

Increased efficiencies at Blackdome

*British Columbian gold mine
hits new production levels*

by Explosives Technology Intl staff

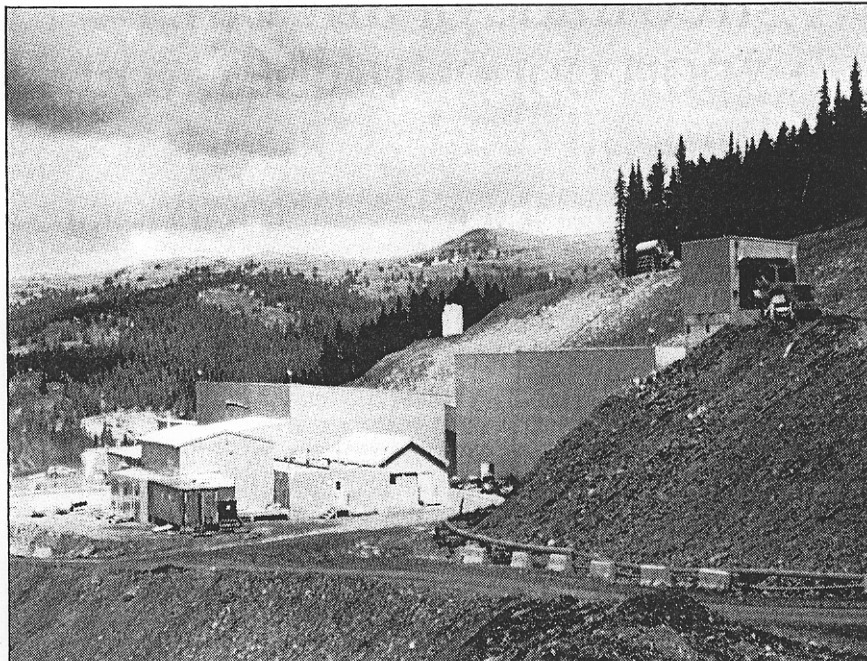
A highly efficient underground drill-blast program, utilizing water gel explosives, has helped propel a valuable new source of high-grade gold and silver ore into its third full year of production on Blackdome Mountain — a remote, rugged area in the Cariboo region of southwest British Columbia.

Located approximately 140 air-miles north of Vancouver, Blackdome mine is one of the highest-grade gold mines in North America. From the beginning of production in May 1986 to the end of the 1988, the underground mine has produced more than 128 000 oz Au and 387 400 oz Ag at an average grade in excess of 0.70 oz/ton (t) Au and 2.77 oz/t Ag.

The mine is also recognized as one of Canada's most efficient gold mines on a unit-cost basis. It produces between 200 and 250 t/d of Au-Ag ore, which is transported to the mill building on the surface and is processed into a doré gold product. Approximately 5-10% of the mill feed comes from the mine's open pit operations, which are carried out during the summer months.

The Blackdome mine achieved new records during its second full year of production in 1988. Mill throughput was 87 519 t of ore at an average grade of 0.63 oz/t Au and 2.96 oz/t Ag, resulting in total production of 51 629 oz Au and 182 106 oz Ag. The previous year's total production was 46 698 oz Au and 126 520 oz Ag.

According to mine manager Peter Busse, the company is now on-target to recover an estimated 54 000 oz Au in 1989. At the mid-year point in production, the average grade of mill



Blackdome Mining Corp's mine, mill and camp facilities are situated at an elevation of 6500' on Blackdome Mountain, 140 air-miles north of Vancouver BC.

feed was 0.82 oz/t Au. Mining activities are being carried out in 15 stopes on four underground levels. The company is currently mining No. 1 and parallel No. 2 veins, with development work in progress on the promising No. 17, Giant and Redbird veins.

In addition to Busse, key Blackdome personnel at the mine site include mine superintendent Tom Colbourne, general mine foreman Pete Fast, purchasing agent Jack Spencer, mill superintendent Bill Muir, personnel superintendent Glen Bayes, mechanical superintendent Geoff Moore, chief accountant George Wight, and chief engineer and geologist Dave Rennie.

MINING OPERATIONS

A key component in the overall success of the company is the high efficiency being achieved by the 48-person mining department, headed by Tom Colbourne and Pete Fast. The two men are responsible for ensuring that a sufficient quantity of ore is produced to keep the 220 t/d gravity-circuit milling operation running 24-hr/day, seven days a week. Their work is complicated by the erratic nature of the grade and vein-type structure of the Blackdome orebody, which requires frequent revisions of the mining plan to maintain tonnage and grade schedules.

All development is restricted to the vein structures where possible. Only ore passes, service raises, cross-cuts

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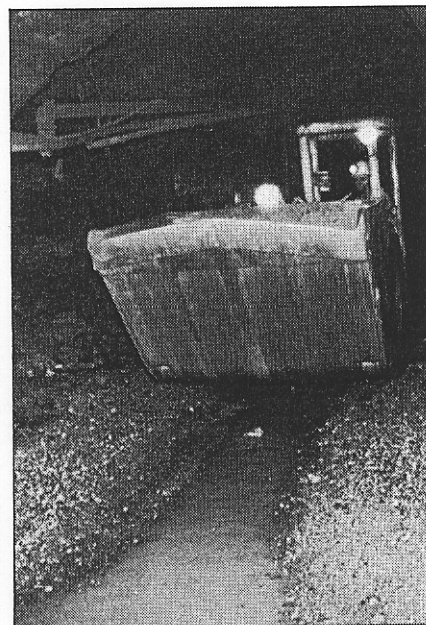
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and remuck bays are intentionally drilled in waste rock. The cross-cut size is generally 13' × 10', and the drift size is 10' × 10'. The present mining method is cut-and-fill, using stopers in the raises and a single-boom diesel-hydraulic jumbo drill in the drifts.

Raises driven for development, exploration or ventilation are generally 5' × 5' and are inclined at 50°. Three raises are being worked simultaneously. Generally the stope blocks are between 50' and 250', with occasional lengths of 300'. Widths vary from 5' to 11.5', with the average being 6.5'.



At present, the load-haul-dump units are mucking and hauling ore a distance of 1200' from the face to the coarse ore stockpile at surface.

The miners are achieving about 8.8'/personshift in the raises, and about 4'/personshift in a drift heading, including timbering and installing ground support.

A typical drift round of 35 holes contains five to six cartridges of Tovex Minerite water gel explosives in each blasthole for a total range of approximately 88 lb. The shot is tied in with non-electric 0-14 period delays, one delay per hole, and initiated with B-line and a conventional fuse cap. In very poor ground, the holes are doubled primed. The blasts generally produce 50 t of -4" muck.



Blackdome miner loading sticks of Tovex Minerite water gel explosives into a blasthole in preparation for a raise shot. Approximately 88 lb of explosives are loaded and fired in a typical drift round of 35 holes.

In the raises, 55 lb of Tovex Minerite water gels are normally loaded into 18 to 20 holes to obtain 12 t of ore per shot. Run-of-mine ore is transported from the different levels to the 100-t covered coarse ore bin on surface by a fleet of seven 2.2-yd³ load-haul-dump units and two 10-t trucks where it is dumped onto a grizzly above the coarse ore bin. Blackdome takes the ore from the bin and does all the processing and refining necessary in the mill building. Total recovery after processing is presently more than 93% for gold and 71% for silver.

EXPLOSIVES

The Blackdome Mine has used ETI explosives exclusively since the mine went into production. All explosives and blasting accessories being used by the mine are supplied by ETI's distributor, Ace Explosives (1984) Ltd out of its Kamloops BC branch. Rick Bellenie, ETI's area manager in Burnaby, and Ace's technical sales representative Ken Woodcock are helping to ensure that the mine's blasting operations proceed as smoothly and efficiently as possible.

Approximately 85% of the explosives used by the mine consist of Tovex Minerite water gels in 1" x 12" and 1.6" x 15.7" cartridges. ETI Nilite FR blasting agent makes up the

remaining 15%. The mine is using 1" x 12" water gels primarily for raise and stope blasting, while the larger diameter cartridges are used in the drift holes drilled with jumbos. For the open pit operations, the company is using Nilite FR wherever feasible.

Colbourne said all of the blasts fired to-date have produced excellent fragmentation results.

The increased safety factors provided by water gels are the main reasons for using them exclusively in the underground operations. "By

being more stable and less sensitive than NG-based explosives, the Tovex Minerite water gels are safer to use, safer to store and offer a longer shelf life than competitive products," Colbourne said.

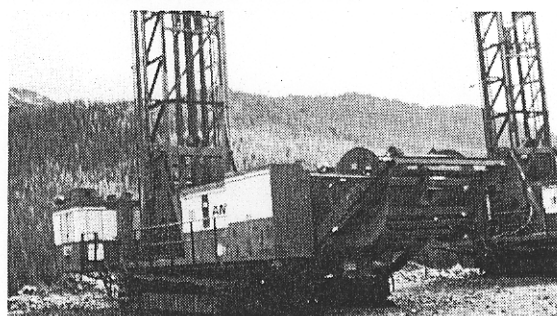
In addition, he reports that the improved packaging of the Tovex Minerite is much superior to that of previous products. The miners have found it easier and quicker to load, and the stiffer packaging stands up better in the tough underground conditions.

CMJ

ELECTRIC MINING DRILLS

1 of 3, 1980 Gardner Denver GD100, 9 5/8" blast hole drills.

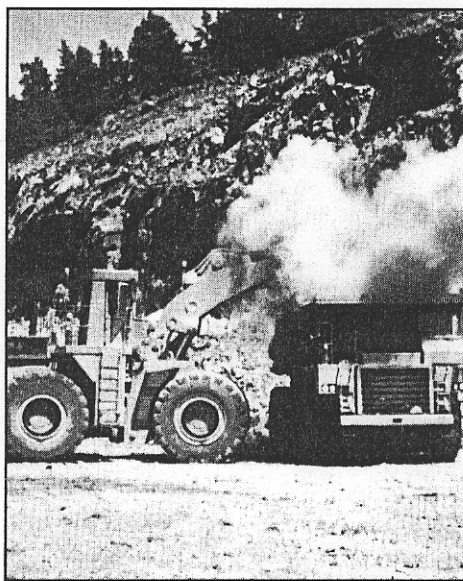
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