

ton, while diluted mineable reserves at Big Missouri are 1.9 million tons of 0.091 oz gold and 0.67 oz silver per ton, sufficient for a 10½-yr mine life. There are reserves in other categories, and Westmin says numerous near-surface and deeper mineralized structures remain to be explored.

Mill construction should be completed in April, 1989, with commissioning to follow from April to July. When mining begins, ores from the Glory Hole pit at Silbak Premier and six pits at Big Missouri will be hauled to the plant at Silbak Premier. A large ore stockpile will be maintained to provide millfeed while mining is suspended during the winter. Mining will incorporate normal drill and blast methods with variable bench heights in waste and ore. The waste-to-ore ratio at Silbak Premier is 5.1:1, while Big Missouri averages 3.7:1. The mill-

ing process includes crushing, semi-autogenous grinding, cyanidation and carbon-in-leach. Recoveries of 94% for gold and 72.4% for silver are expected. Residues will be treated for cyanide destruction with sulphur dioxide technology and will flow by gravity to the tailings pond.

Premier Fact Sheet

Location: 20 km north of Stewart, B.C.
Major owners: . . . Westmin Resources (50.1%), Pioneer Metals (40%), Canacord Res. (9.9%)
Operator: Westmin
Reserves and category: 7.45 million tonnes of mineable ore grading 2.46 g gold per tonne and 69.602 oz silver per tonne.
Metal(s) to be produced: Gold and silver
Discovery date: 1904
Production decision: January, 1988
Start-up date: May, 1989 (commercial production)
Budgeted capital costs: \$88 million (excluding power)
Actual capital costs: N/A
Cash operating costs: \$22.44 per tonne (projected)
Means of access: Open pit
Extent of horizontal workings: N/A
Mining method: N/A
Mining equipment: Two rotary drills, two bulldozers, a hydraulic shovel, a grader, a front-end loader, 6, 35-tonne haulage trucks
Production rate: 2,000 tonnes per day
Milling: On-site, crushing, SAG mill, grinding and CIL, carbon acid wash, pressure stripping, zinc dust precipitation, smelting
Major contractors: N/A
Current status: Pre-production

Coopers & Lybrand



MR. NORMAND CHAMPIGNY

The Coopers & Lybrand Mining Services Group is pleased to announce the appointment of Normand Champigny as a mining consultant. Mr. Champigny is a graduate in Geological Engineering from Ecole Polytechnique and has a Masters of Applied Sciences from the University of British Columbia. He brings 7 years experience in mining project evaluations, with extensive gold expertise through participation in feasibility studies on deposits both in Canada and abroad.

The Coopers & Lybrand Mining Services Group offers technical and financial services to the mining industry worldwide.

SAMATOSUM

The Samatosum deposit, under development by Minnova Inc. (70%) and Rea Gold Corp. (30%), is 20 miles east of Barriere, B.C. Although silver is the primary metal credit, the orebody also contains significant base metals and some gold, which should enhance profitability. Open-pit reserves stand at 610,000 tonnes grading 1.2% copper, 1.8% lead, 3.5% zinc, 32 oz silver and 0.052 oz gold per ton.

Much of the orebody is actually a stratabound quartz vein with lesser portions consisting of mineralized and altered wall rock material. Both ore types contain tetrahedrite, sphalerite, galena, chalcopyrite and electrum. The milling operation will have a nominal capacity of 500 tons per day, and total capital and indirect costs for the project are estimated at \$32.2 million. The ore will be concentrated on-site and three products will be produced by flotation.

Most of the silver will be contained in a tetrahedrite concentrate, lead and some silver in a galena concentrate, and the zinc in a sphalerite concen-

trate. "The 3-concentrate approach maximizes the marketing flexibility and, therefore, the net smelter returns of the project," says Minnova.

An open-pit method will be used in the first 2½ years of operation, followed by a transition year to underground and ending with 1½ years of underground mining. Waste material is predominantly non-acid-generating, and this material will buffer the maximum 10% of that waste that has acid-generating potential. Tailings will be deposited conventionally behind an impervious till dam which will be raised by the downstream method. Tailings effluent will be passed through a monitoring and containment pond downstream of the main dam. Water not meeting quality guidelines will be pumped back to the main pond for further treatment.

Power will be provided by B.C. Hydro and fresh water from nearby Johnson Lake.

Samatosum Fact Sheet

Location: 39 km (by road) east of Barriere, B.C.
Major owners: Minnova Inc. (70%), Rea Gold (30%)
Operator: Minnova Inc.
Reserves and category: 774,000 tons (fully diluted)
Metal(s) to be produced: Silver, gold, copper, zinc, lead
Discovery date: July, 1986
Production decision: October, 1988
Start-up date: July, 1989 (commercial production)
Budgeted capital costs: \$32.2 million
Actual capital costs: N/A
Cash operating costs: \$110 per tonne (projected or actual)
Means of access: Open pit on hillside, adit and incline to underground
Extent of horizontal workings:
 Underground: 80 m high and 200 m long
 Open pit: 80 m high and 250 m long
Mining method: Open pit and longitudinal cut-and-fill
Mining equipment (open pit) 200-mm-diameter drill, 988 loader, 50-ton rear dump trucks, and Caterpillar D9 dozers
Production rate: 422.5 tonnes per day
Milling: 36x48-inch jaw crusher, 5½-ft shorthead cone crusher, 8x10-ft ball mill, flotation of three concentrates (copper, lead, zinc), and Larox filter press
Major contractors: Proton Systems (engineering, procurement, and construction management)
Current status: Pre-production, field construction began Oct 3, 1988

GREENSTONE

In 1986, Greenstone Resources picked up a large land position in the copper/gold belt of Quebec's Chibougamau area. Not even three years later, the holding will yield its first metal concentrate. Greenstone has announced that its Taché prop-