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REPORT ON THE PRELIMINARY EXAMINATION OF THE BERG PROSPECT, RUBY CREEK, SHUNGNAK DISTRICT, ALASKA

by

Robert H. Saunders
Associate Mining Engineer

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ABSTRACT

Copper deposits were first discovered on Ruby Creek in the Shungnak District over forty years ago. In 1906, private interests prospected the deposits by tunneling, drifting, and shaft-sinking; the property was then abandoned with no attempt being made to produce copper. Interest in the property was renewed in 1949, when Rhinehart Berg discovered some radioactive rock specimens on the dump near the old shaft. Investigations since 1949 have so far failed to disclose any appreciable amount of radioactive material, however, the shaft has not been reopened to permit examination of that part of the deposit from which the radioactive material probably came. The reopening of the shaft should be accompanied by surface trenching to expose more of the zone in which mineralization occurred.

INTRODUCTION

As part of its program to furnish aid to prospectors in Alaska, the Department of Mines regularly employs mining engineers to examine mines and prospects. Examinations are made at the request of property owners. Mr. Rhinehart Berg requested that the Department of Mines send an engineer to examine a mineral deposit that he is prospecting on Ruby Creek in the Shungnak District. In response to his request, a preliminary examination was made June 25 to 28, 1952, by Robert H. Saunders, Associate Mining Engineer. This report is written from notes taken during that examination.

Acknowledgement for assistance in gathering the information in this report is due Mr. Earl H. Beistline, Dean of the School of Mines, University of Alaska.

LOCATION AND ACCESSIBILITY

The claims are on the left limit of Ruby Creek, tributary of the Shungnak River, which is a tributary of the Kobuk River. The property is at approximately 67° 05' N latitude and 156° 55' W Longitude; it is in the Shungnak District in the Northwestern Alaska Region.

A tractor trail about 14 miles long leads from the Dahl Creek airfield westward to Wesley Creek, over the divide between Wesley Creek and Ruby Creek, and down Ruby Creek to the property. There is another trail about four miles long between the Dahl Creek airfield and the village of Kobuk River. Plate I in the appendix is a map of the vicinity.

Kobuk village is about 160 miles by air from Kotzebue. A Wien Alaska Airlines float plane makes tri-weekly round trip flights from Kotzebue to Kobuk with waypoint stops at Noorvik, Kiana, Selawik, and Shungnak. The airfield at Dahl Creek is a little over 300 miles from Fairbanks, but there are no regularly scheduled flights direct from Fairbanks to the Shungnak District.

Heavy equipment can be transported up the Kobuk by boat and barge. The distance by river from Kotzebue to Kobuk village is about 250 miles. Mr. A. R. Ferguson, who is experienced in freighting on the Kobuk, estimates the cost of freighting by boat between Kotzebue and Kobuk village at $20 per ton.

Kotzebue Sound is too shallow to accomodate ocean-going ships, and freight that comes to Kotzebue by boat is taken ashore by lighters. Freight rates

from Seattle to Kotzebue vary from about $14 per ton for mining machinery to about $40 per ton for groceries and dry goods. Lighterage is $10 per ton on all classes of freight. Mr. Ferguson expressed the opinion that, if large shipments of freight warranted doing so, ocean-going barges could be taken up the Kobuk, and overall freight rates from the upper Kobuk to Seattle could be reduced considerably.

From the claims on Ruby Creek a road could be built over the divide and down Wesley Creek to the Kobuk River. The route is about 12 miles long, and it presents no major obstacles to road construction.

GENERAL INFORMATION

From the valley of the Ambler River, a major tributary of the Kobuk, the Cosmos Hills, a small range of mountains 2000 to 3000 ft. in elevation, extend eastward along the north side of the Kobuk valley to join the divide that separates the Kobuk watershed from the Alatna River, a tributary of the Koyukuk River. Two rivers, the Shungnak and the Kogoluktuk, approach the western part of the Cosmos Hills from the north with their courses barely five miles apart. The Kogoluktuk, with little change in direction, cuts through the mountain range in a narrow canyon and empties into the Kobuk about two airline miles upstream from Kobuk village.

The Shungnak turns westward and flows away from the Kogoluktuk along the north side of the Cosmos Hills for a few miles, then, turning southward again, it, too, cuts through the hills in a narrow canyon to empty into the Kobuk. Between the canyons of these two rivers, there is a segment of the range about 14 miles long in which there are four major

mountains; from west to east they are: Shungnak, Cosmos, Inerevuk, and Asbestos Mountains. Most of the streams that drain the south side of this land mass flow directly into the Kobuk, and most of the streams that drain the north side are tributaries of the Shungnak. Both Wesley Creek and Ruby Creek head in a narrow canyon between Cosmos Mt. and Inerevuk Mt. Ruby Creek is an eight-mile-long tributary of the Shungnak River, and Wesley Creek is a six-mile-long tributary of the Kobuk.

The higher parts of the mountains around Ruby Creek are barren, but in the lower parts of the valleys, spruce trees grow large enough to make saw logs or mine timbers. Timber line is at about 1000 ft. elevation.

The climate of the Kobuk valley is sub-Arctic; the winters are long and severe. In July 1952, there were numerous patches of snow in the hills remaining from the preceding winter. The Kobuk River is usually free from ice from early June to late September, but Kotzebue Sound, Hotham Inlet, and Selawik Lake, at the mouth of the river, are usually not open to navigation until July.

Very few permanent residents of the Kobuk area are whites; an Eskimo population of about 1500 lives in the following six villages: Kotzebue, Noorvik, Kiana, Selawik, Shungnak, and Kobuk. Many of the men travel to other parts of the Territory for summer employment. Hunting, fishing, and trapping are economically important to the livelihood of the people. Eskimos comprise the greater part of the crew at a tin-tungsten mine on the Seward Peninsula, and the Eskimo villages near the Kobuk River could probably provide most of the employees for a small mining operation in the Shungnak District.

PROPERTY AND OWNERSHIP

Four claims have been staked on the Ruby Creek prospect: they are the Iron Cap, Augusta, Wallis Whitney, and Karen. The relative locations of the claims are shown on Plate II in the appendix. Rhinehart Berg, the locator, has an undivided one-third interest in each of the claims; and John Bullock and A. R. Ferguson, both of Kotzebue, each has an undivided one-third interest in each of the claims. The claims have been recorded in the records of the U. S. Commissioner at Kotzebue.

GENERAL GEOLOGY

The geology of the Shungnak District has been described by Philip S. Smith in U.S.G.S. Bulletin 536, THE NOATAK-KOBUK REGION, ALASKA. Paleozoic and pre-Paleozoic schists constitute the bedrock underlying most of the area between the Shungnak and Kobuk Rivers. An east-west trending, three-mile-wide belt of rocks, younger than the schists but also of Paleozoic age, crosses upper Ruby Creek. These younger rocks are chiefly limestone, dolomite, and calcareous schist. The older schists lie on both the north and the south sides of the belt of younger rocks. Layers of greenstone and greenstone schist occur in both groups of Paleozoic sediments. Along some of the limestone-greenstone contacts, tremolite and other contact minerals have been formed. On Asbestos Mountain, the mining of one such deposit of tremolite and chrysotile asbestos has been attempted. The nephrite variety of jade has been found in the greenstone and in boulders in some of the streams that cut through the Paleozoic rocks.

There are granitic intrusions to the north on the divide between the Noatak and Kobuk Rivers and to the south in the Zane Hills. One large boulder that appeared to be granitic pegmatite was bulldozed from one of the prospect pits on Ruby Creek.

MINERAL DEPOSITS

The mineralization is apparently confined to a wide, brecciated zone in white limestone in the belt of younger Paleozoic rocks. The numerous fractures in the brecciated zone served as passageways for the ore-bearing solutions. The most predominant ore minerals are pyrite, bornite, chalcopyrite, and galena.

The trenching that was planned for the summer of 1952, was not completed because the bulldozer being used suffered a mechanical breakdown after only two days of trenching. The breakdown occurred before any of the pits had been completed, and the float in the pits served as the only indication of the character of the underlying bedrock. The only excavations that appeared to have reached solid bedrock were the hand-dug pits, designated on Plate II by the figures 7 and 10, and the ditch around the shaft. Bulldozer pits 1, 2, 3, and 5 exposed only blue limestone float. Pit 4 contained some greenstone in addition to blue limestone float. In pit 6 there was both blue and white limestone float. Copper minerals, either in bedrock or in float, were in the ditch around the shaft and in pits 7, 9, 10, 11, 12, 13, 14, and 15. Pit 8 was in gravel. The pits that exposed copper mineralization also contained white limestone float, but the pits farther up the

hillside containing blue limestone float showed little or no copper mineralization. Apparently the zone in which the mineralization occurs has its western boundary slightly west of pits 7, 10, and 14, and the western boundary trends in a northeasterly direction. The prospecting has not yet indicated where the eastern boundary of the zone lies.

The shaft timbering appeared to be in good condition; the water level in the shaft was about ten feet below the collar. A weighted tape let down the shaft touched bottom - or a solid obstruction - 55 ft. below the collar.

Philip S. Smith in Bulletin 536 states that the property was examined by experts in private employ in 1906. He describes two open cuts and an adit that are no longer open. According to his description, the adit was a few feet above the high water level of Ruby Creek. It was driven about forty feet through limestone which in places showed mineralization. Two short drifts totalling thirty feet in length turned off the adit; they followed wide mineralized fissures but soon passed out of ore.

In Bulletin 536 there is also a description of a similar copper prospect three miles west of the prospect on Ruby Creek.

SAMPLING AND ASSAYS

Eight samples taken during this examination were assayed at the Territorial Department of Mines Assay Office at College, Alaska, by Lowell Patten, Assayer-in-charge. All of the samples were taken from material that had been oxidized. The results of the assays are shown in Table I, and the locations where the samples were taken are shown on Plate II.

All the samples were tested for radioactive elements and for zinc, but none contained either.

During the field examination a portable Geiger counter was used to test numerous rock specimens for radioactivity. One specimen from the shaft dump showed slight radioactivity; all other tests were negative.

In 1949, a sample from this property was sent to the Territorial Department of Mines Assay Office at College. The sample was picked up by Rhinehart Berg while prospecting with a Geiger counter, and it was forwarded to College by A. R. Ferguson. The sample was analyzed by A.E. Glover at the Territorial Department of Mines Assay Office, and it was also analyzed by John C. Rabbitt of the U. S. Geological Survey, Washington, D. C. The radioactivity was found to be scattered in fractures filled with iron oxides. The radioactive mineral was not identified, but uranium was identified by a fluorimetric determination. According to the U.S.G.S. analysis, the entire sample contained 0.007 per cent equivalent uranium.

The prospect was examined in 1949 by Max G. White of the U.S.G.S., and the results of his examination were published in T.E.I. Report 76-A. His examination failed to show any appreciable amount of radioactivity.

PROPOSALS

Because of the breakdown of the tractor and the lack of other equipment, the work that was planned for 1952 was not completed. This work should be continued in 1953 until the water is pumped out of the shaft and the bulldozer pits are down to bedrock. All mineralized fractures exposed

by the work should be tested for radioactivity and for copper content. While this work is being completed, other bulldozer pits could be excavated over the mineralized zone with little additional expense. The work that has been done so far indicates that the western boundary of the zone in which mineralization occurs is near pits 7, 10, and 14. Any new trenches, therefore, should be located east of those pits, unless further work on the pits already started indicates that there is mineralization west of pits 7, 10, and 14.

Although this prospect is in a remote part of the Territory, its proximity to water transportation might permit the profitable mining of a high-grade copper ore even if no appreciable quantity of radioactive material is found.

TABLE I

Sample No.	Length of Channel	Per Cent Copper	Ounces per Ton Gold	Ounces per Ton Silver	Remarks
10	2.0 Ft	4.54	Tr	Tr	From vein 2 ft wide exposed in hand-dug pit.
11	Grab Sample	2.51	Tr	Tr	Sample taken by breaking off a piece of rock every 2½ ft along ditch around shaft.
12	Grab Sample	2.67	Nil	Tr	Top of vein exposed in hand-dug pit.
13	Grab Sample	0.00	Tr	Nil	Float from bulldozer pit.
14	Grab Sample	0.00	Nil	0.5	Float from bulldozer pit.
15	Grab Sample	1.52	Tr	0.5	Float from bulldozer pit.
16	Grab Sample	2.01	Tr	Tr	Float from bulldozer pit.
17	Grab Sample	3.40	Nil	Nil	Float from hand-dug pit in creek bank.

Fig. 1. Berg's camp on Ruby Creek.

Fig. 2 Shaft showing ditch where Sample No. 2 was cut.