FROM THE COMPANIES CONCERNED, AND THE METHOD FOUND BEST SHOULD BE USED TO EXPLORE THE THREE AREAS. TRACE GEOCHEMICAL WORK SHOULD BE DONE.
5. PERCUSSION DRILLING SHOULD FOLLOW.

COST ESTIMATES ARE ENTIRELY CONJECTURAL UNTIL THE COST OF ACQUIRING THE GROUND IS KNOWN.

IT SEEMS LIKELY THAT THE BUDGET REQUIRED WOULD
NOT BE LESS THAN \$150,000.

A handwritten signature in cursive script that reads "Ross Kidd". The signature is written in dark ink and is positioned in the center-right of the page.

VANCOUVER, B.C.
NOVEMBER 22ND, 1968

ROSS KIDD
CONSULTING MINING ENGINEER

INTER OFFICE MEMO

CYPRUS EXPLORATION CORPORATION LTD.
VANCOUVER OFFICE

TO	REPLY
	COMMENT
RETURN TO	
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Date: December 6, 1968

To: Mr. J. G. Hansen
From: Mr. D. W. Tully
Subject: HIGHLAND VALLEY PROSPECT STUDY, B.C.

Attached is a copy of a report by Mr. Ross Kidd on the subject area. This study shows:-

1. All major deposits known to date are located between phases of the multiple intrusion batholithic complex.
2. All known so far are located 1/2 - 3/4 miles from flexures on the contacts between the intrusive phases.
3. All known to date are on the eastern margins of their host phases in arcuate pattern.
4. North-south fractures are a common denominator in all known deposits.

Donald W. Tully

DWT/jel

Attachment