49°; 126°; S.E.

Evaluation Report
Hesquiat Lake, Stewardson Inlet,
Lat. 49 27' N., Long. 126 20' W.
Alberni Mining Division
by
H.W. Agnew
for
Paco Resources Ltd.,
February, 1962

92E/8E & 9W

Regarding Groups: Hesquiat Lake North
Hesquiat Lake South
Safehie
Middle and Sydney.

462

462

A REPORT ON THE

MINERAL OCCURRENCES IN THE HESQUIAT LAKE - STEWARDSON INLET AREAS ALBERNI MINING DIVISION VANCOUVER ISLAND, B. C.

by

H. W. AGNEW

February 1962

Vancouver, B.C.

SUMMARY

Geological conditions existing in the Hesquiat Lake–Stewardson Inlet area are typical of those which provide the geological environment in which all the economically important iron deposits on Vancouver Island are found.

No "ore" as such exists at present within the area, with the exception possibly of the Indian Chief occurrence, but the possibilities of developing ore, at several localities within the area, are excellent.

Already large tonnages of marginal grade material have been indicated such as the 1,500,000 tons potential of 1.58 copper at the Indian Chief and the 500,000 to 1,000,000 tons of 30 to 40% iron, of indicated material at the Hesquiat Lake property, the old Brown Jug group. In both cases, it is likely that up-grading by separation and/or selective mining could provide a substantial tonnage of ore grade material.

Higher grade material remains to be found and, on the basis of the proposed program, will undoubtedly add to the present total.

Only a very preliminary development program has been outlined in this report and is based on what the writer feels is the quickest approach to the indication of additional tonnages, and too continued development can best be planned on the basis of the results of this preliminary work. The initial programme, which consists of detailed and intensive prospecting, geological mapping and a maggetometer survey, should not exceed a cost of $30,000.

The area (grid) included in the preliminary magnetometer survey has been outlined on the map (in pocket) and is about 3 miles long

and 1 mile wide.

The survey should be completed by an experienced operator or geophysicist.

The area of the survey should be extended but only pending results of the initial survey, together with the results of the prospecting and mapping.

Further magnetometer surveys are of course indicated for all the other occurrences as well, but must be contemplated at some later date.

The area (6a - 9a) on Stewardson Inlet, although extensive, is much too low in grade in areas visited to be economical, but should eventually be explored for possible concentrations of "ore" grade material which might exist within the zone.

The area is an excellent prospect, and the chances for removal from this category to that of a mine are far better than average. The favorable geology, the many occurrences of significant mineralization, the ready access to tide water all enhance the attractiveness of area and add up to a prospect well worth further development.

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MINERAL OCCURRENCES IN THE
HESQUIAT LAKE - STEWARDSON INLET AREA
ALBERNI MINING DIVISION
VANCOUVER ISLAND, B.C.

INTRODUCTION

The following report is based mainly on observations made during an examination of the mineral occurrences in the area in January 1962.

Information based on visits to the area in 1953, 1956, and 1960, together with information compiled from reports and maps of other examining geologists and from the literature of the Canadian Geological Survey and British Columbia Minister of Mines reports, has also been included in this report.

The writer is grateful to Mr. Clive Ball, chief geologist for Canex Aerial Explorations Ltd. and to Dr. R.H. Seraphim, geologist for Moneta-Porcupine, for information supplied concerning the mineral occurrences on the Indian Chief and Prince Groups and to L.H. Hansen of Tofino for information and reports on the development of the mineral occurrences on the Hesquiat Group.

Thanks are due also to D. Lefurgey, J. Tough and J. Murray, all residents at Hesquiat Lake at the time of the present visit, for able assistance in facilitating the examination of the area.

LOCATION

The area, situated on the west coast of Vancouver Island, is located within the Alberni Mining Division. Mineral claims either held by, or under option, to the company extend from Hesquiat Lake on the north-west to Sidney and Stewardson Inlets which bound the area on the southeast.

Tofino, a small seaport on the west coast of Vancouver Island and the nearest town of importance, lies about 30 miles to the southeast.

Access to the area is from Tofino by either boat or aeroplane. Excellent harbourage is available to boat or plane at Boat Basin (head of Hesquiat Harbour) or to planes at Hesquiat Lake, either site providing excellent access to the northern end of the area and by boat or plane to Stewardson Inlet for access to the southern end of the area.

PHYSICAL FEATURES

The topography of the area is typical of the Coast Range. Steep mountains rise abruptly from the waters edge to elevations of 2500 to 3000 feet. Slopes of 40 degrees or greater and precipitous to vertical bluffs are common. Shore lines, for the most part, are bold and rocky.

Mountain slopes are densely wooded with cedar, fir, balsam, many attaining an impressive size. Cedars with butt diameters of 6 and 8 feet were noted.

From sea level to elevations of 350 to 400 feet dense under-brush consisting of rose bushes, berry bushes, salal, ferns and devil's club, everywhere impedes travel, while at all elevations heavy windfall covers the mountain slopes and valleys of the creeks and river.

This too, hampers movement within the area. Trails have been cut to all the known mineral occurrences which of course greatly facilitated movement about the area.

Annual precipitation is extremely heavy and would be estimated at about 150 inches for the average of the area - the majority falling from October to March.

Suffice it to say an ample water supply, for all purposes, is available throughout the year in most of the area.

CLAIMS

A mineral claims map of the Paco Resources staking in the Hesquiat Lake area was provided the writer by D. Lefurgey who was in charge of the staking for the company. This map, together with a search of the records at the Mining Recorders office in Vancouver has provided the information from which the claim sketch accompanying this report has been compiled as well as the following:-

PACO RESOURCES - 178 claims held by location and known as the Paco No's 1 to 16 mineral claims inclusive and the Paco No's 33 to 194 mineral claims.

L.H. HANSEN - 23 claims held by location and known as the Hesquiat No's 1 to 8
Hesquiat No's 10 to 17
Hesquiat No. 19
Vi No's 1 to 4, and the
Estevan No's 1 and 2 mineral claims.

H.E. DENDOFF	-	16 Crown Granted Mineral claims known as the Indian Chief and Prince Groups.
A. STONE	-	16 claims held by location
A.G. CREELMAN	-	10 claims held by location

The position of the claim groups, (see map) is approximate only and will, of course, remain so until all are surveyed, but in the meantime it appears that the Paco claims overlie, in part all the other groups within the area.

The Paco mineral claims cover an area about 8 miles long by 1-3/4 miles wide, extending south easterly from Hesquiat Lake to Stewardson Inlet.

The writer has been informed that the Indian Chief, Prince and Hesquiat groups of mineral claims are held "under option" by Paco Resources which would provide a total of 217 mineral claims held or "under option" to the company.

GEOLOGY

Volcanic and sedimentary rocks of Upper Triassic to lower Jurassic age (Vancouver Group) are in contact with plutonic rocks of the Coast Intrusives (late Jurassic to early Cretacious age) throughout the extent of the area under consideration. Granodiorite is the most common of the intrusive rock types. It is white to grey, medium grained rock. Locally cupolas of intrusive rocks and related dykes are exposed within areas of the older layered rocks.

Rocks of the Vancouver Group consist of interbedded volcanic flows (chiefly andesite), pyroclastic (chiefly tuffs), and sedimentary (predominantly limestone) rocks.

These are generally altered and silicified; the alteration increasing in intensity with approach to the intrusive contact until the ultimate in alteration has occurred - i.e. limestones have been altered to a "skarn-like" material (garnetite) consisting of garnet, epidote pyroxene and wollastonite. Impure (argillaceous) limestones have been altered to hornsfels and some skarn-like rocks have apparently resulted from the silicification and "skarnification" of volcanic flows. The skarn (old Swedish mining term signifying the garnet-pyroxene-epidote rocks accompanying many Swedish magnetite deposits) zones are frequently mineralized with magnetite and iron, copper and zinc sulphides.

There is a remarkable similarity between all the known magnetite deposits on Vancouver Island insofar as their geological environment is concerned. All occur within altered limestones and andesites of the Vancouver Group in the immediate proximity of the granitic contact.

Extensive areas of limestone and volcanic alteration (to "skarn") occur throughout the Hesquiat - Stewardson area.

Mineralization in all probability originates from mineral bearing solutions concentrated along the contact of the intrusive and emplaced in the overlying rocks wherever structural and/or chemical control aided the deposition.

DESCRIPTION OF MINERAL OCCURRENCES

The following is a list of all the known mineral occurrences in the area and includes, besides those examined during the course of the present visit, those others not examined at this time, but of which the writer is aware through previous examinations and through access to recent reports of their present development.

AREA NO. 1a (SEE MAP)

On the west side of Hesquiat Lake and at an elevation of 840 feet above the lake a small natural exposure of magnetite in "skarn" outcrops in the bed of a small creek. The area of mineralization is about 10 feet square and exposes a mixture of skarn and magnetite with a concentration of magnetite across 5 feet of the exposure. The attitude of the zone is obscure but mineralization appears to be controlled by a northwest striking shear. A selected sample of magnetite assayed 51.61% iron.

AREA NO. 2a

On the west side of Hesquiat Lake and at an elevation of 315 feet, a zone of mineralization has been exposed for a distance of about 70 feet in the bed and along one bank of the same stream on which the occurrence at 1a is located.

Again the mineralization occurs as a mixture of "skarn" rock and magnetite and nowhere is the "ore" massive, the whole probably low-grade iron but amenable to up grading by simple separation.

The exposure here occurs in the same limestone belt as area 1a, but continuity between the two is doubtful as again the mineralization appears to be controlled by a cross shear parallel to the one above. A selected sample of magnetite from this area assayed 54.31% iron. Between the areas 1a and 2a several smaller outcrops of magnetite bearing "skarn" rock are exposed in both the creek bottom and on the adjacent slopes. These consisted of blebs and pods of magnetite in skarn and their significance is obscure until they have received further work.

The areas described immediately above are believed to be on the Hesquiat No. 17 mineral claim owned by L. Hansen. Mr. Hansen's claims on the west side of the lake are, in part, a relocation of the old Violet Mineral Claim staked sometime prior to 1902 and referred to in the B.C. Minister of Mines report of that year.

The exposures described above do not appear to resemble the description of the occurrence found on the Violet Mineral Claim, i.e. "an exposure of magnetite some 15 feet wide developed by an open cut — 12 feet long and about 4 to 5 feet deep at the face showing up very clean and solid ore, a sample of which — gave 59.8% iron"—. This occurrence was at an elevation of 300 feet above the lake (see Department of M. of M. B.C. 1902, page 210).

92 E 29 14

No evidence of previous work has been found anywhere within the areas of mineralization so far discovered on this creek.

AREA NO. 3a

About 1-1/2 miles south of Hesquiat Lake on the south fork of the Satchie River magnetite mineralization has been exposed in the bluffs on the east side of the creek at an elevation of about 320 feet. Here a zone of mixed magnetite and "skarn" extends over a width of about 80 feet. At one point within the zone massive magnetite is exposed for at least 20 feet. Some malachite (copper stain) occurs erratically throughout the zone. Following up the bluffs the zone disappears under overburden. The vertical extent of the zone is, at this point, limited by an intrusion of granitic rock which is exposed by the creek (elevation 220) and extends up the valley wall for 20 to 30 feet.

An adit driven in a zone of magnetite mineralization on the west side of the creek at about this point could be the extension of this zone to the west. This adit had not yet been located at the time of the examination and was therefore not seen. A specimen of material from this area assayed 39.88% iron and 0.39% copper. This iron occurrence appears to be on the Vi. No. 4 Mineral Claim owned by L. Hansen of Tofino.

AREA NO. 4a

About 1/4 mile downstream (north) from Area 3a and at an elevation of 200 ft. above sea level an occurrence of magnetite is exposed in a bluff on the east side of the creek. Massive to scattered blebs of magnetite occur in a "skarn" rock over an exposed area of 50 ft. by 50 ft. Near the top of the bluff the mineralized material is overlain by barren skarn. The contact appears to be a well defined wall - in this case the hangwall of the mineralized zone. Beyond the north and south limits of the exposure, overburden obscures the possible extent of the mineralization.

Minor amounts of chalcopyrite and bornite? were observed to occur irregularly across 5 to 6 ft. of this zone. A sample of apparently representative material from this zone assayed 25.15% iron and 0.28% copper per ton.

All the deposits described above occur in a skarn-like rock, which is the result of alteration of a limestone due to the intrusion of the plutonic rocks.

AREA NO. 5a

92E 16

This area includes the original iron discovery on the old Brown Jug property located on the east side of Hesquiat Lake. The owner is L. Hansen of Tofino.

A considerable amount of geophysical surveying, trenching and diamond drilling had been done since the writer's last visit to the area and the occurrence was visited for the purpose of viewing the extent of such development. A detailed examination was not attempted.

The magnetite occurs in a highly altered skarn-like rock of

volcanic origin in close proximity to a bed of limestone which overlies the zone. Geophysical surveys have been carried out over only a part of the potentially mineralized areas, and favorable anomalous areas, as indicated by the survey, have been only partially drilled.

On the basis of the present state of development of the magnetite occurrences on the "Brown Jug", various estimates have been made by as many engineers and vary from a potential 500,000 tons of 40% iron to a potential 1-1/2 million tons of iron ore averaging less than 30% iron.

Some types of easily concentrated magnetite may contain as low as 25% magnetite and still be up graded to yield an ore grade product. Nevertheless, a large tonnage of very low grade or a much lesser tonnage of higher grade material has been indicated to date for the occurrence, with excellent possibilities remaining, to add to the presently indicated tonnages.

The iron occurrences so far exposed are all on the Hesquiat No's. 1 to 4 mineral claims. Abundant "float" material, found to the north, and beyond the extent of the magnetometer survey, has not yet been traced to its source. A representative sample of this material assayed 33.48% iron.

AREA NO'S. 6a, 8a and 9a

These locations (see map) are all parts of the same or parallel bands of an intrusive, now altered to amphibolite, into the granitic rocks of the Coast Intrusives, and form a belt up to 600 ft. in width, which strikes southwesterly across the ridge separating Sydney from Stewardson Inlet.

The amphibolite is dark green to black and consists essentially of an amphibole, plagioclase and magnetite. The body of amphibolite is everywhere, uniformly, slightly magnetic and selected specimens assayed as follows:

Area No. 6a	- 9.91%	iron
7a	- 14.33%	iron. This sample was from the same locality as 6a, but consisted of a more highly altered rock and was slightly more magnetic.
8a	- 14.63%	iron
9a	- 10.92%	iron

The areas described above constitute all of the mineral occurrences examined at this time. Other occurrences in the area, which have been examined previously by the writer should be mentioned. Of these, a considerable amount of development has been completed on the Indian Chief since the writer had first examined it. The others, that is, the Prince, and the occurrence of base metals on the Brown Jug, have had no further attention since last visited.

AREA NO. 10 Brown Jug zn - Ag Au ft.

The area is located about 1/2 mile south of the iron occurrence at Area No. 5a (see map) and at an elevation of 300 ft. above the lake.

A zone of alteration within volcanic rocks is characterized by the deposition of galena and sphalerite mineralization occurring in cross-fractures within this zone. Near the easterly end of the zone of cross fracturing the shears are quartz filled and 3 short adits have exposed quartz veins from 1 to 12 ft. wide.

The zone of alteration (skarn) is at least 400 ft. wide and has been exposed intermittently for a distance of at least 10,000 ft. It strikes northwesterly through the claims. The mineralized cross fractures in this zone have been exposed for lengths up to 450 ft. and are mineralized across widths of from 2 to 20 ft. Mineralization is mainly pyrrhotite, pyrite, sphalerite, with minor chalcopyrite and galena, with possible commercial values in gold, silver and zinc. Further exploratory work in this area is warranted and should consist, first, of stripping and trenching to determine continuity of the zone.

AREA NO. 11

The Indian Chief Group is located in this area. The property is located on Stewardson Inlet at elevations ranging from 1,500 to 1,900 ft. above sea level.

The property was first staked in 1897. In 1904, 100 tons of sorted ore assaying 17% copper was shipped to the Ladysmith Smelter. In 1907 another small shipment was made and in 1916 1,000 tons of sorted ore

was shipped to the Tacoma Smelter.

A 100 TON CONCENTRATOR

A 100 ton concentrator was completed in 1917 and between that year and 1923 approximately 100,000 tons were milled, which averaged from 2 to 2.5% copper. In 1937, the Japanese mined 4,500 tons and milled an additional 2,200 tons from the dump, averaging 2.15% copper.

The "ore" occurs in host rock of "skarn" within a narrow belt of interbedded volcanic rocks and limestones intruded by granodiorite. The predominant "ore" mineral is chalcopyrite, although locally bornite is quite abundant.

In 1954 and 1955, a program of diamond drilling was completed by the Newkirk Mining Company.

On the basis of the geological work and the diamond drilling completed at this time, there is an estimated tonnage of 400,000 tons of possible ore on the Indian Chief and 1,500,000 tons of potential ore grading 1.5% copper with accompanying magnetite. Grade of the iron in the ore has not been estimated. Exploration possibilities for the property have not been exhausted. A complete geophysical program should be made followed by a diamond drill program.

AREA NO. 12

This area includes the Prince Group of mineral claims contiguous to the Indian Chief claims. The occurrence lies about 1 mile northwest of the Indian Chief.

A zone of mineralization within a "skarn" zone has been traced on the surface for several hundreds of feet and contains abundant massive

magnetite. This zone may contain interesting values in copper at greater depths than so far attained. A program of trenching and drilling is warranted. No tonnage can be estimated on the basis of the development accomplished to date on this property.

SAMPLING

Insufficient development has been done on most of the occurrences to warrant the cost of a thorough sampling. Selected material was taken from several of the occurrences and assayed for informative purposes only, that is, to indicate the tenor of the potential "ore".

Sampling of the Indian Chief and the Brown Jug groups has been fairly extensive and the results form the basis for the estimates of the values assigned to the tonnage estimates mentioned in the description of those areas. Three spectrographic analyses were taken, one at each of the locations which appeared most to indicate large tonnages, in addition to the Brown Jug, Indian Chief and the Prince.

Results of the spectrographic analyses of Areas Nos. 2a, 3a and 9a (representative of 6, 7, 8 and 9a) are appended.

With the exception of two high copper assays the spectrographs indicate no impurities beyond the limits set by specification of most buyers.

CONCLUSIONS

Numerous occurrences of magnetite have been exposed throughout the area. All occur in "skarn" rock, which has resulted from the alteration of limestone or volcanic rocks due to the intrusion of plutonic rock. The more substantial zones of mineralization appear to be in altered volcanic rocks in close proximity to limestone bodies. Mineralization is controlled and concentrated along or within cross-shearing within the "skarn" zones.

The occurrences in the Hesquiat-Stewardson area are typical of all the known iron occurrences on the Coast, that is contact-metamorphic deposits in "skarn" adjacent to the contact of the volcanic-sedimentary series with the rocks of the Coast Intrusives.

RECOMMENDATIONS

A considerable amount of development has already been completed on some of the occurrences and on others, little, if any, has been attempted.

All warrant further attention and, as a preliminary program, a magnetometer survey of the area as outlined on the map, together with close prospecting and geological mapping of the entire area is recommended. This could be done at a cost not exceeding $30,000. Further development would be based on the results of this preliminary program.

The recommended magnetometer survey encompasses the occurrences within the limestone band which is in contact with the granitic rocks near the head of Hesquiat Lake, but is extensive enough to, not only survey the skarn zone within the limestone, but also covers the volcanic rocks in close

proximity to the limestone which, so far, appear to be the most prolific source of iron deposits.

The above is, of course, only a preliminary recommendation; i.e., the initial prospecting, geological mapping and geophysical surveying.

In addition to this, further magnetometer work and eventually diamond drilling should be completed on all the known areas of mineralization in the Hesquiat - Stewardson area.

D. W. Lagmuir

#904 - 1030 West Georgia St.,
Vancouver 5, B.C.

May 15, 1962.

Mr. Dave Gray,
Paco Resources Ltd.,
#1007 - 475 Howe Street,
Vancouver 1, B.C.

Dear Sir,

Apropros of my recent visit to the Prince Group, together with a study of the results of the magnetometer survey of the area, I submit the following conclusions and recommendations.

Several anomalies have been indicated by the survey to date. Additional mapping and magnetometer work should be completed, but the results obtained so far would warrant an immediate program of diamond drilling.

The results of the survey indicate several parallel mineralized zones, each made up of lenses of magnetite occurring along the zone, and the behaviour of the mineralization at depth or on the down dip extension appears to be similar to its occurrence in the lateral extent.

The largest anomaly indicated to date, which lies between the zero and 400 N lines, suggests an ore zone at least 600 ft. long and probably 50 ft. wide. If this should persist to a minimum depth of only 300 ft. it would represent a block containing 900,000 tons, and additional depth, width or length of this zone would, of course, increase this figure. Other anomalies exist in close proximity, and others, no doubt, remain to be found by additional magnetometer work.

The potential then at the Prince well warrants the proposed diamond drilling. I believe 800 to 1,000 ft. of drilling at a cost of about $10,000 would be sufficient to indicate the possible size and grade of the mineralized zone indicated by the anomaly described above. Further development would depend on the results of this preliminary program.

A stronger anomaly, the size of which can only be determined by further magnetometer work, occurs on the 2600 N line. This is a negative anomaly which is open to the north, east and south. Difficult terrain made further work in this area impossible at the time. Therefore, with individual anomalies extending over a horizontal distance of at least 2,000 ft., one of which indicates a substantial tonnage, I feel that development could best proceed by an immediate preliminary diamond drill program.

The project will have to be supervised by a geologist who should, during the course of the preliminary drilling, map the geology and extend the present magnetometer survey.

This program is well warranted on the basis of results obtained so far.

Yours very truly,

H.W. Agnew.

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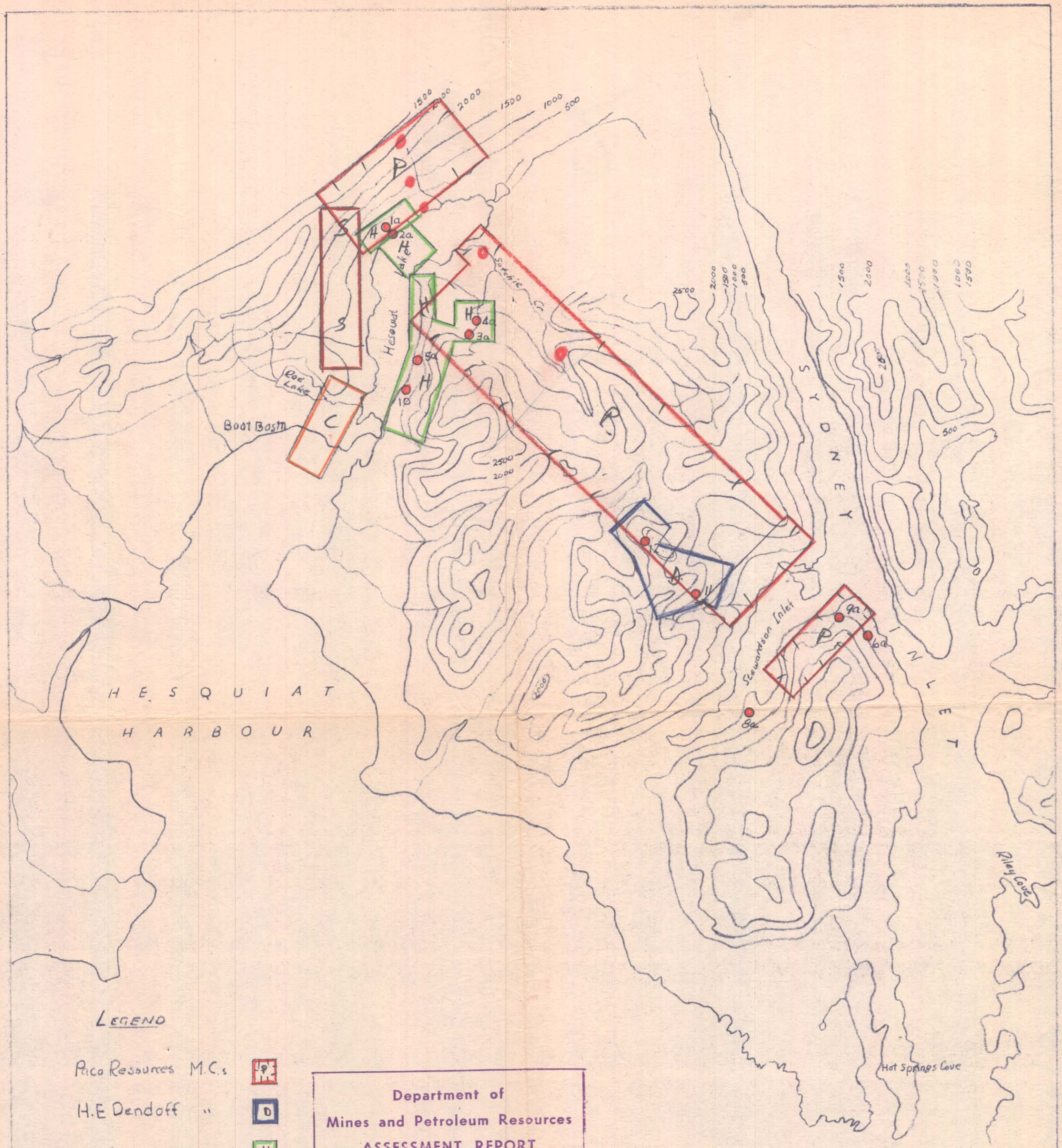

LEGEND

Paco Resources M.C.s		P
H.E Dendoff	"	D
L. Hansen Tofino	"	H
A. Stone Calder	"	S
A.G Creelman	"	C
iron occurrences		●

Scale 1" = 1 mile

Contour interval 500ft.

to accompany report by H.W. Agnew February 1962

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 462 MAP 1

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PACO RESOURCES LTD.
Mineral Claim Groups
Hesquiat Lake —
Stewardson Inlet
Area
Vancouver Island
February 1962

Hesquiat Lake

Boat Basin

HESQUIAT HARBOUR

Hesquiat

Rae Lake

Sydney Inlet

Stewardson Inlet

Rush Cove

Hot Springs Cove

1500'

2500'

500'

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 462 MAP 2

Const Intrusions - mainly granodiorite

Volcanic rocks Bonanza Formation?
& minor limestone

Limestone - Quatsino Formation?
& minor volcanic rocks

Contacts approximate -

Proposed area for preliminary magnetometer survey

Scale 1in = 1mile

To accompany report by H.W Agnew February 1962

MJ

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PACO RESOURCES LTD

Sketch showing
Geology
&
Proposed Magnetometer
SURVEY
Hesquiat Lake - Stewardson Inlet
Vancouver Island