1975 Congdon & Carey report

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first under New Cronin Babine Mines Ltd., then under lessee Mr. Paul Kindrat who eventually purchased the property in 1970 and formed Kindrat Mines. The property was optioned and finally purchased by Hallmark Resources Ltd. who continued to operate it. In 1975 an agreement was reached whereby Coca Metals would earn an interest in the property by doing development work on it. Coca Metals' interest lay in the property's large tonnage-low grade potential.

Geology

The regional geology is illustrated in Geologic Survey of Canada map no. 671A.

The geology of the mine is complex to say the least. Three major rock types host the ore bodies: a sedimentary unit of Hazelton age, and two rhyolite intrusives of indeterminate age.

Rock Types

The sedimentary unit is a bedded clastic sequence consisting of argillite, grits and minor pebble conglomerate. Low grade regional metamorphism has led to the development of sericite shist in such of the argillites as composition permitted. Clasts are for the most part derived from volcanic rocks. Sedimentary structures observed include graded bedding, cross bedding and slump structures. On a large scale, the structure is complex, the intrusives having been emplaced more or less conformably within a synform-antiform couple. Small folds observed in outcrops illustrate tightly closed folds whose axial planes have been refolded. Overturned beds observed in diamond drill holes indicate that large scale folding is equally intense.

Faults tend to be poorly developed in the sediments, branching into a series of slips in the argillite,and crush zones in the coarser clastics. A wide crush zone encountered in drill holes 5 and 10 proved to have such pressures that both holes were lost. This zone may be one of continuing stress and must be avoided in any future underground development.

One rock type, rhyolite porphyry, makes up by far the greatest part of the intrusive complex. This unit is a hard, massive, grey, medium-to-fine grained porphyry with 20 to 40% 1 x 3 mm albite laths in an aphanitic ground mass of quartz, calcite, "sericite", zoisite and chloritoid.

There is no appreciable chilled margin where this unit contacts the sediments. Rhyolite porphyry with a quartz stockwork has been seen to be intruded by an identical rhyolite porphyry, with both phases cut by a second quartz stockwork.

The only significant alteration of this unit is silicification adjacent to quartz veins.

Intruding the rhyolite porphyry is a white-to-pale-yellow heavily altered unit that has been labelled simply "rhyolite". This unit is aphanitic for the most part, although it may contain up to 15% 1-2 mm quartz phenocrysts. Micro-sized quartz, "sericite" and calcite make up the bulk of this rock which also includes trace disseminated pyrite, sphalerite and galena. This unit is not cut by the quartz stockwork.

Both rhyolite units have undergone low grade regional metamorphism. A third intrusive type is a set of dykes of mixed composition, variably porphyrytic, that has been called andesite. They are post stockwork and post mineral.

Faults and vein structures are well developed in the rhyolites and are traceable over considerable distances.

Mineralization

Sulphide mineralization occurs as dilation veins associated with quartz, in quartz stockwork, as coatings on dry fractures in the rhyolite and rhyolite porphyry, and as trace disseminations in the rhyolite. The most common minerals, in order of abundance, are: pyrite, sphalerite, galena, chalcopyrite, boulangerite and tetrahedrite. Sphalerite and galena in dilation veins are the only minerals of economic significance. As is common with this type of ore structure, widths of mineralization vary dramatically over relatively short distances.

Fracture mineralization, although quite common, is not of sufficient intensity to make ore. This may be due in part to leaching of ore minerals from the fractures as leaching was observed in all drill holes right to the bottom, as much as 180 m below surface.

Ore reserves in the vein structures, and feasibility of extraction, are detailed in Egil Livgard's 1972 Feasibility Report.

1975 Work Program

The 1975 work program consisted of a surface and underground control survey, preparation of a topographic plan, surface geologic mapping, and 1530 m of NQ diamond drilling in 10 holes.

Surface mapping was confined to accurate definition of the intrusive-sediments contact as it was felt that the objective of the program did not warrant refinement of the existing detailed mapping of both surface and underground. The control survey in conjunction with the accurate mapping of the intrusive-sediment contact made possible keying existing detailed mapping of unknown control, to an accurate grid.

The objective of diamond drill holes 1-4 was to test zones adjacent to the veins exposed in the old workings for possible low grade widths. Holes 6 to 9 had the same objectives in the Wardell vein area. Unfortunately both rows of holes confirmed that significant mineralization is restricted to the immediate vicinity of the vein structures although they did show a remarkable continuity in the sturctures.

The objective of drill hole 5 was to test the wall rock adjacent to veins 2 and 3 in the area of 5 and 6 levels. This was not accomplished as the hole was lost due to bad ground while still in the sediments. Hole 10 had the same objective but was also lost before reaching its planned depth. It did, however, penetrate the intrusive contact and cut a previously unknown mineralized quartz vein.

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References

J.A. Mitchell, 1972 - Report on Cronin Mine
E. Livgard, 1972 - Feasibility Report on the Cronin Mine

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