PE-086-08

PRELIMINARY REPORT OF RUFF AND TUFF MINING COMPANY,
COLUMBIA GLACIER AREA, PORT VALDEZ DISTRICT
September 14, 1936.

Location, Topography and Accessibility:

The property, consisting of four claims held under option by the Ruff & Tuff Mining Company, is located on the south slope of Kings Island near the center. This island is a barren mass of protruding rock, isolated and completely surrounded by ice of Columbia and King Glaciers; and located in a direct line 8 miles northwest of Shoup Bay. Shoup Bay is located on the north shore of Port Valdez Bay, Prince William Sound. This property lies 4 miles northeast of the Mayfield, 2 miles west of the old Gold King mine located on the eastern end of the island, and 5 miles southwest and over a divide from the Cameron-Johnson.

This property is very inaccessible due to its position between glaciers and elevation of 2400'. Two means of access are available and they must be considered hazardous. One means is via airplane from Valdez. In the winter a favorable plane landing may be made with skis on King Glacier one-half mile from camp. In summer during ideal weather conditions a landing can be made on Columbia Glacier with wheels, 5 or more miles away. This landing is very hazardous due to the fact that nearly each trip a new landing spot has to be picked due to the opening up of large ice cracks in the glaciers. The topography of both land and ice is very rough and rugged with steep barren slopes and bluffs. There is no available timber in this region for several miles.

Location of Ruff & Tuff Mine, King Island in foreground.
Note roughness of topography in background. Winter
and spring landing field in foreground.

The other means of access is on foot over a poorly defined trail which is 12 to 13 miles in length. The old trail of the Mayfield is used from the beach on the west side of Shoup Bay. This trail leads 2 miles overland to Shoup Glacier, 2 miles over the ice on Shoup Glacier, over divide 1 mile between Anderson and Shoup Glaciers, 3 miles on Anderson Glacier along north side, thus a climb of 1000' over a distance of 1 mile to Mayfield, over the summit, El. 3000' and down and across King Glacier, a distance of 4 miles from the Mayfield. The three glaciers contain numerous cracks and several large potholes. This route over trail should not be considered unless in company with some one who has been over the entire route and then only during favorable weather conditions.

Discoverer, C. C. Elwood (right); Andrew Thompson (left); and camp of Ruff & Tuff Mining Company.

History and Development:

The discovery was made during the summer of 1934 by C. C. Elwood and Andrew Thompson, who to date are the owners. An option was taken by R. Reeves of Valdez and in 1935 this option was sold to Jack Hoar, who with associates formed the Ruff and Tuff Mining Company under Washington State laws. This is a two million share company, capitalized at $50,000. D. S. Beals of 329 Republic Building, Seattle is president. This company is registered in Alaska.

Work started this year and all supplies were brought in with plane. Three men were engaged during the season. Some stripping was done on the showings and an opencut 70' long with a tunnel in 6' was completed. Approximately 50 tons of ore was taken by picking quartz from the opencut and by sacking the surface high-grade from the small veins.

A Ford Model T motor is used as compressor with a special head giving two cylinders for explosion and two for compression. A small receiving tank is used and enough air is developed to run one machine. A 10-ton Gibson mill was installed late in the season in a small structure along a small ice fed stream 100' from showing. This mill was operated 17½ shifts and closed October 15. It was reported less than 20 tons of ore was milled and 37.65 ounces of gold was recovered.

Outcrop of diorite sill and mill building under construction.

Geology:

The geology consists of a small sill of altered diorite, ±70' in length in closely folded, graywacke and argillaceous slates. (Note the above photo) Its lenticular axis conforms to the strike and dip of the schistosity and apparent bedding of the highly schistose sediments. These sediments are highly metamorphosed from what appears to be regional metamorphism and strike nearly east-west and the schistosity dips 60-65° N. The diorite sill was intruded either during the folding or after and was probably of a more plastic nature than the sediments. As a result a schistose structure was not produced, but the opposite effect of cross fracture was the result with numerous fractures nearly at right angles to the schistosity in the sediments. These fractures are filled with silica, making numerous quartz stringers and gash veins. (Note photo below)

Showing the numerous parallel cross fractures filled with silica. Most of these carry visible gold.

The geological condition here appears to be an interesting one. The slate, graywacke and argillite series is reported by U. S. Grant and D. F. Higgins, Bulletin No. 443, "Geology and Mineral Resources of Prince William Sound, Alaska," pp. 22-23, as belonging to the Valdez series with an undetermined age. They are described as a very wide and thick series. Thus a small intrusive must have penetrated this series for a considerable distance and might represent the top or very cupola of a stock or batholith. Further, the fractures may have been the result partly, to expansion of gases within the cupola and the rich mineralization may have its source from the larger mass below.

Four short exposed quartz veins which vary in dip and strike occur on the hanging wall side of the sill. Two can be traced to the footwall contact and apparently ends and the two larger ones are a few feet from contact. One blind vein was discovered in the large opencut only a few feet below the surface outcrop. Apparently no definite structure has been developed or is not revealed on the surface. The position of the five veins is shown on the accompanying sketch with surrounding formations.

Showings:

No. 1 vein. This vein was discovered when the opencut was extended into the diorite. It has a developed length of nearly 40' and a width of 18" to 2½'. This vein strikes N. 73° E. and dips 75° S. The walls are free in most portions and a slight movement was noted on the hanging wall. A slight difference was noted in the mineralization of each vein. No. 1 vein appears to be more basic in its mineralization which consists of pyrite, galena and sphalerite. Free gold can be seen with the mineralization and usually associated with the galena and sphalerite. A few crystals of specularite were noted. This vein is wholly within the altered diorite.

No. 1 blind vein in altered diorite.

No. 2 vein. This quartz vein is exposed 35' and is 18" in width, widest portion. It extends from diorite into and across a small slate band 50' east of No. 1. These slates are graphitic. This vein contains only a small amount of pyrite mineralization, but considerable free gold can be seen in the quartz.

No. 3 vein. This is another small quartz vein very similar to No. 2 and lies 75" east. It is exposed 30' and varies from 12" to 18" in width. It contains visible gold in spots and a slight mineralization. Both No. 2 and No. 3 veins have the appearance of gradually narrowing and possibly ending in a short distance further away from the diorite where they are covered with slide rock.

No. 4 vein. This is known as the high grade vein. It is exposed, but broken up considerably for 65' and averages 3' in width. Several small stringers lead into it on the hangwall side and where these stringers join the quartz the vein has greater widths. The surface of the vein is oxidized considerably as also are the slates showing a heavy mineralization. Both quartz and oxidized portions of the slates are sacked and run through the mill. Very heavy pannings of gold are obtainable along this vein. The mineralization is pyrite, arsenopyrite, galena and gold. This mineralization is distributed into the slates which are highly schistose. It is very possible, if more work was done on this vein, values over much wider widths could be obtained. This vein dips into the intrusive, but the exact dip could not be obtained owing to not sufficient work.

No. 5 vein. This quartz vein has an exposed length over 50' and averages 18" in width. Six inches of this width shows a darker and more intensely mineralized quartz. The dip is toward the east, and nearly vertical. The mineralization of this vein shows a higher temperature mineralization of pyrite, chalcopyrite, galena, arsenopyrite and free gold. It extends from fractured graywacke north into schistose slate. The gangue minerals are quartz, chlorite, calcite and a greenish mica, the latter in spots in the veins of the intrusive itself.

J. Hoar, manager for the company
and showing No. 5 vein.

Numerous veinlets, bunches and gash veins occur scattered through the intrusive itself. Gold can be seen in most of them. However, the mineralization in most of the small veins is lacking and the gold occurs free in the whitish quartz. They show a somewhat

parallel arrangement across the sill at right angles to the elongation of the mass. Some bunches are a few feet long and up to 2 to 3' in width, while the gash veins and stringers vary from less than an inch up to 12 to 14" in widest places.

Showing some of larger bunches of quartz in diorite.

Showing parallelism of small veinlets in diorite.

Showing small creek alongside outcroppings with mill in background.

Assays:

Samples were not taken for assay from any of the veins. Average values would not have been obtained due to surface weathering conditions. Gold can be seen in the five mentioned veins and several of the gash veins showed gold on the surface. Less than 20 tons were milled from No. 1 vein with a recovery of nearly 2 ounces to the ton. No. 4 vein was reported to show surface pannings that were estimated to run several hundred dollars a ton. No. 5 vein was reported to average better than $100 a ton from a few samples taken from it.

From the amount of free gold seen in various places from rock in place, it is evident high values are obtainable, while average values for the whole intrusive mass and all the veins, not sufficient development work has been done, to determine. While nothing large, other than the whole intrusive itself, considered as an orebody which is yet to be proven, or persistent is evident from developed showings, the conditions that will be encountered in depth and opening up this prospect will be interesting.

SUPPLEMENTARY REPORT OF RUFF AND TUFF MINE
(To be added to preliminary report of September 4, 1936)
August 31, 1938

The Ruff and Tuff Gold Mining Company operated this season from the first of May until the first of November. Forty tons of ore was milled during June. This amount, with the amount milled last season, completely wore out the two 10-ton Gibson mills. A 20-ton Crescent mill was purchased, but did not arrive until after the writer's visit. A letter from the superintendent, James I. Moore, Jr. (note copy attached), states that a total of 100 tons was milled after the installation of this new mill up until operations ceased on November 1. This letter also gives an account of the performance and the operator's opinion regarding this mill.

A plane table sketch was made of the surface and underground workings. The total underground workings to date consisted of 230 feet of drifting, 50 feet of crosscutting, and one small stope, from which approximately 100 tons of ore has been stoped. Proposed new work consists of a diamond drilling program to be carried on during the winter months and possibly the driving of a lower tunnel.

On date of visit the company was engaged in building a new combined bunk house, cook house, and blacksmith shop. Drifting was in progress in the vicinity directly below the Duck Pond vein. During the early part of this season a 4,000-foot caterpillar road was constructed from the mine over the divide onto Columbia Glacier to the summer plane landing field. All freighting is done with airplane by the Reeves Airways of Valdez at a cost of $60 per ton landed on Columbia Glacier.

New machinery other than that mentioned in previous reports is another 10-ton Gibson mill. Both mills are at the present time jumked and a decided loss was reported from their operation. A Gardner-Denver 154-cu. ft., 3 cylinder compressor is driven with a belt drive by a 6-cylinder, 85 H. P. Cummins diesel. Gardner-Denver machines are used with Timken detachable bits. The mill machinery, with the addition of the Crescent mill, consisted of a crusher, mill, 4x8 foot amalgam plate, Pierce amalgamator, and three-quarter size Wilfley table. Other machinery consists of a 15-H. P. Caterpillar tractor, and a 5-H. P. Fairbanks Morse gas engine coupled to a double drum hoist.

A total of five channel samples were taken at various showings, as shown on the accompanying sketches. These results do not represent an average value, but rather show the irregularity of the gold distribution. Only after a continued mill run could an average value be determined. The sulphides in the ore vary from 2⅓ to 3 per cent and the gold content was reported as varying from 50 to 60 per cent free.

Ten men were employed during the season.

COPY

4327 Thackeray Place,
Seattle, Washington,
November 15, 1938.

Mr. J. C. Roehm,

Juneau, Alaska.

Dear Mr. Roehm:

Sorry I missed you when passing through on the Baranof. I looked around the dock while there, but did not see you, and presume you were out of town, although the Baranof was so inconsiderate as to arrive at Juneau at two a.m.

We put through about 100 tons of ore with the Crescent mill, and found out a lot of things about this equipment. As a grinding machine, there is little criticism. The following screen analysis shows rather good work:

plus 40	3.7%
" 60	14.8
" 80	14.8
" 100	7.4
minus 100	59.3
	100.0

This was rather too fine for good table concentration, so we reversed the direction of the mill, obtaining a little coarser result: 49% minus 100 mesh. Finer grinding can be obtained by adding nipples to discharge pipe.

As an amalgamator, there is room for improvement. The plates suspended around the sides of the mill take an awful beating, and while some amalgam is caught thereon, most of it falls to the collector ring below. There was no indication of free gold in the mill discharge, hence we presume that percentage of free amalgamated in the mill was high.

Wear and tear on the mill liners and balls is quite severe. What this will amount to in pounds per ton or dollars, we cannot say, as we did not put enough through to get any information along this line. However, the maker states that between 280 and 350 tons can be milled with a set of liners, which indicates a replacement of liners every three weeks or so, on twenty-four hour basis. This, in turn, means a shut down for the change of a half shift to one shift, with consequent loss of production and unproductive labor cost. This frequent interruption would seem to me to be costly.

The feed to the mill MUST not exceed $\frac{1}{2}$" ring. Our principal trouble resulted from feeding material larger than $\frac{1}{2}$". It is quite obvious that rolls between crusher and mill are essential for best results. With rolls breaking to $\frac{1}{4}$" mesh or less, the mill will grind much more than rated capacity.

JCR #2

It is my opinion that for prospecting or testing purposes, the Crescent mill will prove satisfactory, in view of its low initial cost, low power consumption, weight, etc. However, for permanent plant and perpetual operation, there is no doubt that a standard ball mill would surpass the Crescent.

We were forced to suspend operations on November first on account of weather. Had not completed our program, but have sufficient information for report. In this connection, have you finished the map of our property from your survey, and if so, would you mind sending me a copy of same at your earliest convenience? Would you object to my referring to this in my report of our operations for the 1938 season? Any comments that you care to, or are permitted to make about our property, will be gratefully received.

With my kindest personal regards, I am,

Very sincerely yours,

(Sgd) JAMES I. MOORE, JR.
Superintendent
Ruff & Tuff Mine.

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Location of Ruff & Tuff Mine, King Island in foreground. Note roughness of topography in background. ~~Winter and spring landing field in foreground.~~

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