Cent. Files

GEOLOGICAL REPORT ON THE WOEWODSKI CLAIMS WOEWODSKI ISLAND, SOUTHEAST ALASKA

PETERSBURG (C-3, C-4) QUADRANGLE
LATITUDE 132N, LONGITUDE 57W

FOR

WESTMIN RESOURCES LIMITED
VANCOUVER, BRITISH COLUMBIA

BY

GEORGINA PRICE, M.Sc., P.Geo.
1698 CONSTITUTION ROAD
BLACK CREEK
V9J 1G2

AUGUST 9, 1993

RPT/93-010

TABLE OF CONTENTS

Cominco Alaska Exploration

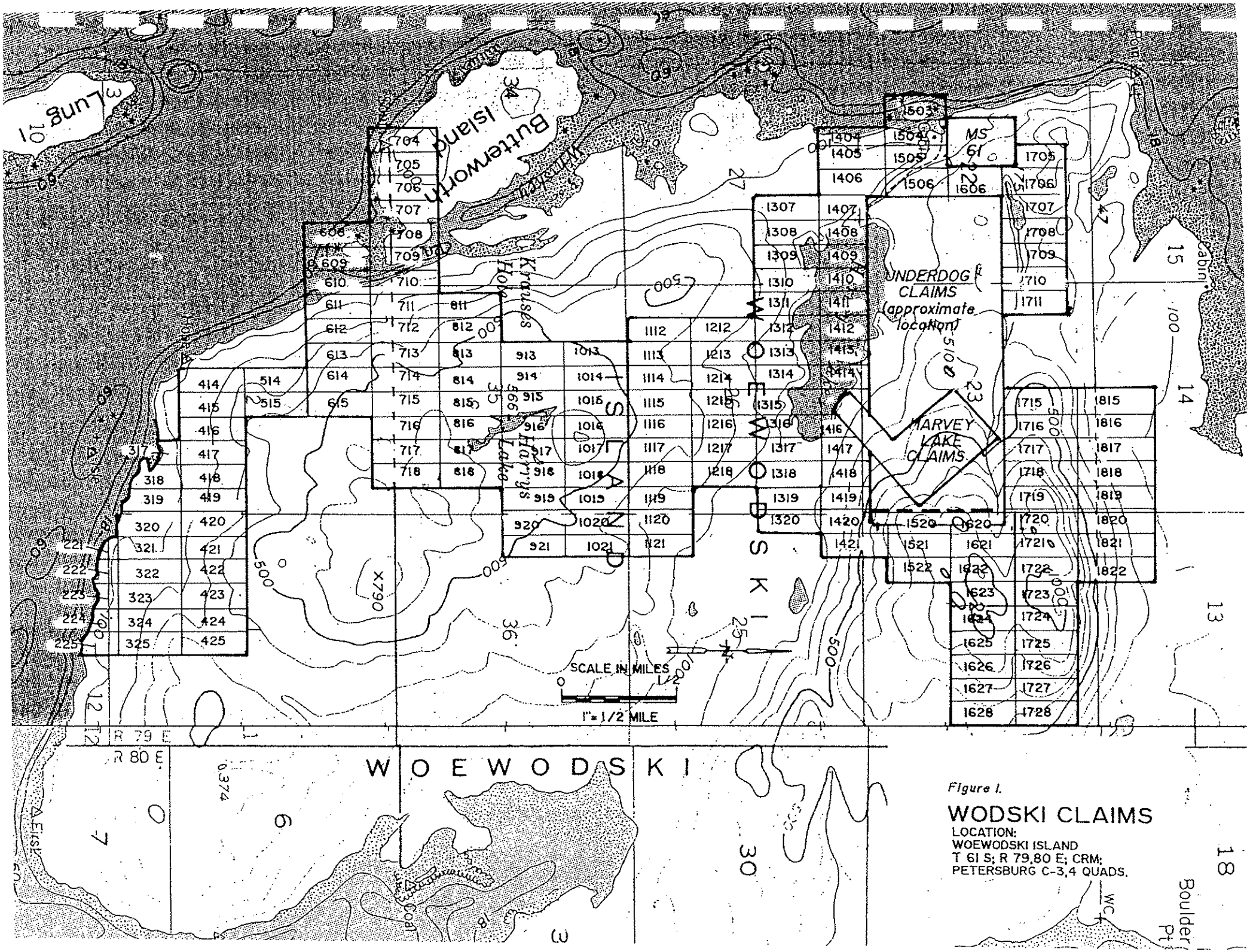


Figure 1.

WODSKI CLAIMS

LOCATION:
WOEWODSKI ISLAND
T 61 S; R 79,80 E; CRM;
PETERSBURG C-3,4 QUADS.

LIST OF APPENDICES

Appendix

Cominco Alaska
Exploration

LIST OF FIGURES

LIST OF PLATES

1.0 SUMMARY

The area comprising 149 claims owned by Cominco Alaska on Woewodski Island was examined for its potential to host "Green's Creek" style VMS ore.

The island had been mapped (1"=1,000'); silt, soil and rock samples were extensively collected; surface and airborne geophysical surveys were done; and limited percussion and diamond drilling was carried out, all by a variety of owners/operators since 1979. Thirteen mineralized showings were found over this time. In addition there was minor drifting and milling of precious metal-bearing material, done at the turn of the century at three showings.

Stratigraphy is reasonably well known: mafic flows and clastics, overlain by calcareous sediments/volcaniclastics, capped by shales, and intruded by diorites and gabbros. Massive sphalerite and silver-rich galena mineralization is found at the sediment volcanic interface as stratabound, deformed and dismembered lenses. There were at least three phases of deformation; S_2 schistosity and F_2 folds dominate and appear to control the morphology of the sulphide bodies.

Much work remains in order to "make this prospect into a mine". Remapping of the central portion of the island, and conducting a careful lithogeochemical study may permit the discovery of further prospects or allow better correlation and expansion between existing showings. Diamond drilling in the Lost Lake and Mad Dog areas will add immediate tonnes, and hence value to the property.

2.0 INTRODUCTION

The purpose of the 1993 exploration program on Woewodski Island was twofold: examine the thirteen sulphide showings (Figure 1) for their potential as VMS deposits similar to that found at the nearby Green's Creek mine, and, by detailed and regional mapping, gain an understanding of the geological controls of the mineralizing processes such that economic quantities of mineralization can be located in the future. Concern had been expressed by the project manager regarding the influence structural geology, so special attention was paid to that aspect.

2.1 1993 Exploration Program

The procedure consisted of: nine days spent by the project geologist reviewing data on the property that had accumulated over the past 15 years; 21 days in the field passed mapping and prospecting by the geologist, a prospector and a helper/surveyor; 4 days transpired for travel/mobilization-demobilization; and 2

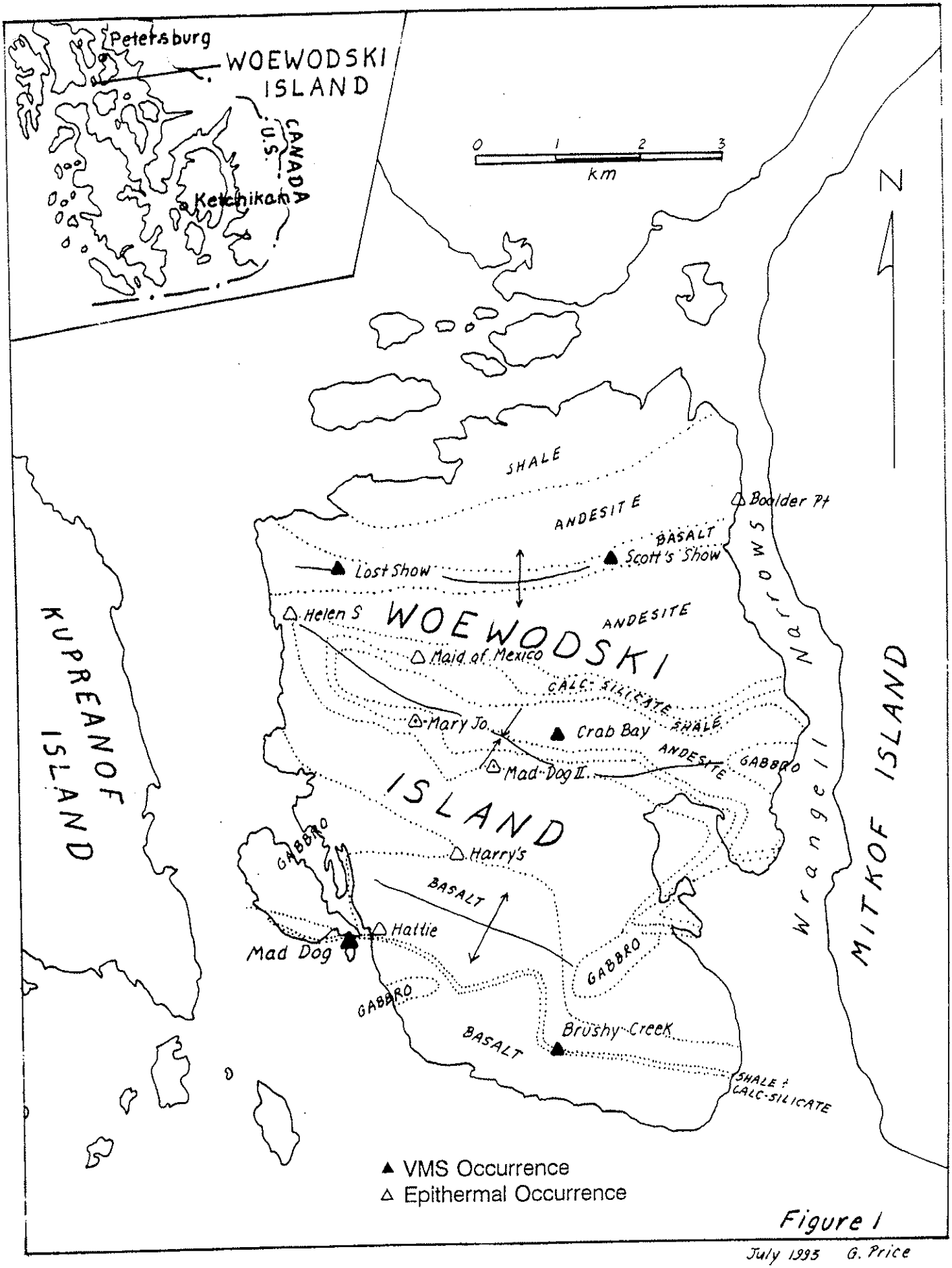


Figure 1

July 1993 G. Price

days were occupied showing a Westmin geologist some of the mineralized exposures and the general stratigraphy. An additional 12 days were spent collating data, drafting and writing this report. A detailed account of time allotted to various tasks is given in Appendix A.

2.2 Location and Physiography

Woewodski Island is located about 40 km south-southwest of Petersburg in the geographic region referred to as "Southeast Alaska" (Latitude 132N, Longitude 57W). High rainfall and resultant vegetation are typical of this coastal region: mature, moderately dense coniferous forest with muskeg in areas of gentle topography. Vegetation and dead trees are unfortunately abundant in the creek valleys where one can find **some** outcrop. Tide tables are required as much of the best exposure is found in the intertidal regions which are uncovered only for a few hours a day. Maximum elevation on the island is 335 m. The weather can be inclement to the point of not permitting small boats or aircraft to operate.

Access from Petersburg is either via boat or helicopter. There are two private cabins, and two public Forest Service cabins on the island. By law the public cabins are not to be used for commercial purposes. As the 1993 mapping program was small, lacking in machinery and of short duration, one of the owners of the private cabins was agreeable to renting their accommodation. The travel time to the most distant showing was approximately 40 minutes by boat plus and additional 50 minutes on foot.

2.3 Land Status

Cominco Alaska holds 149 contiguous Federal claims on Woewodski Island as shown in Table 1, and on Figure 2. Concurring with the joint venture agreement with Westmin Resources Limited, Cominco is responsible for the maintenance of claim lines in accordance with Alaskan mineral exploration regulations. However, during the 21 days in the field, nary a blazed/flagged claim line or current post was seen. A few posts from previously staked claims, and the Forest Service surveying pegs on the patented Helen S claim, were observed.

The only other claims on the island are the previously mentioned Helen S block, and the Harvey Lake (Maid of Mexico showing) claims. Colony Pacific formerly held a block of approximately 20 units that were staked in 1985, and have since lapsed. Amoco also held the RAAT claims, staked in 1978, although it appears as though there may have been an overstaking problem. These claims have also lapsed.

TABLE 1 CLAIM LOCATION DATES	
Claim Name	**Location Date**
Wodski 221-225	07-29-85
Wodski 317-325	07-28-85
Wodski 414-416	07-28-85
Wodski 417-425	07-28-85
Wodski 514-515	07-31-85
Wodski 608-615	07-31-85
Wodski 704-707	07-31-85
Wodski 708-718	08-01-85
Wodski 811-818	08-01-85
Wodski 913-921	08-02-85
Wodski 1013, 1014	08-01-85
Wodski 1015-1021	08-02-85
Wodski 1112-1121	08-02-85
Wodski 1212-1218	08-03-85
Wodski 1312-1318	08-03-85
Wodski 1404-1406	08-01-85
Wodski 1407-1412	08-02-85
Wodski 1413-1415	08-03-85
Wodski 1416,1417	08-02-85
Wodski 1418-1421	08-03-85
Wodski 1503-1506	08-01-85
Wodski 1520-1522	08-04-85
Wodski 1606	08-01-85
Wodski 1620-1628	08-04-85
Wodski 1705-1711	08-23-85
Wodski 1723-1728	08-04-85

Land use other than mineral exploration is limited to a small amount of recreational camping, hunting and fresh water fishing. Crab traps were observed in the Crab Bay area, and in a bay on the west side of Woewodski Island, north of Butterworth Island. Shrimp fishermen were heard dragging their nets one morning, and a single kayaker was seen camping on Butterworth Island.

Please refer to Appendix B for a complete list of BLM numbers, recording dates, book pages and township/range locations.

2.4 Permitting

Ground that is located above high tide line on Woewodski Island (with the exception of the patented claims) is under the jurisdiction of the Tongass National Forest Service. A "Plan of Operations for Mining Activities on National Forest Lands" must be filed with and approved by the U.S. Department of Agriculture branch of the Forest Service at the Petersburg Ranger District office, prior to doing any work. Based on this plan of operations a cleanup bond will be required sufficient in size to remediate any surface disturbance.

In addition, if any work in this plan will disturb "wetlands", approval must also be received from the Regulatory Branch, Project Evaluation Section-South, Department of the Army, U.S. Army Engineer District, Alaska in Anchorage. Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Jeannine Lilly, U.S.D.A. Forest Service, per. comm.). Disturbance of such wetlands refers to filling and changing the course of water flow, by such activity as road and bridge construction.

Intertidal areas fall under the jurisdiction of the Aquacultural Regulations Branch of the Division of Governmental Co-ordination in Juneau. Please refer to Appendix C for addresses of aforementioned governmental offices.

2.5 Property History

The property history is presented below in note form. Please refer to Figure 3 for the locations of the various showings, soil grids and drill holes.

Early 1900's: Small amount of gold produced from the Helen S, Hattie and Maid of Mexico Mines (<200 m total drifting).

1929: Regional geology mapped by U.S.G.S. geologists A. Buddington and T. Chapin.

1978: Amoco flew airborne EM over Duncan Canal area and staked the RAAT claims along Harvey Lake, did "several thousand feet of core drilling"(?) (Eng, 1980).

1978: Staking of the AS claims, regional scale mapping, stream sediment, rock and soil geochemistry (1"=1 mile) was done by Resource Associates of Alaska for Houston Oil and Minerals Corporation (HOMC), in order to find VMS deposits; the

Hattie mine was mapped in detail, and an initial stratigraphic column and structural interpretation were done by P. Lindberg (Twelker and Rogers, 1978).

1979: Rock, soil and stream sediment geochemistry, mapping at 1"=1,000', and thin section analyses, was done by HOMC; Scott's Show soil grid was cut (Eng, 1980).

1980: More of the above, including >600 geochemistry samples, and >6100 m of VLF, EM mag and CEM was done over Mad Dog II, Scott's Show and other parts of the island by HOMC (Eng, 1980).

1981: HOMC had percussion drilling done in the Hattie Mine area, and at Brushy Creek: 22 holes, 438 m (Silverman and Eng, 1982).

1982: HOMC had 410 m of core drilling done at Brushy Creek, soil sampling at Mary Jo and Brushy Creek, and trenching at Scott's Show (Eng, 1983).

1983: HOMC did soil sampling and trenching at the Crab Grid (Eng, 1984).

1984: HOMC had 5 core holes drilled at Crab Cove (452 m), more soils sampled at Crab Cove, a magnetometer survey over Crab Cove and silt sampling on the east side of Woewodski (Eng, 1984).

1985: HOMC allowed claims to lapse, Cominco staked 149 claims and discovered the Lost Show; Colony Pacific did regional mapping and silt sampling (1:20,000) and staked the Underdog Claims.

1986: Amselco as a joint venture partner with Cominco (?) drilled 11 core holes (1,159 m) at Lost Show and calculated a geological inventory of about 0.5 mT grading about 8% Zn; a DIGHEM III electromag-resistivity-mag-VLF survey was flown over the island for Amselco; Colony Pacific did more regional work.

1987: Amselco drilled 4 more holes at Lost show and 3 holes in the Crab Cove area; Colony Pacific did more mapping.

1988: Amselco drilled 1 more hole at Lost Show and 5 holes at Scott's Show.

1989/1990: No work?

1991: Kennecott took over Amselco's properties, and Kennecott geologists re-examined the property for its epithermal gold potential by doing some silt and soil

sampling at Boulder Point, Hattie, Harvey Creek, Maid of Mexico and Mary Jo (Gundy, 1992).

1992: Cominco did 4,633 m of grid and orientation survey, dug 8 pits and took 117 overburden and weathered samples using a power auger in the Mary Jo and Harvey Lake area.

The value of the soil geochemistry may be questionable as much of the island is covered by muskeg and/or thick organic soil, as well as by glacial clays. However, it might be useful to make soil and rock geochemistry compilation maps that have **all** the data that has been collected over the years. Geophysical data could be studied in more detail; however, the presence of argillaceous shales and magnetic intrusive bodies may produce some interference patterns.

3.0 REGIONAL GEOLOGY

Woewodski Island is situated within and near the eastern margin of the belt of rocks referred to as the Gravina/Nutzotin subterrane of the Alexander terrane (Geherls and Saleeby, 1987). The Alexander terrane consists of a Palaeozoic arc sequence overlain by middle Palaeozoic clastic and carbonate strata that are unconformably capped by an Upper Triassic rift assemblage (Rubin and Saleeby, 1992). The volcanic rocks of Triassic age are documented to have "calc-alkaline characteristics typical of island arcs or back arc basins developed in continental crust" (MacIntyre, 1985). It is thought that the Green's Creek VMS deposits are hosted in a similar tectonostratigraphic assemblage to that found on Woewodski Island; both having been deposited in an island arc environment.

3.1 Stratigraphy

Brew et al (1984) and Gehrels and Berg (1984) of the U.S.G.S. have assigned some of the sedimentary and volcanic rocks that are exposed on Woewodski Island to the Upper Triassic Hyd Group. The remainder of the non-intrusive rock has been labelled Mesozoic greenstone, phyllite and schist. Gabbroic rocks have been referred to as Mesozoic meta-gabbro. Felsic to intermediate intrusive rocks are of Cretaceous age, and unaltered basalt dykes of Tertiary age.

The Hyd Group is composed of felsic to intermediate volcanic flows and breccias, limestone and argillite.

Hall (1987) has expressed concern that the regional relationships of the Duncan Canal area are not well understood due to the presence of the unconformity which

separates rocks of similar lithologies. Thus the exposures on Woewodski may in fact belong to a group of rocks which are not of the same tectonostratigraphy of the Green's Creek Mine--the Stephens Passage Group.

3.2 Structure

For the most part, rocks of the Alexander terrane are said to be relatively undeformed, except near the eastern margin where late Mesozoic west-vergent imbricate thrusting has disrupted strata, and "older fabrics record ductile southwest-vergent folding and faulting and regional metamorphism, whereas younger fabrics are characterized by crenulation cleavage and thrust faulting and associated folding" (Rubin and Saleeby, 1992).

3.3 Alteration and Mineralization

Regional metamorphism of lower greenschist facies has resulted in an alteration mineral assemblage of chlorite, sericite, muscovite, biotite, calcite/ankerite and quartz. Primary minerals such as feldspars, amphiboles and pyroxenes are moderately to poorly preserved as was reported in thin section descriptions (Millholland, 1980; Eng, 1980). Alteration related to intrusive activity appears to be limited and is restricted to quartz and quartz-ankerite veining, and local but pervasive quartz-carbonate replacement.

Mineral deposits that are of economic interest and are hosted in similar stratigraphy in the Alexander terrane include: Green's Creek Mine (14 mT of 10% Zn, 3% Pb, 20 opT Ag; Schroeter, 1991); Windy Craggy prospect (290 mT of 1.5% Cu; MacIntyre, 1985); and Castle Barite Mine (reserves not known).

4.0 PROPERTY GEOLOGY

For the purpose of the following discussion the "property" refers to the entirety of Woewodski Island and not just the claim block.

The island is underlain predominantly by variably altered basalt-andesite pillowed flows, flow breccias and tuffs with lesser argillaceous shales and calc-silicate tuffs. Minor intrusions of gabbro, diorite-tonalite and basalt dykes cross-cut strata. Schistosity and related metamorphic alteration is greatest in the finer clastics, and has resulted in the development of chlorite-sericite and sericite-ankerite-quartz schists from the mafic and felsic rocks respectively. Because of alteration, both metamorphic and hydrothermal, the argillaceous shale is the most easily recognizeable, and thus reliable marker horizon.

Sulphide mineralization is both of the VMS and epithermal style. VMS deposition appears to have taken place within the mafic units and at the felsic-mafic interface. Paucity of outcrop has not permitted observation of widespread footwall alteration, although based on limited information the author suspects that a footwall stringer zone is lacking.

There have been at least three phases of deformation, resulting in the development of: local and rarely observed F_1 isoclinal folds; a pervasive S_2 foliation and associated F_2 closed folds; local kinking and open F_3 folds associated faults.

4.1 Stratigraphy

The stratigraphy is described in note form in order from youngest to oldest. This defines a generalized stratigraphic section based on some field observations, and a compilation of previous mapping. Rock types shown on Figure 3, Surface Geology, are for the most part taken from previous mapping. This author deleted what erroneous work was found (i.e. definite problems with the location/mapping along creeks draining east into Crab Bay), and substituted her mapping where appropriate (i.e. some exaggeration of outcrop distribution at Scott's Show).

Basalt dykes: Massive, not foliated, dark green, fine-grained to glassy, locally magnetic, weathers tan to dark chocolate brown, blocky fracturing.

Dacite dykes: Massive, not foliated, pale green, weathers tan, >20% 1 to 2 mm euhedral plagioclase, fine-grained to glassy groundmass.

Diorite-tonalite: Massive, locally foliated (uncommon), medium green grey, groundmass of <0.5 mm plagioclase, quartz and orthoclase, 15 to 25% 0.5 to 1.5 mm euhedral hornblende phenocrysts and glomerocrysts, weathers earthy tan to brown pink, blocky fracturing (type exposure [TE]: SE tip of Butterworth Island).

Gabbro: Massive, locally foliated in high strain zones, dark black green, <20% plagioclase, >40% 2 to 4 mm euhedral hornblende (weakly to moderately altered to biotite and chlorite), weathers polished chocolate brown, pockmarked "vesicle-like" preferential weathering of amphiboles, blocky fracturing, local schlieren, magnetic where least weathered, may have been previously mapped simply as basalt (TE: W side of Butterworth Island).

Andesite tuff/schist: Mapped previously as chlorite schist, not seen by the author, found in the centre of the Harvey Lake syncline.

Argillaceous shale: Black, carbonaceous to siliceous, strongly foliated, locally isoclinally folded, fissile, to massive where interbedded with calc-silicate clastics, local 2 to 5% vfg disseminated pyrite, thin bedded, 10 cm to >500 m thick (TE: N end of Woewodski).

Siltstone/mudstone: (Previous names include phyllite, sericite schist, tuffite, siltstone, exhalite, felsics), pale to tan brown, interbedded with shale, thin bedded, locally isoclinally folded and kinked, weathers creamy tan, strong sericite alteration to silky sericite schist, <5 m thick (TE: NW corner of Crab Bay).

Calc-silicate tuffs to lapilli tuffs: (Previous names include tuffite, exhalite, rhyolite, chert) pale flesh to white, grainy, "welded pumiceous protolith"(?) strongly foliated and fissile, locally interbedded with shale, strongly weathered, strong calcite-ankerite-sericite-quartz alteration, trace fuchsite, may be of chemical sediment protolith, 10 to 150 m thick (TE: W side of Butterworth, Plate 1).

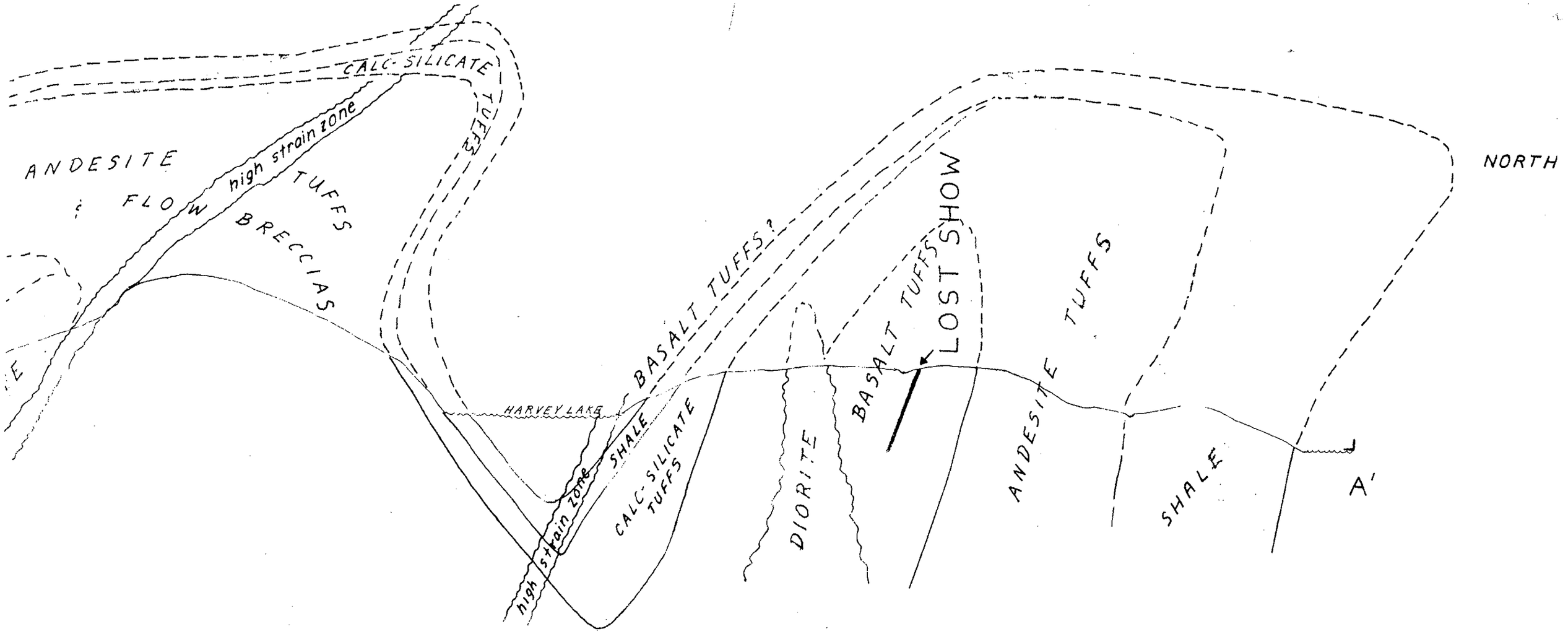
Heterolithic andesite-calc-silicate-shale tuff: (Mapped previously as rhyolite) pale flesh, well sorted, weakly foliated, thick bedded (>1 m), <5% shale fragments, 20 to 35% plagioclase, 5 to 10% euhedral biotite, pale green chlorite-sericite matrix (TE: N side of second bay S of Crab Bay).

Andesite tuffs, lapilli tuffs, pillowed flows and agglomeratic flow breccias: (Previous names include greenstone, mafic volcanics, albite porphyry) medium dark green, moderately to strongly foliated, weathers tan to rusty brown, altered moderately to strongly to chlorite-calcite (ankerite-sericite-quartz), where least altered <20% 0.5 to 1.5 mm plagioclase are visible, </=300 m thick (TE: SSE coast of Woewodski).

Basalt tuffs, lapilli tuffs, pillowed flows and agglomeratic flow breccias - (Previous names include greenstone, mafic volcanics) similar to aforementioned andesite but darker in colour and lacking in feldspar, thickness >300 m (TE: SSW side of Woewodski, Plates 2 and 3).

It is probable that the siltstone/mudstone, calc-silicate tuffs, heterolithic andesite-calc-silicate-shale tuffs and shales are interfingered and have facies relationships that remain to be understood.

The areas for improvement upon previous mapping are: more detailed textural descriptions; subsequent differentiation of gabbro from basalt; differentiation of bleached basalt-andesite from the calc-silicate rocks of chemical sediment origin. Unfortunately, but understandably, much of the past thin section examinations have been done on the most altered and deformed rocks on the property--those



WOEWODSKI ISLAND
CROSS-SECTION LOOKING WEST

SCALE 1" = 1000'
VERTICAL EXAGGERATION x 4

Figure 4.

Georgina Price June 1993

N S

Plate 1

Argillaceous shale, west dipping (in front of man),
calc-silicate tuffs (under knapsack),
basalt flow breccia (foreground), gabbro (background)
at the southwest side of Butterworth.

Plate 2: Pillow basalts.

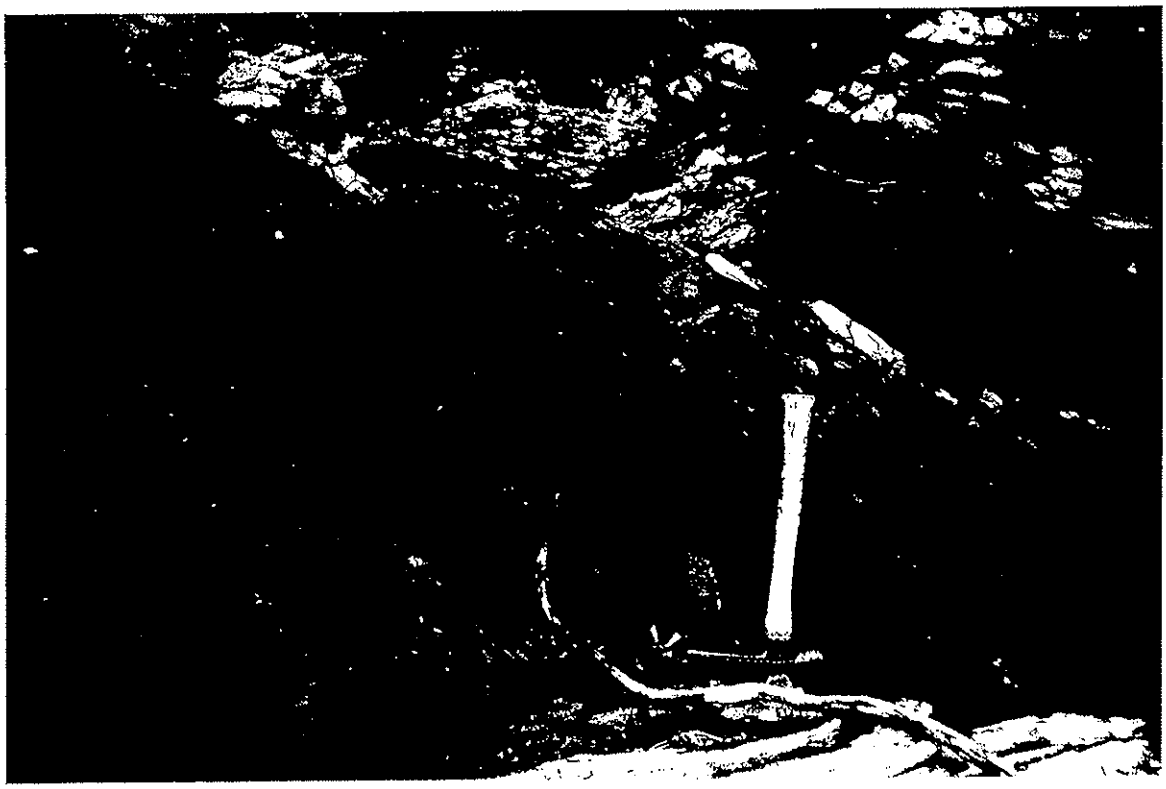


Plate 3: Basalt flow breccia.

from mineralized areas. Thus thin section examination of less altered/mineralized rock could help in correct protolith identification.

There has been much confusion in the past about the naming of the bleached calcite-ankerite-sericite-quartz (chlorite-fuchsite) bearing rocks. Field observations of protolith textures and spatial associations with less altered rocks could aid in a "more correct" identification of protolith. This author has observed gradational contacts between bounding relatively unaltered basalt flow breccia and an internal strongly bleached flow breccia (southwest side of Woewodski). There was no change in texture and the bleached section is at least 100 m thick. These rocks had previously been mapped as dacite and rhyolite. "Pumiceous welded" textures have been seen in some of the calc-silicate rocks at Mad Dog, where three phases of deformation have also been observed, and the "welding" is more likely a result of flattening, stretching and dismembering of microfolds. Unfortunately the finer grained the protolith, the more conducive it was to deformation and subsequent destruction of protolith texture.

Silverman (Silverman and Eng, 1982) expressed the opinions that there are no rhyolites on the property, much of what has been mapped as rhyolite is in fact altered mafic rock, and the obviously bedded material associated with shale is of sedimentary clastic and exhalitive origin. His arguments/evidence for the lack of rhyolites is the overall paucity of the "felsic" units (flows in particular), lack of petrographic evidence (quartz or orthoclase phenocrysts?) and facies relationships with less altered rocks, such as this author observed in the field and described above.

4.1.1 Whole Rock Geochemistry

A total of 12 rock samples from Woewodski have been analyzed for major elements using the ICP method (Appendix D). Six of the samples were collected by P. G. Lhotka, and have been described as "mafic". The remaining samples were of rocks that had been previously mapped as "rhyolite". All samples plot within the tholeiitic field of Irvine and Barager's (1971) A-F-M plot (not in the calc-alkaline field as is suggested by regional correlations) and within the basalt field of a simple $Na_2O + K_2O$ versus SiO_2 (Cox et al, 1979). The TiO_2 values also fall within the basalt to andesite range (0.9 to 4.3%).

Although lacking in statistical evidence, the author infers by visual examination of the limited raw geochemical data that the more altered "calc-silicate" rocks are depleted with respect to sodium and enriched in calcium and volatiles (CO_3?). Based on the low overall SiO_2 values it is probably a misnomer to refer to these rocks as being "calc-silicate"; "carbonate-altered" would be more accurate.

It would help to collect a more complete and representative suite of rocks, but the fissility and iron oxidation of potential samples precludes getting clean unweathered specimens. Should any diamond drill programs be conducted in the future, it is strongly recommended that a whole rock geochemistry study be undertaken, and that analyses include FeO and CO_2.

4.2 Structure

Woewodski Island is located near the eastern boundary of the Alexander terrane, thus one would expect to see west vergent imbricate thrust faults and related folds, and a general northwest-southeast fabric parallel to the angle of accretion. This does not appear to be the case.

The small scale (<1 m) isoclinal folds of which less than a dozen were observed are what remains of the first phase of deformation. Their fold axes were difficult to measure, and for the most part they appear to have been completely rotated parallel into the F_2 fabric. These folds were seen in the argillaceous shales and in mineralized calc-silicate tuffs at both the Mad Dog and Scott's Show.

The F_2 folds are the best documented, and are shown in Figure 4 (Geology Cross-Section at 1"=1,000'). Over the years of mapping, at least 150 measurements of the S_2 schistosity were taken. They were acquired from the 1"=1,000' geology map, and measured in the field, and are plotted on the stereonets on Figures 5, 6 and 7. The F_2 folds are closed, with subround hinge zones, appear to have periodic symmetrical waves and are non-planar in the sense that the hinge surface is curved. As shown in Figure 7 the axial plane strikes 110/84S and the fold axis plunges 25° towards 110°. Thus they may be classified as gently plunging and upright to steeply inclined. As in any stereonet problem, the data may be viewed in a number of ways. Thus an alternative solution is that the fold axis trends 22° towards 098° and the axial plane strikes 110/66N. However, a south dipping axial plane is indicated by the cross-section in Figure 4.

Small scale (<1 m) F_3 folds were observed and measured at the Mad Dog showing, and will be discussed in more detail under that topic. At such scale it was easy to see the broad warping of S_2 schistosity into open and isoclinal folds. Suffice to say the F_3 fold axes seem to parallel the inferred high strain zones and apparent refolding of the F_2 folds shown on Figure 2, that trend about 240° to 260°. These youngest folds are rare, and prevail in the finest grained rocks, thus seem limited in their distribution to the strongly sericitic siltstones, and to a lesser extent, shale and calc-silicate and mafic tuffs. Please refer to Figure 8 for examples of these folds.

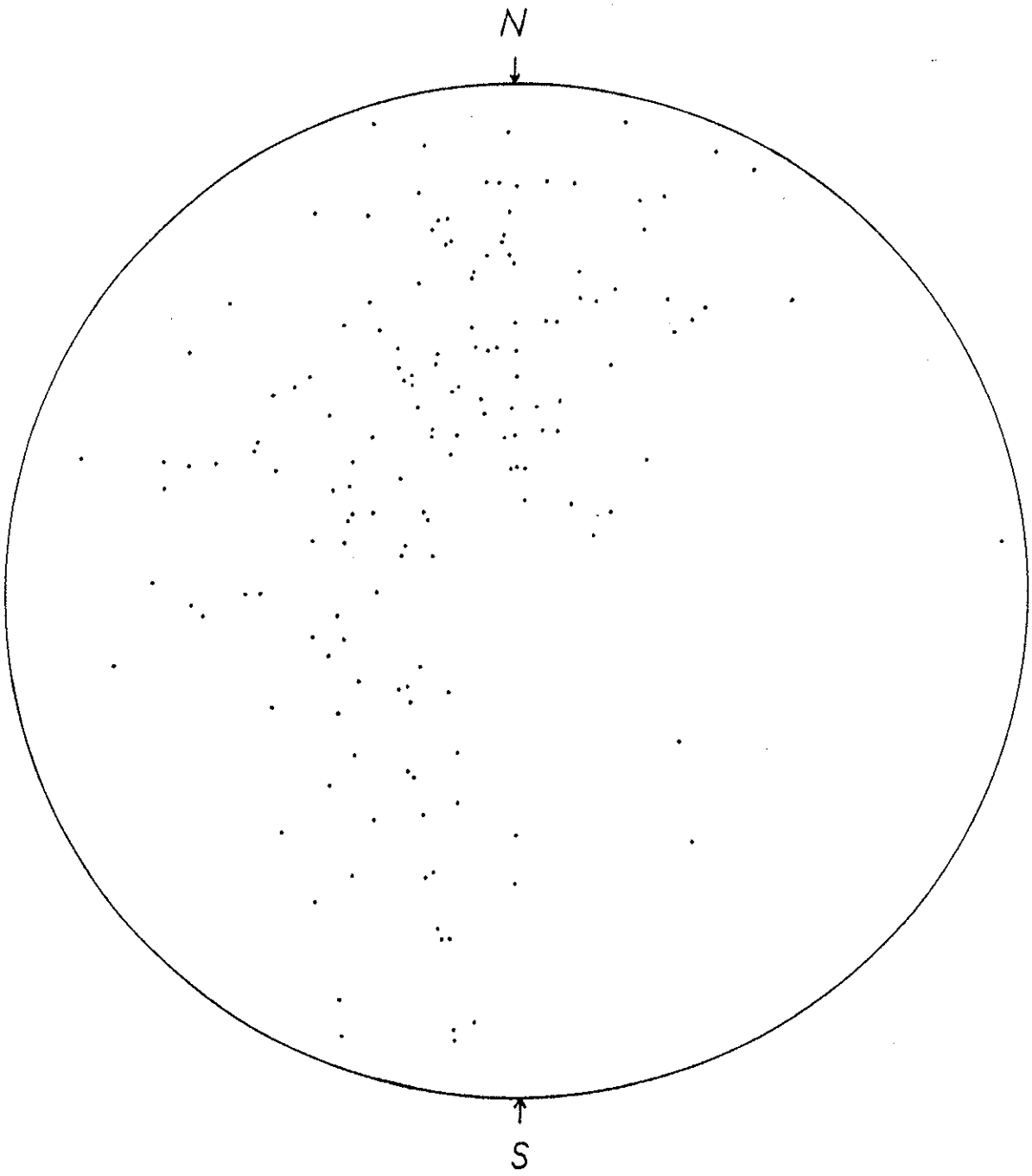


Figure 5

158 poles to S_2 ? S_1

Woewodski Island

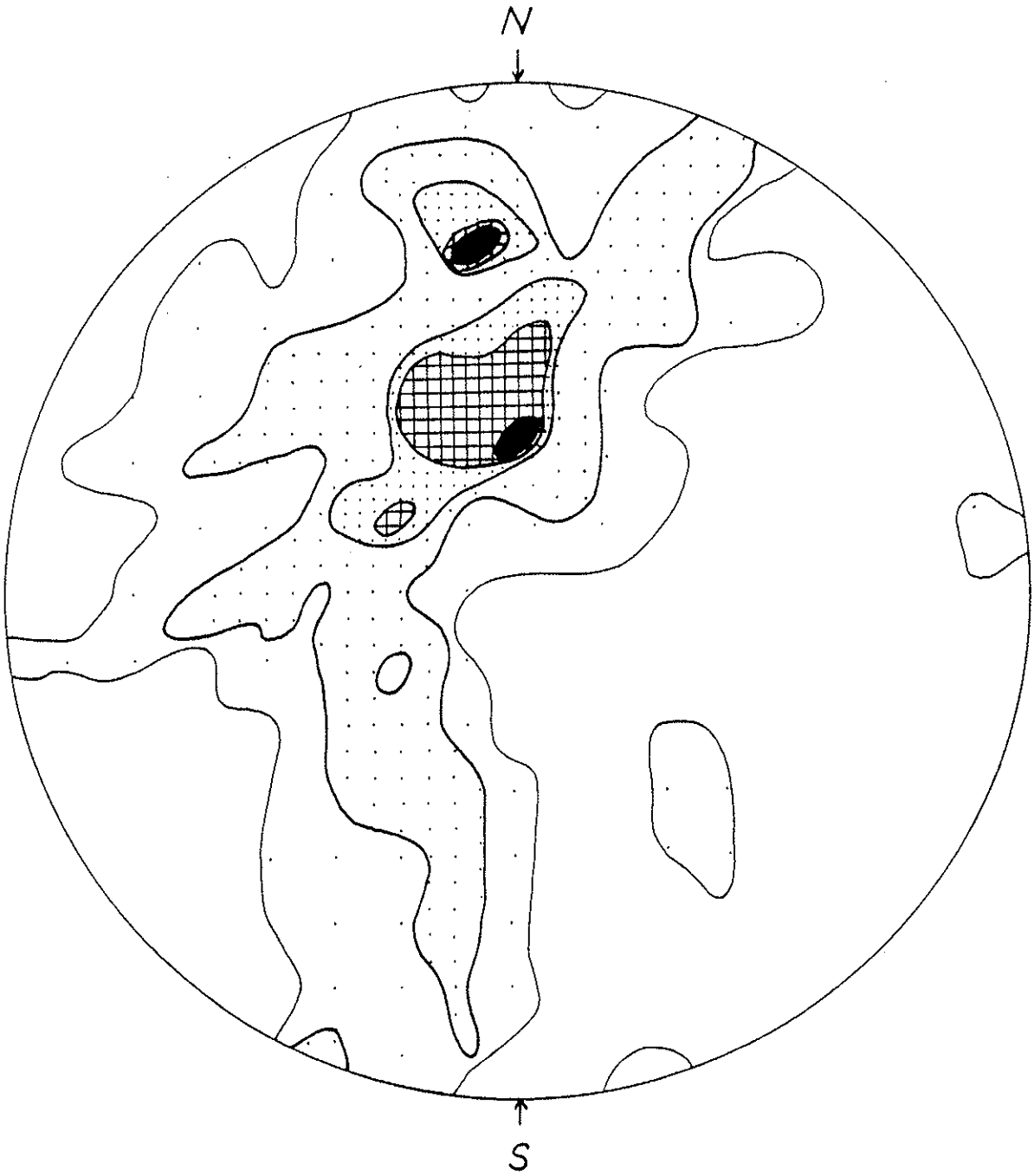


Figure 6

Contours 0.5-2-4-6-8 % per 1% area

Woewodski Island

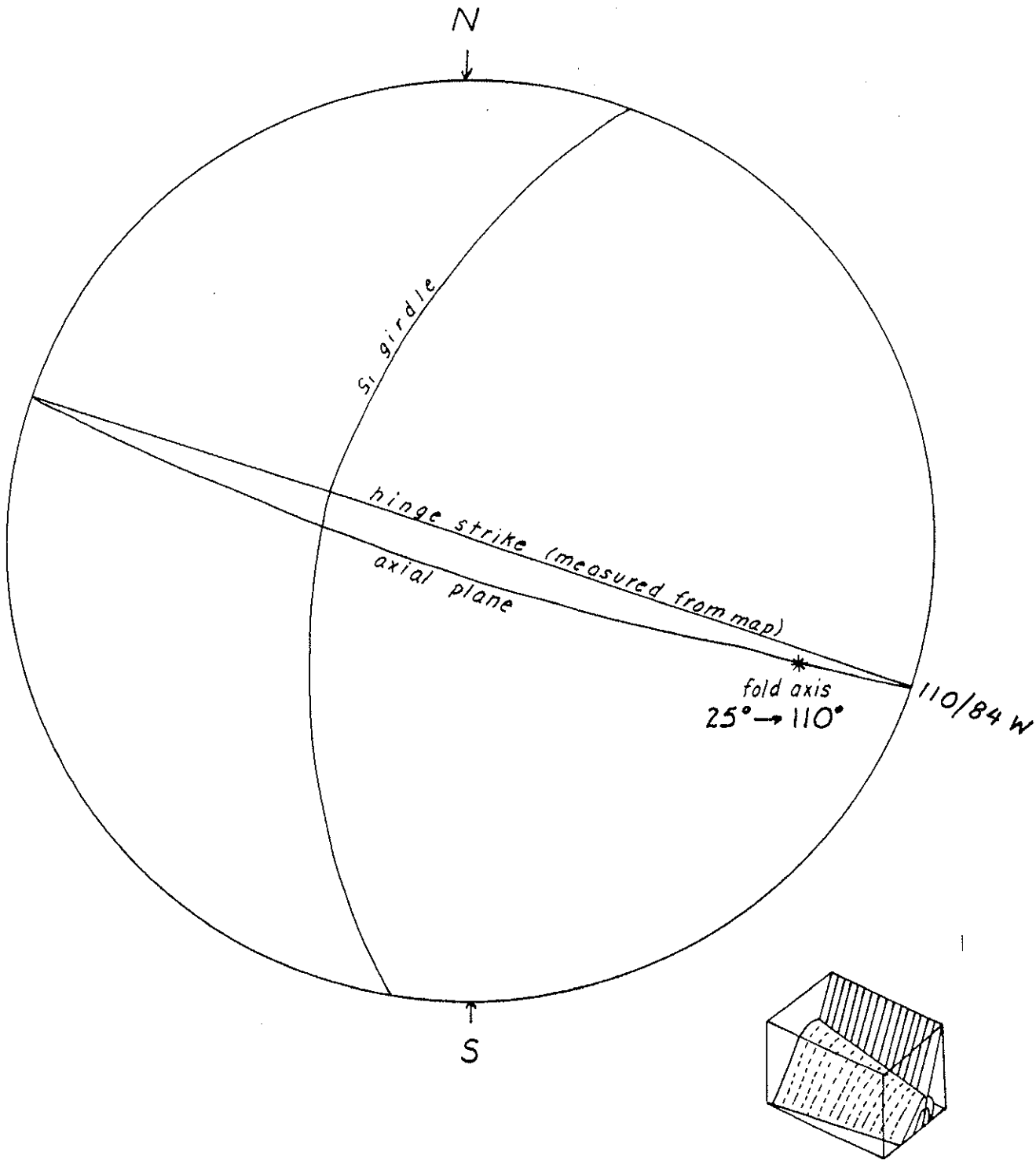


Figure 7

Fold Geometry F_2

Woewodski Island

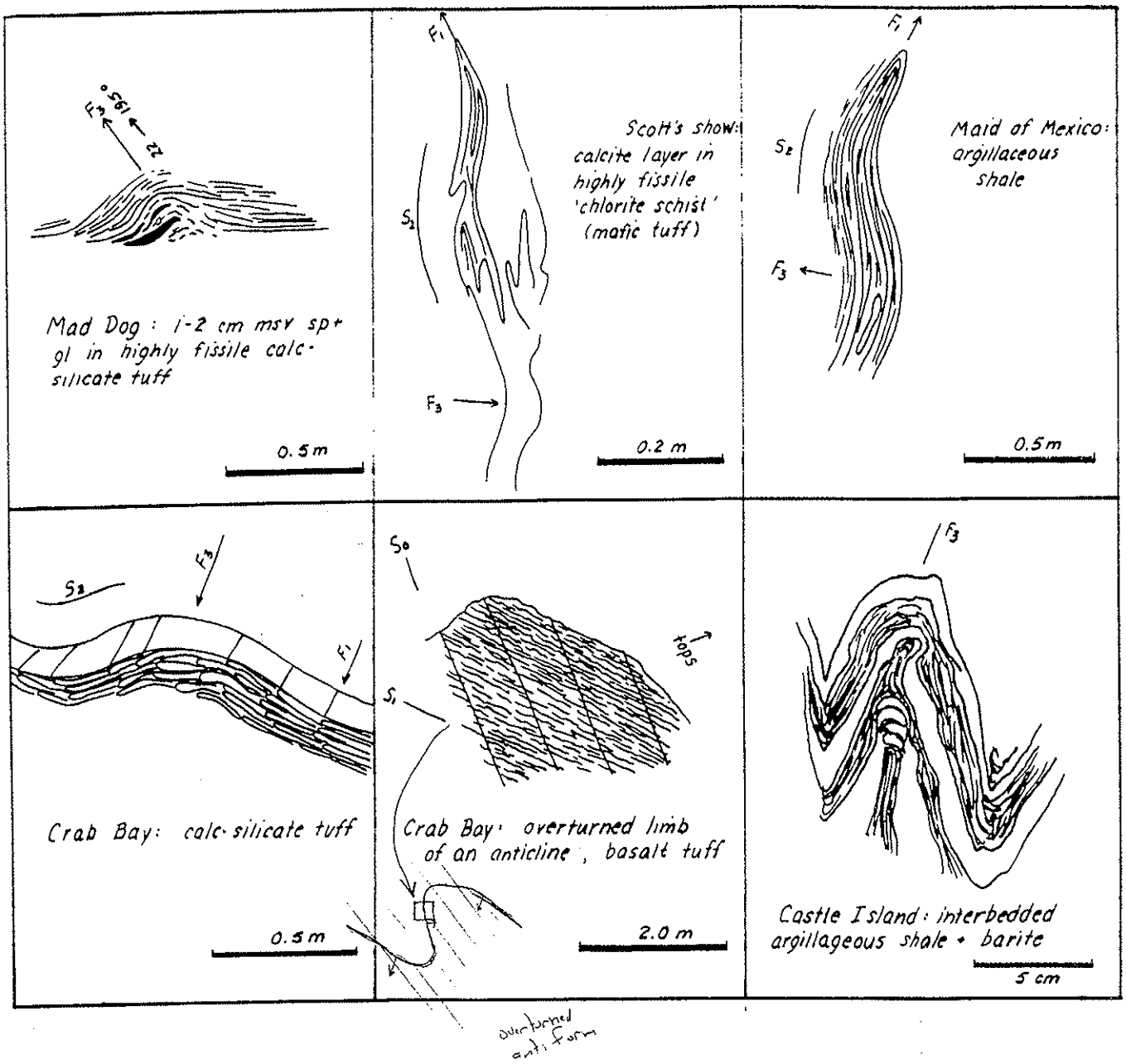


Figure 8 Profile sections of small scale folds in calc-silicate tuffs, shales, 'mafic tuff' and barite at Woewodski and Castle Islands

Slickensides, fault gouge, breccia, fault associated fracture fillings and signs of offset were rarely observed, except in the Maid of Mexico and Hattie mines and immediate environs. The author looked for and did not find any signs of faulting along Whiskey Pass. A single, low-angle thrust fault that has offset of <1 m was seen cutting the shale-pillow basalt contact at the southeast end of Woewodski Island (Plate 4). It is probable that faulting did occur during the three phases of deformation, but a combination of paucity of outcrop and a strong S_2 schistosity has resulted in the obliteration or obscuring of signs of faulting.

Because of an apparent lack of any sizeable offset in areas where faulting could be inferred, the author has defined a few "high strain zones". These zones cut both Scott's Show and Mad Dog. At Scott's Show the sulphides are boudinaged, and at Mad Dog there has been dismemberment of fold limbs.

The problem of determining if there has been overturning of beds in the Crab Bay area was not solved with any satisfaction during the few days visit to the area. If Mary Jo and Mad Dog II creeks as well as the creeks that drain into Crab Bay were remapped and attention paid to structure, this problem could be solved. This author did not have the time required to do a reasonable job (4 to 6 days with chain and compass and slope correction by an assistant). It is possible that in the Crab Bay area the Harvey Lake anticline is recumbent, as a small scale fold that is overturned was observed in one of the drainages. On the 1"=1,000' map the appearance of overturning is given by the lack of north dipping shale beds, but this appearance may be a function of topography and paucity of outcrop in the area where one would expect the south limb of the Harvey Lake anticline to be exposed. In general it was not a simple task to determine stratigraphic tops.

4.3 Mineralization and Alteration

Sulphide mineralization of economic potential is present in two distinct styles at Woewodski Island: as stratabound and structurally deformed lenses, and hosted in less deformed to undeformed cross-cutting quartz veins. The former style will be the focus of the following discussion.

The greatest potential for a mineable volume of mineralization at most consistent grade comes from the presumably syngenetic stratabound material. Current exposure and data acquired by previous workers only permits a two-dimensional understanding of these lenses. To date the maximum known strike length of these system of lenses is about 350 m and thickness about 3.5 m. Maximum dip length has been inferred to be at least 120 m (Lost Show, without palinspastic reconstruction).

Plate 4

Argillaceous shales overlain by pillow basalts, cut by thrust fault (Location: south end of Woewodski).

The stratigraphic position of the sulphides is generally at the interface between strongly altered mafic tuffs and flows and calc-silicate tuffs/chemical sediments interbedded with argillaceous shales. Minor amounts <10 cm thick of siliceous (chert(?)) material has been observed in this contact area.

The rheology of the sulphides has made the lenses more conducive to folding and remobilization than the surrounding more competent sediments and volcanics. Thus not only would one expect to find mineralization concentrated in the hinge areas of the folds, but conversely one would expect to find the fold hinges in areas of greatest concentration of sulphides.

Where the folds are tight to isoclinal and remobilization has taken place, the identification of stratigraphic hangingwall and footwall is tenuous.

The prospects are described below in order of their potential as mineable ore bodies.

4.3.1 Volcanogenic Massive Sulphide Showings

The showings on this property have over time been referred to as a variety of "types"; "Green's Creek type, VMS, SEDEX, veins and carbonatized epithermal auriferous shear zones associated with mafic rocks". This author believes that the majority of showings may be described as lensoidal, stratabound, baritic, syngenetic, remobilized and volcanic hosted: hence VMS. However, there are some aspects of the host rocks and mineralization style that do not fit the classical Kuroko, Besshi or Cyprus models for VMS deposits: paucity of rhyolite, chert, jasper and lack of chlorite-sericite footwall alteration and associated stringer zone, lack of Cu; the prevalence of carbonate alteration, and chemical sediments or clastics in the form of carbonates.

- **Lost Show-Scott's Show Trend**

The Lost Show, discovered by Cominco Alaska geologists in 1985, is exposed in two trenches spaced approximately 30 m apart. Please refer to Figure 9, a detailed map of one of the trenches. The trenches are approximately 1.5 x 2.0 m in size. Any other "trenches" that were relocated in 1993 measure less than 30 cm. Access to the Lost Show trenches and grid is via a well cut trail that skirts the south side of Lost Lake and comes from the Helen S cabin. Travel time is approximately 20 minutes. The baseline of the grid is in excellent shape as it was cut, tie lines were not cut and are harder to follow.

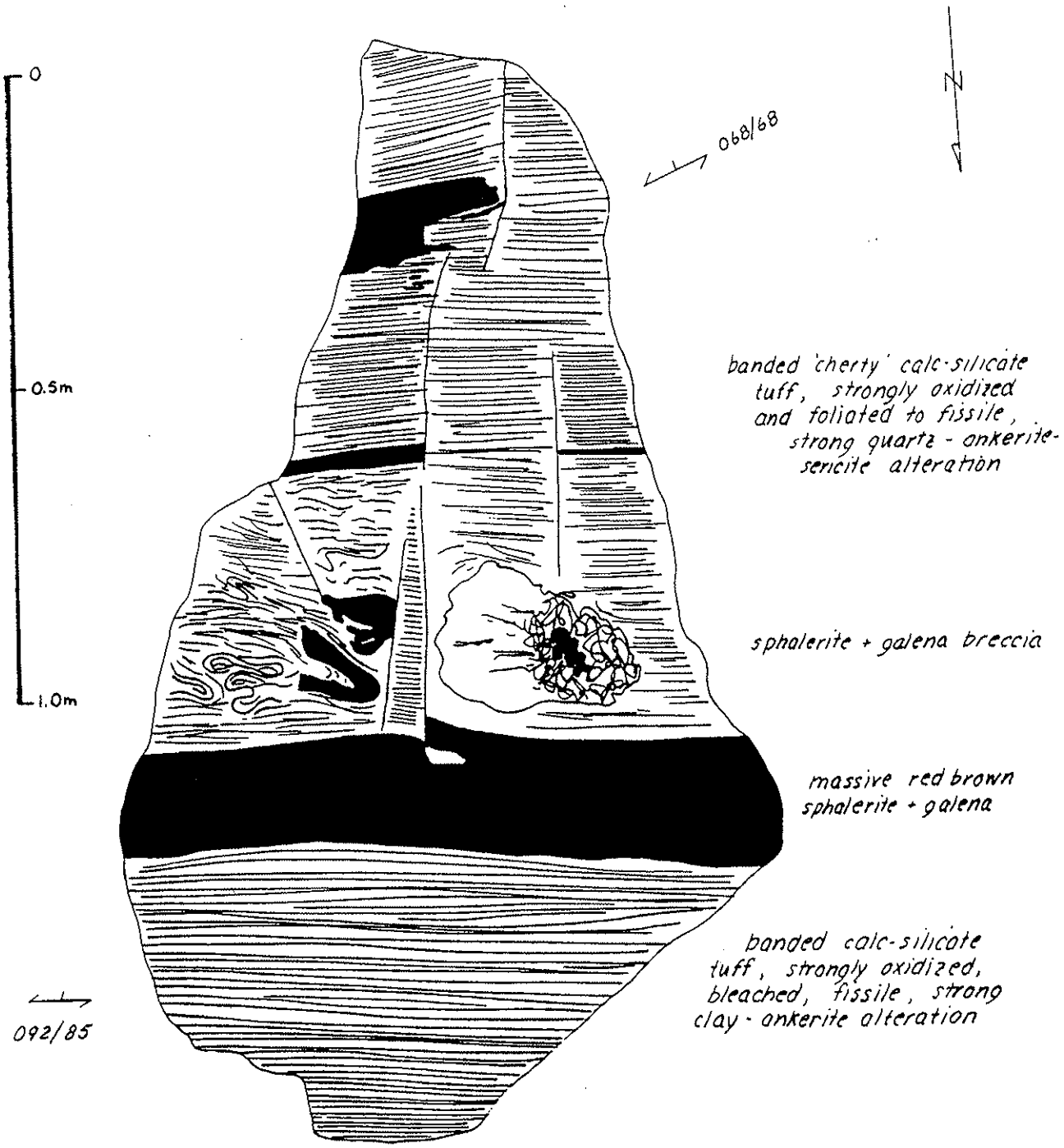


Figure 9 Lost Lake trench (0+00 E, 1+00 S)

(Plan : slope of trench is from 5 - 85°)

A total of 18 core holes (Wod 1-12, 16-20, 27?) over approximately 1,533 m were drilled at a single hole per set-up, spaced about 120 m apart over a strike length of about 800 m. Most of the clearings cut for these holes were relocated and surveyed in using compass and chain by Westmin personnel. The odd unlabelled plug was also found. Mineralization from over a 610 m strike and 120 m dip was used to calculate a geological inventory of 550,000 imperial tonnes of 0.6% Pb, 8.1% Zn and 2.5 oz/t Ag. This inventory was calculated using a plan polygonal method with blocks up to 122 m in width, and based on 15 mineralized intersections of widths of 0.6 to 3.6 m. Drilling took place during the period of 1986 to 1988, and documentation from the last phase of drilling is in the form of weekly/monthly reports written by the field geologist for his supervisor. Drill logs, sections and complete assay results from this last season remain to be found, and approximately 90 m of skeleton core currently resides in Kennecott's Spokane (Washington) office. Results from hole Wod 19 have yet to be included in the geological inventory (82.5 to 104.0' = 6.5 m of 7.3% Zn, 128 ppb Au and 2.2 oz/t Ag; including a 0.5 m interval of 26.5% Zn, 197 ppb Au and 23.2 oz/t Ag, and a 1.2 m interval of 21.5% Zn, 14 ppb Au and 136 oz/t Ag). Polished section descriptions were done on 5 samples, and microprobe analyses on 4(?) samples.

The geological inventory was recalculated using a sectional method and what information was available by M. Becherer (Westmin Resources Limited, Myra Falls Operations). Results are given in Appendix E, and are comparable in tonnage, though slightly lower in grade. The exercise of producing sections allows one to see the gaps in drilling: holes at the west margin of the prospect were not drilled to sufficient depth, and at the east end the bounding hole was possibly drilled from too far south.

As shown on Figure 4, the Lost Show is located in the core of an F_2 anticline within basalt tuff. As there are essentially only two outcrops (trenches) in the area, a description of the stratigraphy will be summarized from previous work. Andesite flows, flow breccias, tuffs cut by diabase sills/dykes and diorite to gabbro were encountered. In addition "quartz eye variety lapilli/lithic tuff" is shown on the legend that is attached to the 1986 drill sections, and "argillite" is said to be present in Wod 7. If one assumes that it is difficult to miss-identify the argillites and quartz eyes, then it is probable that the fold geometry is considerably more complex than that shown on the 1"=1,000' cross-section (Figure 4).

If one believes the larger scale interpretation that the F_2 fold axes plunge at 25° towards 110°, then one would also expect mineralization that is concentrated in fold axes to behave the same way. The long sections plotted by Amselco geologists in 1986 are oriented at 070° and show flat-lying stratigraphy. At the 070°

orientation the plunge of the fold axes would appear flatter (20°), but it would still exist.

It is this author's contention that the holes are so widely spaced as to not permit a reasonable geological interpretation. Drilling fans of holes, rather than individual holes, would also permit a greater understanding of the plunge.

Thus it is recommended that this area be "redrilled" on N-S sections, using a fan pattern at 3 to 4 holes per section, and extended both east and west.

Scott's Show is exposed in a northeast draining incised creek approximately 275 m on trend due east from Lost Show, in the hinge of the same anticline. The slope of the creek walls is about 25° to 35° and the slope of the creek from 2° to 20°. Outcrop is relatively continuous (at 70% o/c) in the creek bottom and a short distance up the walls. Access to this show is via walking up a creek that drains east towards Boulder Point, then heading due north to the readily recognizable baseline in order to avoid the thick vegetation and swamp. This is the most expedient route as it only takes about 50 minutes to walk to the showings.

In 1988 there were 5 core holes drilled (Wod 21-25) for a total of 180 m (Figure 10). Similar to the last drilling that took place at Lost Show, the only documentation is a few weekly field reports. All five clearings, and two labelled plugs, were relocated and surveyed by compass and chain by Westmin personnel.

The stratigraphy that is mentioned in the weekly reports consists of "intermediate volcanics, porphyritic andesite flows, chloritic sediments and chlorite schist". This author also observed some strongly silicified bleached tuffs, possible diorite and a minor amount of "cherty argillite".

Foliation is strong and pervasive in unmineralized rock. Massive, coarse-grained pyrite and barite are present as boudins up to 40 cm in length. Massive high grade sphalerite (>40% Zn) has the habit of erosion resistant 2 to 10 cm thick continuous to boudined lenses that resemble dykes at first glance. The entire mineralized section is 110 m long.

In 1981 HOMC did a rigorous job of chip sampling (14 samples) that was repeated at a smaller scale accompanied by detailed mapping by the author (8 samples). Encouraging results came from both sampling programs:

1.7 m of 40.1% Zn, 145 ppb Au, 1.32 oz/T Ag, 0.37% Cd
0.7 m of 4.1% Zn, .115 oz/t Au, 13 ppm Ag
0.7 m of 11.7% Zn, .185 oz/t Au, 40 ppm Ag

0.3 m of 7.6% Zn, .124 oz/t Au, 13 ppm Ag
0.9 m of 2.5% Zn, .335 oz/t Au, 13 ppm Ag

Results from the drilling program were disappointing; Zn values ranged from 0.01 to 3.9%, Ag up to 19 ppm and Au up to 0.55 oz/T.

Because of the location on trend with Lost Show, the strike continuity of Scott's Show, the total strike length of Lost Show to Scott's Show (3,650 m) and the sporadic high grades, the author places this showing in second position in the order of potential to produce a mineable quantity of mineralization.

- **Mad Dog-Brushy Creek Trend**

The Mad Dog showing is located in the intertidal area between Butterworth and "Mad Dog" islands (Plate 5). In order to see all the sulphide exposures it is necessary that the tide be at the extreme low (-3' is best).

The stratigraphy consists of highly schistose to massive ankerite-quartz-sericite altered "rhyolite tuff", schistose to massive chlorite-sericite altered andesite tuff, minor argillaceous shale and diorite (Figure 11).

The poles to S_2 and interpreted F_2 axis (38° towards 182°) and axial plane (115/40° SW) are shown on the stereonet on Figure 12. Although the highest concentration of S_2 data points nicely overlies that shown in Figure 6 (S_2 contours for Woewodski Island), it is the spread of the remaining data points that differs substantially. The resultant interpretation shows that the F_2 folds at Mad Dog have an axial plane that strikes about the same direction as those of the entire Woewodski Island, but the dip of the axial plane is considerably shallower (F_2 Woewodski = 110/84° SW). The moderate plunge of the F_2 axes at Mad Dog appears to be almost due south, as opposed to the east-southeast plunge shown in the Woewodski data. The discrepancy in plunge amount and direction between Mad Dog and Woewodski Island is possibly due to lack of measurements from the fold hinge area at Mad Dog, and rotation of S_2 schistosity by later faulting.

Twenty-six F_3 fold axes are contoured on the stereonet in Figure 13. Although there is a fair scatter of points from this small data base, two clusters do stand out: 20° towards 225° and 73° towards 242°. Patterns could not be elucidated from the complete range in vergence.

Plate 5. Mud Bay Shoal, looking southeast, exposed (all tide) and under water.

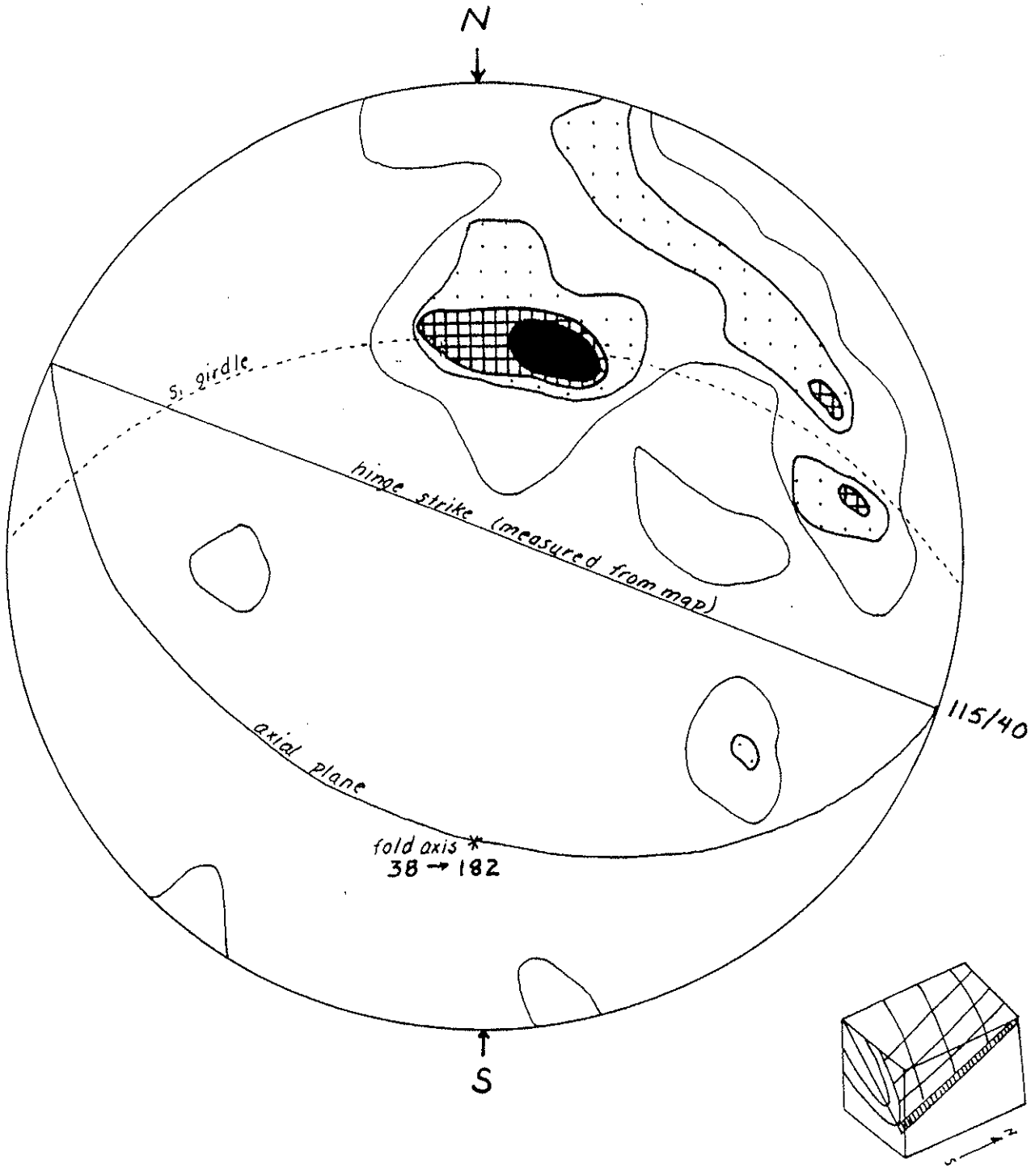


Figure 12

46 poles to S_2: contours 2, 4, 9, 11% per 1% area

Mad Dog Show

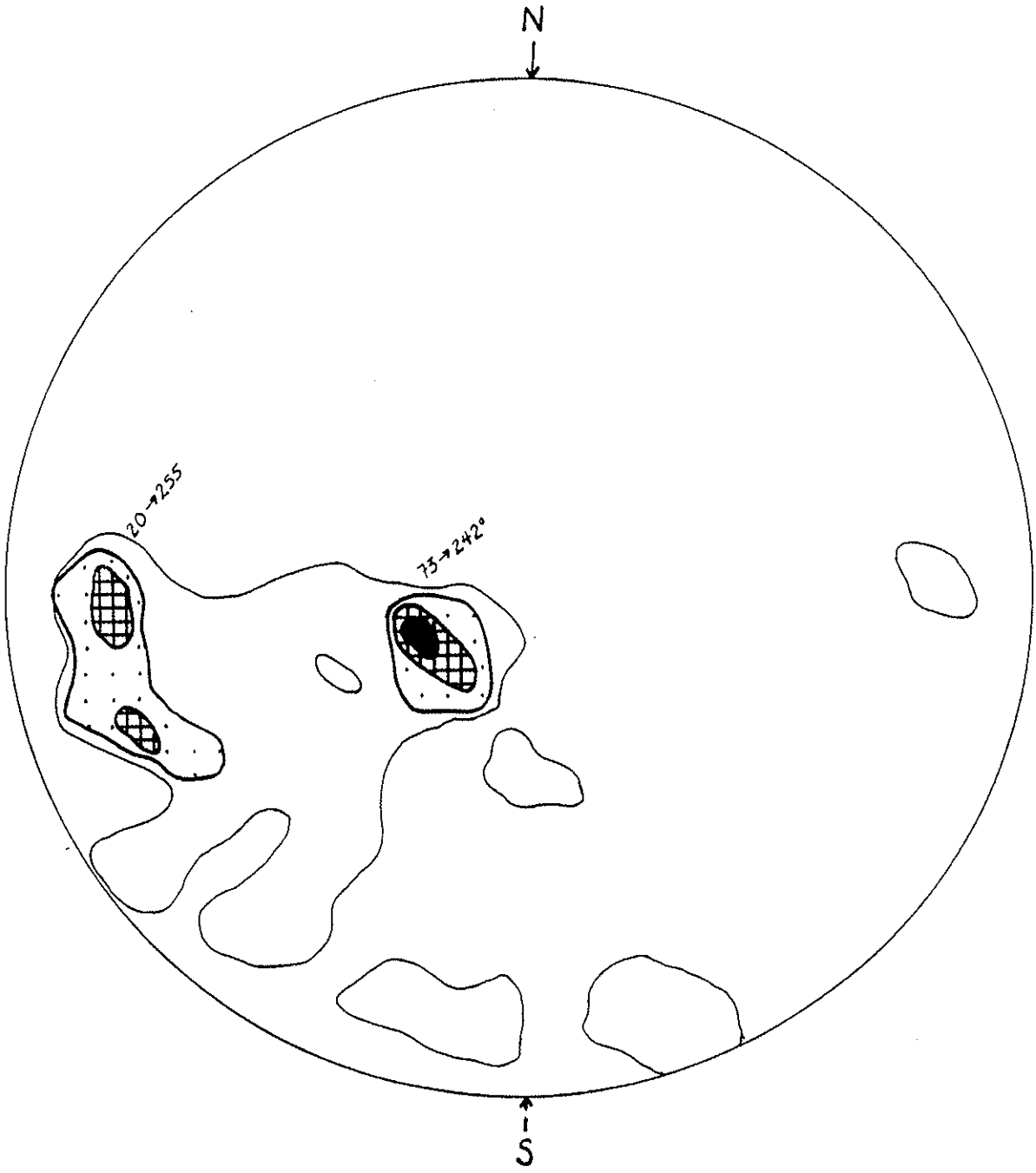


Figure 13

26 F_3 axes: contours 4, 8, 12, 15 % per 1% area

Mad Dog Show

There are eight separate exposures of massive sphalerite and galena, seven of which can be connected to define one single folded lense. Cominco took 11 chip/grab samples in 1986, P. G. Lhotka took 6 chip samples in 1992 and the Westmin helper/surveyor took and additional 19 chip samples in 1993. Results for Au, Ag, Cu, Pb, Zn and Cd analyses are given in Appendix F. The samples collected by P. G. Lhotka were also analyzed for As, Bi (<30 ppm), Hg (<45 ppm), Mo (<15 ppm) and Sb (<140 ppm). The best intersection that was collected averaged 8.9% Zn, 2.2% Pb, 8.1 oz/T Ag over 8 m length crossing true width (most northeast exposure).

This showing has potential because it is implied that there is a maximum thickness of 8 m, and a minimum dip length of about 180 m (taken from a rough palinspastic reconstruction of the cross-section shown in Figure 11). Exposed strike length is about 40 m. The mineralization disappears under sand and water along strike both to the east and west. The only possible location on dry land for a drill collar is shown on Figure 11. It is advised that holes be drilled in two north-northeast and east-eastnorth fans. It is cautioned that the intertidal topography be surveyed for elevation prior to hole layout such that holes are not too shallow and "surface" under water. (Fresh water for drilling is available <250 m away on Woewodski Island at Hattie Creek.)

A few days were spent by both the geologist and prospector searching the adjacent coast of Mad Dog, Butterworth and Woewodski Island for continuation of the Mad Dog mineralization and related stratigraphy. "Rhyolite" and argillite similar to that hosting the Mad Dog show was found on the west side of Butterworth Island, in Brushy Creek, and at the southeast end of Woewodski Island. A somewhat tenuous correlation has been made between these limited exposures, as is shown on Figure 3 (Surface Geology). The author and prospector looked for felsic outcrop on the coast of Woewodski Island between Mad Dog and Brushy Creek, and did not find any (bleached pillow basalts adjacent to minor shears were present). The author also looked for signs of north-northwest trending faults in the Whiskey Pass area, and saw none. Hence this tenuous interpretation is the best possible given the limited outcrop.

The "rhyolite" and argillaceous shale that is exposed on the west side of Butterworth Island was lacking in sulphide mineralization, and appeared to trend east-west. The previously mentioned "seashore kill zone" (Eng, 1980) is probably a boulder field which has a shoreline morphology that is not conducive to growth of marine life.

The Brushy Creek Show is located approximately 730 m up Brushy Creek from the coast. The 170 m long prospect, and the main 10 m long trench, are portrayed in

Figure 14. HOMC drilled three percussion holes (72 m), four core holes (410 m) and blasted five pits/trenches, as well as doing extensive soil sampling. In addition, Cominco took ten chip and grab samples. The best result from both programs comes from a grab sample that ran 6.9% Zn and 17.8 ppm Ag (Cossaboom and McMichael, 1986). Drilling results were not encouraging as Zn values were generally less than 3% (Eng, 1982 and Eng and Silverman, 1981). Four probable drill set-ups were relocated, including two plugs.

The showing is described in considerable detail by Eng. He refers to the style of mineralization as "stratabound, clearly not stratiform, not syngenetic, authigenic/diagenetic, phreatoclastic, exhalitive and correlative with Mad Dog." The rocks are strongly foliated, calc-silicate altered, and in most places there is evidence of brecciation (angular fragments cemented with vfg pyrite or limonite). It is not clear if this breccia formed in a syngenetic or epigenetic environment, or both.

This showing is deemed to have potential because of its association with Mad Dog, its strike length of >160 m and the presence of sphalerite and galena mineralization. As the strata dips at a shallow angle into the south wall of the creek, and the creek walls are fairly steep, blasted trenches will adequately expose cross-sections of strata and mineralization. Thus it is recommended that a series of trenches be blasted and existing pits enlarged.

Two-and-a-half person days were spent looking for Blowdown Creek to the southeast of Brushy Creek. There are numerous small drainages that could qualify, and minor amounts of arsenopyrite in quartz vein were found in one of the drainages and as float on the beach. In general outcrop is limited in this area.

- **Crab Bay**

Outcrop is severely limited in the vicinity of the drilling that took place on the Crab Bay grid. The ubiquitous muskeg is prevalent in this generally flat area. One suspects that "soil samples" were commonly silts from the streams that traverse the muskeg. Only one pit was relocated; it exposes calc-silicate altered andesite tuff. HOMC drilled eight, perhaps nine core holes (544 m and 2 holes) into Zn soil geochemistry anomalies (As 5-10, Wod 13, 14 and maybe 15; as before, data is non-existent for the last three holes). The best intersection was 3 m grading 0.123 oz/T Au, 4.7% Zn and 0.23% Cu (AS-5).

From the logs of the first six holes, the mineralization appears to be hosted in andesite tuff that structurally overlies calc-silicate tuffs and argillaceous shales. Barite was encountered about 10 m below the sulphide mineralization in one hole.

All holes were stopped in the argillaceous shales. Either the stratigraphy is overturned, or there was more than one mineralizing event and this strata is located within the hinge area or on the north limb of the Harvey Lake anticline.

This area warrants more attention in the form of 5 to 10 days mapping/remapping of the creeks where there is reasonable exposure, and where stratigraphic and structural data can readily be collected to determine stratigraphic tops. This data could then be tied in with the information from the 1984 drill program.

Access to this area is via the creek that drains southeast into Crab Bay, or by rowing across Harvey Lake and walking up the creek in which the Mary Jo showing is located. Travel time from the Helen S cabin is about 1.5 hours either way. The baseline of the Crab Bay grid is cut and in excellent shape, as are some of the cross lines.

- **Mad Dog II**

The author did not locate this showing, although the prospector did in a second attempt, and he described the "trenches" as "slumped in creek bank". Cominco has depicted this showing as being similar to Crab Bay, and has reported grab samples from a 0.3 m thick massive sulphide horizon that run as high as 0.93 ppm Au, 40.5 ppm Ag, 3% Zn and 0.33% Cu (Cossaboom and McMichael, 1986). The area is also described in HOMC's 1984 report (Eng); however, the detailed geology remains to be mapped. Similar to the other creeks in the Crab Bay grid area, chain and compass and slope corrected mapping should be done.

4.3.2 Epithermal Showings

These are showings in which mineralization has elevated precious metals and is hosted within quartz veins and shears that cross-cut S_2 schistosity. Some of the showings may merely comprise significantly more remobilized VMS mineralization.

- **Helen S**

There are reported to be two shafts, and about 200 m of drifts and crosscuts developed along a mineralized horizon that is up to 12 m wide (Cossaboom and McMichael, 1986).

This author saw three mineralized outcrops (Figure 15): two 20 cm thick quartz-chalcedony veins with banded pyrite-sphalerite and galena; a trench with 15 to 25 cm long pods/boudins of massive coarse grained pyrite with 1 to 2 cm clots of massive sphalerite hosted in highly schistose andesite. The latter bears some

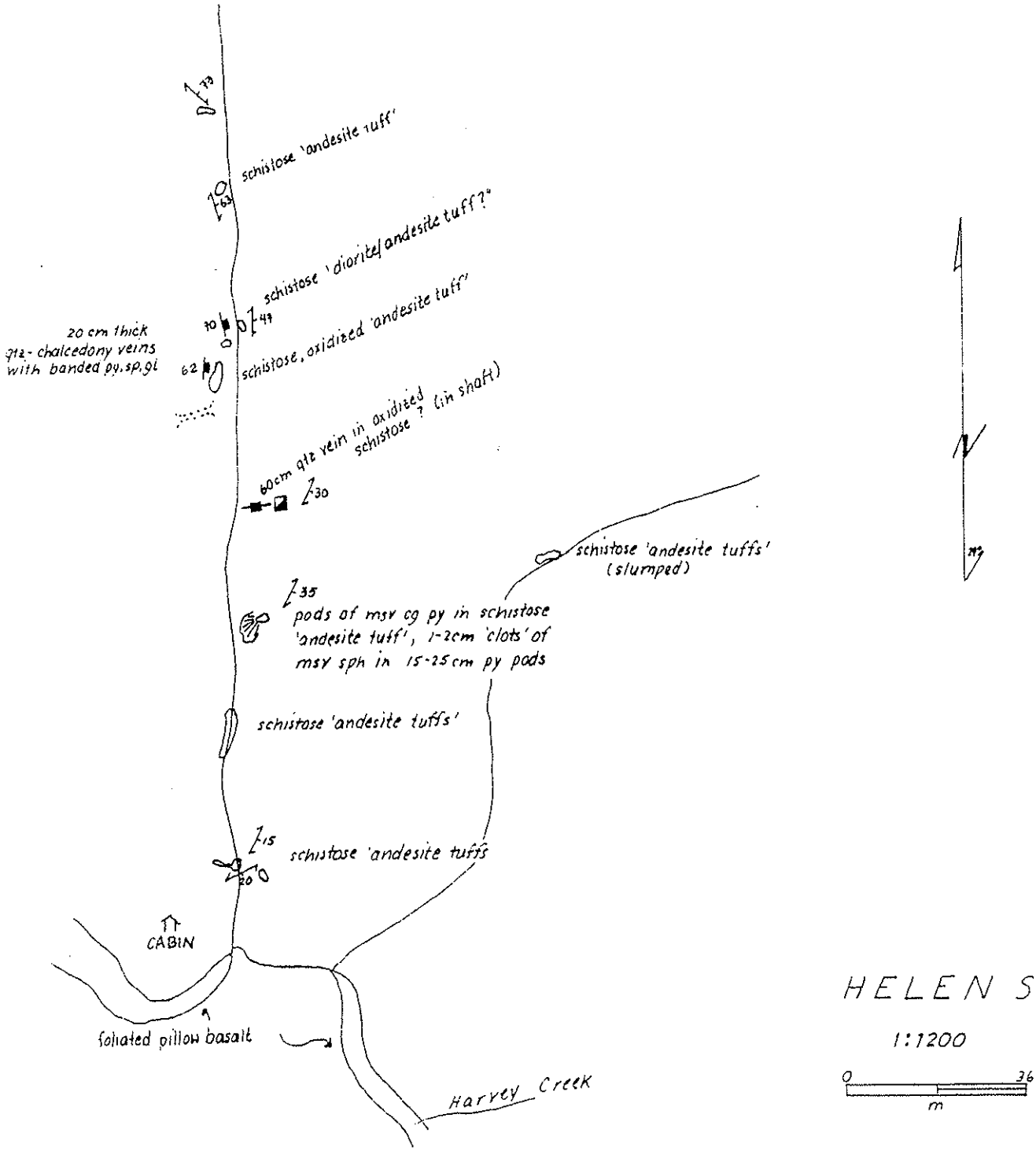


Figure 15

G Price June 21,1

resemblance to the style of mineralization seen at Scott's Show. Cominco (Cassaboom and McMichael, 1986) recovered a 15 cm sample of this that returned 0.04 ppm Au, 38.0 ppm Ag, 38 ppm Cu, 3.40% Pb and 11.02% Zn. From this limited knowledge, the author has the "feeling" that the sulphides here were deposited in an epithermal environment.

The Helen S is a patented claim owned by four gentlemen from Petersburg (Appendix G), who procured the claim as a vehicle to own land on which a cabin for recreation could be built. Privately owned land is scarce in this part of Alaska. Only one of the owners is interested in the mining potential of the claim, and the remainder prefer that the land remain undisturbed (particularly during hunting season). For this reason, it is recommended that the Helen S claims not be pursued.

- **Maid of Mexico**

Enid MacGill of Petersburg holds the four unpatented claims that cover the Maid of Mexico workings. Half a dozen or so short drifts (<10 m) and trenches have been cut to follow quartz veins. The property was mapped in detail by Kennecott geologists (Gundy, 1991), although few comments were made on the geology.

The Westmin prospector found some float of what had probably been mined: massive coarse quartz with 6% coarse galena, 3% fine-grained sphalerite and about 0.5% pyrite.

Although this prospect is located at or near the contact between argillaceous shales and mafic volcanics, the lack of both observed and previously reported base metals renders this showing of low potential.

- **Hattie**

The Hattie area was mapped in detail (1"=200") by Resource Associates of Alaska geologists in 1978 (Twelker and Rogers, 1978). There is one adit, a shaft and a dump measuring about 40 x 20 x 20 m. The adit entrance cuts/follows a 20 cm thick clay gouge seam in strongly ankerite-calcite-sericite altered rock. HOMC conducted percussion drilling of 22 holes over 367 m in order to test for Au mineralization hosted in a shear zone spatially associated with a diorite intrusion (Silverman and Eng 1982). Holes were spaced approximately 15 to 30 m apart, and their best intersection was 5.4 ppm Au (did they have recovery problems using percussion drilling in brecciated gougey sheared rock?).

If one assumes that the north-south Whiskey Pass faults do not exist, then the stratigraphy associated with Mad Dog mineralization must pass through the general locality of the Hattie. Regardless of paucity of outcrop, an attempt at detailed mapping in the inland area between Hattie and Brushy Creek would help locate the continuity of the Mad Dog sulphides.

4.3.3 Miscellaneous Showings

These are showings that are limited to massive pyrite or pyrrhotite and do not have any base or precious metal values.

- **Mary Jo, Boulder Point and Harry's Lake**

The Mary Jo prospect is located at the argillaceous shale-mafic volcanic interface. The showing consists of limonitic, massive, coarse-grained pyrite hosted in shale. In 1982 Cominco subcontracted power auger soil sampling of 117 holes (0.2 to 2.7 m deep) over an aeromagnetic anomaly in the area of Mary Jo. This anomaly appeared to correlate to the shales. This area could be remapped in detail in order to correlate stratigraphy with the nearby Mad Dog II and Crab Bay areas.

The Boulder Point Show consists of massive pyrrhotite as matrix to pillow breccia adjacent to the contact of basalt-rhyolite-granodiorite. It was found attractive by Kennecott because of a magnetometer high, and a soil grid was run over the magnetometer anomaly to the northwest of the showing. Results were negative.

The Harry's Lake Show is currently under water due to a beaver dam causing the level of the lake to be raised. It is described by Eng (1980) as consisting of "chert exhalite float that assayed up to 0.84 oz/T Ag, 0.28% Pb and 4.19% Zn, resembling both vein and syngenetic mineralization".

5.0 CONCLUSIONS AND RECOMMENDATIONS

Of the thirteen prospects on Woewodski Island, five were deemed to be of good potential as VMS deposits similar to those found at the Green's Creek Mine: Lost Show, Scott's Show, Mad Dog, Brushy Creek and Crab Bay. In general the mineralization is found at the volcanic-sediment interface, and the argillaceous shale is the best marker horizon for determining this stratigraphic position. A structural interpretation revealed that the plunge of the probable ore concentrating F_2 fold axes is 25° towards 110°, and the dip 110/85° S.

Recommendations for further work include:

1. Drill a fan of 4 holes at 3+00E and 4+00E, and extend drilling both east and west at Lost Lake.

2. Survey the bay and then lay out and drill 1 or 2 fans of holes at Mad Dog.

3. Detailed mapping of the outcrop in the creeks in the Crab Bay-Mad Dog II-Mary Jo area.

4. Lay out and blast 3 to 6 trenches in Brushy Creek.

5. Carry out all work as close to mid summer as possible in order to take advantage of the lowest tides, and to avoid the costly problems of lost time due to the inclement weather of other seasons.

In terms of claims that could be dropped, the area east and west of Maid of Mexico, to the south side of Harvey Lake could be let go. However, one must weigh the cost of assessment against that of restaking.

6.0 REFERENCES

Brew, D.A. et al, 1984. Preliminary Reconnaissance Geologic Map of the Petersburg and Parts of the Port Alexander and Sundum 1:250,000 Quadrangles, SE Alaska. U.S.G.S O.F. Report 84-405, 43 pp.

Bowdon, D.R., 1987-88. Numerous weekly and monthly reports for W.C. Meyers of Amselco, and miscellaneous loose sheets of drill data, thin section and microprobe analyses.

Cossaboom, C.C. and R.C. McMichael, 1986. Southeast Alaska Properties, Woewodski and Frenchie Groups. Cominco Alaska in-house report. 33 pp.

Cox, K.G. et al, 1979. The Interpretation of Igneous Rocks. George Allen and Unwin Ltd., London. p. 14.

Dvorak, Z. and P. Smith, 1986. Dighem III Survey of the Woewodski Island, Mansfield Peninsula and Greens Creek Areas, Southeast Alaska. Dighem Surveys and Processing Inc. in-house report. 30 pp.

Eng, T., 1984. As Claims Annual Report 1984. Houston Oil and Minerals Exploration Company in-house report. 27 pp.

Eng, T., 1984. As Claims Annual Report 1983. Houston Oil and Minerals Exploration Company in-house report. 10 pp.

Eng, T., 1983. As Claims Annual Report 1982. Houston Oil and Minerals Exploration Company in-house report. 22 pp.

Eng, T., 1980. As Annual Report 1980. Houston Oil and Minerals Exploration Company in-house report. 65 pp.

Geherels, G.E. and J.B. Saleeby, 1987. Geologic Framework, Tectonic Evolution, and Displacement History of the Alexander Terrane. Tectonics, Vol. 6, No. 2, pp. 151-173.

Gundy, K., 1992. Petersburg JV, Woewodski Island Frenchie Claims 1991 Annual Report. Kennecott Exploration in-house report. 4 pp.

Hall, B., 1987. Preliminary Geological and Geochemical Report of the Underdog Claim Group and Surrounding Area, Petersburg, Alaska. Colony Pacific in-house report. 16 pp.

MacIntyre, D.G., 1986. The Geochemistry of Basalts Hosting Massive Sulphide Deposits, Alexander Terrane, Northwest British Columbia. B.C.M.E.M.P.R. Geological Fieldwork 1985, Paper 1986-1, pp. 197-211.

Millholland, M., 1980. AS Claims SE Alaska, Houston Oil and Minerals Exploration Company in-house report.

No author, 1992. Cominco Woewodski Assessment. Pacific Northwest Resources in-house report. 7 pp.

Rubin, C.M. and J.B. Saleeby, 1992. Tectonic History of the Eastern Edge of the Alexander Terrane, Southeast Alaska. Tectonics, Vol. 11, No. 3. pp. 586-602.

Schroeter, T., 1991. Green's Creek Tour. Conference, Juneau Alaska, April 1991. 5 pp.

Silverman, A. and T. Eng, 1982. As Claims Southeast Alaska 1981 Annual Progress Report. Houston Oil and Minerals Exploration Company in-house report. 35 pp.

Walker, S., 1991. Green's Creek Keeps It Clean. E.M.J. pp. 20-23.

Twelker, E. and J. Rogers, 1978. HSM 1978 Southeast Alaska Massive Sulphide-Gold Exploration, Vol. VI. Resources Associates of Alaska in-house report. 10 pp.

7.0 STATEMENT OF EXPENDITURES

	Expenditures (Canadian Dollars)
Contract geologist 49 days at $250 per day	$12,250
Surveyor/assistant 22 days at $122 per day	2,684
Prospector 27 days at $220 per day	5,940
Staff wages 4 days at $300 per day	1,200
Camp/cabin rental 22 days at $120 per day	2,640
Hotel, 10 days	562
Food	900
Travel (Petersburg/Spokane)	1,200
Boat rental	1,100
Boat fuel	110
Car rental (Paul Pieper)	125
Drafting material	150
Camp equipment	100
Geochemical analyses	1,000
Shipping	75
Drafting, typing	1,060
Total	**$31,096**
Note: These costs are estimated to July 30, 1993.	

8.0 STATEMENT OF QUALIFICATIONS

I, Georgina Price, of Black Creek, British Columbia personally performed and/or supervised the work that is referred to in the preceding report, and certify that:

1. I am a geologist and have continually practised my profession since 1982;

2. I am a graduate of the University of British Columbia with a B.Sc. in geology, and of Oregon State University with an M.Sc. in exploration geology;

3. for the purposes of this fieldwork and report I have been under the employ of Westmin Resources Limited, P.O. Box 49066, Bentall Centre, #904 - 1055 Dunsmuir Street, Vancouver, B.C., V7X 1C4; and

4. I am a certified member of the Association of Professional Engineers and Geoscientists of British Columbia (No. 18871) and a Fellow of the Geological Association of Canada (No. F5605).

DATED this _____ day of _____ 1993 at Black Creek, British Columbia.

Georgina Price, M.Sc., P.Geo.

APPENDIX A

1993 EXPLORATION TIME ALLOCATION

APPENDIX A 1993 EXPLORATION TIME ALLOCATION (June 2 to 28)	
Geologist	
Mad Dog Show	6 x 5 hour days (tidal constraints only permitted 5 hours of mapping)
Hattie	3 hours
Scott's Show	4 days (including 1 full day locating the prospect)
Maid of Mexico/Harvey Lake	1 day
Mary Jo/Harry's Show	1 day (didn't find Harry's Show as it was under water)
Crab Bay	2 days
Mad Dog II	0.5 days (never found it)
Brushy Creek	2 days
Helen S	0.5 days
Lost Show	1 day
Coastal reconnaissance	3 days
Touring Chris Rockingham around property	2 days
Frenchie Creek	1 day
Spruce claim	1 day
Expediting	1.5 days
Office work	1.5 days
Prospector	
Mad dog/Butterworth	2 days
Lost Show-Scott's Show grid	9 days
Maid of Mexico	1 day
Crab Bay grid	4 days (including Boulder Point)

Brushy Creek/Blowdown Creek	3 days
Coastal reconnaissance	2 days
Spruce claim	1 day
Touring C. Rockingham around property	2 days
Frenchie Creek	1 day
Expediting	1 day
Demobilization	1 day

APPENDIX B

CLAIM RECORDS

BLM NO.	CLAIM NAME	COPPER RIVER MERIDIAN 1/4 SECTION	TWSP.	RANGE	PETERSBURG REC. DIST. BK/PG
AA 57132	WODSKI 221	SW1,NW12	62S	79E	24/846-7
AA 57133	WODSKI 222	SW1,NW12	62S	79E	24/848
AA 57134	WODSKI 223	SW1,NW12	62S	79E	24/849
AA 57135	WODSKI 224	SW1,NW12	62S	79E	24/850
AA 57136	WODSKI 225	SE1,NE12	62S	79E	24/851
AA 57137	WODSKI 317	SE2	62S	79E	24/852
AA 57138	WODSKI 318	SE2	62S	79E	24/853
AA 57139	WODSKI 319	SE2	62S	79E	24/854
AA 57140	WODSKI 320	SW1,SE2	62S	79E	24/855
AA 57141	WODSKI 321	SW1	62S	79E	24/856
AA 57142	WODSKI 322	SW1	62S	79E	24/857
AA 57143	WODSKI 323	SW1	62S	79E	24/858
AA 57144	WODSKI 324	SW1	62S	79E	24/859
AA 57145	WODSKI 325	SE1	62S	79E	24/860
AA 57146	WODSKI 414	SW2	62S	79E	24/861
AA 57147	WODSKI 415	SE2,SW2	62S	79E	24/862
AA 57148	WODSKI 416	SE2	62S	79E	24/863
AA 57149	WODSKI 417	SE2	62S	79E	24/864
AA 57150	WODSKI 418	SE2	62S	79E	24/865
AA 57151	WODSKI 419	SE2	62S	79E	24/866
AA 57152	WODSKI 420	SW1,SE2	62S	79E	24/867
AA 57153	WODSKI 421	SW1	62S	79E	24/868
AA 57154	WODSKI 422	SW1	62S	79E	24/869
AA 57155	WODSKI 423	SW1	62S	79E	24/870
AA 57156	WODSKI 424	SW1	62S	79E	24/871
AA 57157	WODSKI 425	SE1	62S	79E	24/872
AA 57158	WODSKI 514	SW2,NW2	62S	79E	24/873
AA 57159	WODSKI 515	NE2,SE2,SW2,NW2	62S	79E	24/874
AA 57160	WODSKI 608	NE3	62S	79E	24/875
AA 57161	WODSKI 609	NE3	62S	79E	24/876
AA 57162	WODSKI 610	NW2,NE3	62S	79E	24/877
AA 57163	WODSKI 611	NW2	62S	79E	24/878
AA 57164	WODSKI 612	NW2	62S	79E	24/879
AA 57165	WODSKI 613	NW2	62S	79E	24/880
AA 57166	WODSKI 614	NW2	62S	79E	24/881
AA 57167	WODSKI 615	NE2,NW2	62S	79E	24/882
AA 57168	WODSKI 704	SW34/NW3	61S/62S	79E	24/883
AA 57169	WODSKI 705	SE34,SW34/NE3,NW3	61S/62S	79E	24/884
AA 57170	WODSKI 706	SE34/NE3	61S/62S	79E	24/885
AA 57171	WODSKI 707	SE34/NE3	61S/62S	79E	24/886
AA 57172	WODSKI 708	SE34/NE3	61S/62S	79E	24/887
AA 57173	WODSKI 709	SE34/NE3	61S/62S	79E	24/888
AA 57174	WODSKI 710	SE34,SW35/NW2,NE3	61S/62S	79E	24/889
AA 57175	WODSKI 711	SW35/NW2	61S/62S	79E	24/890
AA 57176	WODSKI 712	SW35/NW2	61S/62S	79E	24/891
AA 57177	WODSKI 713	SW35/NW2	61S/62S	79E	24/892
AA 57178	WODSKI 714	SW35/NW2	61S/62S	79E	24/893
AA 57179	WODSKI 715	SE35,SW35/NE2,NW2	61S/62S	79E	24/894
AA 57180	WODSKI 716	SE35/NE2	61S/62S	79E	24/895
AA 57181	WODSKI 717	SE35/NE2	61S/62S	79E	24/896
AA 57182	WODSKI 718	SE35/NE2	61S/62S	79E	24/897
AA 57183	WODSKI 811	SW35	61S	79E	24/898
AA 57184	WODSKI 812	SW35	61S	79E	24/899
AA 57185	WODSKI 813	SW35	61S	79E	24/900
AA 57186	WODSKI 814	SW35	61S	79E	24/901
AA 57187	WODSKI 815	SE35,SW35	61S	79E	24/902
AA 57188	WODSKI 816	SE35	61S	79E	24/903
AA 57189	WODSKI 817	SE35	61S	79E	24/904
AA 57190	WODSKI 818	SE35	61S	79E	24/905
AA 57191	WODSKI 913	NW35	61S	79E	24/906
AA 57192	WODSKI 914	SW35,NW35	61S	79E	24/907
AA 57193	WODSKI 915	NE35,SE35,SW35,NW35	61S	79E	24/908
AA 57194	WODSKI 916	NE35,SE35	61S	79E	24/909
AA 57195	WODSKI 917	NE35,SE35	61S	79E	24/910
AA 57196	WODSKI 918	NE35,SE35	61S	79E	24/911
AA 57197	WODSKI 919	NE35,SE35	61S	79E	24/912
AA 57198	WODSKI 920	NE35,SE35,SW36,NW36	61S	79E	24/913
AA 57199	WODSKI 921	SW36,NW36	61S	79E	24/914
AA 57200	WODSKI 1013	NW35	61S	79E	24/915
AA 57201	WODSKI 1014	NW35	61S	79E	24/916

BLM NO.	CLAIM NAME	COPPER RIVER MERIDIAN 1/4 SECTION	TWSP.	RANGE	PETERSBURG REC. DIST. BK/PG
AA 57202	WODSKI 1015	NE35,NW35	61S	79E	24/917
AA 57203	WODSKI 1016	NE35	61S	79E	24/918
AA 57204	WODSKI 1017	NE35	61S	79E	24/919
AA 57205	WODSKI 1018	NE35	61S	79E	24/920
AA 57206	WODSKI 1019	NE35	61S	79E	24/921
AA 57207	WODSKI 1020	NE35,NW36	61S	79E	24/922
AA 57208	WODSKI 1021	NW36	61S	79E	24/923
AA 57209	WODSKI 1112	SW26	61S	79E	24/924
AA 57210	WODSKI 1113	SW26	61S	79E	24/925
AA 57211	WODSKI 1114	SW26	61S	79E	24/926
AA 57212	WODSKI 1115	SE26,SW26	61S	79E	24/927
AA 57213	WODSKI 1116	SE26	61S	79E	24/928
AA 57214	WODSKI 1117	SE26	61S	79E	24/929
AA 57215	WODSKI 1118	SE26	61S	79E	24/930
AA 57216	WODSKI 1119	SE26	61S	79E	24/931
AA 57217	WODSKI 1120	SW25,SE26	61S	79E	24/932
AA 57218	WODSKI 1121	SW25	61S	79E	24/933
AA 57219	WODSKI 1212	SW26,NW26	61S	79E	24/934
AA 57220	WODSKI 1213	SW26,NW26	61S	79E	24/935
AA 57221	WODSKI 1214	SW26,NW26	61S	79E	24/936
AA 57222	WODSKI 1215	NE26,SE26,SW26,NW26	61S	79E	24/937
AA 57223	WODSKI 1216	NE26,SE26	61S	79E	24/938
AA 57224	WODSKI 1217	NE26,SE26	61S	79E	24/939
AA 57225	WODSKI 1218	NE26,SE26	61S	79E	24/940
AA 57226	WODSKI 1312	NW26	61S	79E	24/941
AA 57227	WODSKI 1313	NW26	61S	79E	24/942
AA 57228	WODSKI 1314	NW26	61S	79E	24/943
AA 57229	WODSKI 1315	NE26,NW26	61S	79E	24/944
AA 57230	WODSKI 1316	NE26	61S	79E	24/945
AA 57231	WODSKI 1317	NE26	61S	79E	24/946
AA 57232	WODSKI 1318	NE26	61S	79E	24/947
AA 57233	WODSKI 1404	SW22,NW27	61S	79E	24/948
AA 57234	WODSKI 1405	SE22,SW22,NE27,NW27	61S	79E	24/949
AA 57235	WODSKI 1406	SE22,NE27	61S	79E	24/950
AA 57236	WODSKI 1407	SE22,NE27	61S	79E	24/951
AA 57237	WODSKI 1408	SE22,NE27	61S	79E	24/952
AA 57238	WODSKI 1409	SE22,NE27	61S	79E	24/953
AA 57239	WODSKI 1410	SE22,SW23,NW26,NE27	61S	79E	24/954
AA 57240	WODSKI 1411	SW23,NW26	61S	79E	24/955
AA 57241	WODSKI 1412	SW23,NW26	61S	79E	24/956
AA 57242	WODSKI 1413	SW23,NW26	61S	79E	24/957
AA 57243	WODSKI 1414	SW23,NW26	61S	79E	24/958
AA 57244	WODSKI 1415	SE23,SW23,NE26,NW26	61S	79E	24/959
AA 57245	WODSKI 1416	SE23,NE26	61S	79E	24/960
AA 57246	WODSKI 1417	SE23,NE26	61S	79E	24/961
AA 57247	WODSKI 1418	SE23,NE26	61S	79E	24/962
AA 57248	WODSKI 1419	SE23,NE26	61S	79E	24/963
AA 57249	WODSKI 1420	SW24,NW25	61S	79E	24/964
AA 57250	WODSKI 1421	SW25,NW36	61S	79E	24/965
AA 57251	WODSKI 1503	SW22	61S	79E	24/966
AA 57252	WODSKI 1504	SW22	61S	79E	24/967
AA 57253	WODSKI 1505	SW22	61S	79E	24/968
AA 57254	WODSKI 1506	SW22	61S	79E	24/969
AA 57255	WODSKI 1520	SW24	61S	79E	24/970
AA 57256	WODSKI 1521	SW24	61S	79E	24/971
AA 57257	WODSKI 1522	SW24	61S	79E	24/972
AA 57258	WODSKI 1606	NE22,SE22	61S	79E	24/973
AA 57259	WODSKI 1620	SW24,NW24	61S	79E	24/974
AA 57260	WODSKI 1621	SW24,NW24	61S	79E	24/975
AA 57261	WODSKI 1622	SW24,NW24	61S	79E	24/976
AA 57262	WODSKI 1623	SW24,NW24	61S	79E	24/977
AA 57263	WODSKI 1624	NE24,SE24,SW24,NW24	61S	79E	24/978
AA 57264	WODSKI 1625	NE24,SE24	61S	79E	24/979
AA 57265	WODSKI 1626	NE24,SE24	61S	79E	24/980
AA 57266	WODSKI 1627	NE24,SE24	61S	79E	24/981
AA 57267	WODSKI 1628	NE24,SE24	61S	79E	24/982
AA 57268	WODSKI 1705	NE22,NW22	61S	79E	25/402-3
AA 57269	WODSKI 1706	NE22	61S	79E	25/404
AA 57270	WODSKI 1707	NE22	61S	79E	25/405
AA 57271	WODSKI 1708	NE22	61S	79E	25/406

BLM NO.	CLAIM NAME	COPPER RIVER MERIDIAN 1/4 SECTION	TWSP.	RANGE	PETERSBURG REC. DIST. BK/PG
AA 57272	WODSKI 1709	NE22	61S	79E	25/407
AA 57273	WODSKI 1710	NE22,NW23	61S	79E	25/408
AA 57274	WODSKI 1711	NW23	61S	79E	25/409
AA 57275	WODSKI 1723	NW24	61S	79E	24/983
AA 57276	WODSKI 1724	NE24,NW24	61S	79E	24/984
AA 57277	WODSKI 1725	NE24	61S	79E	24/985
AA 57278	WODSKI 1726	NE24	61S	79E	24/986
AA 57279	WODSKI 1727	NE24	61S	79E	24/987
AA 57280	WODSKI 1728	NE24	61S	79E	24/988
AA 60381	WODSKI 1715	NE23,NW23	61S	79E	28/86-7
AA 60382	WODSKI 1716	NE23	61S	79E	28/88
AA 60383	WODSKI 1717	NE23	61S	79E	28/89
AA 60384	WODSKI 1718	NE23	61S	79E	28/90
AA 60385	WODSKI 1719	NE23	61S	79E	28/91
AA 60386	WODSKI 1720	NE23,NW24	61S	79E	28/92
AA 60387	WODSKI 1721	NW24	61S	79E	28/93
AA 60388	WODSKI 1722	NW24	61S	79E	28/94
AA 60389	WODSKI 1815	SE14,SW14,NE23,NW23	61S	79E	28/95
AA 60390	WODSKI 1816	SE14,NE23	61S	79E	28/96
AA 60391	WODSKI 1817	SE14,NE23	61S	79E	28/97
AA 60392	WODSKI 1818	SE14,NE23	61S	79E	28/98
AA 60393	WODSKI 1819	SE14,NE23	61S	79E	28/99
AA 60394	WODSKI 1820	SW13,SE14,NE23,NW24	61S	79E	28/100
AA 60395	WODSKI 1821	SW13,NW24	61S	79E	28/101
AA 60396	WODSKI 1822	SW13,NW24	61S	79E	28/102
AA 63603	WODSKI 1307	NE27	61S	79E	30/431
AA 63604	WODSKI 1308	NE27	61S	79E	30/432
AA 63605	WODSKI 1309	NE27	61S	79E	30/433
AA 63606	WODSKI 1310	NW26,NE27	61S	79E	30/434
AA 63607	WODSKI 1311	NW26	61S	79E	30/435
AA 76513	WODSKI 1319	NE26	61S	79E	39/987-8
AA 76514	WODSKI 1320	NW25,NE26	61S	79E	39/989

APPENDIX C

PERMITTING--GOVERNMENT ADDRESSES

APPENDIX C

PERMITTING--GOVERNMENT ADDRESSES

FOREST

United States Department of Agriculture
U.S.D.A. Forest Service
Tongass National Forest
Petersburg Ranger District
P.O. Box 1328
Petersburg, Alaska, U.S.A.
99833

Contact: Jeannine Lilly (Ranger)
Phone: 907-772-3871
Fax: 907-772-3141

WETLANDS

Regulatory Branch
Project Evaluation Section - South
Department of the Army
U.S. Army Engineering District, Alaska
P.O. Box 898
Anchorage, Alaska, U.S.A.
99506-0898

Contact: Glen Justis (Chief, East Unit)
Phone: 907-753-2712
Fax: 907-753-5567

INTERTIDAL

Aquacultural Regulations - Division of Governmental Co-ordination
#101 - 431 North Franklin
P.O. AW
Juneau, Alaska, U.S.A.
99811-0165

Phone: 907-456-3562

APPENDIX D

WHOLE ROCK GEOCHEMISTRY

APPENDIX D

WHOLE ROCK GEOCHEMISTRY

Sample Name	Location	Description
WRH-1	Hattie	mafic
WRHS-1	Helen S	mafic
WRHS-2	Helen S	mafic
WRL-1	Lost Lake	mafic
WRMD-1	Mad Dog	mafic
WRMD-2	Mad Dog	mafic
Wod-93-1	Hattie	calc-silicate altered
Wod-93-2	Hattie	calc-silicate altered
Wod-93-3	Mad Dog	calc-silicate altered
Wod-93-4	Harvey Lake	calc-silicate altered
Wod-93-5	Mary Jo	calc-silicate altered
Wod-93-6	Mary Jo	calc-silicate altered

Note: Wod series rocks had oxidized rind chipped off prior to analyses.

Sample	Al_2O_3	CaO	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	LOI	Total
W931	19.53	4.16	8.12	0.24	2.16	0.16	0.07	0.54	49.55	0.89	13.31	98.74
W932	14.60	9.03	16.80	0.07	4.66	0.24	0.01	0.11	26.36	2.70	24.28	98.87
W933	7.68	1.75	17.64	0.31	1.86	1.13	0.02	0.65	53.94	1.62	13.67	100.30
W934	15.11	7.29	14.06	0.04	6.74	0.26	0.01	0.34	45.93	2.31	5.45	97.58
W935	15.16	12.50	11.54	1.48	5.17	0.18	0.93	0.24	45.70	1.72	3.26	97.92
W936	11.31	8.19	9.42	0.88	4.00	0.14	0.01	0.21	45.29	1.58	16.95	98.01

P. G. Lhotka, 1992.

APPENDIX E

LOST SHOW GEOLOGICAL INVENTORY

APPENDIX E LOST SHOW GEOLOGICAL INVENTORY					
Section	**Horizontal Distance (ft)**	**Tons (Imperial)**	**Ag (oz/T)**	**Pb (%)**	**Zn (%)**
1420E	150	18,750	2.2	0.2	7.3
1200E	200	80,000	2.2	0.2	7.3
1050E	100	61,100	1.4	0.1	3.3
980E	200	116,000	1.4	0.4	4.9
600E	400	50,000	2.4	0.8	6.2
260E	175	59,150	2.4	0.4	10.4
190E	150	60,000	3.2	0.6	11.5
0E	125	41,000	3.4	1.1	11.8
80W	100	16,800	4.2	1.7	9.0
260W	200	60,000	1.8	1.2	3.5
Total	**1,800**	**562,800**	**2.2**	**0.6**	**7.0**
Note: No cutoff, undiluted, 4' minimum width. Tonnage factor = 10.					

APPENDIX F

GEOCHEMISTRY--MAD DOG SHOW

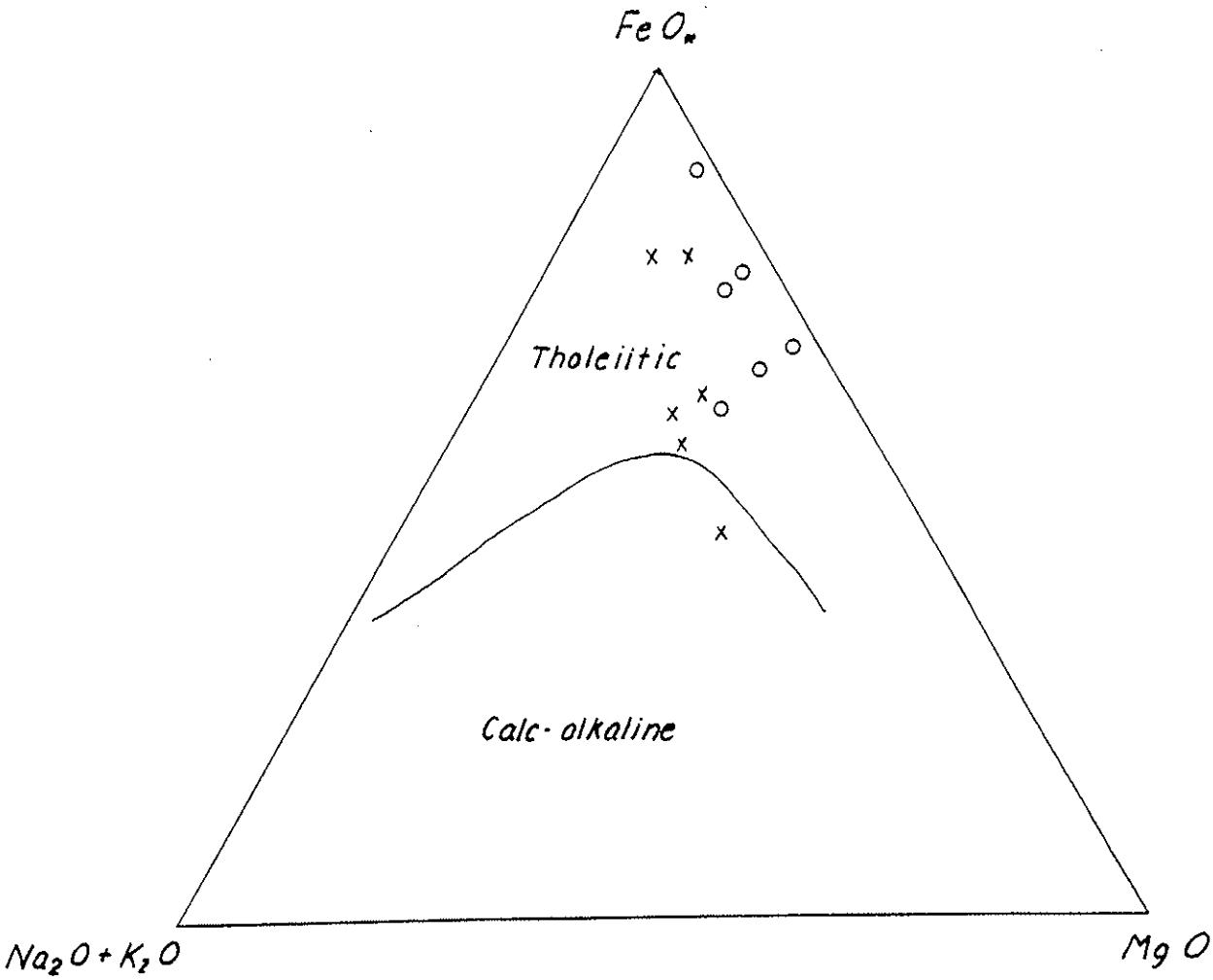
APPENDIX F

GEOCHEMISTRY–MAD DOG SHOW

Sample No.	Au (ppb)	Ag (oz/T)	Cu (%)	Pb (%)	Zn (%)	
81308	.005	3.3	.06	1.6	5.36	
81310	.004	1.25	.02	.79	7.05	
81311	.005	4.8	.04	1.35	6.51	
81312	.008	11.9	.03	3.06	5.84	
81313	.040	5.1	.07	2.55	7.99	
81314	.008	4.55	.08	.37	8.67	

G. Price, 1993

Sample No.	Au (ppb)	Ag (oz/T)	Cu (%)	Pb (%)	Zn (%)	Cd (%)
178851	80	.11	.03	.03	1.17	.007
178852	100	2.44	.04	.41	7.49	.051
178853	160	16.4	.09	4.87	10.8	.102
178854	80	5.27	.09	1.46	8.42	.065
178855	20	1.3	.07	.17	1.55	.011
178856	75	.05	.02	.02	.08	.001
178857	30	.22	.09	.07	.21	.001
178858	20	.08	.11	.01	.15	.001
178859	10	.03	.12	.01	.02	tr
178860	30	.48	.11	.18	.44	.003
178861	120	8.25	.06	2.65	10.9	.080
178862	20	.82	.05	.13	1.74	.013
178863	1,490	4.12	.03	1.07	2.88	.025
178864	265	4.91	.05	.73	5.25	.036
178865	60	5.22	.03	1.94	3.21	.027
178866	30	3.06	.03	.93	4.40	.030
178867	1,450	0.85	.01	.73	3.25	.006
178868	70	2.31	.02	.76	2.86	.020
178869	30	2.55	.02	.58	3.19	.017



Irvine + Barrager (1971)

A-F-M Diagram
Woewodski Island

x calc-silicate altered rocks

o mafic rocks

APPENDIX G

LOCAL SERVICES

APPENDIX G LOCAL SERVICES			
Name	**Service**	**Telephone No.**	**Fax No.**
Paul Pieper	Prospector	(907) 772-3915	
Alaska Airlines	Travel	(800) 426-0333	
Scandia House	Hotel	(907) 772-4281	
Trading Union	Groceries/hardware	(907) 772-3881	(907) 772-9309
Tongass Marine	Boat rental	(907) 772-3905	
Murph Engineering	Blueprint machine	(907) 772-4211	
U.S. Forest Service	Bureaucracy	(907) 772-3871	
Whitepass Fuel	Fuel	(907) 772-4251	(907) 772-3380
R & R Storage	Locker #12	(907) 772-4270	
Viking Travel	Public fax	(907) 772-3818	(907) 772-3940
Helen S Cabin Owners			
Phil Beardslee	Cabin rental	(907) 772-9246	
Syd Wright			
Dick Greseth			
Bill Neumann			