0480 0004

(147)
Item 4

Copper Canyon

Locate both properties - Canyon and Basin.
Sec 27, T31N, R43E MDM

Claims at Canyon:

10 patented
8 claims of location
2 fractions
3 placer claims

Holdings on Willow Creek:
120 acres of land, 40 patented.

History:

First records of mining at Copper Canyon go back to 1870 to an English Company. Virgin claim is reputedly oldest patented claim in State; Pat 37

This English Company shipped 40,000 tons of 50% ore to Swansea Wales via bull team to Sacramento and around the Horn.

Owned and operated a concentrator in Willow Creek, 2½ miles from the Mine. Hand jigged 12% ore by Chinamen.

This Company opened the Virgin to the 590' Level and Superior to the 188' Level.

~~Property was then idle until~~

Property was next sold to a local syndicate who sold the mill equipment and then allowed the mine to lie idle until 1897 when Glasgow Western Exploration Company bought it to supply their smelter at Golconda with fluxing ore.

During 1898,99, and 1900 they mined about 2,000 tons of 12% ore from old workings and in 1907 the mine produced 844 tons of the same grade.

About 1910 G&W built a leaching plant to treat low grade oxidized ores. The plant was a failure, with extraction of only about 47%. Flow sheet: Blake crusher, Huntingdon Mills, classifier, Callow Cones for slimes, agitators for sands. Heated ferrous sulphste solutions were used along with some sulhpuric acid. Grinding was in mill solution. Decantation of sands and settling of slimes gave a clear effluent which was run through a launder filled with scrap iron. Main trouble with the plant - other than low recovery - was that the acidic solutiions

ate the iron mullers, etc of the mills. Finally abandoned as unsuccessful.

Other causes of low extraction:

1. Too coarse a grinding
2. Short time of contact
3. Low acidity of solutions
4. Poor washing
5. Presence of copper sulphides
6. Presence of native copper
7. Re-precipitation of Cu caused by H2S generated by action of acid on pyrite.

The plant was shut down about 1914 and in 1916 the present owners, Copper Canyon Mining Co., took it under bond and option. Under stimulus of war copper prices, the Willow Creek dump was screened and shipped - 6,000 tons of 4½% ore. The development of the Estes stopes allowed a large tonnage of 9% ore to be shipped during the war. Between August 1916 and December 1918, the Company shipped 22,481 tons of 9% ore. In 1917 the Company acquired the Copper Basin property and subsequently directed all its activity to that group of claims. The Canyon Mine was shut down late in 1918.

Some sporadic leasing was carried on about 1927 when copper enjoyed ready sale. This lagged along about 1930 and in 1932 a leaser, Bob Wigglesworth, while panning for native copper, hit gold in the south part of the mine. This lead to consdierable leasing until 1935 when the Company undertook the ppesent development program.

GENERAL GEOLOGY

Copper Canyon is situated on the southwest end of the Battle Mountain range. The dominant regional rock are quartzites and indurated shales, mostly arg llites. Their age is most probably Pre-Cambrian or early Paleozoic at the latest; There are minor outcrops of limestone which is possibly Pennsylvania in age.

Copper Canyon seems to be near the one time crest of a general northerly striking anticline for dips of beds in the mine are about 15-20 degree to the southwest while further west they are steeper. To the east, east dips are encountered.

General strike of beds if N 15-20 W with a southwest dip. Bedding is indistinct; changes in rock types are difficult to determine but assays help in this.

Three major faults - Virgin, Superior, and Gulch, the latter newly found. All strike generally north - south with a steep westerly dip - about 65 degrees. A system of cross fissure of general northwest - south east strike and easterly dip is also developed, the principal being the Estes along which large stopes were opened by the present company in 1918. To this is also developed a conjugate system of general NE strike.

Difference of opinion exists as to the age of the Faults. ~~Possibly~~ Proof for post mineral theory:

1. Show rake of secondary copper along Virgin
2. Low gold content of high grade copper ore along Virgin is proof of its migration.

Virgin, Superior, and Gulch are apparently normal; high dip is good evidence but not necessarily conclusive as post faulting folding may have had something to do with it.

Local intrusion is a monzonite porphry, one finger of which has been uncovered in the Estes Stope along 113 Level. No porphry has been found in the present gold zone.

Discuss shape of gold zone, type of mineralization and its nature, taking into account the oxidation and also enriched sulfides. in hanging wall of the Gulch Fault. Primary ores - their nature and relation to bedding - importance of preferential mining.

Talk about development method - limiting current development to the shear with cross-cuts and raises. Speak of the possible shrinkage with transverse stopes, drawing a paral elism to NJ Zinc operation in the trough at Franklin. Also discuss how this would or could be altered if it was decided better to stope along bedding planes rather than running vertical stopes indiscriminatly through all the beds. Point out that it is a manner of economics: in one case lower mill heads with cheaper costs; in the other,

higher mill heads with higher costs. Show how the larger the milling operations, the more will the balance swing to vertical stoping.

Bring out water and power; power ought to cost in the neighborhdd of 0.75 cents per KWHr. Water to developed in Willow Creek and pumped to the mill.

Discuss general type of mill. including the possible use of a jig with amalgamtion and possibly making a preferential pyrite - chalcopyrite separation to cyanide pyrite concentrate, ship chalcopyrite. All this tenative, not yet established but is hoped for. Combination of oxides and transition faces hoped for along with sulphides.

Basin

Give an brief histroical sketch of Copper Basin; bought in 1917 and intensively developed until late in 1922, lately by churn drilling. Property was in shape for a mill when the markets broke in 1921 and plans were dropped. According to old reports, there were 2,000,000 tons of 2% or better ore in sight with a possible tonnage of around 8,000,000 tons. Leasing there in 1927-31 with large production.

Recent activity dates to revaluation of gold and Johnson-Dolezal strike on the Carissa Claim. Here again is a sedimentary bed. Note insoluble - gold ratio, au-cu balance, etc. Discuss other Basin operations, including turquoise.

End up with a discussion of the potential import of sedimentary gold deposits. Point out that future mines will not be bonanzas; mine of the future are an engineering job, good management and administration. The definition of ore: a naturally occuring mineral aggregate ~~containing~~ from which a metal or metals can be extracted AT A PROFIT. Dwell on this point.

Examples: Beattie, Howey, Alaska Juneau.