

REPORT ON
GROUNDHOG BASIN CLAIMS
WRANGELL DISTRICT, ALASKA

K4117-6

by
Alexander Smith

Recalculation of Mr. W. B. Maxwell's
memorandum on ore values

April 13th, 1943

TERRITORY OF ALASKA
DEPARTMENT OF MINES
JUNEAU, ALASKA

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VENTURES LTD.

REPORT ON GROUNDHOG BASIN CLAIMS, WRANGELL DISTRICT, ALASKA.

SUMMARY AND CONCLUSIONS:

The results of work by the company indicate that the zinc content of the ore is about 8.3% and not 14% as shown in earlier reports on the property. Little is known of the average grade of the disseminated sulphide type of mineralization found in the veins at higher elevations.

Where tested, the ore sections of the veins average 4' in width and assay about 2 ounces silver, 2½% lead and 8.3% zinc. If the company feels that this ore could be mined at a profit under present conditions, then the property merits further exploration at this time.

INTRODUCTION:

The Groundhog basin group is situated on the mainland about 13 miles east by northeast of the town of Wrangell. The claims are reached by small boat from Wrangell to the mouth of Mill Creek a distance of 8 miles. Hence by road from the mouth of Mill Creek one mile to Virginia Lake. Hence to the head of the lake 2 ¾ miles by boat or 4 miles by train. Then 5 miles by trail up Porterfield Creek to the cabin which is near timberline at about 750' elevation. Hence ¾ mile beyond the cabin to the mine workings at an elevation of about 2000 feet.

The property consists of four patented claims: General Sherman, General Grant, General Logan and General Lee. In addition there are two millsites - one situated near the property and the other on the beach at the mouth of Mill Creek. Usatis checked these claims with the Surveyor General for Alaska and found them to be as represented. Copies of a claim map by Charles S. Hubbell, U. S. Mineral Surveyor, are to hand. No claim posts were seen by the writer.

The location, history, general geology and ore deposits have been well described by A. F. Buddington (U.S.G.S. Bulletin 739, pp. 56-63, 1923). The company has prepared typewritten copies of this report together with a photostat of Buddington's map showing the location of the group.

Dr. H. R. Gault of the U. S. Geological Survey spent 11 weeks during the summer of 1942 making a detailed geological study and map of the Groundhog Basin deposits. His report and maps have not yet been published. The writer is indebted to Dr. Gault for information regarding the deposit, - information that it was impossible to obtain independently during the winter.

REPORT OF WORK DONE BY COMPANY TO DATE:

Work was started on October 10th with a crew of 10 men. Tent camps were established at the beach and at the head of the lake. Five miles of trail, requiring considerable corduroy and small bridges, was built from the head of the lake to the cabin. Much of the original

trail into the property was overgrown or had been washed out. An additional three miles of trail was slashed out along the north shore of the lake for use during freeze-up and break-up. Three small barns were built for horses and feed - one at the beach, one at the head of the lake and one at the mine cabin. A Float capable of carrying 3 tons was built on the lake. The cabin was repaired and made habitable and a supply of wood laid in.

During October the writer had been able to spend about ten days sampling and surveying on the property. The first heavy snows occurred at the mine on October 25 and after that it was impossible to do further work on the surface.

The horses, drilling equipment and supplies were unloaded from a scow at the mouth of Mill Creek on November 6 and by Christmas everything had been hauled in to the cabin. The crew was then reduced to six men. The lake froze over on November 20 and between then and January 6 was unusable either for boats or for walking over the ice. The channel between Mill Creek and Wrangell froze over for 3 weeks in January forming ice one foot thick. This was the first time on records that this channel has frozen.

Between the cabin and the mine all freighting had to be done by manpower. Horses could not be used because of steep grade and deep snow. By New Year the drill was set up but we were unable because of driving snow and snowslides to start drilling before January 26th. Between then and when we received word early in March to cease

operations, we drilled whenever weather permitted. Two holes had been completed and a third was in progress. A total of 649 feet were drilled.

All drilling was done from the one setup at the portal of #2 tunnel. This with the exception of a possible setup at the portal of #3 tunnel was the only safe place from which one could drill during the past winter, i.e. since mid-November. It had been planned to drill a series of flat holes normal to the strike of the veins from setups along the northeast bank of the draw. Extremely heavy snow and the danger of slides made this impossible. By March 1st there was from 40 to 100 feet of packed snow in the creek canyon. It was necessary to tunnel 90 feet through this to get water from the creek for drilling.

The drill and camp equipment were freighted from the mine and cabin to the beach in 8 days.

TIMBER:

There is a supply of hemlock and spruce timber adequate and suitable for mining and construction purposes in the valley of Porterfield Creek within $\frac{1}{2}$ mile of the cabin. A larger stand of better timber extends from the head of Virginia Lake for 2 miles up Porterfield Creek.

WATER POWER:

About 300 feet north of the cabin there is a 36-inch Pelton

wheel which operated under a head of 280 feet and was supplied by water from the south branch of Porterfield Creek through a 500 foot flume and 750 feet of 13"-11" steel penstock pipe. The wheel and pipe line are still in fair condition. The Pelton wheel drove an air-compressor which supplied air to the mine through 4000 feet of 2" pipe. The airline has been dismantled and the compressor is probably in poor shape after so many years exposure to the weather.

At the mouth of Mill Creek there is a water-power site possibly of a capacity large enough to supply the needs of any planned development of the Groundhog Basin deposits. Virginia Lake is fed by two large creeks, - Porterfield Creek and Glacier Creek. Mill Creek draining Virginia Lake falls about 100 feet in elevation in its 3/4 mile course to tidewater. At the outlet of the lake there is a good site for a small dam to raise the lake level a further 5 or 10 feet. The town of Wrangell at one time was considering building a hydro-electric plant at this site. Details of the available horsepower and the flow could probably be obtained from the U. S. Forestry Service. They had a water gauge on the creek when the Zellerbach Paper Company were examining the area for a location for a proposed pulp mill.

TRANSPORTATION:

A suitable site for a wharf at which coastwise steamers could dock can be found within 1/4 mile of the mouth of Mill Creek.

A truck road from tidewater to the mine cabin, a distance of

about 10 miles, could be constructed with a good grade and without much rock work. It would not follow the present trail close to Porterfield Creek. A better route lies closer to the base of the mountain on the west side of the creek.

GENERAL GEOLOGY:

The Groundhog deposits occur in a belt of metamorphic rocks which lies between two masses of quartz diorite. This belt is from 1 to 1 1/2 miles wide and extends from the Stikine River to Bradfield Canal, a distance of 40 miles. Its trend is N. 33 W. parallel to the Coast and the structural trends in the Coast Range Mountains. The two masses of quartz diorite (Coast Range intrusives) are intruded parallel to the foliation planes of the metamorphic rocks.

The ore veins are found in a mineralized zone at least 7 1/2 miles long. This zone is the only portion of the belt of metamorphics where dykes and sills of quartz-porphphyry and rhyolite occur. The zinc veins of the Groundhog area are older than these dykes and sills. Buddington surmised that the ores and these intrusives may have had a common origin.

The metamorphic rocks in the mineralized zone are mainly fine grain ribbon-banded schists and gneisses derived originally from an impure sandy sedimentary series. Brownish biotitic schists and dark grey-green chloritic and hornblende schists are the rocks near the vein. In places they have been injected with narrow alternating bands of light-colored aplitic rock.

MINERAL DEPOSITS:

The ore bodies are tabular replacement veins in the fine-grained gneiss and schists. They conform in strike and dip with the country rock which trends about N. 30 W. and dips 50° - 80° East. Dr. Gault has called the ore bodies "ore beds" because he believes that the ore solutions replaced certain favorable beds or strata in the schists. The greenish epitotized gangue could have been derived by the hydrothermal alteration of impure calcareous beds.

The ore is of two types - heavy massive sulphide ore and a green gangue type with disseminated sulphides.

The massive sulphide type consists essentially of pyrrhotite interstreaked and banded with dark brown sphalerite. Small and variable amounts of galena, pyrite and chalcopyrite occur in bands and late veinlets. Bands of greenish gangue occur in these massive sulphide veins. They are the remnants of unreplaced country rock.

The second type, that with ~~the~~ greenish gangue and disseminated sulphides has a much leaner mineralization. There is little pyrrhotite present and a large proportion of the disseminated sulphides is sphalerite.

The veins are remarkably persistent. Dr. Gault has traced the veins in Groundhog Basin for 4 miles southeast into Glacier Basin.

In Groundhog Basin ore of the massive sulphide type is found only northwest of a point lying 800 feet southeast of #4 (upper) Tunnel. To the southeast of this point only green gangue type of mineralization is found in the veins. That is, the massive sulphide

ore occurs only at the lower elevations. The same relationship holds true for the veins on their southeastern extension into Glacier Basin. Here too the massive sulphide type is found only at the lower elevations. This suggests the possibility of zoning in the veins with a higher zone of disseminated sulphides and a lower zone of massive sulphides. If such a zoning exists, it would have an important effect economically. As far as is known to the writer, the disseminated type is non-commercial but it has not been sampled sufficiently. If the exposures of this type at the higher elevations changed with depth in part to ore of the massive type, it would enhance the value of the deposits.

The writer has used Gault's nomenclature for the veins and tunnels, i.e. of numbering them consecutively from west to east. To avoid confusion, they are listed below together with names appearing in the older reports.

<u>VEINS</u>		<u>TUNNELS</u>	
<u>Gault</u>	<u>Old Reports</u>	<u>Gault</u>	<u>Old Reports</u>
#1	Lee Vein	#1	Lee Tunnel
#2	Intermediate Vein	#2	#2 or #3 Tunnel
#3	Split of Main Vein	#3	Main Tunnel
#4	Main Vein	#4	Upper Tunnel

#1 Vein where crosscut by #1 Tunnel shows a 20foot width of massive sulphides of good grade. Unfortunately, the surface outcrop appears to pinch down 10 feet northwest and twenty feet southeast of the tunnel. To the northwest it is talus covered. To the southeast Gault has mapped as the vein a weakly mineralized zone outcropping along the southwest bank of the creek.

#2 Vein is a narrow structure averaging less than ⁽²⁾ " ' in width. Throughout most of its exposed length, it shows only a weak disseminated mineralization. Above #2 Tunnel it carries a narrow lense 60' long of massive sulphides averaging 7% zinc. This vein was not crosscut in either #2 Tunnel or in the holes drilled from the tunnel portal.

#3 Vein is a much stronger structure and on the surface shows 2 shoots of massive sulphide ore, - one at the northern end of the o/c is 150' long. The second extending from 80 to 230 feet southeast of #3 tunnel averages 5.1' in width.

Southeast of this oreshoot only disseminated sulphides occur in the vein. Southeast of the cirque on the Basin M.C., the vein increases to average over 10 feet in width but Gault reports values are non-commercial.

In D.D.H. #2, #3 vein shows a 4.9' width of massive banded sulphides; in #2 tunnel it is poor; and in D.D.H. #1 a 2.6' width.

#4 Vein on the outcrop shows massive sulphides at #4 Tunnel and to the southeast an oreshoot extends from the tunnel southeast for 270 feet paralleling the oreshoot in #3 vein. However, massive sulphides are reported by Gault to occur in #4 vein for as far as 800 feet southeast of the #4 Tunnel. To the southeast of this point there is only disseminated sulphide across greater widths. To the north of #4 Tunnel the vein is talus covered excepting for a 50 length of disseminated mineralization outcropping near the north end of #3 vein outcrop. D.D.H. #2 outcrops the vein down the dip 150'

lower in elevation than the weak mineralization of the surface outcrop showed a 3.2' width of zinc-lead ore. In #2 tunnel the vein is lensey and the values only fair, but in D.D.H. #1 an 8.0' width of 15% zinc ore was intersected.

#4 Vein on the surface and in D.D.H. #2 is paralleled in the hanging wall by a narrow rhyolite dike.

CRUSHED ZONE:

In the area mapped, a strong crushed zone or fault breccia zone subparallels the veins and lies between #3 and #4 veins. On the surface it varies from 4 to 20 feet in width. In D.D.H. #2 the zone was over 40 feet in width. The brecciated country rock was sometimes cemented with quartz or had cavities lined with quartz crystals. The zone was not cut in D.D.H. #1. It may here lie to the east of #4 vein. Gault reports that at about the same elevation at which the veins ~~change~~ change from the massive to the disseminated type of mineralization, the crushed zone changed to contain fluorite not present at the lower elevations.

ASSAY RESULTS AND TONNAGE CALCULATIONS:

The Assay results of the sampling are shown on the accompanying 40 scale map. Samples 1 - 12 were taken by Mr. Usatis, the balance by the writer. Because of snow conditions, the writer was unable to complete a regular 10-foot interval channel sampling of the surface outcrops, but, for the area discussed below such a sampling would not change the "picture" greatly.

A 940-foot length along #4 and #3 veins was tested by the surface sampling and diamond drilling. For this length, the assay results indicated the following values:

	#4 Vein	#3 Vein	Average of #3 & #4
Total length tested	940'	940'	
Length of waste sections	235'	535'	
Length of ore sections	705'	405'	
Percentage ore	75	43	59
waste	25	57	41
Tons ore per vertical foot	304.2	177.5	481.7 (total)
Average width of ore sections	3.9'	3.95'	
Average values for ore sections:			
Silver	2.3 oz.	1.02 oz.	
Lead	2.95%	1.2%	
Zinc	8.2%	8.43%	

Total tonnage ore sections:
above #2 Tunnel level - 116,000 tons.

POSSIBLE EXTENSIONS OF THE ORE BEYOND THE 940' LENGTH TESTED:

There are several possible extensions of the ore beyond the 940' length tested:

- (1) #4 vein continues with massive sulphides for another 300 feet southeast.
- (2) #3 and #4 veins may continue northwest for 1200 feet under the talus-covered area. Hubbell's claim map shows an assay of \$51.68 from a point in a creek bottom 1200 feet northwest of #2 Tunnel. This area is now talus-covered.
- (3) Sections of the disseminated sphalerite type of mineralization may be commercial. This type of ore has not been thoroughly sampled. If such ore ran 2 - 3% zinc across 15-foot widths, it could be attractive.
- (4) If, as suggested above, there is a vertical zoning in the

deposits, then the disseminated sphalerite type characteristic of the higher elevations may be underlain by massive sulphide ore.

Because of these possible extensions of the ore sections, a total length and tonnage per vertical foot double those given for the 940-foot length tested could be used as a basis for preliminary calculations.

RECOMMENDATIONS:

If the company feels that the results of work done to date are sufficiently attractive, then further exploration should include:

(1) A thorough sampling and mapping of the southeast extension beyond the area tested.

(2) Completion of a regular interval sampling within the area tested.

(3) Surface trenches and surveys to see if suitable setups can be found from which to test by drilling the northwest extension of the veins under the talus-covered area.

(4) Survey for a low level adit. The portal would probably be at least 2000 feet northwest of #2 Tunnel. The present tunnels are too exposed to snowslides to be suitable for mining purposes.

(5) Staking of open ground along the extensions of the veins.

Alexander Smith (S)

April 13, 1943.

Cross Frozen Back Channel To Wrangell

By Genevieve Mayberry

Four men from the Groundhog Basin mining project were in town recently demonstrating the latest styles in beards for the well-groomed miner. This was the first visit to town in a number of weeks, since the waters of the Back Channel were frozen over from Mill Creek to Crittenden Creek and the trek necessitated a hazardous hike over roughly frozen ice with a heavy skiff in tow. The four men were Engineer Al Smith, Cliff Kilkenny, George Sylvester and Sid Martin. Howard Churchill made the trip a few days before after a long hike down the beach to his boat moored in open water.

The men report the ice as being about eight inches in depth but that it sagged alarmingly in spots under their combined weights. When the edge was neared the ominous cracking made them scramble hastily into the skiff in time to save themselves from a ducking in the icy water. Once in the open water the rest of the trip was made with the outboard.

Temperatures at the Groundhog dropped to 12 degrees below zero during the recent cold snap. Stiff winds accompanied the sub-zero temperatures, making outside work impossible. The men, however, were able, after digging through 25 feet of snow and running an exhaust pipe to the outside, to tune up the diamond drill and continue work inside.

The rapidity of the freezing of the fresh water on the salt water made their several attempts to reach town futile. Some concern had been felt about town for the men, but those coming in reported the miners as being fairly well contented with their lot until struck by a meat and tobacco shortage. The most serious inconvenience was the complete freezing of the creek which was their only source of water supply.

Transporting of materials is now being carried on over the frozen surface of Virginia Lake by means of Yukon sled. According to Engineer Smith, they are able to transport as much by that method in 35 minutes as in four days when the trip had to be made around the lake by pack horse. Strong winds, however, add to the difficulties of this method.

Children about town will be sorry to learn of the death of one of the horses brought to town last fall by the mining company. The horse, which was injured before it was taken to the mine, failed to recover from infection resulting from a cut foot.

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PANAMINAS, INC.
200 Park Avenue
New York

Washington, D. C.
May 27, 1943.

Mr. E. D. Gardner
U. S. Bureau of Mines
Rolla, Missouri.

Dear Mr. Gardner:

Thanks for your letter of May 2#th, regarding the zinc deposits in Groundhog Basin.

Since writing you Frobisher has been unable to reach a satisfactory agreement with the owners regarding the option. We have, therefore, withdrawn from the picture.

However, I am interested enough in the deposit to forward you herewith Alexander Smith's report so you will have all the information possible on the area.

This is the only copy of the report that we have so after it has served your purpose please return it.

I am unable to tell you who has control of the property because options were obtained by Frobisher through their office in Toronto. The U.S.G.S. may be able to give you this information or if you are interested enough please write:-

G. R. Burge, President
Frobisher Exploration Co. Ltd.
25 King Street West
Toronto, Ontario

Please accept my thanks for your prompt reply to my letter.

Very truly yours,

GWM'F
Enclosure
cc: Mr. J. C. Reed
U. S. Geological Survey
Washington, D. C.

G. W. Mitchell

122 Eastlake
Seattle, Washington
June 10, 1943

Mr. B. D. Stewart
Juneau, Alaska

Dear Mr. Stewart:

I am writing you about our Groundhog Basin claims on which a considerable amount of drilling was done by the Canadian Company in December and January. Unfortunately for both of us, the company being Canadian, has encountered great difficulty in securing U. S. funds because of Canadian government restrictions and the restrictions of other governments. Also they have encountered difficulty in securing equipment and material. They have offered me \$1,000 to extend the option until such time as they would be permitted to resume work on the property.

I have no complaint whatsoever to make about their efforts, but as you know, their work was done during the most severe winter conditions ever experienced in Wrangell in a lifetime, and due to a late start in the season, they could not obtain as much information as they otherwise might have. If I had any assurance that they would resume operations this summer, I would be quite willing to extend the option. I found the company in every respect pleasant to deal with.

However, my chief desire is to have further exploration work done on the property this season. Do you know of any responsible concern that would be willing to undertake this work? I am sure a lease with the option to purchase can be worked out, because of the value of the claims. Any leads you can give me, I will very much appreciate.

Very truly yours,

B. D. Stewart
W.D.G.

WDG:RM

JUN 14 1943
B. D. STEWART
Commissioner of Mines