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REPORT
ON
QUEEN CHARLOTTE ISLS.
PROSPECTING
AIR MAGNETOMETER AND
GENERAL

~~MINING DIVISION~~

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R E P O R T

on

QUEEN CHARLOTTE ISLANDS PROSPECTING

AIR MAGNETOMETER AND GENERAL

by

James J. McDougall

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M A P S:

Q. C. I. #100 (a & b) - Scale 1" = 10 mi. 2(a)

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INTRODUCTION:

Using our Air Mag equipped helicopter last summer about two weeks were spent checking anomalies shown on published government magnetic maps of the Queen Charlotte Islands. At the same time our iron properties were tested in detail for either possible extensions or new bodies and previously untested areas were checked. This report presents a short account of this work and should be supplemented with reference to the enclosed maps. A somewhat unique manganese deposit is briefly described.

LOCATION, ACCESS AND HISTORY:

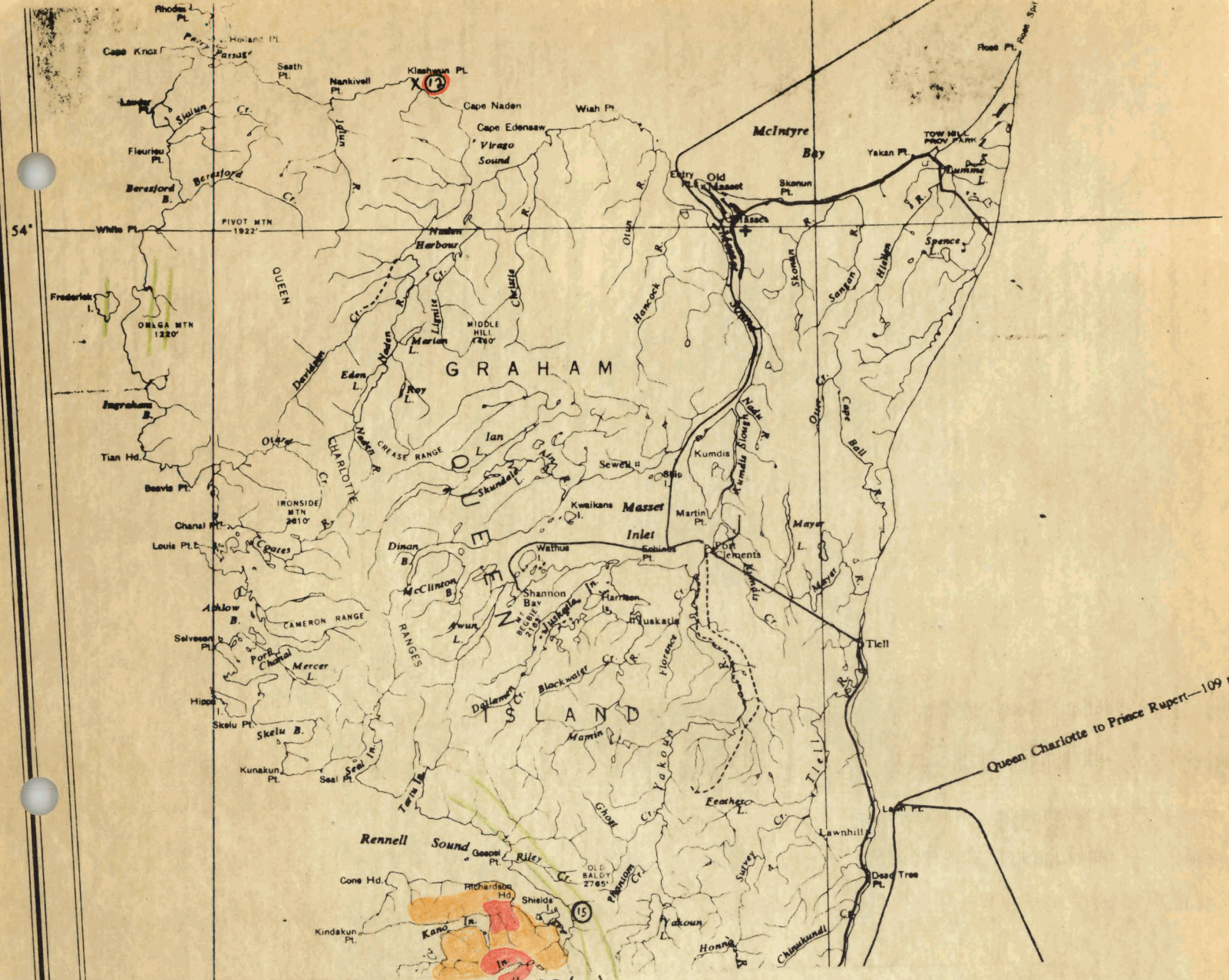
The areas of interest in this report include the entire Queen Charlotte Islands group. Our float-equipped machine, the first helicopter to ever land at Sandspit Airport, was flown across 40 mile wide Hecate Straits via Banks Island. One of our Super-Cubs was used for servicing and both aircraft were based at Queen Charlotte City. Besides the writer our crew consisted only of Bridcut and Hepworth. Mr. Sutherland-Brown of the B. C. Mines Department, presently engaged in mapping the Charlottes, accompanied the writer on several trips and was placed off on local traverses in otherwise nearly inaccessible regions. Several localities of in-

terest were pointed out by Albert Jones of Skidegate and examined with him.

RESULTS OF AIR MAG INVESTIGATION:

During the winter of 1959-60 the Provincial Government published results of an air mag survey made of a 750 square mile area on Moresby Island. Our Tassoo property was used as a central checkpoint for their work. Soon after publication about eight groups of claims were staked by companies such as Silver Standard and New Jersey Zinc. During previous work on the Charlottes we had ground-checked most of the areas now shown to be of interest and the writer had also ran our A3 mag over some of the same sections using a Super-cub (1). We thus felt staking of these unwarranted despite the excellent anomalies shown. However, a number of smaller anomalies showed up in areas known probably by us only to be geologically favorable and checking of them seemed necessary. Such results are plotted on Map QC #100 (a & b). With the possible exception of #20 which should be ground-checked, we have discounted all anomalies shown. We found most of them caused either by a slightly higher than average magnetite content of the more basic andesites or by topographic effect or by both. Air mag investigation such as that sponsored by the Government leaves much to be desired when it comes to detecting smaller west-coast magnetite deposits. Their weakness is not restricted to interpretation and is more probably, as we have shown, due to a field technique

(1) (a) Reports on Queen Charlotte Islands Prospecting 1955,
(b) A3 Mag checks, 1959. (1956, 1957.)



MAP Q. C. I. #100(a)
Scale 1" = 10 miles

To accompany Q.C.I. Report on
Airmag and other Investigations,
Ventures Limited, 1960.

LEGEND

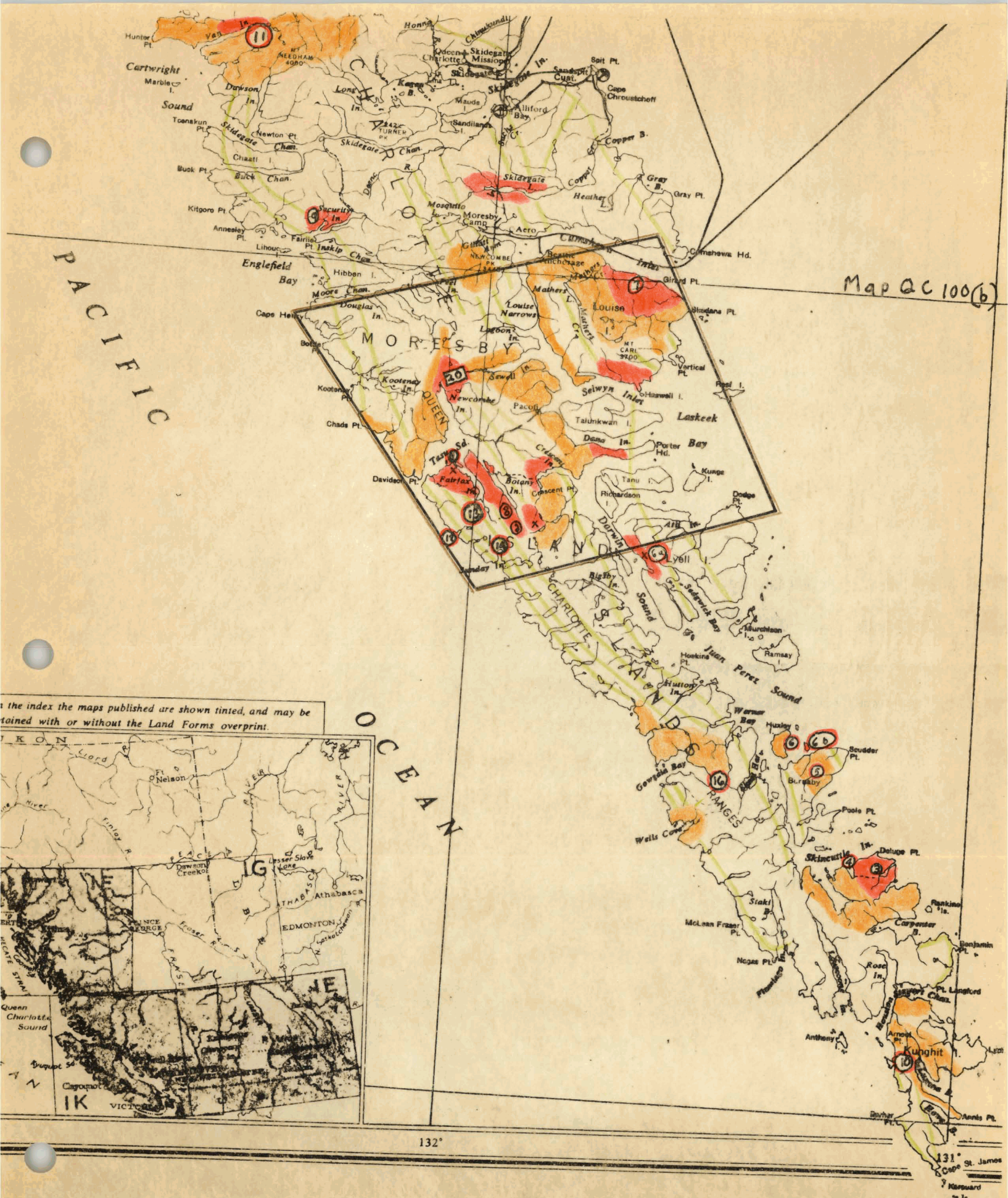
- Area flown by government airmag plus indicated anomaly.
- ⑫ Prospect or property referred to in accompanying Report.
- Area flown with flux gate magnetometer in helicopter.
- red: flight line spacing 300 feet or less.
- orange: flight line spacing at 1/4 mile intervals.
- green: Air mag recce flight or spacing at greater than 1/4 mile.

Map QC 100(b)

PACIFIC

OCEAN

In the index the maps published are shown tinted, and may be obtained with or without the Land Forms overprint.



demanding too much ground clearance. The lack of an anomaly over any area covered by the government survey does not discount the possibility of the occurrence of an economic magnetite deposit there.

(1) TASSOO:

Our magnetite property at Tassoo has been examined or checked intermittently for the past 6 years but detailed magnetic prospecting has been restricted to the vicinity of known magnetite outcrops. Three years ago the B.C. Department of Mines while examining the property obtained a magnetic dip needle anomaly in a steep overburdened area several thousand feet west of the main showings. As prospecting outlined for this otherwise favorable locality was never completed and as surveyors who ran lines in the area thirty years ago remember a copper showing of possible interest some attention was paid the section while in the area with the A3 mag. However the Super-cub was not suitable for the required low flying here and no information was gained. We did however locate an anomaly on the West Jack claim south of the lower Tassoo magnetite zone. Ground investigation led to a previously undiscovered poorly exposed magnetite Zone (the A3 deposit) which should be investigated during proposed work at Tasu.

Helicopter work this past season failed to confirm the government dip needle anomaly west of the showings despite careful low level grid flying. It is thus felt that the ground anomaly is either due to a change in rock type

or to the presence of magnetite at considerable depth. Small bodies of less than 100,000 tons could be present without our being able to pick them up from the air. Also cupiferous magnetite which might be expected in this section and which is believed by the writer to contain less overall magnetics than normal deposits could be present in important undetectable quantities.

Checking both of all known magnetite occurrences and of geologically favorable areas in the Tassoo District gave no results of interest. The C. M. & S. deposits on the peninsula opposite Gowing Island could not be detected although a smaller one held by them in the "Townsite" Area did afford weak readings.

Conclusions and Recommendations Regarding Magnetics in the Tassoo Area:

(1) The A3 anomaly as described should be investigated preferably in conjunction with ground work proposed for the #1 Zone.

(2) A trained crew should relocate the government dip needle anomaly and thoroughly prospect the area.

(3) A local dip needle survey should be run centered around the showing on the C. M. & S. claim on the Tassoo Townsite and followed up by one or two short packsack drill holes to check on possible copper content below the surface weathering zone. This showing is plotted on our early maps and the ground is open to deal. The claim may lapse in the near future and should be relocated.

(4) Anomaly #20 should be checked on the ground with a dip needle. Attention should be paid to any reading greater than + 15°, especially if such occurs near a contact area, and the magnetite content of the country rock should be noted.

(2) APEX CLAIM:

We own by agreement and location the old unusually well exposed Apex copper-magnetite property situated high on a mountain several miles southwest of Tassoo. The government map showed a moderate magnetic concentration very near the present property but well away from the present erroneously plotted position of such on the current claim map. Silver Standard has covered the anomaly with a group of claims located north of Anna Lake.

We were able to pick this property up on our magnetometer only by flying at very slow speed a few feet above it. Continuation through the mountain-top ridge on which it is located could not be proven although A3 mag work the previous year indicated such to be the case. Similarly related deposits hoped for to the north along the geologically favorable ridge were not indicated. The main deposit, estimated conditionally to contain a maximum of 300,000 tons of magnetite, was examined on the ground by the writer but little not already known could be added. The copper mineralization (about 0.8%) is erratically distributed and numerous dyke-like unmineralized bodies of country rock confuse the picture.

Conclusions and Recommendations:

The writer believes the government anomaly over the Apex to be entirely topographical and in keeping with many obtained elsewhere in British Columbia. No new magnetite body is indicated in the area and extensions to the present one are doubtful. However as constantly stressed by the writer the copper present in such deposits may cause a decrease in magnetic values out of proportion to that caused by the usual presence of other material such as unmineralized inclusions, etc.

Recommendations include -

(1) Several Packsack drill holes to be put down through the limestone capping (described in previous reports) but only at time some spring or early summer when assessment work is required.

(2) In conjunction with the above an A3 ground mag survey to test possible continuation at depth to the north. Assessment work could easily be carried out using the Cobra drill but no new information whatsoever could be obtained. Use of the helicopter would greatly simplify such work.

(3) IKEDA AREA:

In general magnetic results over our magnetite and cupiferous magnetite properties at Ikeda Bay were disappointing. Good strong readings on the other hand were obtained over deposits near Harriett Harbour⁽⁴⁾ being tested by Silver Standard and these were useful as base guides.

The magnetite deposit on the Rose and Maple claims could not be detected at treetop height despite the fact

that the writer knew the exact location of the gentle dipping deposits one of which was proven by drilling to be at least 35 feet thick. Similarly no reaction was evident over the known magnetite on the Thunder claim or around the scattered outcrops on the Spade Flush and Sadie. This flying was done, as was that at Tassoo, in the best and most complete manner possible with the magnetic equipment on hand.

Work at and below treetop height of a type which would never be attempted by any commercial operator proved conclusively that the bodies in question are not large enough to give detectable magnetic readings.

Very slight readings were attained in the vicinity of the Lily mine. Turbulence in this section prevented close flying or exact marking of the zones of interest but they occur in an overburdened, completely unexplored slough-like area between 500 and 2000 feet southeast of the Lily portal. The cupiferous magnetite comprising the original surface showing of the deposit could not be detected.

Conclusions and Recommendations:

No large deposit of magnetite is indicated on our holdings at Ikeda. Those present on the ground contain amounts probably not in excess of 100,000 tons in any single instance or 250,000 tons combined. Weak magnetics associated with the Lily vein may be of importance.

Recommendations include a re-survey of the Ikeda Basin if the new Proton Magnetometer is more sensitive

than the one presently in use. Emphasis should be placed on the Lily structure where magnetite is only an erratically occurring associate of the more important copper mineralization. Granby, who are presently negotiating with Silver Standard on the adjoining Harriett Harbour Iron Properties, have expressed an interest in our Ikeda properties. Unless the small tonnages of magnetite indicated on our claims can be economically mined by a nearby producer, it is doubtful if they will ever be. Likewise the Lily copper property will probably have to depend on nearby interests which will only be heightened by some indication of continuity completely lacking at present. Should A3 mag work on the ground confirm the magnetics suggested by air mag work, desired encouragement might be forthcoming. A couple of days ground work if assisted by helicopter spotting should give sufficient preliminary data on which to base further work if warranted.

If more physical assessment work is required at Ikeda it should take the form of a few Packsack drill holes on the Maple magnetite deposit rather than on the more easily accessible low grade relatively useless pyrrhotite lenses such as those on the Chrysanthemum.

Other magnetite prospects tested with the air mag should be mentioned without comment as these are shown on the accompanying maps. Included are those on Burnaby Island⁽⁵⁾, Huxley Island⁽⁶⁾, Lyall Island^(6a), Alder Island^(6b), Louise Island⁽⁷⁾, Botany Bay⁽⁸⁾, Security In-

let (9), and Luxana Bay (10). A geologically suitable area comprising most of Southwest Graham Island (11) was flown but without encouragement.

Without some new information to the contrary (such should best be based at least on magnetite float) further air mag work on the Charlottes, beyond that outlined for Ikeda and including the South Collison Bay region, is not warranted. However, if the helicopter were in the Charlottes on other work, and the Proton magnetometer were installed, the added sensitivity might help outline deeply buried deposits at Tasseo.

(12) SHAG ROCK MANGANESE:

Summary and Conclusions:

A low grade but possibly extensive manganese deposit occurs in Tertiary rocks near the northern tip of the Queen Charlotte Islands. Future investigation of the deposit will depend on an increased demand leading to beneficiating possibilities. The showing was briefly investigated by the writer in company with A. Sutherland-Brown of the B. C. Department of Mines.

Location, Access and History:

The Shag Rock deposit is located on the north beach of Graham Island 21 miles northwest of the small Port of Massett. If continued along its northerly strike for several thousand feet under water, the deposit would intersect a small, sometimes tide-covered barren rock from which it gets its name.

The property is held under location by Joe Pauloski of Massett who tried to interest us in it several years ago. Assessment work consists of only a few shallow cuts. The writer believes part of the drift-covered, southern extension of the body to be included in an old Indian Reserve.

The deposit is located on a wide, gently sloping boulder-strewn beach behind which maximum relief is not over several hundred feet. Outcrop is scarce inland from the beach as it is elsewhere on the nearly flat and featureless section of the Island where boggy peatlike moss formations and scrub timber are the rule.

General Geology:

Geology in this section of the Island has not been done in detail but is relatively simple consisting of widespread gently dipping Tertiary volcanics. Underlying continental and marine sediments are presently being investigated by several oil companies, chiefly Richfield.

Description of Property:

The deposit is clearly a mineralized breccia zone in Tertiary volcanics in which earthy manganese oxide is the material cementing medium sized rock fragments. The deposit is well defined as it appears to resist surface weathering better than the enclosing brittle, somewhat cherty volcanics.

The breccia zone appears to be near vertical and to cut the country rock at a high angle. The deposit varies between 5 and 20 feet in width. Exposed length is about 550

feet with the likely northern section extending out beyond low tide mark and the southern end disappearing inland under overburden. The maximum elevation is not more than a few feet above high tide mark and most of the showing is normally under water twice a day.

Without closer study the writer would not hazard a guess as to the origin of this unusual deposit. It is probably of hydrothermal origin with the manganese originating in basaltic volcanics unusually rich in that element and being deposited in a fault zone.

Only bulk sampling can determine the manganese content of this material. Such will undoubtedly be very low as the breccia blocks which form at least 90% of the deposit are completely unmineralized. Samples taken by the writer included a chip sample across 6 feet of a slightly better than average section and a picked sample of interstitial material. The first assayed 12.62% MnO_2 and the second 37.5%. Mr. Pauloski has had assays showing a 50% MnO_2 content. The overall content of the zone is probably between 3 and 10% and as presently exposed would make "ore" at 1000 to 1500 tons per vertical foot. Possible reserves are many times this figure.

Conclusions and Recommendations:

The grade of this deposit is far too low to be of interest in itself at the present time. Should the supply of manganese ever become critical a thought should be given to possible beneficiation of this low grade deposit, which, as far as the writer knows, is unique to Western Canada.

Informed opinion on the economics of manganese is sadly lacking.

GENERAL PROSPECTING:

Helicopter prospecting of geologically favorable sections of Graham and Moresby Island resulted in the elimination of previously plotted but unexamined mineral occurrences and the discovery of several inaccessible new ones.

A possibly important quartz vein⁽¹³⁾ was located high on a cliff at the head of the second valley below Tassoo. This can probably be reached and sampled by sure-footed prospectors given helicopter support on a calm day.

Copper Stain on Vertical Cliffs at the head of the North Arm Sunday Harbour⁽¹⁴⁾ on the west coast could not be examined even with the helicopter. This zone was pointed out by Albert Jones. Such could best be checked from the crow'snest of a small boat crowding the base of the cliff during calm weather.

An antimony deposit⁽¹⁵⁾ reported to occur on the northeast side of Rennell Sound could not be found although claim stakes and narrow bands of pyritic material were noted.


A conspicuous red iron-hydrate(?) crust occurring on the beach at Big Bay⁽¹⁶⁾ was sampled and assayed to give a possible clue to its origin.

Widespread pyrrhotite-pyrite mineralization was checked at several places on the coast below Tassoo. One such conspicuous deposit north of Sunday Harbour⁽¹⁷⁾ failed to return important amounts of any valuable mineral.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Should a helicopter be available for a short time in the Charlottes, the opportunity should be used to further investigate the weak magnetic anomalies at Ikeda as well as the quartz vein south of Tassoo. Such would be the ideal time to do a few days assessment work at the Apex property if such is desired. Large scale air mag investigations are no longer warranted.

Vancouver, B. C.
February 22nd, 1961



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Geologist.