

S U M M A R Y

SOURCES OF IRON

PACIFIC NORTHWEST COAST

by

ALEX SMITH

Vancouver, B. C.  
December 16th, 1932

S U M M A R Y  
SOURCES OF IRON - PACIFIC NORTHWEST

I N D E X

<u>OUTLOOK</u>	<u>Page</u>
<u>FINE GROUND BI-PRODUCT IRON RESIDUES</u>	1
Sullivan Mine	1
Columbia Cellulose	
Kestall	
<u>HIGH GRADE MAGNETITE DEPOSITS</u>	2
Zaballos	2
Quinson	2
Texas	2
Quatsino	
Kla-ench	
Tasu	
Head Bay	
Kluckwan	
<u>COPPER IRON DEPOSITS</u>	4
Coast Copper, Quatsino	4
Warwick & Taseco	4
Ikeda	4
Prince of Wales Is.	
Kasna Creek	
<u>MAGNETITE PYRITE PYRRHOTITE DEPOSITS</u>	5
Texas	5
Churchill	5
Books	
Port San Juan	
<u>COPPER NICKEL MAGNETITE</u>	6
Pacific Nickel	
<u>COPPER SULFUR IRON</u>	6
Kus Cove	
<u>TITANIFEROUS MAGNETITE</u>	6
Snettisham Inlet	
<u>LIMONITE</u>	7
Kyncetz River	

POCKET - Map showing location of B. G. and SE Alaska Iron Properties.

ATTACHED:

- Letters: - Re: Coast Copper Co. - From A.M. Richmond to Neil McDiarmid - April 2, 1947
- From Alex Smith to A.J. Anderson - Nov. 14, 1952
- Re: Quinson - From Alex Smith to A.J. Anderson - April 7, 1952
- Re: Iron, Copper and Sulfur Concentrates do do do - Nov. 21, 1951
- Synopses:
- Ikeda Mine - Feb. 23, 1951
  - Kasna Creek - Feb. 7, 1951
  - Port San Juan Iron Property - April 30, 1951
  - Kus Cove - Feb. 1945
  - Warwick & Taseco (Note) - Nov. 21, 1951
  - Kyncetz River Limonite - Feb. 22, 1952
  - Apr. 12, 1951

## S U M M A R Y

### SOURCES OF IRON - PACIFIC NORTHWEST

#### OUTLOOK:

In terms of a large integrated steel industry, there are no big iron deposits on the Pacific Northwest Coast. In B.C. the 4 largest known deposits - Quinsam, Zeballos, Texada and Quatsino - may average 3,000,000 tons apiece of good grade magnetite ore. A half dozen smaller deposits, plus magnetite concentrates from impure deposits with sulphides, would probably boost the potential up to 30,000,000 tons.

By far the largest source of iron is the pyrrhotite rejects from the Sullivan Mine which C. M. & S., are, as you know, going to roast sulfur. Their iron residue might be suitable and available for your purpose.

#### POSSIBLE BI-PRODUCT SOURCES OF FINE GROUND IRON - PRESENT AND NEAR FUTURE:

Both Quinsam and Texada are currently shipping about 3000 T per day of magnetite to Japan. They have to beneficiate their ores by crushing and magnetic separation. Their contracts call for a certain percentage of the blocky sizes suitable for blast furnaces. They tend to produce too many "fines", so that they might be willing to sell these "fines" cheaply locally. Texada may have, in addition, a problem with sulphide rich "fines."

At Prince Rupert there will be iron rejects from the roasting of Britannia pyrite concentrates for sulfur, recently commenced by the Columbia Cellulose Company.

Also Texas Gulf Sulfur control the Estall River property of Northern Pyrites Ltd. They are now developing the property with the idea of establishing a zinc-copper-sulfur-iron smelter at Kitimat. Perhaps Q.M.I. could take over the iron portion of the process. The ore is a massive pyrite with a little zinc and chalcopyrite.

HIGH GRADE MAGNETITE DEPOSITS:

Rebellos: - Within 4 miles of good harbor at Rebellos, West Coast Vancouver Island. 1,000,000 to 4,000,000 tons 60% iron. Very low impurities. 50% of ore would require magnetic sorting. \$1,000,000. plus to bring into operation for export. - Ventures property.

Quinness: - Operating, exporting to Japan @ 2000 T per day. Contract price \$7.50 per T - \$8.50 per T loaded on ship, for 35% Fe. 1,700,000 T Reserves. Argonaut Mining Company - subs. Utah Construction. 18 mi truck haul. Prob. \$1,500,000 cap. investment. Probably just breaking even. No sulfur problem. Excess fines produced in keeping grade up to requirements.

Texada: - On tidewater. Some bodies high grade magnetite but much of ore contains 1% + S as pyrite or chalcopyrite. Contract price said to be \$7.00 per T. Lower price due to sulfur content. Equipped and operating similar to Quinness. San Francisco capital and Argonaut man. Said to be making money as ore loaded on ship for \$2.50 per ton. Reserves over 1,000,000 T.

Suntano: - Gold-copper - a local stock company. Northern Vancouver Is. adjoining Coast Copper (which see). 18 miles from tidewater - Road construction problem. 30 miles N of Zeballos Iron and on same belt. Said to have recently proven up 500,000 - 1,000,000 T 37% Fe low in sulfur. Original showings were chalcopyrite-magnetite ore similar to Coast Copper. Should probably be worked in conjunction with that property. Recent press releases by Adams describe negotiations with Takahashi for export of ore.

Ale-anch  
Iron:

On Nimpkish drainage, magnetite deposit, 2500 T per vert. ft. May be 500,000 T or so of good grade - becomes pyritic on one extension. North investigation as may now be accessible by logging railway or roads; 18 mi from tidewater. Magnetite on limestone-greenstone contact, similar to Zeballos.

Head Bay:

Magnetite deposit 1-1/2 mi from harbour, S. coast of Vancouver Island; 25 mi S of Zeballos on same belt. Owned by Canadian Collieries. Recently drilled by people seeking to export.

Kluckwan:

25 mi from Haines, Alaska, on Haines Cut-off of Alaska Hwy. Presently being tested for export of blocky high grade magnetite. Reported 1 sq. mile of over 15% magnetite - suitable set-up for fine grinding and magnetic separation. Close to proposed Alcoa development at Skagway.

COPPER IRON DEPOSITS:

Coast Copper - Owned or controlled by C.M. & S. but probably still open for a deal along lines attached letter by A. M. Richmond. 1,000,000 T 3.25% Cu ready for mining above main haulage, plus 1,700,000 T 0.6% Cu, 0.02 oz. Au, and 30% Fe in magnetite. These, together with the nearby Quatsino Gold Copper, are the largest known Cu-Fe deposits on the Coast. Would make a large and efficient operation if both properties could be acquired. Faced with building 16 mi road to Coast.

Queen Charlotte Island:

Herwick & Tassooi - On good harbor on West Coast. Bands of magnetite chalcopyrite ore totalling 130' width in a 500' wide zone, exposed for 500' length. 1100 T shipped, averaged 1.5% Cu and 62% Fe.

Ikada:

- On good harbor on East Coast. Owned by Ventures. Chalcopyrite-magnetite veins and lenses on limestone-igneous contact. One vein up to 40' wide in developed portion has crosscut 180' x 26' - 2.3% Cu, \$1.50 Au and Ag, in magnetite gangue: Only partially prospected as at that time only copper of interest.

Prince of Wales Island:

At one time reported 10,000,000 T magnetite carrying 1/2 to 1% Cu. U.S.B.M.'s drilling during war showed Mount Andrew deposit 1,000,000 T plus 42% Fe

and 0.32 Cu. (estimated - could be calculated from U.S.B.M. R.I. 4129 November 1947).

Kasna Creek: - Iliamna District, Alaska. Ventures property. Very large contact metamorphic hematite-chalcopyrite deposit 2400' x 100' - 1.5% Cu and 20% Fe. U.S.B.M. R.I. 4229 reports sliming of hematite made it difficult to make good Cu and Fe concentrates by flotation. 60 mi of road or railway to get to water transportation. Large hydro-electric possibilities. Geo. Lee made report on electric smelting. Rejects from our sampling were sent to Lakefield for tests (our letter May 31/<sup>1947</sup> to Nepheline Products, Lakefield, cc D.R. Berry, Toronto). We do not know the results, if any. Perhaps these rejects are still available. I had thought of testing the ore for self-fluxing properties.

MAGNETITE PYRITE PYRRHOTITE DEPOSITS:

Texada: - In addition to the ore currently being shipped to Japan, there may be several million tons of magnetite-pyrite with some chalcopyrite. This might be available and suitable for your process. Texada ores can be laid down in the Vancouver Area more cheaply than that from any other deposit along the coast.

Churchill: - 1 mi from Seballos Iron. Pyrrhotite-rich magnetite. 1000' higher elev. than Ford Iron.

- Sooke Pen. - A magnetite body with pyrrhotite (80' wide?); adjacent to the Sooke Copper Deposits.
- Post San Juan. - Central Vancouver Island. May now be accessible by logging roads. 10 mi from Port Renfrew. Magnetite with pyrite on contacts of limestone pendants. Fe 57%, S 2.5%. Possibly 2,000,000 tons.

COPPER NICKEL MAGNETITE:

Pacific Nickel Mines

- (Now Western Nickel). Near Hope, B.C. Local stock company. Renewed development being undertaken by Newmont. Cu-Ni ore to be treated in Sherritt Refinery in Edmonton. Ore reserves given as 1,200,000 T. 1.4% Ni, 0.5% Cu. In addition to considerable magnetite with this ore, there is probably a larger tonnage of magnetite available without Cu and Ni values.

COPPER SULFUR IRON:

Rus Cove:

Prince William Sound, Alaska. On tidewater. Massive sulphide ore. U.S.B.M. estimate 200,000 T 1.54% Cu - 1,500,000 T 0.51% Cu. Ore probably contains 20% S. Iron residues might be suitable for process.

TITANIFEROUS MAGNETITE:

Snettisham Inlet:

Coast SE Alaska. 20 sq.mi area yields magnetic anomalies. Magnetite content up to 80% and TiO<sub>2</sub> 4-8% over wide areas. Some 6' veins solid



ilmenite-magnetite.

ILMENITE:

Synopsis B. - 40 mi from Terrace, which will be 20 mi by rail from Kitimat. 500,000 T bog iron 53% Fe, 1.8% S. Examined and reported on in 1952, later than attached synopsis.

A.S.

Vancouver, B. C.  
December 16th, 1952

Alex Smith, Geologist



A. J. Anderson - contd.

April 7th, 1952

3. Mine contd.

by diorite. The magnetite bearing zone is overlain by limestone. In the zone are two or three beds or lenses of limestone alternating with skarn and magnetite. The general picture is as shown on the following sketches:

PlanSection

They have determined the limits and amount of ore on the hill by some 51 vertical drill holes. Their total reserves are said to be 1,700,000 tons, but whether this is their mining or their shipping grade I do not know. Their mining grade is rather low. I would guess at 40% Fe. In no place did I see more than a 20' thickness of high grade magnetite. Over half the material they were hauling to the mill appeared to be almost 50% brown garnet in volume, this being cut by stringers and lenses of magnetite. There is a possibility, however, that perhaps they are not down into the better part of their orebody as yet. On the whole, the present exposures certainly did not look impressive.

They are open-pitting the deposit, and have benches opened up at 30' intervals for a length of about 500', and a vertical range of about 400'. They have to remove a cubic yard of limestone for every cubic yard of mill feed obtained. They appear to do most of their drilling and benching by wagon drill, load the ore by diesel shovel into Euclid trucks, which haul it from the benches about 500' to the ore bin. The mill consists of 2 or 3 crushing stages between which the feed is run over a simple magnetic pulley and a head, middlings and tails product made at each pulley. A separation is even made on the fines by a Stearn's magnetic separator. The final mill product consists of about 40% between 1" and 5", and

A. J. Anderson - contd.

April 7th, 1952

the balance is down to coarse sand. Specifications only allow for a certain percentage of fines in the product. At present they are milling 1500-2000 T per day.

4. General: The whole operation appears to be efficiently run in a contractor-like manner, with lots of heavy equipment, conveyor belts, etc., and a set-up apparently gauged to mining out known ore within a relatively short time. They did not appear to be making any systematic search for extensions of the ore. There is the possibility that the deposit might lie in a fold structure such as at Zeballos, and the extensions might be picked up on strike, some thousand feet or so from the present deposit. They do not appear to have undertaken any search for these possible extensions, but appear to be concentrating solely on mining out the known tonnage as quickly as possible.

A price of \$7.00 a ton was mentioned, but whether this included \$1.50 haulage charges or not I do not know.

5. Churchill Group, Zeballos:

The Argonaut people intend to continue drilling there this summer. Mr. Burke indicated that if we were going to give a contract, or lease the Ford Iron property at Zeballos, the Utah Construction people would be about the most logical outfit with which to deal. I invited their Manager to visit us this summer at Ford Iron when he is up on their Churchill property.

Yours sincerely,

AS/EPG.

cc. W.B.Maxwell  
cc. enclosed.

November 21st, 1951

A. J. Anderson, Vice-President,  
Frobisher Limited,  
2810 - 25 King Street West,  
Toronto 1, Ont.

Dear Allan:                    Re: Iron, Copper & Sulphur Concentrates for  
Export

I asked Mr. Teba if the Japanese would be interested in magnetite concentrates, copper concentrates, or pyrite concentrates. He said very much so. They were anxious to obtain high grade magnetite concentrates and could sinter them. They are in the market for and could handle copper concentrates containing as low as 10 to 15% copper. Also that they would pay \$11.00 per ton Pacific Coast ports on pyrite concentrates containing 40% sulphur. (This would be worth about \$26.00 per ton in Japan).

This brings up again the possibilities of some of the chalcopyrite-magnetite deposits on the coast of which I have written from time to time, e.g. the Coast Copper, the Warwick & Tasu properties on the West Coast of Queen Charlotte Island, and the deposits on Prince of Wales Island, Southeastern Alaska.

If there were to be a long term market in Japan, the Kasna Creek property might be developed. It's a much shorter ocean haul from Iliamna to Japan than from Vancouver. Copper and sulphur concentrates might be obtained from the Rua Cove, Alaska pyrrhotite-chalcopyrite deposits, or the massive ore shipped direct.

There are, within a couple of miles of tidewater at Squamish, massive pyrite deposits. They now have a logging road within half a mile of the property. If surface stripping and a little diamond drilling showed them to be large enough, a nice profit could be made at \$11.00 a ton.

We are enclosing extra copies of these letters in case you wish to send them on to Mr. Lindsley.

Yours sincerely,

AS/EFG.

cc. 1 encl.

SYNOPSIS

**NAME:** Ikeda

**LOCATION:** 1-1/4 mi from Ikeda Bay, SE coast of Moresby Island, Queen Charlotte Islands, B.C. Good harbor. Formerly tramway from mine to Bay. Mild wet climate. Heavy timber and dense underbrush.

**PROPERTY:** 9 Crown Grants. Purchased from James Arnes for \$5000.00.

**ORE:** Chalcopyrite-magnetite with good gold and silver values.

**GEOLOGY:** Contact-metamorphic type in limestone on or near contacts with igneous rocks. Chalcopyrite-magnetite veins & lenses.

**DEVELOPMENT:** Underground workings, 1200' in 3 tunnels on #1 vein  
500' on #2 vein  
plus 2000' diamond drilling.  
Area only partly prospected, showings now badly overgrown.

**HISTORY AND PRODUCTION:**

	Tons	Cu	Au	Ag
Shipments: 1906-1909	6,081	7.43%	0.119	2.89
1915-1920	3,004	9.77%	0.184	2.41

**RESERVES:** (W.J. Morrie)  
(Probable)  
ore 1917 90,000 2.3% \$1.50  
plus 8,000 8% 0.16 2.2  
7,000 similar ore now on dump.

**CONCLUSION:** From available reports, it appears that most of the work was done on 2 veins dipping at 30° ± on the Lily claim. One was a narrow high grade vein with an oreshoot 200' x 12' averaging 10% Cu and 0.25 oz. Au, and the other a large chalcopyrite-magnetite vein with oreshoot 180' x 25' averaging about 2.3% Cu and \$1.50 in Au and Ag. This large vein, up to 40' wide, was traced on the surface for a considerable distance. Other similar deposits occur at the Bay. These large low-grade deposits appear attractive.

**PROPOSED INITIAL DEVELOPMENT:**

1. Geological and dip needle survey (means establishment of a survey camp and one to two months work for field party).
2. Clean out important parts of old workings.
3. Drill extensions of known ore shoots.

**REPORTS:** A.G. Larson - 1910 & 1912; E.J. Conway - 1913;  
H.M. St. Cyr - 1913; H.S. Hedley - 1917; W.J. Morrie - 1917;  
C.M. Campbell - 1943: (short visit). R.R. Wilson - 1944.

Vancouver, B.C.  
February 23rd, 1961

Alex Smith

MEMO

re

KASNA CREEK

ORE RESERVES:

Since writing the following synopsis on Kasna Creek, we have received from the U. S. Bureau of Mines a copy of their sample plans. Have written back asking for a preliminary copy of their report, which we understand is at present being forwarded for publication.

They have made a more detailed sampling of the surface exposures than was previously available - evidently doing some trenching for their samples.

In the case of the Barnes orebody, our results correspond fairly well with theirs; one point of difference is that I considered the east wall of the Barnes orebody was not exposed, and that the body might be considerably wider than the surface outcrop. Their trenching apparently does not indicate that one could expect a width much greater than the outcrop width.

In the case of the Gilt Edge orebody, their detailed sampling in 12 trenches across the deposit indicate an average grade, for the same width, lower than my estimate of 1.55%. Their sampling for an additional 500' south of this block shows only lower copper values, but some sections of considerably higher iron content.

In the case of both the Barnes and the Gilt Edge orebodies, the highest values seem to be within 500 or a thousand feet of the cross fault separating (?) the two orebodies.

We will await the U.S. Bureau of Mines report before making any detailed calculations.

METALLURGY:

The letter from the U.S. Bureau of Mines stated -

"Metallurgical tests on representative composite samples indicate that copper-iron separation by simple methods will be difficult, if not impossible. Spiral and magnetic concentrates gave very poor results. Flotation gave the best results of the three methods tried. The results of a typical flotation test were reported as follows:

METALLURGY: contd.

<u>Product</u>	<u>Weight Percent</u>	<u>Assay Fe</u>	<u>Percent Cu</u>	<u>Distrib. Fe</u>	<u>Percent Cu</u>
Cu concentrate	3.6	30.0	15.3	3.7	50.5
Cleaned Fe Conct.	33.9	33.5	1.0	42.6	33.9
Fe cleaner tails	46.4	30.9	0.3	49.2	12.8
Rougher tails	<u>15.1</u>	<u>10.1</u>	<u>0.35</u>	<u>4.5</u>	<u>2.8</u>
Calculated heads	100.0	35.0	1.69	100.0	100.0

Finer grinding gave increased slime losses."

It is difficult to see how this ore would be much of a metallurgical problem, at least as far as making a copper concentrate was concerned, because the copper was fairly well separated and discrete from the iron. (Unless sliming of hematite was excessive). Perhaps the metallurgical tests were attempts to make an iron concentrate instead of a copper concentrate? There does not seem to be much point in doing anything further until we have the complete metallurgical results available. In the meantime, you might check with Nepheline Products, Lakefield, Ont., to see what results, if any, they obtained in their tests on this ore. (See correspondence with L. S. Berry and Nepheline Products, May 19th and 21st, 1947.

I mentioned this Kasna Creek property to George Lee, and he believes that with 10,000 h.p. of cheap hydro-electric power available at the property, it could with electric smelting be made to pay on the basis of a 2,000 ton operation on copper prices 14¢ or over.

In the meantime, if you wish photostats of these Bureau of Mines maps wire, and we will have photostats made and forwarded.

Before undertaking any large expenditures at Kasna Creek, the more accessible deposits at Kus Cove and Prince of Wales Island, Alaska, should be investigated.

Vancouver, B. C.  
February 21st, 1951

Alex Smith



## SYNOPSIS

- NAME:** Kanaa Creek
- LOCATION:** Southwestern Alaska, Iliamna District, at headwaters, Kanaa Creek, which enters south shore of Kontrashibuna Lake. Trail from lake to showings at 2000'.
- PROPERTY:** 9 Patented claims owned by R. M. Edwards Estate under option to St. Eugene. Total purchase price \$22,000.00, of which \$17,000. (7) has been paid.
- ORE:** Copper - Iron.
- GEOLOGY:** Pneumatolytic replacement in limestone band 2000' wide. Chalcopyrite - hematite mineralization in greenish gangue, width 50-200', exposed for 3500' length. Some 10-50' bands of 3% Cu. Also some 20-50' bands of massive hematite.
- DEVELOPMENT:** 2 short prospect tunnels.
- ASSAYS:** Preliminary surface sampling for 2350' length exposed averages 92' width - 1.50% Cu, 13% Fe, 14.5% CaO, 33.7% SiO<sub>2</sub>. 1942 - U.S.B.M. surface sampling averaged 1.30% Cu, and 20% Fe over a larger area.
- CONCLUSION:** Desirable to acquire as a long term investment. Large capital expenditures would be required including about 45 miles of road or railway to reach water transportation at Iliamna Lake. Two very large hydro sites near the property. Ore may be self-fluxing. These factors might give low costs in spite of the isolation, and lead to electric smelting of both iron and copper at Iliamna.
- INITIAL DEVELOPMENT:** Should include staking extensions of the zone, particularly towards the lake, diamond drilling to test depth, average grade, and extent of Cu and Fe rich bands, estimation of hydro-power available, etc.
- REPORTS:**
1. U.S.G.S. Bull. #485
  2. Alexander Leggett
  3. W. R. Crane
  4. Examined by Alex Smith (3 days) 1943.

Vancouver, B. C.  
February 7th, 1951.

Alex Smith

## SYNOPSIS

**NAME:** Port San Juan Iron, Gordon River Grp. Bugaboo Cr. Grp. Conqueror, Baden-Powell, Little Bobs, etc.

**LOCATION:** Gordon R. & Bugaboo Crk. 7-10 mi up Gordon R. from Port San Juan (Port Renfrew) W.C. Van Is. B.C. Elev. from 250' at Gordon R. to 2200' on upper elms. on Bugaboo Crk. Area now reported opened up by logging roads. Port San Juan poor natural harbour, open to SW gales.

**PROPERTY:** About 30 Crown Grants; 7 owned by Mr. Cathcart, Victoria, B.C. former Dep. Min. Min. of Lands, include Conqueror, David & Elijah deposits.

**SUBMITTED BY:** Mr. Henrahan (HA. 6938R), who is attempting to get option on balance of elms. from English owners. Brought in by Al. Harris.

**PRICE:** 7 About \$10,000. cash and royalty on production with minimum annual royalty \$10,000.

**ORE:** Magnetite

**GEOLOGY:** 3 or more parallel reef pendants of limestone in Bealediorite, which is a marginal phase of the granodiorite batholith. Limestone belts 75-200 yds wide str. N70°W. Most of deposits on largest limestone belt extending for 3 mi along Bugaboo Cr. & Gordon R. Numerous magnetite masses varying in size up to that of the Baden-Powell which is 90' wide and 320' long on the outcrop, (inc. mixed limestone-magnetite aureole). Magnetite pure but cut by great numbers of veinlets of pyrite and chalcopyrite.

**DEVELOPMENT:** A few old cuts and short crosscut adits.

**ASSAYS:** Conqueror 7 better-than-average samples: Fe 59.69%, SiO<sub>2</sub> 1.4-6.0%; S. 0.3-3.8%; P. 0-0.01%; TiO<sub>2</sub> nil.  
Baden-Powell - Fe 56.59%; Insol. 5.9-8.5%; S 2.5-2.7%; P 0.01-0.12%; MgO<sub>2</sub> 0-1.14%.

**RESERVES:**

Brewer's Estimates -	<u>Proven</u>	<u>Prob.</u>	<u>Poss.</u>
Sirder	94,000	-	47,000
Conqueror	16,000	220,000	120,000
Baden-Powell	-	500,000	250,000

**CONCLUSIONS:** Outcrops are scarce; probably good chance of finding both extensions & new bodies by dip needle survey. Most of ore is high in sulfur but reported to be below bessemer limit. Core of large Baden-Powell deposit much lower in sulfur. Probably worth examination to size up prospecting possibilities.

**REPORTS:** G.S.C. Econ. Geol. Series 3 pp.-167-190  
G.S.C. Summ. Rep. 1909 pp.- 94-95  
B.C. Dept. of Mines Bull. 2 1919 pp. 27-30.

Vancouver, B.C.  
April 30, 1951

Alex Smith

## SYNOPSIS

- NAME: HUA COVE, COPPER BULLION.
- LOCATION: Prince William Sound, Alaska, on tidewater on Hua Cove, Knight Island.
- PROPERTY: 18 claims, some patented, owned by Fred B. Snyder, 1430 Rand Tower, Minneapolis, Minn. Under option to Frank H. Dickey, 1218 First Avenue, West Seattle.
- ORE: Copper, Sulphur.
- GEOLOGY: Strong shear zone several hundred feet wide cutting greenstone and porphyry and intruded by two small stocks diorite. Grebodies on large plunging drag-folds within the shear. Principal deposit horseshoe shaped up to 70' thick and 200' in diameter 1.35% copper. Heavy sulphides pyrrhotite, chalcocite, chalcocopyrite. Ore 1% copper contains 50% sulphides.
- DEVELOPMENT: 1500 feet underground work in 1929 by C.M.S. plus 2300' diamond drilling.
- ORE RESERVES: At tunnel level 2300 T per vertical foot 1.35% Cu plus 4760 T per verb. foot 0.81% Cu. Ore reserves U.S.B.M. calculation 790,000 tons 1.34% Cu plus 1,470,000 tons 0.81% Cu.
- CONCLUSIONS: U.S.B.M. estimates operation as a copper mine would not be profitable at present. Property appeals to the writer as a possible source of sulfur, for which there should be a good postwar market on the Pacific Coast. The ore should run over 20% sulfur.
- REPORTS:
1. E.J. Longyear Co.
  2. U.S.B.M.'s, Juneau.
  3. Assay plans by C.M.S. Kennicott and Longyear.

Vancouver, B. C.  
February 1945.

Alex Smith,  
Geologist.

Nov. 21, 1951 - Believe U.S.B.M.'s report has since been published.

## SYNOPSIS

NAME: Warwick & Tassoo

LOCATED: Located on the south side of the entrance of the south arm, and just east of the entrance of Tassoo Harbour on the West Coast of Moresby Island, Queen Charlotte Islands, B. C. Elevation 2000'.

ORE: Copper, Iron and some gold and silver.

GEOLOGY: The formation at the base of the mountain is granite, which changes at an elevation of 700 ft., to felsite and diabase, the felsite being more in evidence near the point of change. Above the mine the country-rock is nearly all limestone.

A large showing of magnetite has been traced for 500' on the surface of the Warwick Tassoo property, and can be traced for a considerable distance on the adjoining ground. Striking East-West and dipping 75°N. Ore in the tunnel is in bands up to 25 feet wide. These bands are separated by diabase and trap dykes, which are vertical or dipping slightly south.

DEVELOPMENT: (1914) - A tunnel 300 ft. long with 60 ft. winze 129' from the portal. Aerial tram to the beach, and camp buildings.

ASSAYS: Shipment of 1100 tons to Tacoma ran 1.5% Cu, 0.02 ozs. Au, 0.42 oz. Ag, 52% Fe.

REPORTS: Min. Mines 1910 - p. 85, 1913 - p. 96, 1914 - p.162, Maps and reports on file.

Vancouver, B. C.  
February 22nd, 1952

James A. Robertson

## SYNOPSIS

**NAME:** Zymoetz River Limonite. North Pacific Iron Mine. Bog Iron (Limonite) Deposit.

**LOCATION:** N side of Summit Crk. a tributary of the Zymoetz R about 38 mi S from Copper City on the C.N.R., at the junction of the Zymoetz and Skeens Rivers.

**PROPERTY:** Consists of 5 Crown Granted claims owned jointly by Lois Jones & Evelyn Baird, 555 Keystone Ave. River Forest, Ill. USA. Extending from the creek up the S slope of the Mountain from elev. 2600' to 3000'. Claims are as follows: Limonite, L.5612; Iron Horse L.5613; Iron Mack L.5614; Old Ironside L.5615; Iron Mountain L.5616.

**GEOLOGY:** This deposit is a bedded bog-iron ore occurring in platy layers from 1 to 5" thick, lying parallel to the hillside, which has an average slope of nearly 30°. The country rock on which the ore lies is an altered greenish porphyry, containing in many places impregnations of pyrite. Across the valley of Limonite (Summit) Cr. to the S this porphyry is in contact with the quartz-diorite of the Coast Range rocks which are probably intruded into it.

**DESCRIPTION:** The ore on this property is right at the moss roots, as prospecting has been done by burning the moss off and sinking pits and open-cuts; one pit has been sunk to a depth of 22'; 3 pits to a depth of 10', and several pits 3 to 5' deep. In none of these pits has the bottom of the ore been reached. The given surface area is 2,550,000 sq. ft. At 20 cubic to the ton, this would give 112,500 tons per ft. of depth. Estimates of from 1,000,000 tons to 7,000,000 tons have been made on this property.

**SAMPLES:** Taken by different people at different times from various places & analyzed by different labs, these are as follows:

<u>Analyses</u>	#1	#2	#3	#4	#5	#6	#7	#8	#9
Iron (Metallic)	54.00	56.01	54.32	52.19	51.0	50.6	55.2	53.2	54.0
Silica	1.08	0.8	1.99	1.36	2.0	1.7	1.51	1.62	1.04
Manganese	0.85	0.5	0.59	0.70	-	-	-	-	-
Phosphorus	0.46	0.1	0.08	0.51	nil	nil	0.001	0.01	0.002
Sulphur	1.16	1.5	1.14	1.47	1.7	0.8	2.55	1.89	1.15
Water (combined)	18.6	16.02	20.47	19.61	-	-	-	-	-

**REMARKS:** At present this property is 38 mi from the nearest railroad, but in the near future the area will be opened up by the logging industry for pulp in connection with the Cellulose Plant at Prince Rupert. Also to the S of this will be the Alcoa Plant and power which will also help to open up the country with transportation. A railroad 38 mi long is to connect Kitimat with the C.N.R. near Copper City.

**REPORTS:** B.C. Min. Mines 1913-p.111, 1914-p.123, 1916-p.301, 1918-p.54, Iron Ores of Canada, Economic Geol. #3, Vol.1, p.16.

Vancouver, B.C.  
April 12th, 1951

James A. Robertson