PE-109-01

TERRITORY OF ALASKA

DEPARTMENT OF MINES

JUNEAU, ALASKA

September 5, 1952

MEMORANDUM REPORT

TO: Phil R. Holdsworth, Commissioner of Mines

FROM: James A. Williams, Associate Mining Engineer

SUBJECT: Preliminary investigation of Alaska Iron Company's magnetite deposit near Klukwan in the Haines Recording Precinct.

On 18 July 1952, Phil R. Holdsworth, Commissioner of Mines, and James A. Williams, Associate Mining Engineer, made a preliminary investigation of a magnetite deposit near Klukwan, Alaska. The geographical coordinates of the deposit are approximately 135° 50' W Long and 59° 25' N Lat and is reached by travelling 23 1/8 miles NW on the highway from Haines and then turning right for a distance of about 1-1/2 miles to the base of the mountain upon which the magnetite is situated.

The property is owned by the Alaska Iron Company, a firm of eight partners whose names are as follows: C. W. Magnuson, Mrs. Jo Bonkowski, Ed Russell, Cal Barkdull, Clifford Howsand, Al Shrimpf, Dr. Collins and Ralph _____. The first four named are of Haines and are actively working on the property. The latter four are in the States.

C. T. Takahashi of an import-export company of that name in Seattle has an option on the property to carry out an exploration program of diamond drilling in the expectation of putting the property into production and shipping the iron to Japan. A Longyear Jr. (Canadian) drill with a 2-3/4 horsepower motor was being moved up the slope by hand to the first drilling site at the time of the visit. A Takahashi driller, Al Upton, was on the property and a consulting geologist, Gordon Adderson, also employed by Takahashi was visited the property several times.

Transportation for the ore should be no problem, once a road to the deposit is built. The highway to Haines is hard surfaced, and the harbor at Haines is excellent for large ships. The Coastwise Line has signified a desire to obtain shipping from Alaska to Japan to complete their West Coast to Alaska to Japan to West Coast haul.

Mining the deposit should also be no problem, as it is located on a steep slope and can be open-cut by benching, gravity doing much of the work. Utah Construction Co. does the mining for the Takahashi firm.

The immediate problem is the construction of a road up the slope to the property. The slope is steep and cut by steep-sided gulches and canyons, and the lower part is covered by alluvial material containing huge boulders which would also make the road building difficult. A thorough reconnaissance is needed to choose the most practical route for the proposed road. It is believed that the best solution for this problem would be to rough out a tractor trail more or less straight up to the deposit for the present, so that equipment can be transported up by tractor rather than by back-packing as is being done now. The truck road can be built later when the drilling results begin to show up the amount of ore reserves, and the size and attitude of the deposit and the terrain are all better known.

The deposit appears to be tremendous. A reconnaissance was made up one of the canyons (locally called Canyon No. 4) from about 1350' to 3700' in elevation, and magnetite of varying grades (mostly high grade) was found all the way and continued on up past 3700'. It is reported by the owners that the megnetite continues to the top, about 5200', and down the other side, and that the width of the magnetite area is about 2 1/2 miles across the face of the mountain. It is believed that the best showing is in Canyon No. 4, but this is not necessarily true. The tonnage available is beyond estimating, but from the surface appearance, there should be many years' mining of high grade megnetite.

It appeared originally that the deposit dipped parallel to the hill side, and could possibly be only a thin layer exposed over a large area. In a subsequent visit by the Commissioner of Mines it was determined that the dip is into the hillside, rather than with it. The diamond drilling should give evidence on this question. The driller was advised to drill the first hole normal to the slope, so as to develop the thickness as rapidly as possible. The drilling will start in No. 4 Canyon near the 1350' elevation.

The deposit has been sampled in many locations and results are reported to run between 30% and 72% iron with negligible sulphur, and 0.5% titanium. Practically no sulfides were noted in the magnetite, and only an occasional very small quartz stringer. A few granite inclusions show up in various places, but considerable granite float was noted in the bottom of the canyon. It is believed that the deposit is a result of magmatic segregation. No evidence of metamorphic alteration was noted.

A huge amount of alluvial material has been deposited at the bottom of the mountain which includes magnetite boulders of all sizes, many of them being very large. This material can also be mined, but at present there is no market for the fines which would have to be separated and discarded.

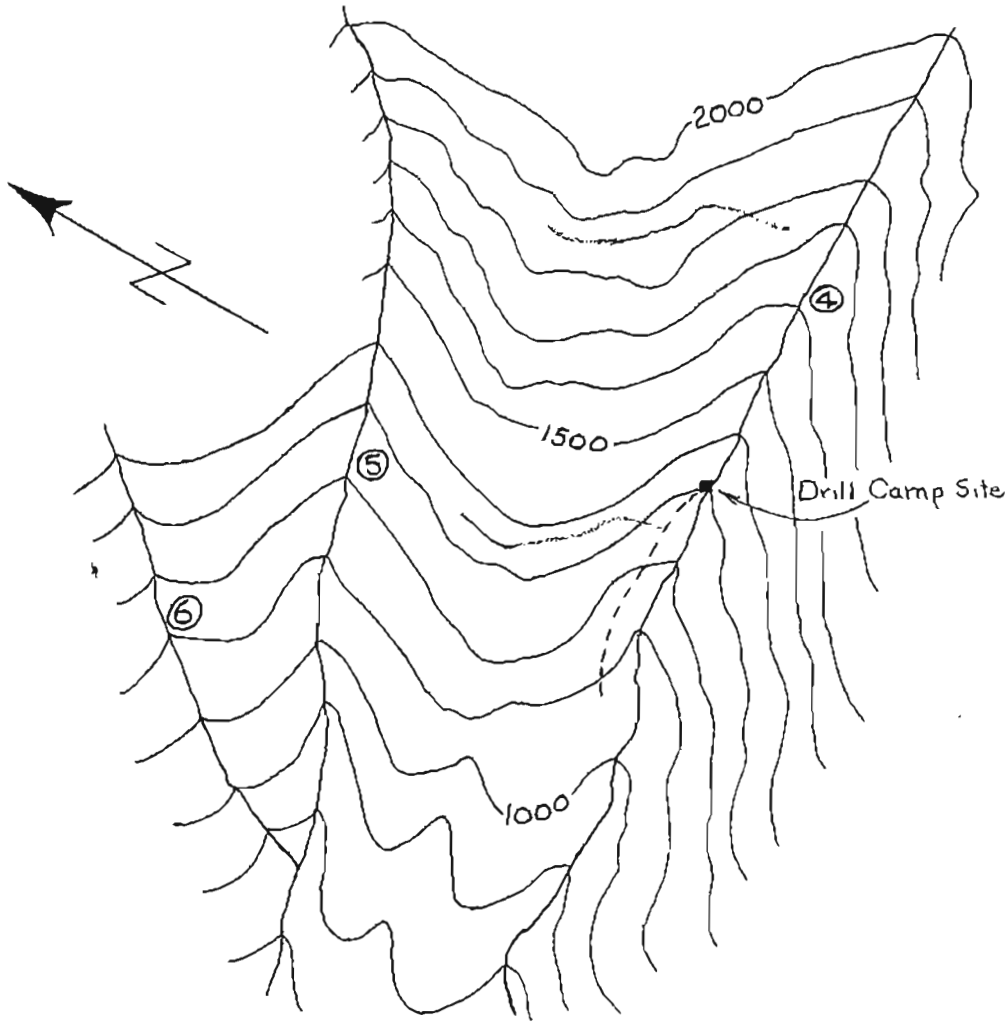
Takahashi has requested a magnetometer survey. It is evident that because of the steepness of the slopes and canyon walls, and because of the small amount of overburden over the highly magnetic material, the results of a surface magnetic survey would be very difficult, if

not impossible, to interpret. It is recommended that a physical survey be done to precisely locate all future work, and if possible, an aerial magnetic survey be made rather than a surface survey to help determine the extent and limits of the deposit.

Respectfully submitted,

James A Williams

James A. Williams
Associate Mining Engineer



Alaska Iron Co. Magnetite Property
showing
Approximate Locations of High-grade Limits
as indicated by dipneedle.
Map from enlargement of U.S.G.S. map.
Scale: 1 inch = approx. 533 feet.

14 Sept.'52

James A. Williams
Associate Mining Engineer
Territorial Dept. of Mines

TERRITORY OF ALASKA

DEPARTMENT OF MINES

JUNEAU, ALASKA

14 September 1952

Mr. Gordon Addarson, Geologist

Dear Mr. Addarson:

In compliance with a verbal request of Mr. Holdsworth, inclosed is a copy of my report on the dipneedle work I did on the Alaska Iron Company magnetite deposit on September 10 and 11, 1952. I have been informed that you will call at our Juneau office for this.

I regret that I was not able to trace the limits of the high-grade zone as far as I had hoped to. Also, the zone turned out to be much wider than had been previously indicated.

The limits should be easy to locate with the brushed-out lines and the colored flagging. The lower limit takes off from the trail just before the trail drops into a small gully and then goes across the face of a rocky point. Ed Russell and "Mag" Magnuson did the brushing and can show you where the limits are, if they are there. ("Mag" was worrying about getting away for the States before the highway gets bad.)

I hope that the results of my work will be of assistance to your program. If you wish further dipneedle work or other help, we will be happy to oblige to the best of our ability.

Very truly yours,

JAMES A. WILLIAMS
Associate Mining Engineer

Incl: 1

TERRITORY OF ALASKA

DEPARTMENT OF MINES

JUNEAU, ALASKA

September 14, 1952

MEMORANDUM REPORT

TO: Phil R. Holdsworth, Commissioner of Mines

FROM: James A. Williams, Associate Mining Engineer

SUBJECT: Dipneedle survey of Alaska Iron Company's magnetite deposit near Haines on September 10 and 11, 1952.

The purpose of this survey was to assist Gordon Adderson, geologist, in the planning of a proposed diamond drilling program for which he is responsible. Mr. Adderson is associated with Mr. Tackahashi, who has an option on the property. The Simplot Company is reported to be the organization which intends to do the above mentioned drilling. C. W. Magnuson and Ed Russell, both of the Alaska Iron Company, assisted the writer in the survey.

The instrument used was a Sharpe dipneedle made by Sharpe Instruments, Ltd. of Toronto, Canada. It is of the single-suspension type, and was used with the needle swinging in a plane perpendicular to the magnetic meridian in a manner similar to that used in operating a Schmidt-type vertical magnetometer, so that only the vertical components of the magnetic anomalies were measured. Elevations were measured with a Paulin aneroid altimeter.

Profiles were not surveyed, but the survey was conducted so as to outline the upper and lower limits of a high-grade portion of the deposit which crosses Canyon No. 4 at an elevation of 1300 feet and roughly follows the ground contours toward Canyon No. 6. Readings at each point were taken in two directions, facing magnetic north and south, and the average of the two taken as the correct value. Usually a large "spread" between the two readings was encountered which was attributed largely to the fact that when facing magnetic north on the steep hillside, the instrument was closer to the ground than when facing south. After a little experimentation, a reading of about eighty degrees inclination from the horizontal was chosen as the dividing line between high and low grade indications. Accordingly, in laying out the limits, the points were flagged where the readings were found to run between eighty minus and eighty plus. Flags were placed at intervals of from fifty to a hundred feet and narrow paths were brushed out between flags for better visibility and access. Orange flagging was used on the upper limit and red on the lower. All points checked

between the two limits gave readings of eighty or more, but did not consistently indicate any peak, or ultra high-grade area. Readings were not recorded because of the very wet weather encountered during the survey.

The survey was not as successful as was hoped for earlier. The high grade zone turned out to be much wider than formerly supposed, but the limits could not be traced all the way from Canyon No. 4 to No. 6 as planned. On most of the comparatively "gentle" slope between 4 and 5, the limits could be determined fairly easily, but on the extremely steep slopes dropping into the canyons on either side, the readings became erractic, varying between sixty and ninety degrees, Here the limits could not be determined, though definite efforts were made to do so. The limits as found are plotted in red on the accompanying sketch map which was made from a blown-up portion of a U. S. G. S. contour map of the area. The map appears to the writer to be rather inaccurate, and the limits are plotted according to the elevations at which they were found, rather than being placed according to horizontal location.

Dipneedle work on this deposit is difficult and largely erratic because of the steepness of the terrain and presence of high-grade float. If future magnetic surveys are to be carried out, it is recommended that straight lines be brushed out in advance and located and that dipneedle readings be taken at measured intervals on these lines so that profiles or isanomalic contours can be plotted relatively accurately with respect to both intensity and location.

Respectfully submitted,

JAMES A. WILLIAMS
Associate Mining Engineer

(18.6-19.0, 7.4-7.8)
59°25'N 135°53'W

138° — 135°

TERRITORY OF ALASKA

DEPARTMENT OF MINES

JUNEAU, ALASKA

November 17, 1952

MEMORANDUM REPORT

TO: Phil R. Holdsworth, Commissioner of Mines

FROM: James A. Williams, Associate Mining Engineer

104-1
104-2
104-6

SUBJECT: Investigation of and assistance to core drilling project in Canyon No. 2 of Alaska Iron Company's magnetite deposit near Klukwan, November 7 to 12, 1952.

In the process of assaying the diamond drill cores taken from Canyon No. 4 by Al Upton, it was found that the titanium dioxide content there averages about 3% which is higher than originally reported and higher than the Japanese steel mills are equipped to process. Consequently, Upton returned to the property to drill in Canyon No. 2 where the TiO_2 content is reported to be lower than in No. 4 in the hopes of developing iron ore sufficiently low in TiO_2 to be shipped to Japan. Upton is a driller and consultant in the employ of C. T. Takahashi, an importer-exporter of Seattle who has had an exploration contract on the property with Alaska Iron Co. Help was requested of the Department of Mines, and the writer was sent to the property for the chief purpose of assisting in the location of the most favorable drill site in Canyon No. 2.

Upon arrival, the writer was further requested to remain during the drilling and log the core. Since it appeared this would only be a matter of about two extra days, it was agreed upon. However, the man that had been hired as a packer to work with Ed Russell, one of the Alaska Iron Co. partners, in moving the drill and equipment from Canyon No. 4 to No. 2, received a minor injury and quit. This put the project behind schedule, and the writer helped with the packing for three days. Also an accident was had with the drill and considerable trouble was experienced in obtaining replacement parts. The drilling was finally begun on the last day that the writer was on the property, but only about 10 feet of core was obtained that day.

A road leads to Canyon No. 2 and ends at an elevation of 735 feet on the right limit. Another older road leads to the left limit where a camp site and adit once were at an elevation of 930 feet, but this road is reportedly cut in two or three places by washouts. Proceeding up the canyon, iron-bearing rock is first seen at an elevation of 1340 feet and the drill site was selected at 1500 feet. The highest elevation reached in this canyon was 1725 feet where the grade of the canyon becomes precipitous. The magnetite was observed to extend above this point. These elevations were calculated after checks with an aneroid

on each trip up and down the canyon, using the camp as a base at 470 feet. The slope of the lower part of the canyon between the road and drill site averages 8° and the upper part is 10°. Above the drill site it is 12° for a few hundred feet until it becomes much steeper as mentioned above. The canyon floor is covered with an alluvial deposit of black sands and boulders of magnetite and diorite. Walking over this material is not too difficult. The distance from the end of the lower road to the drill site is slightly less than a mile.

Several dip needle readings were taken within the iron zone in the canyon, and they were all between -60° and -80°, the opposite to the readings in the vicinity of Canyon 4. A possible explanation for this might be that the magnetite deposit is polarized. The material in place throughout this area appeared to be about the same grade, and a drill site was chosen at a nearly vertical exposed face on the right limit near water at 1500 feet where casing would not be necessary.

The iron-bearing material in Canyon 2 is definitely not as high in magnetite concentrate content as in Canyon 4. The magnetite is spotty and in relatively small pods. It has the appearance of a replacement deposit here rather than that of a segregation deposit as in No. 4. There is less hornblende, some serpentine, and an occasional red mineral in the country rock. Samples JW52-58 and JW52-59 were taken of the country rock and the red mineral and sent to Glover for identification. A few small copper stains were noted in various places in the canyon. A zone of copper stains and numerous quartz (?) stringers were observed at a distance on the mountain side above No. 2.

The core that was taken during the writer's time on the property also showed relatively low grade material. It was decided then that if it did not improve within a 50-foot depth, that no more drilling should be done here unless assays showed a better grade than appeared likely. A hole was started at a -45° in a westerly direction and drilled for about five feet when an apparent squeezing of the rock caused the rod to bind. Trouble was also experienced with bent core barrels. A new hole was started in the same direction at -2½° and the drilling progressed to about five feet by the end of that day. The core showed mostly country rock with the fore-mentioned replacement type deposit appearances. The sludge was light grey most of the time too, a further indication of low grade material. Upton reported that here the material was harder than in Canyon 4, since the drilling was slower. A possible second 50-foot hole in a northerly direction was planned.

As a matter of general interest, it was learned a few days ago from J. A. "Joe" Williams, General Manager of the A. J. Mining Co., that the Treadwell mining interests investigated the Klukwan magnetite deposit many years ago and turned it down. He reported that records of their assay results and other findings are no longer in existance.

The foregoing is the writer's third report on the Alaska Iron Company property. If it has a pessimistic tone, it is merely to show that Canyon 2 is not as favorably regarded as Canyon 4. The deposit as a whole is very highly regarded, and it is probable that once mining is well under way in the vicinity of No. 4, the operation can and will profitably include No. 2.

Respectfully submitted,

James A. Williams

James A. Williams
Associate Mining Engineer

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