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Copper Mountain nears production in BC

SITE VISIT

PRINCETON, B.C. — Since 2006 **Copper Mountain Mining** (CUM-T) has been quietly but confidently building a large, open-pit mine near Princeton and within six months British Columbia will have its first major new metal mine in years.

Well, mostly new. The Copper Mountain mine has been in operation, intermittently, since 1923, though it certainly spent more years sitting idle than producing copper. After its last shut-down in 1996, then-owner Princeton Mining dismantled the facilities and sold the property to a soil remediation company — copper prices were so low at the time that few foresaw the mine ever starting up again.

But James O'Rourke has built several mines and seen metal prices cycle several times during his 30-plus years in the mineral business. O'Rourke was president of

Princeton Mining; he knew the Copper Mountain project well and kept his eye on it for the next 10 years. During that time he kept busy, leading Princeton through the acquisition, evaluation, financing, and development of the Huckleberry open-pit copper mine in northern B.C. Princeton Mining later merged with **Imperial Metals** (IIM-T).

While O'Rourke was building Huckleberry, back down near Princeton the soil remediation company sold Copper Mountain to **Compliance Energy** (CEC-V). Compliance thought the brown-fields site was ideal for its venture: a coal-fired power plant. Then, in 2006, B.C. Premier Gordon Campbell banned new coal-fired plants.

O'Rourke was on the Compliance board. Aware the property was again up for sale and copper prices were again on the rise, he convinced Compliance to spin

the property out into a new company. Copper Mountain Mining was born.

From the start the company has moved quickly. In 2007 alone the company completed 44,000 metres of drilling, had an initial public offering, came out with a resource estimate, and completed a preliminary economic assessment. Over the next 18 months the company drilled another 106,000 metres and increased that initial estimate 2.6 times, bringing Copper Mountain's measured and indicated resource count to 326.2 million tonnes grading 0.37% copper. Inferred resources add 169 million tonnes averaging 0.29% copper.

Now the mine is more than half built and Copper Mountain expects to start commissioning in May, with full production in June. The mine has already had a huge impact on the town of Princeton, where hotels have been booked out for



Trucks haul earth at Copper Mountain Mining's copper project 15 km southwest of Princeton, B.C.

COPPER MOUNTAIN MINING

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two years. And Copper Mountain's share price has rocketed from the \$2 range to more than \$6 in the last six months.

It looks like O'Rourke has done it again.

Past vs. present

Copper Mountain is home to a large, structurally complex, alkalic porphyry copper-gold system that has already produced more than 1.7 billion lbs. copper, 700,000 oz. gold, and 9 million oz. silver, from five separate pits and an underground operation, between 1927 and 1996.

The first operators, Granby Consolidated Mining, Smelting and Power, ran an underground operation at the site between 1926 and 1952. During that time, the company extracted 31.5 million tonnes of ore from below what are now pits 1 and 3; the rock carried an average grade of 1.08% copper. Lower copper prices and increased rail costs forced Granby to suspend operations.

The next company to take a stab at Copper Mountain, **Newmont Mining** (NMC-T, NEM-N), faced a different problem: a canyon between its mine and its processing facilities. Newmont bought the property in 1972 and quickly outlined the Ingerbelle deposit, which is on the northwest side of the Similkameen River canyon. Sensibly, the major built a mill beside its deposit and started mining.

Then the company expanded its exploration horizons a bit and started probing the other side of the canyon. The effort revealed a much larger area of mineralization. Newmont was therefore stuck building a conveyor to bring ore from its open pits on one side of the Similkameen River across the canyon to its processing facility on the other side. On top of that, there was not a lot of room over on the Ingerbelle side for a tailings facility, so Newmont also built a tailings pipe to pump tailings back across the canyon and into a facility on the mine side.

It was a situation plagued with problems. The conveyor alone caused all kinds of issues, from icing up in the cold Princeton winter to getting jammed at its bend points. Nevertheless, Newmont ran the operation until 1985, pulling ore from three pits.

In 1988 Cassiar Mining, which later became Princeton Mining, bought the mine and ran it again until 1993. In 1995 the company tried again, just working through ore available on the mill side — resources left at Ingerbelle and in low-grade stockpiles. But by late 1996, a lack of resources available at reasonable strip ratios, rising production costs, and necessary capital expenditures forced Princeton to shutter the operation once again.

All together, the open-pit miners at Copper Mountain extracted some 100 million tonnes from the site.

O'Rourke knew there was more. Even though the mine had been forced to shut down many times over the years, not one of the shut downs was due to a lack of resources. And his conviction paid off when Copper Mountain's first 84 drill holes combined with historical results to produce a resource totaling 228 million measured and indicated tonnes grading 0.37% copper plus 169 million inferred tonnes averaging 0.29% copper. The project was on a roll. The development decision was made, the agreement with Mitsubishi finalized, and the feasibility study updated. By the end of 2009, Copper Mountain was pouring concrete for mill foundations.

One of the key reasons Copper Mountain was able to move into development so quickly was that the project, as a past producer, came with most of the necessary permits, including a B.C. Mines Act permit authorizing the mine and reclamation plans, a Waste Management Act permit for effluent discharges, and a water license approving removal of water from the Similkameen River. As such, Copper Mountain did not need to go through the time-consuming environmental assessment impact process. Instead, it just needed to update existing permits.

The mine now being built at Copper Mountain will churn through 35,000 tonnes of ore daily. Ore will come from the three existing pits, which will slowly grow into one super pit. The mine plan was designed so as to provide mill feed with the highest possible head grade for the first few years; specifically, mill feed should average 0.45% copper for the first three years. Over the 17-year mine life outlined to date, mill feed will average 0.361% copper.

At peak production the operation will move 153,300 tonnes of material every day. To accomplish that, Copper Mountain has bought \$85 million worth of equipment from Komatsu, including two

at the mine.

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hydraulic excavators. The 42-cubic metre shovels are the largest that Komatsu builds, able to move 80 tonnes in each load or 68,000 tonnes of material each day. And the machines are electric, making Copper Mountain the first mine in North America to use an electric version of Komatsu's largest shovel.

Exploration, economics

The mine will produce 105 million lbs. copper annually. At first, ore will be sourced from pit 3, which is the southernmost pit. As Copper Mountain pushes back the walls of pit 3 it will be grown into pit 1, to the northwest. Then pit 1 will start to expand and, eventually, it will merge with pit 2, to the east.

The strip ratio is expected to average 1.96-to-1, though Copper Mountain is hoping to improve that by proving up resources in an area known as the Saddle zone. Saddle is between pits 2 and 3 and at present does not host known mineralization, though company's vice-president of exploration Richard Joyes is fairly confident his drills will be able to convert the Saddle from waste to low-grade ore, at least.

Saddle is one of the focuses of the current exploration program, which comprises drilling that will have a direct impact on the mine plan in the next five years. There are a few other areas in and around the super pit outline that require infill drilling. And there is a new zone developing just south of pit 3, known as Oriole, that Joyes says is showing potential to become a nice, high-grade starter pit. The latest set of drill results from Copper Mountain focused on Oriole, where the company completed 16 short holes. All but one of the holes returned mineralization above the cutoff grade, with the

stronger holes returning such intercepts as 42.3 metres of 0.44% copper, 13.6 metres of 1.99% copper, 27.6 metres of 0.58% copper, and 7.5 metres of 1.69% copper.

In the next phase of exploration, Copper Mountain will test the potential for long-term expansion. In particular, Joyes will direct a deep drilling program, testing for mineralization below the super pit shell. He will be guided in that effort by the results of a Titan 24 survey, which indicates sulphide mineralization continues at depth.

Generally, mineralization at Copper Mountain comes in veins, fracture fillings, and disseminations within volcanic rocks of the Nicola Group and, to a lesser extent, within the intrusive rocks of the Lost Horse Suite. The structures that control mineralization are mostly vertical, with secondary structures running north to northeast. Copper comes in the form of hypogene chalcocite, bornite and chalcopyrite.

"It's not a typical porphyry," says Joyes. "There's no large zone of consistent, low-grade mineralization, because it's structurally controlled. And since most of the important structures are vertical, our methods are a bit different."

Joyes directs drillers at Copper Mountain to drill at 45 degrees, because drilling down would just follow along the structure. He says Newmont drilled vertical holes at Copper Mountain and got into trouble with overestimating the resource.

In addition, because the mineralization is not consistent, grade control is key to ensuring good recoveries. In places the deposit carries 15% copper in veins, so ore like that has to be blended with rock from a low-grade stockpile prior to pro-

cessing. A lack of attention to grade control was one of the reasons Newmont had trouble making its Copper Mountain mine economic.

Aside from the need to blend grades, Copper Mountain ore is simple from a metallurgical perspective. It responds well to conventional crushing, grinding, and flotation processes, enabling copper recoveries of just over 89%. The old tailings facility, which was on the wrong side of the canyon for Newmont but is now conveniently on the right side for Copper Mountain, is being expanded with higher walls and will suffice for the first 17 years of operation.

Copper Mountain is spending \$438.5 million to build its namesake mine. The mining fleet and processing facility account for more than half of the capital cost, while another \$25 million is contingency.

For that investment Copper Mountain should be able to produce a pound of copper for US\$1.30. Using a copper price of US\$1.80 per lb., an exchange ratio of 80¢ U.S. per \$1 Canadian, and a 5% discount rate, the project carries an after-tax net present value of \$421.4 million. It is expected to generate a 20.8% after-tax internal rate of return, enabling capital payback in four years.

And of course, the price of copper is currently more than double the US\$1.80 per lb. estimate used in the feasibility study.

Six months ago Copper Mountain shares were trading below \$2.75, but the company's share price started a sustained climb in July 2010 to reach as high as \$6.24. Recently, its shares closed at \$5.99. Copper Mountain has 90 million shares outstanding.