A

REPORT

ON THE

GEOLOGIC RECONNAISSANCE

OF THE

COPPER PENNY PROSPECT,

CURRY ~~JOSEPHINE~~ COUNTY, OREGON

--FOR--

CARL SETERA AND RICHARD ROUNDS

--BY--

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AUGUST 13, 1986

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SUMMARY AND CONCLUSIONS

The Copper Penny prospect is a volcanogenic massive sulfide Kuroko-type deposit consisting of pyritic, siliceous, baritic chemical precipitates in pods and layers in tuffaceous metasedimentary rocks. Lesser amounts of sphalerite, and copper-bearing minerals occur higher in the iron oxide section. Significant values of gold with lesser but still significant values of silver and gallium occur associated with base metals in the higher portions of the deposits. Cadmium and tin are also noteworthy in occurrence. Two subparallel zones, each at least twenty (?) feet in thickness, occur several hundred feet apart. Three adits test the mineralization on the claims.

INTRODUCTION

The Copper Penny prospect lies in the Kalmiopsis Wilderness area of the Upper Chetco Drainage area, Josephine County, Oregon (fig. 1). The owners have the right of access, which may not be well defined. On June 25, 1986, Richard Rounds guided me over the property, while I made a reconnaissance of the geology, mapped some of the workings, and collected samples for analysis.

Ramp (1975) reported that this prospect is the Copper Creek prospect of the Chetco Copper Company, as originally reported by Diller (1914).

At the Copper Penny prospect, three adits explore the massive sulfide deposits. The two lower adits may be on one or two different zones. The upper adit (the Melanterite tunnel) is on a zone which is not characteristically similar to the lower zone or zones, and their geographic (no. 54, Ramp and fig. 2) and structural positioning with respect to each other is unknown at this time, as we did not follow the exposures of the deposit between the areas. I did not map the area, but only visited the adits for sampling and to generalize and map some of the adit geology to determine some idea of the mineralization.

Ramp (1975) supplies the following information:

> "The upper adit, called the `Melanterite tunnel' (no. 54) is about 25 feet in length ....at about the 2,800 feet elevation.. Mineralization ... is thickly disseminated to massive granular pyrite in a siliceous phyllite. A 23 foot channel sample cut at waist height along the northwest wall of the adit assayed 0.02 ounces /ton gold, nil silver, 0.10 percent copper. The layered rocks strike about N. 8 W. and dip 40 to 60 E under the serpentinite.
>
> The two lower adits are situated about 1,000 feet south. The eastern one is about 50 feet

long in a N53E direction. It penetrates mineralization similar to that in the

Melanterite tunnel and foliation of the rocks at this point strikes N. 15 W. and dips 35 E. The western lower adit, called the Sunset Tunnel, is about 90 feet long with a fifteen foot crosscut to the right. The main portion of the tunnel trends N. 20 W. parallel to the strike of foliation in the rocks and the dip is 35 E.

A selected sample of the ore from a narrow enriched zone in the adit containing quartz, abundant pyrite, chalcopyrite, and minor sphalerite assayed 8.53 percent copper, and 1.3 percent zinc. This probably is the source of the small amount of production recorded by Diller (1914)."

Location

The Copper Penny prospect lies in the W. 1/2, section 10, T. 39 S., R. 10 W. (No. 56 and 54, Ramp, fig. 2). The claim area is about 13 miles due west of Kerby, Oregon.

GEOLOGY

General Geology

Massive sulfide deposits containing significant amounts of base and precious metals occur in ancient oceanic-crust and island-arc terranes of the northern Klamath Mountains in southwestern Oregon (Koski, 1981). The Copper Penny deposit is a volcanogenic massive sulfide deposit formed in ancient island-arc terrane in the Jurassic Rogue Formation. Volcanogenic massive sulfide deposits, which form in felsic submarine lavas and pyroclastic rocks in calc-alkaline island-arc sequences, host the important class of Kuroko-type massive sulfide deposits. These volcanogenic massive sulfide deposits generally consist of one or more stratiform massive sulfide layers and lenses intercalated with volcanic strata overlying stockwork mineralization of lower grade. The latter stockwork represents the hydrothermal feeder system for the layered sulfide accumulations. Kuroko-types of deposits as well as the deposits in southwestern Oregon have vertical zonation consisting of loosely bound pyrite (friable yellow ore) yielding upward to dense massive pyrite-chalcopyrite (yellow ore), massive pyrite-sphalerite, tennantite-bornite-barite (black ore), and massive barite (Koski, 1981). Feeder systems were not recognized in some Oregon deposits.

Five similar, but inactive, deposits throughout the region have produced approximately 4,000 tons of copper, 2,000 troy ounces of gold, and 70,000 troy ounces of silver (Koski, 1981).

Thrust faulting recurs regionally, and in the map area, such a thrust fault forms the base of the Rogue Formation less than a mile west of the Copper Penny prospect.

Copper Penny (Sunset) Prospect

The Copper Penny adit (fig. 3) trends N. 33 W. parallel to the general strike of the mildly warped layered rocks. The bedding dips 26 to 49 degrees NE. The sulfides consist of densely disseminated to massive pyrite, with lesser amounts of sphalerite and chalcopyrite in siliceous, baritic, felsitic, phyllitic, sericitic, and tuffaceous sedimentary rock. A diagrammatic section through the layering at the portal is in Figure 4. Similar to Kuroko-type and other deposits in southwestern Oregon, the lower part of the section is a porous boxwork limonite, probably from the oxidation of pyritic layers. The lack of dense silica or barite may have allowed more intense oxidation. Above that zone is unoxidized pyritic pods of silica and barite. Above that is layers of pyrite-sphalerite, with copper minerals, oxidizing to malachite. The massive sulfides, silica, and barite deposits are poddy to lenticular to well-bedded. Pyrite disseminations along layering appearing like foreset beds indicates that the pyrite fragments and cubes may have been transported from a vent area to the northwest, where the deposit may thicken. The floating appearance of the pyrite in some of the silica and barite layers and pods may indicate that these chemical precipitates were in colloid form at the time of their deposition. In this adit the massive sulfide zone is at least 17 feet thick, including a thin non-oxide zone separating two oxide zones locally. The siliceous and baritic pods in this adit occur at the portal; minor thin pyritic layers in oxidized host rock dominate further in the adit.

At this site visit, I did not identify barite in these fine-grained chemical metasediments because I was not looking for it. I recall, however, chalcedonic-cherty appearing rock, which I hesitated to call chalcedony or chert because of its dull appearance and may be barite. My literature search occurred after sending in the samples. I thought that the geochemistry would include barium, but did not. I surmise that barite occurs at this site from my recollection and may dominate the gangue instead of silica, a relationship which is typical in the upper parts of such deposits.

Thin quartz veins, which strike N. 30 E., and dip 38 SE., cut the oxide zone near the northwest end of the adit. These quartz veins are 1/2 to 5 inches thick in a three foot zone. This quartz vein zone may represent a part of the feeder system, which expectedly exists beneath this type of deposit, but the age of these veins is younger than the massive sulfide units, and could not be feeders of this specific unit. They also did not contain conspicuous pyrite. The geochemistry of the sample (CP 5) was also dissimilar to the massive sulfide geochemistry (CP 1, CP 5a) These veins could be feeders to the massive sulfides in the deposit above in the Melanterite tunnel (Mel 1 and 2).

Melanterite Tunnel

Massive silica, barite, and pyrite occurs as pods at least 3 to 5 feet thick in the lower portion of an oxide zone at least 25 feet thick at the Melanterite tunnel (fig. 5). The hanging wall zone consists of minor pyrite layers, in oxidized host rock. The layering strikes N. 22 E. and dips 56 E. The adit is short and does not expose the deposit adequately for a good evaluation of the deposits form. The large pods at the face of the tunnel do not appear at the portal.

Geochemistry

The fire assays of the samples from the Copper Penny deposits indicate very significant amounts of precious metals, base metals, and other metals. The analyses consisted of:

TABLE I

Fire Assay:

	Gold oz/ton	Silver oz/ton
CP-1A*	0.8562	1.286
CP-2	0.0166	-0.001
CP-3	0.2054	0.909
Cp-4	0.0144	0.064

Geochemistry:

	Gold	
	ppm	oz/ton
CP-1*	10.2	0.30
CP-5a	16.1	0.47

(see Figures 3 and 4 for locations of samples)
* - same samples; laboratory misnumbering.

All of the fire assay samples have significant gold grades. A grade of 0.01 or 0.02 ounces per ton could easily be a cut-off grade in an open pit deposit, but the tonnage is not sufficient here. Sample CP-1A would be defined as ore if the unit (2 to 4 inches) was thicker. The occurrence is very significant because the deposit is ill-defined at this time and higher grades, thicker units or more extensive layers may occur in the area. The thickness of unit CP-3 is 9 to 11 inches, and lies immediately below unit CP-1A. The weighted average of these two units would be 0.36 ounces per ton for a thickness of 13 inches.

Sample		Comments
		tuffaceous metasediments
CP-1	2 to 4 inches	malachite-rich silica
CP-3	9 to 11 inches	silica-barite?, pyrite, limonitic, sericitic.
CP-2	8 - 26 inches	silica-barite and pyrite
	< 12 inches ?	silica and pyrite
CP-4	> 24 inches	box-work limonite

Figure 4. Diagrammatic section of massive sulfide deposit at Copper Penny prospect portal. Samples are dispersed chip channel samples.

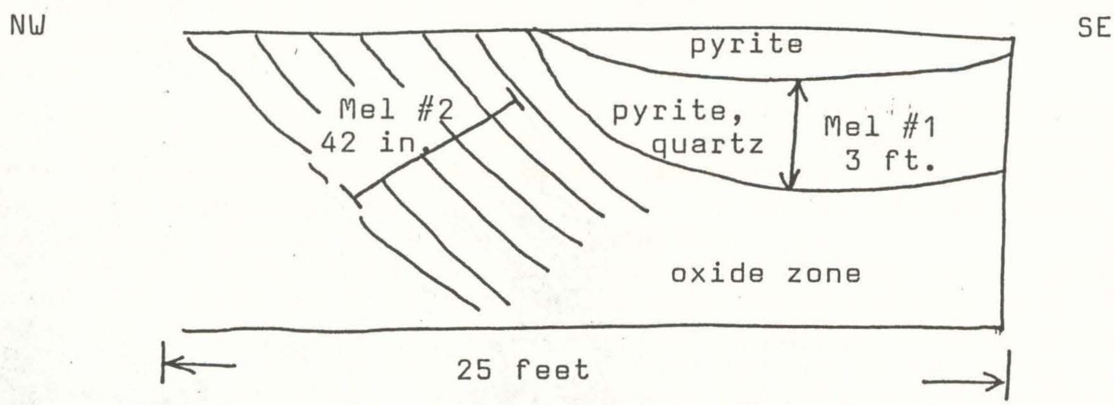

Figure 5. Diagrammatic section of the northwest wall of the Melanterite tunnel.

The geochemical results are more complicated; the complete results are in the Appendix, but the significant gold values are recalculated above (Table 1). The geochemistry confirms but does not match exactly the fire assay values, but could be a cheaper method for trace element detection as well as giving significant gold value. Zinc and copper record significant values but their contained minerals were not well dispersed throughout the deposit, though they may be elsewhere on the property. Cadmium and gallium usually occurs with zinc in sphalerite. Gallium is a new high technology metal with the economic value similar to silver at the present time, but this may change dramatically in the future. The presence of gallium here is higher than the presence of silver, but the two metals are not occurring possibly in the same mineral even though they are in the same samples; their range in values do not correspond. Dutrizac and others (1986) report that gallium concentrates in jarosite, a limonite-like complex sulfate. Sampling of the limonite zones may indicate higher gallium values. Germanium may also be present. Tin and cadmium though not too high in value may be significant as bi-product metals in this deposit.

Sample CP-5a is a grab sample from a 2 to 7 inch thick pinching, sphalerite-rich (>50.K = >50,000 ppm = >5% - Zinc) layer not at the section in Figure 4.

The relative differences in geochemistry between the deposit at the Copper Penny adit (CP-1 and CP-5) and the deposit in the Melanterite tunnel (Mel 1 and 2) are sufficiently distinct to strongly suggest two different ore deposits.

Discussion and Recommendations

The preliminary interpretation of the localization of the precious metal values with the base metals (Cu, Zn and Pb) in the higher units of the massive sulfide deposit will readily allow exploration over broad areas by searching for these associated, more abundant and more widely dispersed metals.

All oxide zones and mineralization in the claim area should be more fully reconned and cursorily mapped. This reconnaissance with select sampling would be the basis of a decision to do more extensive sampling. The distribution of gold, silver, base metals and gallium should be primary concerns.

REFERENCES

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Signed:

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DSJ.

GEOCHEMICAL SERVICES INC.

GEOCHEMICAL ANALYSIS REPORT

LOT ID: JUA-60724E

SAMPLE ID	#	Ag	As	Au	Cu	Hg	Mo	Pb	Sb	Tl	Zn	Bi	Cd	Ga	Pd	Pt	Se	Sn	Te
		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
CP 1	1	11.5	35.7	10.2	27800	2.01	30.4	559.0	49.9	<.5	32600	4.63	353.0	21.8	<.25	<.5	<1.0	48.1	<.5
CP 5	2	.315	8.94	<.05	275.0	<.5	1.33	5.1	<.25	<.5	383.0	<.5	.716	3.6	<.25	<.5	<1.0	1.08	<.5
CP 5a	3	12.0	3.01	16.1	1185.	2.24	<.5	86.2	36.1	<.5	>50.K	<.5	943.0	35.6	<.25	<.5	<1.0	<.5	<.5
MEL 1	4	.854	19.9	.146	1436.	<.5	14.8	13.0	.904	<.5	693.0	2.63	1.78	<.5	<.25	<.5	6.21	7.97	1.61
MEL 2	5	1.26	35.8	.268	571.0	<.5	5.77	15.5	.781	2.01	231.0	3.26	1.16	<.5	<.25	<.5	3.08	2.74	.729

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REPORT OF ANALYSIS

Submitted by:

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Date: August 05, 1986

Laboratory number: 28213

Analytical Method: Fire 5T

Your Order Number:

Report on: 16 Samples, rock

Sample Mark	Gold oz/ton	Silver oz/ton
CP-1A	0.8562	1.286
CP-2	0.0166	-0.001
CP-3	0.2054	0.909
CP-4	0.0144	0.064
PWL-1	0.0138	0.004
PWL-2	0.0062	0.028
PWL-3	0.0030	-0.001
PWL-4	0.0200	-0.001
STM-1	-0.0001	-0.001
STM-2	-0.0001	-0.001
STM-3	0.0004	-0.001
STM-4	0.0168	-0.001
STM-5	0.0062	-0.001
STM-6	0.0006	-0.001
STM-7	0.0004	-0.001
STM-8	0.0316	-0.001

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ppm = parts per million. **oz/ton** = troy ounces per ton of 2000 pounds avoirdupois. **percent** = parts per hundred. **fineness** = parts per thousand. **ppb** = 0.001 ppm. Read — as "less than". 1 oz/ton = 34.286 ppm. 1 ppm = 0.0001% = 0.029167 oz/ton. 1.0% = 20 pounds/ton.