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## CARLIN GOLD MINING COMPANY

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### GENERAL GEOLOGY OF THE CARLIN AND MAGGIE CREEK DEPOSITS

The Carlin and Maggie Creek Gold Mines are located respectively, approximately 21 and 9 miles north of the town of Carlin, Nevada. The Carlin Mine is located in the southern end of the Tuscorora Mountains and the Maggie Creek Mine is located on the south flank of Schreoder Mountain.

Both the Carlin and Maggie Creek deposits are of the disseminated replacement type, with gold mineralization in two distinctly different lithologic units. The Carlin Mine is located in the upper Roberts Mountain Formation, a member of a group of lower plate carbonate rocks with respect to the Roberts Mountain Thrust Fault. These host rocks consist of dolomitic siltstones and silty dolomites. The Maggie Creek Mine is located in the upper plate section of this thrust fault and the hosts consists of argillaceous, variably dolomitic limestones, siltstones, shales and sandstones.

Each deposit shows overall different controls on the mineralization. The overall geometry of the Carlin deposit is near that of the attitude of the host unit, hence it is a strataform deposit. The Maggie Creek deposit is controlled by a north east trending fracture zone along which gold is deposited. Dissemination outward into the country rock, however, shows a significant amount of stratigraphic control.

The major amounts of gold are associated with fine grain pyrites, with minor amounts being associated with silica and clays. Carbon is present in the system, however very little gold is associated with it.

The gold was deposited by circulating hot waters in the roots of an ancient hot springs system. Along with the gold, anomalous arsenic, mercury and antimony were deposited. The gold and most of the associated minerals in these deposits are submicroscopic to microscopic, being between 1-10 microns in size (.00004 - .0004 in). Some sulfides, besides pyrite, are visible at the Carlin deposit in the form of realgar and stibnite. Most of these observations were made in primary, unoxidized rock. Fortunately, a larger portion of the rocks have been oxidized which represents ore amenable to cyanidization.

To date, more "Carlin Type" gold deposits have been found in upper plate sediments of the Roberts Mountain Thrust, but the ones with greater tonnage (Carlin, Cortez and Jerritt Canyon) have been located in the lower plate rocks.

- MINING -

- MAGGIE CREEK -

Mining is conducted 2 eight hour shifts per day, 5 days per week. About 16,000 tons of ore and waste are moved each mining day. Ore is hauled the 14 miles to the Carlin crusher by a contractor. Low grade ore will be treated at Maggie Creek.

Mining Equipment:

- 1 - 12-1/2 cu. yd. 992 C Loader
- 1 - 6 cu. yd. 988 Loader
- 3 - 75 ton capacity Wabco Haulpak trucks
- 1 - D-8 Track Dozer
- 1 - Motor Grader
- 1 - T-750 Chicago Pneumatic Rotary Drill
- 1 - D40K Driltech Rotary Drill

Blasting is done with prilled ammonia nitrate and prima cord.

- CARLIN PIT -

Mining is conducted 2 eight hour shifts per day, 5 days per week. About 29,000 tons of ore and waste are moved each mining day. The Bluestar Mine, which is 5 miles to the north, is worked intermittently with the main pit.

Mining Equipment:

- 3 - T-750 Chicago Pneumatic Rotary Drills
- 1 - Hough 400C 12 cu. yd. Loader
- 1 - 10 cu. yd. - 992 Loader
- 1 - 7 cu. yd. - 988B Loader
- 1 - 5 cu. yd. - P & H Diesel Electric Shovel
- 10 - 75 ton capacity Wabco Haulpak Trucks
- 2 - 50 ton capacity Wabco Haulpak Trucks
- 1 - D-8 Track Dozer
- 1 - Rubber Tired Dozer
- 1 Motor Grader

- TAILING DAM -

Earth filled dam presently 250 ft. high. The pump house below the dam returns reclaimed solution to the mill.

### MILLING

Milling is done 3 shifts per day, 7 days per week at a rate of 2400 tons a day. About 20% of the mill feed is carbonaceous ore that is pretreated by chlorination before cyanidation.

The carbon ore is separated in the pit and is crushed and ground separately and sent to chlorination treatment before combining with the oxide ore for cyanidation.

Ore is crushed to minus 3/4 inch and ground in either the 10' X 10' Marcy or 8' X 7' Allis-Chalmers. Ore pulp at 60% minus 200 mesh goes to agitation and then to a 5 thickener C. C. D. circuit for washing and liquid-solid separation. Pregnant solution from #1 thickener goes to clarification, deaeration and zinc precipitation. Precipitate is fire refined to produce about a 980 fineness bullion.

Since milling commenced in April 1965, through 1979

Tons mined	-	110,818,000
Tons milled	-	12,088,700
Oz. Produced	-	3,044,000

**SIMPLIFIED FLOW DIAGRAM**

The diagram illustrates the steel-making process, starting with raw materials and ending with finished steel. The process is divided into several stages:

- Raw Materials:** 30 TON DUMP TRUCK, VIBRATING FEEDER, JAW CRUSHER, CONE CRUSHER, VIBRATING SCREEN, SLOTTED FEEDERS.
- Primary Processing:** CYCLONES, BALL MILL, CYCLONE FEED PUMP, AGITATOR LAUNCHER, AGITATORS, REPUCKER, UNDERFLOW PUMP, OVERFLOW PUMP.
- Secondary Processing:** REPUCKER, UNDERFLOW PUMP, OVERFLOW PUMP, REPUCKER, UNDERFLOW PUMP, OVERFLOW PUMP, REPUCKER, UNDERFLOW PUMP, OVERFLOW PUMP.
- Final Processing:** MIL SOLUTION SURGE TANK, CLARIFIER FILTER, MIL SOLUTION SURGE TANK, DEAERATOR, VACUUM PUMP, PRECIPITATE PRESS, PRECIPITATE PRESS FEED PUMP, MELTING FURNACE, BILLET, PIPE.

The diagram shows the flow of materials through various stages of processing, including crushing, grinding, and refining, leading to the final product of steel.

