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TERRITORY OF ALASKA

DEPARTMENT OF MINES

PROPERTY EXAMINATION REPORT

KOLMAKOF CINNABAR PROSPECT ⁸²⁻¹³

WESTERN ALASKA MINING COMPANY

ANIAC PRECINCT

KUSKOKWIM REGION, ALASKA

by

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U.S. Bureau of Mines R.I. 4065. Pages 49-50	
U.S.G.S. Bulletin 622. Pages 273-4, 280 to 286	
History:- Ivan Petrov's Report on Population, Industries and Resources of Alaska 1884. Pages 13, 77, and 90. First Mention.	
J. E. Spurr, U.S.G.S. 20th Annual Report, Part 7, Page 261, 1900.	

KOLMAKOF CINNABAR PROSPECT

SUMMARY

The Kolmakof cinnabar occurrence is possibly the first one noted by the Russians, in the 1800's. *

Although known for 75 to a 100 years, the limited amount of exploration work done upon it has been unsuccessful to date in determining the presence of ore bodies of economic interest.

Dozer stripping in August and September 1954 uncovered a lense 24 feet in length, which carried fair values across 22 to 51 inch widths in sheared shales on hangingwall side of a narrow rhyolite sill. No other points of mineralization were noted in the 125 feet of stripping along the strike of the thin sill. An $\frac{1}{2}$ " to 1" cinnabar stringer, striking to northwest, was uncovered and followed for 25 feet in the overlying sandstone.

It was reported May 9th, 1955 that a winze, sunk last month to depth of 10 feet, found no cinnabar mineralization below the 2 foot level.

* References: U.S.G.S. Bul. 622. Pages 280-286

U.S.B.M.R.I. 4065. Pages 48-49

INTRODUCTION

At request of R. J. Anderson & Associates (a partnership known as the Western Alaska Mining Company (WAMCO)) to examine the prospect and lay-out a dozer stripping program on the Kolmakof cinnabar property which they had recently located, the period from August 28 to September 3, 1954 was spent on that project.

All old workings and the dozer cuts were tied-in by Brunton-tape traverse, and are shown on Maps 1 & 2 attached.

Following the mapping of the area locations for additional dozer stripping in September was laid out.

LOCATION AND ACCESSIBILITY

Located on a 250 foot bluff on north side of the Kuskokwim River at extreme western limits of the river in the Sleitmute quadrangle, Aniak Precinct, it lies about 1 mile east of geographical coordinate Longitude $159^{\circ} 00'$, and Latitude $61^{\circ} 36'$. It is approximately 20 miles upstream from Aniak, and $3\frac{1}{2}$ miles downstream from the old Kolmakof Fort ruins.

It is accessible by daily scheduled Northern Consolidated Airlines planes from Anchorage to Aniak and Bethel. From Aniak to the property an outboard motorboat was used. Float equipped planes can land on the Kuskowim River within 500 feet of the showings.

The property is about 200 miles from mouth of the Kuskokwim River, and about 160 miles above Bethel.

Heavy freight shipments into the region are handled by river boats from Bethel, where it is delivered by steamships from Seattle.

TOPOGRAPHY

This immediate area on north side of the river is one of low relief, with a generally rolling surface gradually rising to 1000 to 2000 feet above sea level. Elevation of the river, below the showings, is within limits of 150 to 200 feet,* and the showings examined are 250 feet above it.

* Refer to attached pictures.
Also to U.S.G.S. Bul. 622. Page 280.

"The north bank of the Kuskokwim River is made up chiefly of rock bluffs from 100 to 400 feet high".

*To the south of the river the area is one of a wide alluvial lowland valley.

The rivers width in this vicinity is $\frac{1}{2}$ to $\frac{3}{4}$ mile.

TIMBER AND VEGETATION

Only scattered scrub spruce is to be found on the property. However, there is an abundance of spruce suitable for mining timber and lumber along the river valley within a few miles of the property. Birch and poplar is abundant, with some birch noted of good size.

In the area on north side of the river the underbrush growth is notheavy and offers easy travel across the country on foot and for tractor travel. The slopes have a fairly heavy moss covering, and perma frost was found in some of the cuts for a few feet in thickness under the tundra.

WATER SUPPLY

A small stream, intrenched in a fault plane, is present on the property; it lies 500 to 1300 feet north of the bluff showings in west half, and parallels the bluff edge at 100 to 200 feet in east half of mapped area.** The stream flow would be sufficient for camp use.

HISTORY AND OWNERSHIP

The Kolmakof cinnabar occurrence was known to the Russians long before J. E. Spurr's reference to it in 1898.***

During his reconnaissance of the Kuskowim region that year Spurr mentions that a trader, Mr. Lind, had found a cinnabar vein several years before on the Kolmakof property, and that Lind had spent \$2000.00 mining some of the ore, which was shipped to the States at a loss.**** He visited the property but did not note the small excavations along the bluff slopes.

A.G. Maddren, in 1914, also found that the cinnabar indications were obscure, although work was reported to have been done on the occurrences since that of Mr. Lind.*****

A Mr. Rabideau is reported to have held the ground for many years and that a small amount of quicksilver was

*U. S. G. S. Bul. 622. Pages 280-81 **Map 1, attached.

***U. S. G. S. Twentieth Annual Report, Part 7. Page 261, 1900.

****U. S. G. S. Bul. 622. Page 273, 1914.

*****U. S. G. S. Bul. 622. Page 274.

produced in a homemade retort at his home a mile or so downstream on south bank of the Kuskokwim river. It is not clear when he or others put down the two old winzes; one of these is located 75 feet from bluff edge (vertical and of undetermined depth), and the other 675 feet to northeast, sunk on a 50° to 60° slope and said to be 80 feet in depth, although the dump indicates it to be much shallower. The first noted winze was largely destroyed by dozer cut No. 3-CT, a short time before the 1954 examination, and the other was filled with water.*

The property was optioned or relocated (?) in 1907 or 1908, by Gordon Bettles of Nome and the Bettles adit was driven an undetermined distance.

The property was held by Willie Rabideau, son of the old-timer, for a number of years, prior to 1953.

The property was relocated in 1954 by the WAMCO group.

GEOLOGY

The formation in vicinity of the Kolmakof prospect is limited to sandstone (arkosic and quartzose) and shale, which are well-exposed for the most part half way up the bluff. These interbedded sediments are of great thickness, and are classed as upper cretaceous (or lower tertiary) similar to other sections of Kuskokwim region. The sandstone beds have the greater widths, varying from a few feet up to 30 feet or more in thickness, while the shales appear to range from thin layers to 2 to 5 foot thick.**

A number of sills have been reported in the district. Strike of the sediments locally ranges from $N45^{\circ}$ to $75^{\circ}E$ and their dip varies from 40° to $60^{\circ}NW$.***

Two rhyolite sills, (Identified as andesite by U.S.G.S.), are known to be present; the westerly one exposed and followed 125 feet in cut No. 4-CT, and one showing in bluff below but not exposed in cut No. 3-CT 250 feet east. The first noted sill varies in width from 2 to 5 feet where stripped in the cut; it is obscured by the bank "creep" to large extent on the steep bluff slope. The second sill is also largely obscured, but is reported

*Refer to Map I.

**U.S.G.S. Bul. 622, Page 283-84.- Refer to Map 2, attached.

***U.S.G.S. Bur. of Mines. R.I. 4065, Page 50, Fig. 21.

to be 1 to 2 feet thick.*

During course of surveying and mapping in 1954 plotting of the 8 trenches still in evidence on bluff slope excavated by U.S. Bureau of Mines in 1944 indicates their ~~was~~ work along a 5 to 30 foot sill ~~done~~ and shown on their Figure 21,** and is the same narrow sill uncovered in cut No. 4-CT. However, its true width on the slope was also largely obscured by bank "creeps" and by the material pushed over the bluff edge by the dozer.

Shearing along the shale bedding (on hanging-wall side of sill) was noted in No. 4-CT cut, and two faults are shown at west end of this same cut.***

Several feet of glacial clay was present in number of the 1954 dozer cuts; the residual weathering of the sediments extends from 5 to 15 feet below the clay, especially near the bluff edge.

Mineralization

The cinnabar mineralization, as elsewhere in the Kusko-kwim region, is associated with and followed the intrusion of sills. With the U.S. Bureau of Mines 1944 trenches sloughed-in and in number of cases obscured by "creep" of the steep bluff slope, and the Bettles adit and old winzes inaccessible, observations of the mineral occurrences were limited to the showing exposed by dozer trenching in 1954.

Due to inexperience of the owners and the contractor doing the stripping, trenching done prior to the examining engineers arrival on the property had not located the sill on top of the bluff which the U.S. Bureau of Mines had traced on the slope below. Cut No. 4-CT was then laid out and the sill with some good cinnabar values in its hanging-wall shale was uncovered within an hour and a half.

With overburden depth along strike of sill ranging from 10 feet on east end to 18 feet on west side of this cut, and perma frost present at north side, four days were required to strip 125 feet and remove 3500 cubic yards to the bluff edge.

* U.S.G.S. Bul. 622, Page 283-84.

Refer to Map 2, attached.

**U.S. Bur. of Mines. R.I. 4065, Page 50, Fig. 21.

*** Refer to Map 2, attached.

In stripping the 125 feet along the sill from east to west a short lense, 24 feet in length and carrying good values was exposed in the shale on hanging-wall of the narrow (2 to 5 feet) sill. It was noted that in cutting down the zone $1\frac{1}{2}$ to 2 feet to expose more solid bedrock, the dozer got down below limits of mineralization at the east end for length of about 5 feet and exposed an approximately equal length of mineralization on the west end.* This suggested the short ore-shoot to have very limited vertical range and "plunged" at small angle to the west.

The cinnabar occurs as small "pods" or bunches, as short discontinuous veinlets, and as "blebs" and disseminated grains in a strongly sheared shale. No other sulfides were noted to be present. A little calcite was observed at a few points.

The narrow sill is well fractured but no cinnabar was noted in it throughout its exposed length.

A cross-fracture, having a N62W strike and 50° to 55° south dip, was uncovered in the hanging-wall sandstone. This was traced 30 feet and is filled with $\frac{1}{2}$ to 1 inch of "soft" (weathered) cinnabar, with no other sulfides noted. The inch or two of gouge-like material along the walls is probably due to hydrothermal alteration of the arkosic sandstone as no fault movement is evident along this fracture plane. Stripping to the northwest encountered frozen ground so that it was not determined whether the stringer continued beyond point shown on Map 2, although indications at that time suggested it did not.

The only other indications of cinnabar mineralization was found in cut No. 3-CT; this trench was completed before date of visit.

A half dozen or more pieces - 1 to 3 inches in diameter - were found in west bank of cut a few feet above bedrock. Depth of clay and residually weathered shales and arkosic sandstone at this point is 18 feet. A few pieces of similar size were reported found on (or in?) bedrock, although on examination of the cuts floor no cinnabar was observed. No cinnabar was noted in dump of winze on east side of cut No. 3-CT; it is possible that any ore encountered was carefully sorted out and retorted by the miner who sunk the winze.

* Refer to Map 2, attached.

No cinnabar was noted in dump of the inclined winze 650 feet to northeast, although 0.16% Hgs. was obtained in a "grab" sample. If any ore was found during course of that work it may also have been sorted and retorted.

All old trenches known by present owners were checked and no cinnabar observed in their dumps. None of the material removed from the Bettles adit remains on the bluff slope; it has been removed during periods of high water or "ice-jams" and washed into the river.

Sampling

Fourteen channel samples were taken of the short lense in cut No. 4-CT and one grab sample of the inclined shaft dump. Description of these are as follows and locations shown on Map 1, attached:-

1954 Sampling Results

No.	Width Ins.	Mercury		Location	Description
		%	Lbs/T		
1-WA	24	0.38	7.6	4-CT	Floor of cut. Sheared shale. Irreg. "blebs" & few fine veinlets HgS.
2-WA	22	1.78	15.6	4-CT	Floor, sheared shale. HgS as disseminations & fine short veinlets.
3-WA	24	8.48	169.6	4-CT	Floor, sheared shale. No HgS noted in 15" on FW side. 9" on HW side composed of small lense and few stringers.
4-WA	24	0.38	7.6	4-CT	Floor, sheared shale. Continuation of sample 3-WA on HW side. Two fine veinlets and little dissem. HgS.
5-WA	21	3.47	69.4	4-CT	Floor, sheared shale. Full width of main mineralized section next to sill. HgS as blebs & veinlets.
6-WA	30	0.81	16.2	4-CT	Floor, sheared shale. Continuation of 5-WA on HW side. Few blebs & little fine grained disseminated HgS.
7-WA	24	1.19	23.8	4-CT	Floor, sheared shale. Blebs and fine veinlets.

(Continued next page)

1954 Sampling Results - Continued

No.	Width Ins.	Mercury		Location	Description
		%	Lbs/T		
8-WA	46	1.34	26.8	4-CT	Floor, sheared shale. HgS as blebs & veinlets. Limits of mineralization.
9-WA	42	3.34	66.8	4-CT	Floor, sheared shale. Full width of mineralized section. HgS as veinlets & disseminations.
10-WA	36	0.65	13.0	4-CT	Floor, sheared shale. Full width of mineralized section. Shows few blebs and disseminations.
11-WA	29	2.94	58.8	4-CT	Floor, sheared shale. Full width of the shale. Few large blebs & fine veinlets.
12-WA	32	0.24	4.8	4-CT	Floor, sheared shale, full width. Few grains HgS noted.
13-WA	32	1.78	55.6	4-CT	Floor, full width of sheared shale. Few veinlets, blebs, & disseminations, HgS; this is west limit of mineralized section.
14-WA	3	19.20	380.4	4-CT	HW stringer in sandstone. Width of fairly solid HgS is $\frac{3}{4}$ " to 1". Balance of sample is decomposed, "gougy" arkosic sandstone.
15-WA	grab	0.16	3.2	Incline winze	Dump of old winze. No HgS was visible.

Note:- Except for the "grab" all samples were channeled. Sample intervals are plotted to scale. No HgS was noted between #11-WA and #12-WA. The area was covered with a Geiger counter and no radioactivity found.

CONCLUSIONS

From work done and results obtained along the sill by the U.S. Bureau of Mines in 1944 and by the present owners strip-ping program in 1954, no encouraging evidence has been found that would indicate a "fair chance" of locating ore-shoots or mineralized zones of economic importance in this vicinity.

The ore occurrences found by the U.S.B.M. in their trenching were isolated small "pods", a thin veinlet along a few fractures across the sill, a slightly mineralized 2 foot wide shear zone along the sills footwall, and a narrow (average width $\frac{1}{2}$ inch) persistent highgrade cinnabar stringer traced by trenches at intervals 250 feet up the slope for vertical distance of 100 feet. This latter offers possibility of a very small tonnage, while the other occurrences in mining widths would be too low grade.

The ore-shoot exposed for length of 24 feet and width of 22 to 51 inches in cut No. 4-CT has good values but is an isolated occurrence believed to have a shallow depth. This was indicated in deepening this cut which in 2 feet reached the bottom and removed 5 feet of this ^{ore} ~~the~~ lense. Additional proof of its probable shallowness was obtained during April 1955, when a winze was sunk on the highest grade section to depth of 10 feet; the miner reported last week that no values were found from point 2 feet below surface to bottom of the winze.

Nothing of interest was found in the other trenches excavated by dozer last year prior to time of examination date; unusually wet weather made the overlying clay and residually weathered bedrock impractical to remove to solid bedrock except at bluff end of cut No. 3-CT. Cut No. 8-CT was not completed later in September due to perma frost at upper end and softness of ground at south end.

Examination of the old winze dumps shows nothing ^{of} sufficient ~~of~~ interest to encourage additional work in that section.

From surface indications as well as bedrock exposures in cut No. 3-CT there appears to be no justification for cleaning out and examining the old Bettles adit.

RECOMMENDATIONS

The following limited program was suggested:-

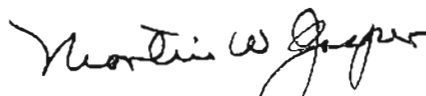
1. Sink winze to 20 to 30 feet depth at location marked on Map 2, in cut No. 4-CT. Should good values continue to that

depth, drift to west and east to determine limits and values of lense (ore-shoot).

Should values and length of lense justify, sink an additional 20 to 30 feet, and drift to west and east. Abandon project if cinnabar mineralization is bottomed in first section of winze.

2. Make dozer cut No. 8-OT along line marked on the ground to bedrock. This will cross-cut both dikes. If no values are found there will be no justification for additional cuts parallel to it to the northeast; should good values be found strip ^{along} strike of mineralized zone as encountered, and/or make additional parallel cuts.

Favorable results from this work will determine future program to follow.



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Territorial Department of Mines

Anchorage, Alaska
May 12, 1955

KOLMAKOF CINNABAR PROSPECT

Aug. 31, 1954

View looking N40W from River bank with Cut No. 4 CT. Dump Cat bluff edge in center background.



Sept. 1, 1954

View looking S65W showing depth of stripping in Cut No. 4-CT. Trench in Cut exposed ore-shoot in foreground for 25 feet.



KOLMAKOF CINNABAR PROSPECT



Sept. 1, 1954

Cut No. 4 CT. Cat cutting down trench following bedding of mineralized shale and sill. "Warped" sediments due to fault cutting formation at 45° angle at point under tractor. Short (25' long) ore-shoot (lense) in center foreground.



Sept. 1, 1954

Looking $S55^{\circ}-60^{\circ}E$ and upstream showing low relief of Kuskokwim River valley. Taken from bluff edge at Cut No. 4-CT.

Plate 2.