C O PY. 018037

103I/16W
103I-48

Copy of Report on Tredway Mine. By J.R. Turner.

Location.

The Tredway Mine is situated about four and one half miles from Dorreen B.C., a station on the Canadian National R.R.126 miles east of Prince Rupert B.C. On Knauss Creek, about one mile above the junction of Knauss and Fiddler Creek.

Area.

The Tredway Mine, often called the Fidler Group and the Dorreen Mine, consists of 14 claims and fractions, of which three are Crown Granted, (Intrusive, Indicator, and Boulder) the others are held by annual assessment work. Each claim is approximately 1500 by 1500 ft.

Topography.

The property lies on a very steep mountain slope which has an inclination of forty degrees or better; thickly covered with heavy growth of ferns, devil clubs, Spruce, Hemlock, and Cedar.

Knauss Creek, a glacier fed stream with a very rapid drop flows along the boundary of the claims and within a few hundred feet of the vein.

The elevation of Dorreen is 404 feet. The elevation of the end of the wagon road is approximately 1400 feet, while that of the tunnel is 2200 feet.

The climatic conditions are favourable for carrying on operations throughout the year. The snowfall averages about four feet at the mine, while the rainfall varys from year to year, Snowslides do occur but the main workings of the property will be located clear of the path of the snowslides.

History.

The vein was discovered in 1912 by D.C.Knauss. After very little development work by him it was bonded to Martin Walsh in July 1914, who relinquished his bond in the fall of the same year, due to the war, and the fact that they got off the vein. Further work was done by the owner, who very readily picked up the vein where it was lost by Walsh.

In the summer of 1916 the property was bonded by D.J.Williams for the Fiddler Creek Mining Co., consisting mainly of Edmonton shareholders. Under the management of D. J. Williams a wagon road 4½ miles long was built from Dorreen on an 8% maximum grade, and a tunnel,known as No.3, or the Williams Tunnel, was driven through glacieral wash a distance of 200 feet with a view of making it the main working tunnel of the mine. In all some forty thousand dollars was spent during this period. With no available funds to continue development or complete payments on the property it was closed down. Mr. Tredway, one of the stockholders of the Fiddler Creek Co., acquired the property in 1917. From 1917 to 1923 no work beyond the annual assessment work was carried on. During this period the upper tunnel was extended fifty feet along the vein, showing up continuous ore of good quality for that distance, and the vein was opened up along the surface between the upper and middle tunnels, by a series of open cuts, which also showed up a good grade of ore.

Late in the fall of 1923 the property was taken under an option from Mr.Tredway by J.F.Duthie of Seattle Wash., and work was started late in November, which consisted of repairing the wagon road, building bridges, taking in lumber for the construction of a camp, constructing a boarding house and bunk house, taking in cars and mine rails, mine supplies, and camp equipment, repairing and regrading tunnel and the driving of No. 1 tunnel 57 feet.

In 1924 the tunnel was advanced 30 feet, a raise put up 25 feet, 75 tons of ore mined and shipped. The ore was taken from the development from the back of the drift, where it had been left in place by previous development and from the opening of a small stope.

Work was stopped on October 1st 1924 to await returns from the ore shipment and to consider plans for the construction of a mill. In December Mr. Duthie, owing to ill health went to California. Returning to Seattle April 27th 1925. Three days later he was taken down with the Flu.

The ore mined was broken up and sacked, sent down the steep hillside over a cheaply constructed rope tram, 1000 feet, then hauled in a cart ¾ of a mile to the wagon road, the haule by single ~~by-single~~ team to Doreen and shipped to Trail Smelter.

Transportation.

The road built by the Fidler Creek Co,was not completed to the mine, but is however within a few hundred feet of the proposed location of the mill. It is built on an excellent grade with a maximum of 8%. Under continuous operation it should not cost more than $3.50 per ton to haul ore to Dorreen.

The freight rate from Dorreen to Trail Smelter is at present based on the value of the ore per ton. $9.80 for $50.00 ore, $12.50 for $75.00 ore and $14.00 on $100.00 ore. This is the nearest lead Smelter. There is however very good assurance from the railroad that these rates are going to be reduced.

The freight rate to Granby, the nearest copper smelter is also based on the value of the ore. $6.70 on $50.00 ore,$8.90 on $75.00 ore, and $10.00 on $100.00 ore.

While the freight rate to Selby California, Lead Smelter is a flat rate of $10.00 regardless of the value of the ore. The Duty charges and the fact that you only ship in 200 ton lots, and that it is necessary to wait three months for a settlement prohibits the shipping there.

Labor

There is an ample supply of good miners for the operation of a small plant to be had.

Power.

Guagings made by the Fiddler Creek Mining Co., show that Knauss Creek could be made to develope 300 horse power for eight months out of the year, but the writer's observation for the last two Winters show that there is ample power for over 9 months operation.

Fiddler Creek has a drainage area of over two hundred miles and at all seasons of the year is a good sized river, capable of furnishing ample power for any desired mill.

Geology.

The property is situated on the Eastern Slope of the Coast Range near the contact of the Batholith and Sediments. The predominating rock is a thick bedded argillaceous limestone of bluish black color.

Cutting the limestone roughly at right angles to the bedding places are several large granitis dykes, described as granite porphyrys, but most of which are quartz porpyrys.

Vein.

The vein is a typical bedded fissure vein and although it pinches and swells, similar to a coal vein, it is extremely regular and persistent and well defined. The strike and dip conform with the bedding planes of the enclosing formation. It has a North-west strike and dips in the same direction as the flow of Knauss Creek.

It is a quartz vein carrying chalcopyrite, zinc blende,pyrite and galena. The values are chiefly in gold and silver with appreciable amounts of lead and copper.

The dip is about 30 degrees. At the point where the upper tunnel is located the formation has been cut by Knauss canyon and the vein exposed along its dip for upwards of 800 feet and opened by strippings and exposures continuing up the side of the mountain for at least

1200 feet further, and along its strike by a drift tunnel for 300 feet. Below this point the vein and side of the hill is covered with heavy glacial wash which makes it practically impossible to expose the vein.

The vein is very unusual in so much as it is opened up, or rather exposed along its dip.

It is not necessary for me to go into further discussion of the vein, as this is carefully covered in the reports on the property in the annual report of the Minister of Mines for 1916, the report of D.J.Williams, J.D.Galloway, Provincial Mining Engineer, H.E.Sparks, E.M.,E.J.Conway Field Engineer for the Granby Smelter, and W.G.Norrie-Lowenthal E.M.

The average width of the vein is over two feet, it varies in width from eight inches to over four feet.

Workings.

No.1 tunnel was driven on the vein for a distance of 100 feet, then in the foot wall for 150 feet leaving the ore exposed in the back. A raise put up 25 feet.

Two hundred and fifty below this tunnel on the dip of the vein a cut of 20 feet was driven in the vein. The vein on the surface was stripped between these two levels. Below No.2 several cuts were driven into the glacial wash in an attempt to pick up the vein. But none of them were ever continued far enough to get thru the wash, and nearly all of them never would have cut the vein had they been continued to solid ground as they were not property located, being either above or below the vein on its dip. Some 500 feet below No.1 tunnel No.3 tunnel was driven a distance of 200 feet and has just entered the solid formation. This tunnel if continued would be 135 feet below the vein on its dip. It was driven with the idea in view of making it the main working level, from which raises would have been put up to the vein.

Tonnage.

It is estimated that there is now developed a probable tonnage of thirty thousand tons.

Values.

From the average of all samples taken by several competent mining engineers it is safe to say that the ore will average $20.00 per ton in gold and silver values 4% of lead, 4% of zinc and 1.3% copper.

When the writer first examined the property he decided that in view of the fact, that the vein was so extensively opened up on the surface and in the tunnels, and had been so carefully sampled (which results are available from above mentioned reports) that he would take a few check samples and if the results checked out, that it would be advisable to mine several tons of ore just as the ore would have to be mined and shipped. The results of these samples were a remarkably close check on those taken by other engineers and showed that it should be possible to mine and ship several thousand tons of crude ore providing satisfactory freight and treatment charges could be obtained. And in view of the fact that all smelters require silicious ores it was anticipated that a very low treatment rate could be obtained, the property was bonded by Mr. Duthie.

Summary of the results obtained by the operations of Mr.Duthie.

The property was taken under bond by Mr.Duthie in November 1923, but owing to the lateness of the season, time required to repair the wagon road, the getting in of material for erection of camp buildings, mine supplies etc. and the erection of camp, the putting of the mine in shape, winter was too far advanced to permit of mining and sacking ore, without protection from the elements, It was therefore decided to continue development.

The following Summer 72 tons were mined, sacked and shipped to Trail Smelter.

Careful sampling of the ore during mining showed an appreciable amount of lead, and copper and as the Granby Smelter, which is a copper smelter would not pay for the lead content, and would charge a penalty on the combined lead and zinc and as the copper content was not sufficient to overcome these losses, it was decided to close down and await results from shipment and take up the question of a mill. As it was not considered advisable to continue putting up money for development with 30,000 tons of ore in sight.

Just before closing down a survey was made to locate a tunnel site, from which point a cross cut driven thru the hanging wall a distance of 700 feet would tap the vein 1200 feet below the No.1 tunnel on the dip of the vein, and from which crosscut tunnel a cross cut could be run to a second vein discovered late in the summer. This second vein is exposed by a cut due to snow slides for 20 feet, showing an average width of 4½ feet with six inches of ore on foot wall carrying 17.3% lead, 47.26 oz silver. A cut sample across the remaining four feet ran 2% lead and 13.12 silver. No work whatever has been done on this seam.

Results of Shipments.

Lot 1. Dry weight of ore 75.130# 37.56 tons.
Gold 1.4 oz. Silver 5.3 oz. Lead 4.95% Zinc 3.1% Copper 1.2%

95% of the gold was paid for @ $20.00 per oz.....	$1,020,64
Silver 95% less ½ oz. from assay.....	121.37.
Lead, deduct 1.25% pay for 90% less 20#.....	192.59
Value of ore at Smelter	$1334 .60
Value per ton	35. 53

Charges.

Treatment 5117 per ton	$ 194,21
Freight.....	372.99
	567.20
Net returns	767.40
Net returns per ton.....	$21.60

Copper was not paid for.

Lot 2.

Contained 34.96 tons. net value	$633.16
Net value per ton	18.16
Average value per ton lot 1 and 2.....	$19.88 Net.

Mining charges all work done by hand.....	$5.45 per ton.
Sacking, cost of sacks, twine etc., ...	7.00
Tramming over rope tram.....	.50
Trucking from tram to road.....	2.00
Hauling.....Single team.....	5.00
Loading on cars.....	.50
	$19.45

Net profit per ton shipping crude ore, under present conditions.....	.33
With machine drills the ore could be mined for	$4.00
With tram from mine to road ore could be laid down at Dorreen using four horse team for	$3.50
Sorting.....	2.00
With tram the ore could be shipped crude not sacked thus cutting out sacking charges	.50
Total cost in using machine drills and tram	...$10.00
Profit per ton with compressor and tram on same grade of ore as shipped.	9.88

However even though all the ore could be shipped and would net as shown above it would not be advisable to do as for the following reason.

It would cost at least twenty five thousand dollars to put in necessary compressor plant, tramway, machine drills, mine equipment, and

purchase teams, and the following would be lost, Freight, Treatment, Penalties deductions and losses per ton on crude ore shipments.

	Per Ton	30 tons daily
Mining	$4.00	$120.00
Traming	.50	15.00
Wagon Haul	3.50	105.00
Freight	9.80	294.00
Treatment	5.25	157.00
Sorting	2.00	60.00
Penalty on Zinc	1.25	37.00
Deductions made by Smelter		
1¼% from lead assay	2.00	60.00
½ oz silver @ 60 cents	.30	9.00
Loss 20 lbs. copper not paid for	2.20	66.00
	$30.80	$923.00

Now if we take a mill of thirty ton capacity and put ten tons of mine run into one ton of concentrates, there would be obtained 3 tons of concentrates for shipment with the following charges.

Mining	$4.00	30	tons	$120.00
Traming to mill	.50	"	"	15.00
Milling	3.00			90.00
Sacking	1.00	3	tons	3.00
Wagon haul	3.50	"	"	10.50
Freight	14.60	"	"	37.50
Treatment	8.00	"	"	24.00
Penalty on Zinc	1.50	"	"	4.50
Deductions				
Net lead less 1¼	2.00	"	"	6.00
½ oz Silver	.30	"	"	90
Total cost				$311.40

From the above it will be seen that there would be a loss of $611.60 a day by trying to ship crude ore. However the above figures cannot be taken as earnings per day, as this would be based on the value of the ore in the mine.

The average of all samples taken give a value of $20.00 in gold and silver and approximately $3.00 in lead and copper, without considering the zinc values. If the value of the ore was taken at $20.00 and 90% of the values saved there would be a net return of $9.50 per ton. With a mill handling 30 tons per day the net daily earning of $285.00 or approximately $8000.00 per month.

Estimated Cost of equipment for 30 ton mill.

Compressor Plant	$7500.00
Tramway	7000.00
30 ton mill approximately	30000.00
Camp Buildings	5000.00
Four Horse Team Wagon etc	1500.00
	41000.00
Add 20%	8250.00
Or approximately	$50,000.00

Summary.

As there is at least three years run of ore in sight for a mill of thirty tons capacity, with every indication of several times this amount of possible ore and in view of the fact that there is too great a loss in shipping crude ore, compared to milling the same and shipping the concentrates, the successfull operation of the mine depends on the erection of a mill.

While it is possible to drive a lower adit which will tap the vein at a depth of 1200 feet on the dip, below the present No.1 tunnel I do not think it advisable to furnish the required amount of money for this work, when it can be set aside from earnings. However there is every reason to believe that this work will open up several times the amount of ore at present in sight. And the second vein dis-

covered last Summer looks extremely favorable for large ore bodies, and justifies prospecting. The values obtained were $62.49 on 6 inches of the vein, and $12.40 over 4 feet.

Conclusion.

With a mill handling thirty tons per day, the net yearly returns, for ten months operation would be.....$80,000.00

If a company were formed with $250,000.00 capitalization the property should pay 32%.

While the average of the ore from all samples is taken as 22 dollars, the ore broken and shipped by us, gave returns from the Smelter of 19% better than the average of all samples taken over the exposed area before mining.

I can see absolutely no reason why this property should not pay at least 25% over a good many years.

Mr.Duthie's retirement is due entirely to ill health.

Signed John R. Turner.
Engineer for J.F.Duthie.

With a mill operating on a basis of 30 tons per day the net earnings per day will be $300.00 or $9,000.00 per month. Setting aside $1500.00 per month for the driving of the lower adit, there would be $7,500.00 per month available for dividends. Thus one years operation of 8 months will return the capital investment of the mill.

Recommendations.

It is recommended that an average sample of at least 500 lbs. of ore be sent at once to the General Engineering Co., for a complete test.

That a mill of approximately 30 tons capacity be erected near the end of the present wagon road and the mine equipped with a power plant. That no further work be done under the ground until said mill is erected.