A NEW LOOK AT THE ROSSLAND AND BOUNDARY MINING CAMPS USING LOG Cu (lb.)/Log (Au + Ag)(oz.) FROM PRODUCTION DATA

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INTRODUCTION

Up to 1967 gold production from the Rossland Camp ranked second and that from the Boundary Camp, fourth, of all the mining camps in British Columbia (Grove, 1971, p. 94). In the Rossland Mining Camp (this paper) three 'phases' of mineralization are indicated while the Boundary Camp has one (Addie 1975). At Rossland the distribution of the mines by 'phase' indicated a concentric distribution more or less centred on the Rossland monzonite. Similar zoning was identified by Thorpe (1967). He points out (p. 11) 'the Rossland District, then produced a very rare type of gold ore.' This paper proposes that the Boundary Camp has similar ore.

The Rossland monzonite also has a coincident magnetic anomaly (Figure 1) which seems to be connected to a large magnetic anomaly to the west that is associated with the contact zone of the Coryell Batholith. The Rossland monzonite has also been intruded by the Coryell, which may contribute to the magnetic anomaly. The Rossland monzonite may have acted as a buttress against which the Carboniferous and Jurassic volcanic and sedimentary rocks were broken to give the vein structures. Thrusting in the area may be related to emplacement of the Trail granodiorite (49.5 - 50.5±1.5 Ma) and/or the Rainy Day Stock (48.7±1.5 Ma). Fyles (1973) suggests that the mineralization is related to one of the plutonic masses, probably the Trail Batholith. All authors (Brock, 1906; Drysdale, 1923; Little, 1963; Fyles, 1973) agree that the mineralization is Tertiary. The only question is the source of the mineralization. This author proposes that the Coryell intrusions should be examined more closely. It is clear from the literature that Coryell pulaskite dykes were emplaced both before, and after, the mineralization. This is important because we now have a direct link to the Coryell Batholith, at least for timing, as a potential cause, if not the source, of the economic mineralization. The presence of weak molybdenite mineralizaation suggests the Coryell as a possible source of the Rossland molybdenite deposits.

In the Boundary Camp, the Phoenix Copper ore zone is cut off by a pulaskite dyke (Coryell). The dyke intruded along a fault plane which has had repeated movement, before and after some of the mineralization (Addie, 1964). Recent geochemical data from Geological Survey of Canada Open File 409 indicates a molybdenite anomaly adjacent to the Phoenix Copper area (Addie, 1981). Tertiary diorite (McNaughton, 1936) is just to the north of the Phoenix Copper pit and contains a showing of mineralization similar to the mine, that is, the precious metal/copper

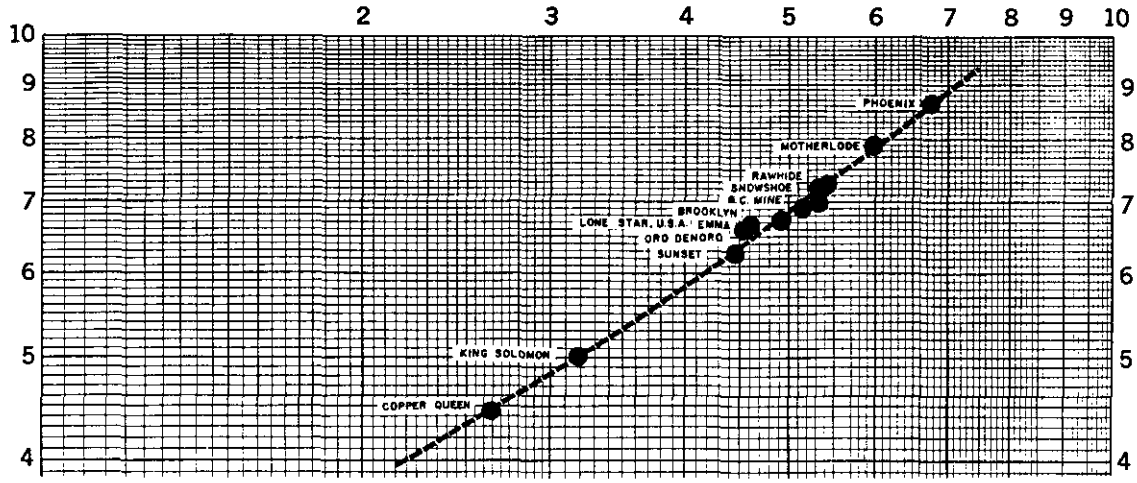

Figure 2. Boundary district, log Cu (lb.) versus Log (Au + Ag) (oz.).

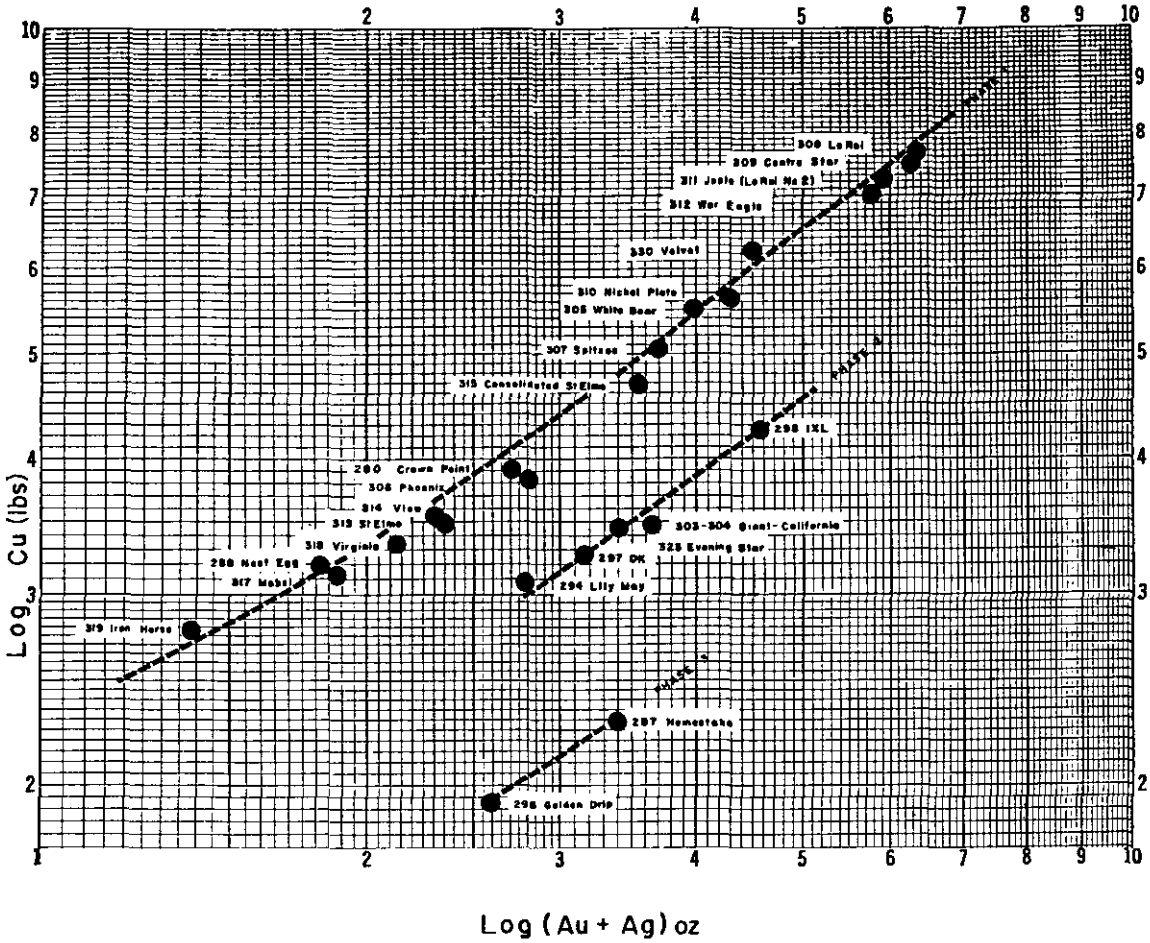

Figure 3. Rossland, Log Cu (lb.) versus Log (Au + Ag) (oz.).

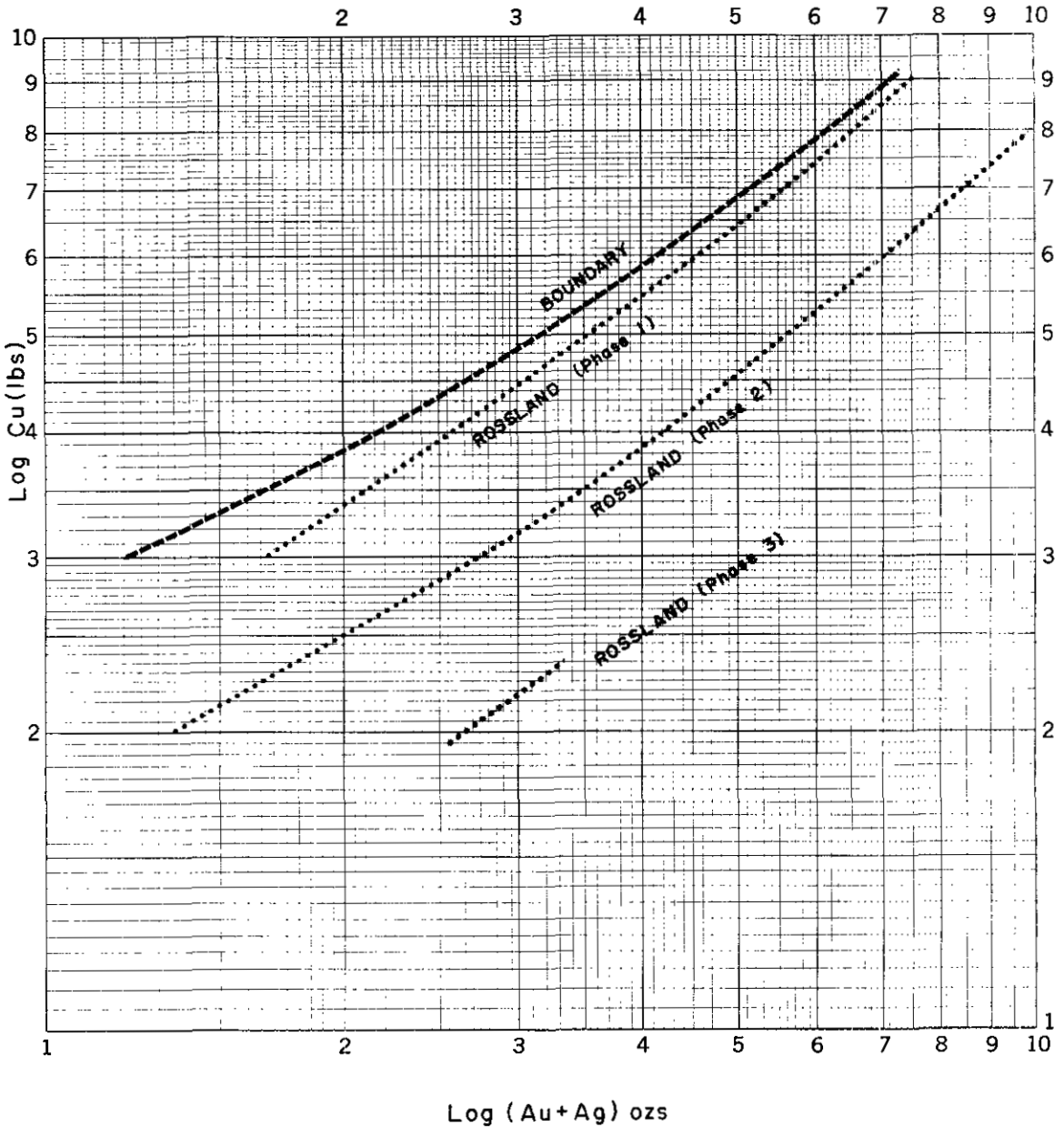

Figure 4. Comparison of Boundary and Rossland, log Cu (lb.) versus log (Au + Ag) (oz.).

ratios are identical (Addie, 1964). These Teritary intrusions (see also Church, 1970) therefore deserve a closer scrutiny for other skarn deposits, porphyry deposits, or another mining camp similar to Rossland.

SOURCE OF DATA

Production data are from 'Index 3 to Publications of the Department of Mines.' Note that 20 of the mines shown on Figure 1 are not used in our study because no copper production was reported.

CONCLUSION

The copper/gold plus silver mineralization at Rossland seems to be identical to that at the Boundary Camp except that more phases are involved. Geologically and from argon age dating it is clear that the mineralization at Rossland is Tertiary (Fyles, 1973). This paper proposes that the Boundary area be examined in this light and that the Coryell intrusions, especially the edges, be examined for new mining camps. As at Rossland, these may be identified from the aeromagnetic maps.

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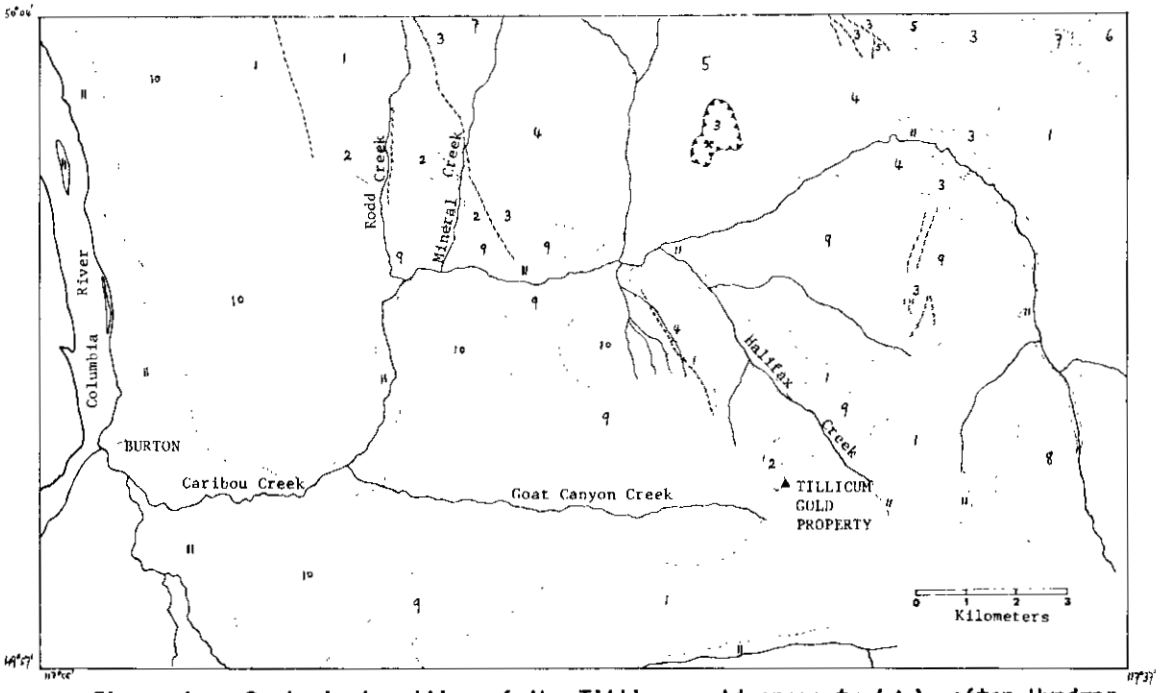

Figure 1. Geological setting of the Tillicum gold property (▲); after Hyndman (1968, Geol. Surv., Canada, Map 1234A).

LEGEND

Quaternary

11 Glacial, lacustrine and fluviatile gravel,sand, silt and clay

Cretaceous and/or Jurassic

10 Lower Caribou Creek stock: quartz monzonite, granodiorite, quartz diorite and granite

9, 8 9. Goat Canyon-Halifax Creek stock: quartz monzonite, minor quartz diorite and granodiorite
8. Snowslide Creek stock: quartz monzonite, quartz diorite and granodiorite

7 Ruby Range stock: quartz diorite, diorite, quartz monzonite, monzonite and syenodiorite

6 East Caribou stock: quartz monzonite and quartz diorite

Jurassic

Rossland Group

5 Andesite and basalt flows and tuffs

Lower Jurassic (?) and Triassic

Slocan Group

4 Andesite to dacite, tuffs and flows

3 Undivided argillite, shale to siltstone, tuff and pelitic to silty phyllite and slate

Triassic

Kaslo Group

2 Amphibole-metavolcanic rocks

(?) Pennsylvanian to Triassic

Milford (?) Group

1 Pelitic schist and calc-silicate metasedimentary rocks

▲▲▲▲ Thrust fault

Fault

Geological contact