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Wide silicified section (No 4 stope) and true vein (No 2 stope) in the Denoro Grande gold mine of Colt Resources, formerly the Jewel mine

## The Jewel Mine

**BZESESS**

## early days of a revived gold producer

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An examination of the history of one of the small mining camps in the Greenwood District of British Columbia gives an insight into the varied conditions needed to encourage small mine development.

The Jewel Lake mining camp is located around Jewel Lake which lies about six miles north-east of the town of Greenwood.

The camp is a gold-silver property, the precious metals being found as gold-silver tellurides in quartz veins. The main vein of the camp, the Jewel vein, strikes approximately north-south and dips an average of 40 degrees to the east. The vein, where exposed on surface, is bounded by greenstone. The southern section which is bounded by granite is covered by deep overburden. Occasional bonanza shoots are characteristic of the camp and several of these outcropped.

It is possible that fur scouts operating from the Hudson Bay post at Fort Coleville, Washington, noted the outcroppings. The district being wilderness at this time any discoveries other than placer gold would not have been worthy of reporting.

With the decline of the prospecting boom in the Western United States many prospectors were working their way north in the hope of undiscovered mineral wealth. In 1859 placer gold was discovered in the nearby Rock Creek and Boundary Creek which lies to the west of the Jewel camp. By October 1859 five-hundred miners were working the placer deposits along Rock Creek.

In 1865 access to the District from the Pacific coast of Canada was facilitated by the construction of the Dewdney Trail.

As the placer operations became exhausted (peaked production in 1863); prospecting began for lode deposits. The first quartz claim was staked in 1884 near the placer operations. By 1895 nearly every mineralized outcrop in the district had been examined and the most promising of these staked.

The first claim in the Jewel Lake camp was staked in 1895 (gold drop claim).

The district was still very isolated and the work being done was mainly preliminary evaluation and assessment. The first prospectors were hoping to find deposits rich enough for one- or two-man highgrading operations. The results of this intensive prospecting showed that the Greenwood District needed better transportation to develop the relatively low grade ores that were being discovered.

The potential of the area was recognized by many Americans from Butte and Spokane who either held on to their claims or purchased claims from those with less vision. The widespread interest in the low grade copper discoveries of the Greenwood District also attracted English and Eastern Canadian investors.

By 1897 rumours were circulating that the Canadian Pacific Railway would build a line to the Greenwood area. During 1897 three companies were prospecting the Jewel vein and one of these sank a shaft to a depth of 130 ft on one of the Bonanza outcrops (assay of \$500 per

ton gold over narrow widths reported). These results spurred further activity and by year-end nearly a dozen claims were being actively prospected.

### JEWEL VEIN

The Jewel Gold Mining Company, of London, England, acquired the four key claims on the Jewel Vein in 1899. During this period many wagon roads were built and the railway was four miles away at the town of Eholt (CPR from Robson on the Columbia River).

The Jewell Shaft was deepened to 234 ft, and 700 ft of lateral development work was done. The vein averaged 4 ft in width, and the ore as mined graded \$10 per ton, although ore of \$70 per ton was found. The Company mined and stockpiled 600 tons of ore and as the vein appeared continuous it was decided to erect a mill.

By early 1900 over 60 small mines were shipping over 100 tons per year to the two smelters in the district. A third smelter was under construction and English capital was developing the water power of the district for hydro-electric purposes.

By the end of 1901, 3000 ft of lateral and vertical work had been done in the Jewel Mine and a shipment of 325 tons was made to the smelter. A new mine-hoist was installed on the Jewel shaft.

During 1902 the prices of copper, silver, and lead fell sharply closing all the small mines in the district except the Jewel. During this year an active development and exploration program took

place. A new shaft was sunk 1000 ft to the north of the Jewel Shaft, 2160 tons of ore were shipped to the smelter and many improvements were made to the operation.

The test results from the 250-ton bulk sample sent to Rosslund in 1900 were received, and indications were that \$12.00 worth of metals could be recovered from the ore. Although the results from the mine were encouraging the money for a proposed stamp mill and cyanide plant was not available due to prevailing economic conditions.

The period from 1903 to 1908 was one of labour unrest and the area was racked with strikes, particularly in the coal mines. As the smelters required large amounts of coke this period was one of poor productivity for the copper mines.

#### DEVELOPMENTS FROM 1909

The Jewel Gold Mining company conducted feasibility studies during this period, and in 1909 a new company was organized to operate the Jewel Mine. This new company called the Jewel Mining Syndicate began erecting a 15-ton stamp mill with a cyanide plant and three concentrating tables. A new 50-horsepower hoist was installed on the Jewel Shaft, the shaft improved, and a gravity tramway constructed for a mile from the mine, to the mill on Jewel Lake.

The mill was started in August 1910, and treated 500 tons of ore. It was found that the slime plant was of too small a capacity and the operation was closed down. During this operating period seventeen men were employed with an average monthly payroll of \$1,462.60.

The mill was adapted slightly and, in late 1912, was started up again. The mill

recovered \$15,000 worth of metals during the remainder of the year.

During this period the Jewel Denero Mining Company, of Edinburgh, Scotland, took over the property but failed to obtain full title to the claims covering the southern section of the property.

A geological study of the area by the BC Department of Mines concluded that the area of best ore potential lay in the granitic rocks under this southern section. The feasibility studies indicated that the blocked out ore of 30,000 tons graded \$9.00 per ton (1912 prices).

The ore was screened to 20 mesh and 12 mesh, and the cyanide was introduced at the stamps, each of which weighed 1250 lb. The mill treated 50 tons every 24 hours. In July, August, and September of 1913, 3855 tons of ore was milled, with a recoverable value of \$8.78 and an average tailing loss of \$1.00 per ton.

Some minor alterations were made to the mill circuit as the concentrating tables did not work as anticipated, all particles were then ground to slime.

The mill feed was coming from the upper levels of the Jewel Mine and the shaft was deepened to 400 ft for further production purposes.

#### DEPRESSION AND RECOVERY

In 1914 the copper market was depressed, and copper mines and smelters closed down. The Jewel Mine operated until August 1915 and produced 27,105 tons of ore for a good profit to the company. The average crew for this operation was 34 men in the mine and 18 on surface. From 1917 to 1921 only minor activity by leasers took place in the Jewel Mine. The price for supplies and labour was high and new equipment

was simply not available. The prices for lead and copper were high, and many mines had a wage pegged to a sliding price of the metals. With the price of gold fixed, the gold mines could not compete for labour.

By 1921 the price of silver began to rise and the economic situation generally improved. An improved demand for gold and silver encouraged prospecting and leasing. In 1926 a group of prospectors working in an old 20 ft shaft on the Jewel Vein to the North of the Jewel Mine encountered a high grade ore shoot. This shoot was 7 ft wide and assays ran as high as 9.66 oz/ton gold and 52 oz/ton silver.

The property was optioned in 1928 and the mine dewatered, but the price of silver dropped and risk capital was not available. During this period the cyanide plant was dismantled and sold.

During 1930 a Calgary Syndicate optioned the claims. This company reorganized an old (1927) company called Stadacona Petroleum into a new company called Dentonia Mines Ltd (13 Jan 1931).

On 13 August 1933, a drift was made on the vein, from the northerly Jewel shaft to pass beneath the rich ore discovered in 1926. A crew of nine men underground and six on surface did enough drifting and raising to delineate approximately 40,000 tons of ore. This was a 400 ft long ore shoot, 6½ ft in width, grading 0.40 oz/ton gold with silver values.

The old mine buildings were used for the crew and a 140-ton/day flotation mill was installed in the old stamp mill building. It was estimated that the mill would cost \$30,000. Power was again brought in from the town of Greenwood.

During 1934 a long crosscut from near lake level was driven to the vein and further drifting to the north and south was completed. The collar of the old Jewel shaft was retimbered and a new headframe and hoist house was erected.

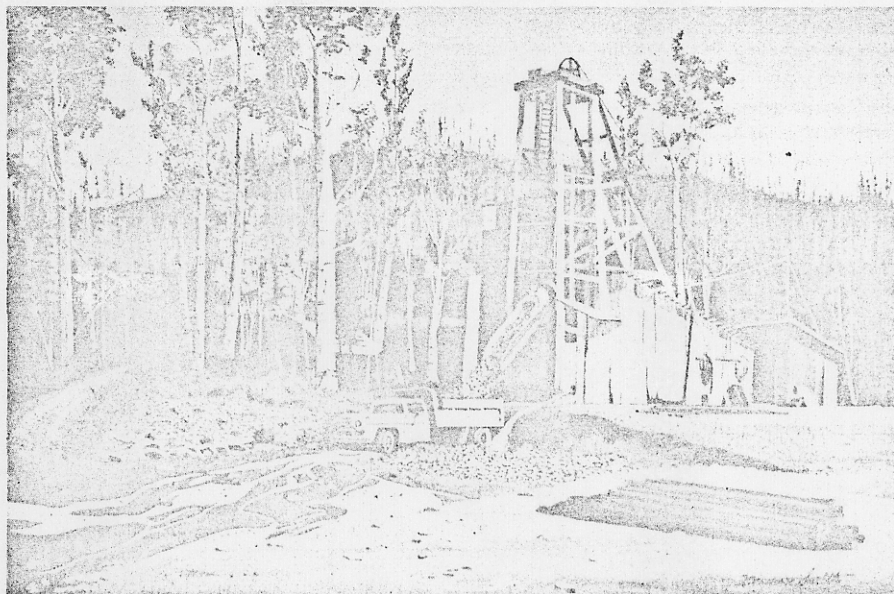
The mill, rated at 140 tons/day, milled 90 tons/day from the ore shoot discovered in 1926. During 1935 the mine operated 333 days and the mill 359 days. The operation employed 52 men in the mine and nine in the mill. During the year 32,447 tons were mined and milled.

During 1936 the mine operated 308 days, the mill 130 days, producing 11,612 tons of ore. The operation employed 43 men in the mine, six in the mill.

The company optioned the Howard Mine in Ymir in September 1935 and the crew was relocated. The mine did not operate in 1937, other than a seven-man crew removing equipment. The mill employed eight men and milled 17,727 tons of ore during a 213-day period in 1937.

From 1938 to 1944 the property was leased by various groups of local leasers. During this period 7748 tons of ore was shipped to the smelter at Trail. A minor amount of diamond drilling and under-

Exploration headframe (1973) of Colt Resources at the Denoro Grande gold mine, Jewel Lake, BC, from a painting by F Western Smith, of Rock Creek, BC, who is widely known for his portrayal of mining scenes





## JEWEL MINE

ground development work was done during this period.

During 1944 the company vice-president had asked a mining engineer for his opinion on the Jewel Camp. At the annual company meeting (1 August 1944) the engineer stated that the property merited a thorough examination. The vice-president offered to finance this examination in return for a stock option. The proposal was accepted and the remainder of the year was occupied with financing.

In June 1945 twelve men were employed building a camp and 1200 ft of diamond drilling was done. Equipment was purchased and power was brought in from Greenwood.

During 1946, 1000 ft of drifting and nearly 5000 ft of surface and underground diamond drilling was completed in the north end of the vein. The old workings were rehabilitated and 16 men were employed. The following year 4000 ft of diamond drilling was done and the northern area of the mine was developed.

The old mill building was again altered and a 100-ton/day flotation mill was installed. The mill began treating ore on 1 November 1947. A total of 1678 tons of ore was mined and milled in 1947, yielding 103 oz of gold, 660 oz of silver, 611 lb of lead, and 64 lb of zinc. The mill was closed in March 1948 and the company declared bankruptcy in April 1948. The final shipment was 48 tons of concentrate grading 140 oz gold, 856 oz silver, 1152 lb lead, and 125 lb zinc.

A post mortem of this operation showed that the exploration work was entirely within the old workings. The sampling had showed erratic assays and too much significance was attributed to these erratics.

The engineer who originally recommended the examination was asked to write a report on the failure of the operation. His conclusions were that a shortage of miners and poor grade control were the main reasons for failure. He expressed concern that no exploration had taken place to the south of the workings. He considered that the area to the south had 'unusual possibilities' for another ore shoot.

### REVIVAL IN 1970s

The camp lay dormant until the summer of 1971. At this time the Park Planning Branch decided to consider the camp as a park. The Department of Mines, with great forethought considered the area and concluded: 'to set aside the area for single use seemed a pity since it has been demonstrated that mining and recreation can live in harmony at this location.'

The claims had been placed in receivership and were optioned by a local prospector for \$125 per month. In 1969 the

prospector purchased the claims for a further \$4500 as the receiver, after consulting various mining people, felt the property too small and too low-grade for a profitable operation.

In the summer of 1970 the prospector and his partners drilled a hole in unexplored area to the south of the old workings. This area is covered by 60 ft of clay and boulders, and after many drilling problems cored 3 ft of quartz assaying historic mine grade. The prospector attempted to interest several companies but at that time the tonnage potential seemed limited and gold veins were of little interest to mining companies.

The property came to the attention of Colt Resources through a casual conversation. Two geologists who were making a trip past Greenwood were asked to examine the area. The area was covered with snow during the time of examination in March 1973. A cursory examination of the underground workings of the 1930s and '40s convinced the pair that the vein structure was extremely strong.

The story presented by the owner seemed easy to test. An area next to an old producing mine, covered with deep overburden, and the ground not owned by previous operators. The area was also supposed to be in an unfavourable rock type, but the owner's drill hole in the centre of the area cored an obvious extension of the vein.

The ground was optioned in April 1973 and diamond drilling began in May 1973. By early June eleven holes had been drilled, nine of which intersected the vein.

Three of these holes were of a width and grade similar to ore mined previously. It was then decided to rehabilitate the southern workings on the vein, and drift into the drilled area to test the vein by underground development.

The old shaft collar had caved and the leasers had removed many of the pillars making the mine unsafe. The company, believing that gold was underpriced, decided to collar a new shaft in overburden at the southern limits of the diamond drilling. The shaft was sunk to 290 ft by January 1974, and a crosscut was driven to the vein from the 250 ft level.

The vein was intersected on 21 February 1974 and a shipment of 67 tons was shipped to the smelter at Trail on 3 April 1974. The shipment averaged historic mine grade, and justified the premise of ignoring the drill intercept average grade in favour of an assumption that quartz and telluride, in mining widths, meant a repeat of an ore shoot of historic tonnage and grade.

By April 1975, over one thousand feet of drifting and raising in the vein had been done, and the vein located by underground drilling to the north, south, and below the new workings. Five stopping areas had been opened up, and over 2000 tons of ore had been mined.

The Company has been shipping monthly allotments to the smelter (of Cominco Ltd, at Trail) to pay for development costs. A new production headframe and hoist has been installed to replace the exploration headframe and hoist.

During the summer of 1974 mill testing was completed by two separate mill consultants with favourable results.

The company is deferring the purchase of a mill until the full ore potential of the unexplored granitic rocks is evolved. It appears that ore bodies containing 40,000 tons of ore occur in the Jewel vein system and that systematic underground prospecting is the only way to uncover these. Historically these vein camps get a thorough going over in hard times. If enough risk money is available to finance these programs several new ore bodies will be found.

British Columbia has many camps similar to the Jewel Lake Camp and if the government would provide the incentives, exploration and development would follow. In most of the camps the ore in sight was extracted and when that was gone, management shut the operations down. Most were closed before modern drilling techniques were perfected.

It is a fallacy to argue that these vein deposits, the Jewel vein being very typical, if they cannot carry a heavy taxload, are to be left in the ground. As to all things, there is a season and there is a time to mine silver and gold vein deposits. History has indicated that the exploitation of these deposits is a condition of the times. The price of precious metals has to be right in relation to the labour and material cost, and to general economic conditions.

With record gold and silver prices, it is almost certain that a detailed examination of these gold and silver veins by modern methods would re-open many of these camps. A number of them are located in developed areas of British Columbia and, being underground and on a small scale, the environmental impact would be minimal. Under these circumstances, it is hard to understand why our present government pursues a tax policy (in a period of relatively high unemployment in the lumber and copper industries) which discourages the opening of these camps.

### REFERENCES

- Minister of Mines' Reports: 1896-99, 1900-03, 1907, 1909-1913 most data 1914-19, 1921-23, 1925-1929, 1930 to 1948.
- Data from Boundary Historical Society 1964.
- Data from files and minutes of Dentonia Company.
- Personal communication with many Greenwood residents who worked on the Jewel Camp.