

WESTERN
PRINCETON MINING CORPORATION (PMC-T)
(formerly CASSIAR MINING CORPORATION)

TOUR OF THE 25,000 TON/DAY SIMILCO COPPER MINE PRINCETON
CURRENT OPERATION IS MINING 80,000 TONS/DAY AT A
2:1 STRIP RATIO TO RECOVER 60 MILLION POUNDS COPPER/YEAR

ORE RESERVES PLUS MANY STRONG EXPLORATION TARGETS
SUGGEST MANY YEARS PROFITABLE OPERATION
UNDER TECHNICALLY STRONG, HARD DRIVING MINE STAFF

The mine is located at 3,740 feet elevation along both sides of the Similkameen River, 9 miles west of the town of Princeton, 17 miles north of the U.S. border, 150 miles east of Vancouver, B.C. Rainfall is 25 inches, 50% as snow. The property held is 6 miles north south by 4 miles east west containing about 25 square miles. The mine has a crew of 335 persons, made up of 265 hourly and 70 staff, most of whom live in Princeton.

Robert A. Hamaguchi, general manager, T.G. Smith, P.Eng., concentrator general superintendent, Bill Epp, geologist, Paul L. Clarke, mine general superintendent, all provided an informative tour of the Similco mine and concentrator. The two outstanding features of the tour were:

- the variety of operating experiences of the senior staff, each of whom have held senior positions in a variety of mines and concentrating plants; the ease with which they explained the unique features of this particular project and the enthusiasm and determination they express in the objective of achieving a long term on-going profitable, mid-range cost copper producer;

and

- the number and size of the as yet un-explored mineralized zones. The main targets include four immediately to the north of the present operations and the Oriole to the south of the Pit 3. The Oriole, which is to be further drilled, was mined in 1955 yielding 23,000 tons grading 0.8% copper plus 11,000 tons grading 0.5% copper. After induced polarizations, magnetometer and geochemical surveys located a number of targets the limited exploration drilling in 1989 successfully tested areas containing ten million tons of near surface, low strip ratio mineralization. The assays suggest better than reserve average copper grades, which when confirmed by closed spaced drilling could add a number of years to existing reserves.

The Copper Mountain Mine was acquired by Granby in 1923, with underground and open pit copper mining continuing, under various owners, except for several short term closures, until the present.

The most recent ownership change was in June 1988, when Princeton Mining Corp. purchased the mine and plant from Newmont Mining for \$15,400,000. The mine and concentrator had an operating capacity of 19,000 tons per day when purchased and currently is operating at

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purchased to provide the higher mining rate are: an 11 cu.yd. electric shovel; a 12.5 cu.yd. front end loader, bulldozers, graders, plus 4 trucks of 120 ton capacity and 4 trucks with 150 ton capacity. The 150 tons trucks not only have a 45 ton greater capacity than the trucks they replaced they operate at 30 miles per hour, 50% greater than the 20 to 22 miles per hour speed of the earlier trucks.

Mineable ore reserves are estimated at 42,000,000 tons grading 0.52% copper equivalent available to a 1:1 stripping ratio, using a 0.22% copper cutoff. In addition there are 75,000,000 tons at the same 0.52% copper equivalent grade in the No.2 and No.3 pits at a higher stripping ratio. As well there are a number of geophysical targets currently being drill tested with large tonnage potentials. Total drilled mineral reserves are 127,000,000 tons which are presently being evaluated to design a 10 year mine life. There are large tonnages of copper mineralization which could be ore depending upon the price of copper at the time of mining. What the current drilling is seeking is slightly higher copper grades in low strip ratio areas which will add to mineable tonnages at current or lower copper prices. An exploration budget of \$1,500,000 has been proposed for 1990 to complete close spaced drilling on some of the better grade, low strip ratio mineralization, in preparation for possible early mining.

Because the previous owner had scheduled the mine to shut down in 1990, maintenance of equipment and mill facilities had been reduced over the past few years. Consequently, catch up-work in both the concentrator and mine have been underway for over a year.

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Copper production in 1989 was budgetted at 60,000,000 pounds at an average cost of 82¢ U.S. Production for 1990 is forecast at approximately the same level. The cost range for 1991-1992 is anticipated to run between 68¢ and 75¢ U.S. per pound because stripping ratio is scheduled to decrease from:

1990 - 1.8 waste to : 1 ore

1991 - 1.1 waste to : 1 ore

1992 - 0.87 waste to : 1 ore

and because much of the mill maintenance and modifications will be completed with the resulting higher operating availability, lower down time, lower overtime, higher and more consistent recovery. Ore is currently being mined from Pit 1 and Pit 3. In Pit 1 the ore yields a 77% recovery in a 26% copper concentrate. Pit 3 ore yields 80% recovery. A further factor in the expected improvement in 1991 and 1992 operations is the completion of the processing of a knob of much harder than average reserves which also carries finer grained copper. This material plays havoc with the mill circuits because it needs finer grinding, takes longer to grind, reducing daily throughput, increasing power and steel consumption and reducing overall recovery. Some of the mill modifications include replacing steel with rubber liners on a test basis in the three 32 foot semi-autogenous mills, improved speed and cost of spill recovery by installation of a uniform sump pump system, cleaning and replacement of worn pipelines, tanks etc. some of which have been in place since 1972. When the mills were installed they had a fully autogenous designed capacity of 15,000 tons per day, by altering the speed of rotation and adding steel liners and balls the capacity was increased to 19,000 tons per day. The more recent changes by Princeton has further increased the daily throughput to 25,000 tons

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per day of flotation feed averaging 59% minus 200 mesh. The float cells are being expanded to increase the cleaning capacity which is designed to increase overall copper recovery. One of the additions which is expected to make a substantial improvement in efficiency, costs and moral is the construction, now underway for April occupancy, of a much expanded rebuild shop adjoining the concentrator building.

Some indication of the history and future of the mine can be seen in the table below:

HISTORIC PRODUCTION *

UNDERGROUND MINE PRODUCTION 34,775,010 tons 0.88% copper
Recovered 613,139,846 pounds copper, 187,294 oz.gold

OPEN PIT MINE PRODUCTION

Pit 1	4,000,000 tons grading	00.40% copper, ratio	--
Pit 2	30,000,000	.385	1:1
Pit 3	30,000,000	.45	1:1

CURRENT RESERVES

Pit 1	20,000,000	.465	.9:1
Pit 3	30,000,000	.46	1.1:1

INFERRED POSSIBLE RESERVES

Pit 2	44,000,000	.33	1.75:1
Pit 3	33,000,000	.44	about 1.50:1

Plus Lost Horse Gulch and Oriole zone tonnages

* All of the grades are quoted as only copper which increase to about 0.52% copper equivalent by including recoverable precious metal content. The Pit 2 reserves have slightly lower copper grade and higher strip ratio but provide better copper recovery in the 82% to 85% range and slightly higher precious metal credits.

An interesting historic fact is the underground mine produced to the 800 level at an elevation of 2,875 feet, using a manway shaft from surface and a main haulage adit on the 600 level. The original surface was at 4,100 feet elevation indicating copper production was through a 1,225 foot vertical interval. The current pit is at 3,740 feet elevation equivalent to the 600 level. The old workings have established that copper mineralization extends well below the currently planned bottom of the open pits. No work has tested the potential for an underground mine below the open pit limits.

The history at Copper Mountain since 1923, through a series of owners and a number of closures *, has demonstrated that a good mine dies hard and that there is a large copper reserve in the mountain yet to be defined and produced.

*The underground mine produced from 1926 to 1930, was closed from 1930 to 1936. Mining resumed in 1937 and was continuous until 1957. The property was idle until 1972 when Newmont started the Similco operation at the Ingerbell open pit.

(FOR A REVIEW OF PRINCETON / CASSIAR'S McDAME ASBESTOS MINE AT CASSIAR, B.C. and OTHER EXPLORATION PROJECTS SEE GCNL NO.230. NOV.30.1990.)

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