W.A.C. MEEKEL, J.R. EGAN and M.J. FAIRWEATHER, Technical Research Centre, Cominco Metals, Trail, British Columbia

Pine Point Mines zinc concentrate is required to meet an MgO impurity constraint of 0.4% or less. A pilot flotation column was installed in late 1986 to determine the potential for reduced operating costs of the existing concentrate leaching plant. Results of this study will be presented, together with a consideration of various integration alternatives. While the program was technically successful, further work on the project was cancelled following the decision in early 1987 to close the mine.

Paper No. 6 — 2:30 p.m.
The Nickel Plate Mill.
RICHARD MORROW and STEVE HAGGARTY, Mascot Gold Mines Limited, Nickel Plate Mine, Penticton, British Columbia

The Nickel Plate Mine is an open pit mine-mill complex located on Nickel Plate Mountain near Hedley, British Columbia. Mill production began in April 1987. Mill throughput is 2700 tpd at grades of 0.15 oz gold per ton and target recoveries of 89%. Projected production for 1988 is 160 000 fine oz of gold. This paper will detail the milling process and development projects undertaken since start-up.

GOLD GEOLOGY SESSION

DAVID JENNINGS, Quartz Mountain Gold, Session Chairman

Paper No. 7 — 1:30 p.m.
Geology, Geochemistry and Mineral Deposits of the Lower Jurassic Rossland Group, Southeastern British Columbia.
TRYGVE HOY and KATHRYN ANDREW, Geological Survey Branch, B.C. Ministry of Energy, Mines and Petroleum Resources, Victoria, British Columbia

The Rossland Group includes a lower, generally highly deformed sequence of predominantly fine-grained clastic rocks of the Archibald Formation (equivalent to the Ymir Group), overlain in turn by a thick accumulation of autoclastic, pyroclastic and epiclastic rocks of the Elise Formation, and less intensely deformed clastic rocks of the Hall Formation. South of Nelson, the Elise Formation includes a basal section of augite porphyry flows and fragmentals, overlain by dominantly ash, lapilli and crystal tuffs, with only minor flows. Within the upper Elise are high-level, comagmatic plagioclase porphyry intrusions; boulders of these porphyries are conspicuous in a prominent epiclastic tuffaceous conglomerate. Whole rock and trace element geochemistry of volcanic rocks of the Elise Formation indicate that they have alkaline and calc-alkaline, shoshinitic affinities.

The Rossland Group contains mesothermal Au-Ag-Pb-Zn veins in the Ymir Group, Au-Ag-Cu veins in the Rossland camp and elsewhere in the Elise Formation, gold skarn deposits (Tillicum), and intrusive related volcanic breccia pipes (Willa). These highly variable gold deposits appear to be structurally controlled. They are preferentially distributed within Elise volcanic rocks or Ymir sedimentary rocks, and appear to be associated with intrusions of the Nelson batholith.

Paper No. 8 — 2:00 p.m.
Sheep Creek Gold Camp.
DONALD G. ALLEN, Gunsteel Resources Inc., Vancouver, British Columbia

Gunsteel Resources has been actively exploring the old Sheep Creek Gold Mining Camp near Salmo, British Columbia, since July 1986. The work has included underground exploration drifting, surface and underground diamond drilling, and surface geophysics and geochemistry. A total of 223 000 tons grading 0.33 ounces of gold per ton have been outlined and the feasibility of production is being evaluated.

Paper No. 9 — 2:30 p.m.
The Bralorne-Pioneer Gold Vein Deposit, Southwestern British Columbia.
CRAIG H.B. LEITCH and COLIN I. GODWIN, Department of Geological Sciences, The University of British Columbia, Vancouver, British Columbia

The Bridge River gold camp produced more gold than any other camp in British Columbia over its 70 years of operation (130 kg or 4 million oz of Au, from 7 million tonnes of 18 g/t ore), mainly from the Bralorne-Pioneer mesothermal vein deposit. The deposits are hosted in the accreted Bridge River and Cadwallader Terranes, which are of Permian to Triassic age and of oceanic and island-arc character, respectively. Mineralization is temperally and spatially related to a suite of Late Cretaceous albitite dykes of 85 - 90 Ma age. It thus occurred long after and is genetically unrelated to the emplacement of the major host intrusives (Bralorne diorite and soda granite) which have been dated as Early Permian (275 Ma).

The major gold-bearing veins at Bralorne strike about 110 degrees azimuth and dip north at 70 degrees, with slickensides plunging 45 degrees east indicating that the last movement was reverse. Major ore shoots in the veins occupy somewhat less than 20 degrees of the vein and plunge steeply west, roughly perpendicular to the slickensides. The best host for veins seems to have been the competent Bralorne diorite and the Cadwallader greenstone; soda granite may have been too brittle to sustain large fractures.

Hydrothermal alteration envelopes around the veins are extensive and grade outward from intensely foliated quartz/ankeritic carbonate/sericite (± fuchsite) to less sheared calcite/chlorite/albite to unsheared epidote/calcite. Chemical studies of the alteration on constant volume basis (based on Al_2O_3 and TiO_2, which have remained relatively immobile), show that there has been addition of K_2O, CO_2, S, As and Au, while Na_2O, FeO (total), and MgO have been strongly depleted close to the vein. SiO_2 and CaO are locally depleted and reconcentrated.

Disseminated pyrite, pyrrhotite, and much lesser chalcopyrite occur within envelopes for up to several metres from the veins. Arsenopyrite is confined to vein selvages. Small amounts of sphalerite and especially galena appear to correlate with more gold-rich portions of the veins. Traces of tetrahedrite and stibnite have been observed but not tellurides.

JOINT SESSION: COAL AND METAL MINING

DOUG STOKES, Fording Coal Limited, Session Chairman

Paper No. 10 — 3:15 p.m.
Startup at Curragh Resources.
LARRY BEITZ, Personnel and Human Resources, Curragh Resources Inc., Faro, Yukon Territory

The role of individuals and the team effort required for Curragh Resources Inc.'s successful re-opening of the Faro, lead/zinc mine from a human resource aspect, will be discussed.

Paper No. 11 — 3:45 p.m.
Productivity Improvements at Fording Coal's Fording River Operations' Coal Mine.
D.A. BROWN, Superintendent, Mining, and Z.E. LUKACS, Mining Engineer, Fording Coal Ltd., Elkford, British Columbia

Over the last five years, faced with declining coal prices, an oversupply of coal in the market, and high strip ratios, Fording Coal employees responded to the challenge by setting productivity records in total material moved and clean coal production. For its achievement in productivity increases, Fording Coal was awarded the Silver Medal from the Canadian Awards for Business Excellence Program.

The productivity increases resulted from the experience, creativity and perseverance of the employees. Changes to operating and planning procedures contributed to increased productivity and profitability. The application of existing technology and the careful adoption of new technology, resulted in record production with decreased operating costs.

Paper No. 12 — 4:15 p.m.
Title and author to be announced

MINERAL PROCESSING SESSION

HEATHER KENNEDY, Fording Coal Ltd., Session Chairman

Paper No. 13 — 3:15 p.m.
Evaluation of Used Grinding Mills for New Projects.
G. GREGR, Sales and Service Manager, Mining Equipment, Dominion Engineering Works Limited

In recent years, there has been an increasing number of small- or medium-size mining projects, predominantly on gold or high-grade base metal deposits. The grinding requirements of these new mines usually call for a rod and ball, or small semi-autogenous and ball mill combinations. With the exception of semi-autogenous mills, many of these mills may be found in old, closed-down mining operations.

The used mills are often an attractive alternative to the new mills, because of their immediate availability and lower price. Most of the old mills are well designed and of solid construction, and if well cared for in the previous operation, they may still provide many years of useful service.

On the other hand, there are mills which have been abused, poorly maintained, operated in severe environmental conditions, or exposed to accidents, and as a result, one or more crucial parts of the mill or the mill drive, may be seriously damaged.

When considering used mills for a new operation, a thorough inspection of the mill and the drive, preferably before its acquisition, is extremely important, and may save the buyer a considerable amount of money.

This paper describes the proper procedure for the inspection of the mill, the mill drive including the motor, and the auxiliary equipment. The main areas of concern are discussed, such as the type of damage which would render the mill unsuitable for future operation, parts which may be repaired or replaced, liner conditions, missing components, spare parts, etc.