

Paper 3-2—9:30 a.m.

Sam Goosly Copper-Silver-Antimony Deposit, Central British Columbia.

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The Sam Goosly copper-silver-antimony deposit, 35 km south of Houston, B.C., occurs in an inlier of Cretaceous sedimentary, pyroclastic and volcanic rocks. This inlier is intruded by a quartz monzonite stock in the western part of the property and by a gabbro-monzonite complex in the eastern half. Flat-lying to shallow-dipping Tertiary andesitic to basaltic flows unconformably overlie Cretaceous rocks around the flanks of the inlier. Based on careful examination of over 4,875 m of drill core and on limited surface mapping, four stratigraphic subdivisions striking about 015 degrees and dipping about 45 degrees west have been identified. The Clastic Division, composed of a lower polymictic conglomerate and an upper chert pebble conglomerate, is lowermost and is thought to be correlative with the Skeena Group. Sedimentary rocks are overlain by the Pyroclastic Division, a heterogeneous sequence of tuff, breccia and reworked pyroclastic debris. The Pyroclastic Division is thought to be correlative with the Kasalka Group. Tuff, sandstone and conglomerate of the Sedimentary-Volcanic Division have well-defined bedding and overlie pyroclastic rocks. The uppermost unit, composed of andesitic and dacitic flows, is the Volcanic Flow Division.

Copper-silver-antimony ores at Sam Goosly are contained in the Main Zone and Southern Tail deposits. Principal ore minerals, viz. pyrite, chalcopyrite, tetrahedrite, arsenopyrite, sphalerite and galena, are associated with tourmaline, andalusite, scorzalite and corundum (only in the Main Zone). The deposits are epigenetic, and cross-cutting relationships are visible both in hand specimen and throughout the deposit as a whole. Ores occur within the Pyroclastic Division and, although they are controlled mainly by structure, crude stratigraphic controls are also apparent. Other mineralized areas at Sam Goosly are a zone of porphyry copper-molybdenum mineralization in and adjacent to the quartz monzonite stock and a zone of tourmaline breccia. Similarities in mineralogy, textures and paragenesis among all four mineralized areas suggest that they are genetically related. Potassium-argon dating of hydrothermal alteration indicates that mineralization occurred almost simultaneously with the emplacement of the quartz-monzonite stock (58 Ma). It is suggested here that copper-silver-antimony ores are a part of the porphyry mineralizing system. Early stages of mineralization took place between 400°C and 491°C; sulphides continued to form as the system cooled below 300°C. During subsequent thermal metamorphism (48 Ma) of the Main Zone deposit adjacent to the gabbro-monzonite complex, pyrrhotite and sillimanite

formed in an aureole about 90 m wide. Temperatures during metamorphism are thought to be above 750°C and pressures to be less than 350 bar (about 1 km depth).

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Gooley AdS. man.

"Bulk Ag"? "Porphyry Ag"?

Very uniform ore mineralogy in all zones, tail. Slightly diff in Kawabax and porph. at the zone.

Common paragenesis in all of zones.

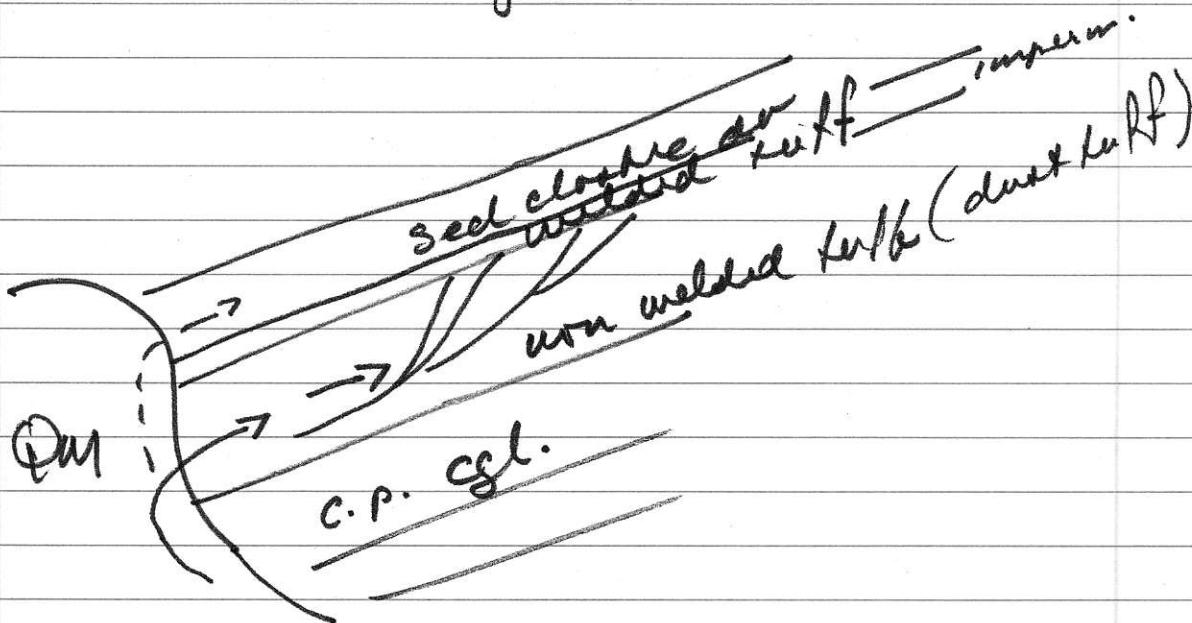
1 main mineralogy phase.

Altn ① qtz-ser-py ± fawn
— most pervasive, abundant.

② pyrophyllite — pegged @ SP zone
— 300°C

③ Andalusite (+500°C) S. tail.

Model T range 300-500°C.



no source of metals from roled seen
source of ma elements thermal meta.

PM is 58 ma — age of men.