

February 19, 1982

~~CONFIDENTIAL~~

~~Robert H. Drilling~~

Page 9

COMSTOCK PROJECT

The Comstock Mill of Houston International Minerals Corporation, a subsidiary of Tenneco is actually located at Gold Hill, slightly south of the Comstock lode. The agitated cyanide leach plant was designed for 1500 tons per day. The mill is presently running at 900 tons per day with stockpiled ore (60 day stockpile left.)

Houston Oil and Minerals Corp. was bought by Tenneco recently and Tenneco decided to close the mines and mill because of decreasing metal prices, increasing operating costs and extreme environmentalist pressure. Condemnation of several historic houses and a State highway were required to expand the open pit operation. In February 1980 reserves of 1.3×10^6 tons of 0.085 oz gold per ton and 3.42 oz. silver per ton were reported. The ore grade of the stockpiles was 0.06 oz. gold per ton and 2.5 oz. silver per ton. Stripping ratio was 20:1. Costs were \$0.54 per ton waste and \$0.58 per ton ore using contractors. Last year a major pit wall failure occurred. They have also shut down the Manhattan Mill.

Recently, the management of the Houston International Minerals Corp. has changed with Fred Park becoming the President. Fred Park is the son of Charles Park who is a longtime exploration geology professor at Stanford University. The Comstock site manager is Dan Martin and the Mill Supt. was Bob Turner, however he recently resigned to take another position because of the impending shutdown of the project.

The mill is mechanically rather complex, much more complex than is required. The mill was constructed with surplus equipment and has considerable maintenance and operating difficulties. The milling costs at full production (1500 tons per day) are about \$14.00 per ton. They employ 55 hourly people including nine maintenance. The various inter-operations in the crushing(8), grinding(1), and leaching(1) and CCD(1) sections are scattered about considerably, requiring additional operators to attend to these separated operations. This mill involves a 6 stage CCD washing circuit with a 3:1 wash ratio with high rate thickeners which they like. They also like the Ramsey solid state weightometers (Model 40-20) used with DC motors for feeding their ball mills. They employ Merrill-Crowe zinc for precious metal recovery. Since the mill is not

1200 1251

February 19, 1982

Page 10

mechanically very desirable, further discussion will be brief. (See attached flowsheet.) Because of decreased throughput only two of three ball mills were operating when we were there. Their reagent consumption is 3 lbs. sodium cyanide per ton of ore (as 20% solution) and 2 1/2 lbs. lime per ton of ore. 0.5 lbs. lead nitrate per ton was also used. Leaching is conducted at 50% solids. Seventy percent of the gold and 30% of the silver is extracted in the grinding circuit; final recovery is 90% gold and 65 to 75% silver. Total leach residence time is 48 hours. Their head assay is .06 oz. gold per ton and 2.5 oz. silver per ton. Pregnant liquor (500 gpm) from an intermediate 150' thickener containing 2.2 lbs. per ton sodium cyanide at a pH of about 10.5 goes to a Merrill-Crowe zinc precipitation plant. Zinc usage is one lb. zinc per pound dore. Precipitates are 75 percent dore. They do not appear to have any mercury problem in retorting. They use very little precoat in their filters. The precipitates are melted to produce dore and a slag running 6 to 8 percent zinc, 100 oz. silver per ton, and 0.75 oz. gold per ton. They plan to send this slag plus the Borealis slag to a smelter eventually. (McGill took some.) Water is recycled from the tailings pond providing about 60% of their water requirements.

