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REPORT ON THE NEW YORK ALASKA GOLD DREDGING COMPANY OPERATION BEAR CREEK, TULUKSAK RIVER, ALASKA

14-81-10

By

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U. S. G. S.

Juneau, Alaska
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INDEX

ITINERARY

August 16, 8 a.m. left Akiak. Camped on Tuluksak River 20 miles from Tuluksak village 7 p.m.

August 17, arrived second landing Tuluksak River 7:30 p.m.

August 18, left second landing on foot, meeting team near foothills camp and proceeded to Nyac, arriving 3 a.m. August 19.

August 19, Nyac.

August 20, Nyac. Went in tractor to foothills camp (15 mi) in afternoon.

August 21, left foothills camp by tractor 5 a.m. arriving second landing 10 a.m. Arrived Akiak midnight.

ACKNOWLEDGMENT

The officials of the New York Alaska Gold Dredging Company extended every courtesy and aid during the visit to Nyac. Appreciation is expressed to Mr. Lester Wallbridge, manager, Mr. O. Fowler, and Mr. Ralph T. Hirsh, mining engineer for the New York Alaska Gold Dredging Company.

THE NEW YORK ALASKA GOLD DREDGING COMPANY OPERATION

BEAR CREEK, TULUKSAK RIVER, ALASKA

LOCATION

The property of the New York Alaska Gold Dredging Company is located on Bear Creek, a tributary of the upper Tuluksak River, Alaska. A post office has recently been established at the dredge camp under the name of Nyac, Alaska. Nyac is located ninety four and one-half miles by river, company survey, from the Indian village of Tuluksak at the mouth of the Tuluksak River. Tuluksak lies twenty miles up the Kuskokwim from Akiak. From the company survey Nyac is forty four and one-half miles east by air line from Tuluksak. The accompanying map shows the crooked nature of the lower Tuluksak River, a characteristic of all streams flowing through the tundra. The distance by river from Bethel to Nyac is estimated at one hundred sixty five miles.

TRANSPORTATION AND ACCESSIBILITY

The Santa Ana Steamship Company operates a steamer from Seattle to Bethel twice a year, usually leaving from Seattle during the months of May and August. The trip requires from 12 to 14 days. The freight rate from Seattle to Bethel is $22.50 per ton, ship option cubic measurement or 2000 pounds. A river steamer connects with the ocean steamer at Bethel. The freight rate from Seattle to Akiak is $37.00 per ton. The supplies are landed at Bethel and taken by small

boat to the landing at the forks of the Tuluksak 32.5 miles from Tuluksak village. This point was used in 1925 as a landing for the material and machinery used in the construction of the dredge and the camp. A tractor was used during the winter to haul this material to Bear Creek. It is impossible to operate a tractor from this point during the summer on account of the tundra. A winter dog team trail has been staked from Tuluksak to the camp.

Transportation of supplies in summer from the first landing to the second landing on the Tuluksak River is accomplished by means of a poling boat. It is possible to travel between the first and second landings at nearly all stages of water. During the periods of high water the poling boats are able to reach the foothills camp.

Camping on Tuluksak River below Bear Creek

A tractor trail has been constructed under tundra difficulties from the second landing on the Tuluksak to the foothills camp eighteen miles distant. This trail follows the river timber line and is not used

during wet weather by the tractor. Usually a team is used in hauling supplies from the second landing to the foothills camp. From continued usage by the tractor a fair road has been established from the foothills camp up the valley of the Tuluksak to the dredge camp at Nyac, a distance of fifteen miles. Supplies are hauled from the foothills camp to Nyac by tractor.

The movement of supplies from the Bethel to the first landing on the Tuluksak and between the first and second landings is usually done by native labor on contract. There is no established rate for this work but one figure was obtained from the Japanese trader at Tuluksak of 14¢ per pound from Bethel to the second landing.

CAMPS

The camp at Nyac is one of the best laid out dredge camps in the country. The buildings are of log construction consisting of two bunk houses, a staff house, office, manager's house, mess house, bath house, a small refinery, machine shop, gasoline-electric plant and stables. A few of the workmen have built cabins for their families. Several reindeer herds furnish an assured meat supply at Nyac.

The Alaska Road Commission is building a shelter cabin to replace the one destroyed by fire at the foothills camp. In addition to this, the company has two tents for use in the summer. The foothills camp is located at the base of the foothills on the bank of the Tuluksak and serves as an overnight stopping place for travel between the second landing and Nyac.

A tent camp, to serve as a warehouse for supplies, is maintained at the second landing. At the first landing a sheet iron warehouse has been constructed where a watchman is kept.

TIMBER

The tractor is blamed for starting a tundra fire this summer that swept the tundra area along the Tuluksak river and the timber area in the valley of the Tuluksak River to within three miles of Nyac. In consequence much of the standing timber in the vicinity of the camp has been destroyed. The tundra moss, when dry, burns readily and the fire if unchecked burns over a large area of country. Fires have raged throughout the Kuskokwim district this year, serious in nature, because of the destruction of timber, and the moss which is the feed for the reindeer herds in the country.

Small spruce, cottonwood, and willows are found along the river banks. The spruce is thinly scattered in the lower foothills; in the hills beyond Nyac moss alone is found. Many edible berries grow in the mossy localities. Some gardening has been successfully attempted at Nyac. The perpetual summer daylight seems to promote the growth of vegetation where water is available.

WATER POWER

No streams have been noticed from which water power might be developed.

TOPOGRAPHY

The tide in the Kuskokwim River is slightly noticeable at Tuluksak village. The Tuluksak River from Tuluksak village to the foothills flows through the tundra with the greatest rise in elevation from the mouth of Fog River which is above the first landing on the Tuluksak. The approximate elevation of the dredge is 1500 feet. The areas of tundra are flat with the exception of small ridges and moss covered gravel bars. The valley of the upper Tuluksak is wide, the foothills rising on either side to an elevation of less than one thousand feet. Bear Creek is the largest tributary of the upper Tuluksak River, being larger than the stream that is the Tuluksak River above the mouth of Bear Creek. The valley of Bear Creek forms a large basin that is marked by the gravel benches along its sides. The higher ridges of the mountains rising from the valley at the head and sides of upper Bear Creek reach an approximate elevation of twenty four hundred feet.

The head of the Bear Creek basin is located on the south slope of Mount Hamilton. The basin is drained by the waters of Fox Creek, Bonanza Creek, Myrtle Creek, Spruce Creek, and the East Fork. From Mount Hamilton to Bear Creek Discovery the distance is fifteen miles. Along the right limit of the Tuluksak River, in the vicinity of the foothills camp, the topography is marked by a high bluff extending to Granite Creek. The relative topography of the country is shown

by the accompanying maps of the New York Alaska Gold Dredging Company.

GEOLOGY

The bedrock as exposed near Bear Creek Discovery is of a granitic nature cut by narrow fine grained dikes. The bedrock is highly altered and fractured. On the left limit of Bear Creek near Discovery is an exposure of yellowish highly altered siliceous rock. The gravels of the Bear Creek valley cover the bedrock to such an extent that the true nature is not discernible. It is impossible to give a comprehensive report on the geology of the Bear Creek district from the limited time spent on the ground. During the summer of 1914 Mr. A. G. Maddren, United States Geological Survey, made a study and detailed report of this district.

Gold Placers of the Lower Kuskokwim; U.S.G.S. Bulletin 622. Pages 292-355.

The average depth of the bedrock on the claim, seven below, that has been worked by the dredge is twelve feet. Mr. Hirsh, engineer for the company, believes that there is a deep channel in the Bear Creek valley that cannot be reached by the dredge. The dredge and drilling activity has not been sufficient to disclose definite additional geological data on the deposit. Pieces of bedrock show it to be a fine grained greenish rock that breaks in angular fragments. A characteristic of this rock shows suggestive columnar structure. There is some mineralization of pyrite. All of the rock in this locality is highly altered.

On either side of the Bear Creek valley the benches are almost continuous. The gravel, in general, is apparently an old flood plain that widens out toward the foothills camp. Ninety per cent of the gravel passes through a 2½ inch ring. There are few large boulders, the largest attaining a weight of less than 600 pounds. It is, as a rule, loose and unconsolidated.

Gold is found over the area along Bear Creek and at the mouth of Granite Creek in the Tuluksak valley. Other prospects may be had along the Tuluksak valley but they are not of sufficient value to warrant exploitation. The gold is very spotted and there are many barren spots in the dredging ground. Drilling and sampling is therefore necessary in connection with the dredging to determine the limits of the ground.

The dredge started operations on Seven below, which, in the opinion of the company was too far from Discovery. The dredging limit above Discovery has not been determined.

Mr. Hirsh reports the existence of sediments and a fossil locality near the mouth of Bear Creek. A sample of a black mineral resembling asphalt has been sent to Fairbanks for identification. (Sample No. 31). Mr. Hirsh sent a group of fossils from the East Fork to Columbia University for identification. He reports them as belonging to an oil group of sediments found in the United States. No details were available and no other significance attached to the report.

A mineral which is believed to be platinum has been recovered from the dredge cleanups and from some of the drill holes. No estimation has been made of the amounts of this mineral. (Sample No. 37). Cinnabar has also been recognized in the dredge cleanup.

EARLY MINING ACTIVITY

Placer gold was first found in this region in 1909-10. The Bear Creek placers have yielded a small return to their owners. The mining activities prior to dredging were small consisting of ground-sluicing and shoveling in operations. Mr. Maddren, in his report, (op. cit.) gives the historical outline of the district.

Mr. Lester Wallbridge was the first representative of the dredging company in the locality. The New York Alaska Gold Dredging Company has no other operations. Part of the Bear Creek ground has been purchased by the company, the rest being operated under royalty lease from the owners. All of the ground in the locality is controlled by the company.

The New York Alaska Gold Dredging Company

GENERAL DATA

Location of Dredge,- Bear Creek, Tuluksak River, Alaska.

Mining District,- Kuskokwim.

Post Office,- Nyac (New), via Akiak.

Towns in Locality of Dredge,- Tuluksak, Native Village at mouth of Tuluksak River, 100 miles by river. Tuluksak to Akiak, 20 miles. Akiak to Bethel, 45 miles. Total Dredge to Bethel by river 165 miles.

Recording Precinct,- Bethel.

General Manager,- Lester B. Wallbridge, Nyac, Alaska.

Secretary Treasurer,- Milton S. Dillon, 120 Broadway, New York City, N. Y. Mr. O. Fowler is associated with Dillon and is one of the principal shareholders in the company, address Nyac, Alaska.

Mining Engineer,- Ralph T. Hirsh, Nyac, Alaska.

Dredgemaster,- W. A. Peterson, Nyac, Alaska.

Head Office,- 120 Broadway, New York City, N. Y.

Total number of Men Employed,- 40.

Average Wage Per Man Per Day,- $9.00. (This takes into consideration that board is furnished costing approximately $2.10 per day. Native labor is available at $75.00 to $100.00 per month but is not used. Contracts have been given for clearing brush and general labor work to the natives at Tuluksak village. This makes a greater cost for native labor as the trader at Tuluksak (Japanese) handles the contract at a profit. The labor used in the construction of the dredge and in the preliminary operation wasmostly furnished by the Union Construction Company. There will not be as many men employed in the dredge operation next season. Labor is available locally at $6.00 per day and board.

Lumber is available from a small sawmill operated by the Bureau of Education at Akiak.

The New York Alaska Dredging Company

DETAILS OF DREDGE CONSTRUCTION AND OPERATION

The New York Alaska dredge,
Bear Creek.

Dredge First Started (New),- July 1, 1926.

Length of Dredging Season (Starting April or May),- 6 to 7 months.

Character of Deposit,- Creek. Some bench gravels.

Cross Section of Deposit,- Moss and muck, 0-4 feet averaging 1 foot; loose light gravel and loose coarse gravel, 8-9 feet; bedrock 1½-2 feet taken.

Character and Kind of Bedrock,- The bedrock is metamorphic in character and the prospecting and work so far completed by the dredge has not been sufficient to enable a classification of the bedrock. The bedrock is not exposed in the area where the dredge is now operating. Pieces dug by the dredge show it to be a fine grained greenish rock that breaks in angular fragments and is shattered, the fine gold being retained in the small fissures. At other points of exposure the bedrock is granitic cut by fine grained basic dikes.

There is no frozen ground.

Average Depth of Deposit,- Not determined. At the time of visiting the dredge had gone over one claim. This claim had an average bedrock depth of 12 feet. Drilling has shown the presence of deeper channels which have not been clearly defined.

The New York Alaska Dredging Company

Size of Gravel,- Ninety per cent of the gravel passes through a 2½ inch ring. There are very few boulders, these attain a maximum weight of 600 pounds.

Distribution of Gold,- Very spotted.

Size of Gold,- Medium and fine, no large nuggets. It was reported that the largest recovered was $50.00.

Value of Gold per Ounce,- $19.00 plus. No returns as yet.

Total Gold Production to Date,- $15,000.00. August 12, 1926.

Average Value of Deposit Per Cubic Yard,- The dredge had dug 75,925 cubic yards to produce $15,000.00. This was the result from one claim making an average value of 19.75¢ per cubic yard. The company would not give the results of their drilling.

Other Valuable Minerals Found,- Platinum?

Total Number of Cubic Yards Dug to Date,- 75,925. August 12, 1926.

Average Number Cubic Yards Dug Per Day to Date,- 1716.

Estimated Life of Property,- Entirely undetermined.

Actual Running Time of Dredge,- Averages 80% of the 24 hours. The dredge runs 3 - 8-hour shifts.

Type of Dredge,- Combination two flume screen and stacker.

Kind of Anchorage,- Spud.

Number and Kinds of Spuds,- Two, wood moving, and steel digging. The dredge has a 120 foot swing.

Dredge Constructed by,- Union Construction Company.

This dredge was never operated elsewhere. (New).

Cost of Dredge,- Not available.

Maximum Digging Depth Below Water Level,- Twenty feet.

The New York Alaska Dredging Company.

Horsepower Required,- Two - seventy-five horsepower Deisel Engines.

Type of Engine,- (Two) Deisel, Pacific Deisel Engine, two cylinder, 75 horsepower, 325 R.P.M. Engine number, 532. One engine used for pumps and one for main dredge drive.

Size of Buckets,- 4 cubic feet.

Number of Buckets in Line,- 61, Close connected.

Digging Speed,- 27 buckets per minute.

Kind of Power,- Deisel.

Fuel Oil Consumption,- 160 gallons per day average to date.

Cost of Oil,- 41¾¢ per gallon for fuel oil, and 90½¢ per gallon for lubricating oil. (Note, A cream separator is to be installed for the recovery of lubricating oil from the engine base). The above costs are landed at the dredge.

Size of Hull,- Width, 38 feet. Length, 73 feet. Depth, 5 feet 5 inches. Draught, 4.3 feet.

Kind of Screen,- Revolving. Length, 16 feet. Diameter, 5 feet. Size of screen perforations, 2½ inches.

Location of Nozzles in Screen,- 3 located in center of screen.

There is a 2-inch spaced grizzly located under the bucket line.

Pumps,- Number, 4. Description; one 12" pump for flume with a 3-inch auxiliary pump coupled on the jackshaft for fire protection, one 8-inch pump for the nozzles, and one 3-inch pump for washing buckets.

Approximate Gallons of Water Pumped for Sluicing,- Undetermined.

Conveyor,- Length C to C 80 feet, Width belt, 30 inches.

Flumes,- Number, 2. Length, 80 feet. Width, 30 inches, Depth, 12 inches.

Gold Saving Area,- 84 x 120 inches, distributor.

The New York Alaska Dredging Company

Save All Area,- 18 feet x 18 inches.

Kind of Riffles Used,- Cast iron, Hogendoff, in flumes. Hungarian angle iron riffles in distributor.

Operating Difficulties,- The main operating difficulties encountered were those generally associated with the installation of a new dredge. There were a few changes necessary in the construction after the dredge was in operation. The overhead expense was very high but it is hoped that the experience of this season will lower the cost of operating the next. The dredge company maintained a large staff consisting of surveyors and clerks which will be materially reduced next season. Much of the overhead expense of this season has been in the construction and improvement of the camp.

The ground dredged did not average as well as anticipated. The managers believe that the dredge started too low down from Discovery. The start was made on the lower limits of seven, on August 19, they had reached the upper limits of seven. The upper limits of the claims above discovery has not been defined.

Operating Cost Per Cubic Yard,- The company would not give out the probable operating cost per cubic yard. The expense of starting and high initial overhead was reported to render a fair calculation impossible.

Reindeer herd, Bear Creek
Discovery.

The New York Alaska Gold Dredging Company

DRILLING

Prospecting to define the limits of dredging ground is carried on continuously in front of the dredge. Two four inch diameter Union Drills are used with a maximum drilling depth of sixty feet though no drilling has been necessary to exceed thirty five feet. The presence of a deeper channel is suspected but as yet no definite information has been obtained concerning it. The maximum dredging depth below water level is twenty feet which would not permit the dredging of the deeper channels beyond their rims.

Front view Bear Creek dredge showing drill

Drilling operation ahead of dredge

A third drill is used for prospecting at other points. Due to the spotted occurrence of the gold, drilling does not accurately determine the values in the dredging ground. This has been shown by the returns from the first period of operation. It is therefore considered advisable to drill in front of the dredge. A man is employed

solely for the purpose of a systematic sampling of the buckets as a check on the dredging limits.

PROSPECTING BENCH GRAVELS

The bench gravels at discovery, on Bear Creek, are being prospected by groundsluicing. It is the intention of the New York Alaska Gold Dredging Company to mine these gravels by hydraulicking should the prospecting warrant the operation. At the present time two men are employed sluicing the bench on the right limit of Bear Creek. The water for sluicing is brought by a small ditch from Bonanza Creek to the prospect.

Prospecting gravel benches, Bear Creek Discovery.

The water is directed by means of a canvas pipe from the intake on top of the bench. This work has been in progress a short time

and has been hindered by the general shortage of water this season. The officials of the company at Nyac, however, seem encouraged with the results of the work so far accomplished.

The gravels are loose and unconsolidated. The gold is fine and well worn and occurs mainly in the crevices of the shattered metamorphic granitic bedrock and in a foot of the overlying gravel. At this point the approximate depth of gravel is eighteen feet with a foot and a half covering of moss and muck. There are few large boulders and the ground is unfrozen.

IMPRESSIONS

The first general impression gained from a visit to the Bear Creek dredge is the well constructed nature of the camp and the general air of contentment among the workmen.

The dredge has been installed under supervision of employees furnished by the Union Construction Company. It is well constructed, and after the experience of the present season in learning the dredging conditions, should run efficiently. The ordinary problems of delay and changes in adapting the dredge to the locality have apparently been solved.

The expense of getting started has been obviously great. The men connected with the dredge company were newcomers in the country and, in consequence, a greater amount has been expended in the transportation of supplies and in general construction than necessary.

Perhaps their plans have been a little too elaborate for a new enterprise.

The dredge is operating with a large force of men. A great deal of local comment has been occasioned by the large staff personnel, surveyors and clerks, maintained by the company. The dredge is, at the present time, employing more men than necessary for efficient operation.

The recovery of gold is not as great as anticipated. As the drilling and prospecting data is available only to the officials of the company, a prediction cannot be made of the future. The occurrence of gold over so large an area has been the incentive to the dredging operation in the district.

The Alaska Road Commission has given its cooperation by assisting in the building of trails and bridges.

The New York Alaska Gold Dredging Company is the pioneer in the dredging field of the lower Kuskokwim. They have the problems of pioneering and isolation. Their work has been a benefit in the development of that section of Alaska and on their success or failure rests the attraction of other capital for future placer development.

Prospecting with a view to dredging is being carried on this season in the Arolic River District near Good News Bay. This is due, in part, to placer attention being called to the lower Kuskokwim District through the activities of the New York Alaska Gold Dredging Company.