

Property File 005

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T H E

Q U E E N M I N E

REPORT
OF
PRELIMINARY EXAMINATION
OF THE
LUSSE MINE
SHEEP CREEK CAMP
SALTK. B. C.

To: Queen Consolidated Mines Co.

By Chas. C. Starr,
Mining Engineer,
May 8, 1929.

INTRODUCTION: Present conditions at the Queen and Yellowstone mines preclude the making of a thorough examination and report, since many of the old upper workings are inaccessible through caving, and all of the Queen mine workings below the No. 3 tunnel are full of water.

This report, therefore, is necessarily based on an examination of the surface, the accessible parts of the workings and a study of such of the old maps and reports as are available, covering the inaccessible parts of the mine.

LOCATION: The Queen Mine is situated on Wolfe Creek, near its junction with Sheep Creek, in the Sheep Creek District of the Nelson Mining Division.

It is ten miles east from Salmo, a station on the Nelson branch of the Great Northern Railway, with which it is connected by a fair road.

PROPERTY: The Queen Group is made up of fifteen claims, many of them fractional, of a total area of about 400 acres.

GENERAL CONDITIONS: CLIMATE is moderate for British Columbia and the snowfall is comparatively light.

TIMBER - the property is wooded and there is a very considerable amount of good timber suitable not only for mine use but for sawing also; most of this is conveniently located above the mine workings.

TRANSPORTATION - The road to the railway at Salmo is in fair condition and uniformly of down grade; it can easily be kept open through the winter.

TOPOGRAPHY - The narrow valley of Wolfe Creek passes northwesterly through the center of the property, making a comparatively level area of a few acres at its junction with Sheep Creek. Along the

sides of the valley the mountains rise at steep angles.

WATER POWER: Water from both Solfe Creek and Sheep Creek has been used for power development at the Queen Mine, and the Company, is said to own rights to 400 miner's inches of water from each creek. At present, water from Sheep Creek is in use under a 350 foot head, and is sufficient for the production of compressed air for development work. The flume for Solfe Creek water has rotted away. Both sources of power would probably be sufficient for the operation of the mine and mill for the greater part of the year, but a shortage of power would occur at certain seasons.

HISTORY: Both the Yellowstone and Queen mines were located in 1896. The Yellowstone mill was built in 1900 and operated on Yellowstone ore in that and the following year.

Wm. Waldie began mining on the Queen vein in 1904 and treating his ore in the Yellowstone mill. In 1906 the two properties were combined, and the mill was increased to 20 stamps shortly after. Later the properties were sold to the Queen Mines, Inc., the present owners.

The Queen mine was operated continuously from 1902 to 1916, when it was closed down, according to report on account of unfavorable business conditions. Since 1916 the mine has been re-opened several times but no consistent operations have taken place.

PRODUCTION: According to data in the Minister of Mines reports (which is apparently not quite complete) the production of the mines has been -

Yellowstone	16,987 tons producing	\$ 124,331
Queen	<u>118,136</u> " "	<u>1,804,726</u>
	135,123	\$1,929,057

Other sources give the production of the Alexandra as 800 tons from which \$10,500 was saved.

On Yellowstone ore a saving of \$7.32 per ton was made.

On Queen ore a saving of \$10.19 per ton was made.

On Alexandra ore a saving of \$13.00 per ton was made.

The values are essentially all in gold, with a small amount of silver.

There are no mill records showing the value that was lost in the tailings, but a conservative figure of the proportion saved, based on work elsewhere, would be 70%.

On this basis the gross value of the Yellowstone ore would be \$10.40 per ton, and of the Queen ore \$14.60 per ton.

It is worthy of note that in 1915, \$11.18 per ton was saved from the Queen ore, and that in 1916 (the mines closed in the middle of this year) the saving was \$7.96 per ton. The implication of these figures is that the 6th level ore values were as good as the average of the mine, but that the last ore taken from the mine, (presumably from the 7th level) was of somewhat lower grade, there is however, some reason to suspect that considerable waste was milled with the ore from this level.

EQUIPMENT: The equipment on the property is essentially that remaining from the operation of the mine and mill in 1916. Much of it is worn out or obsolete and will have to be replaced when operations are started again.

The buildings on the property are in fair condition, and with minor repairs would be satisfactory for a fair sized crew. At the Queen mine, the usable equipment is practically limited to track, cars, compressed air lines, hoist, and pump.

Each of this would need some overhauling.

At the Alexandra mine there is track, cars, a small tram equipped to lower ore and raise supplies, and a blacksmith shop equipped for hand work.

There is no equipment at the Yellowstone workings.

The compressed air plant for the mine is located in the mill and consists of two old compressors of 500 & 900 cu. foot capacity, driven by waterpower. The larger compressor after a thorough overhauling should furnish sufficient air for development and exploration work. The smaller compressor requires a new cylinder, as well as overhauling.

The mill consists of a jaw-crusher, 20 stamps, amalgamating plates, concentrating tables, etc. It is incapable of making a satisfactory recovery on the Queen ores, without the installation of more modern equipment and methods.

Whenever sufficient ore has been developed to justify it, tests should be made to determine the most efficient method of treating the ore, and the mill remodeled.

For the preliminary mine work, outlined below, new drilling equipment and a drill sharpener should be purchased, costing perhaps \$3000.

DEVELOPMENT: The most extensive development has been done on the Queen vein and consists of four tunnels, an underground shaft 405 feet deep, and four levels from it, gaining a maximum depth of over 600 feet. According to the maps furnished by the company, the length of the levels along the course of the vein are as follows:-

No. 1 Tunnel	440 ft.	Inaccessible account stoping
No. 2 "	255	Stopped out
No. 3 E Tunnel	1140	Accessible
No. 3 S "	925	"
No. 4 Level	585	Inaccessible, under water.
No. 5 "	1275	" " "
No. 6 "	1095	" " "
No. 7 "	<u>840</u>	" " "
Total	<u>6555</u>	

Roughly, one third of the vein area opened in the quartzite has been stoped. The shaft is reported to be unsafe a new one would have to be sunk before mining was undertaken in the lower levels.

On the Yellowstone vein three tunnels have been driven, as follows, giving a maximum depth on the vein of 350 feet:-

No. 1 Tunnel	300 ft.	Stopped out.
No. 2 "	450	Accessible.
No. 3 "	<u>700</u>	Inaccessible, caved.
Total	<u>1450 Ft.</u>	

On the Alexandra vein three tunnels have been driven, as follows, giving a maximum depth on the vein of 450 feet:-

No. 1 Tunnel	230 Ft.	Accessible.
No. 2 "	280	"
No. 3 "	<u>350</u>	"
Total	<u>860 Ft.</u>	

GEOLOGY: The formations on the Queen property consist of steeply dipping bands of quartzite and schist, which strike nearly north and south; to the east of Wolfe Creek the dip is steeply eastward, while to the west of the creek the dip is steeply westward. Two bands of quartzite, the Queen quartzite and the Kootenay Belle quartzite, cross the Queen property, separated by thirteen hundred feet of quartzose or limsy schists,

and a porphyry sill; similar schist formations also occur to the east and west of the quartzite bands.

VEINS: The veins cut across the formations in a northeast-southwest direction, vertical, or dipping slightly southward. Throughout the property and the whole Sheep Creek district the veins are larger and stronger in the quartzite than in the schists, and practically all the ore of the district is found in the veins where they are enclosed between quartzite walls, or at least where one wall is quartzite. The hardest, most silicious parts of the quartzite seem most favorable to ore, and experience has shown that it is useless to search for ore in those parts of the veins lying entirely in schist.

Some faulting has occurred along all vein fractures; cross faulting occurs occasionally but is apparently small.

Three veins have been partially developed on the property, the Queen, the Yellowstone, and the Alexandra. Several others are known to exist. They are all of similar type and consist of quartz filled fissures carrying gold as the chief value and containing small amounts of pyrite, pyrrhotite, with occasionally a little galena and zinc-blende.

QUEEN VEIN: The strike of the Queen vein is N 60° E and the dip practically vertical. So far as observed, in the accessible workings, its width varies from four to fifteen feet in the quartzites, probably averaging about seven feet, but it is reliably reported that the average width over the whole range of development is about nine feet, with a maximum of 25 feet.

The No. 3 tunnels show an ore-bearing area about 1100 feet long, which seems to increase slightly with depth.

The locations and contours of the stapes indicate

that the marginal parts of the quartzite band were somewhat more productive of ore than the remainder of the quartzite.

An area of un-stoped, and apparently unprospected ground, lies between the back of the west stope in No. 3 tunnel, and the surface, and near the west margin of the quartzite. According to the plan map, No. 1 tunnel was off the vein at this point and very good possibilities remain of opening a body of ore in this section of the mine at small cost.

It has been suggested that the vein should be followed westward into the limestones that appear at the west face of the No. 3 tunnel, on account of the easily replaceable qualities of limestone, and since ore is said to occur in this limestone in a nearby property. While admitting the validity of the argument, I feel somewhat sceptical of the possibilities in this direction, pending opportunity to examine the surface more completely after the snow has entirely disappeared.

Mr. Arthur Lakes, in his report on the Queen mine mentions several areas in the submerged levels of the mine which, from their location along the course of known ore-shoots, seem to offer promising prospects of considerable ore with a minimum of development. Mr. Lakes' deductions seem in line with good reasoning, but it would seem too much to expect that more than part of these areas would be productive of ore. Not being able to examine this part of the mine I do not feel competent to discuss its prospective value further.

Careful sampling should be done in the favorable parts of the drifts and stopes above water-level, both east and west of Wolfe Creek, and may easily result in the finding of ore streaks which, on development, might lead to considerable bodies³

of ore.

YELLOWSTONE MINE: The Yellowstone vein strikes N 65⁰E and has, on the average, a vertical dip. Its width is from four to sixteen feet, and may average about seven feet. It has been stoped over a length of about 250 feet at the surface and 130 feet at the No. 2 level.

On No. 2 level the vein apparently splits; the north portion of the vein is the best defined and has been followed. The two parts of the vein again join near the east end of the stoping and stopes have followed back on the south branch for some distance. Since the No. 4 tunnel is caved (presumably near the portal only) it is not possible to tell which branch of the vein it has followed. There is however, a strong possibility that it has followed the barren north part of the vein, and that ore may be opened by short crosscuts south. The re-opening of this tunnel is justified by the conditions. Extensive sampling should be done in the No. 2 level, and in the No. 4 when it has been opened up. The vein has apparently not been explored along the western margin of the quartzite.

ALEXANDRIA MINE: The Alexandria vein strikes N 70⁰E and dips some 75⁰ southerly; its width is from one to three feet. It has been partially developed for a length of 550 feet, and maximum depth of 450 feet.

Two short croshefts have been exposed, and a little stoping done in the No. 1 and 2 tunnels, by the present lessees. The No. 3 tunnel has apparently encountered the extension of the first crosheft, but does not show ore; the larger sheet should be entered in about 150 feet advance. This vein is too small

to have any important bearing on the future of the property.

SUMMARY: The gold bearing veins of the Sheep Creek district are persistent on their strike, and to the greatest depth that any of them have been opened (something over a thousand feet.)

One in different veins in the district occurs over a vertical range of nearly four thousand feet, although there is no proof that any individual ore-shoot will extend that distance. The Queen vein contains the lowest ore of the district by over 400 feet. Evidence is conflicting as to whether its values still continue without diminution, in the bottom, but the most authentic information obtainable is that the former operators were there mining two streaks of ore as well as a nearly barren "horse" between, and that ore of a good width and value comparable with that in the upper levels still exists in the bottom of the mine. If this is the case, the prospects for the downward continuation of the ore to a considerable additional depth seem good.

Between the bottom level and the No. 3 tunnel of the Queen there are some areas contiguous to a sloped ground which would justify further exploration if they were not under water, but the prospect of ore in these areas does not appear to justify the unwatering of the shaft unless sufficient profitable ore is developed in the upper part of the property to defray the expense of unwatering.

Conditions favorable to the possibility of the development of further ore exists in the upper part of the Queen vein near the east and west margins of the quartzite.

The Yellowstone is a strong vein; the lower tunnel should be opened up, sampled, and examined; there is a strong

possibility that ore may be found with a limited amount of work.

The Alexandra vein is small, but there is a chance of opening a small tonnage of ore there cheaply by advancing the lower tunnel a short distance.

Throughout the property, mining has apparently been carried on over the whole duration of the operation without any attempt at systematic sampling, and there is room for hope that sampling in likely appearing areas may lead to the development of further ore.

Good float has been found along the Queen Quartzite to the south of the Queen vein and this area should be carefully prospected on the possibility that the south veins may be picked up there.

RECOMMENDATIONS: I would recommend that the following work, which is of a preliminary nature, be undertaken at once:-

(1) Explore the area in the Queen mine between the back of the west stope in No. 3 tunnel and the surface. This may best be done by raising on the vein from the back of the stope, and necessitates timbering up a manway through the stope.

This work should be accompanied by sampling of all adjoining vein exposures that have a favorable appearance.

(2) Sample the back of the small stope above the Queen No.3 tunnel east.

(3) Repair the timbering in the Yellowstone No. 2 tunnel and sample the better appearing vein exposures.

(4) Re-open the Yellowstone No.3 tunnel, which is caved, to allow examination and sampling.

(5) Advance the No. 3 tunnel of the Alexandra into the downward continuation of the ore-shoots developed above.

(6) Prospect the surface over the Queen Quartzite, to the south of the Queen vein, to locate the source of the float ore that has been found, and also prospect along the course of the Alexandra vein to the westward.

A reasonable measure of success in the work above outlined should lead to the development of sufficient ore to justify the unwatering of the shaft, and the further exploration of the favorable areas in the shaft workings.

COSTS: No cost data are available covering the period of operation of the mine, and even if there were they would be only roughly applicable to present day conditions. From comparison with costs at other mines, mining and milling costs under operation may be expected to be between \$4.50 and \$7.00 per ton, depending on the tonnage and value of the ore that may be developed.

For the preliminary work recommended, not less than \$30,000 should be provided; if this work results in developing a satisfactory amount of ore, an additional sum, perhaps \$75,000 will be required for further mine development and mill reconstruction

CONCLUSION: Present conditions and past experience in the Sheep Creek district are indicative of a good measure of permanency of veins and values in the quartzites. This, in conjunction with the hap-hazard methods which have prevailed in the operation of the Queen mine in the past suggesting the possibility that ore may have been overlooked, justifies optioning the property and undertaking the work outlined above, if easy terms of lease and bond are obtained. There are many possibilities for developing further ore adjacent to the present workings without extensive work, and some of the best of these seem to be in the shaft workings.

However, I do not feel justified in recommending the expense of unwatering of the shaft until further encouragement is obtained from the success of the exploration of the upper, and more cheaply developed parts of the mine.

As will have been inferred from the foregoing, the mine now shows no developed ore, but I recommend it as a speculative proposition on which the known facts justify at least the preliminary work outlined. A reasonable measure of success in this preliminary work will give sufficient inducement for further exploration and development.

Respectfully Submitted,

Chas. C. Starr