

(18.6-190, 7-9-8)

59254/135253W

TERRITORY OF ALASKA
DEPARTMENT OF MINES
BOX 1391
JUNEAU, ALASKA

PE-109-02

September 18, 1953

MEMORANDUM REPORT

TO: Phil R. Holdsworth, Commissioner of Mines
FROM: James A. Williams, Associate Mining Engineer
SUBJECT: Visit to the Alaska Iron Company magnetite deposit at Klukwan, Alaska, September 14, 1953. Confidential until further notice.

Kx 109-1
104-2
109-6

The Klukwan magnetite deposit of the Alaska Iron Company, 23 miles NW of Haines, was visited by the undersigned on September 14, 1953. The deposit has been under exploration by Quebec Metallurgical Industries, a Ventures subsidiary, during the summer, and this report contains information on the work done thus far. Alex Smith, St. Eugene Mining Corporation geologist, is the man in charge. The information was obtained from him under the agreement that it be kept confidential until QMI either signs a contract to get into full production or drops the project altogether. He is presently on the way to a conference with Mr. Lighty and other officials of Ventures and representatives of Alaska Iron Co. to negotiate toward a final contract. Mr. Smith intends to recommend to his company officials that the property be retained, if possible, and that a limited amount of production of the alluvial material be started and carried out simultaneously with further exploration and development work. It is believed that results of the conference will be made known to the Department of Mines at a very early date. Smith hopes to return to the property and continue work through the winter.

One thing that may hold up negotiations is the fact that J. R. Simplot Company holds 7 claims on the property that were deeded to them in earlier negotiations when C. T. Takahashi was active in the deal. Simplot is reportedly quite difficult to talk reasonable business with, and does not want to release the claims. Takahashi is reportedly clear out of the picture now, and, in fact, is being sued by Alaska Iron for breach of contract. Further complications will no doubt be caused by the existence of some of the Klukwan Indian reservation on part of the deposit.

The exploratory work by QMI has been concentrated mostly on the placer material, rather than the lode. Upon surveying, it has been found that the alluvial fan is an almost perfect cone, centering on the mouth of Canyon No. 2. The contours could almost have been drawn in with a compass, they are so nearly circular. The tonnage of this cone has been calculated by Mr. Smith to be about 600,000,000 tons, and the sampling done thus far shows it to average about 12% iron. The same average assay was reportedly obtained on the fan where the material came from Canyons 4, 5, and 6. Several roads have been bulldozed along the end lines of the claims so that they are parallel and roughly 1320 feet apart. Sample pits, 6½ feet deep, were dug every 600 feet along these roads, and from each sample pit was taken a measured cubic yard of material for testing and assaying. The measured yards averaged close to 3300 pounds in weight. The yards were measured out of place, but Smith reports very little swell upon excavation, so that the weight or volume in place would be nearly the same. This is an interesting difference from ordinary placer gravels which swell from 20 to 35% when excavated. The fan has been test-pitted all the way down to the edge of the Chilkat River.

In the testing, the material was run through a 2½" grizzly, a ½" screen, and then through a sluice box. The sluice box was 5 box lengths, set on a fairly flat grade. Riffles used were large pole riffles and Hungarian riffles made of 2 x 4's. An undercurrent was also employed to catch some of the concentrate. The grizzly oversize was divided into diorite and pyroxenite. The loss in each trial was high, sometimes as much as 600 pounds, mostly in fines that were high grade but could not be caught. A typical testing result went as shown in the following table:

	Weight	Assay, %	Fe, Lbs.
Cubic Yard	3290	12.1	396
Grizzly Oversize, Pyroxenite	350	14.0	49
Grizzly Oversize, Diorite	302	0	0
Screen Oversize	570	10.3	59
Screen Undersize	2070	13.9	288
Box Concentrate	1200	14.1	169
Box Tailings	351	11.1	39
Loss	519	15.4	80

Lab tests show that the concentrate can be improved by electro-magnetic separation without grinding by the additional recovery of 163 pounds

of iron, and with grinding, by 301 pounds. Based on a rate of \$6.00 per ton for a 60% product at Klukwan, this would amount to 82¢ per yard or 50¢ per ton in the former case and \$1.50 per yard or 92¢ per ton in the latter. Whether the grinding would be economical, Mr. Smith does not know at present.

It appears that an economical recovery without electro-magnetic separation is not probable. Sluicing alone will not do it, but placer methods should be employed for the actual mining of the alluvial deposit.

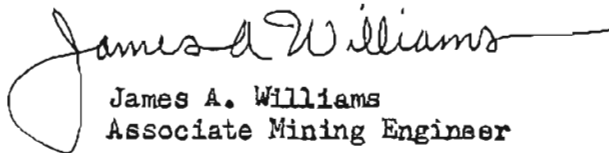
From the sampling of the lode done thus far, Canyon No. 4 is a disappointment. Apparently only a relatively small area in the vicinity of last season's drilling is sufficiently high-grade to be interesting, although it is believed that those drilling results have been overlooked in Mr. Smith's calculations. From his sampling, he has calculated that the area under question will produce 2500 tons of 20% ore per vertical foot. He claims that Canyon No. 2 is a better bet--that there is a zone there trending toward No. 4 about 700 feet wide that should run close to 20%.

A road was built up Canyon 2, but was completely destroyed in a recent flash flood which changed the whole canyon floor. Another road is currently being bulldozed up Canyon 4. A total of five or six miles of road have been constructed around the deposit by QMI. Also many trails have been built and transit survey lines have been run wherever they might be needed in the future as well as for mapping the present work. A crew of 15 to 17 men has been working until very recently when the first stage of the work was completed.

A small amount of dip needle work comprised the only magnetic surveying done. The writer's former work was not checked.

An additional point to be noted here is that Mr. Smith does not subscribe to the popular theory that this deposit was formed by magmatic segregation. He believes that the magnetite resulted from metamorphism of the original intrusive, and states further that the proof of his theory is in the fact that the pyroxenite is highly altered.

Respectfully submitted,


James A. Williams
Associate Mining Engineer

RECEIVED

SEP 23 1912

RECORDED
& INDEXED