COMINCO LTD.

EXPLORATION WESTERN DISTRICT

PROGRESS REPORT
June 15th to July 15th 1968

PUZZLE GROUP

1) CONCLUSIONS and SUMMARY:-

a. Although the property is located on the ridge one mile west of that shown on the work proposal, the relative geologic setting is unchanged.

b. Lead-zinc mineralization occurs primarily in carbonate rocks of the Horsethief formation although vein mineralization may extend into Paleozoic quartzites.

c. Lead-zinc mineralization occurs in three forms: as discontinuous veins in siderite gangue with associated sideritic alteration; as blebs in late carbonate veinlets; and as part of the matrix in dolomitized, brecciated magnesian limestone. In the latter occurrence, some replacement of the country rock is evident.

d. Check sampling indicates that the geochemical grid sampled by Larabee is reliable. Extension of the grid resulted in two more local anomalies which will be tested by stripping.

e. Adjacent to the Puzzle Group on Starbird Ridge, very low grade disseminated copper mineralization occurs in quartzites of the Starbird Ridge (?) formation, grits of the Horsethief formation, and dolomites of the Mt. Nelson formation. Discountinuous quartz-barite-chalcopyrite veins occur in dolomite which is in fault (?) contact with Toby conglomerate east of the Puzzle Group. None of the showings are of economic interest.

f. An A-C-16 Bulldozer (equivalent in size to a Caterpillar D-7) has been hired to begin stripping on the property July 16th.

2) INTRODUCTION:-

The property is sixteen miles northwest of Invermere, B.C. overlooking Horsethief Creek on the south flank of Starbird Ridge. Access is by government and logging road to within two miles of the property, then by four-wheel-drive road driven as part of the Cominco 1967 work agreement. Some trenching was also carried out to test soil sample anomalies based on sampling done by Larabee, the owner of the property.

It should be noted that the property is not situated on the ridge indicated on the work proposal map. Instead, it is approximately one mile further west, on the next ridge. Its relative geologic setting, however, is unchanged.

3) GENERAL GEOLOGY:-

The ridge containing the Puzzle Group can be divided into three parts. To the north, folded rocks of the Mount Nelson formation are thrust southward over rocks of the Horsethief formation, which are in fault contact with folded Paleozoic rocks which form the southern part of the ridge. It is within the klippe of Horsethief formation rocks that most of the showings on the property occur.

Most of the showings on the Puzzle Group are confined to brittle limy members of the Horsethief formation. Three main types of lead-zinc mineralization have been found:

a. Thin, discountinuous high grade veins accompanied by siderite and sideritic alteration of the country rocks. These veins cut various rock types, including quartzite of the Starbird Ridge formation (?).

b. Small, high grade lead-zinc pods (?) in brecciated carbonate rocks. The host rock is partially dolomitized dark gray magnesian limestone. Textures suggest that open-space filling in the breccia is the predominant

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3) GENERAL GEOLOGY:- Cont'd

b. process of mineralization but some replacement of the country rock is indicated.

c. Discountinuous, scattered blebs of galena and sphalerite occur in the cores of late-stage carbonate veins in dolomitic layers within gray slates and in dark gray magnesian limestone of the Horsethief formation.

Only breccia-type mineralization seems to have any possiblility of producing mineralization of sufficient tonnage to be of economic interest.

In all the showings studied galena is far more prominent than sphalerite.

No appreciable mineralization has been found in grits, conglomerates, slates or slates with interbedded dolomite of the Horsethief formation. Apparently only fairly thick beds of dark gray magnesian limestone were initially brittle enough and subsequently permeable enough to sustain appreciable fracturing then subsequent veining and mineralization.

Outcrop is sparse adjacent to mineralized areas but geochemical sampling has proven successful in locating even small areas of mineralization. Re-sampling of parts of the 1967 geochemical soil sampling grid indicate that the results quoted are reliable (the numbers are different but highs and lows match up). The geochemical grid was extended northward up the ridge to include the north (thrust) fault. Although two new local anomalies were found, they are both near the showings. These anomalies and several from the old grid will be tested by bulldozer stripping.

4) WORK ADJACENT TO THE PUZZLE GROUP ON STARBIRD RIDGE

Quartzites of the Starbird Ridge formation (?) commonly have copper carbonate stains on joint faces which can sometimes be attributed to disseminated chalcopyrite in the rock. Similar stains are common on joint faces in grits of the Horsethief formation.

Lenses of pyrite and sparsely disseminated grains of chalcopyrite occur in buff-colored dolomites of the Mount Nelson formation north of the Puzzle Group.

Barite and quartz-barite-chalcopyrite veins were found in dolomite of uncertain age which is in fault (?) contact with the Toby conglomerate east of the Puzzle Group. The veins are discontinuous and of no economic signifigance.

5) RELATIONSHIP OF MINERALIZATION TO FAULTING AND FOLDING

Vein mineralization in the southern showings of the Puzzle Group apparently represents tension gash fillings formed during movement on the south fault. This conclusion is based on inferred vein/fault proximity and the low angle they make with the fault. Breccia mineralization, however, is not obviously related to the fault. Lithology seems to be the primary localizing factor but ultimately, brecciation is probably initiated by folding or faulting.

Where it has been studied, no mineralization is associated with the north (thrust) fault. It has associated breccia where it crosses Mt. Nelson dolomites but elsewhere the contact is sharp.

On Starbird Ridge east of the Puzzle Group, blebs of galena, sphalerite and chalcopyrite occur in veins filling tension cracks associated with small scale folds. Mineralization occurs only in dark gray magnesian limestone of the Horsethief formation. Not all the veins are mineralized and the overall grade is negligable but the association of mineralization with folding is interesting.

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6) PLANS FOR THE PUZZLE PROJECT

A bulldozer equivalent in size to a Caterpillar D-7 has been hired to strip likely - looking areas on the Puzzle Group. Little likelihood is seen of a deposit of economic interest but information about controls of mineralization should be forthcoming.

COMMENTS

Regional work on Starbird Ridge has solved some problems but raised others. In particular, the locations of the north and south faults and distinctions between the Horsethief and Firebird formations remain problematical. Toby conglomerate has been seen in several areas (on Toby Creek, on Firebird Ridge) but no conclusions about its origin have been drawn.

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