ARIS SUMMARY SHEET

District Geologist, Victoria — Off Confidential: 92.08.30

ASSESSMENT REPORT 21612 — MINING DIVISION: Nanaimo

PROPERTY: Hushamu
LOCATION: LAT 50 40 00 LONG 127 50 00
UTM 09 5613188 582451
NTS 092L12W

CAMP: 031 Island Copper Area

CLAIM(S): Expo 189,Expo 238-239,Don 14 Fr.,Hep 57
OPERATOR(S): Moraga Res.
AUTHOR(S): Pawliuk, D.J.
REPORT YEAR: 1991, 263 Pages
KEYWORDS: Triassic-Jurassic,Vancouver Group,Quartz-feldspar porphyry
Bonanza Formation,Pyrite,Chalcopyrite,Bornite,Molybdenite
Porphry copper

WORK
DONE: Drilling,Geochemical
DIAD 2347.0 m 8 hole(s);NQ
SAMP 757 sample(s) ;ME

RELATED
REPORTS: 21352
MAP(S): 092L 240,092L 185

Daiwan Engineering Ltd.
1030-609 Granville Street, Vancouver, B. C. Canada. V7Y 1G5
Phone: (604) 688-1508

ASSESSMENT REPORT

ON THE

MCINTOSH DRILLING PROGRAM

"MAC GROUPS" CLAIMS

NORTH VANCOUVER ISLAND, BRITISH COLUMBIA

NTS: 92L/12

Latitude: 50° 40' N
Longitude: 127° 50' W

For

Moraga Resources Ltd.
1030 - 609 Granville Street
Vancouver, B.C.
V7Y 1G5

By

David J. Pawliuk, B.Sc.

August 26, 1991

C:\wp51\w91.57/2

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Daiwan Engineering Ltd.
1030 - 609 Granville Street, Vancouver, B.C. V7Y 1G5
Phone: (604) 688-1508

SUMMARY

Between November 1 and December 10, 1990, the author was employed by Daiwan Engineering Ltd. to supervise a drill program of 2347.0 metres (7,700 feet) within the Hushamu copper-gold deposit area. The program consisted of eight drill holes.

The drill program was successful in further defining copper mineralization beneath siliceous, pyrophyllite breccias which cap McIntosh Mountain.

The drill program extended the geological boundaries of the Hushamu copper-gold deposit.

A total of $314,052 was spent on this drill program between September 1, 1990 and January 25, 1991, and is claimed for assessment.

INTRODUCTION

Mr. Maurice Young, president of Moraga Resources Ltd., requested Daiwan Engineering Ltd. conduct a drilling program on the Expo property in the McIntosh Mountain area near Holberg, British Columbia. The program was designed to further investigate mineralization both south and northwest of the Hushamu copper/gold deposit.

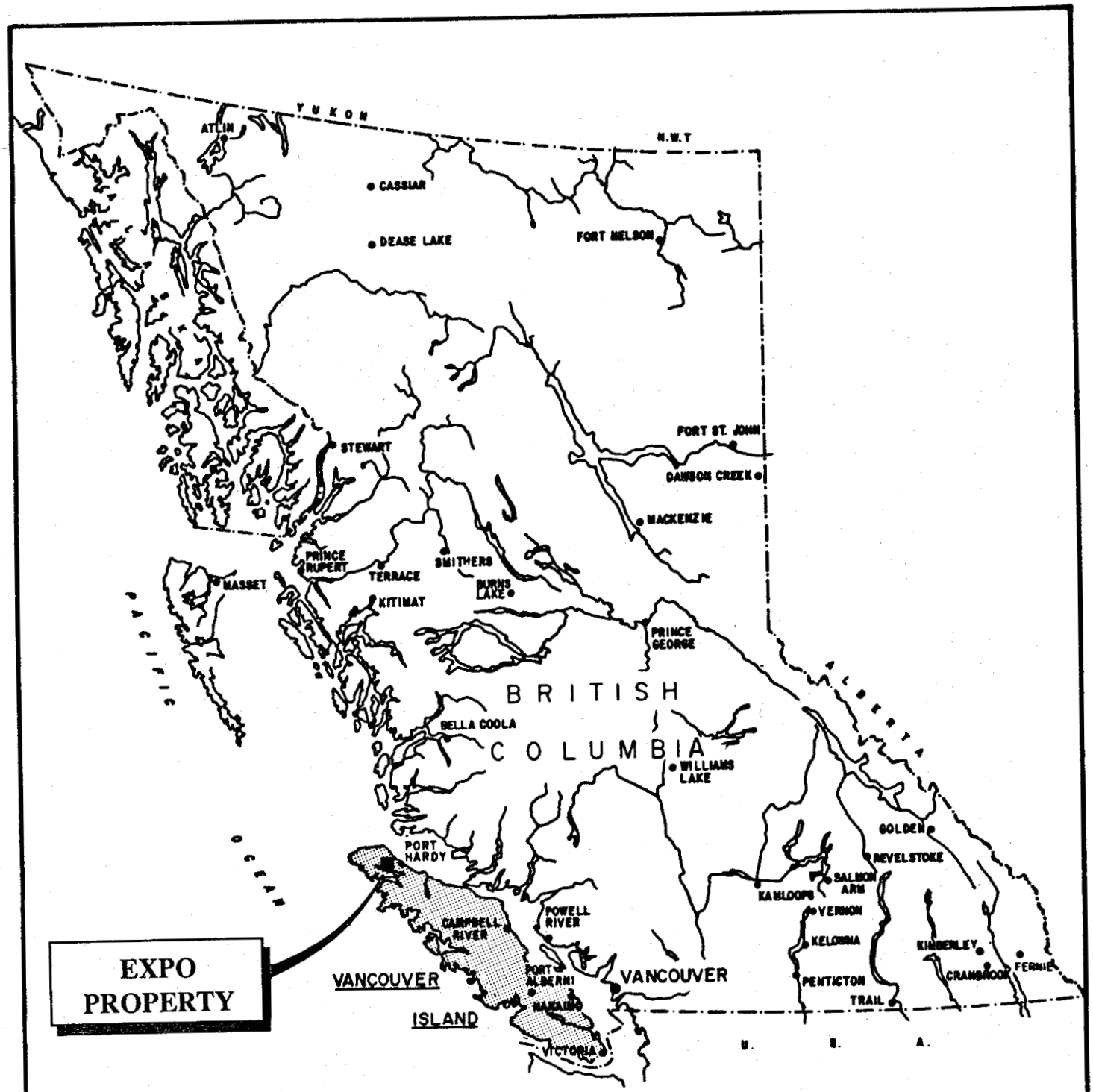
Preliminary drill hole test layout commenced in September 1990; the drilling was carried out during November and December 1990, and this report was written in January 1991.

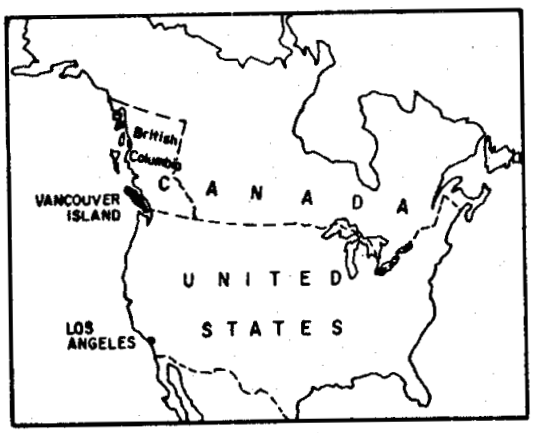
LOCATION AND ACCESS

The Expo property is located on northern Vancouver Island, approximately 360 km (225 miles) northwest of Vancouver, British Columbia, Canada (Figure 1). This large claim group covers a 20 km (13 mile) stretch of ground immediately north, and parallel to, the west end of Holberg Inlet on N.T.S. topographic map 92L/12. The Hushamu claim group consists of 97 contiguous two-post claims in the centre of the Expo property (see Figure 2). Most areas of the property can be reached by well maintained logging roads and forest tracks. The main access to the claim block is by forest road "Wanokana Main" which commences on the outskirts of Coal Harbour.

Regular airline service to Port Hardy from Vancouver is available on a daily schedule. Alternately, there is good highway access, with travel from Vancouver taking eight hours.

Port Hardy is the local commercial centre, but there are forestry and fishing centres at Coal Harbour and Holberg.





MORAGA RESOURCES LTD.

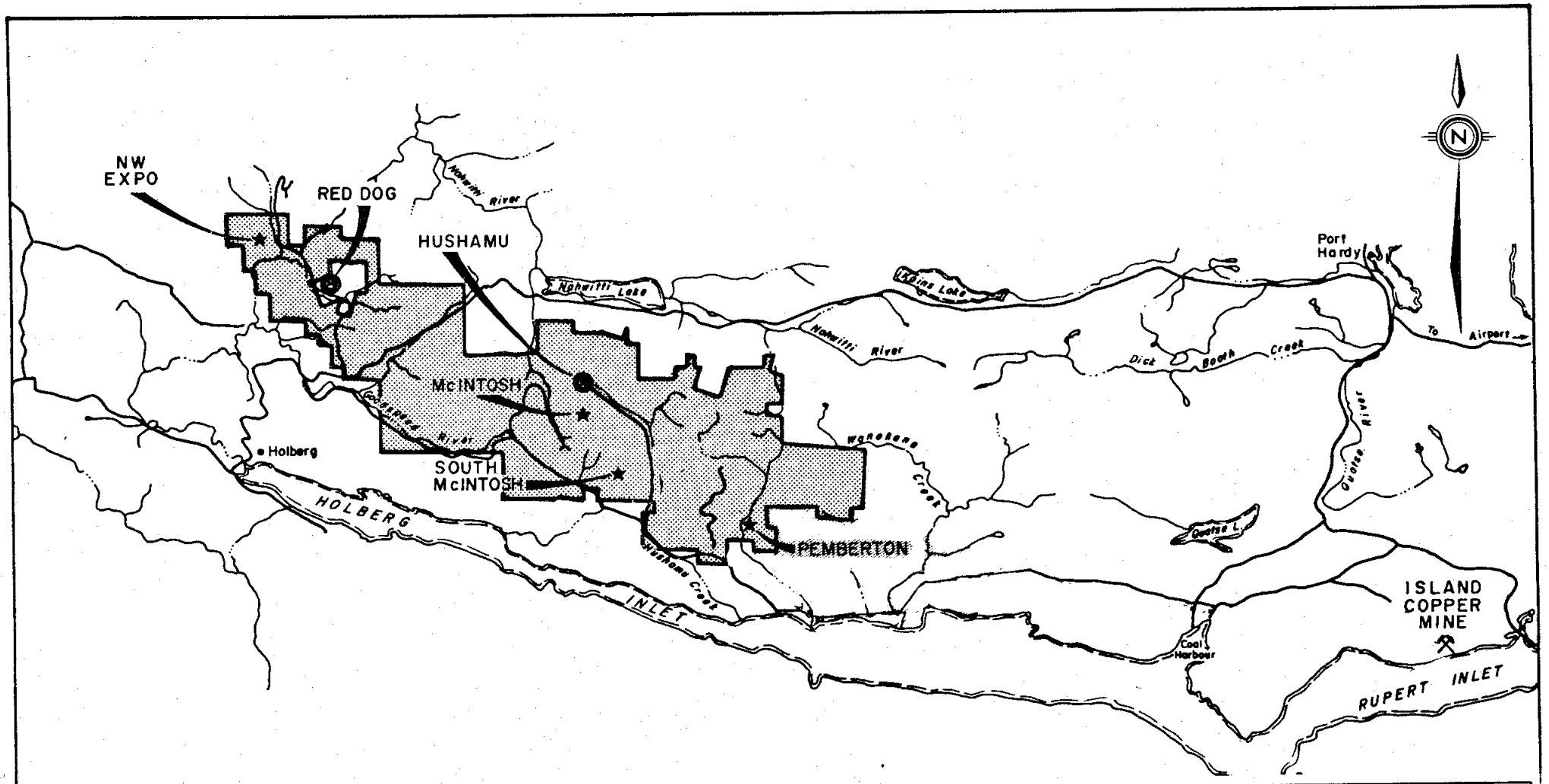
EXPO PROJECT

NANAIMO MINING DIVISION, B.C.

LOCATION MAP

DAIWAN ENGINEERING LTD.

SCALE	DATE	FIG.
1: 8,000,000	Aug. '91	1



LEGEND

- EPITHERMAL CENTRES
- PORPHYRY COPPER - GOLD DEPOSITS
- ROAD
- PROPERTY OUTLINE

KILOMETRES
0 5 10

MORAGA RESOURCES LTD.

EXPO PROJECT
NANAIMOMINING DIVISION, B.C.

PROPERTY MAP

DAIWAN ENGINEERING LTD.

SCALE	DATE	FIG.
As Shown	Aug. '91	2

TOPOGRAPHY AND VEGETATION

The property is characterized by many low, northwest to westerly trending hills and ridges bounded by narrow, deeply incised valleys and steep slopes. Elevations range from sea level to over 600 metres (2,000 feet). Within the claim block ridge tops are commonly about 300 metres (1,000 feet) above valley bottom. The property is within N.T.S. topographic map-sheet 92L/12.

The claims are located within an active logging area, consequently forest cover varies from mature stands of fir, hemlock, spruce and cedar to dense second growth to open clear-cut areas of recent logging. Some of the ridge tops are fairly open with only stunted evergreens. Low areas, especially along creeks, have thick brush and berry bushes.

Rock exposure is abundant in areas of high relief and on the higher ridges. However, thick humus development on the forested slopes and scattered residual glacial gravels in the valley bottoms restrict geological mapping in these areas.

PROPERTY DESCRIPTION

The Expo property of Moraga Resources Ltd. consists of over 524 contiguous claims, mostly two post mineral claims designated "Expo" and "Hep".

This drilling report is being applied as assessment against a portion of the claims within the Expo group. Figure 3 shows this grouping. A complete list of the claims can be found in Appendix 1.

HISTORY

A large copper-molybdenum deposit discovered at the eastern end of Rupert Inlet during the 1960s was developed into Island Copper Mine (Figure 2). This mine commenced production in October 1971. Production to 1987 had been in excess of 200 million t milled, for concentrate sales of 753,000 t of copper, 23.1 million grams gold, 168 million grams silver, and 15.3 metric t molybdenum[5].

With the discovery of significant copper mineralization on the Utah property, a great deal of exploration was performed in the area by individuals and companies searching for copper. Many copper occurrences were located but none were found to be economic.

FROG 1400(4) 4S x 3W

EXPO 900 1200(3)

EXPO 1900 1200 (3)

WIN 1 3212(12) 4N x 5W

WITTI-1 3918(7) 4N x 5W

WITTI-2 3919(7) 4N x 5E

LOD 6 3679(1)

LOD 7 3680(1)

LOD 1 3674(1)

LOD 2 3675(1)

LOD 3 3676(1)

LOD 4 3677(1)

LOD 5 3678(1)

HELPER 3237(1) 3N x 5W

LAKE 2 3366(5) 2S x 5W

HPH 4 3558(5)

RUTH MATU 2757(8) 3S x 4E

IRON HAT 2761(8) 4S x 3W

QUATSINO 2760(8) 3S x 3W

DORLON 2455(8) 4S x 5W

NAHWITTI 2657(5) 4S x 4E

CLIFF 2659(8) 4S x 5W

3367(6) 5S x 3W

Nahwitti

STRAN 5 3750(3) 3S x 4E

SJ 1 3967(7) 5S x 4W

SJ 2 3968(7) 3N x 4W

SJ 3 3969(7) 5N x 4E

SJ 4 3922(7) 5S x 4E

SJ 5 3970(7)

SJ 6 3971(7)

SJ 7 3972(7)

SJ 8 3973(7)

NAHA 1 3980(7)

NAHA 2 3981(7)

Holberg

Holberg Inlet

GOLDILOX 3905(6) 2S x 3E

PAPA-1 4010(8) 3N x 6W

PAPA-2 4011(8) 4S x 4W

PAPA-3 4012(8) 5S x 4E

PAPA-4 4013(8)

STUART 3813(5) 4N x 4W

CLESK 1 3792(4) 4S x 4W

CLESK 2 3793(4) 4S x 5E

Clesklaht Cr.

Clerup Cr.

Pegasus Cr.

Holberg Inlet

HUSH-1 3921(7) 4S x 4W

H-78910 4006(8) 1S x 4E

H-6 3917(7)

H-4 3915(7)

H-2 3913(7)

H-5 3916(7)

H-3 3914(7)

H-1 3912(7)

YOUG-1 4007(8) 4S x 5E

SHAWOOD 1 3771(4) 5S x 4W (111840)

SHAWOOD 2 3771(4) 5S x 4W

SHANNON 2 3772(4) 5S x 4E

TRISH 1 3775(4)

TRISH 2 3774(4)

TRISH 3 3777(4)

TRISH 4 3776(4)

TRISH 5 3778(4)

PEMBERTON 1 1108(4)

PEMBERTON 2 1109(4)

PEMBERTON 3 1110(4)

PEMBERTON HILLS

PEM 1 3781(4)

PEM 2 3782(4)

PEM 3 3783(4)

PEM 4 3784(4)

PEM 5 3785(4)

PEM 6 3786(4)

PEM 7 3787(4)

PEM 8 3788(4)

PEM 9 3789(4)

PEM 10 3790(4)

PEM 11 3791(4)

STAT 3 2324(4) 4S x 5W

STAT 2 2323(4) 4S x 5W

111830 111837 111838 111839 111840 111842 111853 111854 111856

0 .5 1 2 3 kilometres

Shaded area indicates claims listed in the MAC '91, MAC '91A, MAC '91B, MAC '91C, MAC '91D GROUPINGS

MORAGA RESOURCES LTD.

EXPO PROJECT

NANAIMOMINING DIVISION, B.C.

CLAIM MAP

DAIWAN ENGINEERING LTD.

SCALE	DATE	FIG.
As Shown	Aug. '91	3

During the height of the exploration activity, Utah Mines Ltd. held mineral claims covering most of the area extending from the east end of Rupert Inlet to the west end of Holberg Inlet. Their properties included the large block of claims covering the Island Copper deposit, as well as the favourable geology on trend to the northwest (most of the present Expo group). After exploring the area extensively to 1975, Utah dropped some of the claims but retained the Expo group. Exploration on the Expo claims had located the Hushamu copper-molybdenum deposit estimated in 1983 to contain 58,420,000 mineable tons grading 0.32% Cu, 0.008% Mo and 413 ppb gold with a stripping ratio of 2.21:1. The indicated geological reserve for the deposit was over 100 million tons at the same grade, but at a higher stripping ratio.[2]

A number of other alteration zones similar to those at Island Copper Mine and at the Hushamu deposit were investigated. While some were mineralized, they were not significant enough at the time to warrant further work.

The Hushamu deposit and these other alteration zones are the targets for Moraga Resources Ltd.'s current gold and copper exploration.[1] The urgency for developing another copper deposit in the area is prompted by the expected closure of the Island Copper Mine in 1996 due to the depletion of the pit reserves.

Moraga has completed four phases of exploration since obtaining the property option. The first groundwork was a Downhole Pulse Electromagnetic Survey of diamond drill hole (DDH) EC-158 at Pemberton Hills.[7] This survey indicated a sheet-like sulphide horizon with a significantly more responsive sulphide zone to the north-northwest of the drill hole. This anomaly is awaiting further fieldwork.

The second program commenced in late November of 1988, on the completion of the Company's public financing, and included regional mapping with road cut sampling, computer modelling of the 1963 airborne geophysical data, and a 762 metre (2,500 foot) drill programme. In addition archived soil sample rejects were recovered from storage and analyzed for gold, arsenic, selenium, tellurium, bismuth, and antimony. These samples were previously analyzed for copper, lead and zinc.[8]

The third work program was diamond drilling in the vicinity of the Red Dog deposit in April and May of 1990.

A fourth program of drilling was carried out from June to August 1990 in the vicinity of the Hushamu deposit; at the same time, another drill program was carried out on behalf of Moraga Resources Ltd. on the Red Dog deposit.

REGIONAL GEOLOGY

Vancouver Island north of Holberg and Rupert Inlets is underlain by Upper Triassic to Lower Jurassic rocks of the Vancouver Group. The Vancouver Group rocks are intruded by rocks of Jurassic and Tertiary age, and disconformably overlain by Cretaceous sedimentary rocks. Figure 5 shows a 1:500,000 geological map of the northern part of the island.

Faulting is prevalent in the area. Large-scale block faults with hundreds to thousands of metres of displacement are offset by younger strike-slip faults with displacements of up to 750 metres (2,500 feet).

Sedimentary and Volcanic Rocks

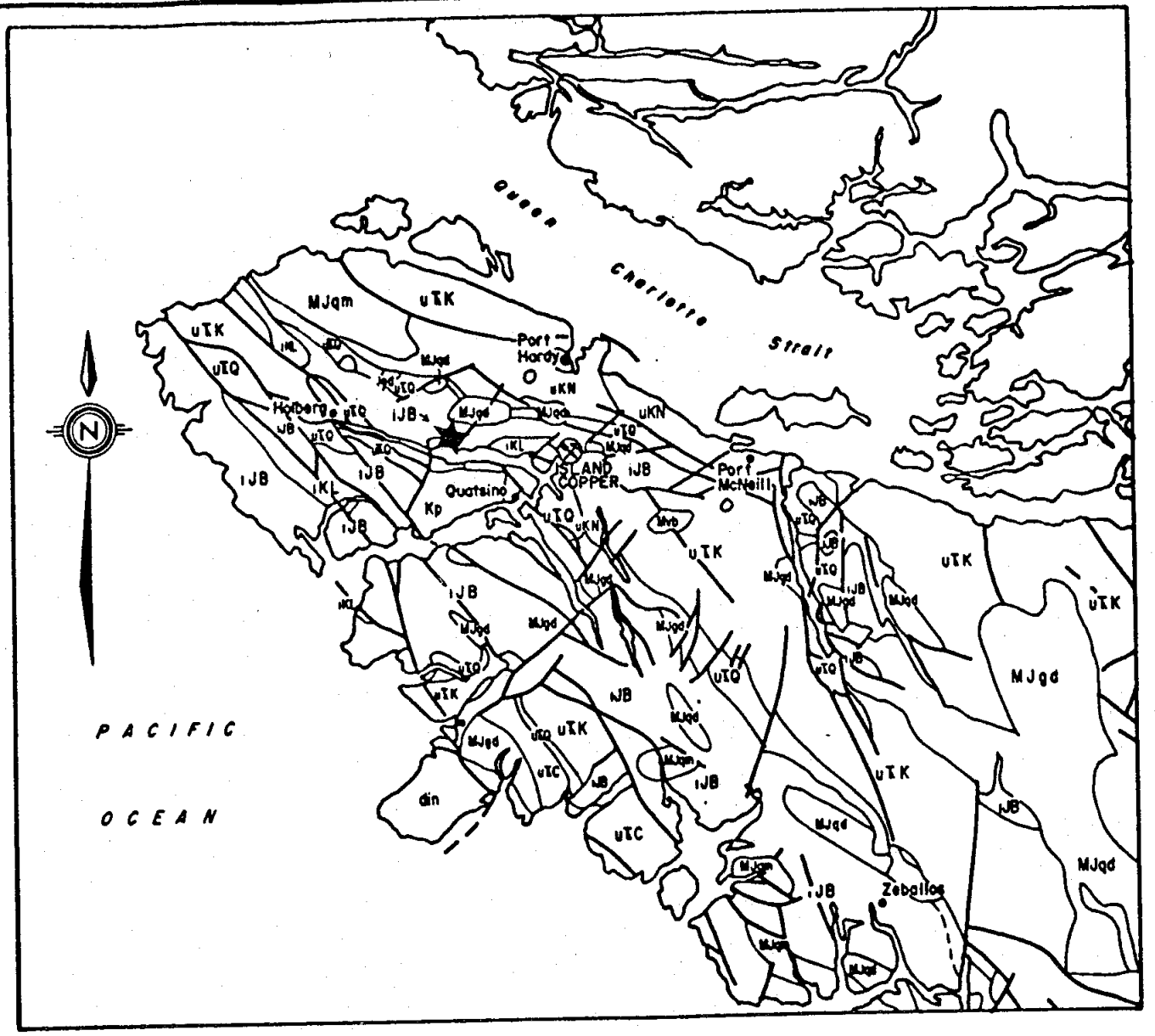
The Vancouver Group includes a basal sediment-sill unit of shales and siltstones invaded by diabase sills, Karmutsen Formation volcanic flows and pyroclastics, Quatsino Formation limestone, Parson Bay Formation argillite, Harbledown Formation argillite-greywacke and Bonanza Formation tuffs and breccias.[3]

The Vancouver Group is unconformably overlain by the non-marine Cretaceous Longarm Formation sediments which occupy local basins. Early coal mining in the district was from several of these basins.

Intrusive Rocks

The Vancouver Group rocks are intruded by Jurassic stocks and batholiths. A northwest-trending belt of stocks extends from the east end of Rupert Inlet to the mouth of Stranby River on the north coast of Vancouver Island.[6] Dykes and irregular bodies of quartz-feldspar porphyry occur along the south edge of this belt of stocks. The porphyries are characterized by coarse, subhedral quartz and plagioclase phenocrysts set in a pink, very fine grained, quartz and feldspar matrix. They are commonly extensively altered and pyritized. At Island Copper Mine, these porphyries are enveloped by altered, brecciated and mineralized Bonanza Formation wallrocks. The porphyries are also cut by siliceous veins, pyritized, extensively altered, and are mineralized where they have been brecciated. The quartz-feldspar porphyries are thought to be differentiates of middle Jurassic felsic intrusive rocks.

Other intrusive rocks of lesser significance include felsic dykes and sills around the margins of some intrusive stocks; dykes of andesitic composition which cut the Karmutsen, Quatsino and Parson's Bay formations and represent feeders for Bonanza volcanism; and Tertiary basalt-dacite dykes intruding Cretaceous sediments.



LEGEND

MIOCENE
- Mvb basalt flows,sills and dykes

UPPER CRETACEOUS, PALEOCENE,EOCENE
- Kp QUEEN CHARLOTTE GROUP: siltstone,shale,greywacke

UPPER CRETACEOUS
- uKN NANAIMO GROUP: sandstone,shale,conglomerate

LOWER CRETACEOUS
- iKL LONGARM;greywacke,conglomerate

JURASSIC
- Jgd granodiorite,quartz diorite

MIDDLE JURASSIC
- MJqm quartz monzonite,granite,monzonite
- MJgd granodiorite
- MJqd quartz diorite

LOWER JURASSIC
- lJB BONANZA;andesite,dacite,rhyolite

UPPER TRIASSIC
- uTQ QUATSINO and PARSON BAY: limestone,argillite
- uTK KARMUTSEN:basalt, pillow lava

SCALE

0 25 50

kilometers

MORAGA RESOURCES LTD.

EXPO PROPERTY
Nanaimo Mining Division

REGIONAL GEOLOGY MAP

DAIWAN ENGINEERING LTD.

SCALE	DATE	FIG..
As shown	Aug. '91	4

Structure

The rocks north of Holberg and Rupert inlets are folded into shallow synclines along northwesterly fold axes. The steeper southwesterly limbs of these folds have apparently been truncated by faults roughly parallel to the fold axes. Failure of limestone during folding may have influenced the location of some of the faults, as indicated by the proximity of the Dawson and Stranby River faults to Quatsino Formation limestone. Transverse faulting is pronounced and manifested by numerous north and northeasterly trending faults and topographic lineaments (Figure 4).

Northeasterly trending faults comprise a subordinate fault system. In some cases, apparent lateral displacement in the order of several hundred metres can be measured on certain horizons. Movement, however, could be entirely vertical with the apparent lateral offset resulting from the regional dip of the beds.

The beds generally dip gently to moderately to the southwest. West of Holberg dips are locally much steeper where measured in close proximity to major faults. There is little folding or flexuring of bedding visible, except along loci of major faults where it is particularly conspicuous in thinly bedded sediments of lower Bonanza Formation. Bedding is generally inconspicuous in massive beds of Karmutsen, Quatsino and Bonanza formation rocks, particularly inland where outcrops are widely scattered.

REGIONAL MINERALIZATION

A number of types of mineral occurrences are known on northern Vancouver Island. These include:

1. Skarn deposits: copper-iron and lead-zinc skarns;

2. Copper in mafic volcanic rocks (Karmutsen Formation): in amygdules, fractures, small shears and quartz-carbonate veins, with no apparent relationship to intrusive activity;

3. Veins: with gold and/or base metal sulphides, related to intrusive rocks;

4. Porphyry copper deposits: largely in the country rock surrounding or enveloping granitic rocks and their porphyritic phases.

PROPERTY GEOLOGY

Vancouver Island north of Holberg and Rupert inlets is underlain by Vancouver Group rocks consisting of (with decreasing age) Karmutsen Formation, Quatsino Formation, Parson Bay Formation, Harbledown Formation and Bonanza Formation.

In the Hushamu deposit area the rocks are mainly Bonanza Formation andesitic to basaltic bedded and massive tuffs, formational breccias and rare amygdaloidal and porphyritic flows. In the upper Bonanza the flows and breccias become rhyodacitic and are interbedded with andesite and basalt flows, tuffs and tuff breccias.

The volcanics are intruded by quartz-feldspar porphyries of the Island Intrusions which have local propyllitic and pyrophyllitic alteration halos as shown in Figure 5.

DRILL PROGRAM SUMMARY

The drill program was performed using a Longyear 38 diamond drill with NQ wireline equipment from November 1 to December 10, 1990. It consisted of 2347.0 metres (7,700 feet) of drilling in eight holes. The drilling information is summarized in Table 1. Drill hole locations are shown on Figure 7. Drill core assay certificates form Appendix 2; drill hole logs form Appendix 3. The core is stored on the BHP-Utah Mines Island Copper mine site at Rupert Inlet.

The split core samples were shipped by bus to Chemex Labs Ltd. at North Vancouver, B.C. The samples were ground to -80 mesh then .500 gm was digested in 3 ml 3-1-2 HCL-HN03-H2O at 95°C for one hour then diluted to 10 ml with water and analyzed by ICP methods. Gold analysis was by acid leach with an AA finish from a 10 gm sample.

Table 1 Drill Program Summary

Hole #	Dip	Azimuth	Depth	Reason for Drilling	Location
EC-181	-45°	360°	233.48m (766 ft)	To test for extension of north-west Hushamu deposit at coincident induced polarization and copper in soil geochemical anomalies.	229315E/ 248100N

MORAGA RESOURCES LTD.

EXPO PROJECT

NANAIMOMINING DIVISION, B.C.

PROPERTY GEOLOGY

DAIWAN ENGINEERING LTD.

SCALE	DATE	FIG.
As Shown	Aug. '91	5

Airborne Magnetics Lineaments

Ground Mapping (Faults)

From B C D M Aerial Survey, 1963

PROPERTY

N.W. EXPO

RED DOG

HEP

Dorion

Nahwitti Lake

Goodspeed Creek

Goodspeed River

Husharnu Copper - Gold Deposit > 100M Tonnes 0.32% Cu, 0.008% Mo, 0.413gm./t. Au

HUSHAMU LAKE

McINTOSH MTN.

HOLBERG

WEST PEMBERTON

PEMBERTON HILLS

Hautenen Creek

Woodcock Creek

Cleveland Creek

H O L B E R G I N L E T

LEGEND

JURASSIC AND CRETACEOUS

1 Cretaceous Sediments

JURASSIC Island Intrusions

2 Diorite

3 Quartz Feldspar Porphyry

LOWER JURASSIC

4 Bonanza Volcanics

TRIASSIC

5 Parson Bay Formation

6 Quatsino Formation

7 Karmutsen Formation

8 Siliceous Breccia

Propylitic Alteration

Pyrophyllite Alteration

Geological Contact

Breccia

Expo Property Boundary

KILOMETRES 0 1 2 3

Reproduced from BHP - Utah Mines Ltd. (1989 Regional Mapping)

270,000 N

260,000 N

250,000 N

240,000 N

230,000 N

220,000 N

200,000 E.

210,000 E.

220,000 E.

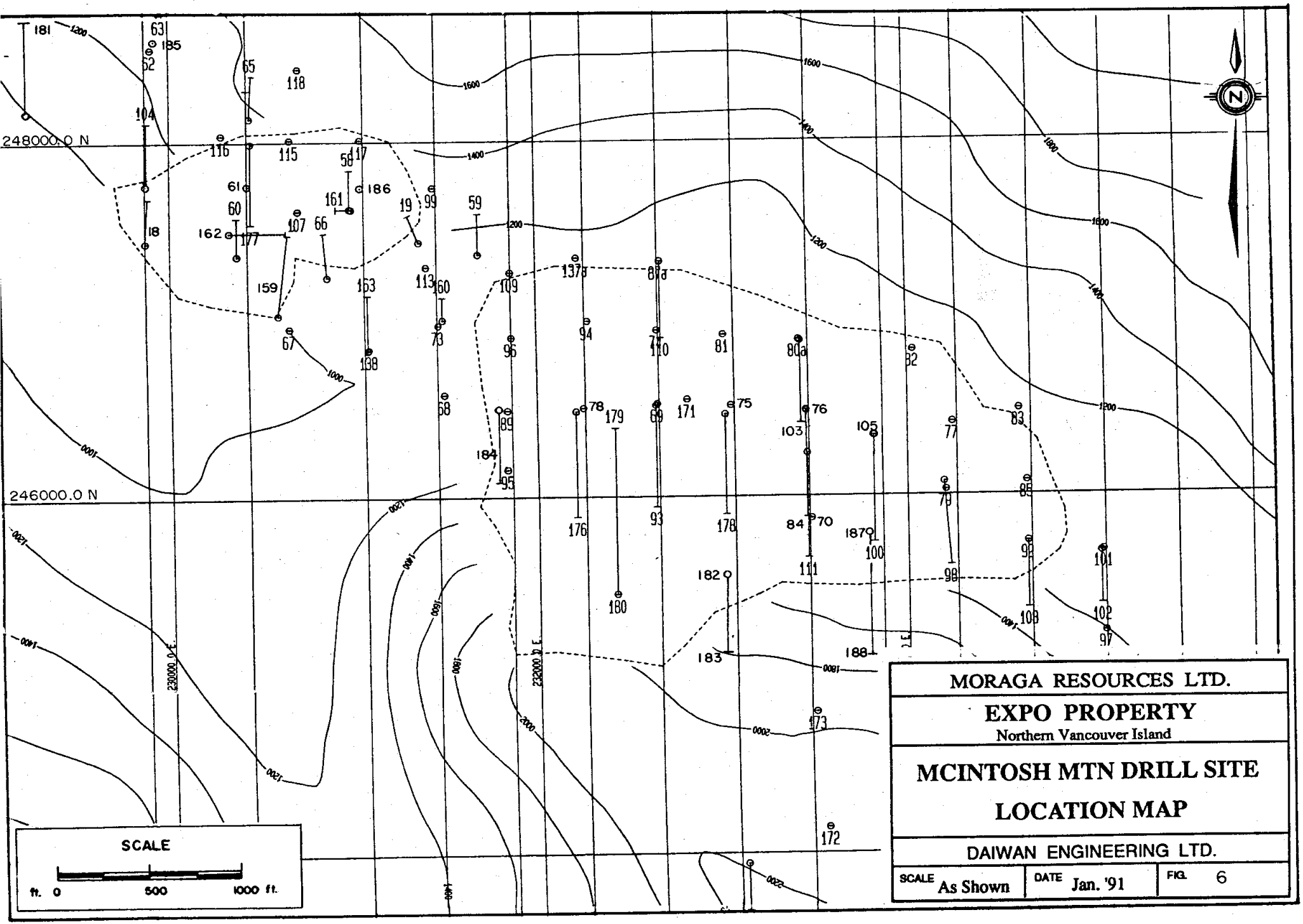
230,000 E.

240,000 E.

250,000 E.

260,000 N.

270,000 N.


248000.0 N
246000.0 N
232000.0 E
SCALE
ft. 0
500
1000 ft.
MORAGA RESOURCES LTD.
EXPO PROPERTY
Northern Vancouver Island
MCINTOSH MTN DRILL SITE
LOCATION MAP
DAIWAN ENGINEERING LTD.
SCALE As Shown
DATE Jan. '91
FIG. 6

Hole #	Dip	Azimuth	Depth	Reason for Drilling	Location
EC-182	-90°	---	437.99m (1437 ft)	To test depth of silica cap and mineralized zone to northeast of EC-179.	233053E/ 245550N
EC-183	-70°	180°	393.19m (1290 ft)	To test depth of silica cap and mineralized zone to northeast of EC-179.	233053E/ 245550N
EC-184	-45°	180°	183.49m (602 ft)	To test southern extension of Hushamu Zone in EC-89.	231875E/ 246490N
EC-185	-90°	---	200.25m (657 ft)	To test northwest Hushamu zone near known surface mineralization and copper in soil geochemical anomaly, where poor recoveries were obtained in earlier drilling.	229914E/ 248555N
EC-186	-90°	---	194.16m (637 ft)	To test northern extension of zone in EC-58, and to test known mineralized road cut exposure.	231041E/ 247711N
EC-187	-90°	---	322.23m (1090 ft)	To test depth of silica cap and mineralization at depth.	233836E/ 245793N
EC-188	-55°	180°	372.16m (1221 ft)	To test depth of silica cap and mineralization at depth.	233836E/ 245793N
	TOTAL		2347.0m (7700 ft)		

The drill data will be subject to further detailed petrological and mineralogical studies. These studies will be reported in later assessment filings.

CONCLUSIONS

The drilling has substantially increased the reserves within the Hushamu copper/gold deposit.

Both gold and copper mineralization appear to be directly related (eg. high Cu = high Au). Values are carried by pyrite and pyrite/chalcopyrite mineralization associated with quartz and quartz/carbonate veining as well as general disseminations in various rock types. Elevated Au and Cu values also appear to be related to rocks exhibiting moderate to strong silicification. Chalcopyrite and bornite appear to be the most abundant copper minerals within the Hushamu deposit.

The mineralization is hosted in Bonanza volcanics, but there does not appear to be a specific lithologic host for either gold or copper mineralization. The mineralization is epigenetic with areas of brecciation, silicification and subsequent quartz veining being prime targets.

RECOMMENDATIONS

Further drill exploration should be conducted on McIntosh Mountain west of drill holes EC-173, EC-179, and EC-180, and east of drill holes EC-187 and EC-188.

STATEMENT OF COSTS

The following costs relate to diamond drilling on the Hushamu deposit between November 10 and December 11, 1990.

Personnel

1 Project Geologist - D. Pawliuk - 69.3 days @ $340/day	$ 23,562.00
1 Senior Geologist - P. Dasler - 32.42 days @ $380/day	12,319.60
1 Geologist - G. Sutton - 54.4 days @ $250/day	13,600.00
1 Geologist - S. Robertson - 5 days @ $250/day	1,250.00
1 Office Assistant - T. Sheridan - 17.85 days @ $220/day	3,927.00
1 Field Technician - R. Bilquist - 24.5 days @ $260/day	6,370.00
1 Field Technician - K. Bilquist - 2 days @ $200/day	400.00
1 Field Technician - S. Oakley - 15 days @ $250/day	3,750.00
1 Field Assistant - L. Allen - 2.5 days @ $260/day	650.00

Disbursements

Food and Accommodation -180 man days @ $23.69	4,263.88
Field Supplies	2,852.28
Equipment Rental	1,713.65
Vehicle/Supplies - 1 4x4 - 90 days @ $94.22 all inclusive } - 1 4x4 - 35 days @ $94.22 all inclusive }	11,777.60
Airfare	351.60
Helicopter	16,899.92
Drafting/Maps	2,232.09
Office/Secretary	177.95
Telephone	570.40
Assays	15,773.68
Heavy Equipment Rental	6,419.12
Disbursement Fee	9,197.10
Miscellaneous	317.18
G.S.T.	306.95
TOTAL	**$ 314,052.00**

Daiwan Engineering Ltd.
1030 - 609 Granville Street, Vancouver, B.C. V7Y 1G5
Phone: (604) 688-1508

CLAIM GROUPS - DISTRIBUTION OF COSTS

Group MAC 91	Work on Mineral Claim	Feet of Drilling	% of Total Drilling
Mac 91A	HEP 57	1,432	18.5%
Mac 91C	EXPO 239	2,727	35.4%
Mac 91B	EXPO 238	602	7.8%
	EXPO 189	637	8.3%
Mac 91D	DON 14 FR	2,300	30.0%
			100.0%

Total Expenditures:	$ 314,052.00
Expenditures applied June 10, 1991	10,000.00
Balance	**$ 304,052.00**

Proportion of Expenditure Alloted to Each Claim Group:

Mac 91A	$ 56,249.62
Mac 91B	48,952.37
Mac 91C	107,634.41
Mac 91D	91,215.60
Total	**$ 304,052.00**

Daiwan Engineering Ltd.
1030 - 609 Granville Street, Vancouver, B.C. V7Y 1G5
Phone: (604) 688-1508

CERTIFICATE OF QUALIFICATIONS

I, David J. Pawliuk, do hereby certify that:

1. I am a geologist for Daiwan Engineering Ltd. with offices at 1030 - 609 Granville Street, Vancouver, British Columbia.

2. I am a graduate of the University of Alberta, Edmonton, Alberta with a degree of B.Sc., Geology.

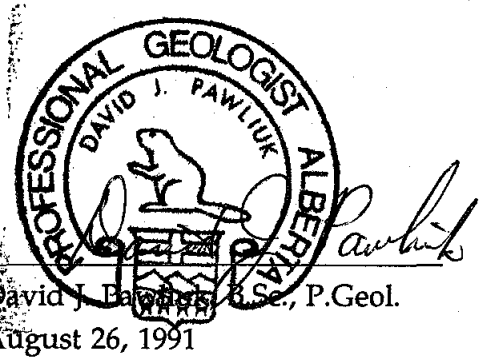
3. I am a member, in good standing, of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.

4. I have practised my profession continuously since 1975.

5. This report is based upon my personal fieldwork including supervision of the diamond drilling program, geological logging of the drill core and upon reports of others working in the area.

6. I have no interest, either direct or indirect, nor do I expect to receive any such interest, in the properties or securities of Moraga Resources Ltd.

7. This report has been prepared for British Columbia Ministry of Energy, Mines and Petroleum Resources assessment purposes only.



David J. Pawliuk, B.Sc., P.Geol.
August 26, 1991

Daiwan Engineering Ltd.
1030 - 609 Granville Street, Vancouver, B.C. V7Y 1G5
Phone: (604) 688-1508

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4. Kesler, S.E. (1985) — Report on Geological Review of the McIntosh - Pemberton Precious metal Exploration Area. Private Report to BHP-Utah Mines Ltd., June 1985.

5. BCDM Records — Island Copper Statistics; B.C. Dept. of Mines records to 1984 with estimates to end of 1986.

6. Carson, D.J.T. (1972) — The plutonic rocks of Vancouver Island, British Columbia; Geol. Surv. Canada Paper 72-44.

7. Woods, D.V. (1987) — Geophysical Report on Reconnaissance Surface and Borehole Pulse Electromagnetic Survey on the Expo Project, Vancouver Island; report for Moraga Resources Ltd.

8. Dasler, P.G. (1989) — Report on the Expo Group, Northern Vancouver Island, British Columbia, Canada; report for Moraga Resources Ltd.

APPENDIX 1

CLAIM DATA - MAC GROUPS

Daiwan Engineering Ltd.
1030 - 609 Granville Street, Vancouver, B.C. V7Y 1G5
Phone: (604) 688-1508

mac91a group claims list

REC#	Claim_Name	Units	Record_No.	Tenure_No	Expiry_D
1	Don 16 Fr	1	30288	232313	21/11/97
2	Expo 1	1	19722	231711	18/09/97
3	Expo 2	1	19723	231712	18/09/97
4	Expo 3	1	19724	231713	18/09/97
5	Expo 4	1	19725	231714	18/09/97
6	Expo 5	1	19726	231715	18/09/97
7	Expo 6	1	3602	230787	16/10/91
8	Expo 7	1	19728	231716	18/09/97
9	Expo 8	1	19729	231717	18/09/97
10	Expo 9	1	19730	231718	18/09/97
11	Expo 10 Fr	1	19731	231719	18/09/97
12	Expo 11	1	19732	231720	18/09/97
13	Expo 12	1	19733	231721	18/09/97
14	Expo 13	1	19734	231722	18/09/97
15	Expo 14	1	19735	231723	18/09/97
16	Expo 15	1	19736	231724	18/09/94
17	Expo 16	1	19737	231725	18/09/94
18	Expo 18	1	19739	231726	18/09/94
19	Expo 21	1	19740	231727	18/09/94
20	Expo 22	1	19741	231728	18/09/97
21	Expo 23	1	19742	231729	18/09/97
22	Expo 24	1	19743	231730	18/09/97
23	Expo 25	1	19744	231731	18/09/97
24	Expo 26	1	19745	231732	18/09/97
25	Expo 31	1	19750	231737	18/09/94
26	Expo 32	1	19751	231738	18/09/97
27	Expo 33	1	19752	231739	18/09/94
28	Expo 34	1	19753	231740	18/09/97
29	Expo 35	1	19754	231741	18/09/97
30	Expo 36	1	19755	231742	18/09/97
31	Expo 37	1	19756	231743	18/09/97
32	Expo 38	1	19757	231744	18/09/97
33	Expo 41	1	19758	231745	18/09/97
34	Expo 42	1	19759	231746	18/09/97
35	Expo 44	1	19760	231747	18/09/97
36	Expo 45	1	19761	231748	18/09/97
37	Expo 46	1	19762	231749	18/09/97
38	Expo 47	1	19763	231750	18/09/97
39	Expo 48	1	19764	231751	18/09/97
40	Expo 49	1	19765	231752	18/09/97
41	Expo 50	1	19766	231753	18/09/97
42	Expo 51	1	19767	231754	18/09/94
43	Expo 52	1	19768	231755	18/09/94
44	Expo 53	1	19769	231756	18/09/94
45	Expo 54	1	19770	231757	18/09/93
46	Expo 55	1	19771	231758	18/09/93
47	Expo 60	1	19776	231759	18/09/97
48	Expo 75	1	19789	231767	18/09/97
49	Expo 76	1	19790	231768	18/09/97
50	Expo 77	1	19791	231769	18/09/97
51	Expo 78	1	19792	231770	18/09/97
52	Expo 83	1	19795	231773	18/09/97

mac91a group claims list

REC#	Claim_Name	Units	Record_No.	Tenure_No	Expiry_D

53	Expo	84		1	19796	231774	18/09/97
54	Expo	85		1	19797	231775	18/09/97
55	Expo	86		1	19798	231776	18/09/97
56	Expo	87		1	19799	231777	18/09/97
57	Expo	88		1	19800	231778	18/09/97
58	Expo	93		1	19801	231779	18/09/97
59	Expo	94		1	19802	231780	18/09/97
60	Expo	95		1	19803	231781	18/09/97
61	Expo	96		1	19804	231782	18/09/97
62	Expo	97		1	19805	231783	18/09/97
63	Expo	98		1	19806	231784	18/09/97
64	Expo	141		1	20264	231896	10/10/97
65	Expo	143		1	20266	231898	10/10/96
66	Expo	155		1	20278	231910	10/10/96
67	Expo	156		1	20279	231911	10/10/96
68	Expo	179		1	20290	231922	10/10/97
69	Expo	197		1	20308	231940	10/10/97
70	Expo	199		1	20310	231942	10/10/97
71	Expo	200		1	20311	231943	10/10/97
72	Expo	218		1	20329	231961	10/10/97
73	Expo	504	Fr	1	21612	232228	18/12/97
74	Expo	862		1	21321	232190	14/11/97
75	Expo	863		1	21322	232191	14/11/98
76	Expo	864		1	21323	232192	14/11/97
77	Expo	1012	Fr	1	27356	232277	05/12/97
78	Hep	51		1	19029	231666	20/09/97
79	Hep	57		1	19035	231370	20/09/97
80	Hep	61		1	3268	230454	01/03/97
81	Hep	62		1	19040	231673	20/09/97
82	Hep	71		1	3266	230452	01/03/97
83	Hep	86		1	20216	231851	04/10/97
84	Hep	88		1	20218	231853	04/10/97
85	Hep	89		1	20219	231854	04/10/97
86	Hep	90		1	20220	231855	04/10/97
87	Hep	91		1	20221	231856	04/10/97
88	Hep	92		1	20222	231857	04/10/97
89	Hep	93		1	20223	231858	04/10/97
90	Hep	98		1	20228	231863	04/10/97
91	Hep	100		1	20230	231865	04/10/97
92	Hep	101		1	20231	231866	04/10/97
93	T	1	Fr	1	35890	232383	05/10/97
94	T	2	Fr	1	35891	232384	05/10/97
95	T	3	Fr	1	35892	232385	05/10/93
96	T	4	Fr	1	35893	232386	05/10/93

mac91b group claims list

REC#	Claim_Name	Units	Record_No.	Tenure_No	Expiry_D
1	Don 1 Fr	1	29501	232298	18/08/97
2	Don 2 Fr	1	29502	232299	18/08/97
3	Don 3 Fr	1	29633	232303	12/09/97
4	Expo 189	1	20300	231932	10/10/97
5	Expo 190	1	20301	231933	10/10/97
6	Expo 191	1	20302	231934	10/10/97
7	Expo 192	1	20303	231935	10/10/97
8	Expo 193	1	20304	231936	10/10/97
9	Expo 194	1	20305	231937	10/10/97
10	Expo 195	1	20306	231938	10/10/97
11	Expo 196	1	20307	231939	10/10/97
12	Expo 237	1	20491	231990	19/10/98
13	Expo 238	1	20492	231991	19/10/98
14	Expo 257	1	20511	232010	19/10/97
15	Expo 258	1	20512	232011	19/10/98
16	Expo 277	1	20531	232029	19/10/97
17	Expo 278	1	20532	232030	19/10/97
18	Expo 297	1	20550	232048	19/10/97
19	Expo 298	1	20551	232049	19/10/97
20	Expo 299	1	20552	232050	19/10/97
21	Expo 300	1	20553	232051	19/10/97
22	Expo 301	1	20554	232052	19/10/97
23	Expo 302	1	20555	232053	19/10/97
24	Expo 303	1	20556	232054	19/10/97
25	Expo 304	1	20557	232055	19/10/97
26	Expo 319	1	21574	232213	18/12/97
27	Expo 320	1	21575	232214	18/12/97
28	Expo 321	1	21576	232215	18/12/97
29	Expo 322	1	21577	232216	18/12/97
30	Expo 323	1	21578	232217	18/12/97
31	Expo 324	1	21579	232218	18/12/97
32	Expo 325	1	21580	232219	18/12/97
33	Expo 326	1	21581	232220	18/12/97
34	Expo 327	1	20560	232058	19/10/97
35	Expo 328	1	20561	232059	19/10/97
36	Expo 329	1	20562	232060	19/10/97
37	Expo 330	1	20563	232061	19/10/97
38	Expo 331	1	20564	232062	19/10/97
39	Expo 332	1	20565	232063	19/10/97
40	Expo 333	1	20566	232064	19/10/97
41	Expo 334	1	20567	232065	19/10/97
42	Expo 347	1	20570	232068	19/10/97
43	Expo 348	1	20571	232069	19/10/97
44	Expo 349	1	20572	232070	19/10/97
45	Expo 350	1	20573	232071	19/10/97
46	Expo 351	1	20574	232072	19/10/97
47	Expo 352	1	20575	232073	19/10/97
48	Expo 353	1	20576	232074	19/10/97
49	Expo 354	1	20577	232075	19/10/97
50	Expo 367	1	20580	232078	19/10/97
51	Expo 368	1	20581	232079	19/10/97
52	Expo 369	1	20582	232080	19/10/97

mac91b group claims list

REC#	Claim_Name	Units	Record_No.	Tenure_No	Expiry_D
53	Expo 370	1	20583	232081	19/10/97
54	Expo 371	1	20584	232082	19/10/97
55	Expo 372	1	20585	232083	19/10/97
56	Expo 373	1	20586	232084	19/10/97
57	Expo 374	1	20587	232085	19/10/97
58	Expo 387	1	20590	232088	19/10/97
59	Expo 388	1	20591	232089	19/10/97
60	Expo 389	1	20592	232090	19/10/97
61	Expo 390	1	20593	232091	19/10/97
62	Expo 392	1	20595	232092	19/10/97
63	Expo 393	1	20596	232093	19/10/97
64	Expo 394	1	20597	232094	19/10/97
65	Expo 495	1	21606	232222	18/12/97
66	Expo 496	1	21607	232223	18/12/97
67	Expo 497	1	21608	232224	18/12/97
68	Expo 498	1	21609	232225	18/12/97
69	Expo 499	1	21610	232226	18/12/97
70	Expo 500	1	21611	232227	18/12/97
71	Expo 521	1	21613	232229	18/12/97
72	Expo 522	1	21614	232230	18/12/97
73	Expo 523	1	21615	232231	18/12/97
74	Expo 524	1	21616	232232	18/12/97
75	Expo 525	1	21617	232233	18/12/97
76	Expo 526	1	21618	232234	18/12/97
77	Expo 527	1	21619	232235	18/12/97
78	Expo 528	1	21620	232236	18/12/97
79	Expo 529	1	21621	232237	18/12/97
80	Expo 530	1	21622	232238	18/12/97
81	Expo 533	1	21625	232239	18/12/97
82	Expo 534	1	21626	232240	18/12/97
83	Expo 537	1	21629	232241	18/12/97
84	Expo 538	1	21630	232242	18/12/97
85	Expo 541	1	21633	232243	18/12/97
86	Expo 542	1	21634	232244	18/12/97
87	Hep 34	1	19012	231649	20/09/97
88	Hep 35	1	19013	231650	20/09/97
89	Hep 36	1	19014	231651	20/09/97
90	Hep 37	1	19015	231652	20/09/97
91	Hep 38	1	19016	231653	20/09/97
92	Hep 39	1	19017	231654	20/09/97
93	Hep 51	1	19029	231666	20/09/97
94	Hep 54	1	19032	231667	20/09/97
95	Hep 55	1	19033	231668	20/09/97
96	Hep 56	1	19034	231669	20/09/97
97	Hep 58	1	19036	231671	20/09/97
98	Hep 59	1	19037	231672	20/09/97
99	Hep 63	1	19041	231674	20/09/97
100	Hep 64	1	19042	231675	20/09/97

mac91c group claims list

REC#	Claim_Name	Units	Record_No.	Tenure_No	Expiry_D
1	Don 5 Fr	1	29504	232301	18/08/97
2	Don 15 Fr	1	30287	232312	21/11/97
3	Expo 27	1	19746	231733	18/09/97
4	Expo 28	1	19747	231734	18/09/97
5	Expo 29	1	19748	231735	18/09/97
6	Expo 30	1	19749	231736	18/09/97
7	Expo 61	1	19777	231760	18/09/97
8	Expo 62	1	19778	231761	18/09/97
9	Expo 63	1	19779	231762	18/09/97
10	Expo 71	1	19785	231763	18/09/97
11	Expo 72	1	19786	231764	18/09/97
12	Expo 73	1	19787	231765	18/09/97
13	Expo 74	1	19788	231766	18/09/97
14	Expo 101	1	20473	231972	19/10/97
15	Expo 102	1	20474	231973	19/10/97
16	Expo 103	1	20475	231974	19/10/97
17	Expo 104	1	20476	231975	19/10/97
18	Expo 105	1	20477	231976	19/10/97
19	Expo 106	1	20478	231977	19/10/97
20	Expo 107	1	20479	231978	19/10/98
21	Expo 108	1	20480	231979	19/10/97
22	Expo 109	1	20232	231867	10/10/97
23	Expo 110	1	20233	231868	10/10/97
24	Expo 111	1	20234	231869	10/10/97
25	Expo 112	1	20235	231870	10/10/98
26	Expo 113	1	20236	231871	10/10/97
27	Expo 114	1	20237	231872	10/10/98
28	Expo 115	1	20238	231873	10/10/98
29	Expo 116	1	20239	231874	10/10/97
30	Expo 117	1	20240	231875	10/10/98
31	Expo 118	1	20241	231876	10/10/97
32	Expo 119	1	3547	230732	08/07/97
33	Expo 120	1	20243	231877	10/10/97
34	Expo 121	1	20244	231878	10/10/96
35	Expo 122	1	20245	231879	10/10/96
36	Expo 123	1	20246	231880	10/10/96
37	Expo 124	1	20247	231881	10/10/96
38	Expo 125	1	20248	231882	10/10/96
39	Expo 126	1	20249	231883	10/10/96
40	Expo 127	1	20250	231884	10/10/96
41	Expo 128	1	20251	231885	10/10/96
42	Expo 129	1	20252	231886	10/10/97
43	Expo 130	1	20253	231887	10/10/97
44	Expo 131	1	3546	230731	08/07/97
45	Expo 132	1	3545	230730	08/07/97
46	Expo 133	1	20256	231888	10/10/96
47	Expo 134	1	20257	231889	10/10/96
48	Expo 135	1	20258	231890	10/10/96
49	Expo 136	1	20259	231891	10/10/96
50	Expo 137	1	20260	231892	10/10/96
51	Expo 138	1	20261	231893	10/10/96
52	Expo 139	1	20262	231894	10/10/97

mac91c group claims list

REC#	Claim_Name	Units	Record_No.	Tenure_No	Expiry_D
53	Expo 140	1	20263	231895	10/10/96
54	Expo 142	1	20265	231897	10/10/97
55	Expo 144	1	20267	231899	10/10/97
56	Expo 145	1	20268	231900	10/10/96
57	Expo 146	1	20269	231901	10/10/96
58	Expo 147	1	20270	231902	10/10/96
59	Expo 148	1	20271	231903	10/10/96
60	Expo 149	1	20272	231904	10/10/97
61	Expo 150	1	20273	231905	10/10/97
62	Expo 151	1	20274	231906	10/10/97
63	Expo 152	1	20275	231907	10/10/97
64	Expo 157	1	20280	231912	10/10/96
65	Expo 158	1	20281	231913	10/10/96
66	Expo 159	1	20282	231914	10/10/96
67	Expo 160	1	20283	231915	10/10/96
68	Expo 161	1	20284	231916	10/10/97
69	Expo 162	1	20285	231917	10/10/97
70	Expo 163	1	20286	231918	10/10/97
71	Expo 164	1	20287	231919	10/10/97
72	Expo 181	1	20292	231924	10/10/97
73	Expo 182	1	20293	231925	10/10/96
74	Expo 183	1	20294	231926	10/10/97
75	Expo 184	1	20295	231927	10/10/97
76	Expo 185	1	20296	231928	10/10/97
77	Expo 186	1	20297	231929	10/10/97
78	Expo 187	1	20298	231930	10/10/97
79	Expo 188	1	20299	231931	10/10/97
80	Expo 201	1	20312	231944	10/10/97
81	Expo 202	1	20313	231945	10/10/97
82	Expo 219	1	20330	231962	10/10/97
83	Expo 220	1	20331	231963	10/10/97
84	Expo 239	1	20493	231992	19/10/97
85	Expo 240	1	20494	231993	19/10/97
86	Expo 850	1	21309	232182	14/11/97
87	Expo 851	1	21310	232183	14/11/97
88	Expo 852	1	21311	232184	14/11/97
89	Expo 855	1	21314	232185	14/11/97
90	Expo 856	1	21315	232186	14/11/97
91	Expo 857	1	21316	232187	14/11/97
92	Expo 860	1	21319	232188	14/11/97
93	Expo 861	1	21320	232189	14/11/97
94	Expo 865	1	21324	232193	14/11/97
95	Expo 866	1	21325	232194	14/11/97
96	Expo 867	1	21326	232195	14/11/97
97	Expo 868	1	21327	232196	14/11/97
98	Expo 1008 Fr	1	27352	232275	05/12/98

mac91d group claims list

REC#	Claim_Name	Units	Record_No.	Tenure_No	Expiry_D
1	Don 14 Fr	1	30286	232311	21/11/97
2	Expo 259	1	20513	232012	19/10/97
3	Expo 260	1	20514	232013	19/10/97
4	Expo 279	1	20533	232031	19/10/97
5	Expo 280	1	20534	232032	19/10/97
6	Expo 305	1	20558	232056	19/10/96
7	Expo 306	1	20559	232057	19/10/96
8	Expo 307	1	21113	232102	13/11/95
9	Expo 309	1	21115	232103	13/11/95
10	Expo 310	1	21116	232104	13/11/95
11	Expo 312	1	21118	232105	13/11/96
12	Expo 313	1	21119	232106	13/11/95
13	Expo 314	1	21120	232107	13/11/95
14	Expo 315	1	21121	232108	13/11/95
15	Expo 335	1	20568	232066	19/10/96
16	Expo 336	1	20569	232067	19/10/96
17	Expo 344	1	21136	232109	14/11/95
18	Expo 345	1	21137	232110	14/11/95
19	Expo 346	1	21138	232111	14/11/95
20	Expo 355	1	20578	232076	19/10/96
21	Expo 356	1	20579	232077	19/10/96
22	Expo 375	1	20588	232086	19/10/96
23	Expo 376	1	20589	232087	19/10/96
24	Expo 377	1	21149	232112	14/11/96
25	Expo 378	1	21150	232113	14/11/95
26	Expo 395	1	20598	232095	19/10/97
27	Expo 396	1	20599	232096	19/10/97
28	Expo 397	1	21159	232114	14/11/96
29	Expo 398	1	21160	232115	14/11/96
30	Expo 399	1	21161	232116	14/11/96
31	Expo 400	1	21162	232117	14/11/96
32	Expo 417	1	21169	232118	14/11/96
33	Expo 418	1	21170	232119	14/11/96
34	Expo 419	1	3601	230786	17/10/96
35	Expo 420	1	3600	230785	17/10/96
36	Expo 421	1	21173	232120	14/11/96
37	Expo 422	1	21174	232121	14/11/96
38	Expo 437	1	21179	232122	14/11/96
39	Expo 438	1	21180	232123	14/11/96
40	Expo 439	1	21181	232124	14/11/96
41	Expo 440	1	3599	230784	17/10/96
42	Expo 441	1	21183	232125	14/11/96
43	Expo 442	1	21184	232126	14/11/96
44	Expo 443	1	21185	232127	14/11/96
45	Expo 444	1	21186	232128	14/11/96
46	Expo 445	1	21187	232129	14/11/96
47	Expo 446	1	21188	232130	14/11/96
48	Expo 457	1	21189	232131	14/11/96
49	Expo 458	1	21190	232132	14/11/96
50	Expo 459	1	21191	232133	14/11/96
51	Expo 460	1	21192	232134	14/11/96
52	Expo 461	1	21193	232135	14/11/96

mac91d group claims list

REC#	Claim_Name	Units	Record_No.	Tenure_No	Expiry_D
53	Expo 462	1	21194	232136	14/11/96
54	Expo 463	1	21195	232137	14/11/96
55	Expo 464	1	21196	232138	14/11/96
56	Expo 465	1	21197	232139	14/11/96
57	Expo 466	1	21198	232140	14/11/96
58	Expo 503 Fr	1	20612	232099	17/10/98
59	Expo 548	1	21200	232141	14/11/95
60	Expo 549	1	21201	232142	14/11/95
61	Expo 550	1	21202	232143	14/11/95
62	Expo 551	1	21203	232144	14/11/95
63	Expo 552	1	21204	232145	14/11/95
64	Expo 557	1	21209	232146	14/11/95
65	Expo 558	1	21210	232147	14/11/95
66	Expo 559	1	21211	232148	14/11/95
67	Expo 560	1	21212	232149	14/11/95
68	Expo 565	1	21217	232150	14/11/95
69	Expo 566	1	21218	232151	14/11/95
70	Expo 571	1	21219	232152	14/11/95
71	Expo 572	1	21220	232153	14/11/95
72	Expo 573	1	21221	232154	14/11/97
73	Expo 574	1	21222	232155	14/11/97
74	Expo 575	1	21223	232156	14/11/97
75	Expo 576	1	21224	232157	14/11/97
76	Expo 577	1	21225	232158	14/11/95
77	Expo 578	1	21226	232159	14/11/95
78	Expo 579	1	21227	232160	14/11/95
79	Expo 580	1	21228	232161	14/11/95
80	Expo 581	1	21229	232162	14/11/97
81	Expo 582	1	21230	232163	14/11/97
82	Expo 583	1	21231	232164	14/11/95
83	Expo 585	1	21233	232166	14/11/95
84	Expo 586	1	21234	232167	14/11/95
85	Expo 615	1	21235	232168	14/11/97
86	Expo 616	1	21236	232169	14/11/97
87	Expo 834	1	21286	232170	14/11/95
88	Expo 835	1	21287	232171	14/11/95
89	Expo 836	1	21288	232172	14/11/95
90	Expo 837	1	21289	232173	14/11/95
91	Expo 838	1	21290	232174	14/11/95
92	Expo 882	1	21295	232175	14/11/96
93	Expo 883	1	21296	232176	14/11/96
94	Expo 884	1	21297	232177	14/11/96
95	Expo 885	1	21298	232178	14/11/96
96	Expo 890	1	21303	232179	14/11/95
97	Expo 891	1	21304	232180	14/11/96
98	Expo 896	1	21305	232181	14/11/96
99	Expo 1013 Fr	1	1557	229789	22/08/96
100	Expo 1015 Fr	1	1559	229791	22/08/95

APPENDIX 2

ASSAY CERTIFICATES

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9026840

Comments: ATTN: PETER DASLER

CERTIFICATE A9026840

DAIWAN ENGINEERING LTD.

Project: EXPO-1
P.O. # : NONE

Samples submitted to our lab in Vancouver, BC.
This report was printed on 23-NOV-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	19	Geochem ring to approx 150 mesh
294	19	Crush and split (0-10 pounds)
238	19	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	19	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	19	Ag ppm: 9 element, soil and rock	ICP-AES	0.5	200
1929	19	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	19	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	19	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	19	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	19	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	19	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	19	Pb ppm: 9 element, soil and rock	ICP-AES	5	10000
1950	19	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-1
Comments: ATTN: PETER DASLER

Invoice Date: 23-NOV-90
Invoice No. : I-9026840
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9026840

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57001	205	294	195	< 0.5	16	1590	5.75	60	24	14	2	36
57002	205	294	195	< 0.5	45	1465	7.51	10	12	29	6	2
57003	205	294	85	< 0.5	39	278	7.39	5	16	21	< 2	2
57004	205	294	55	< 0.5	26	347	6.90	65	11	15	2	114
57005	205	294	60	< 0.5	30	416	6.04	35	14	15	6	72
57006	205	294	50	< 0.5	31	669	5.56	45	36	18	8	112
57007	205	294	85	< 0.5	38	985	4.65	10	56	13	2	24
57008	205	294	95	< 0.5	26	1525	5.44	10	90	11	4	8
57009	205	294	120	< 0.5	32	387	7.80	15	141	13	< 2	6
57010	205	294	200	< 0.5	32	5020	5.33	10	151	17	6	20
57011	205	294	390	< 0.5	20	1170	5.53	10	212	9	12	24
57012	205	294	40	< 0.5	3	229	0.95	10	122	2	6	< 2
57013	205	294	95	< 0.5	11	852	2.63	15	118	7	14	116
57014	205	294	135	< 0.5	15	1380	3.69	5	87	15	2	4
57015	205	294	130	< 0.5	6	1285	2.65	5	99	7	4	< 2
57016	205	294	75	< 0.5	3	172	1.11	10	252	2	6	< 2
57017	205	294	85	< 0.5	4	168	1.73	10	138	3	6	2
57018	205	294	50	< 0.5	1	129	0.91	15	112	2	4	8
57019	205	294	315	< 0.5	17	2120	4.83	15	146	8	2	14

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9026892

Comments:

CERTIFICATE A9026892

DAIWAN ENGINEERING LTD.

Project: EXPO-2
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 25-NOV-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	56	Geochem ring to approx 150 mesh
272	56	Crush and split (11-20 pounds)
238	56	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	56	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	56	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	56	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	56	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	56	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	56	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	56	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	56	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	56	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	56	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
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PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-2
Comments:

Invoice Date: 25-NOV-90
Invoice No. : I-9026892
P.O. Number :

CERTIFICATE OF ANALYSIS A9026892

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57020	205	272	260	< 0.5	6	3300	1.81	10	240	3	4	10
57021	205	272	70	< 0.5	3	183	1.55	10	192	1	4	8
57022	205	272	70	< 0.5	2	105	0.75	15	215	2	4	6
57023	205	272	75	< 0.5	5	142	1.50	15	194	2	6	6
57024	205	272	80	< 0.5	6	87	1.24	15	194	2	2	6
57025	205	272	135	< 0.5	7	240	3.33	30	181	3	8	10
57026	205	272	75	< 0.5	2	295	0.86	15	149	2	2	6
57027	205	272	50	< 0.5	1	133	0.41	15	148	1	4	6
57028	205	272	75	< 0.5	1	296	0.53	15	123	1	4	4
57029	205	272	75	0.5	< 1	137	0.34	15	113	1	4	4
57030	205	272	145	< 0.5	5	691	4.10	25	157	2	2	10
57031	205	272	100	< 0.5	4	310	2.81	20	91	2	2	8
57032	205	272	125	< 0.5	5	911	3.85	20	113	3	4	10
57033	205	272	230	< 0.5	15	3100	4.93	20	150	6	2	18
57034	205	272	170	< 0.5	7	599	2.89	25	218	3	6	12
57035	205	272	180	0.5	3	306	1.83	20	857	1	6	6
57036	205	272	385	< 0.5	6	1510	2.79	10	147	3	6	10
57037	205	272	580	0.5	6	5610	2.64	10	157	3	4	12
57038	205	272	95	< 0.5	3	246	3.40	20	145	2	4	6
57039	205	272	120	< 0.5	3	522	4.48	15	76	1	6	6
57040	205	272	140	< 0.5	7	226	3.72	15	101	2	4	6
57041	205	272	165	< 0.5	2	121	1.97	25	44	1	6	8
57042	205	272	55	< 0.5	1	91	0.84	10	150	1	2	4
57043	205	272	70	< 0.5	4	153	1.80	20	127	2	2	6
57044	205	272	90	< 0.5	1	122	0.71	15	79	1	4	4
57045	205	272	135	< 0.5	6	597	5.41	25	72	2	2	8
57046	205	272	60	< 0.5	4	208	1.60	20	63	2	4	8
57047	205	272	105	< 0.5	1	287	1.74	45	112	1	6	8
57048	205	272	55	< 0.5	1	152	1.42	35	65	1	2	6
57049	205	272	130	< 0.5	3	819	1.95	15	104	2	4	10
57050	205	272	215	< 0.5	9	928	4.70	15	54	3	2	12
57051	205	272	100	< 0.5	4	450	2.43	25	110	3	2	12
57052	205	272	145	< 0.5	6	474	3.40	45	68	4	2	14
57053	205	272	720	< 0.5	23	6770	7.88	20	80	7	< 2	20
57054	205	272	810	< 0.5	25	1595	7.45	20	61	6	2	16
57055	205	272	125	< 0.5	12	886	3.31	35	89	6	< 2	18
57056	205	272	250	< 0.5	12	666	5.97	15	102	3	< 2	12
57057	205	272	145	< 0.5	2	397	2.08	25	63	2	2	12
57058	205	272	1750	< 0.5	11	663	4.87	20	186	5	6	10
57059	205	272	890	< 0.5	31	3350	10.70	25	164	6	< 2	16

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-2
Comments:

Invoice Date: 25-NOV-90
Invoice No. : I-9026892
P.O. Number :

CERTIFICATE OF ANALYSIS A9026892

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57060	205 272	2400	< 0.5	18	1070	8.25	25	72	5	2	14
57061	205 272	445	< 0.5	19	1480	9.38	15	161	2	< 2	16
57062	205 272	225	< 0.5	16	245	6.78	45	83	5	< 2	14
57063	205 272	270	< 0.5	21	349	8.27	30	268	5	2	18
57064	205 272	85	< 0.5	1	158	0.80	30	204	2	6	12
57065	205 272	85	< 0.5	2	191	1.68	60	41	4	6	14
57066	205 272	145	< 0.5	7	379	4.68	25	89	3	< 2	14
57067	205 272	150	< 0.5	21	306	8.07	45	68	6	< 2	14
57068	205 272	145	< 0.5	10	214	4.28	25	68	3	2	12
57069	205 272	160	< 0.5	23	310	7.38	25	35	6	2	16
57070	205 272	320	< 0.5	9	1700	7.66	25	38	2	2	14
57071	205 272	130	< 0.5	6	212	1.99	15	27	3	4	10
57072	205 272	135	< 0.5	11	291	4.47	15	55	3	2	10
57073	205 272	165	< 0.5	12	262	4.56	35	46	5	6	22
57074	205 272	640	< 0.5	17	1805	8.42	15	34	3	8	40
57075	205 272	720	< 0.5	24	4480	10.55	15	26	4	4	48

CERTIFICATION: B. Caglin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9027184

Comments:

CERTIFICATE A9027184

DAIWAN ENGINEERING LTD.

Project: EXPO-3
P.O. # : NONE

Samples submitted to our lab in Vancouver, BC.
This report was printed on 29-NOV-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	20	Geochem ring to approx 150 mesh
272	20	Crush and split (11-20 pounds)
238	20	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	20	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	20	Ag ppm: 9 element, soil and rock	ICP-AES	0.5	200
1929	20	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	20	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	20	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	20	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	20	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	20	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	20	Pb ppm: 9 element, soil and rock	ICP-AES	5	10000
1950	20	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-3
Comments:

Invoice Date: 29-NOV-90
Invoice No. : I-9027184
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9027184

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57076	205	272	750	0.5	13	3250	10.45	10	59	3	6	48
57077	205	272	415	< 0.5	12	2010	9.52	15	83	5	10	74
57078	205	272	610	< 0.5	24	2940	9.46	30	20	4	8	62
57079	205	272	500	< 0.5	17	2270	10.25	10	25	3	6	176
57080	205	272	405	< 0.5	11	1335	8.09	5	18	2	< 2	20
57081	205	272	210	< 0.5	9	857	6.90	5	13	2	2	28
57082	205	272	615	< 0.5	13	2670	7.63	15	10	1	4	76
57083	205	272	605	< 0.5	17	2890	9.10	15	24	3	< 2	44
57084	205	272	290	< 0.5	21	1170	11.80	30	17	3	< 2	58
57085	205	272	400	< 0.5	23	1720	12.25	20	21	2	< 2	82
57086	205	272	405	< 0.5	19	2080	10.80	20	16	3	6	56
57087	205	272	415	< 0.5	20	2240	11.50	30	18	2	6	60
57088	205	272	275	< 0.5	27	1280	10.55	45	19	4	2	70
57089	205	272	440	< 0.5	34	1590	10.95	35	19	3	6	82
57090	205	272	980	< 0.5	7	2910	10.85	25	21	1	10	50
57091	205	272	565	< 0.5	9	1960	11.00	25	25	2	6	60
57092	205	272	595	0.5	14	2410	11.70	40	23	4	4	88
57093	205	272	260	0.5	17	1480	10.35	50	16	4	2	96
57094	205	272	390	< 0.5	10	1240	8.86	65	18	4	8	124
57095	205	272	525	0.5	9	2210	8.02	95	14	3	6	134

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9027306

Comments:

CERTIFICATE A9027306

DAIWAN ENGINEERING LTD.

Project: EXPO-4
P.O. # : NONE

Samples submitted to our lab in Vancouver, BC.
This report was printed on 7-DEC-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	73	Geochem ring to approx 150 mesh
272	73	Crush and split (11-20 pounds)
238	73	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	73	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	73	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	73	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	73	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	73	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	73	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	73	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	73	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	73	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	73	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-4
Comments:

Invoice Date: 7-DEC-90
Invoice No. : I-9027306
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9027306

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57096	205 272	480	< 0.5	16	2660	8.57	135	19	< 1	< 2	148
57097	205 272	430	< 0.5	21	3880	8.13	185	52	1	4	166
57098	205 272	420	< 0.5	27	3050	10.30	80	51	< 1	2	166
57099	205 272	290	< 0.5	14	2260	11.50	90	31	2	< 2	142
57100	205 272	250	< 0.5	14	1530	11.55	80	27	1	< 2	112
57101	205 272	360	< 0.5	20	1730	12.30	85	18	1	2	138
57102	205 272	350	< 0.5	19	2180	11.55	90	22	1	< 2	112
57103	205 272	150	< 0.5	17	777	9.52	15	15	2	4	32
57104	205 272	185	< 0.5	16	1365	10.55	385	26	2	< 2	256
57105	205 272	215	< 0.5	19	1475	11.65	175	18	2	10	278
57106	205 272	155	< 0.5	21	1325	7.85	195	20	2	12	314
57107	205 272	145	< 0.5	17	1325	8.11	235	15	4	10	256
57108	205 272	230	< 0.5	16	1895	4.42	75	16	3	12	512
57109	205 272	200	< 0.5	14	1475	8.42	180	16	2	4	190
57110	205 272	175	< 0.5	13	1215	9.07	160	12	2	4	182
57111	205 272	235	< 0.5	18	1650	11.95	250	25	1	< 2	148
57112	205 272	210	< 0.5	16	1250	10.65	250	20	2	2	148
57113	205 272	185	< 0.5	15	652	10.50	445	10	2	< 2	214
57114	205 272	120	< 0.5	14	834	6.82	160	18	3	< 2	84
57115	205 272	270	< 0.5	11	1260	6.76	195	13	7	< 2	106
57116	205 272	180	< 0.5	12	1060	7.43	370	14	9	18	150
57117	205 272	95	< 0.5	9	766	5.69	285	25	8	4	108
57118	205 272	235	< 0.5	9	1140	4.10	375	10	8	4	118
57119	205 272	115	< 0.5	9	810	4.68	245	15	7	4	90
57120	205 272	200	< 0.5	9	912	4.07	385	13	8	6	120
57121	205 272	145	< 0.5	8	872	3.65	280	17	6	4	112
57122	205 272	90	< 0.5	11	633	4.99	325	9	9	8	128
57123	205 272	100	< 0.5	10	611	4.40	320	12	9	6	128
57124	205 272	50	< 0.5	10	410	4.26	300	14	8	2	118
57125	205 272	45	< 0.5	8	342	3.34	290	10	7	8	106
57126	205 272	30	< 0.5	11	279	4.41	240	13	9	4	90
57127	205 272	30	< 0.5	9	319	2.86	155	7	9	4	72
57128	205 272	110	< 0.5	10	1150	3.38	110	22	12	< 2	46
57129	205 272	175	< 0.5	8	1255	2.54	170	47	12	< 2	60
57130	205 272	175	< 0.5	18	1395	4.35	180	36	24	< 2	68
57131	205 272	165	< 0.5	15	1255	3.40	195	22	14	2	74
57132	205 272	140	< 0.5	12	1045	3.39	160	13	11	< 2	46
57133	205 272	365	< 0.5	14	1740	4.14	200	30	9	< 2	72
57134	205 272	350	< 0.5	17	2300	5.53	200	36	12	< 2	76
57135	205 272	410	< 0.5	14	2240	4.11	205	37	15	2	68

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
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VANCOUVER, BC
V7Y 1G5

Project : EXPO-4
Comments:

Invoice Date: 7-DEC-90
Invoice No. : I-9027306
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9027306

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57136	205 272	255	< 0.5	11	1160	2.70	165	16	9	22	58
57137	205 272	220	< 0.5	11	1280	4.29	210	45	14	34	74
57138	205 272	115	< 0.5	11	798	3.65	200	25	27	20	80
57139	205 272	140	< 0.5	13	1000	4.26	240	39	35	8	80
57140	205 272	190	< 0.5	11	1135	2.35	150	47	22	10	60
57141	205 272	85	< 0.5	24	907	4.55	25	12	20	4	10
57142	205 272	210	< 0.5	29	702	7.75	20	9	19	4	24
57143	205 272	105	< 0.5	36	617	8.22	75	26	20	< 2	92
57144	205 272	90	< 0.5	30	726	6.96	85	26	18	< 2	116
57145	205 272	100	< 0.5	34	1185	5.29	10	36	15	2	20
57146	205 272	165	< 0.5	34	2290	7.62	5	56	16	2	10
57147	205 272	200	< 0.5	37	3060	6.07	5	48	13	< 2	8
57148	205 272	280	< 0.5	29	2810	7.26	5	51	10	2	10
57149	205 272	165	< 0.5	12	804	3.77	5	50	8	< 2	4
57150	205 272	65	< 0.5	1	93	0.53	5	66	1	8	2
57151	205 272	55	< 0.5	1	52	0.53	5	77	1	4	2
57152	205 272	45	< 0.5	< 1	43	0.44	5	99	1	6	2
57153	205 272	60	< 0.5	< 1	33	0.35	10	179	1	8	4
57154	205 272	65	< 0.5	< 1	48	0.31	5	148	< 1	6	2
57155	205 272	65	< 0.5	< 1	49	0.41	5	255	1	4	6
57156	205 272	80	< 0.5	3	160	1.64	10	210	2	4	8
57157	205 272	110	< 0.5	3	257	2.16	10	185	1	6	10
57158	205 272	100	< 0.5	1	170	0.95	10	294	1	4	8
57159	205 272	140	< 0.5	4	313	1.71	10	199	2	2	8
57160	205 272	215	< 0.5	11	2420	4.39	5	390	7	2	18
57161	205 272	240	< 0.5	13	1725	5.66	10	585	4	2	14
57162	205 272	280	< 0.5	24	2870	5.22	10	292	12	2	16
57163	205 272	450	< 0.5	17	3820	5.62	5	222	7	< 2	18
57164	205 272	170	< 0.5	11	920	4.14	5	168	4	4	12
57165	205 272	235	< 0.5	5	6720	1.38	10	134	2	2	12
57166	205 272	240	< 0.5	4	3830	1.76	5	190	2	2	8
57167	205 272	180	< 0.5	2	327	2.42	15	851	1	2	8
57168	205 272	135	< 0.5	2	329	1.46	10	290	1	2	6

CERTIFICATION: B. Caufield

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
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PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9027611

Comments: ATTN: PETER DASLER

CERTIFICATE A9027611

DAIWAN ENGINEERING LTD.

Project: EXPO-5
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 11-DEC-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	60	Geochem ring to approx 150 mesh
272	60	Crush and split (11-20 pounds)
238	60	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	60	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	60	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	60	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	60	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	60	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	60	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	60	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	60	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	60	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	60	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-5
Comments: ATTN: PETER DASLER

Invoice Date: 11-DEC-90
Invoice No. : I-9027611
P.O. Number :

CERTIFICATE OF ANALYSIS A9027611

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57169	205	272	245	< 0.5	6	406	3.09	15	148	4	4	8
57170	205	272	145	< 0.5	10	1330	3.20	15	102	5	< 2	6
57171	205	272	400	< 0.5	8	1040	4.22	10	101	6	< 2	8
57172	205	272	380	0.5	8	6150	4.05	5	115	5	< 2	12
57173	205	272	140	< 0.5	6	586	3.51	20	143	2	< 2	6
57174	205	272	160	< 0.5	6	711	3.43	30	295	1	< 2	6
57175	205	272	170	< 0.5	8	223	2.77	20	490	2	2	8
57176	205	272	260	< 0.5	4	601	3.62	15	360	3	< 2	8
57177	205	272	320	< 0.5	8	797	5.01	25	130	4	< 2	8
57178	205	272	440	< 0.5	4	778	6.00	25	220	2	< 2	12
57179	205	272	150	< 0.5	1	430	1.10	15	284	1	< 2	10
57180	205	272	215	< 0.5	5	467	3.44	20	106	1	2	10
57181	205	272	130	< 0.5	3	235	1.74	15	184	1	< 2	8
57182	205	272	225	0.5	2	218	1.57	30	169	2	4	8
57183	205	272	120	< 0.5	2	182	1.51	35	121	2	2	10
57184	205	272	125	< 0.5	3	299	1.81	15	171	2	< 2	6
57185	205	272	190	< 0.5	5	346	2.31	20	90	4	< 2	10
57186	205	272	195	< 0.5	5	294	2.45	25	179	3	2	10
57187	205	272	175	< 0.5	5	229	2.10	40	106	2	2	6
57188	205	272	130	< 0.5	5	298	2.39	15	20	2	< 2	8
57189	205	272	130	< 0.5	4	351	2.40	30	29	2	< 2	6
57190	205	272	125	< 0.5	5	329	2.95	25	36	3	< 2	8
57191	205	272	140	< 0.5	5	274	2.56	15	28	2	2	8
57192	205	272	180	< 0.5	7	270	2.53	15	30	2	< 2	6
57193	205	272	105	< 0.5	5	326	2.86	25	27	2	< 2	8
57194	205	272	360	< 0.5	51	1655	8.79	25	70	13	< 2	22
57195	205	272	110	< 0.5	4	394	2.32	20	38	2	2	10
57196	205	272	135	< 0.5	6	674	3.67	30	23	4	2	24
57197	205	272	205	< 0.5	4	541	4.01	35	48	3	18	14
57198	205	272	205	< 0.5	8	861	5.69	25	43	4	20	14
57199	205	272	210	< 0.5	2	2270	4.36	35	36	2	< 2	84
57200	205	272	175	< 0.5	4	2300	4.25	50	47	2	< 2	52
57201	205	272	120	< 0.5	5	563	2.32	30	48	2	< 2	20
57202	205	272	75	< 0.5	4	110	1.78	15	36	1	36	6
57203	205	272	120	< 0.5	6	326	4.10	10	49	2	< 2	8
57204	205	272	230	< 0.5	13	599	4.91	15	60	3	< 2	10
57205	205	272	155	< 0.5	9	323	3.96	20	21	2	< 2	10
57206	205	272	220	< 0.5	25	349	6.27	40	44	3	< 2	10
57207	205	272	170	< 0.5	17	505	7.12	30	29	2	< 2	10
57208	205	272	280	< 0.5	23	1455	6.34	40	31	2	< 2	12

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers

212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-5
Comments: ATTN: PETER DASLER

Invoice Date: 11-DEC-90
Invoice No. : I-9027611
P.O. Number :

CERTIFICATE OF ANALYSIS A9027611

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57209	205 272	520	< 0.5	18	3530	7.56	30	61	2	< 2	66
57210	205 272	370	< 0.5	9	1540	7.07	25	76	1	< 2	16
57211	205 272	445	< 0.5	12	1570	6.00	25	57	1	2	14
57212	205 272	195	< 0.5	7	1050	4.56	50	45	1	4	16
57213	205 272	155	< 0.5	1	1035	3.64	35	20	< 1	< 2	18
57214	205 272	350	< 0.5	13	1655	5.50	20	77	2	< 2	26
57215	205 272	210	< 0.5	21	320	7.02	30	82	4	6	14
57216	205 272	520	< 0.5	10	2420	7.02	25	174	2	4	34
57217	205 272	690	< 0.5	17	2120	7.33	15	99	3	< 2	16
57218	205 272	280	< 0.5	6	877	3.22	15	90	1	< 2	12
57219	205 272	520	< 0.5	5	1665	4.44	25	197	2	4	12
57220	205 272	1270	< 0.5	20	6830	8.70	25	83	1	2	52
57221	205 272	950	< 0.5	12	6420	9.59	90	108	< 1	< 2	94
57222	205 272	1240	< 0.5	18	6350	11.05	55	78	1	< 2	116
57223	205 272	625	< 0.5	23	5560	6.65	30	92	4	2	34
57224	205 272	185	< 0.5	8	334	4.42	20	223	1	4	38
57225	205 272	670	< 0.5	14	2760	8.33	30	174	3	< 2	32
57226	205 272	720	< 0.5	20	3820	6.90	25	146	3	< 2	32
57227	205 272	795	0.5	16	4150	8.02	40	144	2	4	20
57228	205 272	610	0.5	24	3020	6.90	25	198	3	4	20

CERTIFICATION: B. Caplan

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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VANCOUVER, BC
V7Y 1G5

A9027612

Comments: ATTN: PETER DASLER

CERTIFICATE A9027612

DAIWAN ENGINEERING LTD.

Project: EXPO-6
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 11-DEC-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	40	Geochem ring to approx 150 mesh
272	36	Crush and split (11-20 pounds)
294	4	Crush and split (0-10 pounds)
238	40	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	40	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	40	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	40	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	40	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	40	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	40	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	40	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	40	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	40	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	40	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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To: DAIWAN ENGINEERING LTD.
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Project : EXPO-6
Comments: ATTN: PETER DASLER

Invoice Date: 11-DEC-90
Invoice No. : I-9027612
P.O. Number :

CERTIFICATE OF ANALYSIS A9027612

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57229	205	272	660	< 0.5	15	4680	6.04	25	242	3	4	32
57230	205	272	510	< 0.5	27	1740	8.20	30	189	4	4	50
57231	205	272	490	< 0.5	39	2750	7.39	20	170	5	< 2	60
57232	205	272	850	0.5	23	5140	5.38	15	154	4	4	82
57233	205	272	265	< 0.5	5	738	5.65	40	240	2	10	852
57234	205	272	415	< 0.5	11	2110	5.30	15	202	4	4	48
57235	205	272	640	0.5	19	5020	4.21	10	211	4	4	62
57236	205	272	850	0.5	24	6980	6.35	15	165	5	< 2	60
57237	205	272	125	< 0.5	18	959	5.52	5	210	3	< 2	14
57238	205	272	415	< 0.5	23	2840	7.55	10	251	7	< 2	20
57239	205	272	485	< 0.5	18	5350	7.82	10	106	4	< 2	24
57240	205	272	475	< 0.5	14	3430	8.31	10	135	3	< 2	20
57241	205	272	210	< 0.5	15	1540	8.81	15	204	2	< 2	16
57242	205	272	180	< 0.5	18	1520	10.60	10	222	5	< 2	18
57243	205	272	365	< 0.5	19	3420	10.95	25	151	5	< 2	24
57244	205	272	250	< 0.5	12	2870	7.19	10	102	2	< 2	22
57245	205	272	85	< 0.5	10	129	5.39	15	126	4	< 2	12
57246	205	272	60	< 0.5	10	89	6.35	15	129	3	< 2	16
57247	205	272	310	< 0.5	14	2150	5.75	60	98	8	6	84
57248	205	272	300	< 0.5	14	2300	8.28	95	52	12	6	96
57249	205	272	450	0.5	17	4270	10.20	75	85	14	2	76
57250	205	272	400	< 0.5	17	2610	10.80	110	53	17	< 2	90
57251	205	272	530	0.5	15	2780	8.53	205	46	13	10	158
57252	205	272	400	0.5	14	3010	8.83	120	39	12	14	116
57253	205	272	290	0.5	16	2080	8.65	110	36	11	2	74
57254	205	272	270	< 0.5	12	2020	10.90	100	38	12	4	76
57255	205	272	335	< 0.5	12	2820	11.30	185	29	14	8	130
57256	205	272	395	0.5	11	2210	11.30	345	20	16	6	224
57257	205	272	475	0.5	11	2530	12.90	295	29	16	4	224
57258	205	272	355	1.0	12	1915	6.87	360	33	9	4	214
57259	205	272	340	1.0	12	1915	7.92	380	29	9	10	242
57260	205	272	240	1.0	14	1720	7.34	495	47	11	16	358
57261	205	272	260	1.0	12	1595	7.52	510	39	11	12	318
57262	205	272	335	1.0	14	2240	7.69	460	38	13	4	296
57263	205	272	340	1.5	14	2700	6.24	345	86	14	6	220
57264	205	272	495	1.5	10	2800	5.60	330	39	10	6	214
57265	205	294	320	0.5	17	2540	6.88	235	45	20	6	138
57266	205	294	350	0.5	17	2650	5.96	170	66	7	8	146
57267	205	294	630	1.0	20	4640	7.40	180	57	7	18	200
57268	205	294	240	< 0.5	16	2100	6.24	240	49	4	8	156

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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A9027704

Comments:

CERTIFICATE A9027704

DAIWAN ENGINEERING LTD.

Project: EXPO-7
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 11-DEC-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	36	Geochem ring to approx 150 mesh
294	36	Crush and split (0-10 pounds)
238	36	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	36	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	36	Ag ppm: 9 element, soil and rock	ICP-AES	0.5	200
1929	36	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	36	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	36	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	36	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	36	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	36	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	36	Pb ppm: 9 element, soil and rock	ICP-AES	5	10000
1950	36	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-7
Comments:

Page Number : 1
Total Pages : 1
Invoice Date: 11-DEC-90
Invoice No. : I-9027704
P.O. Number :

CERTIFICATE OF ANALYSIS A9027704

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57269	205 294	220	0.5	16	1670	6.11	260	35	5	6	180
57270	205 294	570	1.0	18	4650	5.76	220	318	8	12	182
57271	205 294	225	1.0	16	2720	6.77	220	71	5	22	178
57272	205 294	220	0.5	13	1800	5.09	250	35	3	16	158
57273	205 294	310	0.5	17	2480	4.75	195	149	3	14	108
57274	205 294	150	< 0.5	16	1805	6.41	235	38	3	18	172
57275	205 294	130	< 0.5	16	1625	6.33	240	18	2	14	180
57276	205 294	150	< 0.5	13	1675	6.65	240	36	3	14	122
57277	205 294	115	< 0.5	16	1480	5.49	260	41	4	18	158
57278	205 294	80	< 0.5	16	1010	5.25	215	37	2	14	120
57279	205 294	135	< 0.5	13	1135	5.83	190	20	2	10	114
57280	205 294	195	0.5	15	1800	6.48	245	32	3	8	172
57281	205 294	150	0.5	15	1470	6.00	250	38	4	12	124
57282	205 294	275	0.5	17	2390	5.85	215	59	5	8	90
57283	205 294	175	< 0.5	15	1210	5.66	280	42	4	18	170
57284	205 294	230	< 0.5	15	1580	5.06	210	62	4	14	90
57285	205 294	185	0.5	19	2180	5.84	275	60	4	20	202
57286	205 294	230	< 0.5	19	1475	6.44	275	50	4	18	130
57287	205 294	145	< 0.5	14	1525	5.40	270	86	3	8	118
57288	205 294	165	< 0.5	15	1535	5.70	225	57	3	12	106
57289	205 294	125	< 0.5	14	1160	6.23	220	39	3	20	144
57290	205 294	195	0.5	15	1545	6.27	295	57	3	66	236
57291	205 294	125	< 0.5	13	1120	5.42	280	33	1	18	120
57292	205 294	125	< 0.5	14	1180	5.26	290	40	2	24	148
57293	205 294	140	< 0.5	14	2250	4.23	275	119	2	18	140
57294	205 294	135	< 0.5	17	1675	4.34	225	61	4	8	118
57295	205 294	100	< 0.5	19	1725	4.27	205	42	3	8	106
57296	205 294	40	< 0.5	19	1045	4.87	215	28	2	2	98
57297	205 294	35	< 0.5	21	1505	5.18	185	23	5	6	86
57298	205 294	30	< 0.5	15	354	4.41	235	6	5	4	110
57299	205 294	30	< 0.5	18	484	4.73	235	7	5	10	106
57300	205 294	35	< 0.5	17	542	3.75	215	18	7	6	108
57301	205 294	55	< 0.5	19	697	4.36	245	23	9	10	142
57302	205 294	30	< 0.5	14	616	4.73	185	21	12	4	104
57303	205 294	20	< 0.5	17	349	5.11	105	14	8	< 2	70
57304	205 294	20	< 0.5	14	277	4.44	180	10	14	2	98

CERTIFICATION: B. Caplin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9027883

Comments:

CERTIFICATE A9027883

DAIWAN ENGINEERING LTD.

Project: EXPO-8
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 14-DEC-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	24	Geochem ring to approx 150 mesh
294	24	Crush and split (0-10 pounds)
238	24	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	24	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	24	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	24	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	24	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	24	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	24	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	24	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	24	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	24	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	24	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

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V7Y 1G5

Project : EXPO-8
Comments:

Invoice Date: 14-DEC-90
Invoice No. : I-9027883
P.O. Number :

CERTIFICATE OF ANALYSIS A9027883

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57305	205	294	20	< 0.5	21	389	5.70	125	9	14	10	80
57306	205	294	30	< 0.5	18	441	5.17	215	17	6	14	92
57307	205	294	40	< 0.5	22	459	6.34	225	16	7	42	96
57308	205	294	25	< 0.5	23	441	6.02	180	15	5	10	94
57309	205	294	30	< 0.5	19	258	6.15	155	13	6	4	78
57310	205	294	30	< 0.5	16	241	5.68	205	9	6	< 2	98
57311	205	294	30	< 0.5	19	279	5.37	200	11	8	8	106
57312	205	294	35	< 0.5	18	428	5.55	210	12	9	< 2	118
57313	205	294	40	< 0.5	22	425	5.58	185	19	9	2	134
57314	205	294	35	< 0.5	27	513	5.53	210	25	10	6	132
57315	205	294	30	< 0.5	23	494	6.50	160	22	10	< 2	66
57316	205	294	30	< 0.5	21	513	5.37	225	15	8	4	124
57317	205	294	25	< 0.5	24	570	5.10	215	19	7	4	142
57318	205	294	20	< 0.5	24	382	6.89	210	13	11	< 2	92
57319	205	294	30	< 0.5	17	412	4.96	205	11	6	< 2	72
57320	205	294	20	< 0.5	16	410	5.48	230	15	8	4	90
57321	205	294	20	< 0.5	22	408	6.27	325	6	39	18	138
57322	205	294	30	< 0.5	34	1025	6.21	265	68	34	756	1500
57323	205	294	15	< 0.5	25	548	7.37	260	5	30	24	152
57324	205	294	25	< 0.5	27	659	6.28	255	10	37	6	134
57325	205	294	10	< 0.5	17	710	5.42	280	12	8	134	418
57326	205	294	15	< 0.5	23	875	5.95	330	18	16	116	614
57327	205	294	15	< 0.5	20	703	4.66	220	20	7	14	118
57328	205	294	20	< 0.5	18	859	3.79	235	39	7	20	118

CERTIFICATION: B. Caughlin

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VANCOUVER, BC
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A9028159

Comments:

CERTIFICATE A9028159

DAIWAN ENGINEERING LTD.

Project: EXPO-9
P.O. # : NONE

Samples submitted to our lab in Vancouver, BC.
This report was printed on 20-DEC-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	28	Geochem ring to approx 150 mesh
272	28	Crush and split (11-20 pounds)
238	28	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	28	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	28	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	28	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	28	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	28	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	28	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	28	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	28	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	28	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	28	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

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Project : EXPO-9
Comments:

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Invoice Date: 20-DEC-90
Invoice No. : I-9028159
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9028159

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57329	205	272	25	< 0.5	19	1190	4.30	195	20	6	40	100
57330	205	272	10	< 0.5	14	521	4.29	180	10	3	18	100
57331	205	272	10	< 0.5	15	730	3.85	215	15	5	16	156
57332	205	272	15	< 0.5	14	911	3.67	175	23	2	26	138
57333	205	272	25	< 0.5	14	1160	4.24	175	20	5	16	110
57334	205	272	40	< 0.5	16	1655	4.98	185	21	5	14	118
57335	205	272	15	< 0.5	17	738	4.51	175	23	3	18	134
57336	205	272	15	< 0.5	19	612	5.20	200	26	8	14	128
57337	205	272	20	< 0.5	23	827	5.32	215	16	28	12	130
57338	205	272	45	< 0.5	23	984	5.94	245	11	22	12	160
57339	205	272	30	< 0.5	17	815	4.27	230	27	5	20	178
57340	205	272	25	< 0.5	19	787	5.27	200	21	9	8	102
57341	205	272	50	< 0.5	18	963	4.64	180	25	11	12	108
57342	205	272	70	< 0.5	17	975	4.17	195	17	4	14	126
57343	205	272	25	< 0.5	14	754	4.17	165	17	4	10	146
57344	205	272	40	< 0.5	13	745	4.12	200	12	4	22	206
57345	205	272	15	< 0.5	20	732	5.59	180	25	11	12	106
57346	205	272	25	< 0.5	22	804	5.95	225	18	11	18	152
57347	205	272	5	< 0.5	12	384	3.81	210	16	3	18	168
57348	205	272	25	< 0.5	16	688	4.54	260	18	3	32	360
57349	205	272	20	< 0.5	14	685	4.15	195	10	4	18	222
57350	205	272	10	< 0.5	15	718	4.62	225	24	7	20	230
57351	205	272	10	< 0.5	18	623	4.63	250	18	6	18	206
57352	205	272	15	< 0.5	16	502	4.67	250	11	9	12	118
57353	205	272	20	< 0.5	12	289	4.78	200	5	11	12	70
57354	205	272	15	< 0.5	17	524	5.15	205	8	14	18	112
57355	205	272	5	< 0.5	21	708	4.84	175	11	15	12	134
57356	205	272	15	< 0.5	19	943	4.97	205	11	15	14	150

CERTIFICATION: B. Caughlin

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A9028160

Comments:

CERTIFICATE A9028160

DAIWAN ENGINEERING LTD.

Project: EXPO-10
P.O. # : NONE

Samples submitted to our lab in Vancouver, BC.
This report was printed on 20-DEC-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	79	Geochem ring to approx 150 mesh
272	79	Crush and split (11-20 pounds)
238	79	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	79	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	79	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	79	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	79	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	79	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	79	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	79	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	79	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	79	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	79	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

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Project : EXPO-10
Comments:

Invoice Date: 20-DEC-90
Invoice No. : I-9028160
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9028160

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57357	205 272	10	< 0.5	19	577	4.82	165	11	15	16	102
57358	205 272	< 5	< 0.5	24	615	4.41	175	39	20	12	96
57359	205 272	20	< 0.5	23	673	4.05	410	21	12	28	168
57360	205 272	15	< 0.5	17	539	3.48	325	18	10	20	126
57361	205 272	25	< 0.5	19	322	3.83	230	5	15	16	78
57362	205 272	45	< 0.5	21	430	3.72	230	5	16	12	64
57363	205 272	35	< 0.5	40	994	6.56	255	14	27	8	80
57364	205 272	60	< 0.5	30	898	5.27	185	16	26	8	70
57365	205 272	25	< 0.5	30	662	5.45	190	9	23	12	82
57366	205 272	20	< 0.5	24	620	4.61	165	10	24	10	64
57367	205 272	< 5	< 0.5	21	527	3.99	285	8	25	126	300
57368	205 272	15	< 0.5	29	356	4.14	215	5	43	10	70
57369	205 272	20	< 0.5	31	505	4.23	275	22	46	6	66
57370	205 272	10	< 0.5	21	430	4.71	325	7	18	4	64
57371	205 272	10	< 0.5	16	288	3.93	330	2	12	10	72
57372	205 272	15	< 0.5	11	163	3.95	205	2	7	10	60
57373	205 272	5	< 0.5	21	158	4.71	220	9	9	14	80
57374	205 272	15	< 0.5	15	169	4.98	265	4	9	12	94
57375	205 272	10	< 0.5	19	160	5.01	220	5	17	14	68
57376	205 272	15	< 0.5	15	188	4.33	280	10	18	12	70
57377	205 272	5	< 0.5	16	164	3.89	190	9	5	10	70
57378	205 272	10	< 0.5	19	121	5.59	230	4	8	8	80
57379	205 272	10	< 0.5	13	88	4.01	175	11	5	10	90
57380	205 272	5	< 0.5	12	169	4.10	190	3	4	10	80
57381	205 272	< 5	< 0.5	11	190	3.61	180	5	6	8	70
57382	205 272	15	< 0.5	15	320	4.53	285	8	10	20	100
57383	205 272	15	< 0.5	17	250	4.40	275	33	10	10	154
57384	205 272	10	< 0.5	18	138	4.97	230	14	16	12	58
57385	205 272	20	< 0.5	21	54	4.53	5	15	9	2	8
57386	205 272	45	< 0.5	28	108	6.70	5	19	17	2	10
57387	205 272	35	< 0.5	23	62	4.35	< 5	21	20	2	8
57388	205 272	40	< 0.5	12	358	3.09	5	66	5	< 2	12
57389	205 272	125	< 0.5	30	523	9.51	< 5	32	20	< 2	12
57390	205 272	105	< 0.5	26	866	6.88	< 5	53	23	< 2	12
57391	205 272	35	< 0.5	9	2490	3.36	10	92	6	4	28
57392	205 272	15	< 0.5	1	100	0.86	5	165	1	< 2	2
57393	205 272	10	< 0.5	3	525	1.72	5	88	< 1	< 2	6
57394	205 272	20	< 0.5	< 1	1080	0.78	< 5	28	< 1	2	8
57395	205 272	20	< 0.5	4	435	2.28	10	47	1	< 2	14
57396	205 272	35	< 0.5	21	194	4.28	10	178	5	< 2	6

CERTIFICATION: B. Caughlin

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VANCOUVER, BC
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Project : EXPO-10
Comments:

Invoice Date: 20-DEC-90
Invoice No. : I-9028160
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9028160

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57397	205 272	60	< 0.5	22	390	6.09	10	65	9	< 2	14
57398	205 272	70	< 0.5	22	371	5.33	5	157	9	< 2	8
57399	205 272	75	< 0.5	20	417	6.06	< 5	27	11	< 2	10
57400	205 272	160	< 0.5	23	551	6.01	< 5	28	14	2	8
57401	205 272	90	< 0.5	26	494	4.45	< 5	36	5	8	10
57402	205 272	80	< 0.5	16	403	4.65	5	37	4	4	6
57403	205 272	30	< 0.5	2	804	2.22	5	96	< 1	4	20
57404	205 272	20	< 0.5	< 1	713	0.44	< 5	88	< 1	4	16
57405	205 272	20	< 0.5	1	423	0.89	< 5	75	< 1	< 2	12
57406	205 272	30	< 0.5	9	186	1.65	5	76	1	4	6
57407	205 272	385	0.5	8	2240	2.95	< 5	209	3	6	18
57408	205 272	215	< 0.5	20	513	3.33	< 5	123	12	12	22
57409	205 272	185	< 0.5	29	1515	5.06	< 5	51	23	18	56
57410	205 272	160	< 0.5	23	741	3.20	< 5	43	16	8	14
57411	205 272	145	< 0.5	35	640	5.66	< 5	114	26	4	10
57412	205 272	315	< 0.5	29	4230	7.86	5	138	15	4	120
57413	205 272	160	< 0.5	22	2550	7.26	10	260	11	< 2	50
57414	205 272	185	< 0.5	21	765	10.00	10	294	10	2	108
57415	205 272	315	< 0.5	15	3240	8.79	30	105	12	< 2	200
57416	205 272	340	< 0.5	18	2150	7.97	20	130	9	4	106
57417	205 272	415	< 0.5	16	2520	8.12	5	142	10	2	26
57418	205 272	445	< 0.5	24	2390	7.46	5	86	14	4	20
57419	205 272	255	< 0.5	30	1105	7.66	10	331	12	2	30
57420	205 272	115	< 0.5	8	229	4.49	10	269	3	< 2	14
57421	205 272	250	< 0.5	18	2890	6.33	10	251	7	< 2	20
57422	205 272	90	< 0.5	7	270	2.60	5	202	2	< 2	6
57423	205 272	75	< 0.5	4	119	1.91	20	211	1	< 2	4
57424	205 272	75	< 0.5	8	162	2.34	10	245	2	< 2	6
57425	205 272	185	< 0.5	24	1770	3.32	10	327	8	10	14
57426	205 272	230	< 0.5	12	817	3.66	5	282	4	< 2	8
57427	205 272	175	< 0.5	14	306	2.14	5	207	5	6	6
57428	205 272	475	0.5	26	5690	4.52	10	364	10	< 2	26
57429	205 272	750	0.5	30	5280	6.09	10	307	9	< 2	24
57430	205 272	355	< 0.5	26	2730	3.58	30	215	8	< 2	18
57431	205 272	340	0.5	21	3540	4.01	25	173	7	12	32
57432	205 272	305	< 0.5	13	2210	3.38	15	265	7	2	14
57433	205 272	280	< 0.5	24	830	6.68	10	107	9	< 2	12
57434	205 272	275	< 0.5	6	774	2.26	10	139	4	4	10
57435	205 272	80	< 0.5	1	131	0.99	5	166	< 1	2	12

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9028194

Comments: ATTN: PETER DASLER

CERTIFICATE A9028194

DAIWAN ENGINEERING LTD.

Project: EXPO-11
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 20-DEC-90.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	74	Geochem ring to approx 150 mesh
272	74	Crush and split (11-20 pounds)
238	74	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	74	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	74	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	74	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	74	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	74	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	74	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	74	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	74	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	74	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	74	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

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V7Y 1G5

Project : EXPO-11
Comments: ATTN: PETER DASLER

Page Number : 1
Total Pages : 2
Invoice Date: 20-DEC-90
Invoice No. : I-9028194
P.O. Number :

CERTIFICATE OF ANALYSIS A9028194

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57436	205 272	85	< 0.5	2	192	1.51	10	181	1	4	8
57437	205 272	135	< 0.5	5	399	2.55	10	141	1	4	10
57438	205 272	420	< 0.5	18	3890	10.25	10	157	3	< 2	26
57439	205 272	510	< 0.5	13	5450	9.24	10	177	3	6	30
57440	205 272	335	< 0.5	20	4190	9.27	5	178	4	< 2	26
57441	205 272	260	< 0.5	29	2330	6.93	10	110	2	< 2	20
57442	205 272	200	< 0.5	27	1365	5.11	10	127	3	2	20
57443	205 272	280	< 0.5	73	3630	6.11	20	209	4	< 2	24
57444	205 272	350	0.5	25	4810	7.00	15	306	4	< 2	26
57445	205 272	240	< 0.5	32	4310	7.93	20	204	4	< 2	26
57446	205 272	195	< 0.5	34	4840	10.40	50	164	4	< 2	46
57447	205 272	135	< 0.5	50	727	8.68	15	159	4	< 2	22
57448	205 272	125	< 0.5	40	884	8.08	35	210	4	2	36
57449	205 272	70	< 0.5	8	366	3.32	10	157	1	2	14
57450	205 272	90	< 0.5	11	494	6.32	10	382	1	4	14
57451	205 272	130	< 0.5	33	1045	8.79	10	221	2	2	18
57452	205 272	170	< 0.5	47	1170	10.95	15	171	2	2	20
57453	205 272	80	< 0.5	47	330	6.69	15	136	2	4	16
57454	205 272	100	< 0.5	58	400	5.92	25	127	3	6	16
57455	205 272	55	< 0.5	22	253	6.93	30	86	2	< 2	14
57456	205 272	50	< 0.5	15	77	4.34	15	76	< 1	< 2	12
57457	205 272	105	< 0.5	21	870	7.37	10	98	2	< 2	20
57458	205 272	90	< 0.5	33	204	7.39	10	149	3	< 2	12
57459	205 272	120	< 0.5	25	535	8.13	5	51	3	2	12
57460	205 272	190	< 0.5	18	2170	10.30	5	43	3	34	32
57461	205 272	230	< 0.5	15	1415	9.32	5	33	3	2	22
57462	205 272	230	< 0.5	22	2180	7.78	5	45	4	4	24
57463	205 272	175	< 0.5	48	1970	10.90	5	32	4	< 2	22
57464	205 272	230	< 0.5	26	1440	8.30	10	51	3	8	18
57465	205 272	185	< 0.5	34	1675	9.51	10	38	4	4	20
57466	205 272	145	< 0.5	19	1290	6.62	5	27	3	6	16
57467	205 272	135	< 0.5	10	2860	8.03	5	26	2	2	20
57468	205 272	125	< 0.5	24	809	8.84	< 5	40	2	2	14
57469	205 272	< 5	< 0.5	15	1475	7.09	5	29	2	2	30
57470	205 272	75	< 0.5	12	237	8.75	5	40	2	< 2	12
57471	205 272	60	< 0.5	13	267	8.22	5	38	3	< 2	12
57472	205 272	60	< 0.5	15	193	9.38	10	49	2	4	14
57473	205 272	30	< 0.5	19	385	7.21	5	82	1	< 2	12
57474	205 272	60	< 0.5	20	410	10.75	5	91	2	< 2	16
57475	205 272	105	< 0.5	17	744	12.95	20	77	5	< 2	18

CERTIFICATION: B. Campbell

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-11
Comments: ATTN: PETER DASLER

Invoice Date: 20-DEC-90
Invoice No. : I-9028194
P.O. Number :

CERTIFICATE OF ANALYSIS A9028194

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57476	205	272	85	< 0.5	28	732	>15.00	10	56	4	< 2	26
57477	205	272	110	< 0.5	16	1450	8.49	10	165	3	< 2	16
57478	205	272	120	< 0.5	19	1410	9.41	5	87	3	< 2	14
57479	205	272	145	< 0.5	21	2310	5.63	5	73	3	< 2	12
57480	205	272	120	< 0.5	20	1305	10.25	5	37	3	< 2	16
57481	205	272	95	< 0.5	17	1765	5.29	5	49	3	< 2	12
57482	205	272	80	< 0.5	16	1945	3.78	5	51	3	< 2	14
57483	205	272	75	< 0.5	14	1340	4.49	5	22	4	2	10
57484	205	272	50	< 0.5	14	535	8.83	10	25	4	< 2	14
57485	205	272	30	< 0.5	12	661	5.49	5	22	3	4	12
57486	205	272	65	< 0.5	10	1175	5.60	5	31	4	4	28
57487	205	272	55	< 0.5	10	1120	5.70	5	35	2	6	30
57488	205	272	40	< 0.5	4	1650	3.83	5	39	3	10	82
57489	205	272	65	< 0.5	5	1340	3.78	10	34	1	10	48
57490	205	272	50	< 0.5	9	1025	5.32	5	66	2	10	36
57491	205	272	60	< 0.5	7	1075	3.59	10	28	2	10	74
57492	205	272	85	< 0.5	6	1320	3.59	25	53	2	10	48
57493	205	272	65	< 0.5	11	1635	3.99	20	43	2	12	46
57494	205	272	40	< 0.5	10	1720	3.42	5	39	2	6	26
57495	205	272	250	< 0.5	17	2840	7.34	600	42	21	22	290
57496	205	272	230	< 0.5	13	2680	7.01	705	32	16	14	256
57497	205	272	360	0.5	14	4170	7.54	915	29	17	48	660
57498	205	272	225	< 0.5	12	1820	6.19	660	24	14	66	460
57499	205	272	360	< 0.5	12	3690	6.45	565	54	17	14	200
57500	205	272	350	< 0.5	13	3910	6.72	500	48	21	14	182
57501	205	272	340	< 0.5	14	3230	7.86	645	33	19	36	524
57502	205	272	465	< 0.5	14	4150	6.57	545	45	21	14	210
57503	205	272	400	< 0.5	13	3960	6.79	450	32	21	14	174
57504	205	272	395	0.5	13	4100	7.29	640	28	23	24	244
57505	205	272	200	< 0.5	13	2950	8.35	980	18	19	50	582
57506	205	272	340	1.0	14	3500	9.09	765	21	18	24	458
57507	205	272	350	0.5	12	3880	7.52	510	44	16	14	252
57508	205	272	420	0.5	14	4310	7.51	545	27	22	20	176
57509	205	272	260	< 0.5	13	3350	6.50	700	34	20	22	268

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9110049

Comments: ATTN:PETER DASLER

CERTIFICATE A9110049

DAIWAN ENGINEERING LTD.

Project: EXPO-12
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 14-JAN-91.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	96	Geochem ring to approx 150 mesh
294	25	Crush and split (0-10 pounds)
272	71	Crush and split (11-20 pounds)
238	96	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	96	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	96	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	96	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	96	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	96	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	96	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	96	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	96	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	96	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	96	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
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PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-12
Comments: ATTN:PETER DASLER

Invoice Date: 14-JAN-91
Invoice No. : I-9110049
P.O. Number :

CERTIFICATE OF ANALYSIS A9110049

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57510	205 272	230	1.5	16	4820	6.94	875	39	13	30	382
57511	205 272	330	2.0	16	4840	7.93	865	50	13	34	404
57512	205 272	290	1.0	18	4630	9.39	830	48	19	10	352
57513	205 272	380	1.5	17	4720	9.07	795	40	18	14	346
57514	205 272	385	1.0	17	4170	9.54	680	41	21	10	290
57515	205 272	410	2.0	19	4710	10.30	825	55	15	30	356
57516	205 272	600	2.5	16	5450	8.46	570	85	16	14	216
57517	205 272	570	2.0	19	4380	7.87	605	180	19	8	156
57518	205 272	425	1.0	19	3430	8.86	750	99	19	14	302
57519	205 272	450	0.5	18	2480	8.29	705	23	21	16	242
57520	205 272	320	< 0.5	16	3070	8.58	715	42	14	4	366
57521	205 272	330	< 0.5	16	2800	8.11	585	52	18	6	140
57522	205 272	535	1.0	18	4340	8.82	730	34	16	14	242
57523	205 272	625	0.5	17	3270	9.17	905	38	13	14	286
57524	205 272	310	< 0.5	16	1920	7.31	795	11	12	8	222
57525	205 272	340	< 0.5	16	2250	9.65	1045	15	10	18	408
57526	205 272	230	< 0.5	16	1250	10.95	1165	7	8	12	376
57527	205 272	135	< 0.5	15	954	9.44	1290	8	10	14	268
57528	205 272	190	< 0.5	16	1740	10.90	1280	8	13	20	260
57529	205 272	210	< 0.5	17	1600	9.73	1210	12	10	8	194
57530	205 272	95	< 0.5	16	1720	7.65	1030	16	12	12	286
57531	205 272	90	< 0.5	17	1375	10.30	1440	17	15	32	390
57532	205 272	170	< 0.5	22	1800	9.88	1270	22	17	18	214
57533	205 272	100	< 0.5	21	1180	12.15	1450	11	17	10	228
57534	205 272	75	< 0.5	19	810	13.70	1630	7	16	10	260
57535	205 272	50	< 0.5	18	651	11.25	2160	8	14	20	336
57536	205 272	50	< 0.5	16	599	10.50	1475	5	12	8	178
57537	205 272	55	< 0.5	19	448	13.15	1590	4	14	< 2	220
57538	205 272	70	< 0.5	17	711	14.10	1695	5	17	12	242
57539	205 272	50	< 0.5	15	664	11.75	1415	7	16	6	172
57540	205 272	80	< 0.5	14	755	10.55	1215	14	12	10	156
57541	205 272	85	< 0.5	14	887	10.85	1330	7	16	32	216
57542	205 272	80	< 0.5	14	1085	9.53	1295	6	17	46	218
57543	205 272	45	< 0.5	14	988	9.03	1685	6	17	196	334
57544	205 272	50	< 0.5	12	524	8.67	950	4	15	8	162
57545	205 272	70	< 0.5	14	822	9.43	1370	7	16	84	402
57546	205 272	70	< 0.5	12	660	8.25	1115	6	13	16	230
57547	205 272	50	< 0.5	11	426	7.43	885	6	12	16	154
57548	205 272	50	< 0.5	15	733	9.21	1515	8	15	24	264
57549	205 272	20	< 0.5	14	1020	6.90	1450	8	20	18	216

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
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PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-12
Comments: ATTN:PETER DASLER

Invoice Date: 14-JAN-91
Invoice No. : I-9110049
P.O. Number :

CERTIFICATE OF ANALYSIS A9110049

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57550	205	272	70	< 0.5	13	1130	5.81	1065	8	22	18	162
57551	205	272	30	< 0.5	11	995	4.97	775	8	9	14	96
57552	205	272	20	< 0.5	9	895	4.91	730	8	8	12	146
57553	205	272	25	< 0.5	9	1035	4.35	515	7	7	16	112
57554	205	272	45	< 0.5	9	1530	3.95	385	10	14	26	90
57555	205	272	25	< 0.5	12	1110	6.39	825	8	15	22	162
57556	205	272	20	< 0.5	8	1015	4.54	580	9	8	20	136
57557	205	294	20	< 0.5	9	877	6.05	780	10	13	94	276
57558	205	294	25	< 0.5	9	1025	4.32	335	10	15	8	70
57559	205	294	5	< 0.5	19	47	6.04	245	< 1	15	12	100
57560	205	294	< 5	< 0.5	24	62	6.59	170	< 1	16	8	78
57561	205	294	< 5	< 0.5	26	70	6.27	100	1	17	6	36
57562	205	294	20	< 0.5	34	27	8.71	35	1	23	6	18
57563	205	294	15	< 0.5	28	101	6.67	100	< 1	18	8	36
57564	205	294	< 5	< 0.5	19	77	5.58	125	< 1	14	8	44
57565	205	294	< 5	< 0.5	24	127	6.89	75	2	15	6	26
57566	205	294	15	< 0.5	24	81	6.52	205	< 1	12	8	56
57567	205	294	10	< 0.5	16	84	5.92	350	< 1	10	12	94
57568	205	294	15	< 0.5	14	67	5.44	345	< 1	11	8	60
57569	205	294	10	< 0.5	13	53	5.29	185	< 1	14	10	52
57570	205	294	< 5	< 0.5	16	87	5.93	115	< 1	18	4	30
57571	205	294	< 5	< 0.5	22	78	7.09	225	< 1	36	< 2	50
57572	205	294	< 5	< 0.5	21	46	6.04	55	5	20	4	50
57573	205	294	10	< 0.5	28	53	6.74	75	1	20	8	24
57574	205	294	< 5	< 0.5	23	64	6.04	490	< 1	16	2	44
57575	205	294	10	< 0.5	19	86	5.23	240	2	17	2	24
57576	205	294	< 5	< 0.5	17	77	5.83	420	1	12	8	38
57577	205	294	5	< 0.5	26	88	6.59	415	6	15	2	30
57578	205	294	< 5	< 0.5	19	84	6.58	405	1	13	4	30
57579	205	294	< 5	< 0.5	20	84	6.67	435	< 1	11	2	36
57580	205	294	< 5	< 0.5	25	57	6.46	170	2	16	4	22
57581	205	294	< 5	< 0.5	16	32	5.36	200	2	24	8	76
57582	205	272	< 5	< 0.5	21	60	5.77	120	4	28	8	50
57583	205	272	< 5	< 0.5	22	42	5.70	240	< 1	32	2	46
57584	205	272	< 5	< 0.5	24	95	6.27	315	< 1	33	8	40
57585	205	272	< 5	< 0.5	18	78	6.50	440	1	45	8	42
57586	205	272	< 5	< 0.5	29	56	6.90	415	2	45	8	34
57587	205	272	< 5	< 0.5	21	35	6.26	540	4	35	8	34
57588	205	272	5	< 0.5	27	49	6.53	670	1	51	6	38
57589	205	272	15	< 0.5	19	48	6.34	520	1	44	6	36

CERTIFICATION: B. Caughlin

Chemex Labs Ltd.

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VANCOUVER, BC
V7Y 1G5

Project : EXPO-12
Comments: ATTN:PETER DASLER

Invoice Date: 14-JAN-91
Invoice No. : I-9110049
P.O. Number :

CERTIFICATE OF ANALYSIS A9110049

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57590	205 272	< 5	< 0.5	25	36	6.20	495	< 1	36	8	42
57591	205 272	< 5	< 0.5	19	75	6.54	240	3	24	6	44
57592	205 272	< 5	< 0.5	21	48	7.29	310	5	32	10	46
57593	205 272	< 5	< 0.5	20	33	5.91	700	< 1	28	2	58
57594	205 272	< 5	< 0.5	20	45	5.77	560	< 1	18	4	56
57595	205 272	< 5	< 0.5	21	48	6.11	515	< 1	16	< 2	48
57596	205 272	15	< 0.5	25	100	6.50	285	1	33	2	38
57597	205 272	< 5	< 0.5	28	217	9.58	315	14	65	6	36
57598	205 272	< 5	< 0.5	22	70	8.13	180	26	13	10	42
57599	205 272	< 5	< 0.5	23	124	8.64	205	12	24	6	42
57600	205 272	< 5	< 0.5	16	71	5.44	370	1	16	6	84
57601	205 272	< 5	< 0.5	29	54	5.42	340	1	43	8	40
57602	205 272	< 5	< 0.5	23	55	5.44	295	6	40	4	46
57603	205 272	< 5	< 0.5	24	54	5.92	390	< 1	25	< 2	40
57604	205 272	< 5	< 0.5	18	92	5.83	370	1	21	4	36
57605	205 272	5	< 0.5	28	101	6.96	245	< 1	33	< 2	38

CERTIFICATION: B. Caglioni

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Avo., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9028418

Comments:

CERTIFICATE A9028418

DAIWAN ENGINEERING LTD.

Project: EXPO-13
P.O. # :

Samples submitted to our lab in Vancouver, BC.
This report was printed on 7-JAN-91.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	105	Geochem ring to approx 150 mesh
272	105	Crush and split (11-20 pounds)
238	105	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	105	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	105	Ag ppm: 9 element, soil and rock	ICP-AES	0.5	200
1929	105	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	105	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	105	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	105	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	105	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	105	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	105	Pb ppm: 9 element, soil and rock	ICP-AES	5	10000
1950	105	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
British Columbia, Canada V7J 2C1
PHONE: 604 984 0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-13
Comments:

Invoice Date: 7-JAN-91
Invoice No. : I-9028418
P.O. Number :

CERTIFICATE OF ANALYSIS A9028418

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57606	205 272	< 5	< 0.5	20	85	5.54	250	< 1	32	12	40
57607	205 272	< 5	< 0.5	24	107	5.38	250	< 1	32	14	36
57608	205 272	< 5	< 0.5	22	81	5.68	270	< 1	32	6	36
57609	205 272	< 5	< 0.5	20	71	5.31	320	< 1	30	4	48
57610	205 272	< 5	< 0.5	26	145	6.11	245	< 1	28	12	46
57611	205 272	5	< 0.5	26	78	5.37	220	< 1	23	10	28
57612	205 272	< 5	< 0.5	21	66	5.08	180	< 1	16	2	30
57613	205 272	< 5	< 0.5	15	108	4.54	145	1	11	12	34
57614	205 272	20	< 0.5	16	170	4.95	150	< 1	6	6	36
57615	205 272	< 5	< 0.5	13	166	5.18	230	< 1	4	6	48
57616	205 272	< 5	< 0.5	11	93	4.12	210	< 1	3	6	52
57617	205 272	< 5	< 0.5	16	133	4.90	210	< 1	3	12	52
57618	205 272	5	< 0.5	15	213	4.71	215	< 1	6	8	42
57619	205 272	< 5	< 0.5	19	83	5.54	205	< 1	7	4	42
57620	205 272	< 5	< 0.5	17	64	4.48	240	< 1	6	4	32
57621	205 272	< 5	< 0.5	12	99	4.27	265	< 1	3	6	44
57622	205 272	< 5	< 0.5	12	96	3.50	250	< 1	5	4	32
57623	205 272	< 5	< 0.5	15	128	4.28	210	< 1	7	12	60
57624	205 272	< 5	< 0.5	14	126	3.62	245	< 1	5	12	28
57625	205 272	10	< 0.5	14	130	3.79	215	< 1	5	8	26
57626	205 272	< 5	< 0.5	18	144	4.18	210	< 1	9	124	24
57627	205 272	15	< 0.5	19	143	4.48	225	< 1	9	8	26
57628	205 272	15	< 0.5	35	188	5.46	265	< 1	15	10	30
57629	205 272	< 5	< 0.5	13	147	3.21	220	< 1	8	8	26
57630	205 272	< 5	< 0.5	15	99	3.20	210	< 1	9	10	32
57631	205 272	< 5	< 0.5	17	130	3.43	200	< 1	11	8	30
57632	205 272	< 5	< 0.5	26	150	5.49	360	< 1	15	8	70
57633	205 272	< 5	< 0.5	17	281	5.29	360	< 1	8	40	132
57634	205 272	40	0.5	5	93	1.75	10	61	3	2	6
57635	205 272	65	< 0.5	9	346	3.45	10	97	4	< 2	8
57636	205 272	55	< 0.5	8	434	3.90	15	112	4	2	8
57637	205 272	60	< 0.5	7	567	3.28	15	82	2	< 2	10
57638	205 272	80	< 0.5	10	240	4.35	15	80	4	4	12
57639	205 272	95	< 0.5	23	424	8.86	10	45	5	2	16
57640	205 272	90	< 0.5	19	251	7.58	15	57	6	< 2	16
57641	205 272	75	< 0.5	16	119	5.74	15	121	6	4	12
57642	205 272	100	< 0.5	7	84	2.05	10	103	4	< 2	6
57643	205 272	70	< 0.5	9	110	3.09	10	119	6	2	6
57644	205 272	130	< 0.5	5	218	2.57	15	160	3	< 2	8
57645	205 272	115	< 0.5	8	174	3.95	10	198	3	< 2	22

CERTIFICATION: B. Caplan

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
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British Columbia, Canada V7J 2C1
PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-13
Comments:

Invoice Date: 7-JAN-91
Invoice No. : I-9028418
P.O. Number :

CERTIFICATE OF ANALYSIS A9028418

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57646	205 272	65	< 0.5	4	120	2.21	20	239	2	2	8
57647	205 272	55	< 0.5	3	64	1.43	10	161	1	< 2	6
57648	205 272	65	< 0.5	1	82	0.83	10	167	2	4	8
57649	205 272	80	< 0.5	1	144	1.18	15	206	1	10	6
57650	205 272	90	< 0.5	2	63	1.06	10	170	1	12	8
57651	205 272	80	< 0.5	7	120	2.25	35	131	1	4	8
57652	205 272	475	< 0.5	22	1935	8.08	10	211	5	2	22
57653	205 272	760	< 0.5	35	3980	9.51	10	231	5	2	40
57654	205 272	885	0.5	34	5820	10.30	10	252	4	< 2	58
57655	205 272	810	< 0.5	33	3350	8.52	15	206	5	4	28
57656	205 272	100	< 0.5	8	365	3.05	15	237	2	4	16
57657	205 272	120	< 0.5	6	376	2.45	20	493	1	8	14
57658	205 272	730	0.5	36	5920	5.74	20	250	11	8	54
57659	205 272	885	0.5	38	3560	10.70	10	227	7	4	44
57660	205 272	240	< 0.5	16	1170	8.20	25	153	4	4	20
57661	205 272	125	< 0.5	10	513	4.06	25	224	3	4	14
57662	205 272	135	< 0.5	29	1270	5.19	35	262	4	4	18
57663	205 272	340	< 0.5	18	2180	5.03	25	406	4	4	24
57664	205 272	130	< 0.5	5	716	1.47	15	356	< 1	8	10
57665	205 272	325	1.0	11	>10000	2.91	15	285	2	10	62
57666	205 272	310	< 0.5	38	1780	6.84	15	72	7	8	26
57667	205 272	340	< 0.5	29	1925	7.17	15	75	7	10	28
57668	205 272	95	< 0.5	4	498	1.77	25	111	1	4	16
57669	205 272	380	< 0.5	20	622	4.94	25	133	6	8	18
57670	205 272	205	< 0.5	19	547	6.92	30	178	5	6	30
57671	205 272	280	< 0.5	18	427	6.91	40	140	8	6	26
57672	205 272	320	< 0.5	14	315	5.98	30	95	5	8	26
57673	205 272	360	< 0.5	19	1580	8.96	20	100	6	2	32
57674	205 272	420	< 0.5	25	1010	10.20	20	91	5	4	28
57675	205 272	325	< 0.5	20	351	10.85	20	246	4	4	26
57676	205 272	400	< 0.5	21	2860	9.10	20	100	4	8	48
57677	205 272	140	< 0.5	6	463	2.67	15	176	1	4	18
57678	205 272	600	0.5	19	2080	6.73	15	148	3	8	30
57679	205 272	1000	1.0	18	4970	8.56	15	94	4	10	48
57680	205 272	825	0.5	43	3690	>15.00	5	69	9	8	56
57681	205 272	135	< 0.5	10	1170	3.26	20	76	2	4	20
57682	205 272	65	< 0.5	4	155	1.36	35	141	3	6	12
57683	205 272	105	< 0.5	12	206	2.85	35	96	4	6	16
57684	205 272	70	< 0.5	9	273	2.98	30	122	4	4	18
57685	205 272	75	< 0.5	11	367	4.83	30	32	3	6	24

CERTIFICATION: B. Caglioni

Chemex Labs Ltd.

Analytical Chemists * Geochemists * Registered Assayers
212 Brooksbank Ave., North Vancouver
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PHONE: 604-984-0221

To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-13
Comments:

Invoice Date: 7-JAN-91
Invoice No. : I-9028418
P.O. Number :

CERTIFICATE OF ANALYSIS A9028418

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57686	205	272	120	< 0.5	25	709	6.98	20	32	5	2	20
57687	205	272	290	< 0.5	27	1725	8.11	15	45	3	2	24
57688	205	272	440	< 0.5	32	2480	8.48	10	125	4	8	46
57689	205	272	50	< 0.5	11	680	4.58	5	9	3	12	186
57690	205	272	75	< 0.5	13	504	4.81	5	11	2	14	72
57691	205	272	25	< 0.5	8	323	3.82	15	5	2	14	240
57692	205	272	20	< 0.5	9	433	3.87	135	5	2	14	172
57693	205	272	15	< 0.5	10	312	3.53	30	4	2	16	104
57694	205	272	25	< 0.5	9	256	3.43	220	9	< 1	12	186
57695	205	272	165	< 0.5	11	1195	5.46	200	43	4	14	426
57696	205	272	225	< 0.5	13	1400	5.24	200	32	3	6	256
57697	205	272	215	< 0.5	21	1660	5.86	30	68	4	4	96
57751	205	272	30	< 0.5	5	1645	1.84	10	95	3	2	76
57752	205	272	20	< 0.5	4	2960	2.36	< 5	147	< 1	4	96
57753	205	272	25	< 0.5	14	126	3.93	5	40	8	< 2	8
57754	205	272	60	< 0.5	31	184	7.31	10	156	20	< 2	14
57755	205	272	55	< 0.5	38	1490	6.57	5	40	29	4	18
57756	205	272	85	< 0.5	36	1110	8.38	5	37	38	2	24
57757	205	272	100	< 0.5	31	221	9.05	5	84	15	< 2	14
57758	205	272	55	< 0.5	17	774	5.50	5	130	7	4	12
57759	205	272	70	< 0.5	19	293	5.51	5	98	8	2	10
57760	205	272	85	< 0.5	13	742	5.63	5	124	5	2	14
57761	205	272	85	< 0.5	19	228	5.95	5	160	8	2	8
57762	205	272	60	< 0.5	16	316	5.24	15	159	6	< 2	12
57763	205	272	85	< 0.5	19	766	5.85	10	95	7	< 2	16

CERTIFICATION: B. Caglioni

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To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

A9028399

Comments: ATTN:PETER DASLER

CERTIFICATE A9028399

DAIWAN ENGINEERING LTD.

Project: EXPO-14
P.O. # : NONE

Samples submitted to our lab in Vancouver, BC.
This report was printed on 4-JAN-91.

SAMPLE PREPARATION

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION
205	47	Geochem ring to approx 150 mesh
272	47	Crush and split (11-20 pounds)
238	47	NITRIC-AQUA REGIA DIGESTION

ANALYTICAL PROCEDURES

CHEMEX CODE	NUMBER SAMPLES	DESCRIPTION	METHOD	DETECTION LIMIT	UPPER LIMIT
100	47	Au ppb: Fuse 10 g sample	FA-AAS	5	10000
1005	47	Ag ppm: 9 element,soil and rock	ICP-AES	0.5	200
1929	47	Co ppm: 9 element, soil & rock	ICP-AES	1	10000
1931	47	Cu ppm: 9 element, soil & rock	ICP-AES	1	10000
1932	47	Fe %: 9 element, soil & rock	ICP-AES	0.01	15.00
1937	47	Mn ppm: 9 element, soil & rock	ICP-AES	5	10000
1938	47	Mo ppm: 9 element, soil & rock	ICP-AES	1	10000
1940	47	Ni ppm: 9 element, soil & rock	ICP-AES	1	10000
1004	47	Pb ppm: 9 element,soil and rock	ICP-AES	5	10000
1950	47	Zn ppm: 9 element, soil & rock	ICP-AES	2	10000

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1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-14
Comments: ATTN:PETER DASLER

Invoice Date: 4-JAN-91
Invoice No. : I-9028399
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9028399

SAMPLE DESCRIPTION	PREP CODE		Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57698	205	272	1040	< 0.5	35	3110	8.66	80	106	7	12	38
57699	205	272	220	< 0.5	21	2890	6.08	40	46	4	10	28
57700	205	272	165	< 0.5	10	1725	3.26	40	58	3	4	18
57701	205	272	280	< 0.5	10	3140	4.19	30	57	3	4	24
57702	205	272	250	< 0.5	10	1295	4.91	30	128	4	4	22
57703	205	272	285	< 0.5	16	835	5.88	45	59	5	6	18
57704	205	272	370	< 0.5	10	3710	4.67	35	94	4	6	30
57705	205	272	265	< 0.5	12	1335	6.05	55	89	3	4	22
57706	205	272	340	< 0.5	16	1870	6.36	35	70	5	4	26
57707	205	272	920	0.5	28	3680	9.44	40	115	3	2	78
57708	205	272	1380	< 0.5	31	2470	7.48	45	252	4	2	28
57709	205	272	500	1.0	21	6560	7.01	45	72	3	2	60
57710	205	272	175	< 0.5	4	310	3.26	35	524	1	2	14
57711	205	272	130	< 0.5	5	289	2.02	20	280	2	2	10
57712	205	272	175	< 0.5	13	1750	3.55	15	225	3	2	20
57713	205	272	110	< 0.5	9	144	2.31	15	157	2	< 2	6
57714	205	272	65	< 0.5	5	145	1.64	15	139	1	< 2	6
57715	205	272	80	< 0.5	7	128	2.67	45	309	2	2	6
57716	205	272	100	< 0.5	14	387	3.64	45	202	2	< 2	12
57717	205	272	130	< 0.5	9	836	4.27	25	149	< 1	< 2	20
57718	205	272	145	< 0.5	6	286	2.22	15	166	1	4	14
57719	205	272	120	< 0.5	11	271	2.54	15	182	1	4	12
57720	205	272	85	< 0.5	17	442	3.24	15	185	2	4	20
57721	205	272	420	0.5	26	3590	6.67	10	53	3	4	28
57722	205	272	685	0.5	24	5320	8.78	10	23	3	< 2	36
57723	205	272	865	0.5	18	5230	8.43	15	23	3	< 2	34
57724	205	272	770	0.5	19	4010	8.18	10	43	3	2	30
57725	205	272	680	0.5	19	4040	9.27	20	44	3	< 2	42
57726	205	272	320	< 0.5	18	1565	6.06	410	35	34	2	78
57727	205	272	510	< 0.5	15	2070	8.09	60	27	2	2	88
57728	205	272	520	0.5	19	3190	7.87	100	39	2	4	92
57729	205	272	880	1.0	22	3870	12.45	130	42	2	4	192
57730	205	272	505	0.5	20	3410	9.04	75	59	1	6	276
57731	205	272	655	0.5	12	3460	7.38	90	43	2	8	124
57732	205	272	305	< 0.5	17	2300	8.08	75	41	< 1	4	90
57733	205	272	245	< 0.5	11	1510	4.44	45	48	< 1	6	72
57734	205	272	290	< 0.5	15	1945	5.78	80	31	1	4	80
57735	205	272	315	< 0.5	14	1755	6.24	85	36	1	6	96
57736	205	272	490	0.5	13	2720	5.78	140	45	< 1	8	104
57737	205	272	520	< 0.5	16	2820	7.16	90	39	2	10	100

CERTIFICATION: B. Caughlin

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To: DAIWAN ENGINEERING LTD.
ATTN: PETER DASLER
1030 - 609 GRANVILLE ST.
VANCOUVER, BC
V7Y 1G5

Project : EXPO-14
Comments: ATTN:PETER DASLER

Invoice Date: 4-JAN-91
Invoice No. : I-9028399
P.O. Number : NONE

CERTIFICATE OF ANALYSIS A9028399

SAMPLE DESCRIPTION	PREP CODE	Au ppb FA+AA	Ag ppm	Co ppm	Cu ppm	Fe %	Mn ppm	Mo ppm	Ni ppm	Pb ppm	Zn ppm
57738	205 272	640	1.0	14	3260	8.12	220	49	2	18	150
57739	205 272	470	0.5	13	2660	7.52	220	30	2	14	156
57740	205 272	735	1.0	15	4070	7.37	205	47	8	8	154
57741	205 272	575	0.5	13	2780	6.31	260	42	2	10	152
57742	205 272	375	0.5	13	3160	6.76	160	49	11	22	176
57743	205 272	655	0.5	18	3020	10.50	400	32	50	6	196
57744	205 272	985	1.5	18	4700	5.87	335	40	6	14	180

CERTIFICATION: B. Caughlin

APPENDIX 3

DRILL LOGS

Daiwan Engineering Ltd.
1030 - 609 Granville Street, Vancouver, B.C. V7Y 1G5
Phone: (604) 688-1508

HOLE NO. EC-181 **DRILL LOG** Page 1 of 9

PROJECT **Expo**
CONTRACTOR Olympic Drilling Consulting
DATE STARTED Nov 1/90 COMPLETED Nov 19/90
LOGGED BY D. J Pawliuk

T.D. 233.48 COLLAR ELEVATION 980' ±
INCLINATION -45° BEARING 360° Az
COORDINATES 248100 N / 229315 E.
SURVEY REFERENCES

Acid test -44° at 185.01 m

Footage	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Suif Veins	Frac Inten	Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: BASIC GEOLOGY (rock types, metallization, structures, alterations, one column system)	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
9																			1					Py diss as subhedral cubes up to 1.5 or 2 mm. across	0.00 - 9.14 CASING 9.14 - 163.75 ANDESITE Light brownish grey at top of hole, changing gradually to light greenish grey to medium greenish grey with depth. (by 61.0 m depth) Fine to very fine grained, massive, generally moderately fractured with off-white qtz. vlts. to 10mm wide. (av. 2mm) along fractures. Generally moderately broken core above 53.70m; often moderately broken core over short intervals to about 80 m. Moderately to intensely silicified with silica content gradually decreasing with depth; chlorite and magnetite contents gradually increase with depth as small clots av 1-2 mm across.	
11																										
13																										
15																										
17																										
19																										

Sample No & Interval	LOG: BASIC GEOLOGY	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES
57559		
57560		
57561	16.76 - 17.38 Fault; pale creamy grey gouge 4 cm wide on irregular fracture at about 10° to c.a.	
57562	19.24 - 20.83 Fault; Pale creamy grey gouge between slips at about 35° (top) and 60° (bottom)	

HOLE NO. EC-181 **DRILL LOG** Page 2 of 9

PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrox	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
21																				1						speckling the rock, Quartz vlts comprise about 0.5% of rock volume to 53.70 m, then 3-5% to 60.90 m, then 0.5% below 60.90 m depth.	
23																		<1						57563			
25																		<1						57564			
27																		<1						57565			
29																				1/2							
31																		<1						57566			

fH
fH

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T.D. _____ COLLAR ELEVATION _____
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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Suif Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
33																		1-2	tr							
																	<.1									
35																			tr				57567	py		
37																	<.1						57568			
39																		2					57569	flt		
																			tr							
41																	<.1									
																			tr							
43																	<.1						57570	flt		
																		2						flt		
45																			tr							

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Glyrpx	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
45																				2				57571	fH fH		
47																		<.1		1		tr		57572	hem + mag		
49																				2				57573	48.37 – 53.70 Fault zone; pale brownish grey gouge + f. bkn core between slips at about 40°/to c.a.		
51																		<.1									
53																				1				57574	fHs		
55																		<.1		2-3		tr			fPy		
57																											

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyrope	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3C	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
57																											
																				2-3		tr		575775			
59																		4-1				tr				pH	
61																								575776		pH	
																		4-1		1		1					
63																								575777		pH 64.10 - 64.62 Fault, pale greyish brown finely bkn core and gouge at ~40°	
																		4-1									
65																				2-3								
																								575778			
67																		<1		1							
																						1					
69																				<1		2					

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
69																										
																	<.1		<1		2		57579	flt		
71																										
																			1-2		<1					
73																	<.1						57580	py vlts		
75																										
																	<.1						57581	flt		
77																										
79																							57582	Fault zone 42 cm wide at 50°		
																	<.1								
81																										

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INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
81																			1-2	<1			57583			
83																	<.1									
																			tr							
85																	<.1						57584			
																								Py bands along bedding at 50° to c.a.		
87																				2			57585			
																		tr								
89																	<.1	tr								
																							57586			
91																	<.1									
93																										

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_xFeS_x	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
93																				1-2		2					
																		4.1						57587	py vlt		
95																											
97																		4.1						57588			
99																								57589			
																		4.1							py vlts		
101																											
																								57590			
103																		4.1							plt		
105																											

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
105																										
																			1			2	57591	Fault at 55°	107.37 → about 108.00 Possibly int. altered QFP here	
107																	<.1		3					py bands		
109																	<.1						57592			
																								py		
111																		tr		tr			57593			
																	<.1			tr						
113																							57594			
115																	4.1							py vH		
117																										

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
117																										
119																							57595	py vlts		
121																							57596	Fault at 30°		
123																							57597	py		
125																							57598	128.10 m fault at 15°		
127																										
129																										

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INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
129																										
																	5		tr		1-2					
																			tr							
131																	.1						57599			
																			3							
																			2							
133																	<.1		1				57600			
135																							57601			
																	4.1									
137																										
																							57602			
139																	4.1									
141																										

Fault zone at about 10°. soft, pyritic, finely broken brown core and pale grey gouge.

occ. py vlts

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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
141																			1		1-2					
																	<.1						57603		py + ft	
143																										
145																		ft								
																	<.1						57604		py	
147																										
																			4	ft						
																	<.1						57605		ft	
149																			1							
151																										
																	<.1						57606		py	
153																										

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T.D.
INCLINATION
COORDINATES
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COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No. & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
153																										
155																	<.1						57607			
157																			1				57608	157.89–158.11 Healed fault at 45° with ~7% py. Abundant milky white to watery grey vein quartz pieces within fault zone.	Below about 156.00 andesite becomes coarser grained with off-white feldspar crystals to 1.5 mm.	
159																	<.1									
161																			1				57609		163.75–181.66 DIORITE. Greenish grey, medium to fine grained, generally massive. Intruded by off-white quartz and carbonate veinlets throughout as within overlying andesite. Local patchy sections where rock moderately silicified. Hornblendes slightly altered to chlorite. More epidote spots than within overlying andesite.	
163																	<.1						57610			

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
165																							57611	py	Contact between ands + diorite gradational over about 15 cm; at about 50° to c.a.	
167																							57612			
169																							57613			
171																							57614	Healed fault at 25° with off-white vein qtz pieces present.		
173																										
175																										
177																										

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Suif Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
177																			1 / 3 / 1		1		57615	FIT	181.66 - 184.82 ANDESITE PORPHYRY. Midway between overlying andesite and diorite units.	
					6												<.1									
179																							57616		184.82 - 202.33 DIORITE As for 163.75 - 181.66.	
181																	<.1									
																				tr			57617			
183																										
																	<.1									
185																							57618	Healed fault at 40°.		
																								Fault at 30° marked by 12 mm of blk. core and gouge.	
187																	<.1									
189																										

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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
189																			1		1		57619			
191				1													<.1						57620			
193					4												<.1				1-2		57621			
195																	<.1						57622			
197					9																			Healed fault at 215°.		
199																	<.1							py vlts		

Footage: 189, 191, 193, 195, 197, 199

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
201			1														<.1		1		1-2		57623		202.33 – 205.24 ANDESITE PORPHYRY As for 181.66-184.82 medium green-grey colour	
203																									205.24 – 209.77 DIORITE As for 163.75 – 181.66	
205				4				1									<.1						57624	Fault at about 35°		
207				4																					209.77 – 233.48 As for 202.33 – 205.24 ANDESITE PORPHYRY	
209								1									<.1						57625			
211																			<1		1-2					
																	<.1						57626			

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T.D. _____ COLLAR ELEVATION _____
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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
213																		<1		1-2					Pale orange bleached band 8 cm wide at ~30°	
215																	<.1						57627			
																		4								
217																									Fault at ~25°	
																	<.1	<1					57628			
219																										
																							57629			
221																	<.1									
223																							57630		f/t w. py. Hs.	
																	<.1	1								

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T.D. _____ COLLAR ELEVATION _____
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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
225																										
			C							/									1		1-2				py	
																	<.1						57631		flt	
227					6																				py	
229																							57632		py vlts	
			0														<.1									
231			0		6																		57633		flt	
																									py	
																									flt	
233																	tr								1 speck cp	
																									233.48	
																									END OF HOLE	

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DRILL LOG

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DATE STARTED Nov 1/90 COMPLETED Nov 8/90

LOGGED BY D. J. PAWLIUK

T.D. 437.99 m

INCLINATION -90°

COORDINATES 24557.1.6 N, 233089.5 E

COLLAR ELEVATION 1622.2

BEARING —

SURVEY REFERENCES

Note: Acid test -90° at 367.89 m depth

Footage (m)	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyrop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No. & Interval	LOG: SCALE — BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
16																										0.00 – 19.81 CASING	
																										16.72 – 20.45 Rounded pebbles various lithologies, mainly pale grey-brown pyrophyllite bx with 20 per cent yellow clay.	
18																										20.45 – 21.07 Ands bx; maroon to green-brown med. gr., mag clots to few mm across.	
20																										21.07 – 23.84 Pale greyish brown, moderately to intensely fractured pyrophyllite bx. Pale grey to off-white clays on fracture sfcs.	
22																										23.84 – 24.30 Ands bx as for 20.45 – 21.07	
																										24.30 – 27.67 As for 21.07 – 23.84 but more brecciated.	
24																										27.67 – 30.86 Ands bx; brown green to greyish green, med. gr., irregular mag-chlor(?) clots to 10 mm. 2–3% mag. 0.5% combined py, cp disseminated.	
26																											

Somewhat to moderately broken core 16.72 to 42.98 m depth

mixed sulphide and oxide

sulphide

57001

57002

57003

hematite specks

fault contact at 44°

py at 20°

py diss and as wispy vlts

Late bx band with angular clasts to 1.5 cm across.

py diss watery grey pyrophyllite mottled rock

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
28																		.1	tr	tr				57004	flts	30.86 – 32.61 Pyroph bx. Pale greyish brown med to f. gr. granular or clastic texture. Possibly intensely altered andesitic tuff.	
30																									irreg. py vlts to 1 mm		
32																			2					57005	flt at 40°; 32 cm of gouge + f. bkn core	32.61 – 37.08 Andesite – pyrophyllite bx. Mottled with bluish green chloritic patches. Specks and small (to 3 mm) magnetite patches. Gradational over 20 cm w. underlying rock	
34																			tr	rare speck					flt		
36																			1					57006	flts	37.08 – 67.87 Pyroph bx generally as for 30.86 – 32.61 except more abundant watery grey silica as irregular, wormy patches (and) bands. Silica content increases with depth; gradational contact over 4 m with underlying siliceous bx.	
38																			tr								
																			1								
																			2					57007	flts		
																									39.33 – 40.93 Major fault; gouge + f. bkn core at 25° – 60° (av. 48°).	

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT

40
42
44
46
48
50

57008
57009
57010
57011

Fault

<12 cm f. bkn core and gouge at ~35°.

41.90–42.33 Late conglomeratic bx band w. subround to angular clasts to 13 mm in pale brown f. gr. matrix. Matrix pyritic in patches to few cm.

44.35 Late bx band 18 cm wide at ~25° w. py-rich matrix. Abund. creamy clays within 10 cm of bx band.

py vlts

49.67 Int. sil. band 12 cm wide at ~65° to c.a.

51.42–54.25 Mod bkn core.

50.56–51.57 Late bx bands at 40–70° to c.a.; pyritic matrix.

hairline covellite? vlt at 51.15

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Chlorite/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Prop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
52																		<.1		<1				570124	fH	53.85 Fault. Few mm gouge on frac at 50°	
54																											
56																		<.1		3				570113	fHs	57.48 Fault. 3.5 cm f. bkn core and gouge between slips at 55°.	
58																				<1					py as irreg. masses + vlts.	58.00 Fault. 13 cm f. bkn core + gouge at 43° 58.52 Fault. 5 cm f. bkn core between slips at 22°	
60																		<.1		2-3				570114	py vlts	63.11-64.68 Mod. frac w/ limt along fractures, mod. clay alt'n; poss QFP? Upper contact discrete fault at 48°; lower fault at 37°.	
62																		<.1		1					limt		
64																								570115			

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrgen	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
64																		<.1		<1				57016	py, bn	64.68 Fault, 8 cm f. bkn core and gouge at 37°. 67.87 – 252.32 Siliceous breccia. Light grey w. local pale brown mottling. Mod. abund. irreg. hairline fractures throughout, give rock coarse sugary to granular appearance. Rock indurated by silica; in part unit appears to be med. gr. gwke which has been indurated by silica, which was not observed in earlier holes atop McIntosh Mtn. Local late bx bands usually have pyritic matrix.	
66																									py		
68																		<.1						57017			
70																								57018	py gwke interbed graded bedding w. tops top of hole	mod. to	
72																		<.1		0.5					py, speck bn	75.13 Fault, 15 cm f. bkn core.	
74																		<.1		3				57019	late bx band w. pyritic matrix py bn (?)		
76																								76			

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76																				4				53020	py		
																				1							
78																		<.1									
																								53021	py		
80																									py		
																									bn		
																		<.1									
82																								53022	py		
																				1							
																									bn		
84																		<.1									
																									faintly laminated at 37°		
86																								53023	py		
																		<.1		1							
88																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Stroph.	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
88																		<1		1/0.5							
90																								57024	— py, rare bn		
92																				B				57025	— bn (?) 3% over 5cm.	91.80 - 92.42 Late bx with angular silica clasts av. 4-6 mm in siliceous and pyritic matrix.	
94																		4.1							— wispy bn vlt		
96																		4.1		0.5				57026			
98																		4.1						57027	99.09 - 99.43 2% off-white irregular hairline to 1/2 mm wide feldspar vlts.		
100																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophyl.	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
100															E			<.1	0.5								
															1												
															5												
102																											
															4					5							
104															2				0.5								
															5			<.1						57028	flt	101.61 Fault. 7 mm f. bkn core and gouge along slip at 14°.	
106																								57029	py		
															1										bn		
																		.2		2-3				57030	py, bn (0.5%), traces cp.		
108																									108.68 cp mass 2 X 4 mm.		
															4			tr									
															9					1						107.18 Gouge interbed 14 cm thick at 40°.	
110																		.1						57031	py		
																									bn	111.08 - 111.55 1% bn as wispy, irregular vlts 1/8 - 1/4 cm long.	
															X												
															5												

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrox?	STR.: Suif Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
112																				<1							
																		.15						5>032			
114																				3							
116																		.15						5>033			
118																											
																		.1		2				5>03X			
120																											
																				<1							
122																								5>03L			
																		<1									
124																											

trace diss bn

5% cp, 1% bn over 4 cm as irreg. cp masses to thin rims rimmed by bn

py

bn to 0.5% as wispy vlts + diss.

py

py vll 7 mm wide at 38°

1% diss bn

py, bn

bn

tr to locally 0.5% diss + hairline vlt bn.

py, bn

fl/mnt

py, local tr bn

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	py rpc	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
124																									py vfH to 0.5 mm		
																								57036	traces diss + wispy vfH bn to 126.77		
126																									126.77 – 128.40 bn 0.5 to 1% lining \ /short, irregular randomly oriented fractures mostly 5 to 20 mm in length.		
																									bn fl/vein as vfH to 3 mm wide and as disseminated "masses" to couple of cm across; little disseminated sulphide. No cp seen here.	129.71 – 130.41 weak to 5% locally, creamy white clay alth as spots and irreg masses to few mm across throughout.	
128																								57037	lmnt		
																								57038	131.78 – 132.32 Fault. Mod. to finely bkn core bn between slips at 24° to c.a.		
130																									lmnt		
132																								57039	py, bn fH		
																									lmnt		
134																									lmnt		

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrgy	STR.: Suit Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
136					X										•			•		1					py bn	137.30 – 137.41 40% diss py within band at 48° to c.a	
																				40					py		
138					l															3					bn		
																									py		
140																				1					lmnt		
																		<.1							py		
142																				<1					lmnt		
																									lmnt		
144					Cc													.1		1					bn		
																									bn		
146																		.1		1					bn, py bn	147.41 – 147.90 Interbed med. gr. to c. gr. siliceous gwke at ~40° to c.a contains 4% diss py and traces diss + wispy	
148																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrgeol	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
148																				1					bn, py		
150																		<.1						57047	1mnt bn 1mnt py bn		
152																		<.1						57046	152.82 Irregular pyroph masses up to 3x5 cm invaded by pyrite. py		
154																				15						155.13-155.54 Grey, conglomeratic siliceous gwke band at 40° to c.a.	
																		<.1		1				57045	bn 154.20 Bluish white subround pyrophyllite mass 3cm across containing 5% diss py; rim of pyroph invaded by py.		
156																									bn py 1mnt bn 3% diss over 2 cm		
158																								57047	1mnt fine grained, sooty py; bn tr diss	159.30 Py v/fs at about 30° to c.a. within finely fragmental	
																		.1		8							
																				<1							

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Py/Sph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
160																				1				57048	lmnt py as irreg mass / couple cm across; tr bn diss.		
162																		<.1									
164																		<.1		4				57049	lmnt wispy py vlts — tr diss bn	165.18–166.49 Late bx band at about 43° to c.a. with diss py and bn within siliceous matrix. Clasts to couple cm across, av. ~6 mm; 95% sil. bx.	
166																								57050	traces diss bn — py — bn		
168																		.1		2					py		
170																		.1		1				57051	wispy bn vlts; discontinuous, randomly oriented. py, bn		

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
172																				1					← vlts wispy ; py, bn		
																		.1		3				57052			
174																				1					— bn, py		
																									175.43 - 176.73 0.5 to 1% bn as diss specks and short, wispy fracture lining throughout. bn specks, <0.5mm av.; py blebs 1.5-2 mm across av.		
176																		.4		6							
																				3				57053			
178																									lmnt		
																		.1		2				57054	lmnt — py — bn — py, bn	180.32 - 180.60 Bn 2% diss and as wispy fracture filling	
180																				4							
																									bn, py — py — 2% diss bn over 10 cm	181.00 Irreg py band 12 cm long x 1 cm wide at ~ 20°	
182																		.1		2				57055			
																				1							
184																											

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184																									bn 185.18 - 185.30 20% diss py 185.58 - 186.20 15% diss py within siliceous m.gr. gwke interbed at 20°		
186																									bn py		
188																									bn, py diss 188.27 Gwke interbed 9 mm thick at 20° contains 20% diss py. lmnt py, bn lmnt bn lmnt		
190																									py, bn		
192																									v.f. gr., sooty py py py, bn bn 192.99 Watery grey, finely laminated quartz vein(?) 12 mm wide at 50° contains ~3% bn as wispy laminae parallel vein(?) margins. py py, bn	193.29 - 193.41 Late bx bed with pyritic matrix at 35°. 195.66 - 196.15 bn 2% diss	
194																											
196																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophyllite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No. & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
196																				4	tr				bn, py diss py 1mm↑	196.90 – 198.28 Bn 0.5to1 % diss.	
																		3		1.5–1				57060			
198																											
200																		1		2						200.63 – 201.10 Late bx band at 50° with angular clasts to 3 cm across in pyritic matrix. Matrix also contains ~0.5% diss bn.	
																				15				57061			
202																				3					py vlt bn as wispy hairline vlts	206.91 Sooty py 65%, off-white clay 35% within 9 cm wide band at 55°	
																		1			tr						
204																				1				57062			
																				5					py, bn diss		
206																					tr						
																		<1						57063			
208																					tr				bn traces diss + wispy masses		

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208																				<1							
																		<1									
210																											
212																											
																				2							
214																				1							
																				5							
216																				1							
																				3							
218																											
220																											

57064 57065 57066 57067

— wispy bn vlts traces 6% diss py over 12 cm

— tr bn as wispy vlts

wispy bn vlts

217.58 Py mass 3x5 cm,

— 1% bn over 4 cm, traces bn over ~1.5m

— bn
— py

209.28 – 209.48 Pale creamy grey, f. gr., sugary gwke interbed at 67° not as indurated by silica as adjacent rock.

219.80 Vugs 1x3x1 cm lined by soft white mineral, not calcite though trace calcite present.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyrophyllite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
220																											
222																											
224																											
226																											
228																											
230																											

3 #1 <.1 .1 5 <.1 25 3 <.1 <1

57068 57069 57070 57071

late bx w. sil. gwkc matrix; traces bn as wispy, small masses throughout. Breccia conglomeratic with some rounded clasts.

223.37 – 226.92 Traces to locally 0.5% diss + wispy masses bn

226.80 – 227.52 Brown section w. v.f.gr, sooty py and pale greyish blue pyrophyllite as irregular blebs or masses from 1 to 4 mm across. Late, irregular, brassy brown, branching py vlts to 3 mm wide

227.75 – 228.73 As above; No copper minerals seen.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
232																											
																		<.1		<1					232.40-232.70 Mod bkn core; fault at 42°.		
234																				2				57072	233.75-237.20 Local traces bn diss along irregular fracture sets. 234.22 Py vlt 2 mm wide at 46° 234.34 Late bx band 3.5 cm wide at 48°, w. pyritic matrix.		
236																		<.1		5				57073	1% diss bn over 2 cm		
																				3							
238																				1							
																				3				57074			
240																		<.1		6							
																				1							
242																		<.1		10				57075	weak pale brown clay mineral alt'n with pyritic interval; interval possibly intensely silicified c. gr. / gwke. py vlts, veins, bands to 2 cm wide. 1% hematite over 35 c.		
																				5							

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophyllite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
244																											
																								57076	py vlts ?cp diss specks tr diss bn	244.25 Py as interlocking, irregular masses along fracture sfcs (?). Traces diss bn, ?cp.	
246																											
																									py vlts Irregular, off-white feldspar vlt.		
248																								57077	py vlts Both sooty + fine to med. grained pyrite		
250																									py vlts Few watery grey qtz vlts traces diss bn.	251.10 Py-rich (60%) band 4 cm wide at 33°	
252																								57078	py vlt py vlts traces diss bn	252.32 – 362.56 Silicified andesite breccia. Light brownish grey to light grey to maroon to yellowish green, med. gr. generally moderately to intensely altered rock. Upper half of unit intensely to moderately silicified with silica as pervasive →	
254																								57079	py vlts		
256																											
258																											
260																											
262																											
264																											
266																											
268																											
270																											
272																											
274																											
276																											
278																											
280																											
282																											
284																											
286																											
288																											
290																											
292																											
294																											
296																											
298																											
300																											
302																											
304																											
306																											
308																											
310																											
312																											
314																											
316																											
318																											
320																											
322																											
324																											
326																											
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342																											
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348																											
350																											
352																											
354																											
356																											
358																											
360																											
362																											

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PROJECT _____ T.D. _____ COLLAR ELEVATION _____

CONTRACTOR _____ INCLINATION _____ BEARING _____

DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
256																				5		<1					
																		<1		2		1-2		57080	abund py vlts to 4 mm, av 0.5 mm		
258																						<1			magnetite + hematite tr cp(?)		
																						2					
260																		<1						57081	mag + hem		
																						<1					
262																		<1		4		1		57082	magnetite only in pit		
																				3							
264																				5					py vlts		
																		.1	tr					57083	1% bx over 15 cm as wispy vlts		
266																				3					cp specks		
																		.2	tr			3			few specks biotite		
																				5				14776			

alteration, as irregular wormy masses and as watery grey veins and vlts mainly oriented at 40° to 60° to c.a. Qtz vns often offset about 1 cm across fractures which are mainly oriented within about 20° of the c.a., but are also randomly oriented. Qtz vns comprise about 5% of rock volume from 252.32 to 349.90 m and 2% below 349.90 m depth. And bx generally less silicified below 349.90.

Patchy creamy yellow, weak to moderate clay mineral alteration occurs from 296.70 to 349.90; local minor clay alt'n both above + below this interval. Green chlorite also most abundant between about 296.70 and 349.90 m depth.

Magnetite content from rare traces to 5 or 20% over 1 m, av. say 2-3%.

Contact with overlying siliceous bx gradational over a few metres.

Fault contact with underlying andesite though rock units intermixed over a few metres within the wide fault zone.

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Py/Sp	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
268																		.2	tr	5		3		14776		py vlts	
																			tr	2		<1					
270																		.2	tr	4		4		57084			
																			tr	2		<1				specks cp py vlts at 60°	
272																		.2	tr	1		3		57085			
																			tr							v. fine specks cp throughout	
274																		.2		4		<1		57086			
276																				2						py vlts	
278																		.2				3		57087		5% hem over 6 cm	
																				6		<1					

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PROJECT _____ T.D. _____ COLLAR ELEVATION _____

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrope	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
280																		.3	.5	3				57088	speck bn py vlts		
																			0.5	<1							
282																				4							
																			1	2							
																			tr	2							
284																		.1	tr	5				57089	Fault; 7 cm f. bkn core and gouge at 22° to c.a.	283.98 - 284.38 Late conglomerate/breccia band at 70° to c.a. with sil gwke/pyritic matrix. Sg angular to rounded clasts 70% av. 8 mm across.	
																				<1							
286																			tr	1							
																				1							
																			tr	4				57090	py bands to 8 mm wide at 60° py vlts		
																				<1							
288																		.1	tr	2							
																				3							
																				1					wispy py vlts		
290																		.1		5				57091	tr bn speck py vlts		
																			tr	1					occ. specks cp.		
																			tr	4							

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Clay/Py	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_2	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
292																			tr	5		1		57092	py vlts		
																		.1	tr	1		4					
294																			tr						flt		
																			tr			1-2			flt	296.75-303.76 Bleached interval with more clay, less mag. Mag here as v. finely dis's and as small clots mainly to 2 or 3 mm. Overlying + underlying rocks b/x contains mag within clots a few mm in diameter, and these larger clots have more distinct margins than within the bleached interval.	
296																		.1				4		57093	flt		
																						2					
298																				<1				14777			
																		.1									
300																		<.1				2		57094			
302																								57095			
																		.2									
304																											

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PROJECT _____ T.D. _____ COLLAR ELEVATION _____

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DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Py rpl	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
304																											
306																											
308																											
310																											
312																											
314																											
316																											

0.5% diss cp as specks to 1mm within mag masses.

S7096 S7097 S7098 S7099

py vlts

hematite flts

py vlts

flt

py vlts

flt

309.66 - 311.62 Minor fault zone; Mod. to int. bx core.

309.70 Fault. 1.5 cm gouge on slip at 20°

310.14 Fault. 4mm v.f. bkn core at 65°.

311.43 Fault. smear off-white clay on slip at 43°

312.88 - 315.47 Mod. to somewhat bkn core.

315.37 Fault slip at 45° to c.a.

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
318																										
318																	.2	tr	1		4		57100	hairline ep vH few mm long.		
																		tr						py vlts		
																		tr	4		1-2					
320																				2			57101			
																	.1		1		5					
322																		tr					57102			
																		tr								
																		tr								
324																	.3	tr	4		2			py vlts		
																		tr								
																		tr								
																			1		3			325.22		
326																	.2						14778			
																			3		<1			326.75 flt		
																	<.1						57103	328.00 Polished fault slip at 38°		
328																										

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
328																				2		<1					328.16-328.76 Light grey, c. gr. siliceous gneiss interbed at about 40° to c.a.
																		<.1		1		2		57104	fPt		
330																			tr		<1					py vlts		
332																			tr								
																		.1	tr		1			57105	py vlts		
334																			tr		3					watery grey pyroph lenses to 8 mm subparallel c.a.	
																					<1		<1				
336																						2		57106			
																					1						
																		.1	tr				-1				
																			tr				3				
338																					2					fault slip at 22°.	
																								57107			
																		<.1				1					

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrhotite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
340																			2		1				py vlts	341.28 – 345.32 Rock bleached, patchy orange-yellow colour locally.	
																		<.1	tr	1				57108	flt		
342																				3					py vlts		
																									Fault @ 50°		
																				1		1					
344																		<.1						57109	bn(?) specks 0.5% over 2 cm		
																			tr	1	tr (?)				flt		
346																			tr			1					
																			tr								
																			tr			3					
348																		.1		5		<1		57110	py vlts		
																				3					cp specks within magnetite.		
350																			t	1							
																			tr			10		57111	py vlts		
																		.2									
																			tr			4					
352																											

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Py	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
352																											
354																											
356																											
358																											
360																											
362																											
364																											

tr 1 4 | 3 | .2 1 8 | tr | 5 | .1 tr 3 5 | 1 | 3 1 | <.1 2 | 1 | <.1 4

57112 57113 57114 57115

py vlts

py vlts

flt

Fault slips mainly at 60° to c.a.

fault

fault

363.32 – 368.20 Ground core; 29% recovery

flt

traces hem along fracture surfs.

358.18 – 370.82 Moderately to locally finely broken core in fault zone

372.10 – 376.54 As above

362.56 – 438.00 ANDESITE Green-grey to light grey, very fine grained massive, moderately silicified rock. Silica as pervasive alteration throughout. Weakly fractured with creamy white to pale orange carb-zeo vlts →

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrox	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_2	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
364																				<1		4			fault	and veins up to 20 mm wide (av. 2–3 mm) throughout. Rare watery grey qtz vlts to few mm in uppermost 15 or 20 metres of unit. Andesite faintly mottled throughout by chlorite clots couple or few mm across; most of these clots also contain a little magnetite. Andesite contains less chlorite and less mag than overlying andesite breccia.	
																									Most fault slips at about 60° to c.a.		
366																				<1		3					
																									traces hematite lining fracture sfcs.		
368																				<1		2		57116			
																						1		57117	faults		
370																				<1		2					
																									Irregular, discontinuous zeol/carb vlts, randomly oriented		
372																				<1		<1		57118	?cp speck		
374																				<1				57119	Continuous zeol/carb vlts at 25° to 60° to c.a.		
																						2					

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No. & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
376																			2		<1			py vlt		
																			<1							
																	<.1	tr			1-2		57120	cp specks w. py specks		
378																										
																			1					fault		
380																	<.1	tr					57121			
																					<1			py vlt		
382																										
																							57122	few epidote spots		
384																	<.1				1-2					
																								flt		
386																	<.1						57123			
																								py vlt		

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyrox	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
380																											
																		1									
																		<.1						57124	flt		
390																											
																		tr									
																		tr									
392																		tr						57125	cp specks		
																		.1 tr									
																									py vlt		
394																										394.1' Light grey qtz vn 7 cm wide at 53° contains 3% py as irreg. masses, emplaced along flt slip.	
																		1									
																		tr						57126	zeol. vlt 3-4 mm wide subparallel c.a.		
																		<.1							flt		
396																									← soft, bkn core at fault zone.		
																									? cp specks		
																								57127	brecciated zeol. vlts along faults		
398																		tr									
																		<.1							flt		
																		1									

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CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
400																											
																								57128	flt flt flt flt qp mass 2 mm across		
402																		<.1	tr	2		1					
																				1		<1			py specks + blebs rimmed by chlorite.		
404																			tr tr								
																		.1						57129	flt flt. f. bkn core and gouge on slips at 50°		
406																				5							
																			tr	1-2				57130			
408																		<.1									
																			tr	1		<1					
410																								57131			
																		<.1									
412																											

HOLE NO. EC-182 **DRILL LOG** Page 34 of 36

PROJECT _____ T.D. _____ COLLAR ELEVATION _____

CONTRACTOR _____ INCLINATION _____ BEARING _____

DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No. & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
412																										
414																										
416																										
418																										
420																										
422																										
424																										

HOLE NO. EC-182 **DRILL LOG** Page 35 of 36

PROJECT _____ T.D. _____ COLLAR ELEVATION _____

CONTRACTOR _____ INCLINATION _____ BEARING _____

DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_9FeS_4	Fe_2O_3	MoS_2	Sample No. & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
424																								flt		
																	tr		1		<1		57136	py vlt		
																								flt		
426																	tr									
																	.1									
																							57137	flt		
428																										
																	<.1									
																					<1					
430																										
																			1				57138	flt		
																	<.1									
432																								flt		
																							57139	py vlt		
434																		tr						flt		
																	.1	tr	1							
436																										

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DRILL LOG

PROJECT _____ T.D. _____ COLLAR ELEVATION _____

CONTRACTOR _____ INCLINATION _____ BEARING _____

DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite			STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
436			5 1 2 9 9 9				5 / 5 / 5	5 / 5 / 5		/									<.1 tr	1		1			S7140			
438										/																	438.00 END OF HOLE	

HOLE NO. EC-183

DRILL LOG

PROJECT Expo
CONTRACTOR Olympic
DATE STARTED Nov 8/90 COMPLETED Nov 15/90
LOGGED BY D. J. Pawliuk

T.D. 393.19 m
INCLINATION -70°
COORDINATES 245571.6 N, 233089.5 E
SURVEY REFERENCES

COLLAR ELEVATION 1622.2'
BEARING 180°

Footage m	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS	Cu_3FeS_4	Fe_3O_4	MoS_2	Sample No & Interval	LOG SCALE 1" = 2 metres BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
18																									Acid test -67° at 374.90 m depth 0.00 - 18.29 TRICONED OVERBURDEN 0.00 - 21.95 CASING	18.29 - 27.36 Pyrophyllite breccia. Light brown to light brownish grey soft, medium grained with coarser clasts to 22 mm across (av. ~3-4 mm). Py. mainly as irregular sooty vlts, and also very finely disseminated. Generally weakly to moderately fractured rock; white clays/interstitial and often fine fracture sets powell rock may be stained/ altered along fx. Fault encountered with predominant ands fx at about 70°.
20																											
22																								57141	Sooty late py diss. in bx/ matrix		
24																		<.1	3		<1				py vlts		
26																		<.1	6 2		<1			57142	Irregular sooty py vlts to 1cm wide 26.63 - 27.45 Fault. off white, clayey gouge + f. blk core along slips at ~70° to c.a.	27.36 - 35.00 Andesite Lapilli tuff. Brownish grey to green mottled with chlorite-magnetite clasts up to 50 mm across (av. 6-8 mm) in light greyish brown, f. gr. slightly crystal matrix. Faint chlorite clots av. 2 mm in lowermost 1.4 m, otherwise more or less discrete contact at ~55° with underlying pyroph bx. Chlorite bluish green in topmost 2 m of ands bx.
28																		<.1	tr		1 3						
30																		<.1			<1			57143	29.21 - 31.38 Fault Green to locally off white gouge with f. blk core throughout a. slips at 60°/to) to 35°/both sections of fau		

HOLE NO. EC-183 **DRILL LOG** Page 2 of 32

PROJECT _____ T.D. _____ COLLAR ELEVATION _____

CONTRACTOR _____ INCLINATION _____ BEARING _____

DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
30																		<.1		<1		<1			fault	CASING to 21.95 m depth at start of hole. casing later extended to 67.04 m depth due to caving conditions.	
																						1		57143	occ. cp specks within chl-mica clots.		
32																		.1	tr			3					
																			tr					57144	f. bkn core and smears green ggugge on irreg. fracture subparallel c.a.	35.00 – 48.12 Pyrophyllite bx as for 18.29–27.36 except finer grained with generally faint clast boundaries. Somewhat bkn to finely bkn core. Numerous faults within this rock unit; fault contact with underlying silica-pyrophyllite breccia at 53° to c.a.	
34																						tr					
																		<.1		3				57145	flts		
36																									1% v.f. diss cp, traces bn over few cm.		
																			tr								
38																		.1		40				57146	fault at 65°		
																				2					fault slip at 27°		
																				50							
40																				4					traces v.f. diss bn		
																						tr					
																		<.1		3				57147	fH.		
42																											

HOLE NO. EC-183

DRILL LOG

PROJECT
CONTRACTOR
DATE STARTED ____ COMPLETED ____
LOGGED BY

T.D. ____ INCLINATION ____
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION ____
BEARING ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrope	STR.: Suit Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
42																								57147	few specks bn?	48.12 – 245.92 Silica – pyrophyllite breccia. Light, brownish grey, mottled by off-white to brownish pink patches and wispy masses of pyrophyllite and clay. These pyroph-clay masses are generally from 2 to 8 mm across and form about 4% of the rock unit. Down to 61.85 m; below this depth rock contains about 2% pale grey-brown clay/pyroph. as smaller interstitial masses. The breccia below 61.85 m has a granular texture similar in appearance to a mod. sil., med. to c. gr. siliceous gwke. Occ. watery grey qtz vns, vlts throughout sil-pyroph bx; sometimes have sulphides along	
																									flts		
44																								57148	flt		
																									flt		
46																									biotite (?) specks over 45 cm.		
																									flt		
																								57149	py vlt		
48																									flt		
																									late bx w. sil matrix; occ. py specks only below 48.12 m.		
																								57150	flt		
50																									fault at 53°		
																									bn (?) specks		
52																								57151	occ. py specks and masses to 4 mm across.		
54																											

HOLE NO. EC-183

DRILL LOG

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
54																		<.1		<1							
																		<.1						57152			
56																									late bx		
																								57153	late bx band at 20°→40° to c.a. poss. healed fault.		
58																		<.1									
																								57154	white clay along fractures.		
60																		<.1							limit along irreg. fractures.		
62																											
																								57155	1% orange limit local tr cy along irregular fractures.		
64																		<.1							speck bn		
66																											

HOLE NO. EC-183 **DRILL LOG** Page 5 of 32

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T.D. _____ COLLAR ELEVATION _____
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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	py/sph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
66																				<1				57156	1% bn over 1cm as discontinuous wispy band ~3mm wide py lens 2cm x 3cm irreg py vlts.	67.73–68.18 Late bx band at ~20° with pyritic matrix; traces diss bn.	
68																		<.1									
70																		.1		4		tr		57157	tr bn, diss & lining wispy fracture Late bx with pyritic matrix.		
72																		.1		<1		tr		57158	bn lining wispy fracture at ~10° to c.a. traces bn py vlt 6mm wide at 17° to c.a.		
74																		.1				tr					
76																		<.1						57159	pale brown siliceous siltstone interbed 3.5cm wide at 80° to c.a. wispy py vlts.		
78																											

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PROJECT EXPO
CONTRACTOR Olympic
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T.D. COLLAR ELEVATION
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SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
78																				<1							
																				1							
80																		.2									
82																		.3		3							
																		tr		tr 1							
84																											
																		.2									
86																				2							
																		tr									
88																				4							
																		.3									
																		tr									
																		1/2									
90																		tr		1							

57160

1/ traces bn diss and lining short, wispy fractures throughout

1% bn over few cm with 1-2% py 79.88 - 80.24 1% bn

57161

Late bx with pyritic, siliceous gwke matrix; clasts to 20mm, av. ~3-4mm; traces diss bn

82.70 Irregular py-bn vlt at ~40°.

bn-py-cp vlts 1-2 mm wide at 23°-30° to c.a.

15% diss py over 8 cm

57162

smokey grey pyroph vlt cuts & veins earlier py vlt

0.5-1% bn diss + rimming irreg. py masses over 8/16 cm.

57163

Below 86.90 m bn ~0.5% diss + wispy vlts.

py vlts 3mm wide at 45° rimmed by bn.

cp mass 1X2 mm.

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COORDINATES ____
SURVEY REFERENCES ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu-Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
90																		tr		1						Traces diss bn throughout to 97.90 m depth, then local bn traces from 99.36 →	
																				3							
																				6							
92																		1		2						py vlts 0.5–3 mm wide.	
																				5							
																				3						Traces bn	
94																		2									
																				1							
																								57164			
																								57165			
96																										95.42–96.57 Bn 2% diss, irreg masses + lining fractures to few mm long.	
																				1						Prob. healed fault 8 cm wide at 40°.	
																										orange lmnt along fracture.	
98																		2								Fault, few mm grey gouge on slip at 55° to c.a.	
																				2						99.50 Moly vlt ≈0.4 mm wide at 60°.	
																								57166			
																								57167			
100																		1		1							
102																				3							

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PROJECT EXPO
CONTRACTOR Olympic
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T.D. ____ COLLAR ELEVATION ____
INCLINATION ____ BEARING ____
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SURVEY REFERENCES ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Surf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_4	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
102																				1					↓local tr diss bn		
																		<.1		4				57168	py vlts, uns		
104																				1					Imnt (orange → dk brown)		
															X										2% pale bluish grey pyroph as vlts, lenses		
106																		<.1							py band 22 mm wide at 75°		
																				6				57169	diss py within bands at 40°		
108																				1							
																									still local tr bn		
																		<.1		3				57170	py vlt 1.5 mm wide subparallel c.a.		
110																											
1																				1							
112																									↑traces bn		
																		.1						57171			
114																									↑brown Imnt		

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PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
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T.D. _____ COLLAR ELEVATION _____
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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophy	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
114																				1						local traces bn diss throughout	
																		.1						57172	cv(?) lining short hairline fractures.		
116																				tr							
																								57173	py vlts		
118																		<.1									
120																								57174	Imt along fracture py bn vlts bn rims qtz vn 3 cm wide at 38° py vlt 2 mm wide at 73° rimmed by bn		
																		.1		tr							
122																											
124																		.2		tr				57175	125.56–125.84 2% bn as wispy laminae at 55° to 85° to c.a.		
																				3							
126																				2							

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PROJECT EXPO
CONTRACTOR Olympic
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LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_xFeS_y	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
126																				2			1%		moly vlt		
																		.1						57176	bn/py vlts		
128																									py vlts		
																								57177	py vlts		
130																		<.1									
132																								57178	132.65 - 133.10 Bn(?) 1% v. finely diss		
																		2		15							
134																				5					traces bn		
																				1							
136																		.1						57179	137.09 qtz (95%) bn (5%) vlt 4 mm wide at 33° Also vug 5 x 1 x 1 cm. py vlts		
																				1							
138																				2							

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CONTRACTOR Olympic INCLINATION _____ BEARING _____

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
138																				1		tr					
																		< .1		4		tr					
140																				< 1		tr					
142																		< .1		1-2							
																						.5					
144																											
																		< .1									
146																											
148																		< .1		< 1							
150																											

57180 57181 57182 57183

Traces diss bn throughout

Late med. to fine gr. conglomeratic bx with pyritic siliceous gwke matrix. Clasts av. 3 mm, max. say 20 mm, most subangular to subround. Bx band at 25° to c.a.

0.5% diss bn over 20 cm

py lens 1x5 cm

Late bx band with pyritic siliceous gwke matrix; band 6 cm wide at 55°.

wispy py/bn vlts

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_xFeS_y	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
150																									bx as wispy vlts at 70° and diss.		
																								57184		153.49–153.75 Late cong/bx band at ~70° contains few py clasts to 5 mm	
152																		<.1		<1							
																				1							
154																		.1						57185			
156																											
																								57186	orange-brown limit		
																				2							
158																		<.1		1							
																								57187			
160																		<.1									
162																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Intens	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
162																				1						py vlts	
																		<.1	<1					57188		texture as within overlying rock unit.	
164																											
																				1							
166																		<.1						57189	wispy py (+ tr bn) vlts		
																				<1							
168																											
																		<.1		1-2				57190	py vlt 3mm wide at 38° / Fault slip at ~50°	171.87-181.85 rock finer grained; here is less of ~~the~~ patchy silica alteration than in overlying rock. Rock still appears to be silica indurated, coarse grained siliceous gwke above 171.87. Finer grained with more v.f. gr. diss py below 171.87. Still granular	
170																											
172																		.1		<1				57191			
174																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
174																											
																		<.1		<1				57192	= py vlts		
176																				1-2							
																				<1				57193			
178																		<.1									
																									py bands, wispy vlts + diss.		
180																				3				57194			
																		.1		2					py vlts	Below 181.85 Sil. bx - gwke coarser grained with patches where rock intensely indurated by silica and grain boundaries become faint or disappear. Rock as above 171-87.	
182																				<1				57195			
184																		<.1									
186																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
186																				<1							
																				10							
188																		<.1									
																				<1							
190																		<.1									
																				2							
192																				<1							
																		<.1									
194																				3							
																				<1							
196																											
																				6							
198																											

57196 ↓ 57197 ↕ 57198 ↕ 57199 ↑

10% py as irreg diss masses over 10 cm.

py vlts

wispy vlt + diss py

bn vlts

cp/bn

py

186.40 – 186.59
Vugs to 6 mm across, lined by drusy quartz. One vug contains bn?? as subhedral, bluish black blocky xtals.

197.65 cp 6%, bn 0.5% within lens 2x6 cm at 40° to C.a.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Argillic	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
198																											
200																											
202																											
204																											
206																											
208																											
210																											

irreg. py/cp/bn mass ~1 x 5 cm.
py vlts
cp/bn mass 6X30mm
py/bn vlts
py mainly diss; traces bn
bn v. finely diss and as wispy, short, irregular vlts.
py
pyritic fault slip at 85° to c.a. at top late bx.

205.45 – 208.28 Rock speckled with 2-3% off-white feldspar or clay as elongate masses av. 1-2 mm long. Rare qtz eyes? indicate that this interval may be quartz-feldspar porphyry.

208.59 – 211.19 Late bx band with pyritic siliceous gouge matrix. Subangular to subround clasts to 35 mm across, av ~7 mm, comprise 35% rock vol/unit. Upper contact fault slip at 85° with sooty pyrite along slip. Clasts of greater variety of rock types than seen in most holes → cont.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
210																				4	tr					(cont) atop McIntosh Mtn.	
																					tr					← lower contact of bx discrete at 55°	
																					tr					py vlt	
212																				1	tr						
																					tr						
214																		4	-1		tr						
																					tr						
216																				3	tr						
																				5	.05						
																			-1								
																					tr						
218																				2	-2					~2% bn over 2 cm	
																					tr						
220																				2	tr						
																			-1		tr						
																				4	tr					py vlts	
222																				1							

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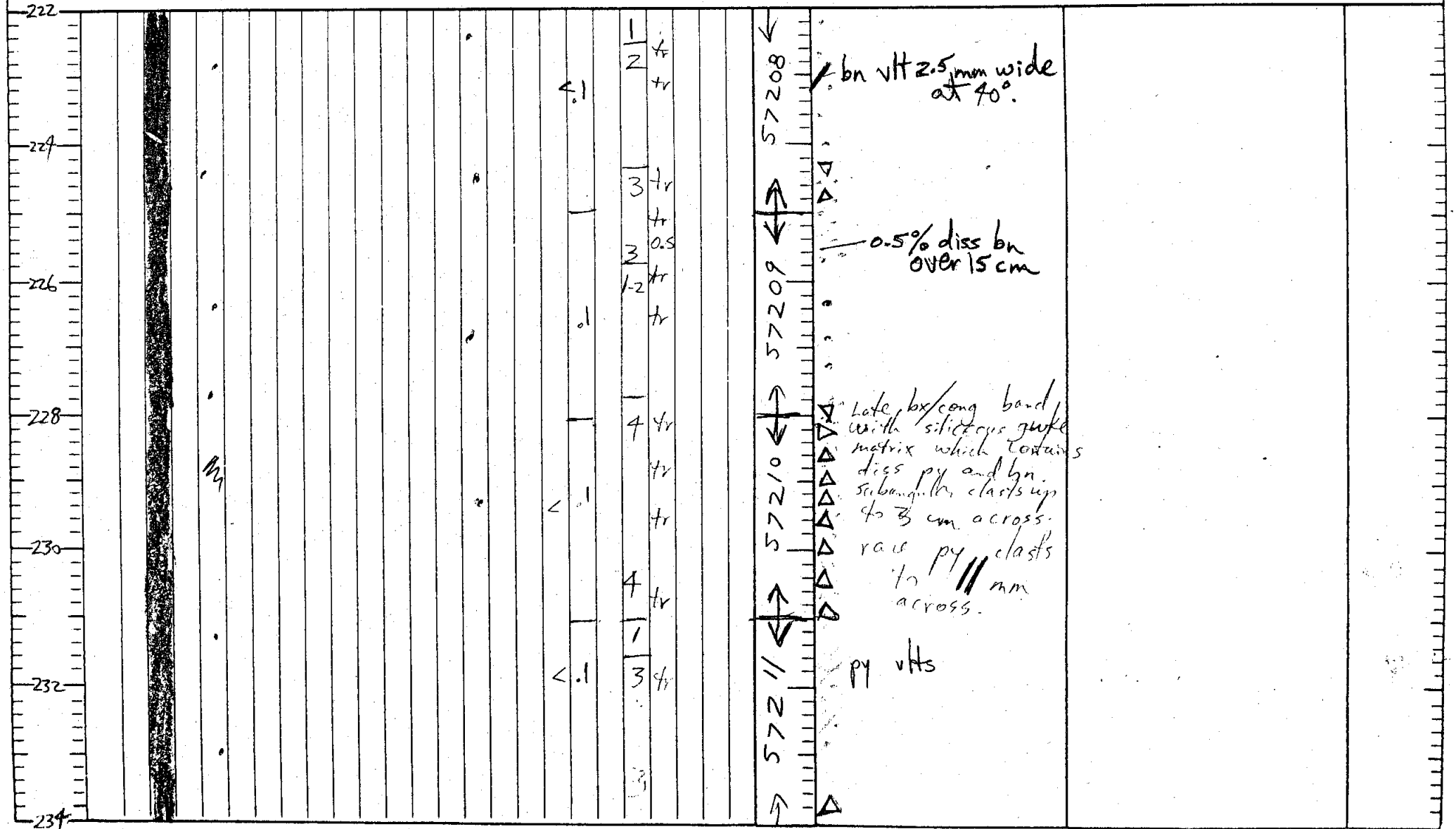
Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
222																											
224																											
226																											
228																											
230																											
232																											
234																											



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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pYroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_2	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
234																				3							
																				1							
																		<.1		<1				57212	~bn vlf		
236																											
																		—			tr						
238																		<.1						57213	wispy bn v/ts		
240																		—			tr						
																					tr						
																		.1		3	1			57214	1% diss bn over 3 cm.	245.92 – 307.70 Andesite breccia. Light brownish grey to brownish green to locally maroon, med. gr. with larger clots av. 3-6 mm across. Intensely silicified and weakly pyrophyllitized above 257.79 m where only local fraces of chlorite, magnetite and epidote remain.	
242																					tr						
																		—									
244																					tr						
																		<.1			tr			57215			
246																					tr						

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
246																											
																									py vlts	Contact with overlying siliceous br gradational over a few metres. rock from 245.92 to 247.70 m depth named andesite breccia because relict ~~BR~~ and/s or texture present though the rock has been intensely altered.	
248																		<.1		3	tr			572/16			
250																		<.1		3	tr			572/17	py vlts		
252																				5				572/18			
																		<.1		<1							
254																								572/19			
256																		<.1									
258																											

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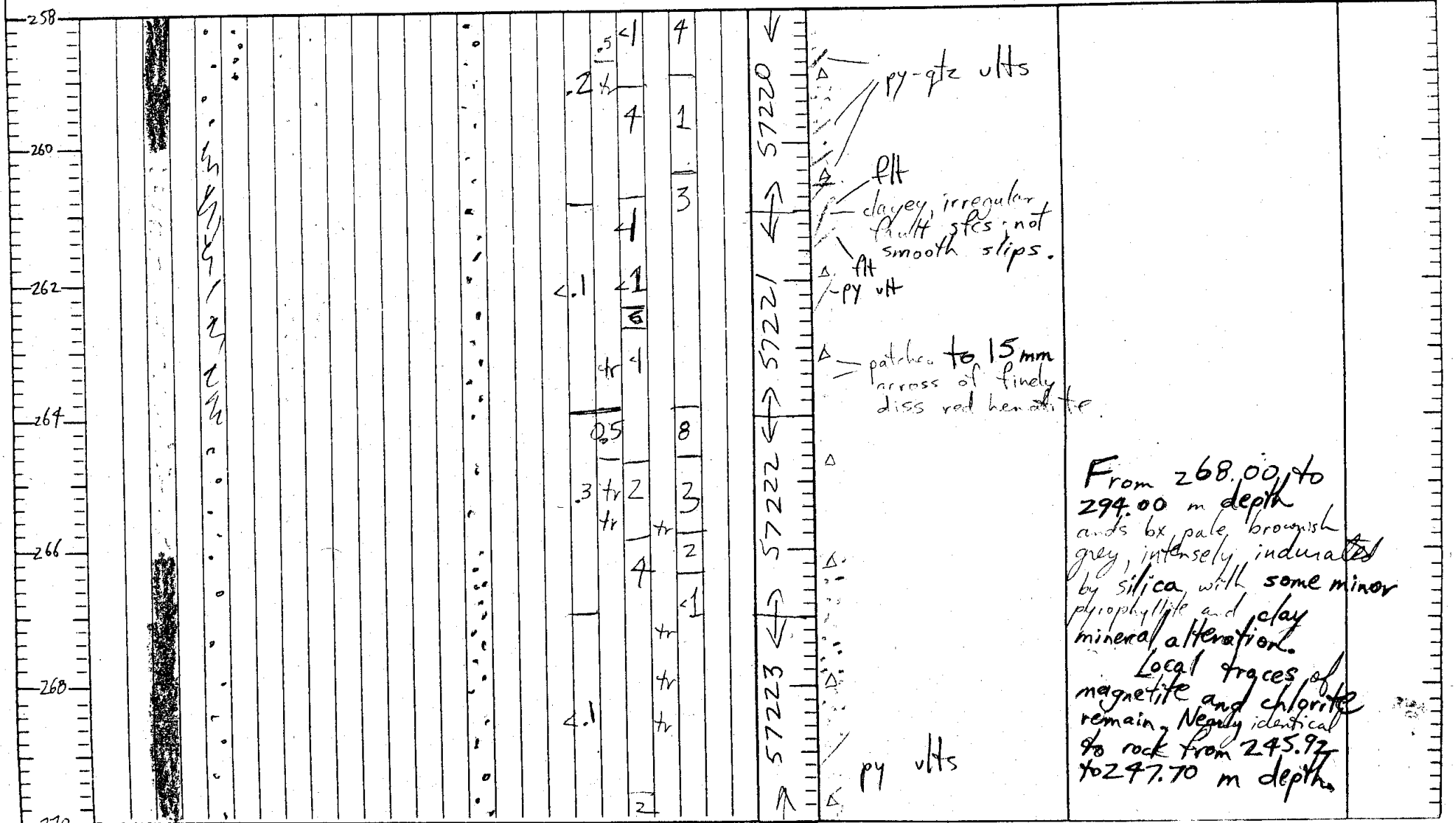
Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pytroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
258																											
260																											
262																											
264																											
266																											
268																											



From 268.00 to 294.00 m depth andst bx pale brownish grey, intensely indurated by silica with some minor pyrophyllite and clay mineral alteration. Local traces of magnetite and chlorite remain. Nearly identical to rock from 245.97 to 247.70 m depth.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Suif Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
270																				2	tr			57224	py vHs		
																				0.5							
272																				1	tr						
274																				2	tr			57225	274.77 Pyrite vein 20 cm wide at about 65° to c.a.		
																		<0.1		95							
276																				3	tr						
																					tr			57226	py vHs		
278																		<0.1		3	tr						
																				1	tr						
280																				3	tr			57227	py		
																		0.1		2							
																				0.5							
282																					tr						

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyrah	STR.: Sulf Veins	Frac Inten.	VISUAL EST.: Est. Cu Mo	CuFeS$_2$	FeS$_2$	Cu$_3$FeS$_3$	Fe$_2$O$_3$	MoS$_2$	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
282																				2	tr						
																					tr						
																		.1			tr						
284																					tr						
																				2	tr						
																					tr			57228			
286																					tr				py vlts		
																				23				57229			
																		.1			tr						
288																					tr						
																				2							
																				1							
																		<.1			tr			57230	Fault slip at 62°		
290																									py		
																				10					Fault slip at 60°		
																				2					py		
																					tr						
292																					tr				py vlts		
																		.1			tr			57231			
																				1-2							
294																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
294																				1-2							
																				4	tr	tr					
																		.1	tr	1-2							
296																						2			py vlts		
																			tr								
																			tr								
																			tr								
298																						tr					
																		.2									
																			tr								
																			tr								
																			tr			1					
300																				3		tr					
																					tr						
																		<.1							py vlts		
302																						tr					
																						tr					
																			tr			tr					
																			tr								
304																						2			flt		
																		.2	tr			tr					
																			tr								
306																				1							

57232 57233 57234 57235

294.60 – 295.03 Band of siliceous m. gr. gwke with pyritic (diss) matrix; gwke band at 60°.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophy	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
306																			tr	1					traces hem along fracture sfcs.		
																			tr	3		tr					
																		.2	tr	tr		6					
308																				4							
																				2					py vll along fault slip at 80°.	307.70 – 340.38 Intensely silicified breccia	
310																		4.1		1				57236			
																								57237		Probably better named siliceous breccia rather than andsbx, because no relict chlorite, mag or epidote seen in this interval. Below about 335 m depth rock similar to fine grained altered QFP.	
312																				4	tr	tr					
																		4.1						57238			
314																				3	tr						
																								57239			
316																		4.1				tr					
																				2							
318																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrogen	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_2	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
318																				2				57240	py	Late bx with pyritic, siliceous gouge matrix.	
320																		.1	tr	3					py vlts along fault slips at 75° and 45° to c.a.		
																			tr	5	tr				1% hem over 20 cm		
322																			tr	4	tr				cp within py vlts 1-2 mm wide		
																		.1		2				57241			
324																					tr				flts	often slips with py vlts along fault slip surfaces. occ. slicks seen.	
																				4	tr						
																				3	tr			57242		occ. brownish grey quartz veins and vlts.	
326																		<.1							flt		
																				8	tr						
																				4	tr				py along fault slips at 65°		
328																			tr		tr				wispy bn vlt with faint boundaries cut by py vlt		
																		.2			tr			57243	cp occ. specks py vlts		
330																			tr		tr						

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
330																											
																				4 tr							
																		.1		2 tr				57244	py vlts		
332																				1							
																				3 tr							
334																				1 tr							
																		<.1		tr				57245			
																				tr							
336																				1 tr							
																				tr							
																		<.1		3 tr				57246	Fault at 50°		
338																				tr							
																				tr							
																				3 tr					340.28 – 342.33 Major fault along slips at about 70° to c.a. Finely bkn core and gouge; clay alt'n.		
340																				tr							
																		<.1		1				57247			
342																											
344																											
346																											
347																											

340.28 – 393.19
Andesite breccia.
Brownish green to light brown to dark greenish brown, generally medium grained with magnetite-chlorite clots av. few mm across. Original rock textures masked by pervasive moderate pyrophyllite alteration which gives rock brown colour. Patchy moderate silicification has occurred below about 367.00 m depth. Less segregation of magnetite + chlorite into clots than in andes bx seen higher in hole.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
342																											
																									flts		
																									cp(?) speck at 343.60		
344																		<.1	tr	1		1					
																			tr	2		3		57248			
																			tr	1							
																			tr								
																			tr								
346																			tr						cp specks within magnetite masses		
																		.2	tr			1		57249			
																			tr						flts		
																			tr			8					
348																			tr						cp specks within qtz vlts.		
																			tr								
																		.2	tr			5		57250			
																			tr						flt		
350																			tr						py		
																			tr			<1			flt		
																						3		57251			
																			tr						py vlts		
352																		.2									
																			tr						flt		
																						1					
																			tr								
354																			tr								

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PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Phlogo	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
354																									flt		
																		tr	1	1				57252	flt		
																		.5		3							
356																		.2	3						356.10 light brown-grey qtz vn 4 cm wide at 60° contains 4% vlt + diss py and rare speck cp.	357.79-358.57 Late bx band within fault zone faults at about 55° to c.a. at upper + lower contacts with angular bx Sybangula clasts in late bx to 35 mm across in siliceous matrix with 4% diss py.	
																		tr	20	1							
																				3							
358																		tr	2								
																			4	1				57253	flt		
																		.2	tr								
																		tr	1	3							
																		tr									
																			2						flt		
360																				1							
																		tr	4	2							
																			1					57254	py vlts	362.49-362.91 Interval 70% vein qtz with hairline to 3 mm py vlts between faults.	
																		.1							flt		
362																		tr	<1	7					flt		
																			3						cp specks.		
																		tr	1								
																		tr									
364																		.2							hairline cp vlt at 85°.		
																		tr	6	4				57255	flt		
																			1	5							
366																											

HOLE NO. EC-103

DRILL LOG

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
366																											
																			<1			5		572556	py vlts		
368																		.2	tr			8					
																			tr								
																			tr								
370																		.2	0.5	6		5		572557	py vlts		
																			tr								
372																				<1				572558	Fault slip at 25° Fault at ≈ 40° flt		
																		.1	tr								
374																											
																			tr								
376																		.1	tr					572559	flt py vlts		
378																									flt		

HOLE NO. EC-183 **DRILL LOG** Page 31 of 32

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
378																											
																		.1 tr tr						57260	flts; py vlts	Pale watery grey qtz vnts 5-60 cm wide occur along faults in this portion of hole. Faults usually at about 40° to c.a.	
380																											
																		tr tr						57261			
382																		.2 tr tr									
																		tr tr						57262	flt; v.f. diss specks; flt		
384																		tr tr									
																		.2 tr tr									
386																											
																								57263			
388																		.1 tr tr							flts; flt	389.81-390.07 Fault. Light grey-green f.g. kn core + gouge on irreg fracture at 33°.	
390																											

HOLE NO. EC-183

DRILL LOG

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PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	PYROPE	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
390																									fH		
																								57264	fH cp as diss specks within mag masses?		
392																											
393																									393.19 END OF HOLE		

HOLE NO. EC-184

DRILL LOG

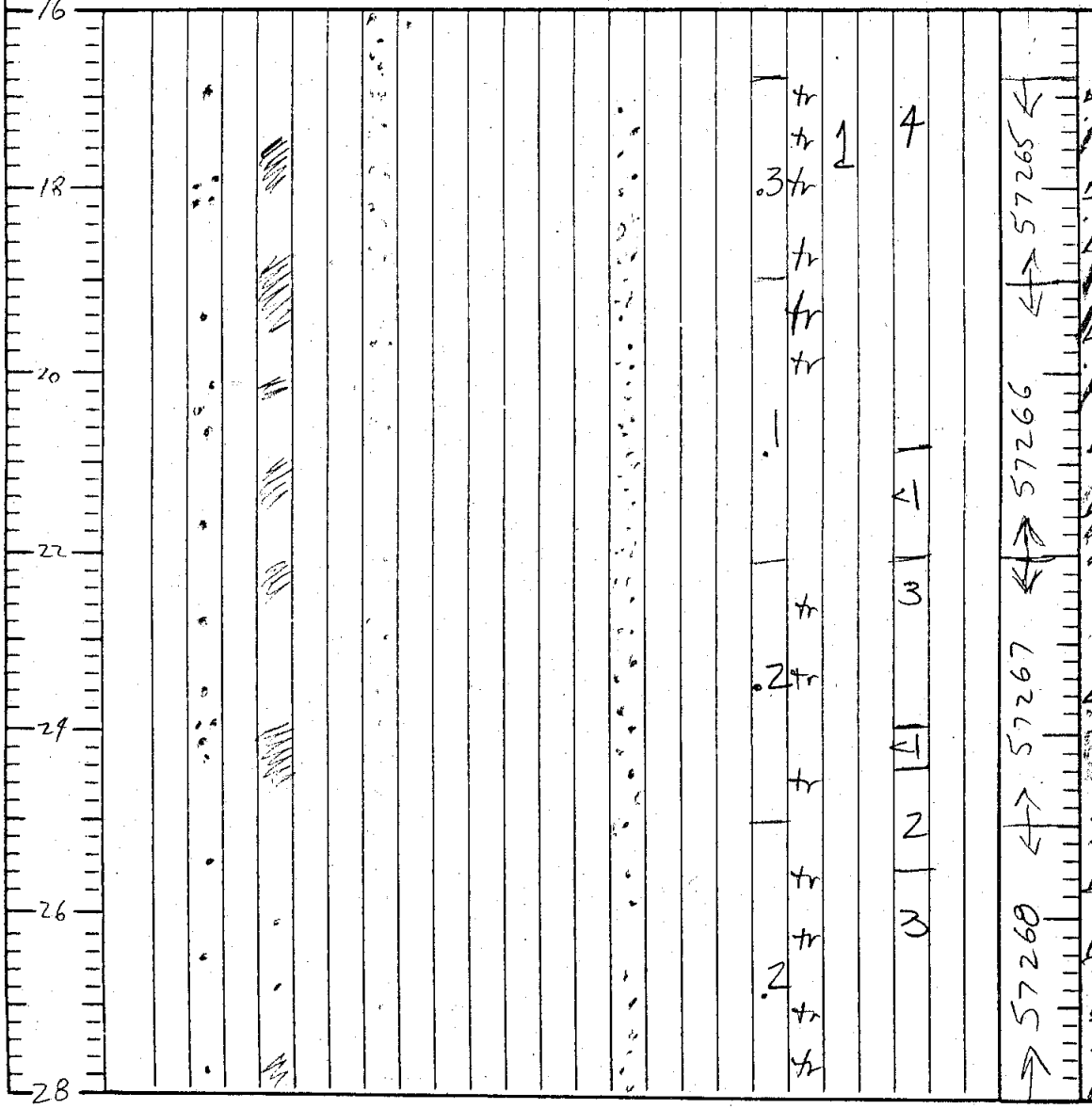
PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED Nov. 20/90 COMPLETED Nov. 22/90
LOGGED BY D. J. Pawliuk

T.D. 183.49 m
INCLINATION -45°
COORDINATES 246490 N, 231875 E

COLLAR ELEVATION ~1052'
BEARING 180°
SURVEY REFERENCES

Footage | Core Recovery | Oxide | ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb Zeo, Garnet, Pyroxene, Amphibole, Wollastonite, Pyrph | STR.: Sulf Veins, Frac Inten | VISUAL EST.: Est Cu Mo, $CuFeS_2$, FeS_2, Cu_2FeS_2, Fe_2O_3, MoS_2 | Sample No & Interval | LOG: SCALE, BASIC GEOLOGY: rock types, metallization, structures alterations, one column system | LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES | ROCK UNIT

Acid test -43° at 172.52m depth.



24.17-24.68 Pale grey clayey pyritic fault gouge + f. blk core between slips at 60°.

0.00-16.76 CASING
16.76-112.18 Andesite breccia. Greyish green to light grey, fine to med. grained with dark green to black chlorite-magnetite clots throughout up to 15 or 20 mm across, av. 3 mm across; clots within a light coloured fine grained matrix. The matrix has been moderately to locally intensely altered by light grey, soft pyrophyllite; this rock scratches easily with a knife. Magnetite content av. ~2%, py say 1%. Only weak local silicification in upper part of hole. Numerous faults marked by pale grey clayey gouge above 48.50 m depth.

HOLE NO. EC-184

DRILL LOG

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Bull Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
28																			tr	1		3		57269			
30																		.1	tr	2							
																			tr	1							
																			tr								
32																		.1	tr					57270			
34																			tr			1-2		57271			
																		.2	tr								
																			tr								
36																				4							
38																		.1	tr			1		57272			
40																											

32.28 - 32.71 Fault. Pale grey-brown clayey gouge + f. bkn core along slips at about 55°.

32.91 - 33.21 As above, at ~70° to c.a.

35.22 Fault. Pale greenish grey gouge between slips at 53°.

35.36 - 36.70 Fault. Pale grey-brown gouge + f. bkn core at ~60°.

HOLE NO. EC-184 **DRILL LOG** Page 3 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_3O_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
40																											
																		tr	<1			1		57273	cp specks		
42																		2				tr			42.78 - 42.97 Fault. Light green - grey f. blkk core and gouge		
44																		.1				tr		57274			
																									py/cp vlt 0.5mm wide at 85° to c.a. within mag band or lens about 1 cm wide 5 cm long		
46																						3					
																		tr				1					
																		.1				3		57275			
48																						<1					
																		tr									
																		tr				2-3					
50																								57276			
																		2	Tr								
																			tr								
																			tr								
																			tr						cp specks within mag mass 15 mm across rimmed by chlorite		
52																											

HOLE EC-184 **DRILLING** Page 4 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyrope	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
52																									cp speckles		
54																		tr	<1			2		57277			
																		tr									
																		tr						57278			
56																		tr									
																		.1									
																		tr						57279			
58																		tr									
																						2					
																		.1									
60																						5		57280			
																		.1									
62																											
																						2					
64																											

HOLE NO. EC-184 **DRILL LOG** Page 5 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrogh	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
64																											
																		tr				2		57281		py/qtz vlts.	
66																		tr				4					
																		tr				2					
68																		tr						57282			
70																		tr						57283		70.70 Fault. Pale brown-grey gouge + f. bkn core between fractures at 72°.	
72																		tr									
74																		tr						57284		mag diss + as vlts as well as clots; clots smaller and less abundant than seen higher in hole. Fault @ 74.1 15°. those	
76																											

HOLE NO. EC-107 **DRILL LOG** Page 6 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

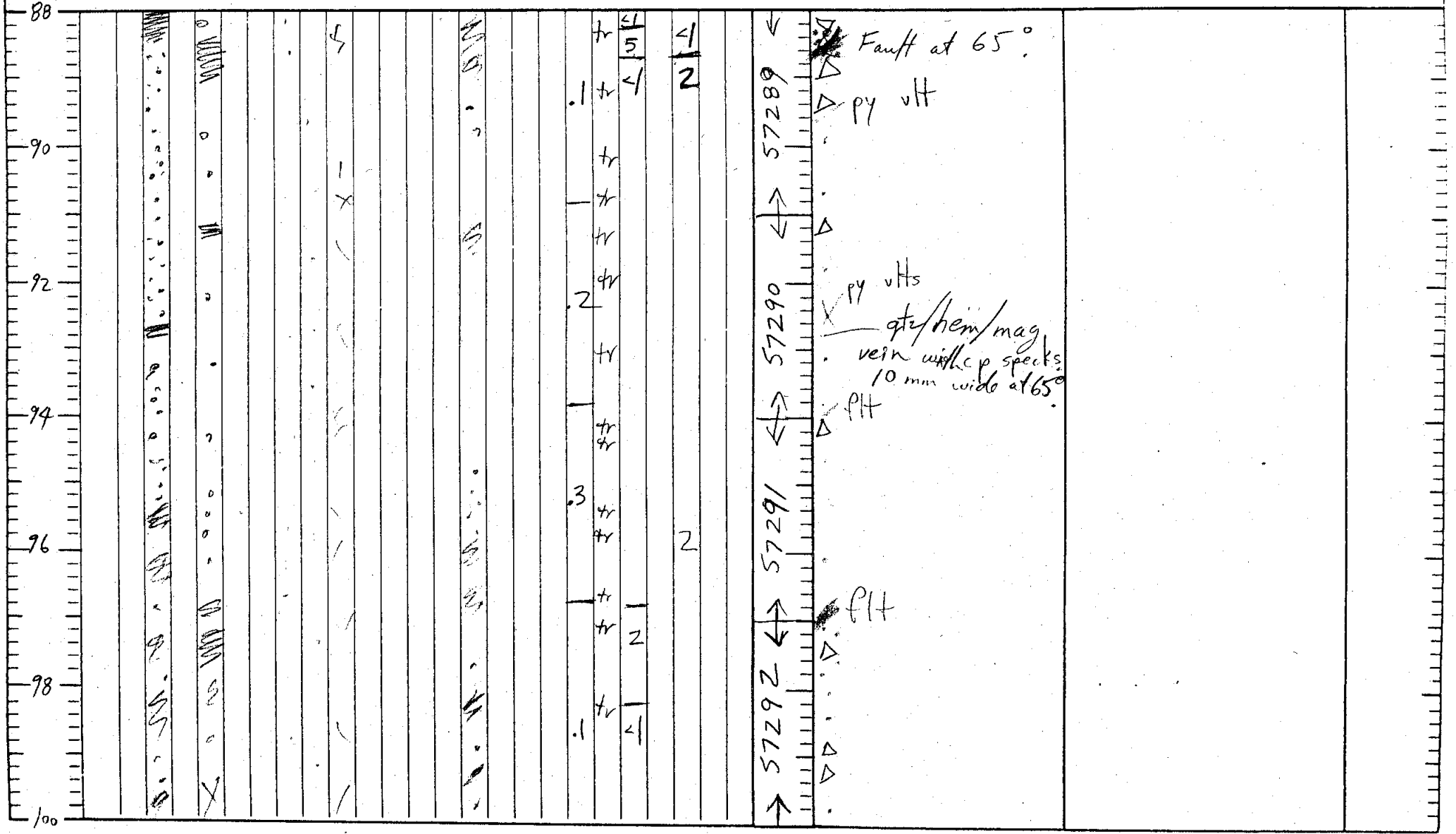
Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
76																											
78																								57285	fault 78.49 Fault 12 cm gouge + f. bkn. core at 50°		
80																								57286	81.70 Fault 20 cm f. bkn core and pyritic gouge at 70°		
82																								57287			
84																								57288			
86																											
88																											

HOLE NO. EC-184 **DRILL LOG** Page 7 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED ____ COMPLETED ____
LOGGED BY ____

T.D. ____ COLLAR ELEVATION ____
INCLINATION ____ BEARING ____
COORDINATES ____
SURVEY REFERENCES ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
88																											
90																											
92																											
94																											
96																											
98																											
100																											



HOLE NO. EC-184 **DRILL LOG** Page 8 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
100																			tr	<1		2					
																		.1		<2		1		57293			
102																			tr								
																			tr	<1							
104																		.2	tr					57294		Fault zone at about 65° to c.a.	
																			tr						qtz/py vlt	
106																			tr	1				57295	flt		
																			tr								
																		.3	tr						hem along fracture sfcs.		
108																			tr								
																									flt		
110																								57296	flt		
																		<.1							Fault zone at about 50°		
112																											

HOLE NO. EC-184 **DRILL LOG** Page 9 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED ____ COMPLETED ____
LOGGED BY ____

T.D. ____ COLLAR ELEVATION ____
INCLINATION ____ BEARING ____
COORDINATES ____
SURVEY REFERENCES ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrosph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval
112																								
114																								
116																								
118																								
120																								
122																								
124																								

LOG
SCALE ____
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

flt

qtz (96%) - py (4%) vein 3.5 cm wide at 25° along slip.

flt

flt

flt

flt

112.18 - 183.49
Andesite. Light greenish grey, fine grained, fairly massive. Chlorite - magnetite clots smaller (av. 1-2 mm) than in overlying ands bx. Less mag than ands bx (av. say 1%). Generally similar to overlying ands bx, with a gradational contact over several metres between the two rock units. Less segregation of magnetite & chlorite into clots within the ands and more abundant pale to bright orange zeolite vlts. Ands also generally less altered (fresher looking) than ands bx.

HOLE NO. EC-184 **DRILL LOG** Page 10 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Py rel ph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
124																											
																			<1								
																			tr	1-2					1		
																		<.1									
126																											
																			tr								
128																											
																		<.1									
																				1-2							
130																				2							
																			tr(?)								
																		<.1		1-2							
132																											
1																											
																		<.1		1-2							
136																											

57301
57302
57303
57304

5 mm vlts at 50°
Fault slip at 75°
flt
flts
py vlts 6 mm wide at 35°
flt
flt
py vlts

HOLE NO. EC-104 **DRILL LOG** Page 11 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
136																				1-2		1		57305			
138																		<.1		3							
																				3				57306	traces cp as specks within magnetite vlts.		
140																		.1	tr			2					
																			tr								
142																			tr					57307			
																		.15	tr								
144																			tr			2					
																			tr								
146																						1		57308	mag/py/hem vlts at 45°		
																		<.1	tr								
148																											

HOLE NO. EC-184 **DRILL LOG** Page 12 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrh	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_3O_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
148																											
150																		<.1		1		1		57309	py vlts mag/py vlts 1-3 mm wide at 45 to 75° to c.a.	150.67 Cream coloured carbonate vein 8 mm wide at 45°.	
152																		<.1				<1		57310			
154																									zeolite vlts later than mag/py vlts.		
156																		<.1		<1				57311	py vlt flt		
158																		<.1						57312	py vlt		
160																											

HOLE NO. EC-184 **DRILL LOG** Page 13 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED ____ COMPLETED ____
LOGGED BY ____

T.D. ____ COLLAR ELEVATION ____
INCLINATION ____ BEARING ____
COORDINATES ____
SURVEY REFERENCES ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_3O_4	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
160																											
162																		<.1	<1		<1			57313	py vft		
164																		<.1						57314			
166																				3				57315	Fault zone at about 45° to c.a.		
168																		<.1						57316			
170																		<.1									
172																											

HOLE NO. EC-184 **DRILL LOG** Page 14 of 14

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
172																											
174																											
176																											
178																											
180																											
182																											
183																											

Sample No & Interval: 57317 (flt); 57318 (Fault zone at about 60° to c.a.); 57319 (0.5% magnetite as vlts; py vlts); 57320 (flt)

183.49 m END OF HOLE

HOLE NO. L[illegible]

DRILL LOG

Page 4 of [illegible]

PROJECT EXPO

CONTRACTOR Olympic

DATE STARTED Nov 23/90 COMPLETED Nov. 25/90

LOGGED BY D. J. Pawliuk

T.D. 200.25 m

INCLINATION -90°

COORDINATES 248555 N / 229914 E

COLLAR ELEVATION 393.1 m (1289.7')

BEARING —

SURVEY REFERENCES

Acid test -90° at 200.25 m

Footage	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	Suif Veins	Frac Inten	Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
10																		tr		1		1				0.00 – 10.67 CASING 10.67 – 130.04 ANDESITE BRECCIA Greyish green to green to light green-grey moderately silicified, fine to medium grained rock speckled by dark green to black chloritic – magnetite clots av. about 2 mm across. 2-3% rock volume creamy white feldspar vlts av. 3 mm wide mainly at about 50° to c.a. (these vlts also oriented in other directions, and are often discontinuous and irregular. Occasional hairline to 2 mm wide mag vlts. Rare PY vlts. Magnetite content 1-2% above 104.80 m depth, increasing to say 4% on average below that point.	
12																		.1	tr								
13.80 Fault; 20cm f. bkn core + gouge at 25°																			tr								
14																		.3	5	tr	tr	2	tr				
2% bn, 5% cp as masses to 8 mm across over 5 cm core length, in pale green qtz vein at 30°																											
16																				2							
18																		4.1	tr								
																			tr								
20																		.1	tr	1		1.2					
																			tr								
22																											

S73321 S73322 S73323 S73324

HOLE NO. EC-185

DRILL LOG

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
22																											
																		tr	1		1-2			57325			
24																		tr									
																		.2									
																		tr									
																		tr									
26																		.1						57326			
																		tr									
																		tr		2							
28																								57327			
																		.2		1							
																		tr									
30																											
																		tr						57328			
32																		.1			1						
																		tr			?tr				py		
34																											

HOLE NO. EC-185 **DRILL LOG** Page 3 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Infen	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_xFeS_2	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
34																											
																		tr	1		1			57329	fH		
36																		tr									
																		.1									
																		tr	<1								
																		tr						57330	cp speck 2mm across		
38																		tr									
																		.2									
																		tr									
																		tr		4							
40																											
																		tr									
																		.2	0.5					57331			
																		tr									
42																											
																		tr									
																				1							
																		tr									
																		tr									
44																								57332			
																		.3									
																		tr									
																		tr									
																		tr									
46																											

HOLE NO. EC-185 **DRILL LOG** Page 4 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
46																											
																		tr									
																		tr									
																		3 tr									
48																		tr									
																		tr									
																		2									
																		tr									
50																		tr									
																		2 tr									
																		tr									
																		tr									
52																		tr									
																		tr									
																		2 tr									
																		tr									
																		tr		1							
54																		tr									
																		tr									
																		1 tr									
																		tr									
																		tr		1							
56																		tr									
																		tr									
																		1 tr									
																		tr									
																		tr		1-2							
58																											

57333 57334 57335 57336

46.90 - 48.04 10% off-white to pale orange-pink feldspar-zeolite vlts in mod. bx interval,

2% cp over 20 cm within pale grey qtz vn.

HOLE NO. EC-185 **DRILL LOG** Page 5 of 16

PROJECT EXPO T.D. _____ COLLAR ELEVATION _____

CONTRACTOR Olympic INCLINATION _____ BEARING _____

DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
58																											
																								57337	Fault slip at 38°		
60																									pH		
																								57338			
62																											
																								57339	pH		
64																											
																								57340			
66																											
68																											
70																											

HOLE NO. EC-185

DRILL LOG

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
70																											
72																		.1	tr			1-2		573441			
74																		.1	tr	1				573442			
76																			tr					573443			
78																		.1	tr	1				573444			
80																		.2	tr			2					
82																			tr								

HOLE NO. EC-185

DRILL LOG

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED ____ COMPLETED ____
LOGGED BY ____

T.D. ____ COLLAR ELEVATION ____
INCLINATION ____ BEARING ____
COORDINATES ____
SURVEY REFERENCES ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
82																			tr	<1		2					
																			tr								
																		2	tr								
84																			tr	2		3					
																			tr								
																			tr	<1							
																			tr			1-2					
86																			tr								
																		.1	tr	1							
																				<1							
88																					tr						
																		<.1									
90																			tr								
																			tr			1-2					
																			tr		tr	?					
92																			tr			3					
																		.1	tr								
																						1					
94																											

573345 ~0.5% cp specks over 5 cm.
— mag v lts at 50°
573346
573347
573348
— few bn? specks

HOLE NO. EC-185 **DRILL LOG** Page 8 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
94																		tr				1					
																		tr	<1								
																		.15						57349			
96																		tr									
																		tr							off white feldspar vlt 4 mm wide at 10° to c.a. offset across fracture lined by other feldspar vlts.		
98																		tr						57350			
																		<.1							traces hematite		
100																		tr									
																		tr						57351			
102																		<.1									
																		tr									
																		tr									
																		tr									
104																		tr						57352			
																		.2				4			waxy brown biotite(?) near feldspar vlts.	104.80 – 111.20 Rock dk greenish grey, even coloured. little or no segregation of magnetite into clots.	
106																		tr									

HOLE NO. EC-185

DRILL LOG

PROJECT EXPO

CONTRACTOR Olympic

DATE STARTED _____ COMPLETED _____

LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____

INCLINATION _____ BEARING _____

COORDINATES _____

SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrh	STR.: Sulf Veins	Frac Infen	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
106																		tr	<1			4					
																		.1				6		57353			
108																		tr									
																		tr				4					
110																		.1						57354			
																		tr									
																		tr				3					
112																		tr				2					
																		tr						57355			
																		tr				3					
																		.25									
114																		tr									
																		tr									
																		tr									
																		tr									
116																		tr									
																		.2				5		57356			
																		tr									
118																		tr									

117.82 - 118.94 As for 104.80 - 111.20.

HOLE NO. EC-183

DRILL LOG

PROJECT EXPO

CONTRACTOR Olympic

DATE STARTED _____ COMPLETED _____

LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____

INCLINATION _____ BEARING _____

COORDINATES _____

SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
118																		tr				5					
																		tr	<1								
																		.25 tr				3					
120																		tr									
																		tr				3tr					
																		tr									
																		tr									
																		tr									
122																		tr									
																		.2 tr			tr						
																		tr									
																		tr									
124																						<1					
																		tr									
																		.2 tr			tr	4					
																		tr									
126																		tr									
																									126.62 Fault along slip at 32° to c.a.		
																						1					
128																		<.1 tr									
																									130.04 Fault slip at 41°		
130																											

57357 — tr ?moly

57358

57359

57360

126.62 - 130.04
Healed fault zone; moderately to intensely brecciated and silicified with about 6% creamy white feldspar vlts and 2% orange zeolite as vlts and as pervasive alteration.

HOLE NO. EC-183 **DRILL LOG** Page 11 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
130																				1			1	57361	py vlt py vlts	130.04 – 200.25 ANDESITE. Light grey to medium greenish grey, medium to fine grained, generally massive rock. Local minor segregation of chlorite into clots. More uniform texture than overlying andsbx. Hard, moderately silicified. More abundant pyrite both diss + vlts to few mm wide than within overlying andsbx. More abundant creamy white feldspar vlts (say 4%) than andsbx (2 to locally 3%). Zeolite nearly absent within andesite, and epidote present as occ. specks.	
132																		tr									
134																		tr						57362	136.00 Healed fault 5 cm wide at 18° 1% cp specks over 2 cm.		
136				2														1		2				57363	biotite? specks		
138																		tr							py vlts		
140																		tr						57364			
142																				3							

HOLE NO. EC-185 **DRILL LOG** Page 12 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrh	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_3O_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
142																			3			1				141.90 - 142.19 Healed fault at 55° to c.a.	
																		tr						57365		py vlts	
144																		<.1	tr								
																				1-2						py vlts	
146																		<.1						57366			
148																								57367		1% cp over 1 cm + moly(?)	
																		.1	1			tr					
150																					<1					py vlts.	
																			tr					57368		152.16 Fault slip at 28°	
152																		<.1									
																				1-2							
154																											

HOLE NO. EC-185 **DRILL LOG** Page 13 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
154																											
156																		4.1	+	1-2		<	1	57369			
158																		<	.	1				57370	py vlts		
160																									159.21 Fault at ~40°		
162																		4.1						57371	162.50 Fault at 30°		
164																		4.1						57372	py vlts		
166																											

HOLE NO. EC-185 **DRILL LOG** Page 14 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED / COMPLETED
LOGGED BY

T.D.
INCLINATION
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
166																								57373	166.63 Fault slip at 84°/6 c.a.		
168																		<.1	1-2	1				57374	flt		
170																		<.1						57375	174.40 - 175.06 Fault zone; finely to moderately bkn core and gouge between slips at 40°		
172																		—	tr	tr							
174																		<.1	1-2					57376	177.03 - 178.40 Fault zone; intensely brecciated rock with some fault gouge.		
176																		—	tr	tr							
178																		4.1		1							

HOLE NO. EC-185 **DRILL LOG** Page 15 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED / COMPLETED
LOGGED BY

T.D. COLLAR ELEVATION
INCLINATION BEARING
COORDINATES
SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrh	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
178																											
																			1	<1		<1		57377	178.40 – 181.69 Healed fault zone. Intensely brecciated rock with little fault gouge; slips at 22° to c.a. at 181.69	178.77 1% cp as specks and irregular masses over 2 cm.	
180																				4					Fault		
																				1							
182																			<.1					57378			
184																									184.17 Banded qtz VN 3 cm wide at 47°.	184.80 Rock here resembles altered QFP; faint quartz eyes(?) present.	
186																			<.1	tr	<1			57379			
																					1						
188																			<.1					57380			
190																											

HOLE NO. EC-185 **DRILL LOG** Page 16 of 16

PROJECT EXPO T.D. _____ COLLAR ELEVATION _____

CONTRACTOR Olympic INCLINATION _____ BEARING _____

DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrh	STR.: Suit Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
190																											
																		tr	1	<1				57381			
192																		<1									
																		tr							Fault slip at 37° marked by banded qtz in 3 cm wide.		
194																		<1	tr					57382			
																									195.85–198.96 Fault zone. Intensely to moderately brecciated with finely broken core and gouge along slips at 50° to c.a.		
196																								57383			
																		<1									
198																			1	<1				57384			
																		<1									
200																									200.25 END OF HOLE		

DRILL LOG

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PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED Nov. 26/90 COMPLETED Dec 10/90
LOGGED BY D. J. Pawliuk

T.D. 194.16 m
INCLINATION −90°
COORDINATES 247711 N / 231041 E
COLLAR ELEVATION 1255 ±
BEARING —
SURVEY REFERENCES

Footage | Core Recovery | Oxide | ALTERATION: Quartz, Sericite, Clay/prop, Biotite, K-spar, Chlorite, Epidote, Carb Zeo, Garnet, Pyroxene, Amphibole, Wollastonite, Pytoph | STR.: Sulf Veins, Frac Inten | VISUAL EST.: Est Cu Mo, CuFeS2, FeS2, Cu2FeS4, Fe2O3, MoS2 | Sample No & Interval | LOG: SCALE, BASIC GEOLOGY: rock types, metallization, structures alterations, one column system | LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES | ROCK UNIT

Acid test −90° at 181.97 m

0.00 − 3.66 CASING

3.66 − 71.49 ANDESITE BRECCIA
Dark grey-green with local medium green and light grey sections, medium grained with dark magnetite-chlorite clots up to 1 or 2 cm across (average about 2.5 mm) in a fine to very fine grained moderately to weakly silicified matrix. Magnetite content av. ~3%; magnetite occurs as clots, occ. vlts, and finely disseminated. Pale orange and white zeolite/carbonate vlts 0.5% rock volume to 19.70 m depth, less abundant below that point. Occasionally pale green epidote occurs with white carbonate and pale grey quartz in vlts and veins up to 35 mm (av. 2 or 3 mm) wide.

57495
57496 — malachite 1% over 2 cm; cerussite ??; malachite
57497 — 9.70 − 10.70 Fault at about 10° to c.a. with zeolite/carb/qtz vlts
57498 — 12.52 − 13.28 Healed fault, as above; also epidote vlts

HOLE NO. EC-186 **DRILL LOG** Page 2 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zéo	Garnet	Pyroxene	Amphibole	Wollastonite	pYroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
15																		tr								Local, rare traces of hematite.	
																		tr									
																		tr									
17																		.2									
																		tr									
																		tr									
																		tr									
19																		.3								Fault, f. bkn core + gouge over 9 cm at 42°.	
																										possible native Cu ?? specks.	
																		.5									
21																											
																		tr									
																		tr									
																		.1									
23																											
																		tr									
																		tr									
25																		.3								hairline cp vlf	
																		tr									
																		tr									

57499 57500 57501 57502

HOLE NO. EC-186 **DRILL LOG** Page 3 of 16

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED / / COMPLETED
LOGGED BY

T.D.
INCLINATION
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	py tr ph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT

27
29
31
33
35
37
39

57503
57504
57505
57506

chalcopyrite v. finely disseminated, and also as specks to 1 mm.

cp mass 5x2 mm

1% diss cp over few cm.

fH

HOLE NO. EC-186

DRILL LOG

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrosph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
39																											
41																		.3	tr	.5	tr	3		575507			
43																		.2	tr	tr		5		575508			
45																			tr	tr		3		575509			
47																		.2	tr	tr		3		575510		47.10 Light grey qtz vn 16 mm wide at 16° contains v. finely diss. py + cp.	
49																		.3	tr	tr						50.61 qtz, mag, py + cp in vn 3 mm wide at 55°	
51																			tr	tr							

HOLE NO. EC-186

DRILL LOG

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LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/grtop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	PYroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
51																						3				occ. faint brownish hue; probable biotite present.	
53																		.3						57511			
55																		.3						57512			
57																								57513			
59																		.2									
61																		.3						57514			
63																											

HOLE NO. EC-186

DRILL LOG

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DATE STARTED _____ COMPLETED _____
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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Infen	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
63																		tr	tr			3		57515		71.49 – 79.98 ANDESITE. Dark grayish green to black-green, fine grained, local brecciated patches to ~1m wide. Little segregation of magnetite and chlorite into clots. Identical composition to overlying andesite bx.	
65								1										.2	tr	tr	tr						
																			tr	tr							
67																		.2	tr	tr		4		57516			
69								1											tr	tr	1	3					
																		.2	tr	tr				57517	qtz-mag-bn-cp-py vlt 3 mm wide at 35°		
71																			tr	tr							
																			tr	tr	tr	1	tr		qtz-mag-moly-bn-cp vlt.		
73																		.3	tr	tr				57518			
75																			tr								

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DATE STARTED _____ COMPLETED _____
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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_2	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
75																											
77																											
79																											
81																											
83																											
85																											
87																											

Sample intervals: 57519, 57520, 57521, 57522

79.78 – 136.25
ANDESITE BRECCIA
As for 3.66-71.49

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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrh	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
87																			tr	0.5							
																			tr			5					
89																		.1		tr				57523		Local 25% magnetite over area to 10 cm wide.	
91																		<.1				5		57524			
93																			tr	tr				57525			
95			X															<.1	tr	tr		5			py/ep vlts at 45° to c.a.	95.37 – 101.93 Fault zone; moderately to intensely brecciated with finely broken core and gouge on slips at 20° to 55° to c.a., average about 52° to c.a.	
97																				tr				57526	faults		
			9															4.1									
99			9																	tr							

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CONTRACTOR Olympic
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LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Py/Pop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
99																											
																				tr				57527	fault zone		
101																											
																								57528	pH		
103																											
																								57529	pH		
105																									pH	109.90 m Light grey quartz vein 5 cm wide @ ~10° to c.a.	
107																											
109																								57530	pH		
111																											

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PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
111																											
																		<.1		tr		5		57531			
113																				tr							
115																		.1						57532	Most fault slips at about 50° to c.a.	magnetite-chlorite clots here less abundant and have fainter boundaries than within ads 6x in topmost portion of hole.	
																			tr	tr							
117																						5					
																								57533			
119																		<.1	tr			8					
																			tr								
																			tr								
121																			? tr					57534	flt		
																		<.1		1					flt		
123																				tr		5			flt		

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PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
123																				tr				5		flt py Fault zone 23 cm wide at 40° with bkn core.	
125																		<.1	tr	3				575535			
																				tr							
127																		<.1		tr				575536		flt	
129																				tr							
																				tr				575537		Banded quartz-hematite-magnetite vein 30 cm wide at 29° w. ~1% pyrite.	
131																		<.1		tr							
133																		<.1		1				575538		fault zone	
135																				1tr							

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PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
135																				tr		5		57539	Fault zone at ~50°.	136.25 – 194.16 ANDESITE. Greenish grey to light grey to green-black, fine grained, local brecciated sections. Patchy moderate to locally intense silicification has occurred. About 0.5% pale orange, zeolite vlts irregular throughout.	
137																		<.1		tr							
139																				2				57540	139.13 – 139.81 Quartz vein at 34° to c.a. w. 1-2% py diss and short vlts.		
141																		<.1		tr		5		57541	flt		
143																				tr		4			flt		
145																		<.1		tr				57542	flt		
147																						3			flt		

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PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Wrapx	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
147																											
149																								57543	flt flts		
151																								57544	qtz vein 2 cm wide at 10° to c.a. along fault		
153																								57545	flt		
155																									flt		
157																								57546	flt qtz veins 3-6 cm wide along faults hematite along fracture sfcs.		
159																											

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PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
159																			tr							
																	<.1						57547			
161																										
																	tr				Z-3		57548	Fault zone at 50-60°; bkn pale grey vein quartz pieces throughout.		
163																	<.1									
																			1							
165																										
																			tr				57549		fH	
167																	<.1									
																			1							
169																			tr				57550		fHs	
																	<.1		.2 tr							
171																										

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PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Infen	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
171																	tr		23				57551	flts		
173																	4.1 tr						57552	flt		
175																	4.1 tr						57553	flt		
177																							57554			
179																	<.1									
181																	tr									
																	tr									
																	.1									
																	tr									

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PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
183																										
185																							57555		Fault at 60° with pyritic gouge. euhedral py cubes to 1/2 mm	
187																	<.1						57556			
189																							57557			
191																	<.1 tr									
193																	<.1						57558		mag v Hs 40 2 mm at 50°-80°	
																									194.16 END OF HOLE	

HOLE NO. EC-

DRILL LOG

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PROJECT EXPO

CONTRACTOR Olympic

DATE STARTED Nov 28/90 COMPLETED Dec 2/90

LOGGED BY D. J. Pawlink

T.D. 332.23 m

INCLINATION -90°

COORDINATES 233814.5 E / 245 650.5 N

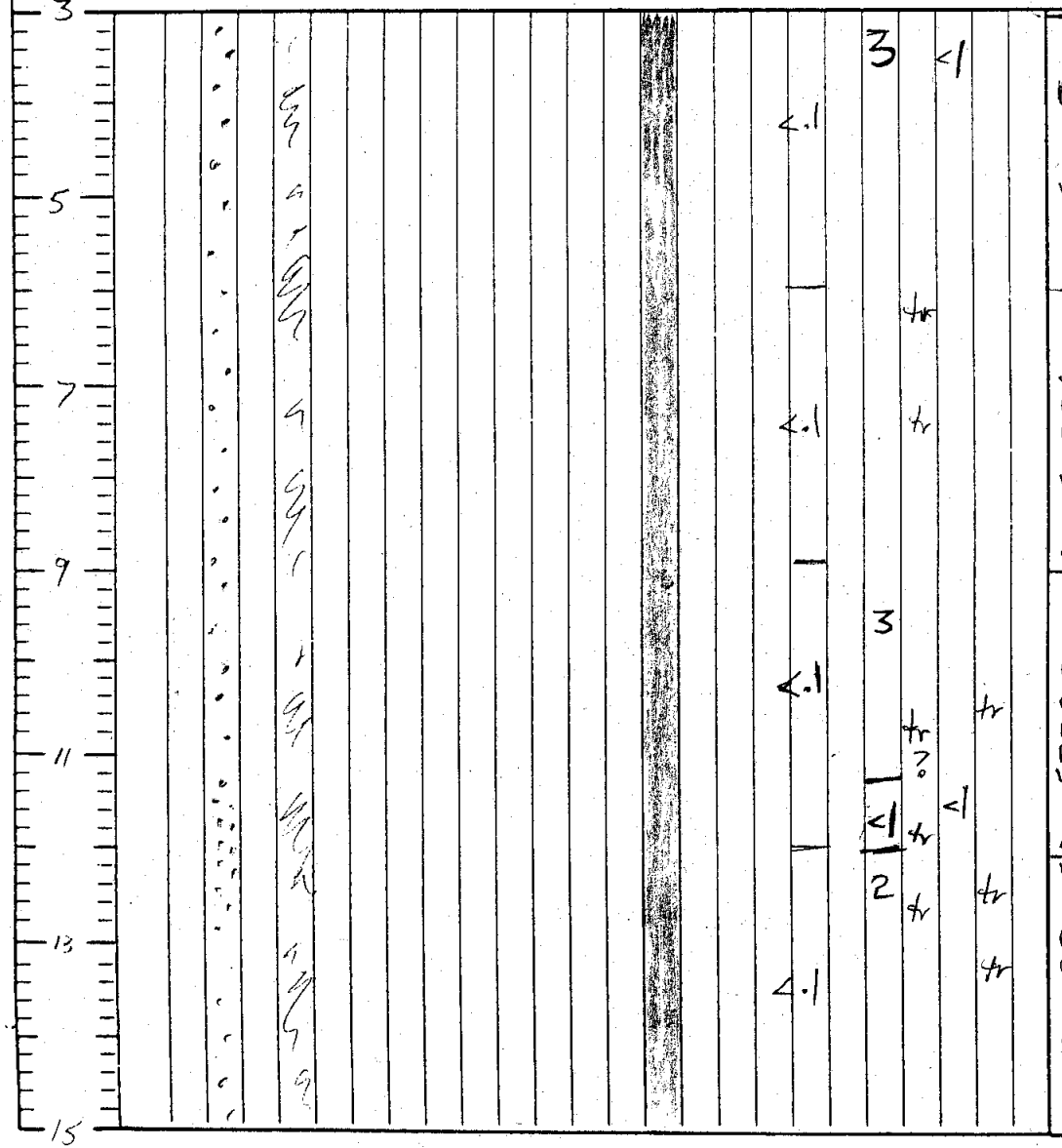
COLLAR ELEVATION 1407.2'

BEARING —

SURVEY REFERENCES —

Footage | Core Recovery | Oxide | ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb Zeo, Garnet, Pyroxene, Amphibole, Wollastonite, Pyrosph | STR.: Sulf Veins, Frac Inten | VISUAL EST.: Est Cu Mo, $CuFeS_2$, FeS_2, Cu_3FeS_4, Fe_2O_3, MoS_2 | Sample No & Interval | LOG: SCALE —, BASIC GEOLOGY: rock types, metallization, structures alterations, one column system | LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES | ROCK UNIT

Acid test -90° at 332.23 m.



0.00 - 3.05 CASING

3.05 - 21.87 PYROPHYLLITE BRECCIA. Light orange brown to light grey-brown, fine grained, weakly silicified. Rare faint banding at about 50° to c.a. Rocky unit has intensely altered dacitic tuff. Pyrite mainly disseminated above 15.7 m, and about 50% as vlts from 15.7 to 21.87 m depth. Off-white clays line occ. wispy, randomly oriented fractures throughout and also occur as interstitial speckles. Clays 5 to 10% of rock. Only one qtz vlt seen at 6.38 m, 4mm wide at ~50°.

clays mainly pale brownish orange.

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PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
15																											
17																											
19																											
21																											
23																											
25																											
27																											

57389 | 57390 | 57391 | 57392

py vlts

5% orange-red hematite over 3 cm.

py vlts

flt.

5% cp over 3cm as irreg. masses

0.5 mm bn vlt at 75° to c.a.

Late bx, bond w/ sil matrix

21.87–42.72 SILICEOUS PYROPHYLLITE BRECCIA
Light grey-brown, hard, indurated by quartz. wispy, irregular masses of off-white clay/pyrop couple of cm across, often with faint boundaries. Generally weakly fractured with dark brown to light yellow-brown limnt lining mainly of the fracture sets. Upper contact probably fault, marked by pale creamy grey clay seam 5 cm wide at 28°. Rock is 3-5% py, 5% pyroph, 0.5% limnt, 90% quartz.

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DATE STARTED _____ COMPLETED _____
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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Inten.	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
27																											
29																			5	<1 tr	<1 1- tr				57393	5% cp, 1% bn over 5 cm; cp masses to 10 mm across.		
31																		.2	2	1-				57394	2% cp, 1% bn as small, irreg. masses over 12 cm.		
33																		.1		tr							
35																		.2	0.5	tr				57395	2% bn, 0.5% cp over 15 cm		
37																		.1	2	3	tr	tr		57396			
39																			1-2	tr							

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
39																											
41																											
43																											
45																											
47																											
49																											
51																											

Footage: 39 | 41 | 43 | 45 | 47 | 49 | 51

Core Recovery: solid

Oxide: none

ALTERATION:
- Quartz: solid
- Sericite: solid
- Clay/Pyrop: solid
- Biotite: none
- K-spar: none
- Chlorite: none
- Epidote: none
- Carb Zeo: none
- Garnet: none
- Pyroxene: none
- Amphibole: none
- Wollastonite: none
- Pyroph: solid

STR.:
- Sulf Veins: none
- Frac Inten: none

VISUAL EST.:
- Est Cu Mo: tr | <.1 | .1 | .1 | .1 | .1
- $CuFeS_2$: tr | 1-2 | 2 | 3 | 1/- 2 | 1/- 2 | 4 | 1-
- FeS_2: tr | 2 | tr | 3 | 2- 1- | tr | tr | 4 | 1- | tr
- Cu_2FeS_3: <1 | tr | <1 | <1 | tr
- Fe_2O_3: none
- MoS_2: none

Sample No & Interval: 57397 | 57398 | 57399 | 57400

LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES:

42.72 - 58.57
PYROPHYLLITE BRECCIA
As for 3.05 - 21.87
Except here rock more fractured (mainly moderately fractured), often with pyrite or off-white clay along fractures.

Fault slip at 60°, with slicks on sfc of slip.

2% bn, 1% cp over 2 cm as irreg. masses cp+bn rim plblde vlt at 40°

mm

py vlts

hematite as pervasive replacement of v. finely diss pyrite. speckles bn within qtz vlts.

Fault at ~40°

ROCK UNIT

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	CuFeS$_2$	FeS$_2$	Cu$_3$FeS$_3$	Fe$_2$O$_3$	MoS$_2$	Sample No & Interval
51																				4	tr	<1		57401
53																		<.1		3				
55																				<1	tr			57402
57																		.1	tr	3	tr			
59																		.2	tr	2	tr			
61																		.2	tr	1	tr			57403
63																				<1	tr			57404

LOG
SCALE _____
BASIC GEOLOGY:
rock types, metallization, structures
alterations, one column system

flt
Imat on fracture sfcs
Fault: 1 cm of gouge on slip at 20° to c.a.
Fault + ~30° to c.a.
Imat on fracture

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

58.57 – 68.38 SILICEOUS PYROPHYLLITE BRECCIA
Light greyish brown to light grey, fine grained, generally granular texture. Indurated by silica. Pyrophyllite has pale bluish grey irregular masses and as vlts.

ROCK UNIT

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	PYROPH	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval
63																				<1 tr				57405
																			tr	tr				
65																		.1		tr				
																				tr				
																				tr				
67																		.1	tr	tr				57406
																				tr				
																				tr				
69																				1				
																				tr				
																				tr				
																		.2	tr	tr				57407
71																			tr	<1	10			
																				tr		tr		
																				tr				
																				4				
73																				tr	<1			
																		.2		1				57408
																				tr	4			
																				3	<1			
75																								

← iron oxide here mainly hematite; rock only weakly magnetic.

py vlts

native Cu?? as v. fine specks

py vlts

68.38 – 81.69
PYROPHYLLITE BRECCIA. Light brown to creamy grey to maroon, medium grained, mottled appearance throughout. Lower contact fault at about 50° to c.a.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
75																				3	tr	<1				py vlts	5% green waxy clay (?) with same mode of occurrence and appearance as pyrophyllite.	
77																		<.1	tr	1	tr	4		57409	pyroph vlts 4mm wide at 40°		
																				3	tr	2			hematite replaced pyrite.		
79																			tr						Fault; 2 cm gouge + f. bkn core at 10°.	81.69–93.73 SILICEOUS BRECCIA Light brownish grey, fine grained, intensely indurated, by silica.	
																		<.1	tr	2		2		57410			
81																						<1			Fault at 60°. slip at about 50° to c.a.	Identical textures as in underlying andesite and pyrophyllite breccias; probably silica introduced via overlying fault zones.	
																				1				57411	Major fault, 110 cm pale grey gouge + finely bkn core		
83																		<.1							flt		
																				5	tr				flt		
85																		.1		2		1		57412	flt		
																					tr				flt		
87																				3	tr	1					

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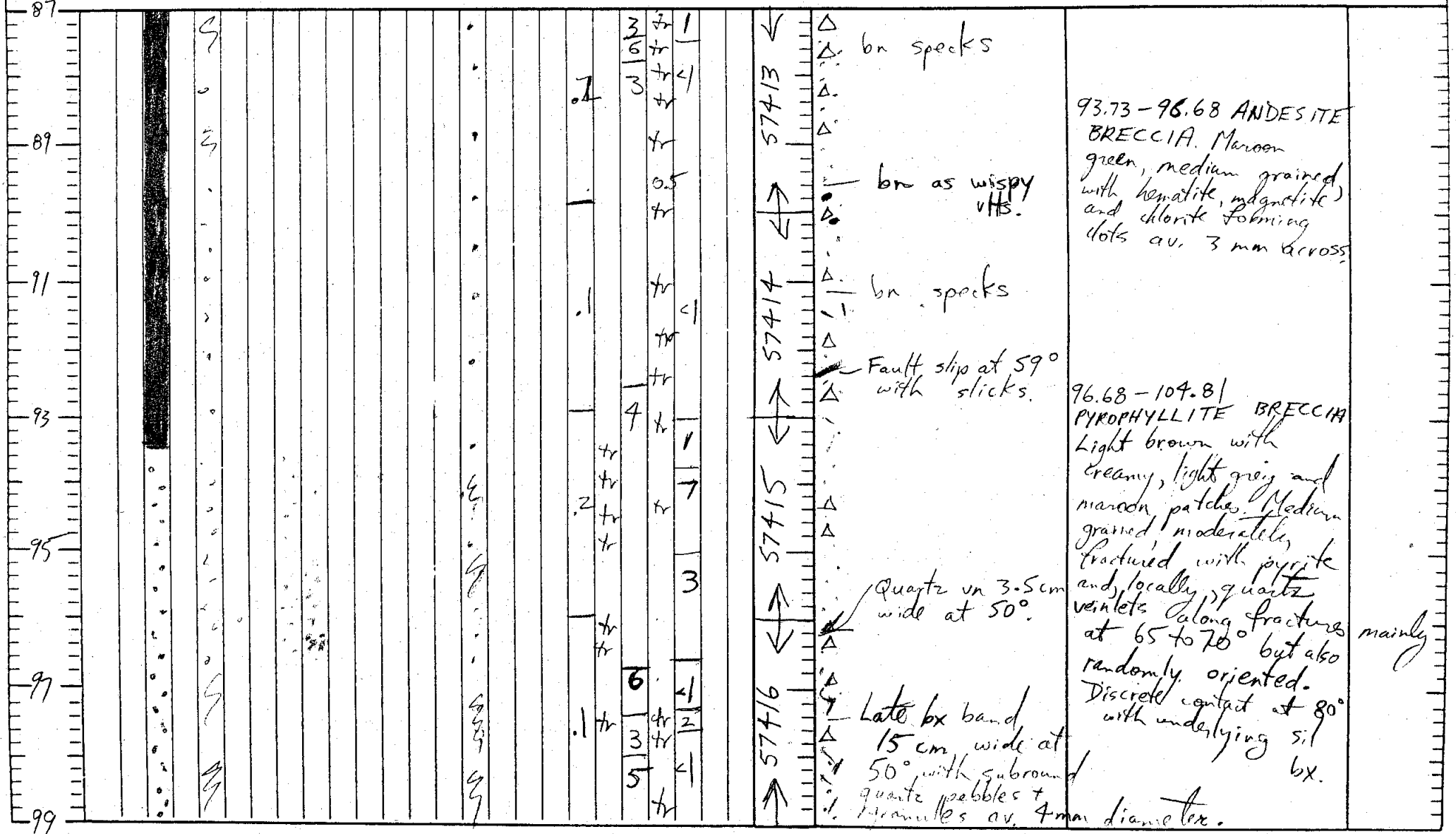
Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
87																											
89																											
91																											
93																											
95																											
97																											
99																											



57413
57414
57415
57416

brn specks

brn as wispy vHs.

brn specks

Fault slip at 59° with slicks.

Quartz vn 3-5cm wide at 50°.

Late bx band 15 cm wide at 50° with subround quartz pebbles + granules av. 4mm diameter.

93.73 – 96.68 ANDESITE BRECCIA. Maroon green, medium grained with hematite, magnetite and chlorite forming clots av. 3 mm across

96.68 – 104.81 PYROPHYLLITE BRECCIA Light brown with creamy, light grey and maroon patches. Medium grained, moderately fractured with pyrite and, locally, quartz veinlets along fractures at 65 to 70° but also randomly oriented. Discrete contact at 80° with underlying sil bx.

mainly

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types; metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
99																											
101																											
103																											
105																											
107																											
109																											
111																											

Late bx band 6 cm wide.
quartz vn 10 cm wide at 45°.
101.40–101.86 Late bx band at 80°, clasts av 6 mm
covellite(?) as wispy, hairline vlts with qtz vn.
hematite
py vlts
bn specks
bn as wispy vlts + specks

57417 57418 57419 57420

104.81–232.08
SILICEOUS BRECCIA
Light grey with local light brown patches, granular texture; rock could be intensely silica-impregnated med. grained siliceous Jwke. Rock commonly spotted by brown pyrophyllite–clay masses a couple of mm across. Breccia becomes coarser grained, less granular and also contains less brown pyrophyllite and clays below late breccia band at 117.67 m depth, to about 169.50 m depth where breccia again granular.

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
111																											
																				2					flt		
																				5				57421	py vlts		
113																		.2	?						flt		
																				2							
115																								57422	115.00 Fault; 6 mm gouge at 13°		
																		.1	<1								
117																								57423			
																		<.1							py vlts		
119																											
																				1							
121																		.1	<1					57424			
123																											

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PROJECT EXPO T.D. COLLAR ELEVATION

CONTRACTOR Olympic INCLINATION BEARING

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	PYroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_xFeS_x	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, ore column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
123																				<1 tr	<1					Fine grained sil gwke interbed 6.5 cm wide at 43°		
																				0.5 tr							
125																		.2		1 tr							
																				tr							
127																				tr 0.5						127.70 – 128.33 Late bx band at ~50° to c.a. Clasts to 2.5 cm across.	
																		-1		2 tr					Fault within late bx band at ~40° to c.a.		
129																				1 tr					wispy bn vlt at 30°		
																				<1 tr					bn specks		
131																		<.1		1 tr							
																				<1 tr					bn as wispy vlts + v. fine diss specks		
																				tr							
133																				tr					bn specks		
																		.2		0.5 tr					py vlts		
135																				tr							

57425 57426 57427 57428

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SURVEY REFERENCES ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
135																											
																		.15		3	tr						
																				2	tr						
																				3	tr						
137																					tr						
																				2	tr						
																					tr						
																				1	.05	1	tr				
139																		<.1			tr	0					
																						0.5					
141																											
																						0					
																		<.1				0.5					
143																				1	tr						
																					tr						
145																					tr						
																		<.1			tr						
147																											

57429 57430 57431 57432

hematite speckles + ds hairline, short v/lts.
— moly speck

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	py traces	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
147																									occ. hematite speckles		
149																		<.1		1				57433			
151																		<.1		1				57434			
153																		<.1						57435	flt		
155																											
157																		<.1		<1				57436			
159																			tr		Vr						

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
159																				4							
																		<.1						57437	161.45–161.70 Fault (grayish white gouge) with f. bkn core between slips at 56° to c.a.		
161																				4							
																								57438			
163																		<.1									
																			tr	tr							
165																			tr					57439	Fault slip at 16°		
																			tr								
																		.1	tr								
167																											
																			tr					57440			
169																			tr	tr					py vlts		
																		.1	tr	tr							
171																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	PYroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
171																			1→4	tr				57441	hairline bn vH at 70° Fault; finely bkn core		
																			1	tr							
																			4								
																		.1	2	tr					py vHs		
173																				tr							
																				tr			tr				
																				tr							
175																			2	tr				57442			
																		.1		6.5							
																				tr							
177																				tr				57443	Late bx vH 1cm wide at 65° with pyritic matrix.		
																				tr							
																		.2		tr							
																			2	0.5							
179																				tr					bn diss + as short (av. few mm) hairline vHs.		
																				0.5							
																				tr				57444			
																		.15		tr							
181																				tr							
																				tr							
183																				tr							

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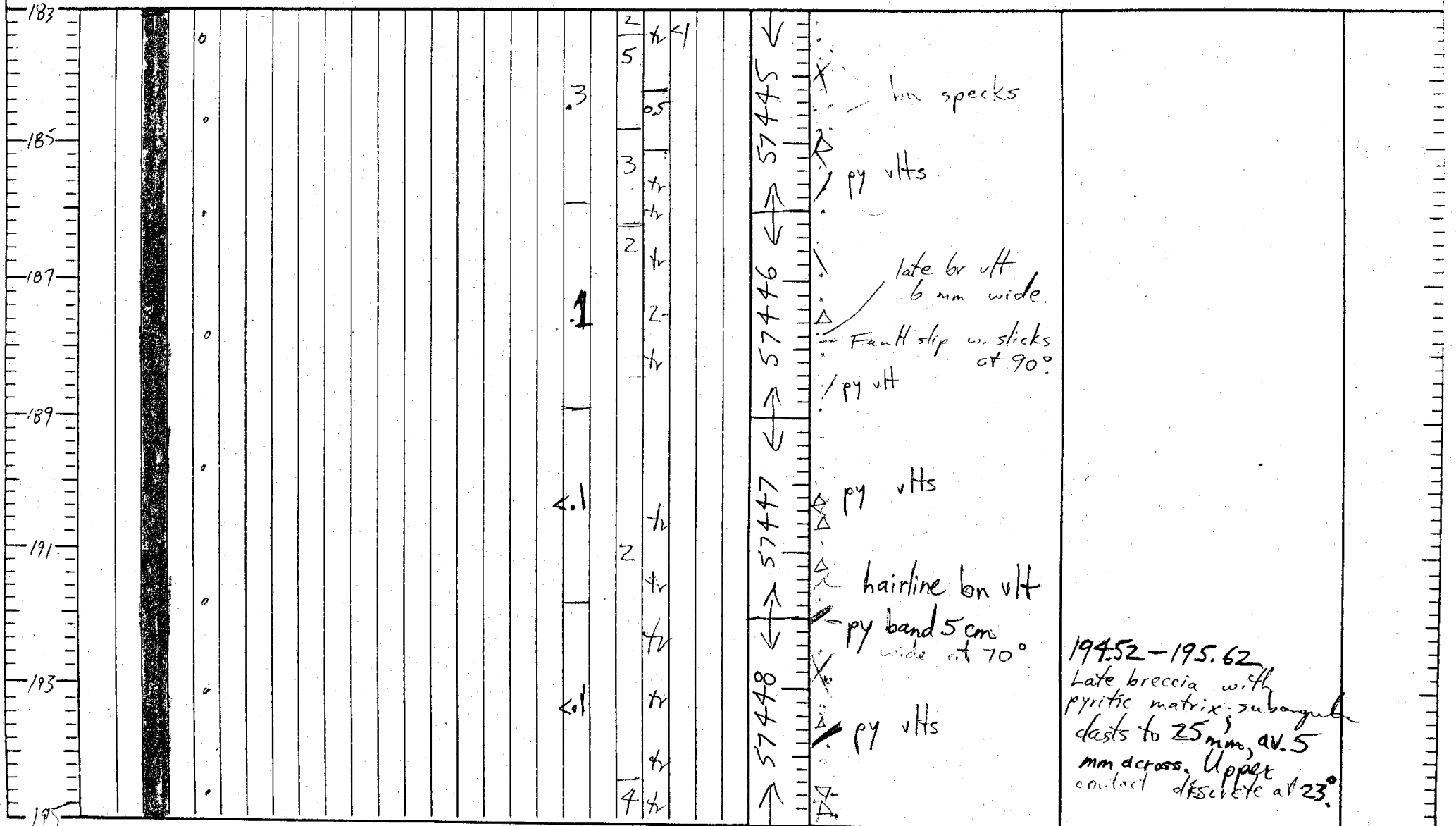
Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophyllite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
183					0															2				57445			
																				5							
185					0													3									
																				3							
																								57446			
187					0													1		2							
189					0																			57447			
																		<0.1		2							
191					0																						
																								57448			
193					0													<0.1									
																				4							
195					0																						



19.52–195.62 Late breccia with pyritic matrix; subangular clasts to 25 mm, av. 5 mm across. Upper contact discrete at 23°.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	CuFeS$_2$	FeS$_2$	Cu$_3$FeS$_3$	Fe$_2$O$_3$	MoS$_2$	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
195																				4	tr	tr		57449		py vHs	
																		<.1		2-3	tr						
197																					tr						
																				1	tr						
199																				15				57450		Fault slip with 2 mm gouge at 25° to c.a.	
																		<.1		2							
201																				1				57451		Ground pyrite along fault slip at 20°	
																				2	1						
203																		.1			tr						
																					tr						
205																				5	tr			57452		Py band 18 cm wide at 60°	
																		.1		2	tr						
207																					tr						

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T.D.
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COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
207																				1							
																				2							
																				tr							
																		<.1		tr				57453	py vlts		
209																				tr							
																				tr				57454	py vlts		
211																		<.1									
																				2				57455	Py band 10 cm wide		
213																				tr							
																		<.1									
215																				1							
																				tr				57456			
217																		<.1									
219																											

HOLE NO. EC-187 **DRILL LOG** Page 19 of 28

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
219																				1		tr	<1				
																		.1		6		1/=		57457			
221																											
																				1							
223																		<.1		8				57458			
																				2		tr					
225																				1					Irregular 0.5mm wide bn vlt at 43°		
																				4				57459	Fault at about 25°		
227																		<.1				tr					
																				10			<1		Fault at 60°		
																				6							
229																		1-					1	57460	cp rims py in vlt 4mm wide at ~65°		
																		.1		tr					Fault at 40°; 1% hematite replacing py.		
231																							<1				

HOLE NO. EC-101 **DRILL LOG** Page 20 of 28

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CONTRACTOR Olympic
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T.D. _____ COLLAR ELEVATION _____
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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
231																									malachite v/t on fracture surf.	232.08 – 239.42 ANDESITE Maroon to light grey to light brown coarse to medium grained, intensely altered by silica, specular hematite and pale brown to cream coloured clay minerals. Gradational contact over 2 or 3 m with overlying siliceous bx. Rock ~ 30% silica, 5–10% specularite, 60% clays + feldspars, 2% + pyrite. Likely hematite has replaced pyrite within this rock unit.	PORPHYRY (?)
233																		<.1	tr	6	<1			57461	flts		
																				3	5				py v/ts		
235																				5	10						
																		<.1	tr	1	1			57462			
																			tr	2	5				flt		
237																				5	10				py v/t		
																				5	5						
																				5	1-2				flts		
																				70	t.?						
																				5							
239																				2	7			57463			
																		4.1			5				flt		
																				6	<1						
241																									py v/ts		
																		4.1	tr		4			57464			
																									flt		
243																											

malachite v/t on fracture surf.
flts
py v/ts
flt
py v/t
flts
flt
py v/ts
flt

232.08 – 239.42 ANDESITE Maroon to light grey to light brown coarse to medium grained, intensely altered by silica, specular hematite and pale brown to cream coloured clay minerals. Gradational contact over 2 or 3 m with overlying siliceous bx. Rock ~ 30% silica, 5–10% specularite, 60% clays + feldspars, 2% + pyrite. Likely hematite has replaced pyrite within this rock unit.

239.42 – 281.82 SILICIFIED ANDESITE / ANDESITE PORPHYRY Light grey, medium grained, hard. Off-white to cream coloured clay masses up to 3 mm across speckle rock and probably represent relict feldspars. In part unit resembles silica-indurated siliceous gouge seen higher in hole and looks like the granular variety of siliceous bx.

PORPHYRY (?)

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T.D. _____ COLLAR ELEVATION _____
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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac. Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
243																				6		<1		57465	py vlts	The silicified andesite generally appears to be a silica-indurated andesite porphyry.	
245																		<.1		4							
																				10	tr				poss. native Cu? few specks v. fine.		
247																		tr		2		7			specular hematite has replaced pyrite.		
																		tr						57466			
																		.2		4							
249																		tr				<1			py vlts		
																				2		5		57467			
																		<.1		4							
251																						<1					
																				10							
																				4	tr?			57468	py vlts		
253																						<1					
																		<.1							Py-rich (80%) band 9 cm wide at 46°		
																			?						Tr specks		
255																			tr								

HOLE NO. EC-187 **DRILL LOG** Page 22 of 28

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CONTRACTOR Olympic
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T.D. _____ COLLAR ELEVATION _____
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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	PYropA	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
255																				4	tr	<1		57469	py		
257																		.1	tr	3	tr				6cm		
259																		<.1			tr			57470	258.50 Fault, finely bkn, pyritic core on fracture at 50°		
261																					tr				bn as dusty, v. fine disseminations	Rock here appears similar to QFP but lacks the characteristic quartz eyes.	
263																		<.1			tr			57471			
265																					1				Pyritic fault slip at 51°		
267																		.1		6	tr			57472	bn as dusty, v. fine disseminated specks forming faint Hs at ~40° to c.a.		

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DATE STARTED _____ COMPLETED _____
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T.D. _____ COLLAR ELEVATION _____
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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay	Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
267																				3	tr					py vlts		
																					tr							
																			.2		tr				57473	bn v. finely diss.	rock similar in appearance to QFP but only a couple of qtz eyes seen.	
269																					tr							
																					tr							
																					tr							
271																			<.1		tr				57474		← as above	
																				3	tr							
																					tr							
273																					tr							
																					tr							
																					tr							
																			.1		tr				57475	bn v. finely diss.		
275																				5	tr					py vlts		
																					tr							
																				15								
277																			4.1		tr				57476	series of py vlts 2-3 mm wide subparallel c.a.		
																				7								
																					tr							
																				4						py vlts		
279																												

HOLE NO. EC-187 **DRILL LOG** Page 24 of 28

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED / COMPLETED
LOGGED BY

T.D. COLLAR ELEVATION
INCLINATION BEARING
COORDINATES
SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay, Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
279																									flt		
281																		<.1		4 6 4 8	tr tr			57477	flt	281.82 - 282.40 QUARTZ FELDSPAR PORPHYRY. Light greyish brown medium grained with subhedral qtz eyes av. 2-3 mm. Contacts with silicified and/or porphyry brecciated, at about 35° to c.a.	
283																		<.1		3 5				57478	py vlts		
285																		tr		2		5		57479	hematite spots to 5 mm.	282.40 - 295.57 SILICIFIED ANDESITE PORPHYRY As for 239.42 - 281.82 except clay minerals somewhat more abundant here than higher in hole.	
287																		.1		4 3	tr	1		57480	mdy vlt, hairline width, on irregular fracture at ≈15°		
289																		<.1		50 3	tr tr				Pyritic fault slip at 25°		
291																											

HOLE NO. EC-187 **DRILL LOG** Page 25 of 28

PROJECT **Expo** T.D. _____ COLLAR ELEVATION _____

CONTRACTOR _____ INCLINATION _____ BEARING _____

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyrope	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_4	MoS_2	Sample No. & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
291																											
																		<.1		3			<1	57481	py vlts	295.57 – 298.27 QUARTZ FELDSPAR PORPHYRY DYKE. Pale brown to light grey-brown, medium grained with qtz eyes av. 1-2 mm, up to 3 mm in aphanitic matrix. Subhedral, pale feldspars 1-3 mm across altered to off-white clays. Rock contains less diss py than adjacent units. Hard, moderately silicified. Lower contact discrete at about 40°.	
293																				tr				57482			
295																		<.1		tr							
																				2							
297																		<.1						57483	py vlts	298.27 – 301.88 As FOR 282.40 – 295.57	
																				3							
299																											
																		<.1		tr				57484	pyrite very finely disseminated.	301.88 – 332.23 As for 295.57 – 298.27, becoming increasingly more altered with clay minerals with depth. Moderately silicified to 315.00, then weakly silicified below 315.00 m. Upper contact at about 65°.	
301																				10							
																				3			<1				

HOLE EC-187 **DRILL LOG** Page 26 of 38

PROJECT EXPO
CONTRACTOR Olympic
DATE STARTED _____ COMPLETED _____
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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrrph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
303																				3	<1			57485	Fault, few mm fr. bkn core and pyritic gouge on slip at 24°		
305																		<.1		5	tr						
307																		<.1		3				57486	Py vlt 2 mm wide @ 33°		
309																				6							
																				3	tr			57487	flts		
311																		<.1			tr				flts		
																					tr			57488	flt		
313																		.1			tr				flt		
																				2	tr						
315																				1							

HOLE NO. EC-181 **DRILL LOG** Page 27 of 28

PROJECT EXPO T.D. _____ COLLAR ELEVATION _____

CONTRACTOR Olympic INCLINATION _____ BEARING _____

DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Argillic	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
315																			1		<1						
																		<.1			tr			57489	py vlts fH	Green chlorite v. fine diss. as weak alteration product within feldspar phenos; not seen within porphyry matrix.	
317																					tr						
																			tr		tr						
319																		<.1						57490	319.33. Pyrophyllite vlt 2 mm wide rimmed by py vlts 1-4 mm wide; along fault slip at 31° to c.a.	(pyroxene??)	
																					tr				321.52-321.88 Fault zone; cream coloured to light grey gouge and finely bkn core at 78°.		
321																					tr						
																		<.1			tr			57491		Below 322.87 Patchy brownish green to pale yellow clay mineral alteration of porphyry has occurred over intervals of up to about 1.4 metres. Rock below 322.82 about 50% moderately altered in this manner.	
323																									fH Local pervasive zeolite alteration.		
325																		4.1						57492	fH elongate	Green mineral translucent, blocky shape, easily scratched by knife; too soft and dark coloured to match epidote seen on property.	
																									fH		
327																											

HOLE NO. EC-181 **DRILL LOG** Page 28 of 28

PROJECT EXPO
CONTRACTOR Olympic
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LOGGED BY _____

T.D. _____ COLLAR ELEVATION _____
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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrcph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
327																				1	tr	<1				flt 327.32 Hairline bn vlt at 70°. py vlt	This green mineral seen in earlier holes drilled during summer 1990, possibly near bottom of EC-179. Green mineral present where porphyry has not been pervasively silicified.	
329																		<.1			tr			57493			
331																		<.1		1				57494	flts		
332																											
333																											

332.23 END OF HOLE

HOLE NO. EC-188 **DRILL LOG** Page 1 of 32

PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED Dec 3/90 COMPLETED Dec. 8/90
LOGGED BY D. J. Pawliuk

T.D. 372.16m (
INCLINATION -55°
COORDINATES 233814.5E / 245650.5 N
SURVEY REFERENCES

COLLAR ELEVATION 1407.2'
BEARING 180°

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
																								Acid test -58° at 365.76 m		

0.00 – 3.05 CASING

3.05 – 206.15 SILICEOUS (PYROPHYLLITE) BRECCIA

See page 5 of log for rock unit description

3

0
0
0

<1 1 1+

57751

HOLE NO. EC-188 **DRILL LOG** Page 2 of 2

PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophyllite	STR.: Sulf Veins	Frac Infen	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, ore column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
5																											
7																								57752	cp as irregular to subrounded masses to 10 mm across.		
9																								57753	bn as wispy vft at ~65°.		
11																								57754	Imat on fracture sfcs at ~40°.		
13																								57755	Fault at ~25°		
15																											

HOLE NO. EC-188 **DRILL LOG** Page 3 of 12

PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Gypsum	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
17																				1					flt py vlt		
																		<.1			4r			57756			
19																									Fault $\alpha \sim 38°$		
																								57757	flt		
21																		<.1									
																								57758	flt		
23																		<.1									
																								57759	flts		
25																											
																		<.1							py vlt		
27																				1							

HOLE NO. EC-188 **DRILL LOG** Page 4 of 12

PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Py/gpy	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_9FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, ore column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
29																				1				S7760			
																		<.1		<1							
31																									flt		
																								S7761			
33																		<.1							bn as v/fts.		
																				1				S7762			
35																									bn specks		
																		.1									
37																				1							
																								S7763	flt	39.74-40.25 Light brownish grey, fine grained gwke interbed at ~40°.	
39																		<.1							Late bx band		
																									gwke interbed		
																									Late bx band		
																									40.60m		

HOLE NO. EC-188 **DRILLING** Page 5 of 32

PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED Dec /90
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	py rop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
41																				3					Late bx band; bottom contact at 21°; clasts to 3 cm.	3.05 – 206.15 SILICEOUS PYROPHYLLITE BRECCIA. Light grey-brown to light grey, fine grained, faint granular texture. Indurated by silica; hard. Can only locally be scratched by a knife. 0.5 (av.) to locally 3% off-white clay as small speckles throughout rock and occassionally lining fracture surfaces. ~3-5% brown local pyrophyllite. Local late bx bands with abundant disseminated pyrite within matrix. Av. ~0.5% diss + vft pyrite. Fairly uniform, monotonous rock.	
																		.5	tr					57634			
43																		<.1	tr								
																				3	tr				Late bx band; upper contact at 70°. py			
45																		<.1	tr	1	tr			57635			
																				1							
47																				.5							
																		<.1	tr					57636			
49																					tr						
																					tr						
51																		<.1						57637			
																			1	.5							
53																											

HOLE NO. EC-188 **DRILL LOG** Page 6 of 12

PROJECT EXPO
CONTRACTOR Olympic Drilling Consulting
DATE STARTED _____ COMPLETED _____
LOGGED BY D. J. Pawliuk

T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrope	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
53																				-5							
																		<.1		1				57638			
55																											
																								57639			
57																		<.1		tr							
																				1 tr							
59																				xtr				57640			
																		<.1		tr							
61																				tr					Late bx band 13 cm wide at 75°.		
																				1 tr				57641			
63																		<.1		tr					Late bx.		
																				tr							
																				3 tr							

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop.	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
65																				3	tr					Late bx	
																				.5							
																		<.1			tr			57642			
67																					tr							
69																		<.1		1				57643			
																					tr						
71																									Fault; 3 cm off-white gouge at ≈ 50°		
																		<.1		.5				57644			
73																					tr						
																				1							
																					tr						
																					tr						
75																					tr			57645			
																		-.1		.5							

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
77																				.5							
																								57646			
79																		.1									
																								57647			
81																		.1									
																								57648	Fault; ? orientation		
83																											
																		.1									
85																											
																								57649	cp as irregular masses.		
87																		.1	1-								
																									moly on fracture		
																							1-				

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	py rpl	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
89																				.5				57650			
91																		<.1						57651			
93																		<.1		.5				57652			
95																		<.1	tr	3				57653	Fault marked by few mm f. bkn core and gouge at 53°. py vlts ± hematite + mag.		
97																				3							
99																		.1	tr								
101																			tr			3					

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
101																										
103																										
105																										
107																										
109																										
111																										

3 tr 1 tr tr 5 5 1 tr 3 2 tr 4:1 <.1 .5 1- .1 tr tr

57654 57655 57656 57657

magnetite and hematite.
py vlts
Fault at ~40°.
py vlts
cp-py vlts to 1.5 mm wide at 30° +50°.

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
113																		.5					57658	py vlt hematite		
115																	2	2	1							
																		.5								
																		tr								
117																		6					57659	py vlts py-cp vlt.		
																	<.1	tr								
																		3								
119																										
																							57660			
																	<.1									
121																										
123																	<.1	1					57661	py vlts		

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
125					o														1	tr					py vlt	
127					o												<.1			tr			57662			
129					,												<.1			tr			57663		Late bx band along fault slip at 53°	
131					,																		57664		py vlt.	
133					/												<.1			tr tr tr			57665		Possible fault; moderately to finely broken PLH core	
135					/												.2			.5						
137					/															tr tr						

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INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
137																			1 tr 2 tr tr tr tr				57666	py vlts		
139																	.2		3 1 tr				57667	py vlts		
141																	<.1		4 tr tr							
143																			tr tr tr				57668		Siliceous breccia. pale grey; 99% silica	
145																	<.1		tr .5							
147																	<.1		.5				57669	py vlt		

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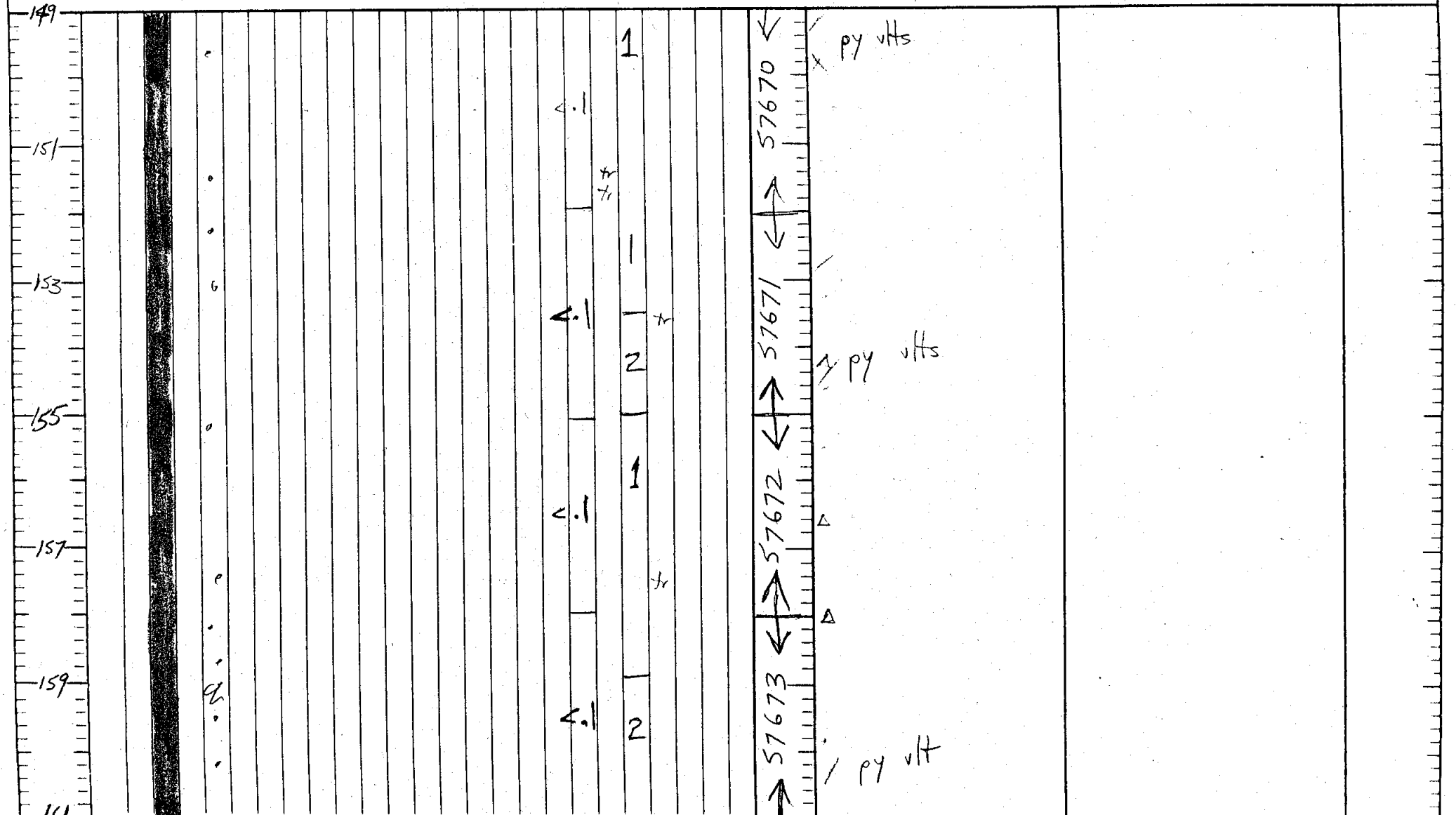
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
149																										
151																										
153																										
155																										
157																										
159																										
161																										



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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
161																				2				57674	py vlt		
163																		<.1		tr							
165																		<.1						57675	py vlt 10cm gwke interbed with pyritic laminae; pyrite probably deposited with silica grains as primary sediment. Bed at ~75° to c.a. → late bx with pyritic matrix.		
167																				2				57676			
169																		<.1									
171																				<1				57677			
																		<.1									

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	py/cpy	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
173																											
																								57678			
175																											
																									py v/t		
177																								57679	24° Fault slip at ≈24° coated by pyrite		
179																											
																								57680	py v/ts hematite		
181																											
																								57681			
183																											
185																											

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SURVEY REFERENCES ____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrox	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
185																											
187																								57682			
189																								57683			
191																								57684		Py vlts	
193																								57685			
195																										Py vlts at ~40°	
197																											

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophyllite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
197																				4							
																				1							
																		<.1									
199																				1							
																		—									
																				3							
201																		4.1									
																				8							
																		tr		<1		8					
203																		tr		5		<1					
																				2		5					
																		4.1	*	3	tr						
205																											
																		—		1-2	*						
207																		4.1		1							
209																											

57686 57687 57688 57689

py vlts

hematite pervasively replaces pyrite

py vlts

py vlts to subhedral

206.15 – 231.02
QUARTZ FELDSPAR PORPHYRY.
Light brownish grey, hard, intensely silicified, medium grained with faint feldspar phenos to 212.45. Below 212.45 Rock less indurated by silica, brown to brownish green to ~~creamy~~ to orange yellow with blocky off-white subhedral feldspar phenos ave. 1.5 – 2 mm across. Phenos locally faint where rock indurated by silica. Soft, crumbly intervals where rock finely broken near faults.
207.68 – 208.29 Fresh, late?? QFP dyke at ~65° with 8% chalky white subhedral feldspar phenos to 4 mm.

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
209																				1							
																		<.1		3				57690	Late bx band with pyritic, siliceous gwke matrix; subangular clasts to 3 cm across; band at ~45°		
211																				4							
																									flt	Unsure of dark green mineral staining QFP as pervasive alteration in patches from about 217.0 m → 230.7 m depth. Chlorite(?)	
213																		4.1						57691			
215																								57692	flts	Brown "stain" due to v. fine diss py. Some magnetite present.	
																		4.1		1							
217																				4							
																									flts		
219																								57693			
																		<.1		1-2							
																				4					py vlt		
221																											

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Suif Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
221																										
																	1							1 py vlt		
223																	4.1						57694			
																							57695	magnetite within QFP.		
225																	4.1				1-2			hem vlt 3 mm at 50°.	23.02 – 316.28 SILICEOUS (PYROPHYLLITE) BRECCIA As for 3.05 – 206.15.	
227																	4.1				1-2		57696			
229																	4.1						57697	Lower limit dk green chlorite (?) stain within QFP.		
231																	4.1									

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
233																			1							
																			2		4		57698	hematite replaces py		
235																	<.1		4							
																		tr	2		tr					
																			1							
237																							57699	½ py vlts at 10°		
																	<.1				tr			py vlt		
239																							57700			
																					tr					
																	<.1				tr					
241																					tr					
																					tr					
																							57701	py vlt		
243																			1							
																	<.1									
																			<1							
245																										

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SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrope	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
245																			<1	tr							
																				tr							
																		4.1							hematite		
247																											
																				tr							
																				tr							
249																											
																		.1		tr							
																				tr							
251																				tr							
																				tr							
																		4.1									
253																				tr							
																				tr							
255																											
																		4.1		tr							
257																											

77702 77703 77704 77705

hematite
py vlt
bn as wispy vlt

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrope	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
257																											
																								57706			
259																		<.1		1							
																								57707	hematite and magnetite replacing pyrite.		
261																		<.1									
																				2				57708	py vlts		
263																		<.1		2							
																								57709			
265																		<.1		1							
267																											
269																											

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COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrophyllite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
269																				1		tr		57710			
																		<.1		<1		tr					
271																						tr					
273																		<.1				tr		57711			
																						tr					
275																				1				57712	Fault at ~60° py vlts		
																				5		tr					
277																		.1		<1							
																						tr					
279																						tr		57713			
																		<.1				tr					
																						tr					

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DATE STARTED _____ COMPLETED _____
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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Trap	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
281																		<1									
																								57714	Late bx band 6 cm wide at 80°		
283																		<.1									
																				tr		1-			← moly on fracture sfcs.		
285																								57715			
																		.1									
																						1-					
287																								57716			
																									← hematite		
																		<.1									
289																											
																								57717			
291																		.1		tr							

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T.D. _____ COLLAR ELEVATION _____
INCLINATION _____ BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Prop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	py rock	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2C_4	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
293																											
295																											
297																											
299																											
301																											
303																											

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PROJECT _____ T.D. _____ COLLAR ELEVATION _____

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
305																											
307																		<.1	<1	2				57722			
309																		<.1	1-2	tr				57723	fault		
311																		<.1	1-2	3				57724		316.28–372-16 ANDESITE BRECCIA Light grey/pale green to pale greyish brown to light grey, medium grained, chlorite–magnetite clots up to 6 or 8 mm across (av. 2–3 mm). Weakly silicified throughout; locally moderately silicified. Often moderate clay mineral alteration Magnetite content av. ~1%.	
313																		<.1	1-2	4				57725			
315																		<.1	1-2	tr		4	tr				
317																											

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DRILL LOG

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyrope	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval	LOG: SCALE ____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
317																				4					py vlt	317.09 – 318.70 ANDESITE DYKE Dark brown, very fine grained with black magnetite? phenos about 0.75 mm long Upper contact discrete at 61° to c.a.; lower at ~60°. Lower contact fault marked by 1 cm pyritic gouge.	
																				3							
																		<.1	<1					57726	flt		
319																			2	<1							
																									py vlts		
321																		<.1	tr	1				57727			
																			tr						flts		
																				3							
323																			tr	1				57728			
																		.1	tr								
325																			tr								
																			tr					57729			
327																				?							
																		<.1	tr	tr					py vlt		
329																				5							

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LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Argon	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
329																			5	<1					py vlt		
																		<.1	1-2					57730	plt py vlts		
331																			tr								
																				2					py vlt		
333																			tr						py vlt		
																		<.1						57731	plt		
																			tr	tr	<1				py vlt		
335																					2				plt		
																									py vlt		
																			tr						plt		
																								57732	py vlt		
337																			.1	tr					plts		
																					<1						
																			tr?	tr					← py-bn-cp(?) vlt		
																								57733			
339																			<.1	tr	tr						
																					2						
341																											

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PROJECT _____ T.D. _____ COLLAR ELEVATION _____

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DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	pyroph	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
341																			1			2					
																		<.1	tr	tr				57734			
343																											
																						1					
345																			tr								
																		<.1	tr					57735			
347																											
																			tr					57736		fH	
349																		.1	tr								
																			tr							fH	
351																						2		57737			
																		<.1	tr								
353																						<1					

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DATE STARTED _____ COMPLETED _____ COORDINATES _____

LOGGED BY _____ SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu. Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE _____ BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
353																										
355																	<.1	tr	1		<1		57738	py vlt		
357																	.2	tr	<1	tr	<1		57739	py vlt flt py vlt cp specks within mag clots.		
359																		tr	1		1					
361																	.15	tr	<1		2		57740	flt		
363																	<.1	tr	1	? tr			57741	flts flt flt		
365																										

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Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Wollastonite	Pyrop	STR.: Sulf Veins	Frac Inten	VISUAL EST.: Est Cu Mo	$CuFeS_2$	FeS_2	Cu_2FeS_2	Fe_2O_3	MoS_2	Sample No & Interval	LOG: SCALE / BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
365																				1		2			flt 365.37 – 366.41 Fault zone at ~35°. py vlts	367.72 – 370.51 ANDESITE DYKE Dark brown to black, very fine grained to aphanitic, moderately fractured. Upper contact fault at ~35° lower fault at ~50°? More chlorite than dyke higher than hole.	
																		4.1		3		4		57742			
367																				2					flts		
																				<1		3		57743			
369																		4.1							flt		
																									py vlts		
371																			tr	1		2				310.51 – 372.16 ANDESITE BRECCIA	
																		.1	tr			1		5774			
373																									372.16 END OF HOLE		