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PRELIMINARY REPORT

ON

PE-103-2

COPPER OCCURRENCES ON McNEIL CLAIM GROUP

PAINT RIVER AREA, KAMISHAK BAY REGION, ILIAMNA PRECINCT

ALASKA PENINSULA

by

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INTRODUCTION

At request of the owners of above property, and assisted by Jas. A. Williams, Associate Mining Engineer, Territorial Department of Mines, a preliminary examination of the property and brief reconnaissance of adjoining area was made on July 18th to 20th, 1953.

With no map of the property available the first day was spent making a Brunton-pace traverse. The following day was devoted to a reconnaissance trip around the headwaters of the Paint river basin, with balance of time devoted to the several mineral mineral occurrences on the property.

Due to misunderstanding regarding the food supply situation at the property, time was limited to a 2½ day investigation although it was believed a longer period for study of the area was justified.

LOCATION AND ACCESSIBILITY

The property lies largely along the main southwest fork of Paint river at and near the confluence of three tributaries - the South and Middle Forks, and Crevice creek. Its location is more precisely described by Longitude 154°40' West and Latitude 59° 7' North.

Accessibility at present is via scheduled airlines to Iliamna, thence approximately 30-35 miles about due south - a 20 minute flight by "bush" plane - to Pilot Knob Lake, which is 2 to 2½ miles from the property. The scheduled airlines - Northern Consolidated and Pacific Northern Airlines - make daily flights between Anchorage and King Salmon during summer months, stopping at Iliamna on request.

The original locators - C. H. McNeil and Associates - serviced themselves by wagon trail from Kamishak Bay up the Paint river valley, a distance of 18 miles. From the air - and according to reports - it appears construction of a truck road could be accomplished at reasonable cost.

Possibilities for deep sea shipping dock construction was not investigated in Kamishak Bay area. Up to 1923 the Bay had not been charted. Soundings in the Bay have doubtless since been made, and a study of recent navigation charts should reveal whether depths are sufficient for close shore approach for deep draft boats.

The area is uninhabited, and Iliamna Village is nearest local supply point.

CLIMATE AND VEGETATION

The climate of area is not severe, nor is it uniformly pleasant. Rain is frequent in summer and snow fall is heavy during winter. Frosts are rare between June and September.

During the growing season the lowlands are covered with heavy grass growth, which reaches heighth of 3 to 6 feet. Along the shore beach grass grows throughout the year.

The region is devoid of trees except for some cottonwood along several rivers; near a few lakes some spruce is to be found. There is an abundant and dense alder growth in the valleys and on many hillsides. Above the 2500 foot elevation vegetation is limited to reindeer moss and other tundra growth.

Mine timber would have to be transported 20 to 30 miles. (Refer to U. S. G. S. Bul. 773-D, page 160 to 162).

TOPOGRAPHY

The numerous lakes and ponds in the lowland valleys and the U-shaped valleys of the uplands are typical of intensely glaciated regions.

The mountains at headwaters of Paint river rise to elevations of an estimated 3500 to 4500 feet. (Refer to picture on PLATE 4).

HISTORY AND OWNERSHIP

Original locations on this property were made by C. H. McNeil and Associates. Mr. McNeil prospected in the area from 1911 to 1924, at which latter date he left the district.

A letter written in 1937 to E. E. Sargent by McNeil from Colorado was made available following the July 1953 examination. In this letter it is stated the first claims were located in 1911. (This group was later increased to 6 claims, comprised of Reward, Reward 1 to 3, Joker, and Ridgeway, as shown on PLATE 2 attached to this report).

In 1912 Mr. McNeil stated a representative of a Montana mining company examined and sampled the property, which resulted in an offer of $100,000.00, with $25,000.00 down and balance in one year with not less than 10 men employed in exploration and development for the period. This offer was said to have been turned down by his associates.

In the letter Mr. McNeil reported that in 1914 a $500.00 "earnest money" payment was made by another unnamed company for a million

dollar consideration. This agreement was said to have called for sinking of 3 shafts to a minimum depth of 250 feet each within a 3 year period, with 10% to be paid at end of first year, 30% by end of second year, and balance at end of third year. This company in May 1914 is reported to have sent in an engineering party of 6 men, including a geologist, assayer, cook, and 3 laborers, 2 packhorses and supplies. After spending two weeks on the property McNeil states they left as his associates finally refused to sign this agreement.

He stated that on several later occassions development of the property by other interests was prevented by associates failure to reach an agreement amongst themselves.

In same letter Mr. McNeil wrote Mr. Sargent of "A box canyon distant about 275 feet and about 200 feet in depth, parallel to principal showing of solid chalcopyrite 4 to 6 feet wide on upper side of 25 foot width of mineralized ore (copper). Assays taken from open cut and breast of drift 50 feet distant 30% copper, 10½ tons from apparently same orebody but different prospect holes, etc.

"Smelter returns gave gold $2.50, 15 ounces silver, 17.55% copper. One ton of ore taken from a tunnel on adjoining claim, contact amphibole and crystallized lime. Width of ore sacked 30 inches. Character, some copper carbonate and chalcopyrite. Length of tunnel about 40 feet. Up the hill 200 feet on same strike an open cross cut shows 20 inches solid chalcopyrite. The Tacoma smelter paid $6.08 gold, 10.93 ounces silver, and 18.19% copper. In none of the workings is there a measurable body of commercial ore blocked out. Neither does development show continuous ore for great length, but surface indicates possible length of 1000 feet or more of the largest body we know of chalcopyrite. None of the other outlying claims I had can be considered a continuance of the first one." Unquote.

It was unfortunate the above letter was not made available before the July investigation. The same applies to an August 31, 1918 claim map by and made to accompany a report on the property by Wilbur H. Grant. Availibility of this map (refer to attached PLATE 2) last July would have been of real value and saved at least time required for Brunton survey for investigation of the several showings. Copy of Mr. Grants report was not, apparently, given to McNeil, nor have present owners knowledge of it.

All development work on the property was done by McNeil. The extent of the several adits are shown on Grants 200 ftscale map. The Brunton-paced survey made in July 1953 closely checked his work and PLATE 2 (attached) is based on GRANTS map.

The McNeil mineral claim group (McNeil and McNeil No.s 1 to 6)

was located in June-July 1953. The locators (a partnership) include E. E. Sargent, Spenard; E. S. Pfaff, Naknek; Wm. Hammersley, Anchorage; and Leon "Babe" Alsworth, Iliamna, Alaska.

Mr. Sargent, related to the late C. H. McNeil, has the few available records noted above.

GEOLOGY

The geology of the Kamishak Bay region was mapped by K. F. Mather, U. S. Geological Survey, in 1923. His report is to be found in U.S. G. S. Bulletin 773-D.

His map (PLATE 3) covering the upper Paint river section, in McNeil claim group area(reproduction of which is attached to this report and listed as Plate 1), shows an irregular mass of Lower to Middle Jurassic granitic rocks into Paleozoic rocks of two general types:-

1. A complex of Gneiss, quartzitic schist, and quartzite. These are the oldest rocks, and are highly metamorphosed sediments.

These rocks vary greatly from place to place. The gneisses also vary greatly in width, direction, and intensity and have no definite trend.Members of this group change quickly in texture and composition.

2. Crystalline limestone and calcareous schist. These highly metamorphosed sediments are shown as a "remnant" of northeasterly trend of elongated form, about 3 miles in length and one mile in width; it is considered "possible they represent higher members of the gneiss and quartizitic schist that surround them, which have been preserved at this locality because it is approximately in trough of a great synclinal fold."

These calcareous sediments are considered of special interest "because of their relation to the (McNeil) copper properties". (Refer to U. S. G. S. Bul. 773-D, pages 162-164).

These sediments, where observed last July, in lower canyon section of Crevice creek, have a strike of N 55°to 60°E and dip 70°to 80°West. They consist of "thin-bedded, fractured, black quartizitc schist with seams and veins of calcite; thin-bedded, light colored quartzite and limestone." (Refer to pictures on PLATE 4 attached).

The two Paleozoic types noted above are intruded by numerous relatively narrow basic and acidic dikes of varying strike and dip.

The old workings as shown on PLATE 2 as located on the McNeil

No. 1 and No. 2 claims, are roughly located along a line 1800 feet in length with N55°to 60°E bearing. This bearing is same as that noted at ~~at~~ lower end of Crevice creek canyon, and is an average of N40 to 75 E strikes determined by K. F. Mather of of the sediments in the area. Their dips here are steeply to northwest. This suggests that mineralization more or less followed general trend of the highly metamorphosed calcareous sediments.

Bedrock outcrops at upper end of several open-cuts, at portal of several adits and in the short accessible No. 4 Adit indicates a strong shear zone of northeast trend and northwest dip.

A fracture with northwest strike and northeast dip was noted at No. 5 open-cut. The course of the other adits (portals now caved) shown on Mr. Grants map suggest these may have been following other cross fractures of northerly strike; however, bedrock exposures at the portals favor the view that they were driven to cross-cut the mineralized zones.

Garnetization and and presence of abundant amphibole (actinolite) with crystals up to 3 and 4 inches in length along this mineralized zone would classify this ~~deposit~~ as a contact metamorphic deposit. However, no igneous intrusives were noted outcropping near-by, although Mather mentions the ore occurrences "in close proximity to the acidic intrusive rocks" as well as stating one of the adits "is not very far from a dike of quartz-feldspar porphory (20 feet wide) which extends in a general north-south direction for at least a half mile. This is doubtless one of the two dikes Mr. Grant mapped and is shown on PLATE 2.

Mineralization

The open-cuts and adits were not cleaned out for study and sampling. However, outcrops at adit portals show mineral occurrences to be similar at the several old workings.

Chalcopyrite is the predominate copper mineral, with the secondary malachite, azurite, chrysocolla, fairly common in the surface zone. Presence of cuprite was noted in the dumps. Magnetite was also noted in dump material associated with the cuprite, and apparently occurs as small irregular "pods" and lenses.

Surface outcrops show abundant limonite, with one solid gossan capping at No. 5 opencut 24 inches in width. Some very fine gold was obtained in panning "grab" samples of gossan material from dump of No. 3 Adit.

Masses of very coarse calcite (crystals up to 3 and 4 inches) are reported to occur with the heavier concentrations of chalcopyrite, as well as the abundant actinolite - also in large crystalline form.

Mr. Mather reported "Generally a belt of rich chalcopyrite ore, a few inches thick, lies near the 'garnet' rock, with another

belt of coarsely crstallized amphibole, possibly actinolite, also a few inches thick, between. The tunnel follows what appears to have been a bed of limestone, now almost completely replaced and altered to schist and ore.....A ton of ore shipped from this drift was shipped to the smelter at Tacoma, Wn., where it yielded $6.08 in gold, 10.93 ounces in silver, and 18.19% copper. Unfortunately the workings are not sufficiently extensive to permit any estimate of size of this orebody. Where exposed at surface and in the tunnel it is only a few feet in width. Presumably it continues downward along the almost vertical beds of calcareous schist." Apparently only one tunnel was accessible (if any) as Mr. Mather reported there "are a number of prospect pits and one tunnel about 60 feet long from which some ore has been extracted. Most of the workings are badly caved, and many are mere pits in the gossan".

The showing referred to in Mr. McNeil's letter to Mr. Sargent an quoted in paragraph 3 of this report as "4 to 6 foot width of solid chalcopyrite of 25 foot width of mineralized ore (an open-cut ?) was not mentioned by Mr. Mather, and had not been uncovered or located by Mr. Sargent last July. It is planned by present owners to clean out all open-cuts and tunnels next season which should locate this reported occurrence.

No. 7 open-cut on the McNeil shows a 70 foot width of thin bedded quartzitic schists having a N5°E strike (locally) and 60° dip to west. This exposure has sparsely disseminated chalcopyrite; a 50 foot chip sample, however, showed no values.

A second open-cut 70 feet south and parrallel to No. 7 about 45 feet in length shows small irregular veinlets and lenses of chalcopyrite in heavily oxidized altered sediments on foot-wall side of the zone. Malachite, azurite, cuprite, and magnetite also occur here in lesser amounts. Ore occurrence here also favors the coarsely crstalline actinolite. "Grab" sample here of the better grade dump material (without selecting small bunches of chalcopyrite) carried 0.30 oz gold, 6.20 oz silver, and 3,66% copper.

This showing (No. 7 and the parallel No. 8 open-cuts) are said to be on the same mineralized zone as south side of Paint river old open-cut, located on the McNeil No. 5 claim. With absence of Mr. Sargent for one day(on 20 mile trip to his base camp) it was not found and investigated. Mr. Sargent reports this cut exposes the widest and highest grade ore occurrence he has personally seen on the property. It is possible this may be the 4 to 6 foot width of high-grade plus 25 feet of lower grade mineralization referred by Mr. McNeil. This reported occurrence has been tentatively shown on PLATE 2 as being approximately 250 feet south of Paint river.

One day of the investigation was spent in effort to locate a very wide copper showing reported by Mr. McNeil to Mr. Sargent to occur within a few miles of the McNeil property. Description of its location was "sketchy" and we were unable to find it. Mr. Sargent plans to make a concentrated effort to locate this showing next season.

A second reported wide showing of chalcopyrite was mentioned by Mr. Sargent about 6 miles distant. Lack of food supplies prevented investigation of this occurrence. Grab samples taken by Sargent at that location a few years ago are reported to have carried 5 to 6% copper.

Sampling

With adits largely inaccessible due to caved portals and open-cuts sluffed-in, only a few informative samples were taken. Their locations are noted on PLATE 2, and the results were as follows:

Sample No.	Width ins	Au Oz	Ag Oz	Cu %	Description
1 Mc	chips	tr	tr	Nil	Face No. 1 Adit 30' from portal. Chips taken at random. Little malachite, no sulfides
2 Mc	54"	nil	2.26	1.26	West side of trench few feet from caved No. 2 Adit portal Malachite & some chalcopyrite
3 Mc	grab	tr	16.45	9.02	Grab from hi-grade portion of No. 3 Adit dump. Adit caved
4 Mc	24"	tr	18.82	tr	Channel of gossan capping NE end of No. 5 Open-cut
5 Mc	50 ft	tr	tr	nil	Chip sample across 50 ft width at No. 7 open-cut
6 Mc	grab	0.30	6.20	3.66	Grab of better grade dump material at No. 8 open-cut
7 Mc	grab	tr	4.12	nil	Grab of dump at Adit No. 4. No sulfides or carbonates noted. Material gossan.
8 Mc	grab	0.02	2.12	0.68	Grab of No. 6 open-cut. Oxidixed material some secondary copper minerals visible

Samples 1 Mc to 6 Mc taken by Jas. A. Williams, and 7 Mc and 8 Mc taken by M. W. Jasper.

During the past season 6 samples have been received from the present owners and assayed by the Department. They were selected samples and values determined were as follows:-

Owners Samples

Sample No.	Au oz	Ag oz	Cu %	Ni %	Submitted by
10817	nil	nil	nil	nil	Wm. Hammersley
10818	0.14	1.88	12.20	nil	" "
10819	0.46	7.14	6.74		" "
10820	nil	tr	4.49		" "
7315	nil	2.12	7.73	nil	" "
7316	nil	1.92	nil	nil	" "

Values in two lots of sorted ore (chalcopyrite) shipped to the Tacoma smelter by Mr. McNeil were as follows:-

Amount	Au $/T	Ag oz	Cu %
1 ton	$6.08	10.93	18.19
10½ "	2.50	15.00	17.55

Gold values on the two shipments were on a basis of $20.67 per ounce.

It would appear that both gold and siver are associated with the chalcopyrite, although that has not been definitely determined.

Qualitative analysis of 4 samples for nickel shows none present.

CONCLUSIONS

Time available and inaccessibility through caving and sluffed-in condition of old adits and open-cuts prevented thorough sampling and detailed study of structural conditions and mineralization along the northeastly trending zone, upon which past work was largely concentrated.

However, the following conditions make this property one of special interest:-

1. The material on adit and open-cut dumps and bedrock exposures near portal of several adits show important amounts of chalcopyrite;

2. The intensive oxidation and leaching of sulfides (as well as of high fero-magnesium silicates) at all of the relatively widely spaced workings along this 1800 foot section;

3. The relative abundance of the secondary copper minerals - malachite, azurite, chrysocolla, and cuprite;

4. The oxidation and leaching revealed at these points suggest possibility of secondary enrichment zones occurring in a "favored" calcareous formation, as well as in the indicated underlying gneiss and quartzitic schist; and

5. The indicated presence of a strong and wide (?) shear zone along strike of this 1800 foot section should be a favorable structural condition for economically important ore concentrations. Bearings of the old workings (as mapped by W. H. Grant) suggest they were largely driven to cross-cut the formation and this shear zone. Strikes and dips of the sediments in the nearby Crevice creek canyon support this opinion.

Although the regional glacial scouring is "recent", the intensity of oxidation and sulfide leaching holds possibility for secondary enrichment to depths of several hundred feet.

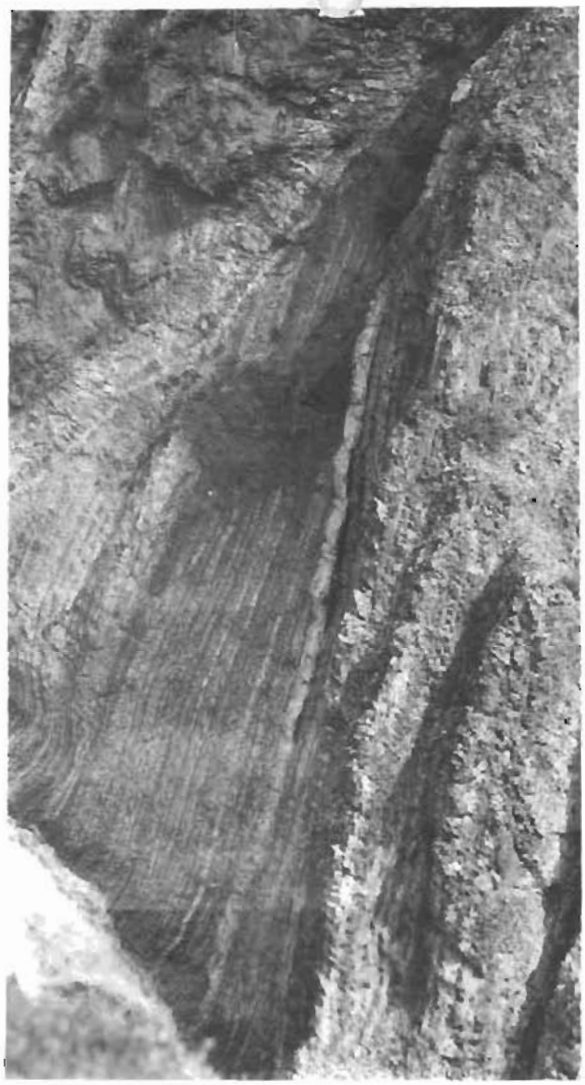
It is believed this property merits the attention of competent mining interests. Other points in upper Paint river drainage basin, carrying reported strong copper mineralization across wide zones, should be investigated at the same time.

Road construction from Kamishak Bay (18 miles) along Paint river valley should be possible at moderate cost, if future development warrents it.

Examination of the magnetite occurrence near head of Crevice creek indicates it to be of no economic importance.

Anchorage, Alaska
December 12, 1953

By- M. W. Jasper
Associate Mining Engineer
Territorial Department of Mines



McNeil Property
July 19, 1953

Lower Crevice creek canyon, looking N22E, showing nearly vertical and warped, highly altered sediments, fault, and dikes in north sheer wall.

Taken near mouth of creek. Depth of canyon estimated at 150 feet.

McNeil Property
July 19, 1953

Looking N51E at mouth of Crevice creek, showing the warped, metamorphosed sediment, and faulted basalt dike in creek bed.

PLATE 3

McNeil Property
Paint River Area
July 19, 1953

Looking S20E up south fork of river.
Taken from 1750 foot elevation on
McNeil No. 4 mineral claim.

PLATE 4

McNeil Property
July 19, 1953
Paint river area, Kamishak Bay region. Looking N80E down the valley. Paint river swings to right in center background. Kamishak Bay, 18 miles distant, lies behind peak to right of center background.

Iliamna Lake
July 21st, 1953
Float plane used, landing on Pilot Knob lake. Pilot "Babe" Alsworth and Wm. Hammersley at center and right.