Paul Wilton

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PROPERTY FILE

A MINERALOGICAL STUDY OF THE MERRY WIDOW PROPERTY VANCOUVER ISLAND, BRITISH COLUMBIA

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ABSTRACT

The Merry Widow magnetite skarn deposit and surrounding showings contain anomalous gold and copper values occurring within a varied sulphide mineralogy. Copper occurs primarily as chalcopyrite; gold is often associated with cobaltite. Chemical analyses revealed another mineral present with the gold, tellurobismuthite. Textures and identification of other minerals was done through the use of ore microscopy.

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1.0 INTRODUCTION

The Merry Widow Property is located west of Port McNeill on Vancouver Island. The property was categorized in the 1920's as a small, high-grade, magnetite rich skarn deposit of minimal value. With increased demand for iron, this deposit became economically viable and was mined for iron from 1957 to 1962, along with other small deposits in the area. Sulphides in the pit were not mined, but are now being examined for their gold and copper potential.

1.1 PROCEDURE

The Merry Widow Property is surrounded by six mineral showings. These showings consist of massive sulphides, magnetite, and skarn minerals which have anomalous gold values (as indicated in assay results). This study, through the examination of polished sections, will determine if gold occurs preferentially in certain mineralization zones. A sample from each of the surrounding showings and several from within the Merry Widow pit are to be cut and made into polished sections. These will be examined microscopically and described in detail for mineralogy and textures. Unidentifiable phases will be examined using the scanning electron microscope and energy dispersive spectrum. These analyses should produce information necessary for metallurgical processing and possibly a qualitative sulphide paragenetic sequence will be postulated.

1.2 HISTORY OF THE DEPOSIT

The Merry Widow group was prospected and staked in 1911 for its copper values. In 1950-1951 Quatsino Copper-gold Mines Ltd. discovered magnetite in the Merry Widow group and began diamond drilling. In 1956 the Empire Development Co. Ltd. was formed by Quatsino Copper-Gold Mines Ltd. and Mannix Ltd., owning 40% and 60% respectively. The Empire Development Co. Ltd. began open pit mining of the Merry Widow magnetite orebody in late 1957 and continued until 1962 when its economic limit was reached. In 1964-1965 an adit under the nearby Kingfisher magnetite pit was extended to the Merry Widow zone where underground mining continued until the mine closed for economic reasons in 1967. Through 1988 the Merry Widow property was owned by the defunct Quatsino Copper-Gold Mines Ltd., but has since been acquired by Taywin Resources Ltd., who are currently conducting exploration on the property.

1.3 LOCATION AND ACCESS

The Merry Widow open pit is located on northern Vancouver Island, approximately 3.5 kilometres south of Benson Lake, at the 790 metre elevation on the east side of Merry Widow Mountain (Figures 1 & 2). Latitude and longitude coordinates are $50^{o}20'20"N$ and $127^{o}15'W$.

The area is accessible by driving south from Port Hardy along Highway 19 for 32 kilometres, then west on logging road Port Hardy Main for 32 kilometres. At this point logging road

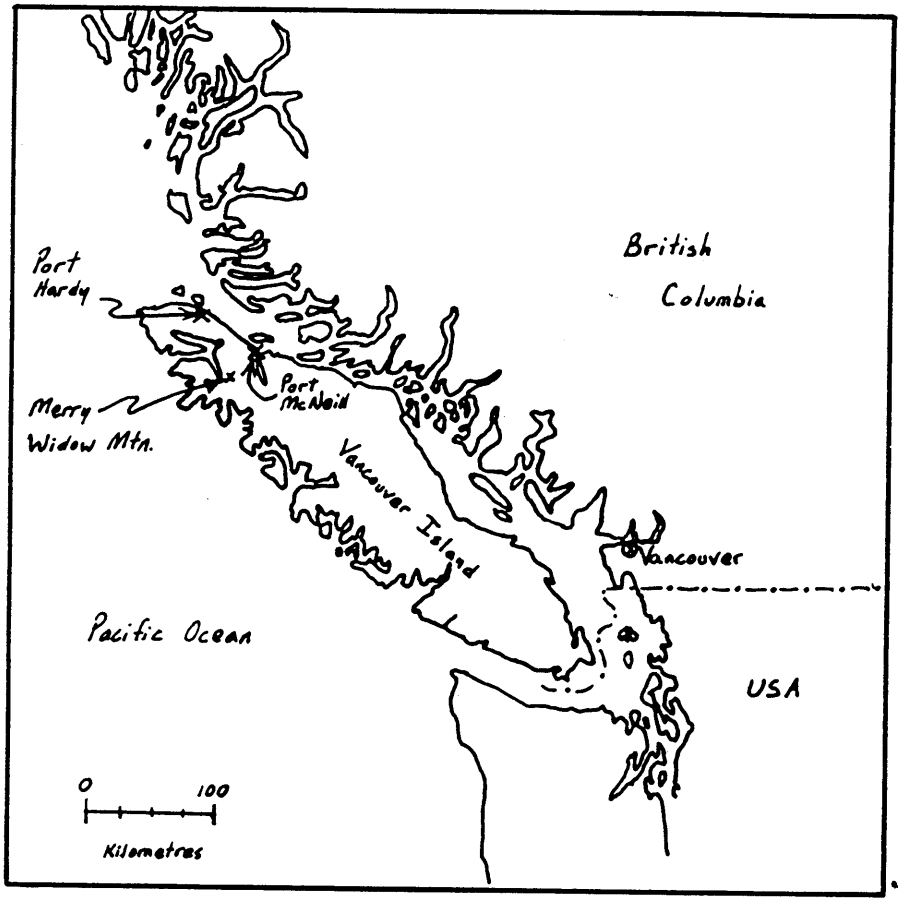
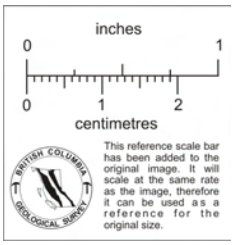


Figure 1: Map of Vancouver Island showing locations of Merry Widow Mountain, Port Hardy, and Port McNeill.



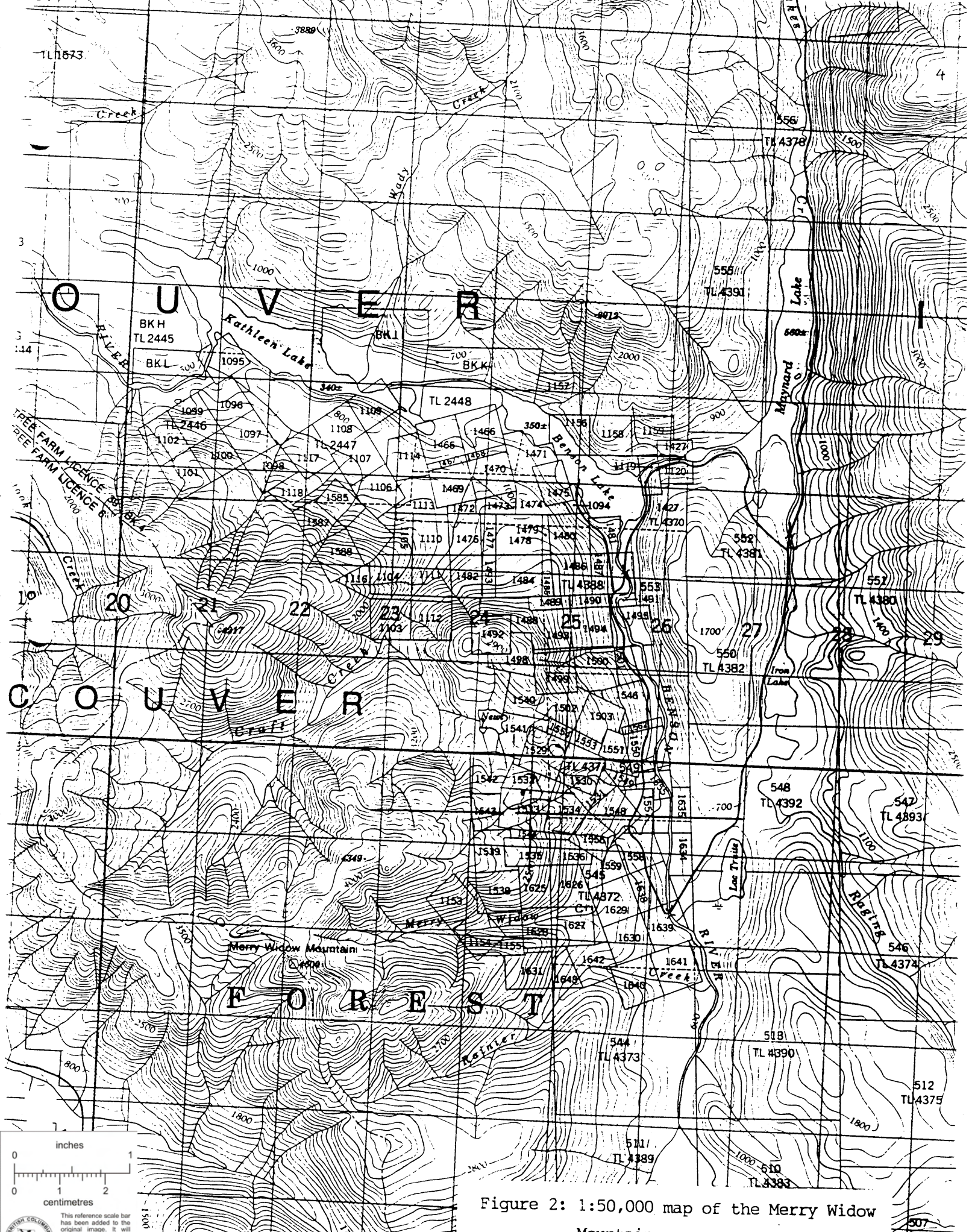


Figure 2: 1:50,000 map of the Merry Widow Mountain map area

1080 is encountered and followed for 3.5 kilometres up Merry Widow Mountain to the Merry Widow pit.

1.4 REGIONAL GEOLOGY

The Merry Widow Mine is underlain by rocks of the Vancouver Group, which can be divided into three main units. The lowest unit is the Karmutsen Volcanics, a basalt and andesite package estimated to be 6 kilometres thick (Eastwood, 1965). The Karmutsen Volcanics have a characteristic lithology of pillow basalts, pillow breccias, and amygdaloidal basaltic flows. The age of the Karmutsen Volcanics is known to be Upper Triassic (Muller, 1974).

Conformably overlying the Karmutsen Formation is the Quatsino Formation, a limestone sequence 600-1200 metres thick. While the lower two-thirds of the sequence is often relatively pure limestone, the upper third is argillaceous and tuffaceous.

The Parson's Bay Formation conformably overlies the Quatsino limestone package. This formation consists of black shales, limestones, and siltstones. These are locally interlayered with volcaniclastic grits and pebble conglomerates, creating a total of 600 metres of sediments.

Overlying the Parson's Bay Formation are the Bonanza Volcanics, a series of massive andesitic to dacitic flows and tuffs, commonly containing feldspar and hornblende phenocrysts in a feldspathic matrix (Muller, 1974). The Bonanza Volcanics are locally conformably underlain by non-calcareous argillites,

cherty quartzites, cross bedded greywackes and feldspathic sandstones of the Harbledown Formation.

Intruding the above Late Triassic-Early Jurassic package are granitic rocks of the Island Intrusion. Most of these have a granite to quartz monzonite and diorite composition, although gabbroic members have been noted and are in the area of the Merry Widow property. The oldest Island Intrusions, including the Coast Copper Stock near the Merry Widow pit, have been potassium - argon dated at approximately 181 +/- 8 ma (Carson, 1973).

Most rocks in the region dip southwesterly, where not affected by the emplacement of Coast Copper Stock. Quatsino Limestone beds generally dip 25^{0}-35^{0} to the southwest (Lund, 1966). Approaching the Coast Copper Stock, bedding steepens and tends to strike along the contact of the intrusion. This is seen in the Merry Widow pit. Regional faults affecting the Merry Widow and surrounding showings have a northeasterly strike and post-date the Coast Copper Stock. Other regional fault sets trend northerly and northwesterly (Lund, 1966), but are not significant in the Merry Widow area.

1.5 LOCAL GEOLOGY

There are three parent rock types present in the Merry Widow Pit (Figure 3). These are gabbro and diorite of the Coast Copper Stock which forms part of the headwall at the western end of the pit, Bonanza Volcanics which lie in the headwall and in the middle pit region, and Quatsino Limestone which lies along the

eastern pit margin. Although the Quatsino Limestone and Coast Copper Intrusion have retained much of their original identity, the Bonanza Volcanic package is largely unrecognizable due to metasomatic alteration.

Three main skarn types have been identified within the Merry Widow pit. The first type furthest from the Coast Copper Intrusion is fine-grained, epidote rich, and locally silicified, occurring along the northern side of the pit access road. The second type is typified by coarsely crystalline actinolite with pods and veins of white rhombohedral calcite, and dark brown garnets along joints and cavities. Closest to the Coast Copper Intrusion is the third skarn type, consisting massive, dense, light to dark-brown garnets.

Mineralization in the Merry Widow pit can be divided into two categories. The first is massive and semi-massive sulphide, and the second is massive magnetite and magnetite-calcite breccia. Overlapping of the two is minimal.

Sulphide mineralization in the Merry Widow main pit is concentrated in the northeast walls and benches. The only other sulphide occurrence is apparently fault bound, high up on the north end of the headwall. Sulphides occurring in the northeast area are primarily chalcopyrite, pyrrhotite, pyrite and aresenopyrite. The first three form a massive sulphide body.

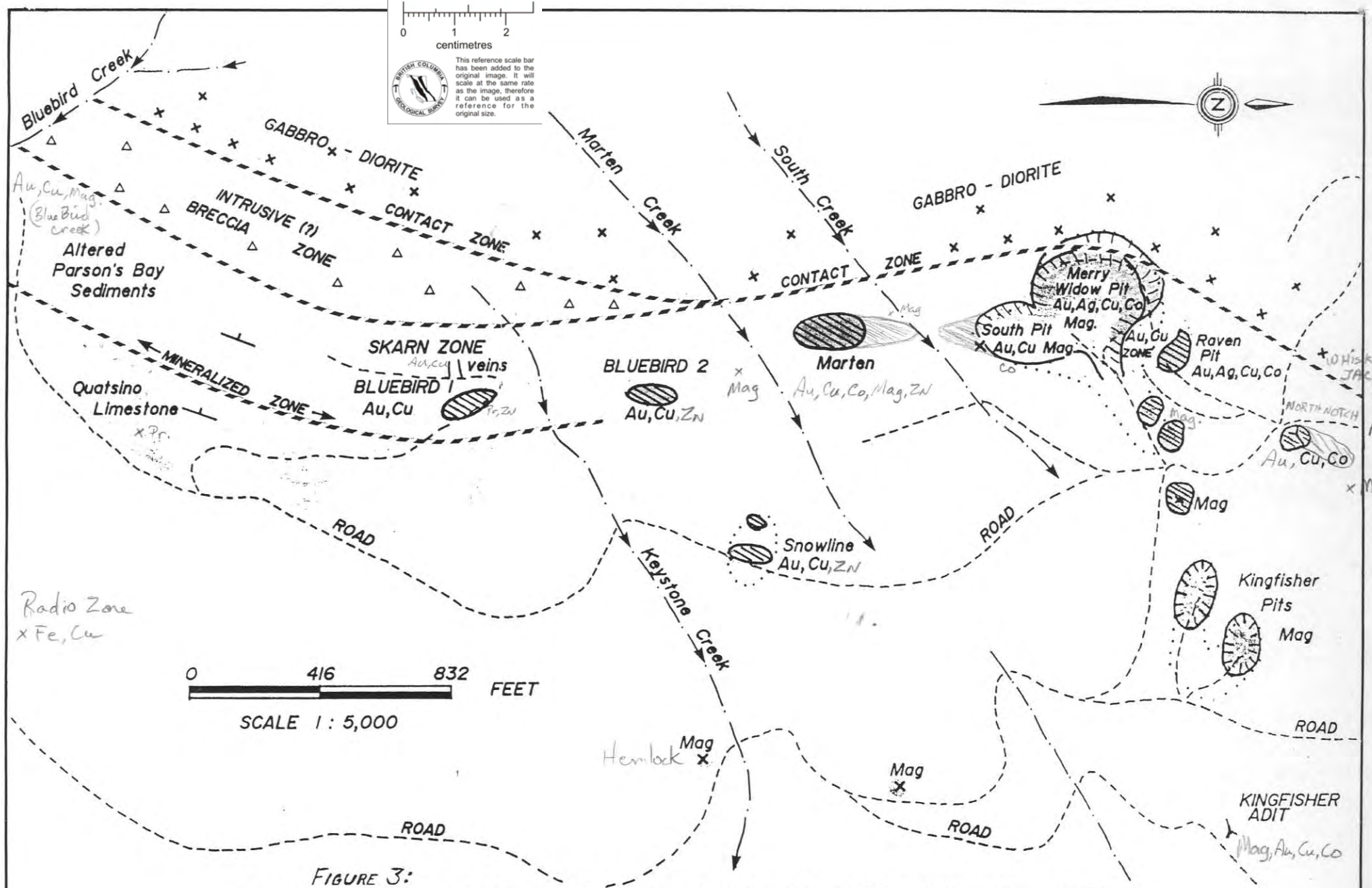


FIGURE 3:

MINERAL ZONE OF THE MERRY WIDOW PIT AREA

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+ Notes by L. Laird June '90

2.0 OPAQUE MINERALOGY

Due to the nature of this study, calc-silicate minerals were not examined. The opaque mineralogy was examined microscopically, and select grains were analyzed with the scanning electron microscope (SEM) and energy dispersive x-ray spectrum (EDS) to determine their chemistry. The mineralogy will be discussed by showing, with references to samples. A total of 9 samples from the Merry Widow pit and surrounding showings were examined, (See Figure 3 for locations) and form the basis for this report.

2.1 MERRY WIDOW MAIN ZONE

A total of 3 polished sections were examined from this region. The main Merry Widow pit consists of massive chalcopyrite containing large pyhrrotite blebs, with some areas of massive pyrite exhibiting annealing grain texture.

Massive chalcopyrite makes up approximately 30% of this area and consistently shows flow textures around other minerals. Within the pyrite zone, the chalcopyrite is in small euhedral grains isolated by pyrite grains.

Pyrite is generally well intergrown with pyrrhotite, and occasionally displays a flow texture. Pyrite makes up less than 25% of the total volume, and is a secondary phase in most places.

Cobaltite occurs as large pinkish grey euhedral crystalline masses and often hosts gold in the Merry Widow Main Zone. The cobaltite is overgrown on its margins by chalcopyrite and is not a major constituent in the Main Zone.

Sphalerite occurs as exsolution crosses and as small (10 um) blebs within the chalcopyrite and pyrrhotite masses (Plate 1). It is skeletal and fibres follow the crystallographic planes of the chalcopyrite as described by Wittur (1961).

Magnetite occurs in the Merry Widow pit as massive grains and is reported as being colloform (Wittur, 1961). Its habit in fissures is skeletal, replacing chalcopyrite, sphalerite and pyrrhotite on mineral margins.

No visible gold was seen in these samples although assay results indicate anomalous gold values averaging 0.7 oz/T. Gold values increase with increased values of cobalt and arsenic

The gangue minerals visible in hand samples are calcite, garnets, quartz and diopside minerals, typical of a skarn type deposit.

2.2 MERRY WIDOW LAIRD ZONE

The Laird Zone is located within the Merry Widow pit and is characterized by massive magnetite and magnetite-calcite breccia. Two samples from this zone were examined for their gold. Minerals in this zone are magnetite, calcite, cobaltite and minor amounts of chalcopyrite.

Magnetite is massive and locally colloform with bands outlining compositional differences. Magnetite is crosscut by calcite veinlets and contains finely disseminated pyrite cubes.

Cobaltite occurs as large euhedral crystalline masses in contact with pyrite and magnetite. The composition of this

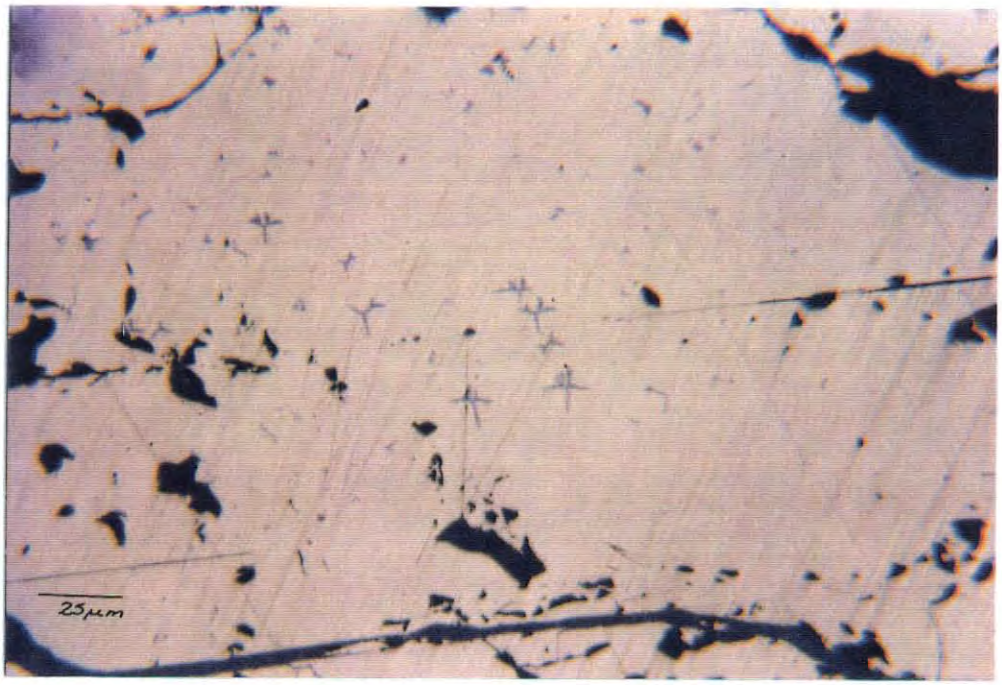

Plate 1: Exsolution crosses of sphalerite in chalcopyrite. Sample MW Main Zone 1.

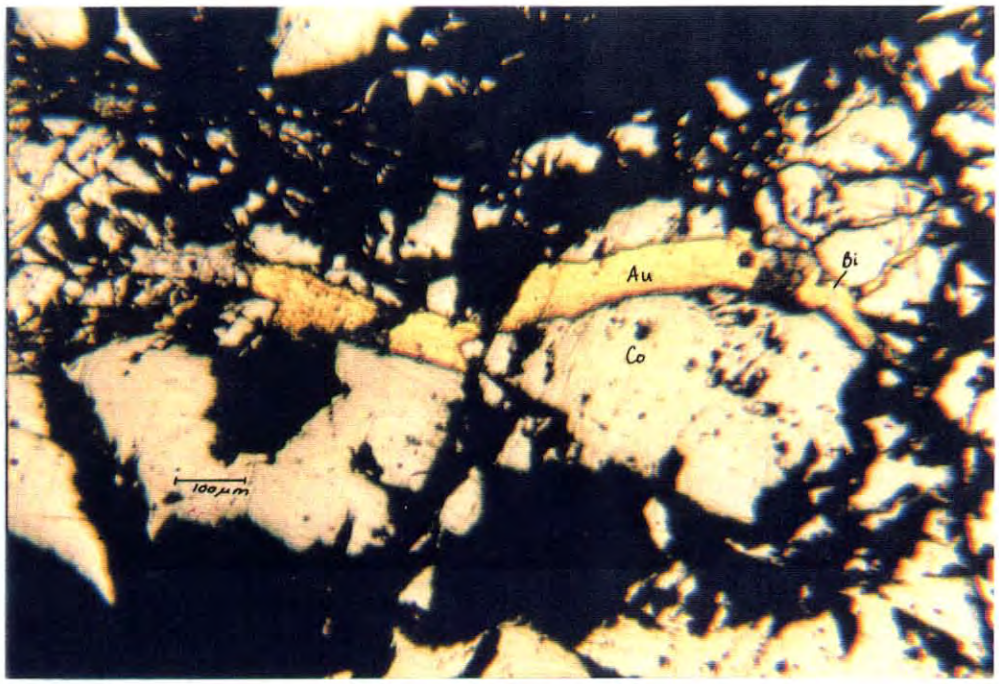

Plate 2: Gold occurrence in cobaltite with minor amounts of tellurobismuthite. Sample MW Laird Zone 2.

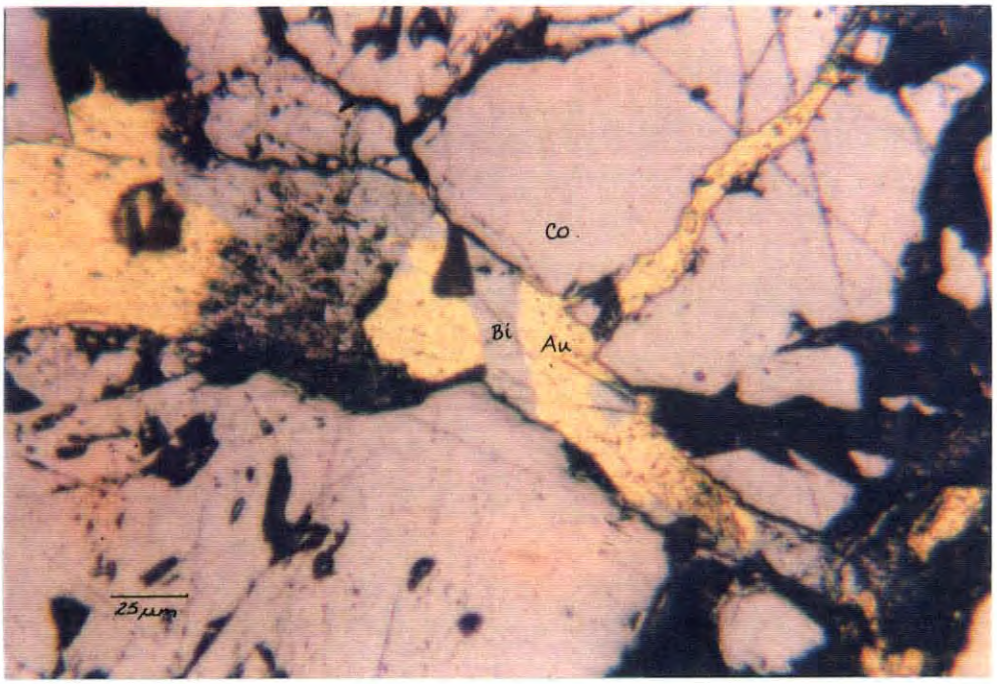

Plate 3: Gold with tellurobismuthite as fracture filling in cobaltite. A closer view of Plate 2.

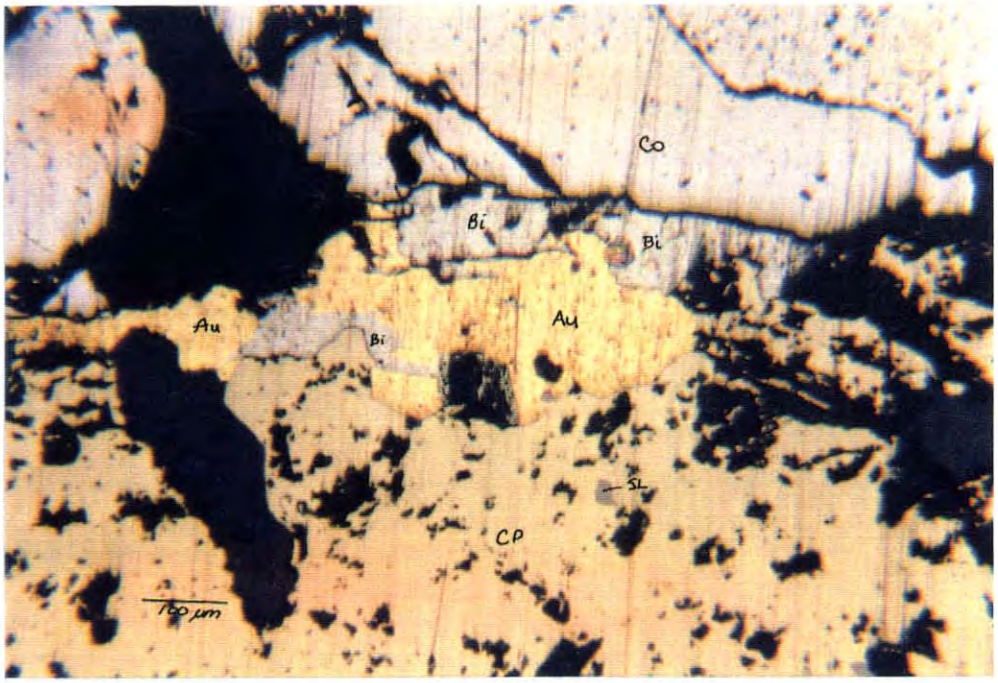

Plate 4: Sample MW Laird Zone 1, containing gold, tellurobismuthite, cobaltite and chalcopyrite. This sample was examined under the SEM.

Plate 5: SEM Back scatter image of gold and tellurobismuthite. Sample MW Laird Zone 1.

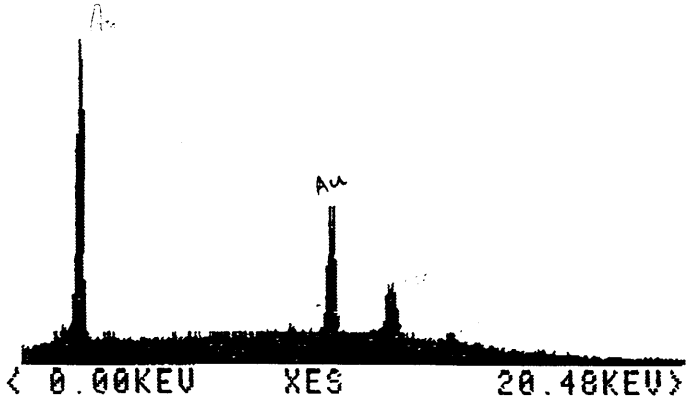

Figure 4: Energy dispersive x-ray spectrum of gold. Plate 5 shows location.

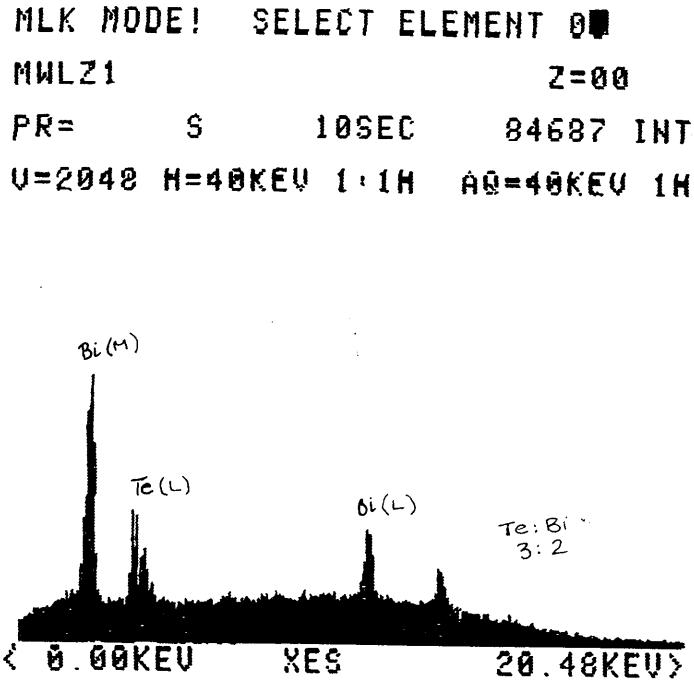

Figure 5: Energy dispersive x-ray spectrum of tellurobismuthite as seen in Plate 5.

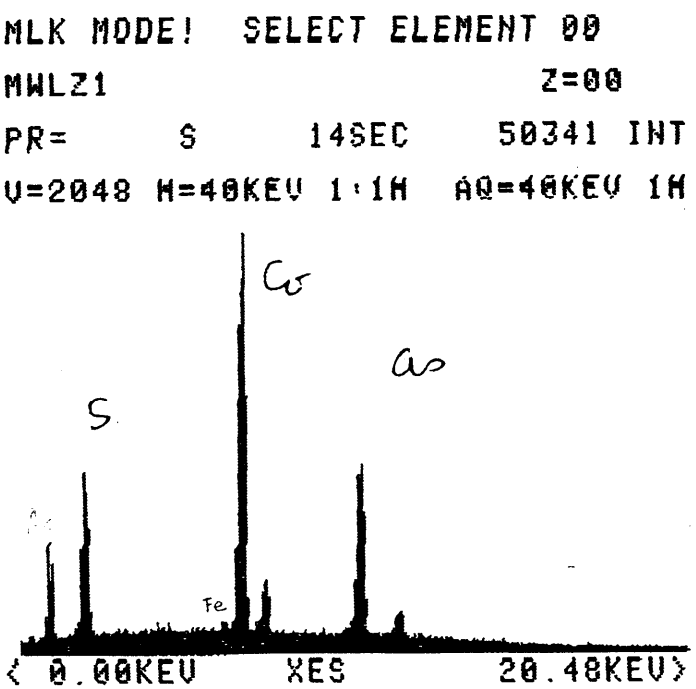

Figure 6: Energy dispersive x-ray spectrum of selected cobaltite grain. See Plate 5 for location.

mineral was determined by SEM/EDS analysis (Figure 4; Plate 2). In both samples from the Laird Zone, the cobaltite is associated with gold and tellurobismuthite (Plates 3, 4, & 5). Gold occurs at grain boundaries and in fractures in the cobaltite. The gold has an irregular shape and is anisotropic. Precipitation of the gold, paragenetically later than the high temperature cobaltite. may have been caused by the cobaltite itself. The gold is relatively pure containing negligible amounts of silver as determined by SEM analysis (Figure 5).

Associated with the gold is a Bi-telluride, possibly tellurobismuthite (Bi_2Te_3) occurring as a soft grey mass on the margins of the gold. This phase is anisotropic like the gold, and was identified in sample MW Laird Zone 1 with the SEM/EDS (Figure 6). The identification of this mineral was achieved through the comparison of other EDS printouts until a match with a known standard was made. Tellurobismuthite in both samples is in direct contact with gold and occurs in the same fracture filling as the gold.

Chalcopyrite makes up interstitial grain boundaries between cobaltite and magnetite. It creates the matrix of brecciated calcite and magnetite but is only a minor phase in the Laird Zone.

Gangue minerals in the Laird Zone are primarily calcite and pyrite with small amounts of marcasite. Calcite occurs as euhedral rhomboids between sulphide lenses and locally grades into coarse Iceland spar.

2.3 RAVEN COPPER

Two samples were examined from the Raven Copper pit, located 100 m north of the Merry Widow pit (Figure 3). The main minerals are massive chalcopyrite containing stringers of pyrrhotite and pyrite. Blebs of magnetite occur and are contingent with stringers of bornite.

Chalcopyrite is both massive with internal sphalerite exsolution crosses and disseminated along the margins of magnetite grains.

Pyrrhotite comprises approximately 25% of the bulk mineralization, and is commonly fine grained containing blebs of chalcopyrite. Growth is primarily along fractures and small pyrite grains are visible within the pyrrhotite.

Magnetite occurs both in massive and disseminated form growing in fractures of chalcopyrite. Where massive it has radiating colloform crystal habit and compositional banding. Magnetite makes up less than 10% of the showing.

Euhedral cobaltite occurs with poikiloclasts of chalcopyrite (Plate 6). Cobaltite is not common in the Raven Copper pit and only makes up 1% of the bulk mineralogy.

Sphalerite occurs as exsolution crosses and as overprinting skeletal crystals on the margins of the chalcopyrite grains. Larger sphalerite grains contain inclusions of chalcopyrite which follow the crystallographic planes of the sphalerite (Plate 7).

Gangue minerals in this showing consist of Fe-rich calcite,

diopside and pyrite. Minerals are small with calcite occurring as discrete veinlets in the sulphides.

2.4 THE MARTEN SHOWING

The Marten Showing is located south of the Merry Widow pit and is within altered Parson's Bay Formation. Crystallinity of minerals varies greatly in the hand samples from this showing. The majority of the showing consists of pyrite, chalcopyrite and pyrrhotite with lesser amounts of arsenopyrite, sphalerite and magnetite.

Pyrite and pyrrhotite occur together in annealed granular masses. They create some stringers between other minerals which may be related to a secondary growth of the minerals.

The chalcopyrite is well fractured and occurs in large masses containing blebs of pyrrhotite, magnetite and exsolution crosses of sphalerite. Some of the chalcopyrite grains exhibit internal zoning in hexagonal patterns.

Cobaltite or arsenopyrite occurs as euhedral grains within magnetite and as anhedral annealed grains within pyrite and pyrrhotite masses. These grains were not probed with the SEM/EDS and consequently a positive mineral identification with a microscope was not achieved.

Magnetite occurs in fracture fillings and as skeletal textures creating borders between chalcopyrite and pyrite phases as described in previous showings.

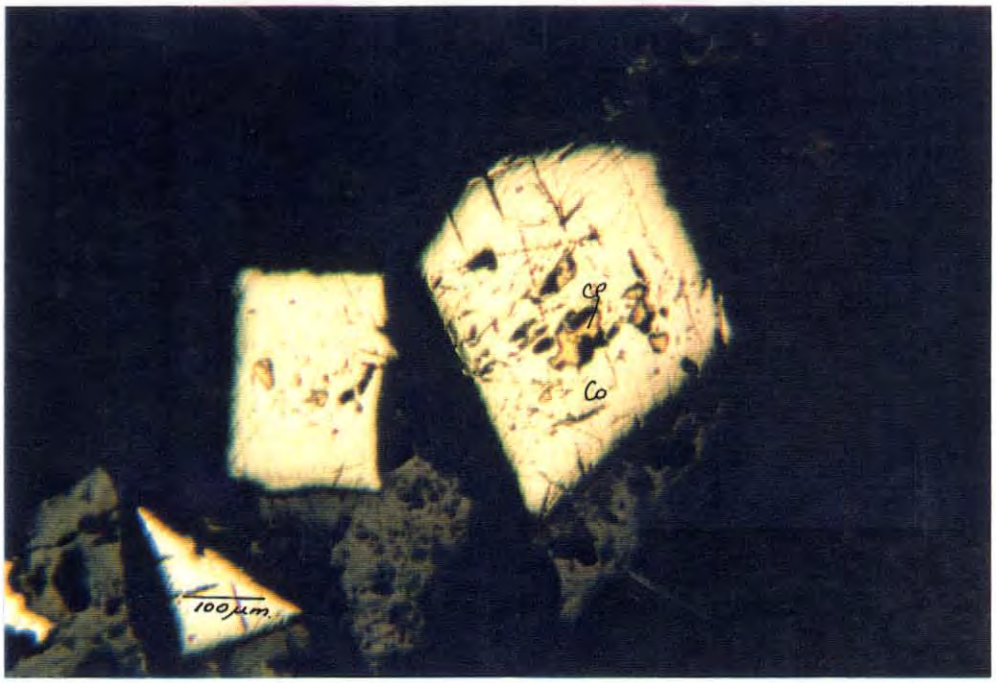

Plate 6: Cobaltite with chalcopyrite poikiloblasts. Sample MW Raven Copper 1.

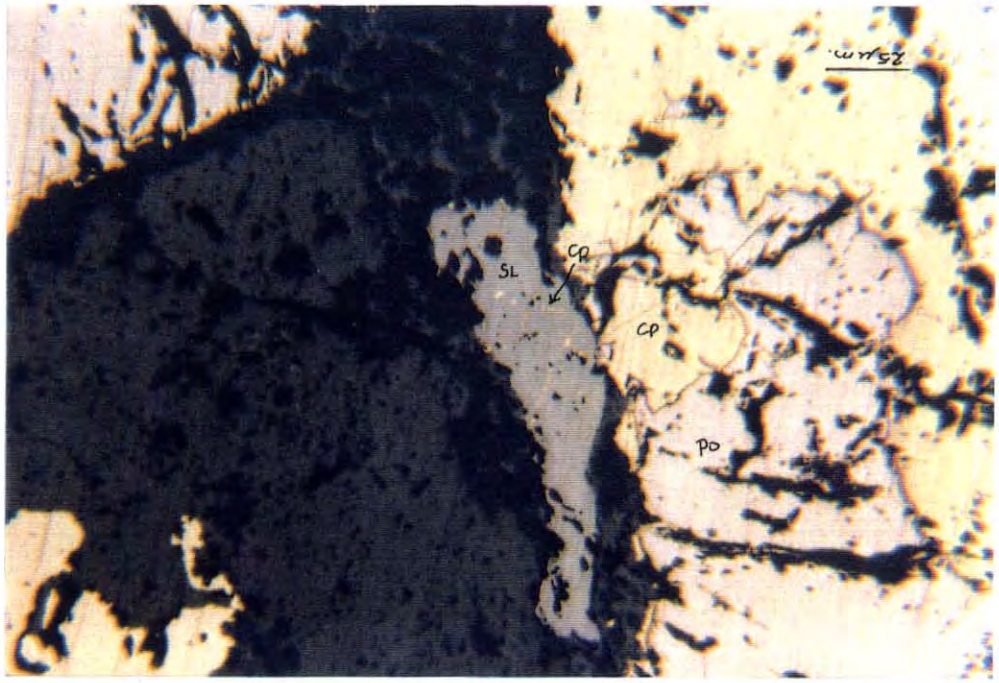

Plate 7: Sphalerite grains containing inclusions of chalcopyrite following crystallographic axes. Sample MW Raven Copper 2.

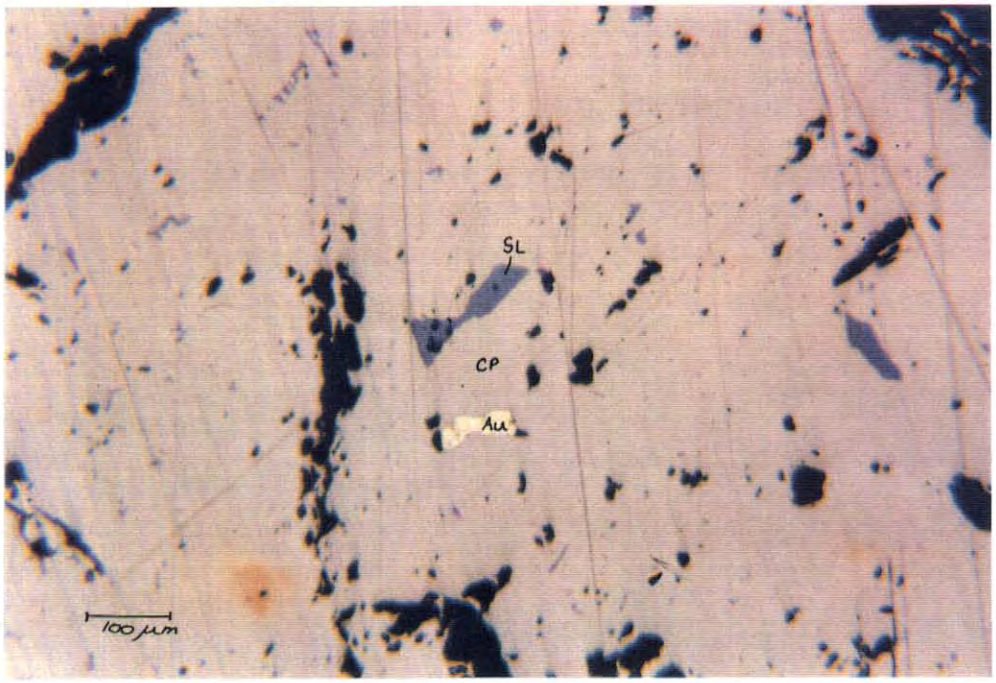

Plate 8: Gold and sphalerite in massive chalcopyrite. Sample MW Bluebird 2.

2.5 BLUEBIRD 2 SHOWING

The Bluebird Showing is located south of both the pit and Marten Showing within altered Parson's Bay Formation. Minerals present are chalcopyrite, pyrrhotite, sphalerite, pyrite, marcasite, cobaltite, cuprite, and gold.

Chalcopyrite is present as massive grains containing sphalerite exsolution crosses. Pyrite occurs in euhedral cubes within the chalcopyrite. A secondary copper phase (cuprite) lies along margins of the chalcopyrite and makes up less than 1% of the mineralization.

Pyrrhotite is euhedral and has magnetite growths on grain margins as well as in void spaces. Pyrrhotite is closely associated with pyrite and marcasite occurrences; all three phases exhibit annealed and flow textures.

Gold is found in chalcopyrite in an irregular mass, without contact to cobaltite (Plate 8). The gold appears to have formed simultaneously with the chalcopyrite.

3.0 DISCUSSION

Mineral assemblages and textures studied were quite consistent throughout the four showings studied. Chalcopyrite, where massive, contained sphalerite exsolution crosses in all showings. Copper bearing minerals other than chalcopyrite were only identified in the Raven Copper pit where cuprite and bornite were identified. Chalcopyrite abundance is economically recoverable from many of the showings and is one of the major

mineral groups in this area.

Gold in the Merry Widow area is associated with cobalt and arsenic. Assay results mirror this trend for other sample localities within the pit. Gold appears to be a later phase than the cobaltite and has precipitated or been remobilized on the margins of this mineral. It has been suggested that cobaltite mineralization may be associated with gold occurrences as seen in other skarn properties on Vancouver Island (J. Laird, pers. comm., 1989). Gold in the Bluebird 2 Showing is not associated with cobaltite but may be an isolated case due to the distance between occurrences.

Tellurobismuthite associated with gold occurs in other skarn deposits (eg. Hedley, B.C.) This mineral is contemporaneous with the gold and appears as fracture fillings as well.

4.0 CONCLUSION

The Merry Widow and surrounding showings all carry high values of gold and copper for a magnetite skarn. The copper values are quite consistent throughout the showings.

Gold in the assay results has a higher value when associated with higher cobalt and arsenic values. Associated with the gold in the Merry Widow pit is the paragenetically equivalent mineral, tellurobismuthite. Gold is later than the copper mineralization occurring in fracture fillings. The gold is pure with nominal amounts of silver associated with it, as determined through SEM/EDS analyses.

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APPENDIX I

ROCK DESCRIPTIONS **SAMPLE NUMBER** MW MAIN ZONE A 6112- 6125

LOCATION/PURPOSE -

MEGASCOPIC DESCRIPTION - Massive fine grained pyrite with euhedral xtle shapes. Euhedral Quartz xtls lie within this and are up to 6 mm long. Small amounts of disseminated chalcopyrite exist and small grossular garnets are visible.

MICROSCOPIC DESCRIPTION -

phases present	**areal %**
Py	
CP	
garnets	

COMMENTS:

Py: Euhedral xtls w/ "island" texture, well broken up.

CP: Euhedral CP grains, isolated w/1 Py grains

garnet: Reddish brown garnets, euhedral, in contact w/ Sx.

NO other phases present.

ROCK DESCRIPTIONS

SAMPLE NUMBER HW MAIN ZONE B. 6112 - 6125

LOCATION/PURPOSE - VANCOUVER ISLAND- MERRY WIDOW MINE.

MEGASCOPIC DESCRIPTION - Massive CP w/ PO [illegible] + some py [illegible] visible in CP as well. Looks like PO + py grew into the CP. No [illegible] is in this [illegible].

MICROSCOPIC DESCRIPTION -

phases present	areal %
CP	63%
PO	22%
SL	3%
Mg	6%
Py	5%

COMMENTS:

>CP: MSSV w/ [illegible] to grain inside. Some SL exsol'n crosses visible

>PO: some SL grains [illegible] zones from mssv to highly fractured, replacement of PO by CP

>NS: feathery texture around fractures it is growing into. Some blebs w/ CP + is replacing SL in some fractures, and PO.

>SL: Exsol'n crosses in CP, some small blebs w/ in the PO.

ROCK DESCRIPTIONS **SAMPLE NUMBER** MW 6107 1
MAIN ZONE

LOCATION/PURPOSE - VANCOUVER ISLAND - MERRY WIDOW MINE

MEGASCOPIC DESCRIPTION - Massive CP with alt'd diopsitic (chl?) rock stringers ~5 mm wandering through. Blebs and stringers of PO are visible. Some disseminated Arsenopyrite + localized rhombohedral calcite crystals are present.

MICROSCOPIC DESCRIPTION -

phases present	areal %
CO	30%
PO	25%
Qz	13%
Py	25%
Au.	> 1%
CP	5%
SL.	> 1% (x-solin crosses).

COMMENTS:

>Py: MSSV w/ no discernable xtles. Well intergrown w/ Po.

>CP: Large euhedral xtles w/ Py, PO mtx. Xtles contain exsol'n SL crosses. It has grown into the CO along cracks + fractures

>CO: Co' is in MSSV, large grains. Partially overgrown by CP. Small blebs of Au are w/ fractures, encased by the CO

>PO: Totally intergrown w/ Py. Look Pocky + alt'd. Some blebs of CP are w/, other than the large euhedral xtles.

ROCK DESCRIPTIONS **SAMPLE NUMBER** MW LAIRD ZONE 1

LOCATION/PURPOSE - [illegible] McKay Widow Pit [illegible]

MEGASCOPIC DESCRIPTION - Largely grey f.g. magnetite with calcite veins x-cutting. Crystallized against the magnetite is Asp and Cp. These are also present within the calcite veins. Cobaltite and pyrite are also phases present here. The magnetite is locally colliform + contains bands of f.g. alteration.

MICROSCOPIC DESCRIPTION -

phases present	areal %
Calcite	30%
Magnetite	20%
Chalcopyrite	12%
Cobaltite (?)	35%
[illegible] (?)	[illegible]
Gold	1%

COMMENTS:

> Calcite: is present in anhedral xtls as well intergranular filling in the magnetite striae seen.

> Cp: makes up interstitial grain boundaries between the cobaltite + magnetite. It looks 2° and makes up the matrix for a cc. mg brxx.

> Gold: is seen on the margin of the Cp + Co in a long sliver. In blebs in two different locations. Anisotrop

> Pyrite: is v f.g. and occurs like the Au within the Cp looks blebby + lies adjacent to Mg.

> Cobaltite: larger grains with few fractures. Au is closely associated w/ this phase.

ROCK DESCRIPTIONS **SAMPLE NUMBER** MW LAIRD ZONE 2

LOCATION/PURPOSE - VANCOUVER ISLAND - HENRY WINDOW MINE

MEGASCOPIC DESCRIPTION - Grey f.g. Mg with calcite veins x-cutting. Mg is equi-form in places. Calcite is xtllized against Mg + small amounts of Cp are visible. Small blebs of py are also present along Cc veins.

MICROSCOPIC DESCRIPTION -

phases present	areal %
Mg.	90 %
Co	19 %
Cc	9 %
Py + Sp	1 %
Au	<1 %

COMMENTS:

Mg - ranges mssv to f.g. w/ small calcite veinlets and blebs throughout. Banding texture is seen approaching Co margin. Some finely dissem. py is also present as Mg grains get smaller

Co - Mssv grains w/ py at Mg margins. Au is present ~~at~~ grain bdry b/w the Co. creating disjointed veinlets. Au is also at gr intersections as blebs.

ROCK DESCRIPTIONS **SAMPLE NUMBER** MW RAVEN Cu 1

LOCATION/PURPOSE - VANCOUVER ISLAND - MERRY WIDOW MTN

MEGASCOPIC DESCRIPTION - MSSV cp w/ stringers of Po and lesser amts of Py. Gangue is calcite w/ f.g. diopside needles in the mtx. Mg is present in stringers + some blebs. Alt'n of CP ∴ Bn is present.

MICROSCOPIC DESCRIPTION -

phases present	areal %
Cp	50%
Cc.	25%
PØ	20%
Mg	<5%
Co	<1%
Sl	<1%

COMMENTS:

>Cp: MSSV containing cross shaped x-soln laths of sphalerite [illegible] tend to line up. Seen under med pwr.

>Sl: Sl makes [illegible] crosses w/ the cp, and looks like secondary growth on the cracks of cp. It makes a very feathery texture.

>Mg: MSSV + feathery textures seen looks to be 2° to the cp.

>Cc: is in descrete veinlets and because of color may be fe-rich

/97 >Po: looks like it is blebby surrounded by cp.

>Co: [illegible] [illegible] of Cp [illegible] [illegible] [illegible] xtls.

ROCK DESCRIPTIONS **SAMPLE NUMBER** [illegible]

LOCATION/PURPOSE - HERICH WIDOW MTN.

MEGASCOPIC DESCRIPTION - MSSV CP w/ stringers of Po and lesser amts of Py. Gangue is calcite with some f.g. diopside in the mtx. The Mg stringers + blebs. Some stringers of Bornite (?) could be oxidized Cu.

MICROSCOPIC DESCRIPTION -

phases present	areal %
CP	45%
PO	25%
Mg	3%
SL	[illegible]
Py	3%
CO	7%
gangue	17%

COMMENTS:

> CP: Disseminated + MSSV in places. Found growing in margins of Mg.

> Pø: f.g. contains blebs of CP, SL + Mg. Looks like it has grown along fractures; Py inclns

> Mg: radiating colliform + rabbit. Feathery textures at margins, growing into CP

> SL: Exsolin crosses + bleb in CP, blebs in Pø, large grains contain Pø + CP as inclns that follow CLVG.

> Py: [illegible] in the shape of Po.

/97

ROCK DESCRIPTIONS **SAMPLE NUMBER** MW HARTEN

LOCATION/PURPOSE -

MEGASCOPIC DESCRIPTION - Py ranging in size from f.g → cse xtline + euhedral xtles. Well broken up + fractured. Fractures are filled w/ Mg, CP + euhedral ASP. Some Fe in the Mg rich areas. CP is in stringers — [illegible]. Mg is f.g. + oxidized [illegible] w/ Red, Mg creates [illegible] between Asp + CP fractures

MICROSCOPIC DESCRIPTION -

phases present	areal %
CP	30%
PY	25%
PO	25%
As /Co	7%
SL	3%
MG	5%
gangue.	5%

COMMENTS:

>CP: Contains Po blebs that are annealed into CP. CP also has large grains of SL, MG. SL exsoln crosses are present. CP is fractured w/ MG inbetween fragments Strong fracture planes (CLVG) filled w/ SL. Internal zoning in some grains

>PY: Annealed grains w/ Po, some stringers? x-cutting + creating bands

>CO: Euhedral grains w/ MG and some annealed ones in the PY PO mix.

/97 >MG: In vein fillings, fracture fillings, and some feathery textures Creates border between CP + PY phases.

ROCK DESCRIPTIONS **SAMPLE NUMBER** HW BLUE BIRD 2

LOCATION/PURPOSE -

MEGASCOPIC DESCRIPTION - Hagnetite w/ euhedral calcite xtls in the interstitial cracks. Blebs of Sx in the form of Py, Py and ASPy. These are made up of f.g. xtls that have cracked blebs. Some euhedral Py + ASP on weathered surface are visible oxidized to Goethite + Jarosite w/ some black ash'n mineral or grains. CP is MSSV in places.

MICROSCOPIC DESCRIPTION -

phases present	areal %
Py (MC)	15%
Po	20%
CP	27%
SL	> 2%.
ASP/CO	5%.
Au	> 1% in CP
Calcite	gangue.
Cuprite	> 2% Assc w CP.
Mg.	10%.

COMMENTS:

> Py: Hexacite, + Py cubes visible. Assoc w/ Po, + the two are f.g. + well mixed.

> Po: Cubes have Mg growths on margins of grains in void spaces.

> CP: MSSV w/ skeletal SL crosses. Au is in the MSSV CP + is small w/ blebs. Some Py cubes w/ + CP.

> Cup: On Margins + fractures w/ + CP; is blwish, Pleoch. + has IR-(red)

> AP/CO: Small euhedral xtls w/ + Mg. MSSV w/ no inclns

/97