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GONNASON EXPLORATION
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MAGNETOMETER - AIRBORNE & GROUND
GEOCHEMICAL AND PATENT SURVEYS
MINING GEOLOGY

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REPORT

Magnetometer Survey

JUMBO MINE

PRINCE OF WALES ISLAND

SOUTHEASTERN ALASKA

LOCATION:

The property of the Jumbo Mine is located on Jumbo and Copper Mountain on Hetta Inlet on the southern portion of Prince of Wales Island, Ketchikan District, State of Alaska.

PURPOSE:

This survey was conducted in an attempt to locate new or larger iron ore bodies on or in the vicinity of the Jumbo property and to assist in laying out a diamond drilling program to establish sufficient reserves of ore to warrant a mining operation.

EQUIPMENT USED:

This survey was conducted with a Varian Magnetometer with a sensitivity of plus or minus five gammas magnetic strength. The base line was laid out by transit survey, and the grid lines were burned off from points on the base line roughly 250 feet apart and run roughly parallel with the end lines of the claims. These lines

were flagged to produce straight lines and also flagged every 100 feet horizontal distance. The magnetometer was run over these lines, and readings were taken every 100 feet or at every change or peak along these lines and distance noted from stationing. The base line was laid out roughly parallel to the southwesterly side line of the Jumbo No. 1C and the Goshen No. 1 claims. In running the base line survey, strong changes in the magnetic variations were noted on the compass. These changes amounted to as much as 10°. Also, elevations were read on an aneroid altimeter at the time of running the magnetometer survey. These have been plotted as contours on the magnetometer map of the survey.

DISCUSSION:

It has been noted that strong variations in the magnetic field occur in the area to the west and southwest of the main magnetite cliffs that occur on the Jumbo No. 1A and the Jumbo No. 2 claims. This strong magnetic area probably is not related directly to this known ore body but to a separate ore body. The nominal magnetic strength in the district of the Jumbo Mine is 57,200 gammas. The entire area of this survey is considerably above that, with the exception of few rare deep dips caused by reversed polarity which are also indicative of magnetite mineralization. As the known ore bodies are approached with the magnetometer, the readings become very erratic and very strong, which is typical of contact metamorphism which contains large amounts of magnetic iron ore. On close approach

to large magnetite ore bodies, the Varian Magnetometer becomes difficult to read as the gradients in magnetic strength become so great that in moving the head of the instrument a foot or so over, a 1,000 gamma change of magnetic strength will be noted. When this situation occurs in the magnetic field, it is known that you are on or near a magnetite ore body, and further use of the magnetometer immediately over an ore body becomes ineffective, as the field strength on these ore bodies becomes so erratic. This is easily seen with a dip needle, as in moving just a few feet, one obtains complete reversals in the dip of the needle.

A great deal of variation is noted in the magnetic strength of the magnetite ore. It is noted that it carries a fair percentage of copper and probably as a result is much weaker in total magnetic susceptibility than straight magnetite iron ore.

The property of the Jumbo Mine was operated originally as a [illegible] copper mine, and only high grade ore was shipped. From this ore [illegible] several specimens of high grade copper ore have been examined, and much of this would cause a great fluctuation in total magnetic field strength. At the outcrops of the iron ore at the surface, the ore body dips from 40° to 60° in a southwesterly direction. This ore body occurs at the contact of granodiorite and limestone which probably has roughly the same dip, averaging about 50°. The hillside in the area of the contact dips at roughly the angle of repose approximately 35°. This, of course, is quite variable.

The erratic magnetic anomalies in the areas of shallow covering of this contact zone can be easily noted on the accompanying profile map. This contact zone would be covered by limestone as a general rule. Further to the southwest, a strong general magnetic field is noted from between the BB line through the DD line, a distance of approximately 1,500 ft., and is approximately 900 feet southwesterly from the known ore bodies. This probably indicates a rather large ore body roughly 200 feet below the surface. The shape of these magnetic profiles indicates a flattening of the contact zone between the limestone and the granodiorite to where the contact zone is roughly parallel to the hillside to the bottom of the basin, and then becomes rather steep as the magnetic profile makes a very gradual decrease in strength on out to the southwest.

CONCLUSIONS:

From a study of the magnetometer map of this survey I determine that:

(1) There is a probable extension of the existing ore body known as the "Iron Cliffs" downward below the exposed contact zone.

(2) A second and possibly larger ore body exists in the magnetic high area roughly 900 ft. southwesterly of the Iron Cliff ore body.

(3) A possible ore body exists southwesterly of the Goshen No. 1 claim.

(4) A possible ore body exists north of the Iron Cliff with considerable downward extension along the northwesterly end line of

the Jumbo No. 1A claim. This ore body would be under a much thicker bed of limestone as is evident by the topography.

RECOMMENDATIONS:

I recommend drilling in the contact zone several holes as indicated on the accompanying maps to further delineate the known existing ore body; also drilling, as indicated on the accompanying map, several holes in the area of the general magnetic high on the Jumbo No. 1C, Jumbo No. 2B, Jumbo No. 1B and Goshen No. 1 claims. These holes should be drilled through the contact zone and into the granites, average depths being in the order of roughly 250 feet. To delineate these ore bodies would require in the order of 7,000 feet of drilling. If this drilling program is successful, then further exploration work would be warranted over the entire property and in the granite-limestone contact zones of the district.

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