COLUMARIO CONSOLIDATED GOLD MINES LIMITED

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4th Year Geology
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Bibliography

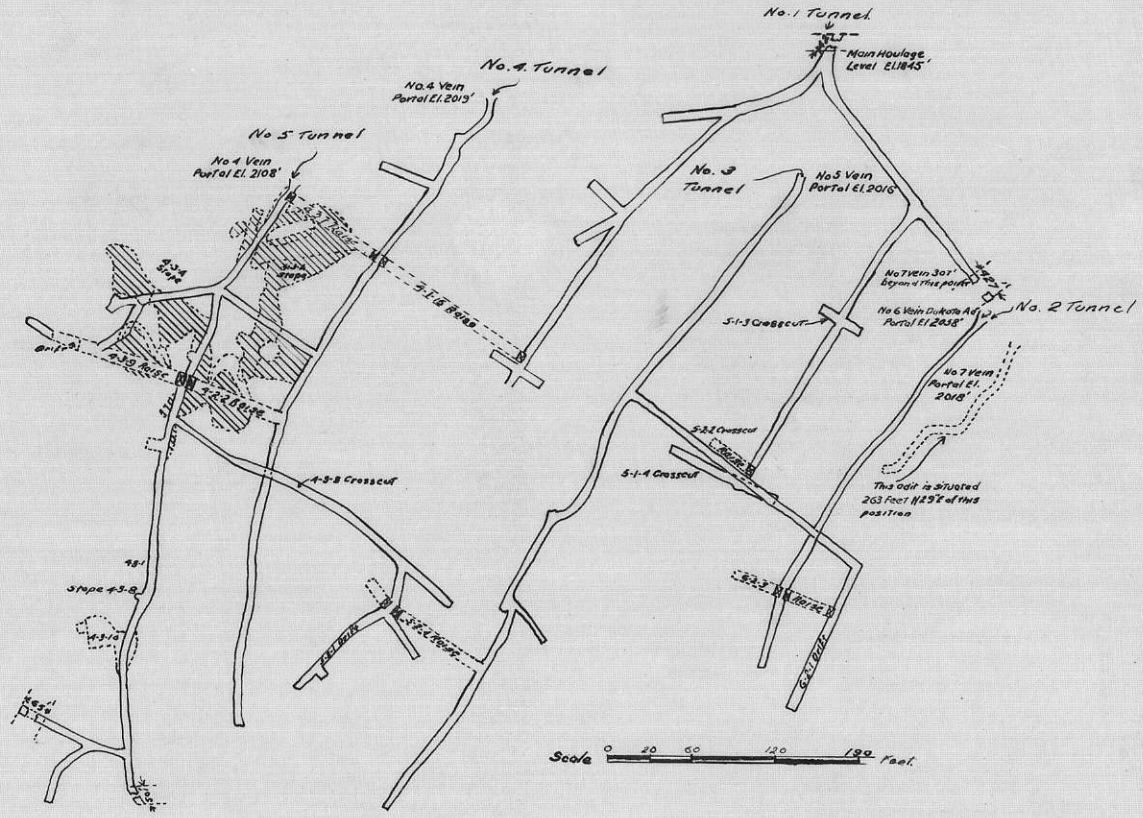
(1) Dr. E. D. Kindle's 1936 Geological Survey report on the Skeena district

(2) 1934 Report of B.C. Minister of Mines

(3) Acknowledgement is made to Dr. Kindle for his personal help in regards to the geology of the district.

(4) Pictures by coutesy of Geological Survey.

MAP OF COLUMARIO MINE WORKINGS



This Map is Taken from the report of the Minister of Mines for 1934

A View of the Main haulage level with the ore shoot & bin in fore ground.

The. Mill.

Looking down the Tramline towards the Mill

(1) The Columario mine property of Columario Consolidated Gold Mines Limited is situated on the west slope of Kleanza Mountain between the elevations 1,700 and 2,300 feet. It is about four miles south-east of Usk, a small village on the western bank of the Skeena River, 80 miles from its mouth. The Terrace to Usk highway, along the eastern side of the Skeena River at the foot of the mountain is one mile distant from the mine. A good wagon road connects the mine with this highway. The mill is on the north bank of Noble Five Creek at an elevation of 400 feet and is connected with the mine by a 4800 foot aerial tramway.

(2) In 1919 the Kleanza Company was organized for the purpose of developing this property and preliminary prospecting was carried on in that and the following year. In 1921 a syndicate known as the "K Partnership" acquired a lease on the Golden Crown group from the Kleanza Company and erected a Ross mill on the property, but work was suspended shortly afterwards. During the next few years prospecting operations were carried on under the supervision of John Willman. A small amount of work was subsequently done annually, with results which lead to the incorporation of a company in 1927, the Columario Gold Mines Limited. In that year a portable compressor was installed and an active campaign of developement was carried in the years 1928 and 1929. The work consisted of drifting, raising and cross-cutting on and between veins Nos. 4, 5, 6, and 7 (shown on map). Developement was continued during 1939 and a little

work was done in 1931 and 1932. Towards the end of 1933 it was speeded up, following the reorganization of the Columario Gold Mines Limited as the Columario Consolidated Gold Mines Limited. In 1934 a flotation plant of about 75 tons daily capacity was built on the north banks of Noble Five Creek, near the Usk-Terrace highway. Milling operations were commenced on September 2, 1934 and simultaneously with construction underground developement was carried on as actively as possible. After running for three months the mill was closed down for the winter. In the spring of 1935 it again operated for a few months at low capacity, but work was suspended indefinitely in both the mine and the mill near the end of June of that year.

Data is not available for the entire mill run but during the three months period in 1934, 101.3 tons of concentrates were produced containing 492.62 oz. of gold and 1401.23 oz. of silver.

(3) The mine camp is on a bench about 100 feet lower than the main haulage. The buildings consist of a well equipped bunk house and cook house combined, an office for the mine staff and a power house.

The power plant is a 112 Brake Horse Power Peters Atomic Diesel engine which operates an Ingersoll-Rand air-Compressor of 500 cubic feet of free air per minute capacity. The electricity used in the camp is supplied by a 110 volt 32 ampere direct current generator operated by a Lister single cylinder oil engine.

To the south of the power house is the ore bin, which is fed by an inclined ore shoot from the main haulage level. From this point the areal tramway operated by gravity carries the ore down to the mill 1400 feet below. The photograph on the opposite page shows the head of the aerial tramway and the ore bin in the fore-ground with the main haulage level in the background.

(4) The mine is on the southeast border of a tongue of the Coast range batholith, about three miles wide, which intrudes Jurassic volcanic rocks. The contact is very irregular and the andesitic volcanics in the mine workings are intruded by a great variety of smaller stocks and tongues of granodiorite. The lower slopes of Kleanza mountain below the mine are underlain by the granodiorites, but at higher elevations the volcanic rocks are predominant. Both the andesitic volcanic rocks and the granodiorite are cut by quartz albitite, diorite and lamprophyre dykes.

The quartz veins occur along a system of fault fractures all of which strilse from south 30 to south 45 degrees east and have an average dip of 50 degrees northeast. They are usually found in the andesite near intrusive masses of granodiorite or along a fault contact between these rocks. Where the faults pass through the granodiorite the veins tend to pinch out within a short distance. This factor is of economic significance as a large number of irregular shaped bodies of granodiorite were encountered in the mine workings. In tunnel number 3 veins occur on both

sides of, and within a few feet of a 3 foot quartz albitite dyke. Where they cross the dyke they are pinched and lean.

The veins average from 1 to 3 feet in width with occasional short lenses five feet in width. In many places they were found to be barren, but where they are mineralized with seams of coarse pyrite a fair amount of gold occurrs. In some cases the pyrite is accompanied by small amounts of chalcopyrite and galena.

(6) Altogether eleven tunnels have been driven in developing seven different veins, most of the work was done on the three veins that lie 150 feet apart above the main haulage level. A brief resume of the work done in the individual tunnels follows. Assay results from a number of samples taken in the various tunnels are also given.

The main haulage level (No.1 tunnel) is at an elevation of 1843 feet. It consists of drifting 80 feet, 1550 feet of crosscuting, and raises to Nos. 3 and 4 tunnels.

No. 2 tunnel has 300 feet of drifting, a short raise and a small stope. A 34-inch channel sample taken across the vein on the north side of the portal assayed: gold 0.025 ounce to the ton.

In No. 3 tunnel the drift to the east extends 175 feet, the one to the west is 545 feet in length. There is also a raise to the east drift of No. 5 tunnel. A 12 inch channel sample taken across the vein 175 feet from the portal assayed a trace of gold and a 19 inch sample

28 feet from the portal assayed 0.04 ounce to the ton in gold.

The work in No. 4 tunnel consists of 505 feet of drifting and 120 feet of crosscutting. The vein averages about 16 inches in width with a maximum width of 4 feet in two places. Most of the wider parts have been stoped out. A 14-inch channel sample taken across the vein 250 feet from the portal assayed 0.045 ounce to the ton in gold.

Three raises and a stope connect tunnels. No. 4 and No. 5. There is also 580 feet of drifting; the main drift being 460 feet long, the east drift extends 120 feet from which a short raise is driven. The average vein width is about 18 inches with widths up to 4 feet. The widest parts as in No. 4 tunnel have been stoped out. Twenty-five feet from the portal two channel samples were taken across a total vein width of 31 inches in the face of a stope where the quartz is well mineralized with coarse pyrite. Twenty inches assayed: gold 1.07 ounces to the ton, silver 2.2 ounces to the ton. The 11 inch sample assayed: gold 0.155 ounce to the ton and a trace of silver.

No. 6 tunnel is connected to No. 5 by a raise and a stope. The work here consists of one drift 135 feet long. An 8-inch channel sample taken across the vein 66 feet from the portal assayed: gold 0.01 ounce per ton. Eighty feet from the portal another channel sample was taken in two parts across a vein width of 35 inches. An 18-inch section showed 1.16 ounces to the ton in gold and the 17-inch sample as-

sayed 0.075 ounce to the ton in gold.

In No. 7 tunnel there is 107 feet of drifting and 35 feet of crosscutting. A 12 inch sample taken across the vein in the face of the south drift assayed 0.005 ounce of gold per ton.

No. 8 tunnel consists of one drift 145 feet long. A 20-inch channel sample taken 33 feet from the portal assayed 0.88 ounce to the ton in gold. The vein was well mineralized with coarse pyrite.

The tunnels Nos. 9, 10, and 11 are small and of relatively little importance. Samples taken in these range from 0.015 to 0.02 ounce of gold to the ton.

There are in addition some further vein showings at a little higher elevation between 500 and 1500 feet southeast of the mine workings, on which only surface works has been done.

(6) To obtain the valuable minerals it was necessary to mine a large quantity of barren material. Therefore instead of shipping all the ore to a smelter direct it was found to be far cheaper to install a concentrating plant, and only send to the smelter the concentrates from this plant thereby saving a great deal in transportation costs.

The plant installed was of the oil flotation type. (The accompanying photograph shows relatively its shape and size). The aerial tramway buckets dump the ore into a 100 ton bin. The primary crushing is done by an eight inch Traylor gyratory crusher, belt fed over a magnetic pulley

to elimate tramp iron. The ore is then elevated by an endless chain equipped with buckets to a ninety ton feed bin whence it is delivered to a six by four foot Hardinge-type ball mill. This has a four ton charge of three and four inch balls. The grinding mill is operated in closed circuit with a Dorr-type classifier overflowing through a 150 mesh screen. This overflow is the final product of the system. From this point it passes to a six-cell "gravity-flow" flotation cone, the under flow passing to a six leaf American filter. To facilitate handling and also reduce transportation costs the concentrates from the flotation cells must be dewatered. This is done by a series of settling tanks or thickeners and filters. The concentrates are delivered to a classifier whence the coarse product is sent directly to the filter, and the fine product is elevated to a cone shaped settling tank. The thickened and settled fine from this tank then goes to the filter which already contains the coarse material. The product of this machine is the final concentrate which is to be shipped to the smelter. The mill tailings pass over a blanket covered tail race and are then deposited behind a wooden dam in Noble Five Creek just below the mill. A sample of these tailings was secured. It assayed gold 0.04 ounce to the ton and silver 0.10 ounce to the ton.

The necessary power to operate the mill is supplied by a 168B.H.P. Peter Diesel engine. The lighting plant consists of a 210 Volt three phase 60 cycle A.C. generator

running at 1800 revolutions per minute. It is operated by a four cycle Fairbanks Morse gasoline engine.

A small assay office was run in conjunction with the mill which daily assayed the mine ore, the concentrates and the mill tailings.

(7) From this brief description it can be seen that the life of the Columario mine from the time of its discovery was of a very erratic nature, developing in stages from a mere prospector's mineral claim to its present form.

It cannot as yet be called a prosperous mine because although the Columario Consolidated Gold Mines Limited installed a great deal of costly equipment and did a large amount of work, it was only of an exploratory nature, the returns by no means paying the developement costs. At the time it shut down all the available ore had been stoped out and very little new ore was in sight. The geology of the mineral formation would also indicate little hope of finding any very large deposits in the near vicinity. Again it might be well to mention the fact that the mill tailings assayed 0.04 ounce of gold to the ton and, although it is not the writer's intention to critisize the company's engineers, it would seem that this is a rather high figure in view of the fact that some of the representative samples taken in the mine were themselves rather low in gold. It is therefore evident that the possibility of this mine becoming a paying producer is small. If the company decides to recommence operations a great deal of developement work

will be necessary before there can be any assurance that it will result in a profitable undertaking.