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BHP MINERALS CANADA LTD.

ISLAND COPPER MINE

ASSESSMENT REPORT

DIAMOND DRILLING

BAY-94, APPLE-94, MIMAS-94, MARY-94, CAR-94 AND KOL-94 GROUP OF CLAIMS

NTS: 92L/11W, 12E

GEOLOGICAL BRANCH
ASSESSMENT REPORT

23,377

J.A. Fleming, P.Geo.

May 25, 1994

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1. INTRODUCTION

Between the 27th of August and the 3rd of October, 1993, eighteen NQ size diamond drill holes totalling 1764.8 meters (5790 feet) were drilled on the north and west sides of Bay (Frances) Lake north of Rupert Inlet (Figure 1). The program was designed to test for ≥0.20% Cu grade porphyry copper type mineralization in three target areas: 1) B Zone, 2) G Zone, 3) West Bay Zone. The holes were follow-up to holes drilled previously in each area. Low grade copper mineralization had been intersected in many drill holes in the area dating back to the first drilling in the area by Utah Mining and Construction Ltd. in 1966. Although previous programs had not yielded an economic deposit due to low average copper grades (0.20 - 0.30% Cu), there was potential that given favourable deposit geometry (stripping ratio) and metal prices, the deposit(s) might provide suitable mill feed for the Island Copper plant in the latter part of the mine life.

2. LOCATION AND ACCESS

The exploration area is located north of Rupert Inlet in the Nanaimo Mining Division on Mining Lease 253 and mineral claim Cove 17 (Figures 2 and 3). It falls on NTS map sheet 92L/11W and 92L/12E with co-ordinates 50° 36.8' and 127° 30'.

The claims and leases can be reached by following paved roads from the Island Highway - Coal Harbour Road junction near Port Hardy. The drill sites can be reached by logging roads on the north and south sides of Bay Lake.

3. PHYSIOGRAPHY

The area is in the Nahwitti lowlands of the Coastal Trough physiographic subdivision that divides the Insular Mountains of Vancouver Island from the Coast Mountains on the mainland. The area is characterized by rounded, gently-rolling hills with a maximum relief of about 150 meters.

4. EXPLORATION HISTORY

The Island Copper porphyry copper-molybdenum-gold deposit lying southeast of the area was discovered in 1967 and its exploitation by open-pit mining has taken place since 1971. Initial drilling by then Utah Construction and Mining geologists was in the A Zone on the south west side of Bay Lake. Sixty-four holes were drilled on this small but high grade showing while exploration work that

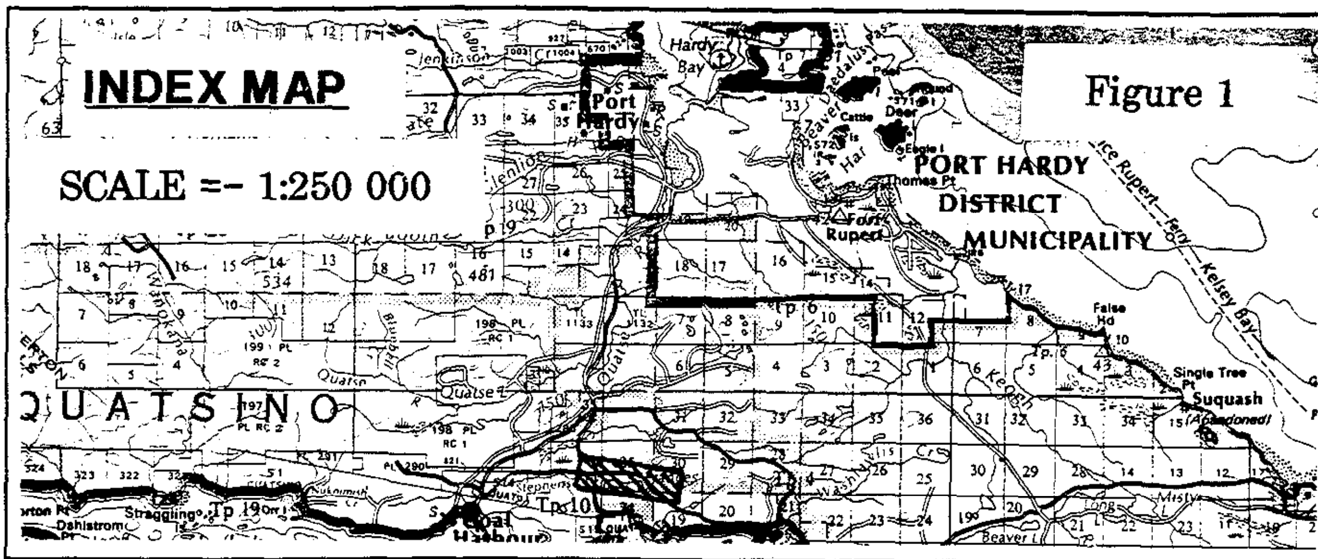


Figure 1

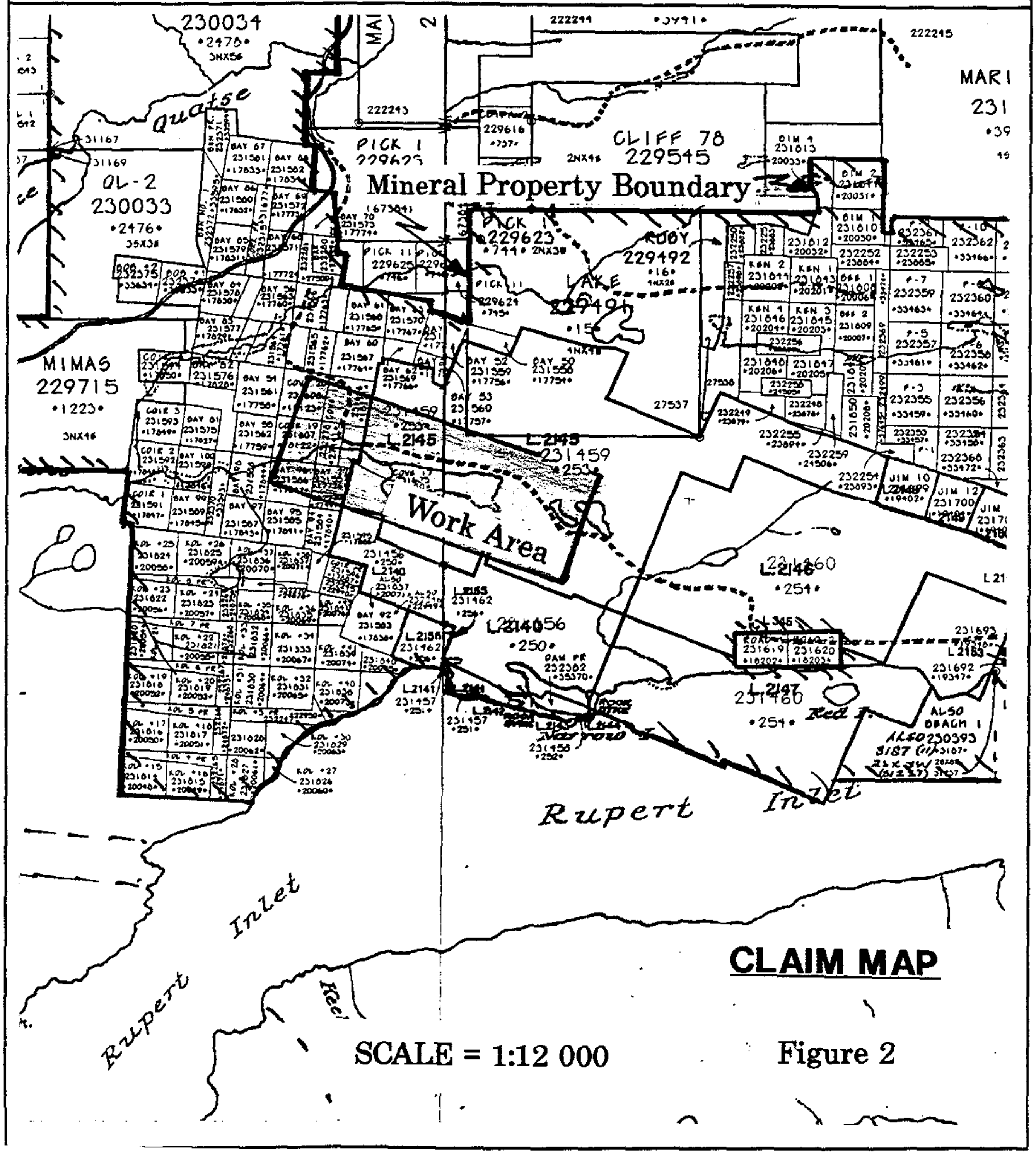
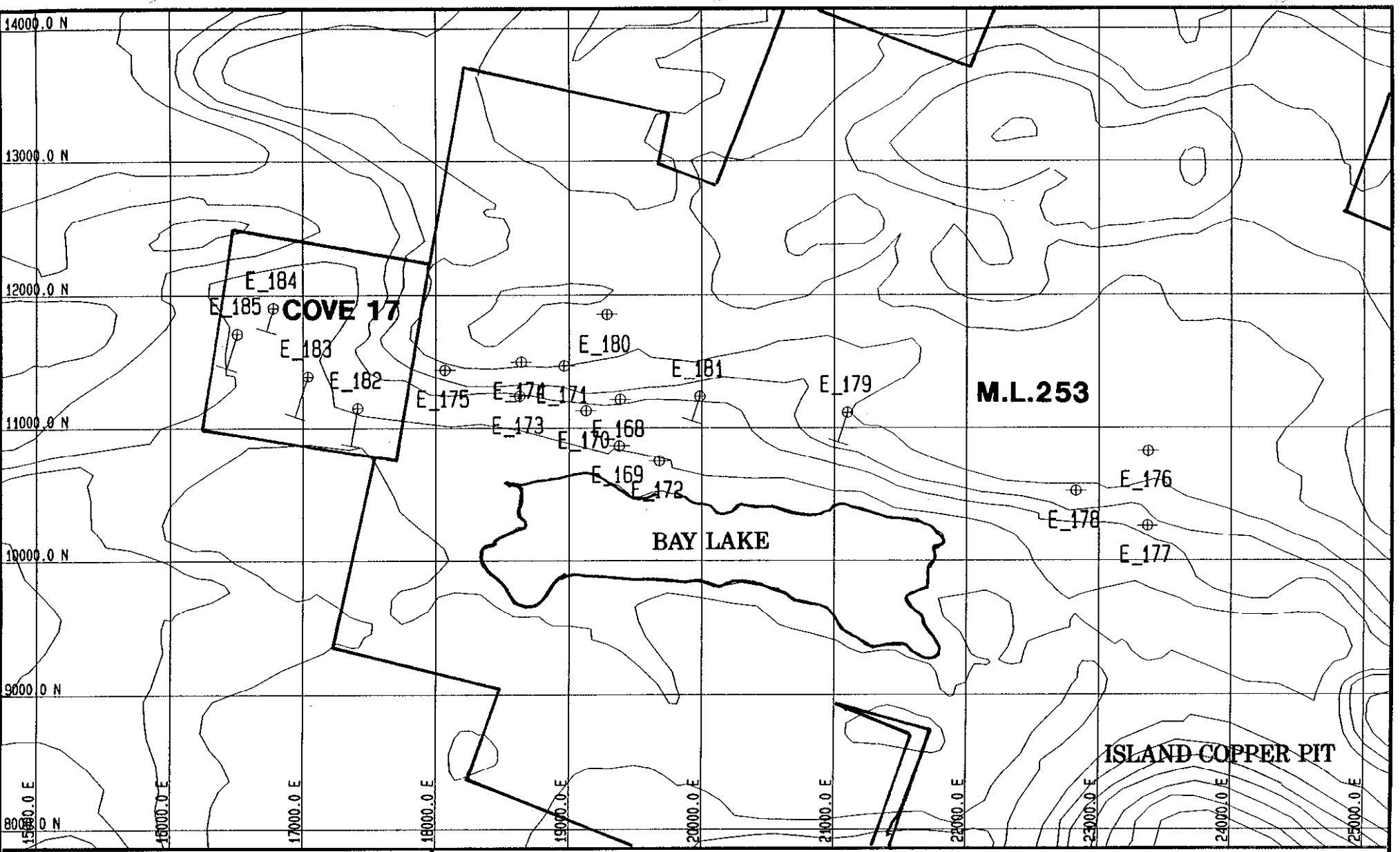


Figure 2



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DATE: 05/24/94 TIME: 12:35:15

SCALE (HOR) 1": 1000' SCALE (VERT) 1": 1000'

CLAIMS AND MINING LEASES
B, G, BG and WEST BAY ZONE DRILLING

FIGURE 3

(Only current drill program holes shown)

Software by GEMCOM Services Inc.

led to discovery of the Island Copper was being undertaken. The Island Copper deposit occurs mainly in hydrothermally altered, crackled and brecciated Lower Jurassic Bonanza Group basaltic tuffs where intruded by ≈180 million year old Island Plutonic Suite rhyodacite porphyry dikes. Porphyry Cu-Au-Mo mineralization in the B, G and West Bay Zones proved to have similar alteration - mineralization symmetries to the Island Copper deposit (Perelló et al, 1989). Geochemical and geophysical (magnetic and induced polarization) anomalies accompany all deposits.

5. GENERAL GEOLOGY

The area (Figure 4) is bounded to the northwest by the Quatse Stock, to the south by the postulated west-northwest striking Holberg (Dawson) Fault and to the southeast by the Island Copper deposit. From south to north the area is underlain by a southward dipping sequence of Lower Jurassic Bonanza Group andesitic and basaltic tuffs and flows, and the Upper Triassic Vancouver Group sequence of Parson Bay Formation clastic sediments, Quatsino Formation limestones and a thick package of Karmutsen Formation pillow basalts, breccias, tuffs and flows. These rocks are intruded by Early to Middle Jurassic Island Plutonic Suite granitoids of which the Bay Lake (B and G Zones) and Island Copper porphyry systems and the Rupert Stock granodiorite porphyry at the northeast end Rupert Inlet are members. The Regional geology has recently been mapped and described by Nixon et al. (1993). All holes in this program were drilled in Bonanza Group and Island Plutonic Suite rocks.

6. OBJECTIVES

Previous drilling programs had shown that significant quantities of near-surface chalcopyrite bearing rocks, albeit of low (0.20 - 0.30% Cu) grade, existed in the B, G and West Bay zones (Figures 5 and 6) but had not fully defined the limits and continuity of the deposits. It was deemed that under favourable economic conditions enhancements to the grade, size, continuity and geometry of the deposits might convert defined geological resources to ore reserves. To this end diamond drilling described herein was undertaken.

7. WORK PERFORMED

Between August 27 and October 3, 1993 eighteen NQ size holes totalling 1764.8 metres (5790 feet) were drilled in the B, G, B-G, and West Bay Lake anomaly areas (Figures 1 - 7). The drill

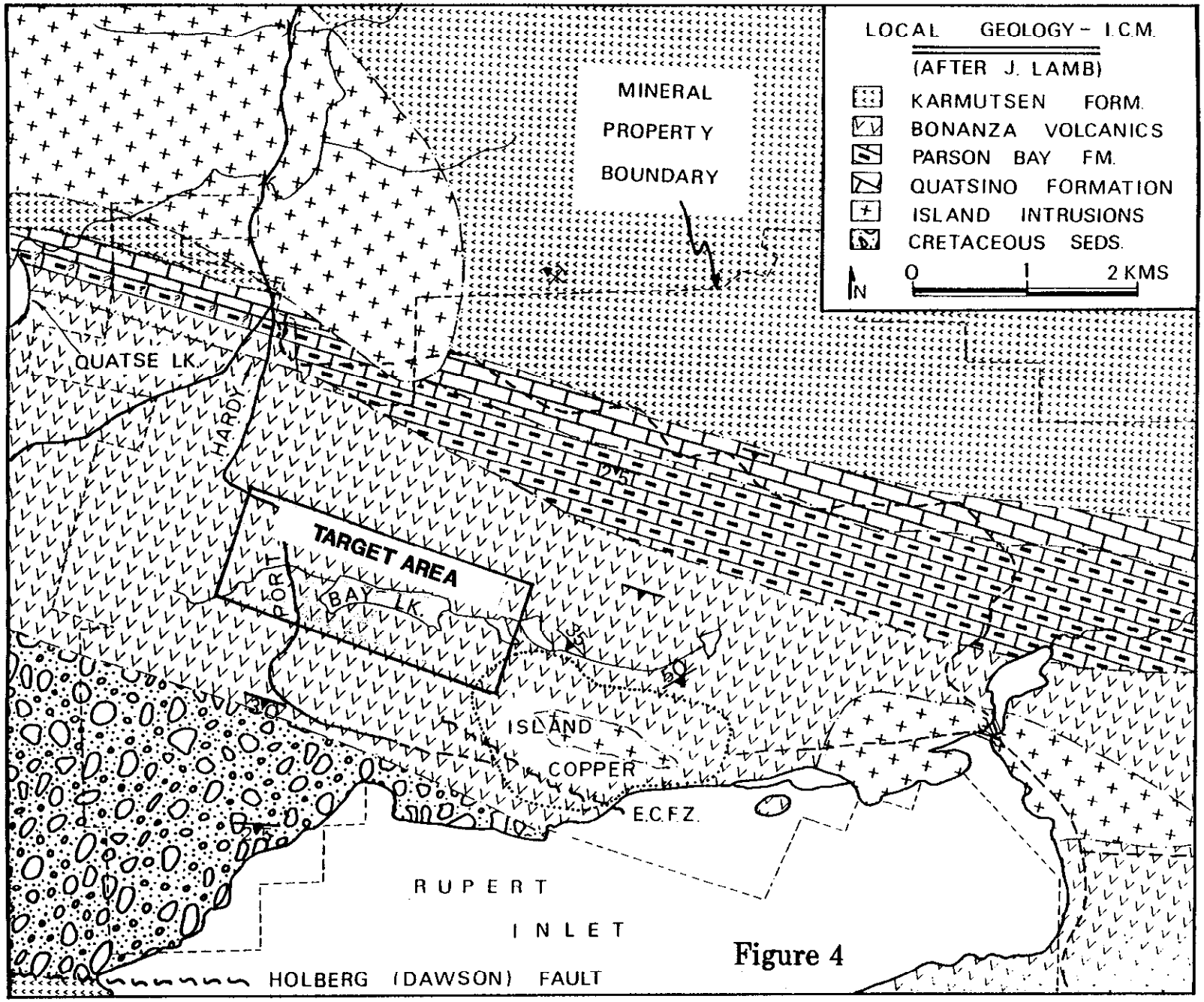
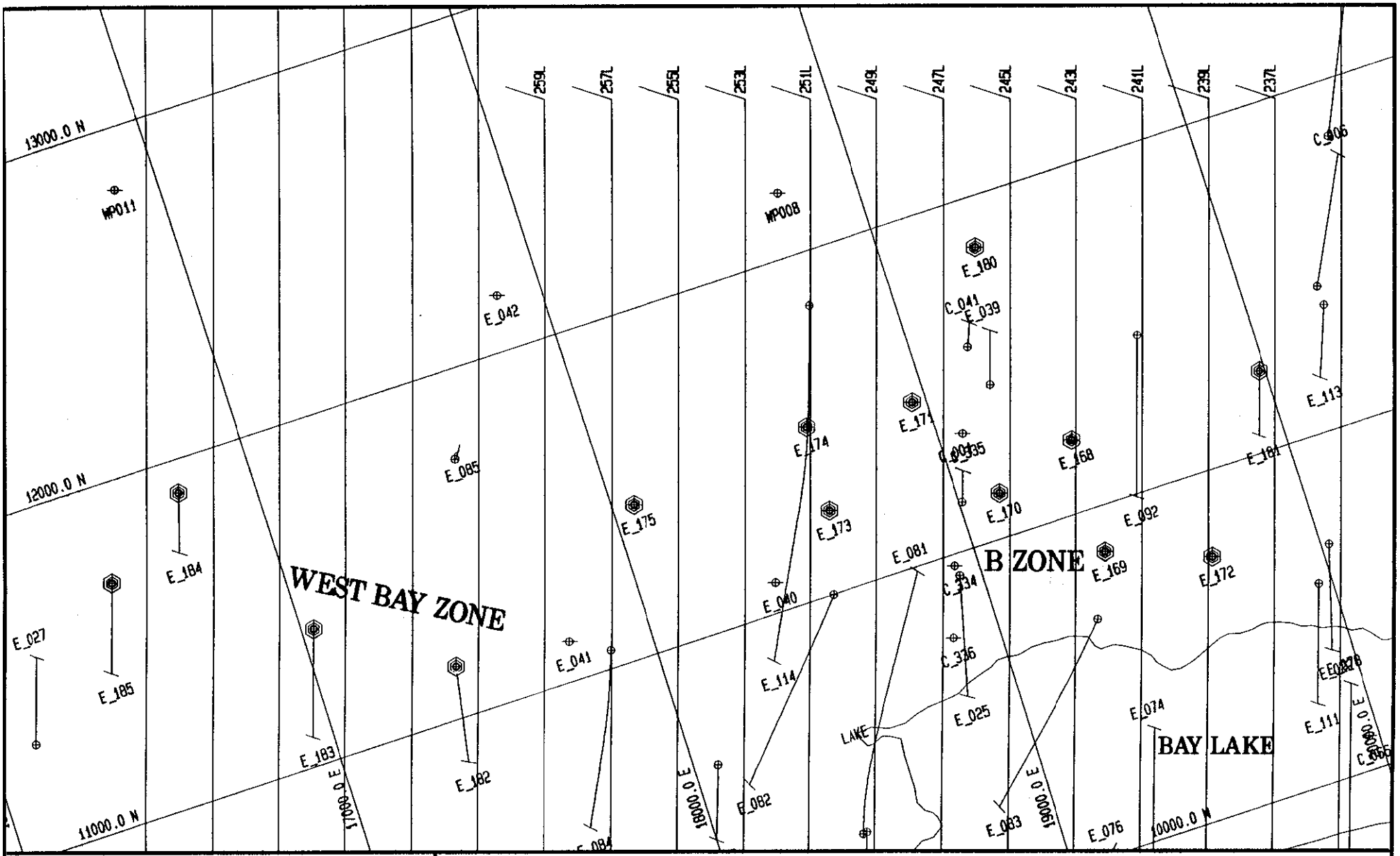

LOCAL GEOLOGY - I.C.M.
(AFTER J. LAMB)
KARMUTSEN FORM.
BONANZA VOLCANICS
PARSON BAY FM.
QUATSINO FORMATION
ISLAND INTRUSIONS
CRETACEOUS SEDS.
0
1
2 KMS
N
MINERAL
PROPERTY
BOUNDARY
QUATSE LK.
HARDY
PORT
TARGET AREA
BAY LK.
ISLAND
COPPER
E.C.F.Z.
RUPERT
INLET
HOLBERG (DAWSON) FAULT

Figure 4



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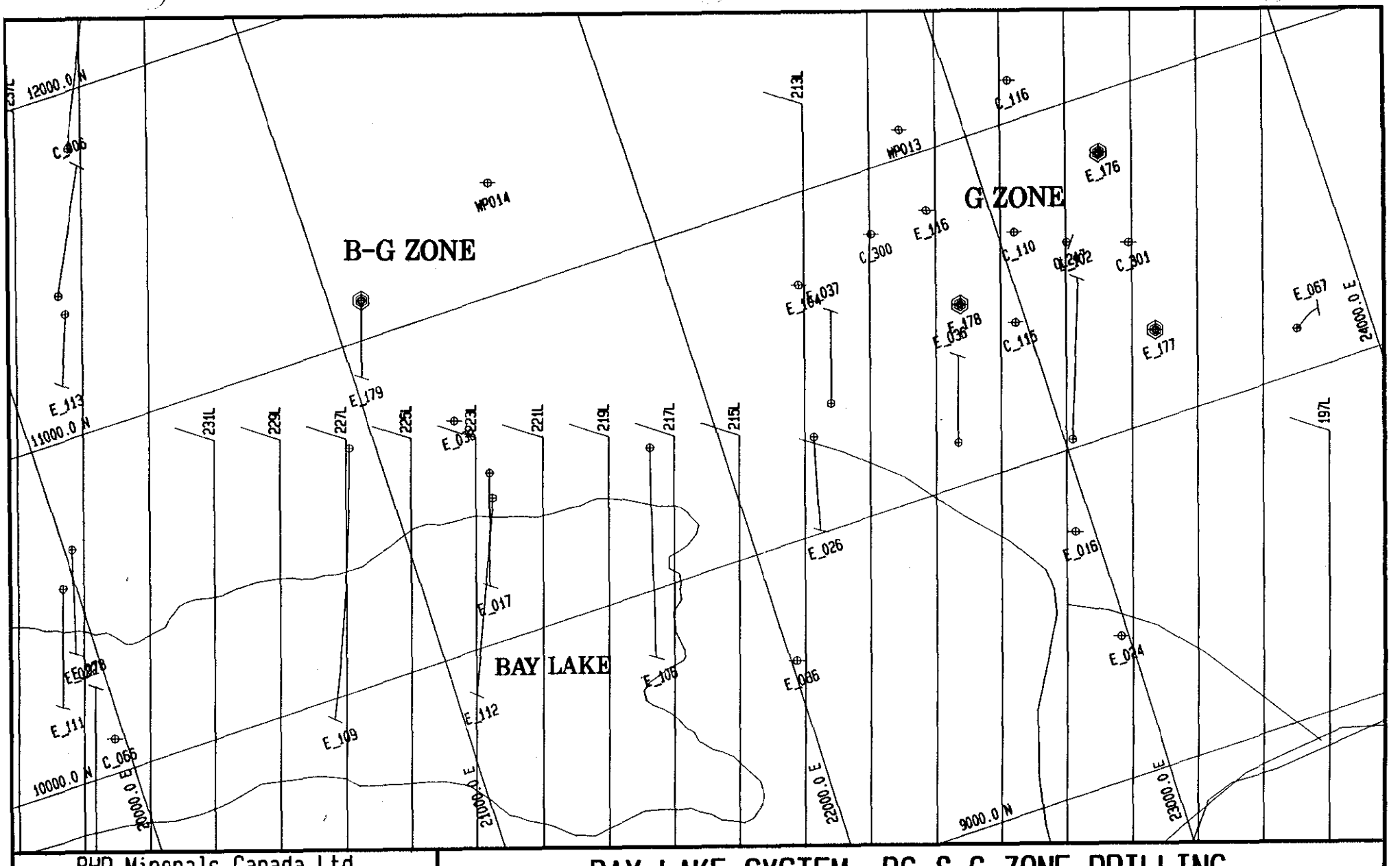
SCALE (HOR) 1": 400' SCALE (VERT) 1": 400'

BAY LAKE SYSTEM -B ZONE DRILLING
and WEST BAY ZONE

HEXAGONS = 1993 DRILL HOLES

Figure 5

Software by GEMCOM Services Inc.



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BAY LAKE SYSTEM -BG & G ZONE DRILLING

HEXAGONS = 1993 DRILL HOLES

Figure 6

Software by GENCOM Services Inc.

program was designed and supervised by the author, J. A. Fleming, P.Geo., Chief Geologist, and A.T. Reeves, P.Geo., Geologist of BHP Minerals Canada Ltd, Island Copper Mine. The program was designed to determine the potential for near surface ore reserves, and thus most of the drill holes are ≤ 100 m (400') in length. The core was logged by Andrew MacIntosh, B.Sc., a contract geologist, under the direction of the author, Barry Quiroz a BHP Minerals exploration geologist from Mexico, Allan Reeves and the author.

The core was measured for magnetic susceptibility using an EDA K-2 susceptibility meter, rock quality designator (RQD) and recovery by a technician under the supervision of the author. Core was split and sampled on 3.05 meter (10 foot) sample lengths every 12.2 meters (40 feet) where copper grades were estimated to be ≥0.20% Cu and on intervals of one 30.5 metre sample per 12.19 metre (40 feet) interval where estimated copper grades were ⟨0.20% Cu. Samples were assayed for copper, molybdenum, iron, gold, silver, lead and zinc at the Island Copper assay laboratory.

A summary of laboratory methods is included in Appendix I. All results and graphic drill logs at scales of 1:120 and 1:2 400 are included in Appendix II. Drill hole collar data are summarized in Table 1.

Three sets of 1:2 400 scale, 018° striking vertical cross sections with 200 foot (60.1 m) spacing and 100 foot (30.5 m) projections front and back are provided. Sections 203 to 213 inclusive cover the G Zone, Sections 235 to 257 (sections without any drill holes not included) the B Zone and Sections 259 to 271 the West Bay Zone. Sections show both 40 foot (12.2 m) "bench" copper grade composites and down-hole composites by cutoff grade. Cutoff criteria allow a maximum of twenty feet (6.1 m) of material grading <0.20% Cu to dilute the composites and a minimum of 20 feet of ≥0.20% Cu to comprise a composite grade. Also included on sections are projected outlines of quartz-feldspar porphyry intrusives, alteration zones based on the Island Copper alteration model, and chalcopyrite-bearing zones grading ≥ 0.20% Cu.

A 1:2 400 scale plan drill hole location map (Figure 7) showing data interpretation has been provided. It shows drill hole traces projected vertically to surface and the section lines. Graphical interpretations shown are alteration zones and ≥ 0.20% Cu zones projected to the 1160 elevation (1000 feet = sea level). The 1160 elevation was selected as it is about the highest elevation that underlies the till cover across the map sheet. Also projected to this plane are major faults. Some computer generated topographic contours are provided. All co-ordinates on plan and sections are mine grid co-ordinates and elevations in feet.

TABLE 1

Diamond Drilling -- August 27 - October 3, 1993

HOLE	ZONE	CO-ORDS[1]	ELEV[2]	AZIM/DIP	LENGTH[3]	CLAIM	START	FINISH	SECT
E-168	B	E 19382.3 N 11215.6	1240.2	000/-90	91.4 (300.0)	ML 253	08/27	08/28	243
E-169	B	E 19375.7 N 10866.8	1203.9	000/-90	91.4 (300.0)	ML 253	08/28	08/30	243
E-170	B	E 19124.1 N 11131.3	1227.0	000/-90	61.3 (201.0)	ML 253	08/30	08/31	245
E-171	B	E 18959.1 N 11472.0	1283.2	000/-90	82.6 (271.0)	ML 253	08/31	09/02	247
E-172	B	E 19766.1 N 10751.9	1195.9	000/-90	64.3 (211.0)	ML 253	09/13	09/14	239
E-173	B	E 18621.9 N 11240.6	1240.2	000/-90	56.7 (186.0)	ML 253	09/14	09/15	251
E-174	B	E 18633.8 N 11500.1	1311.7	000/-90	86.0 (282.0)	ML 253	09/15	09/16	251
E-175	B	E 18065.6 N 11441.0	1274.4	000/-90	110.3 (362.0)	ML 253	09/16	09/18	257
E-176	G	E 23369.6 N 10826.1	1317.7	000/-90	111.6 (366.0)	ML 253	09/18	09/19	205
E-177	G	E 23366.2 N 10262.5	1245.5	000/-90	128.6 (422.0)	ML 253	09/19	09/21	203
E-178	G	E 22822.1 N 10523.9	1287.8	000/-90	95.1 (312.0)	ML 253	09/21	09/22	209
E-179	B-G	E 21097.2 N 11116.1	1284.4	198/-60	128.3 (421.0)	ML 253	09/22	09/25	227
E-180	B	E 19280.8 N 11852.4	1328.2	000/-90	81.4 (267.0)	ML 253	09/25	09/26	247
E-181	B	E 19982.5 N 11236.7	1237.9	198/-50	91.4 (300.0)	ML 253	09/26	09/27	237
E-182	WB	E 17411.4 N 11151.6	1194.3	190/-50	122.8 (403.0)	COVE 17	09/28	09/29	261
E-183	WB	E 17036.6 N 11391.1	1192.5	198/-45	144.5 (474.0)	COVE 17	09/29	10/01	265
E-184	WB	E 16773.6 N 11901.3	1189.8	197/-53	90.2 (296.0)	COVE 17	10/01	10/02	271
E-185	WB	E 16500.2 N 11709.3	1197.6	198/-50	126.8 (416.0)	COVE 17	10/02	10/03	273

Total: 18 holes and 1764.8 metres (5790.0) feet

1. BHP mine grid system in feet
2. Elevation in feet with Sea Level = 1000 feet
3. Metres / Feet

8. DRILLING RESULTS

Results are summarized below on a hole-by-hole basis. A brief assessment of each hole is also provided. References to qtz-mag-amph (QMA), bio-mag and chlorite alteration zones in the

summaries are keyed to the Island Copper alteration - mineralization model described by Perelló et al., (1989). Abbreviations used are the standard used by the Geological Survey Branch of British Columbia. Section numbers refer to the closest 200 foot section on which holes occur.

Drill Hole: E-168

Section: 243
Total Depth: 91.4 m (300')
Azimuth / Dip: -90°
Target:
B Zone - Up dip (to south) extension of the lower 0.23% Cu intercept in hole E-92 on Section 241 and 0.22% Cu intercept in hole E-39 on Section 245.
Results:
Overburden: 7.6 m (25').
Qtz-mag-alb-chl ± epi and weak to moderate ser-clay-chl (SCC) altered ash / crystal tuff to about 25.9 m (85'). Quartz occurs mainly as veins. Qtz-mag-alb-amph ± bio are main alterations from 25.9 m to EOH with the qtz-mag-amph alterations increasing with depth. Chalcopyrite occurs as disseminations with grades ≥ 0.20% to about 50 m (160'). Pyrite content is low (1 - 3%).
Significant Intercepts:
12.2 - 42.7 m (40 - 140'): 30.5 m (100') @ 0.22% Cu
Interpretation:
The chlorite zone occurs to about 30 m (85'), a weakly developed bio-mag zone to about 52 m (170') and the qtz-mag-amph (QMA) zone through to the EOH. The chalcopyrite occurs mainly in the chlorite zone and upper part of the biotite zone. The mineralized zone was shown to extend near-surface with continuity between Sections 241 and 245.

Drill Hole: E-169

Section: 243
Total Depth: 91.4 m (300')
Azimuth / Dip: -90°
Target:
B Zone - Test zone extension between holes E-168 and E-83 on Section 243
Results:
Overburden: 6.1 m (20').
Moderate to strongly qtz-mag-chl-alb-amph and weak to moderately SCC altered fine grained volcanic. Quartz occurs mainly as veins ± carb ± pyr ± cpy. Minor biotite at top of hole to about 12 m (40'). Chalcopyrite mainly disseminated. Pyrite content averages 1%, locally to 3%.
Significant Intersections:

6.1 - 12.2 m (20 - 40'): 6.1 m (20') @ 0.22% Cu
21.3 - 71.9 m (70 - 236'): 50.6 m (166') @ 0.26% Cu
79.2 - 88.4 m (260 - 290'): 9.1 m (30') @ 0.22% Cu

Interpretation:
The biotite zone occurs at the top of the hole and the QMA zone below to the EOH. Most of the good grade copper mineralization occurs in the QMA zone in contrast to the typical alteration-mineralization pattern of the Island Copper deposit. The zone shows good north-south continuity and thickness.

Drill Hole: E-170

Section: 245
Total Depth: 61.3 m (201')
Azimuth / Dip: -90°
Target - B Zone: Test zone west of holes E-168 and E-169
Results:
Overburden: 3.0 m (10').
Strongly qtz-mag, moderately alb-amph-chl and weakly SCC altered fine-grained volcanic. Quartz occurs as a vein stockwork ± pyr ± carb with quartz averaging 20% - 30% and locally to 50% over 3 m intervals. Moderately magnetite and SCC altered dacite porphyry (QFP) occurs from 39.6 - 46.9 m (130 - 154'). Minor chalcopyrite throughout with grades generally ≤ 0.15% Cu. Pyrite generally 3 - 5% with ≤ 1% from about 15 - 46 m (50 - 150').
Significant Intersections: nil
Interpretation:
The hole is within the core QMA alteration zone cut by a less altered and mineralized QFP dyke (intermineral porphyry). The main porphyry dyke probably underlies the bottom of the hole. The mineralized biotite zone lies to the north and is found in hole E-39.

Drill Hole: E-171

Section: 247
Total Depth: 82.6 m (271')
Azimuth / Dip: -90°
Target: B Zone - Test zone west of fence of holes on Section 247
Results:
Overburden: 7.0 m (23').
Qtz-mag-alb ± bio ± amph altered fine grained volcanic. Biotite moderate in upper part of hole and patchy in lower part. Quartz occurs as veins (avg. 10%) ± mag ± carb ± pyr. Quartz veins increase with depth, but not magnetite. Gilsonite occurs in some carbonate veins. Chalcopyrite mainly disseminated with grades ≥ 0.20% Cu to about 49 m (160'). Molybdenite mineralization strong at top of hole with grades to 0.038% Mo / 3 m
Significant Intersections:
15.2 - 48.8 m (50 - 160'): 33.5 m (110') @ 0.22% Cu

Interpretation:
Mainly in bio-mag alteration zone with possible transition to QMA zone near bottom. The lack of magnetite and amphibole at the bottom compared to hole E-170 to the east suggests that it only intersected the outer part of the zone. The hole improved the zone thickness on the section.

Drill Hole: E-172

Section: 239
Total Depth: 64.3 m (211')
Azimuth / Dip: -90°
Target: B Zone - Test zone east of hole E-169.
Results:
Overburden: 8.2 m (27').
Strongly qtz-mag-chl, and moderately bio-alb ± epi altered andesitic (crystal?, lithic?) tuff. Quartz occurs mainly as a stockwork of several different vein sets (qtz ± mag ± chl ± pyr ± cpy) cutting earlier mag ± pyr veins. Strong chlorite alteration possibly after amphibole. Chalcopyrite mainly as fine-grained disseminations associated with bio-mag alterations is spotty, but locally high grade. Molybdenite is absent.
Significant Intersections:
9.1 - 15.2 m (30' - 50'): 6.1 m (20)' @ 0.78% Cu
24.4 - 30.5 m (80' - 100'): 6.1 m (20') @ 0.28% Cu
39.6 - 45.7 m (130' - 150'): 6.1 m (20') @ 0.25% Cu
57.9 - 64.3 m (190' - 211'): 6.4 m (21') @ 0.21% Cu
Interpretation:
Drilled entirely in the bio-mag / QMA transition zone. The spotty mineralization limits the zone to west of this section. The main porphyry is interpreted to closely underlie the bottom of the drill hole. The hole was stopped due to low estimated copper grades which were actually ≥ 0.20% Cu. The casing was left in the hole, but the overall results of the program precluded deepening the hole.

Drill Hole: E-173

Section: 251
Total Depth: 56.7 m (186')
Azimuth / Dip: -90°
Target: B Zone - Test zone extension west of Section 247.
Results:
Overburden: 6.1 m (20').
Intense qtz-mag ± pyr stockworked andesitic tuff cut by quartz-feldspar porphyry dykes containing bio-mag altered and mineralized volcanic xenoliths and qtz-mag vein fragments. Brecciation is intense between the dyke limbs. Main alterations are qtz-mag-chl-bio-alb ± amph to about 30 m (100') and qtz-mag-chl-alb-amph to EOH. Chlorite replaces the amphibole in the upper

part. Qtz-mag ± pyr veins are abundant and cut the porphyry, breccia and volcanics. There is only minor chalcopyrite and no visible molybdenite. Pyrite content averages 3-4%.
Significant Intersections: nil
Interpretation:
The hole was located too close to the core of the system to hit the mineralized zone, although the first 30 m (100') are in the bio-mag alteration zone and the remainder in the QMA core. The narrow QFP dykes are classified as "intermineral".

Drill Hole: E-174

Section: 251
Total Depth: 86.0 m (282')
Azimuth / Dip: -90°
Target: B Zone - Test zone north of hole E-173 for zone extension west from hole E-171 (Section 247)
Results:
Overburden: 22.6 m (74').
Bio-mag-chl-amph-qtz ± alb and weak SCC altered andesitic tuff cut by one narrow (< 1 m) QFP dyke. Bio-mag occurs finely disseminated, amph occurs mainly as veinlets with mag ± qtz ± cpy. The veins appear to post-date the bio-mag alterations. Chalcopyrite occurs as disseminations and in all vein sets. Pyrite content increased from 2 - 3% at top to 5 - 8% at bottom of hole. The biotite alteration and copper mineralization decrease in lower part of hole.
Significant Intersections:
24.4 - 67.1 m (80' - 220'): 42.7 m (140') @ 0.22% Cu
Interpretation:
This is a transition zone between the bio-mag and QMA zones as is reflected in the generally low copper grades. The bio-mag-cpy disseminations and the mag ± cpy veins appear to be the earliest alteration - mineralization with later sets of cross-cutting mag ± qtz ± amph ± cpy ± pyr veins.

Drill Hole: E-175

Section: 257
Total Depth: 110.3 m (362')
Azimuth / Dip: -90°
Target: B Zone - Test west limit of zone.
Results:
Overburden: 31.1 m (102').
Qtz-mag-amph stockworked andesite breccia cut by multiple faults (West Bay Splay near top) and multi-staged(?) QFP dykes from about 65 m (210'), generally separated by fault/shears. Main alterations in the breccia are qtz-mag-alb-amph-chl and weak SCC. The QFP dykes are weakly chl-mag and SCC altered. A dyke at 99.4

- EOH has qtz-moly ± cpy veins while the other dykes are not mineralized. Pyrite content is generally high (3 - 7%) except in the weakly altered porphyry dykes (2-3% pyr).

Interpretation:
Hole drilled thorough the WBS? fault and into the QMA core alteration zone missing the bio-mag zone. The zone potential is thus to the north but is constrained to the west by hole E-42 (Section 261).

Drill Hole: E-176

Section: 205
Total Depth: 111.6 m (366')
Azimuth / Dip: -90°
Target: G Zone - Test up dip (to north) extension of zone from hole E-102 (Section 205).
Overburden: 6.1 m (20').
Qtz-mag-chl-amph ± bio ± alb and weak to moderate SCC altered andesite fine-grained massive and bedded crystal(?) tuff. A breccia zone from about 76 - 95 m (250 - 310') containing lithic and qtz fragments separates the bedded volcanic from the underlying massive tuff. Moderate biotite alteration occurs to about 23 m (75') and weak alteration below. Qtz ± mag ± amph ± pyr veins are common increasing to a stockwork of veins with depth. Intense qtz-mag-pyr veins occur from about 90 m (300'). Pyrite content is moderate (2-5%). Chalcopyrite occurs as disseminations in the bio-mag altered volcanic and in vein sets in the stockworked volcanic. Trace amounts of molybdenite noted.
Significant Intersections: nil
Interpretation:
The hole intersected the lower part of the bio-mag zone at the top of the hole to about 76 m and the transition qtz-mag-amph ± bio through to about 90 m and the QMA zone to EOH. Chalcopyrite is scarce with copper grading generally ≤ 0.20%. This closes the G Zone to the northeast.

Drill Hole: E-177

Section: 203
Total Depth: 128.6 m (422')
Azimuth / Dip: -90°
Target: G Zone - Test zone extension east of hole CL-217 and E-102 (Section 205).
Results:
Overburden: 6.1 m (20').
Bio-mag-qtz-alb-chl ± ser (SCC) altered crystal - lapilli tuff to 70.1 m (230'). Gilsonite noted in this section. Main vein sets are mag(with alb envelopes)-pyr ± cpy, pyr-chl-carb-zeo ± epi ±

qtz. A chl-mag-bio-qtz altered hornblende porphyry occurs from 70.1 m to EOH. Main vein sets are grey qtz ± pyr and white qtz-pyr-zeo ± chl. Chalcopyrite occurs in both the tuff and the hornblende porphyry.

Significant Intersections:

45.7 - 79.2 m (150 - 260'): 33.5 m (110') @ 0.22% Cu
91.4 - 103.6 m (300' - 340'): 12.2 m (40') @ 0.27% Cu

Interpretation:

This is part of the bio-mag alteration zone. The hornblende porphyry clearly predates the alterations and mineralization. This probably reflects the best grade mineralization for the G Zone.

Drill Hole: E-178

Section: 209
Total Depth: 95.1 m (312')
Azimuth / Dip: -90°
Target: G Zone -Test zone extension west of hole C-115 and E-110 (Section 207).

Results:

Overburden: 6.7 m (20').
Bio-mag-chl-qtz ± alb and weakly to moderately SCC altered fine grained ash tuff to about 52 m (170'), chl-mag-qtz-alb-amph ± bio altered to about 76 m (250') and intensely qtz-mag-amph ± chl altered to EOH. Vein sets include magnetite, qtz ± mag ± pyr ± zeo ± calc ± gils. Qtz-moly veins noted at a depth of about 76 m (250').

Significant Intersections:

24.4 - 45.7 m (80 - 150'): 21.3 (70') @ 0.24% Cu

Interpretation:

Intersected the bio-mag alteration zone to about 52 m (150'), the transition mag-amph ± bio zone to about 76 m (250') and the QMA zone to EOH. The chalcopyrite mineralization grading ≥0.20% Cu occurs in the bio-mag zone. The zone shows continuity to the west but the thickness and grade of the zone are low.

Drill Hole: E-179

Section: 227
Total Depth: 128.3 m (421')
Azimuth / Dip: -60°/198°
Target: B-G Zone - Test zone continuity between the B and G Zones

Results:

Overburden: 51.8 m (170').
Pyritic, SCC altered andesitic tuff cut by strong fault at 55.5 m (182') with chl-mag-alb-qtz ± bio altered ash tuff below to EOH. Magnetite veinlets with alb ± chl envelopes are common in the lower unit. Some ≥0.20% Cu grade copper mineralization occurs in bio-mag altered volcanic at about 113 m (370').

Significant Intersections: nil
Interpretation:
The hole started in the inner chlorite zone and penetrated the outer part of the bio-mag zone. The generally weak biotite alteration and copper mineralization indicate that although there is continuity between the B and G Zone systems, the mineral potential is low.

Drill Hole: E-180

Section: 247
Total Depth: 81.4 m (267')
Azimuth / Dip:-90°
Target: B Zone - Test north limit of zone.
Results:
Overburden: 12.2 m (40').
Highly pyritic (5 - 10% +) alb-chl ± bio ± mag and SCC altered fine grained, massive to bedded andesitic tuff. Epidote alteration occurs from about 61 m (200'). Gilsonite is present. Chalcopyrite is scarce.
Significant Intersections: nil
Interpretation:
This hole limits the northward extent of the zone. The biotite at the top and the epidote at the bottom do not fit with the zone symmetry developed in the other holes and may indicate the effects of another porphyry alteration system overlapping the Bay Lake system.

Drill Hole: E-181

Section: 237
Total Depth: 91.4 m (300')
Azimuth / Dip: -50°/ 198°
Target: B Zone - Test northwest extent of zone.
Results:
Overburden: 6.1 m (20').
Mag-alb-bio-chl-epi and SCC altered fine grained tuff. Minor amphibole occurs near bottom of hole. Biotite is patchy; magnetite occurs as disseminations and veinlets ± pyr ± cpy. Vein sets include qtz-mag cut by pyr-epi-calc and qtz-calc-zeo veins. Chalcopyrite occurs as disseminations and locally in veins with magnetite. Pyrite also occurs as disseminations and veinlets (3 - 5%).
Significant Intersections:
30.5 - 51.8 m (100 - 170'): 21.3 m (70') @ 0.17% Cu
Interpretation:
This is probably in the hanging-wall bio-mag zone. The spotty copper mineralization coupled with moderate biotite alteration indicates that there is little mineral potential to the east and the west towards hole E-92.

Drill Hole: E-182

Section: 261
Total Depth: 122.8 m (403')
Azimuth / Dip: -50°/ 190°
Target: West Bay Zone - Test northwest extent of zone
Results:
Overburden: 21.3 m (70')
Chl-mag-alb-qtz ± bio and SCC altered andesitic ash tuff cut by abundant qtz-pyr-cpy ± moly veins. Biotite alteration is patchy and weak. Chlorite patches with disseminated mag ± cpy ± pyr are common. Chalcopyrite occurs mainly in qtz ± pyr ± moly veins, not as disseminations. The rock is highly pyritic (7 - 10%) from about 70 m (230') to EOH associated with chl-ser alterations. A 2.4 m thick fault occurs at about 86 m (280').
Significant Intersections:
21.3 - 79.2 m (70 - 260'): 57.9 m (190') @ 0.35% Cu.
Interpretation:
The hole passed through the well mineralized bio-mag alteration zone at the top of the hole and ended in a pyritic chlorite zone. This implies that the porphyry lies to the north the hole. This is a very well developed extension of the zone first discovered in hole E-74 drilled under Bay Lake from the south shore in 1987.

Drill Hole: E-183

Section: 265
Total Depth: 144.5 m (474')
Azimuth / Dip: -50°/ 198°
Target: West Bay Zone - Test for zone extension west of hole E-182
Results:
Overburden: 12.2 m (40')
Bio-mag-alb-epi-hem ± amph and SCC altered ash - crystal tuff to 48.8 m (160'), SCC and mag ± hem ± bio altered coarse grained to lapilli tuff to 64.6 m (212'), pyritic, SCC altered feldspar porphyry basalt (crystal tuff?) to 78.6 (258') and pinkish - reddish alb-hem?-chl and SCC altered lithic(?) tuff to EOH. A 2 m thick fault occurs at 62.5 m (212') separating two of the volcanic units. Chalcopyrite occurs in amounts grading ≥0.20% Cu to about 100 m (330') and occurs as veinlets (to 1 mm thick) and disseminations. White qtz veins ± cpy cut grey quartz veins. Some late-stage chalcopyrite occurs in calc-pyr veins. Strong albite alteration in lowest unit with unusual concentrically banded chl-ser clots cut by pyr-cpy veinlets and strong albite envelopes.
Significant Intersections:
12.8 - 54.9 m (42 - 180'): 138' @ 0.30% Cu
Interpretation:
Intersected bedrock within the bio-mag alteration zone and ended in the chl-mag alteration zone indicating that porphyry the

hanging-wall 0.20% Cu contact lie to the north so that the ≥0.20% Cu mineral zone probably exceeds the 88 m intersected.

Drill Hole: E-184

Section: 271
Total Depth: 90.2 m (296')
Azimuth / Dip: -53°/ 197°
Target: West Bay Zone - Test for zone extension west of hole E-183
Results:
Overburden: 15.2 m (50')
Qtz-mag-chl-alb ± bio ± amph ± epi altered ash-lapilli tuff. Smoky-grey quartz veins ± pyr common throughout. Biotite alteration is patchy and weak. Amphibole generally altered to chlorite. Chalcopyrite where prominent occurs with pyr ± sphal in quartz veins and breccias.
Significant Intersections:
54.9 - 67.1 m (180 - 220'): 12.2 m (40') @ 0.29% Cu
Interpretation:
The weak biotite and chalcopyrite alteration / mineralization and the sphalerite veins indicate that this is in a weak or outer part of the porphyry system. Hole was stopped due to the weak copper mineralization in the lower 15 m of the hole. The hole appears to have been drilled in the bio-mag and QMA transition zone.

Drill Hole: E-185

Section:
Total Depth: 126.8 m (416')
Azimuth / Dip: -50°/ 198°
Target: West Bay Zone - Test for zone up dip to south from hole E-184
Results:
Overburden: 6.1 m (20')
Alb-mag-qtz-chl-amph ± bio ± epi ± ser altered ash - lapilli tuff. Amphibole occurs as veinlets and pervasive(?) and is generally altered to chlorite. Very strong albite alteration with mag-amph-chl spots is common. Chalcopyrite is scarce. Pyrite content is low (1 - 3%).
Significant Intersections: nil
Interpretation:
This could be part of the bio-mag and QMA transition zone as also interpreted for hole E-184. The stronger amphibole alteration is consistent with the weaker copper mineralization than that found in E-184. There may be a footwall mineralized zone to the south, but at depth. Hole was stopped due to lack of copper mineralization.

9. INTERPRETATION OF RESULTS:

Drilling focused on three main zones, the B, G and West Bay Zones (Figure 3). One hole was drilled between the B and G zones. The interpretation of the results is presented here on a zone-by-zone, section-by-section basis starting at the east end of the map sheet.

G Zone

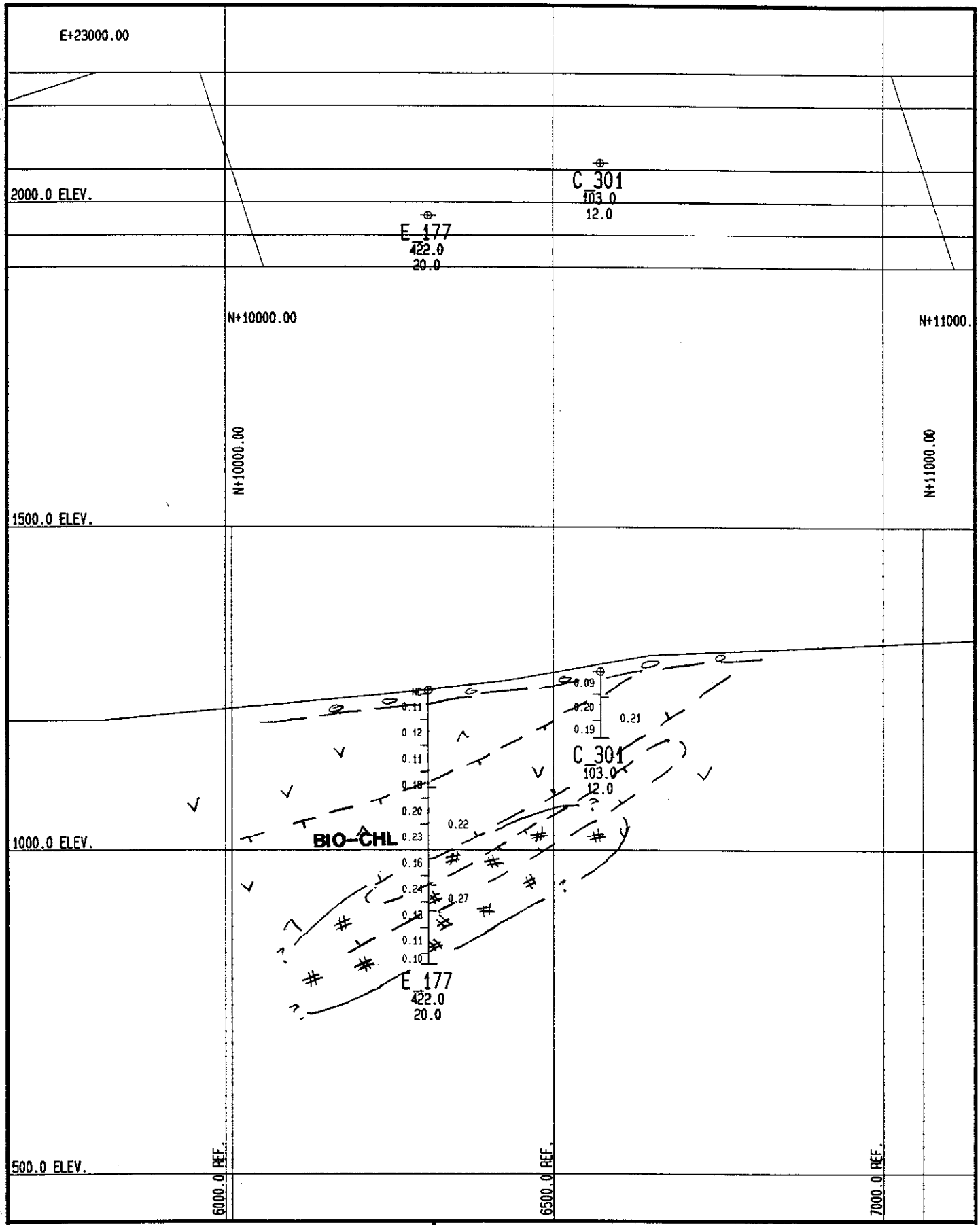
The G Zone was discovered in the 1960's as part of property exploration that led to discovery of the Island Copper deposit. This drilling and later drilling programs including the current one have shown that the zone is small with dimensions of about 1300 by 500 feet (400 by 150 m). Good features are that it is flat-lying to gently southward dipping and it is near surface. The prospect of expanding the zone and possibly improving its average grade, a potential low stripping ratio and proximity to the pit have kept it an active exploration interest.

Hole E-177 (Section 203) provides a down-dip measure of the ≥ 0.20% Cu zone and show it to dip about 30° to the south. Hole C-301 bottomed in ≥ 0.20% Cu grade material and hole E-177 show that it consists of two horizons, an upper 100' (30.5 m) one grading 0.22% Cu and a lower, 40' (12 m) thick zone grading 0.27% Cu. Alterations grade from a bio-chl-alb ± qtz assemblage at the top to bio-mag-chl ± qtz towards the bottom. This is consistent with a porphyry centre lying to the north (porphyry is encountered in hole E-116 on Section 209). The hole also intersected the hornblende porphyry (dike or sill?) which was also intersected in hole E-102 to the west. A sericite-clay-chlorite (SCC) alteration overprints the above alterations.

Hole E-176 (Section 205) was drilled north of E-102 to determine the north limit to the zone. Although the hole encountered biotite-magnetite alterations at the top, copper grades ≤ 0.20%. Increased qtz-mag-amph alterations down hole and decreased biotite is also consistent with hole E-177 indicating that a porphyry intrusion and barren qtz-mag core lies to the north. The two-horizon nature of the zone is carried over into hole E-102 and the zone is significantly thicker.

Hole E-178 (Section 209) further established that the zone is flat lying, but it did not improve either thickness nor grade. Only one horizon occurs on this section. One possibility is that the top section existed but was removed by erosion. The geometry of the shell of alteration zones around the intrusive is well illustrated on this section. Two horizons are again seen on Section 213 in hole E-37.

Alterations as shown on the Figure 7 indicate that there is a break in continuity between the B and G zones. The porphyry



BHP Minerals Canada Ltd.
P.O. Box 370
Port Hardy, BC
V0N 3P0

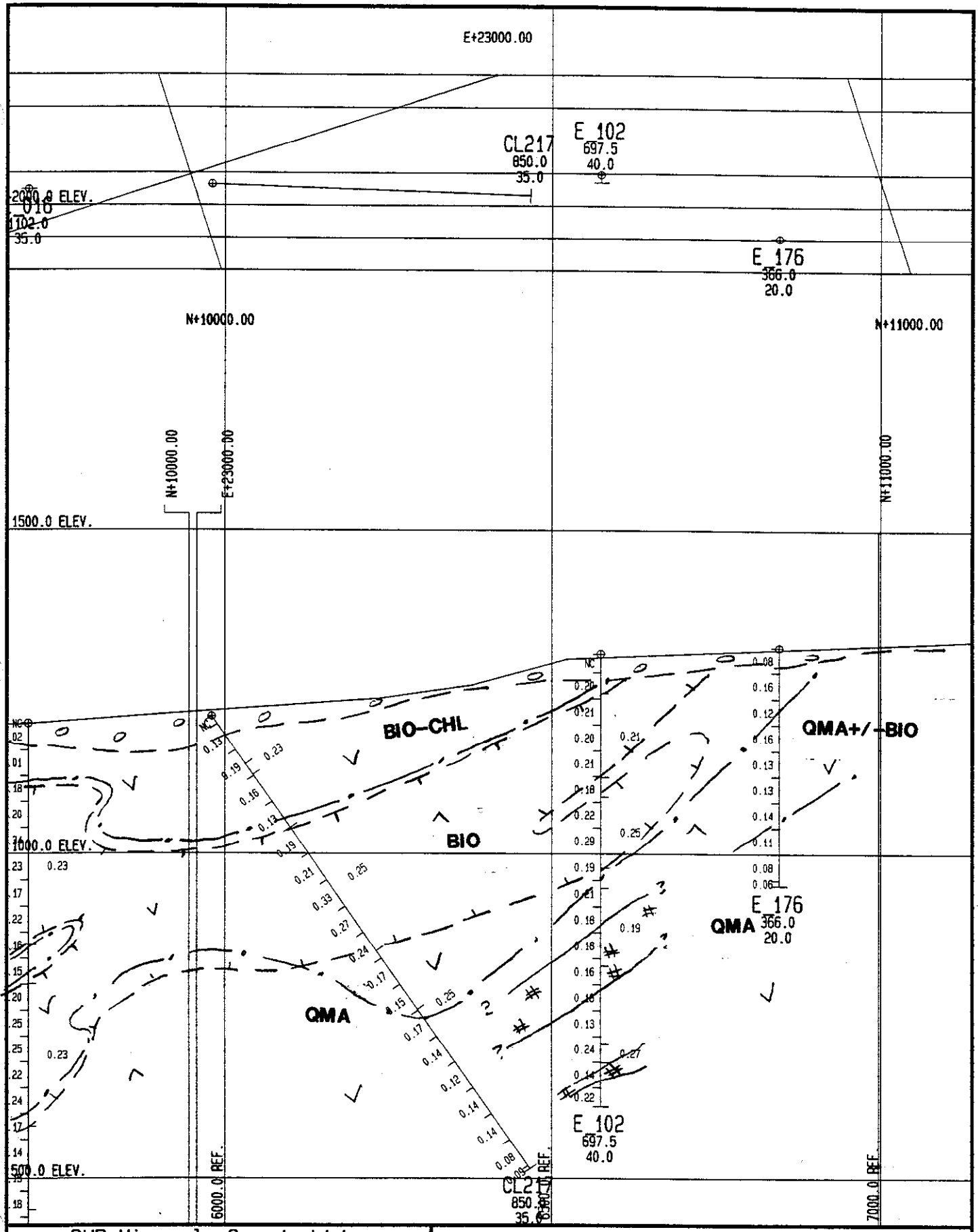
DATE: 01/20/94 TIME: 20:04:34

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

G ZONE DRILLING - GEOLOGY AND COPPER GRADES SECTION 203

COPPER AT 0.20% CUTOFF AND BENCH COMPOSITES
(BENCH HEIGHT = 40 FEET)

Software by GEMCOM Services Inc.



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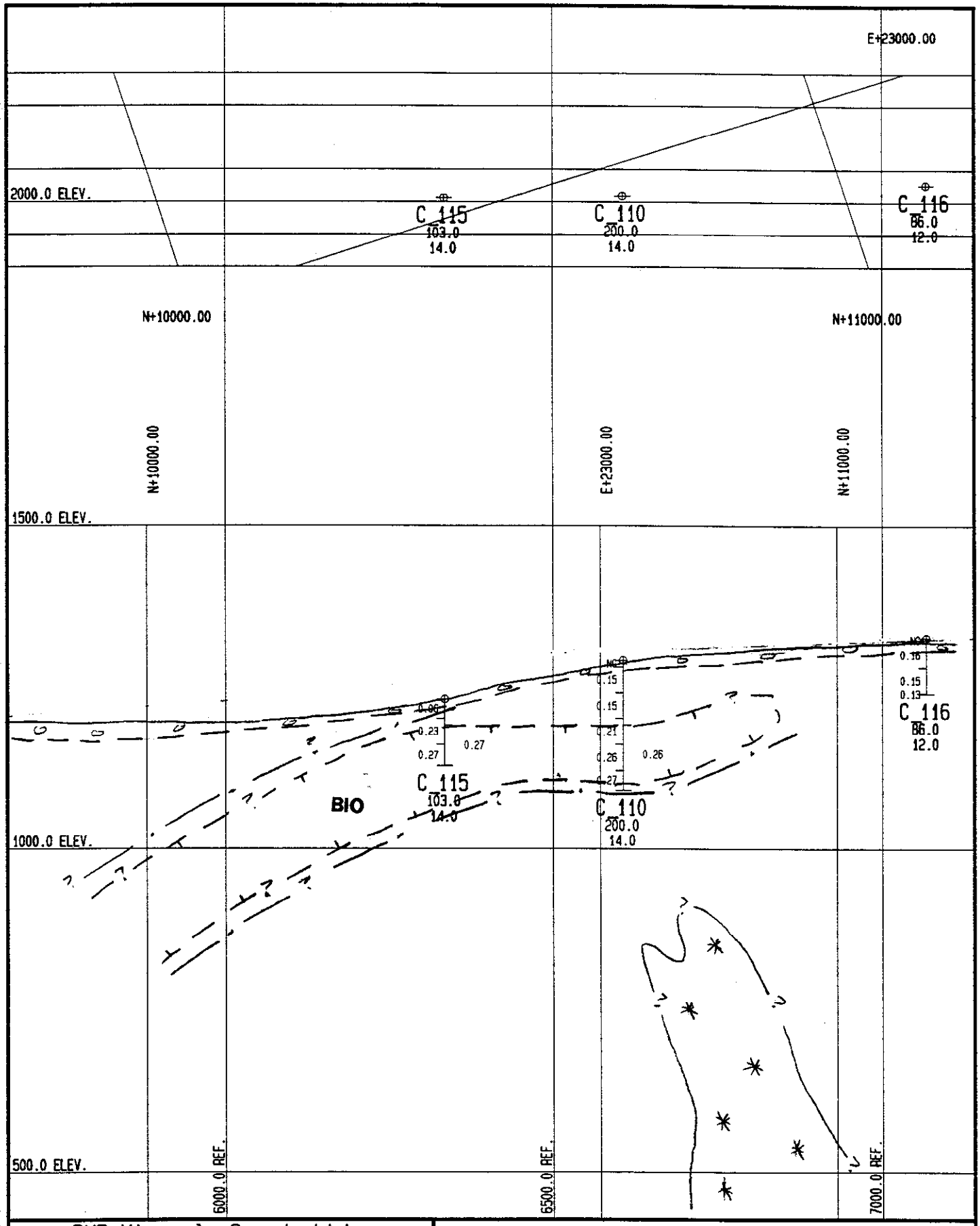
DATE: 01/20/94 TIME: 20:05:21

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

G ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 205
COPPER AT 0.20% CUTOFF AND BENCH COMPOSITES
(BENCH HEIGHT = 40 FEET)

Software by GEMCOM Services Inc.



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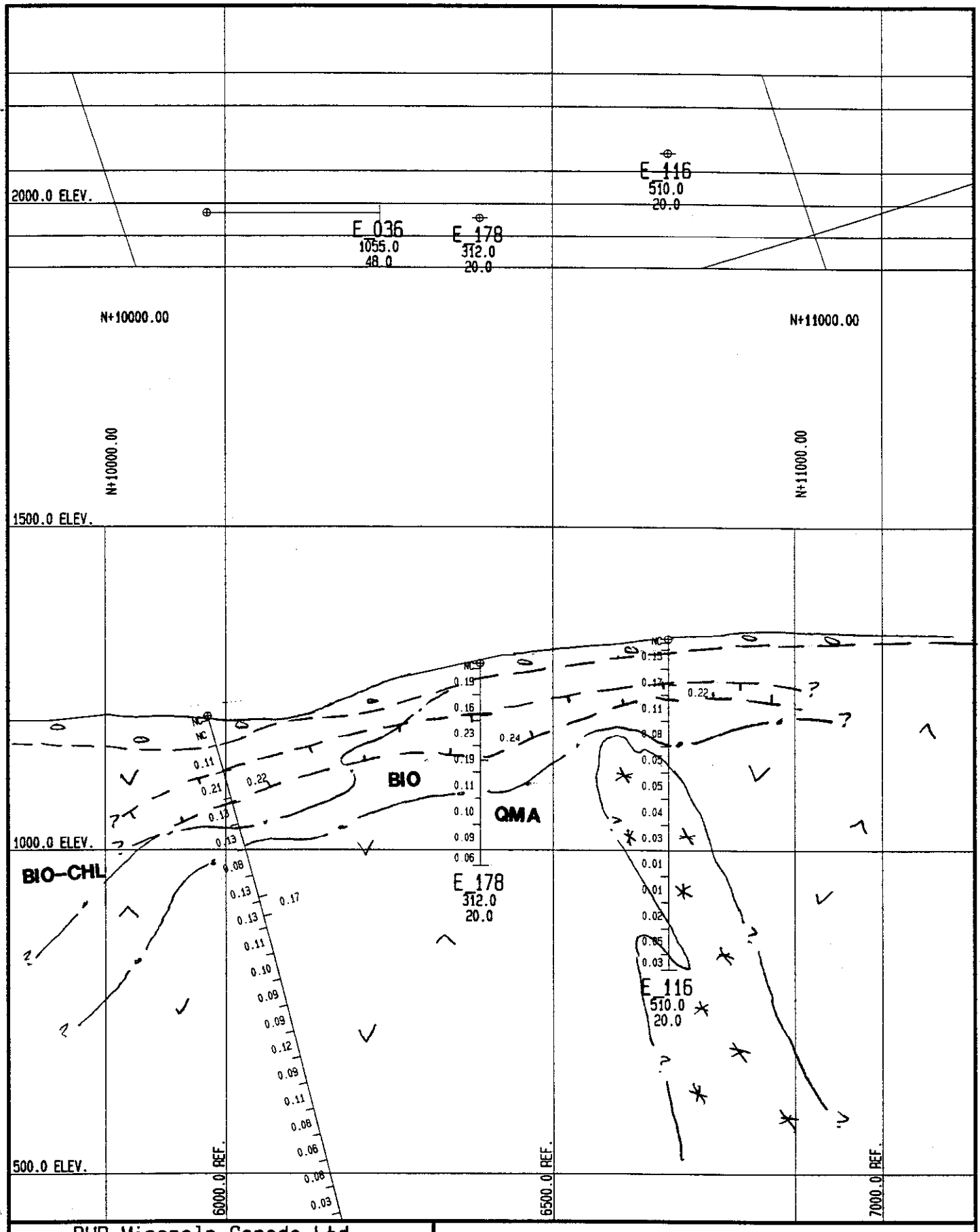
DATE: 01/20/94 TIME: 20:02:08

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

G ZONE DRILLING - GEOLOGY AND COPPER GRADES SECTION 207

COPPER AT 0.20% CUTOFF AND BENCH COMPOSITES
(BENCH HEIGHT = 40 FEET)

Software by GEMCOM Services Inc.



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DATE: 01/20/94 TIME: 20:06:23

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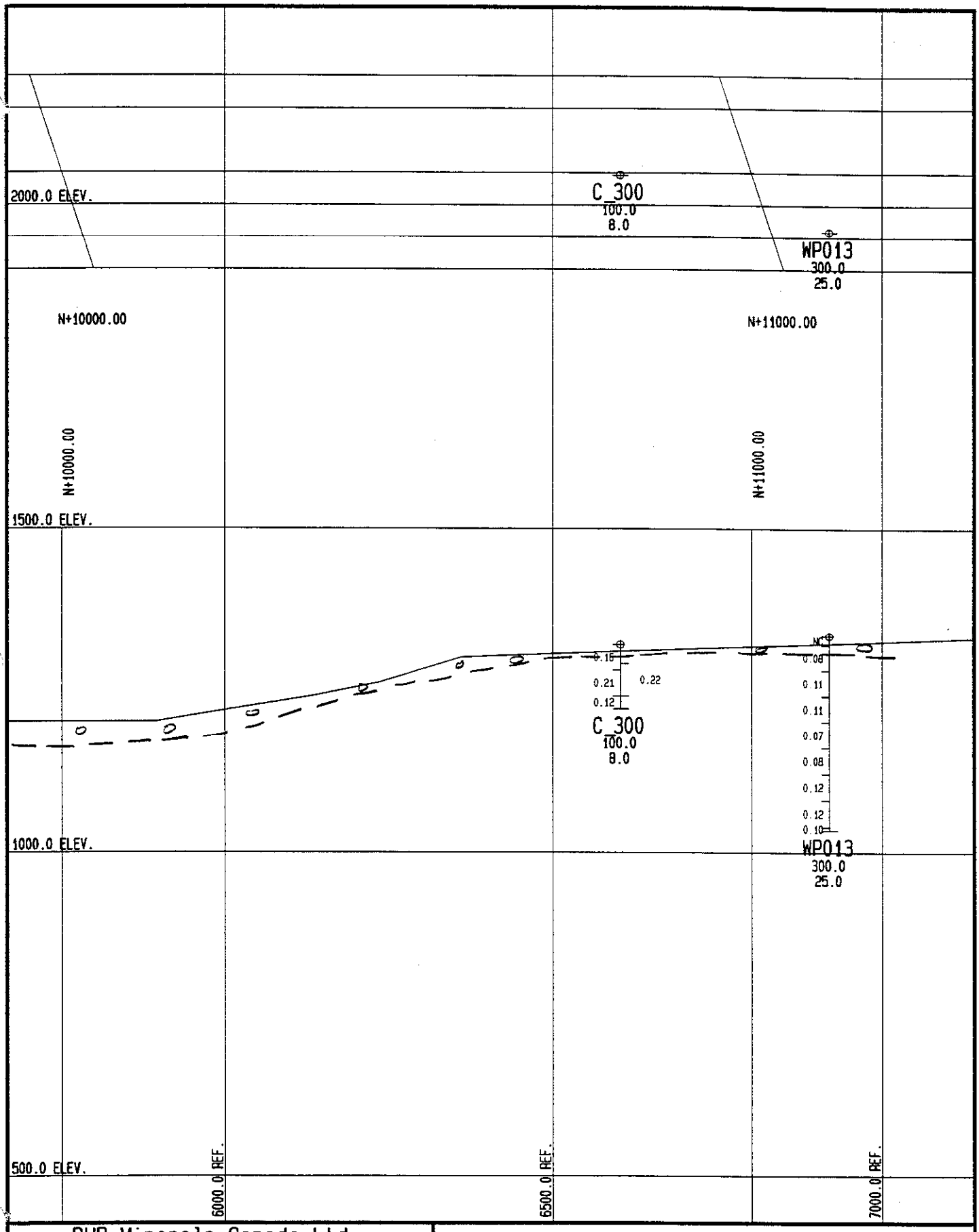
G ZONE DRILLING - GEOLOGY AND COPPER GRADES SECTION 209

COPPER AT 0.20% CUTOFF AND BENCH COMPOSITES
(BENCH HEIGHT = 40 FEET)

Software by GEMCOM Services Inc.



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DATE: 01/20/94 TIME: 20:07:07

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

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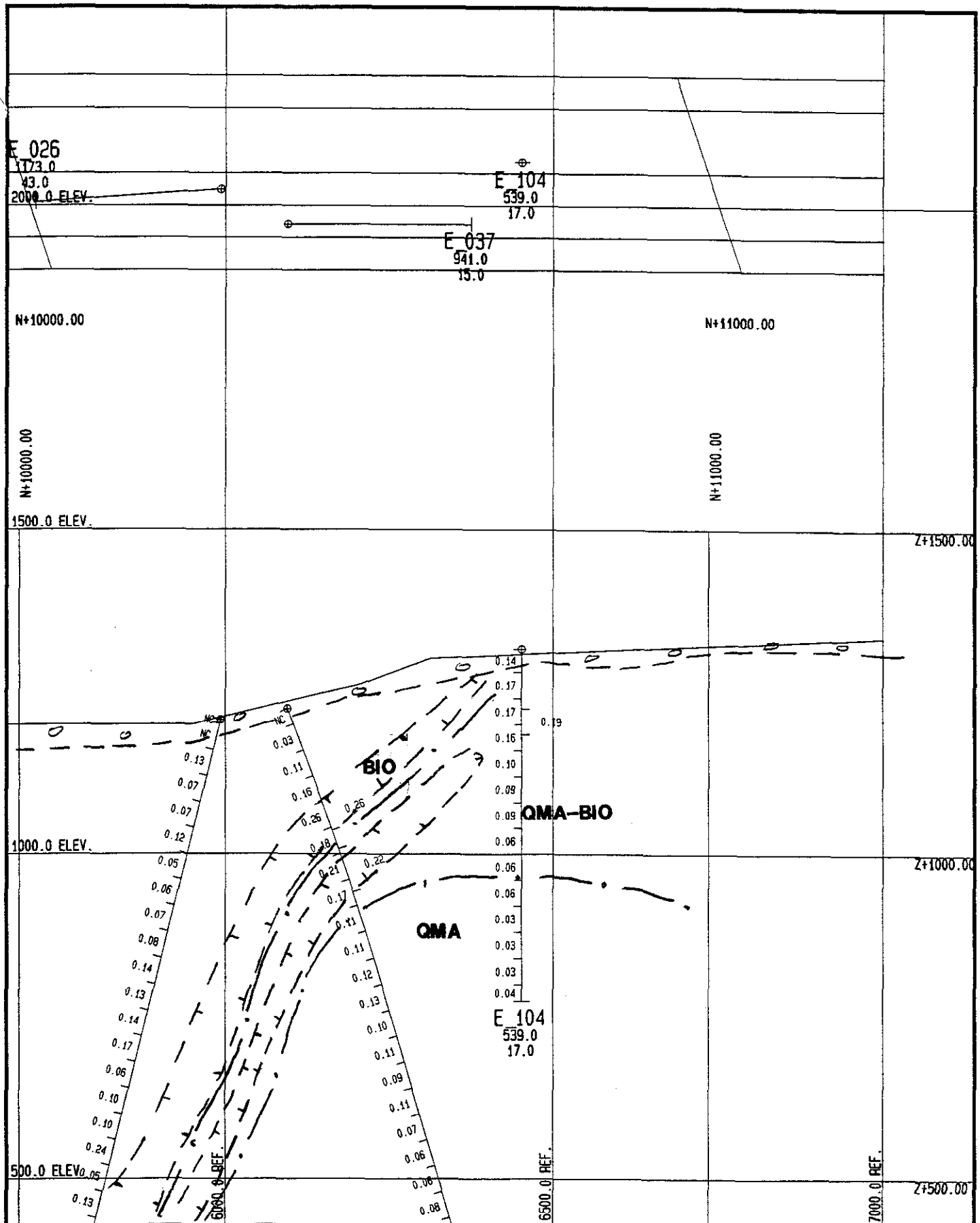
G ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 211
COPPER AT 0.20% CUTOFF AND BENCH COMPOSITES
(BENCH HEIGHT = 40 FEET)



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DATE: 01/20/94 TIME: 20:11:39

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

G ZONE DRILLING - GEOLOGY AND COPPER GRADES SECTION 213

COPPER AT 0.20% CUTOFF AND BENCH COMPOSITES
(BENCH HEIGHT = 40 FEET)

Software by GEMCOM Services Inc.

centre in the G Zone lies about 350 - 400 m further north than would the B Zone porphyry projected to the southeast. Whether the zones are faulted segments of the same porphyry or different intrusives is not known, but the similarities of alteration and mineralization and strike indicates that they are probably part of the same system or phase of intrusion.

Alteration and ≥ 0.20% Cu zones shown on Figure 7 and the sections suggest that there could be a mineral limb lying to the north that has not been detected. Low copper grades in holes WP-13 and C-116 may be part of the waste core zone.

B-G Zone

Hole E-179 was drilled on about Section 227 to determine if continuity exists between the B and G zones. Chlorite-mag-alb alterations at the top grading to chl-mag-alb ± bio towards the bottom fit better with a B Zone porphyry lying to the south than with a G Zone porphyry lying further to the north. Low copper grades in this hole and biotite altered volcanic rocks in hole E-109 lying to the south indicate that the zone is too narrow and low grade to be of interest between the zones.

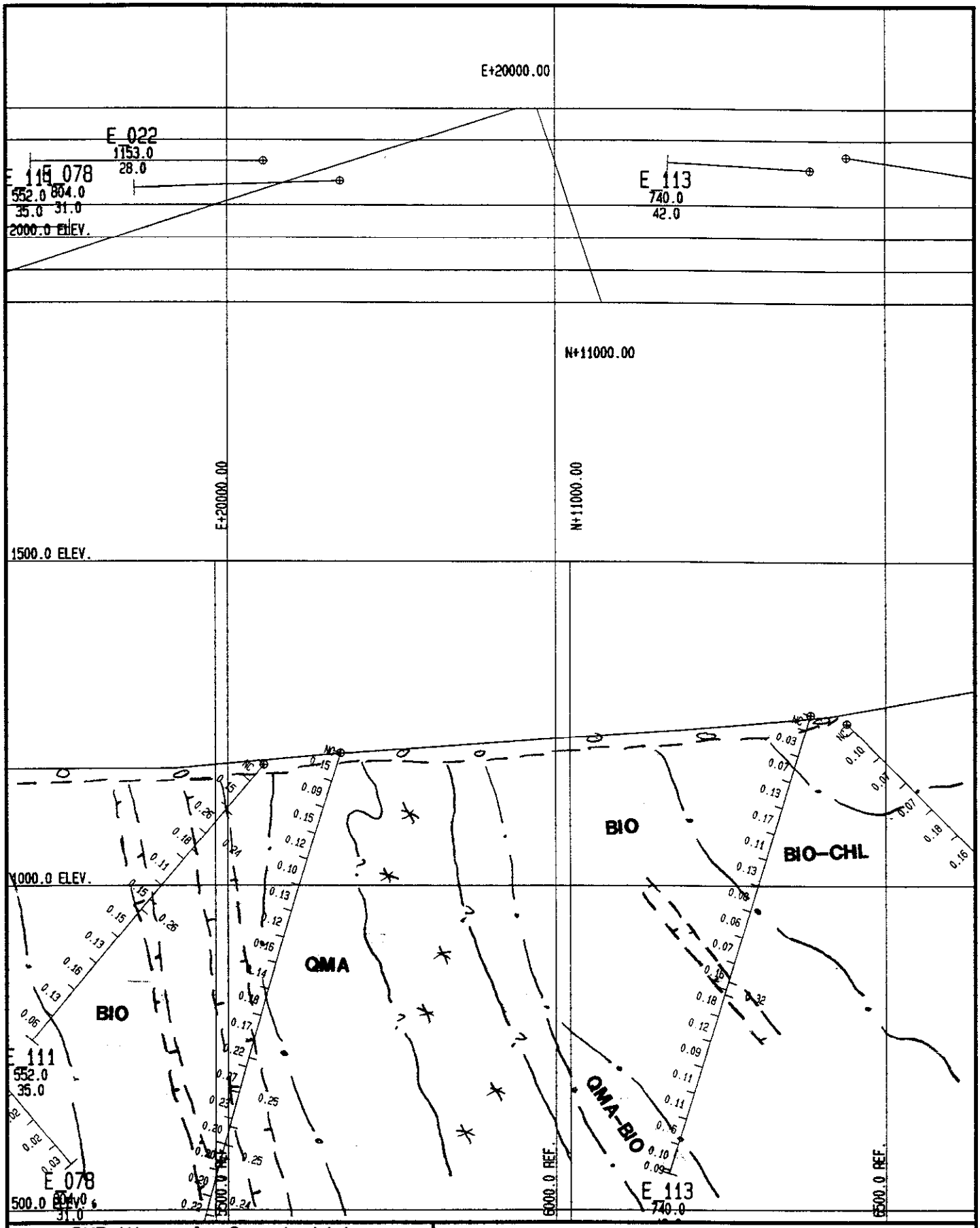
B Zone

The interpretation summary below starts at the east end of the zone on Section 235. Interpreted geology and ≥ 0.20% Cu zones on this section show a steeply northward dipping porphyry dike and adjacent qtz-mag-amph alteration zone bounded to the north and south by weakly mineralized biotite alteration zone.

Hole E-181 (Section 237) encountered the hanging wall biotite zone, but with little associated copper.

Hole E-172 (Section 239) drilled further to the south is interpreted to have intersected the inner part of the biotite zone overlying the porphyry with weak and contains discontinuous copper mineralization. Alteration zone interpretations on some of the sections show transition zones such as qtz-mag-amph / biotite and chlorite / biotite. These did not transpose well to the plan view. Therefore, the chlorite / biotite assemblage on the plan has been included with the biotite zone and the QMA / biotite zone included with the QMA zone.

Hole E-169 (Section 243) intersected a thicker section of ≥ 0.20% Cu grade material, but surprisingly in the qtz-mag-amph alteration zone, an exception to generally lower copper grades in the core alteration zone. Hole E-168 to the north together with E-169 and E-83 to the south are interpreted as part of a near-surface flat lying zone, a distinct difference in zone geometry



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DATE: 12/16/93 TIME: 11:36:34

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 235
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

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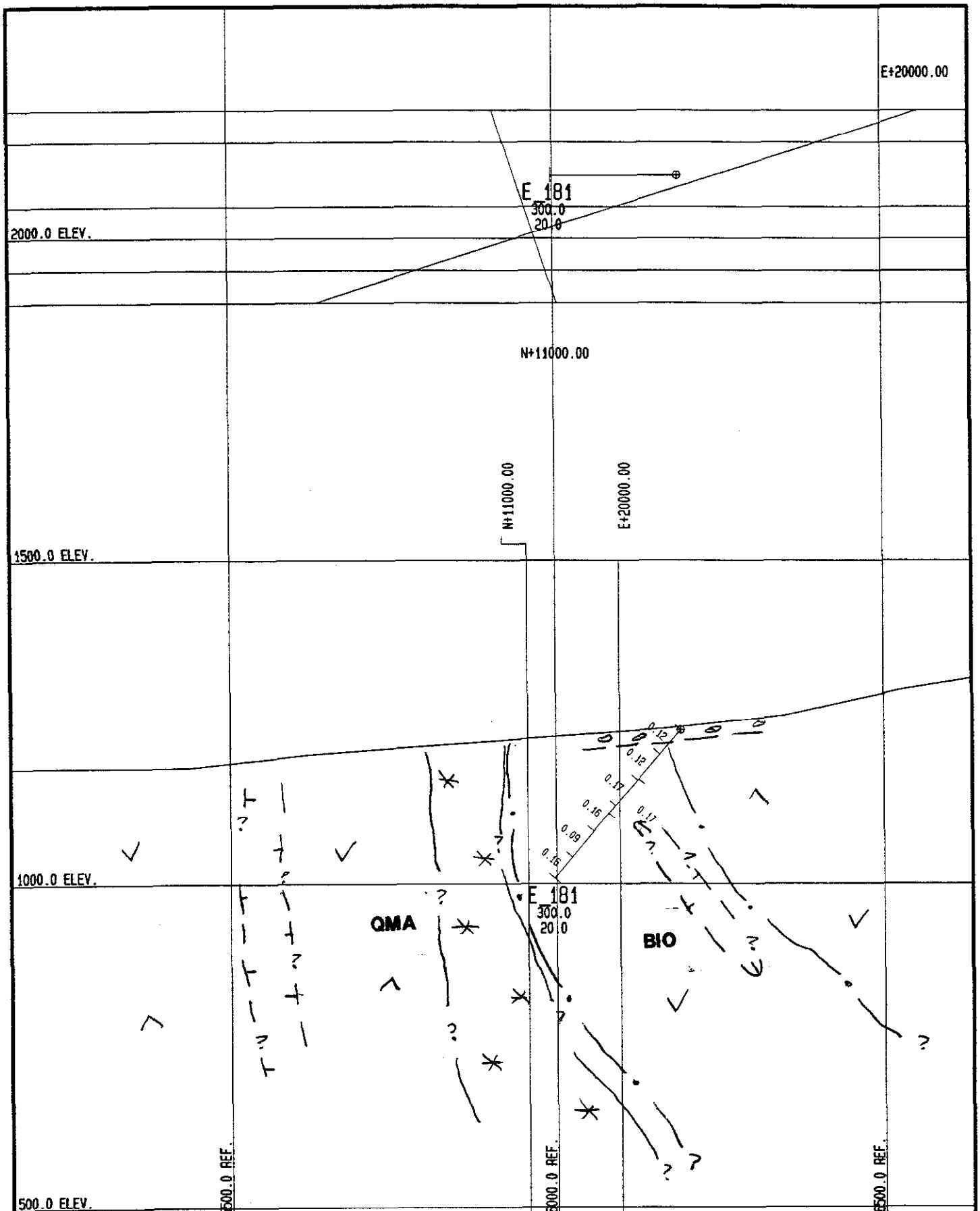

BHP Minerals Canada Ltd. P.O. Box 370 Port Hardy, BC V0N 3P0	**B ZONE DRILLING - GEOLOGY AND COPPER GRADES** **SECTION 237** COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES
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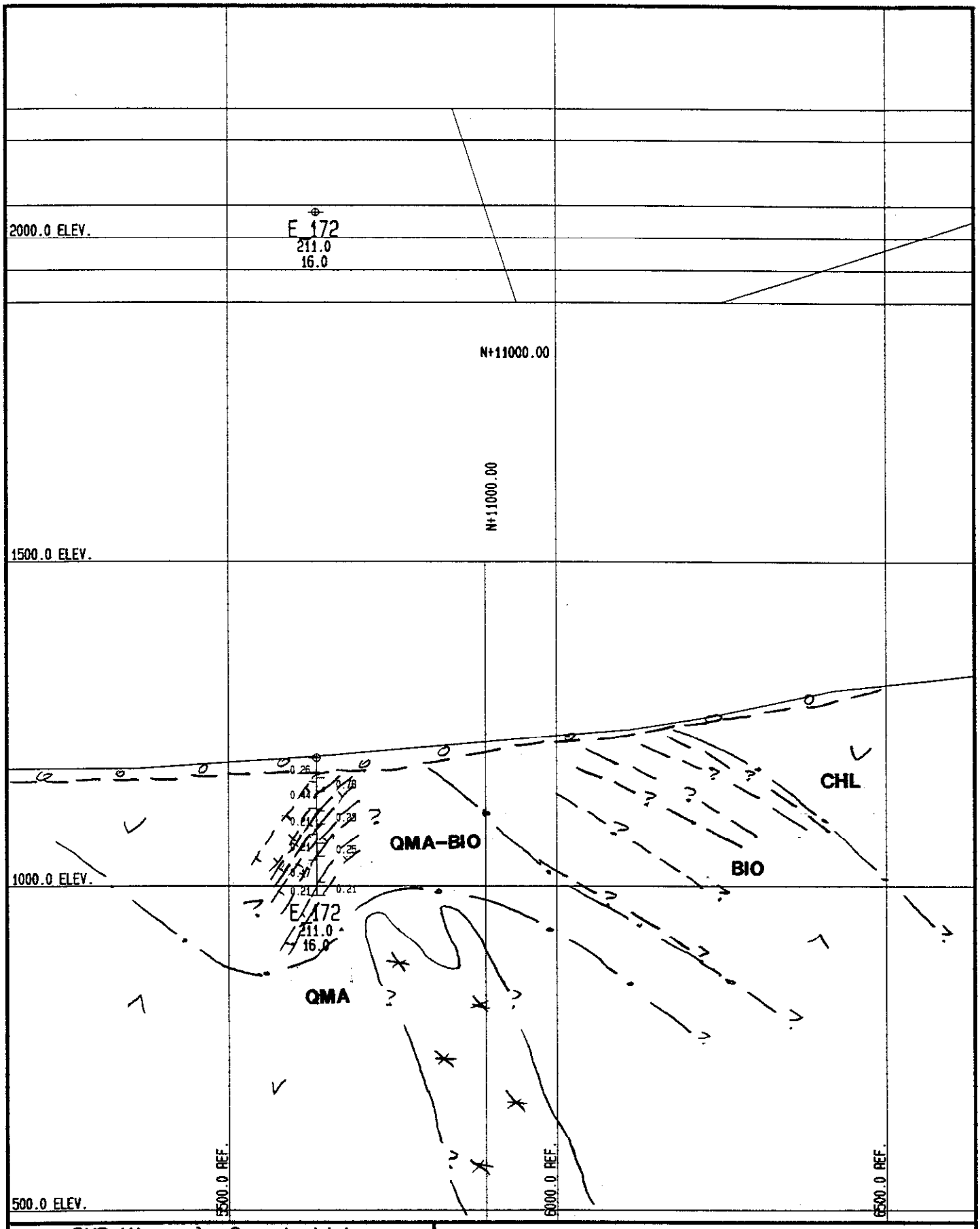
Software by GEMCOM Services Inc.



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DATE: 12/16/93 TIME: 11:31:20

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES SECTION 239

COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

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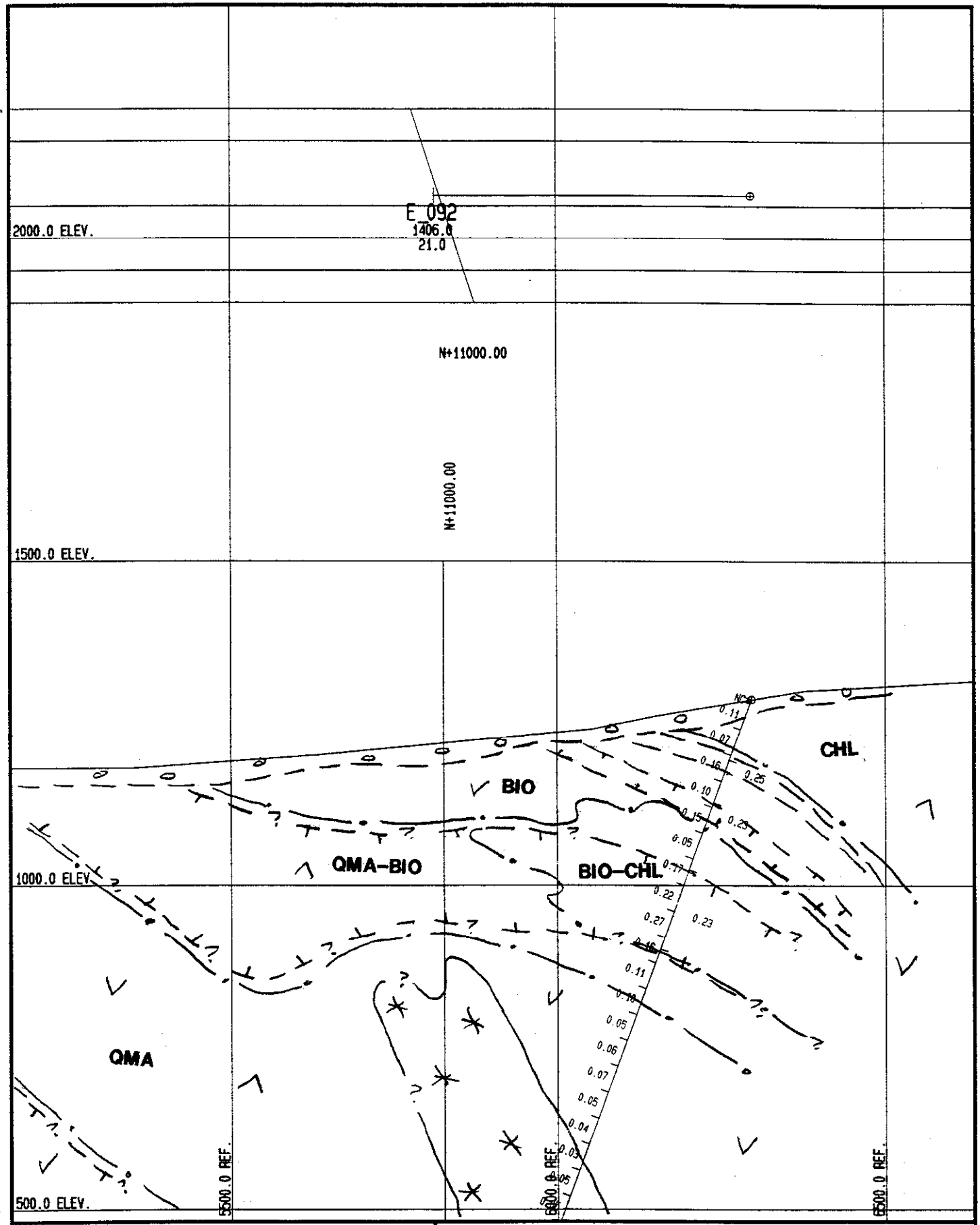

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DATE: 12/16/93 TIME: 11:29:11

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 241
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

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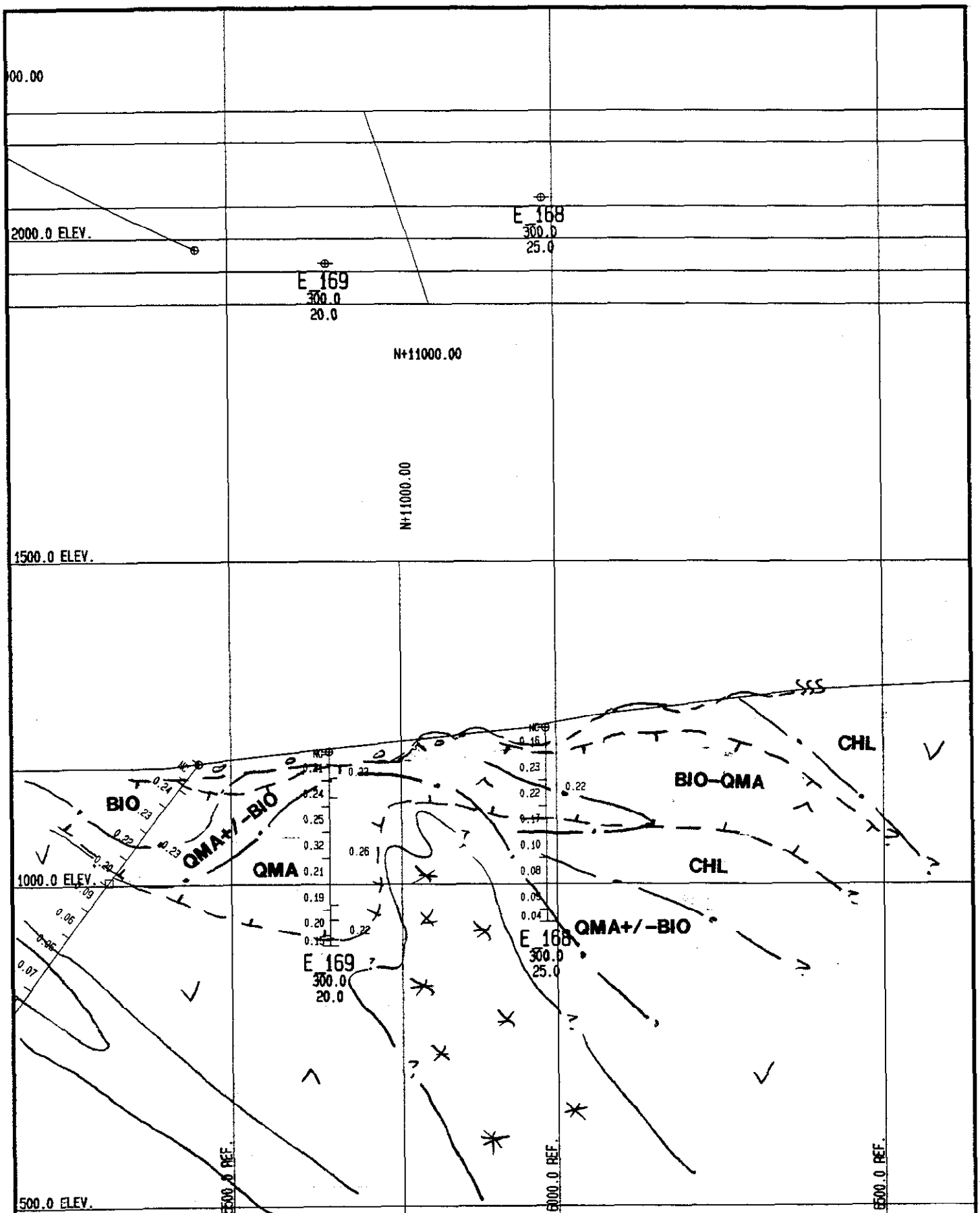


BHP Minerals Canada Ltd. P.O. Box 370 Port Hardy, BC V0N 3P0	B ZONE DRILLING - GEOLOGY AND COPPER GRADES SECTION 243 COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES
DATE: 12/16/93 TIME: 11:06:15	
SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'	

Software by GEMCOM Services Inc.

from that shown on Sections 235 and 237. This is interpreted as an effect of the porphyry plunging to the west and the mineralized biotite zone overlying the porphyry. This is a liberal interpretation. A more conservative one would have the mineral limbs continuing to dip steeply to the south with less near surface copper in the central zone.

Hole E-170 (Section 245) penetrated the core qtz-mag-amph zone and a short section of (inter-mineral) porphyry with little copper.

Hole E-171 (Section 247) thickened the zone to approximately 34 m (110'), but did not clarify whether or not a thicker zone of ≥ 0.20% Cu underlies hole C-41. Hole E-180 clearly limits the zone to the north.

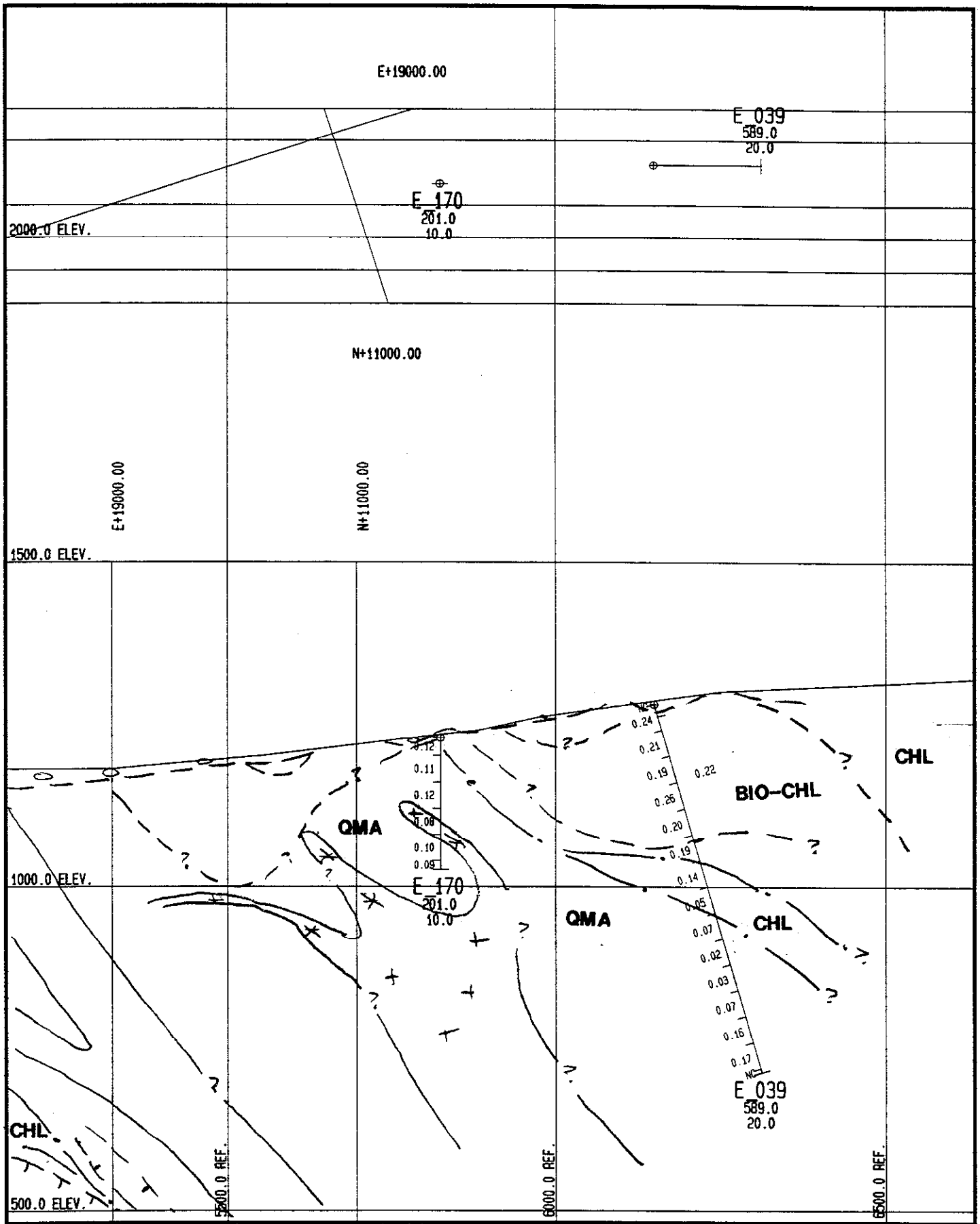
Hole E-173 penetrated the core zone above the porphyry and some quartz-feldspar porphyry as did hole E-170 to the east. This porphyry equates to the Island Copper "main porphyry" as it is stockworked with qtz-mag veins. Porphyry in E-114 is of a similar constitution. Hole E-174 drilled further to the north to intersect the hanging wall biotite zone successfully accomplished this goal and intersected about 46 m (150') of material grading 0.22% Cu.

The westernmost intersection of the porphyry and "core" QMA alterations was made in hole E-175 (Section 257). The area south of E-175 appears too confined with hole E-84 lying about 120 m (400') to the south to host a significant volume of ≥ 0.20% Cu grade material. The north side is open, but hole E-42 on Section 261 appears to limit potential for a significant extension of the north limb westward from Section 251.

Copper in the zone occurs as chalcopyrite both as disseminations and as part of qtz-mag and other vein sets. The ≥ 0.20% Cu zones correlate reasonably well with the biotite alteration zone and further support the usefulness of the Island Copper alteration model for interpreting drilling results in porphyry systems in the Island Copper area.

West Bay Zone

The West Bay zone was discovered in 1987 when hole E-74 was drilled north from the south-central shore of the lake. The hole intersected about 150 m (500') of biotite-magnetite altered rock (Island Copper-type ore) grading 0.45% Cu. A series of holes subsequently drilled around the south and west end of the lake proved that what might have been a major deposit underlying the lake was a moderately-steeply northward tabular body underlying a northwest striking, northward dipping fault called the West Bay Splay. Hole E-74 had been drilled down the dip of the body in its



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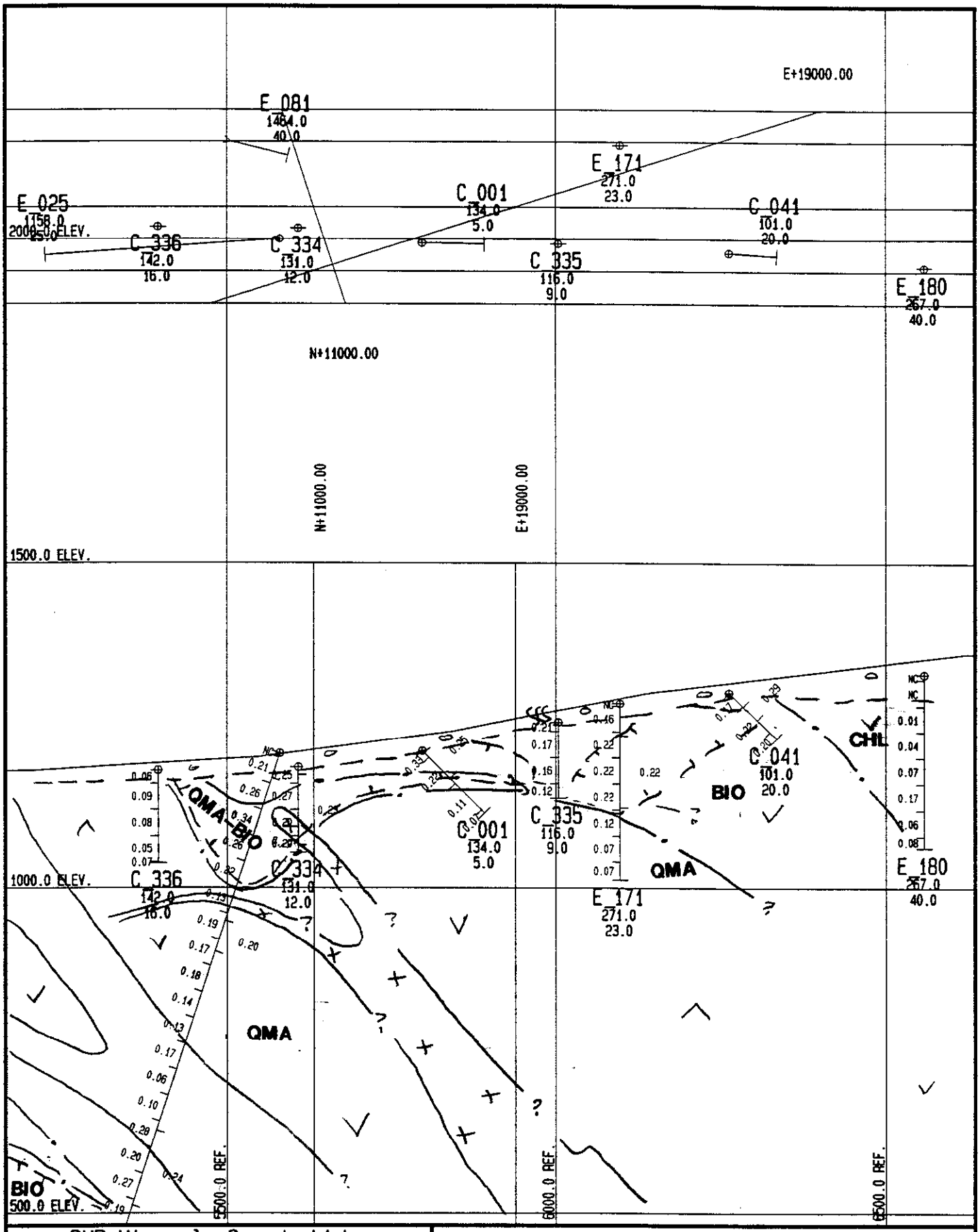
DATE: 12/16/93 TIME: 11:04:34

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 245
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.



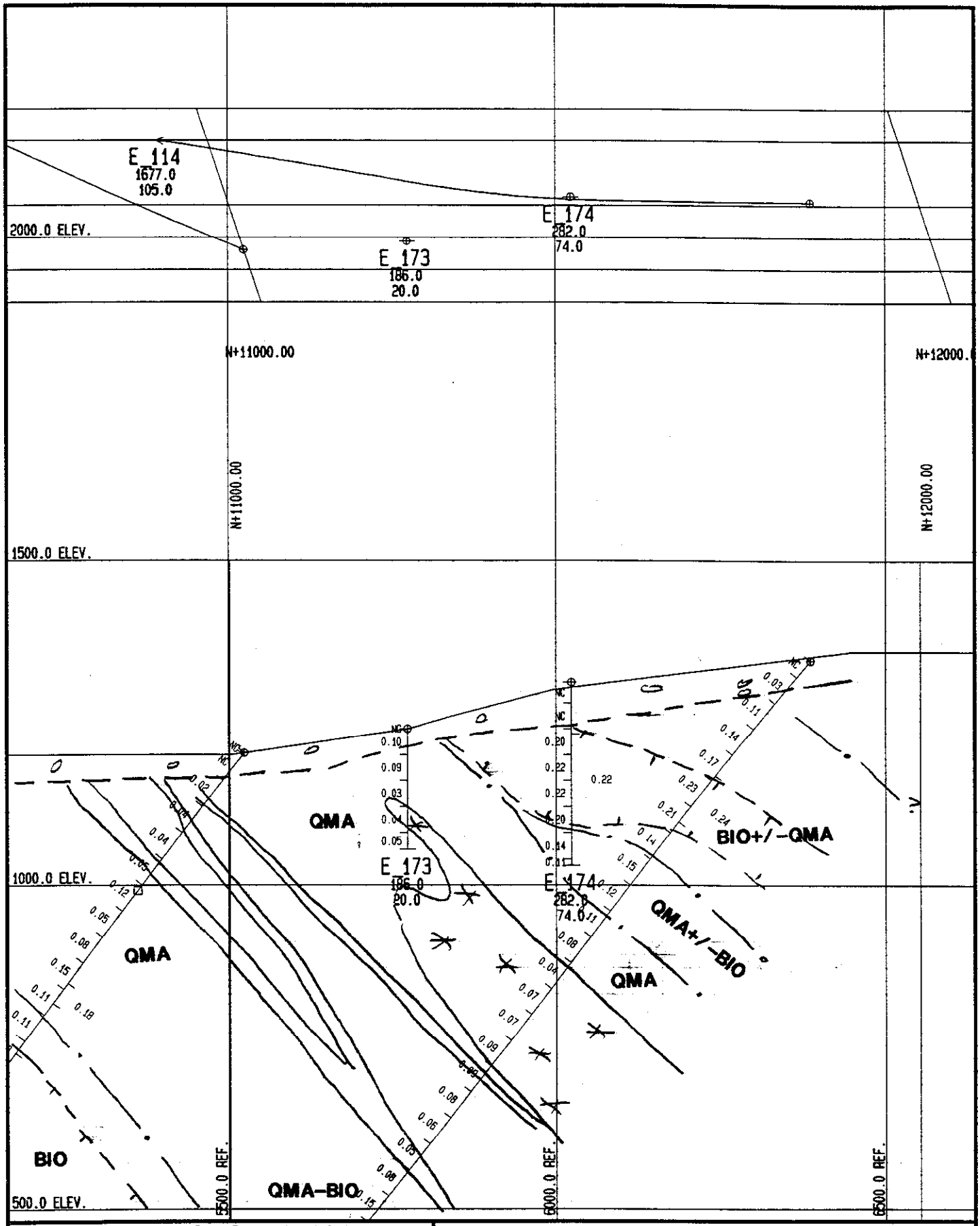
BHP Minerals Canada Ltd.
P.O. Box 370
Port Hardy, BC
V0N 3P0

DATE: 12/16/93 TIME: 17:21:15

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 247
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.



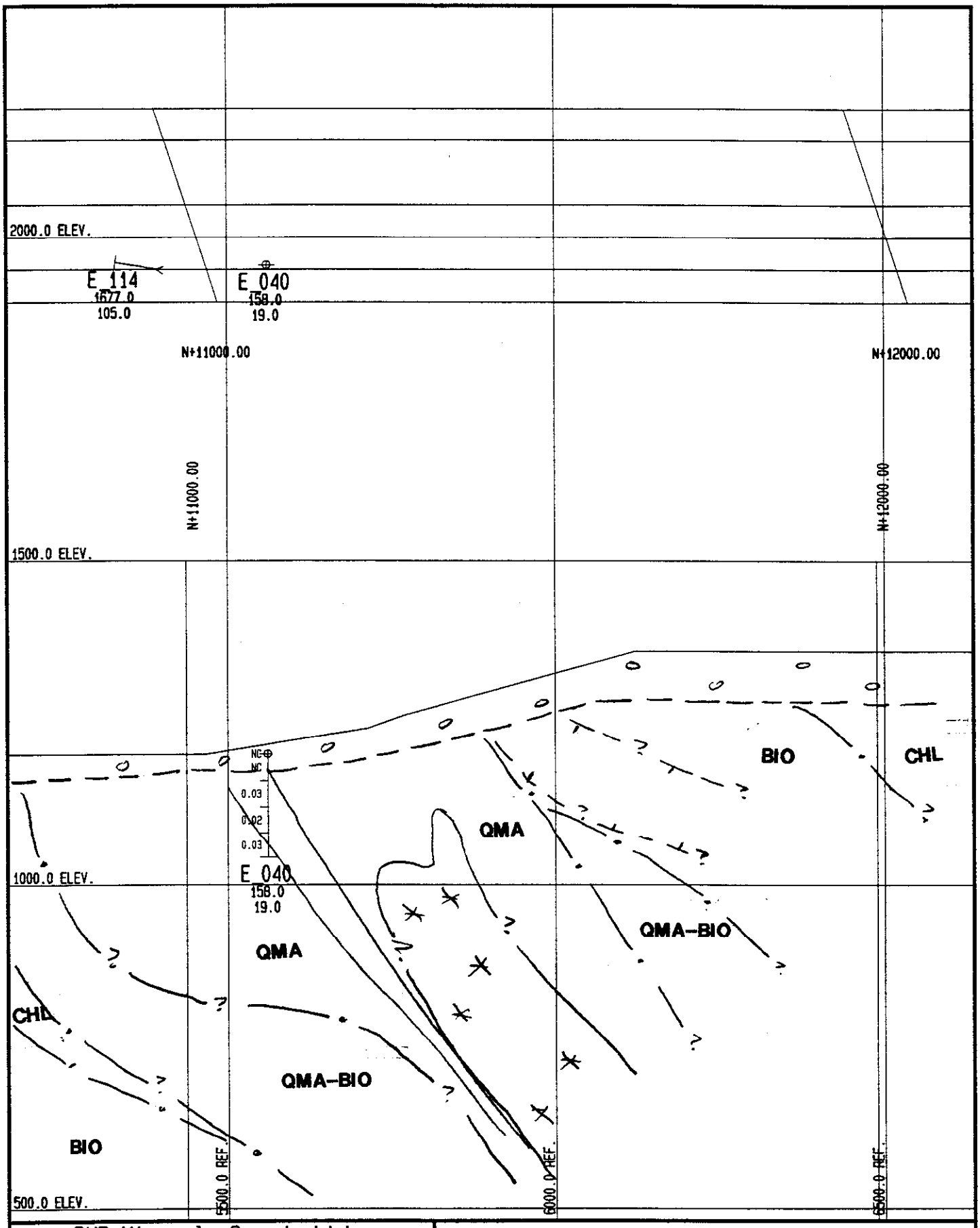
BHP Minerals Canada Ltd.
P.O. Box 370
Port Hardy, BC
V0N 3P0

DATE: 12/16/93 TIME: 10:57:46

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 251
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.



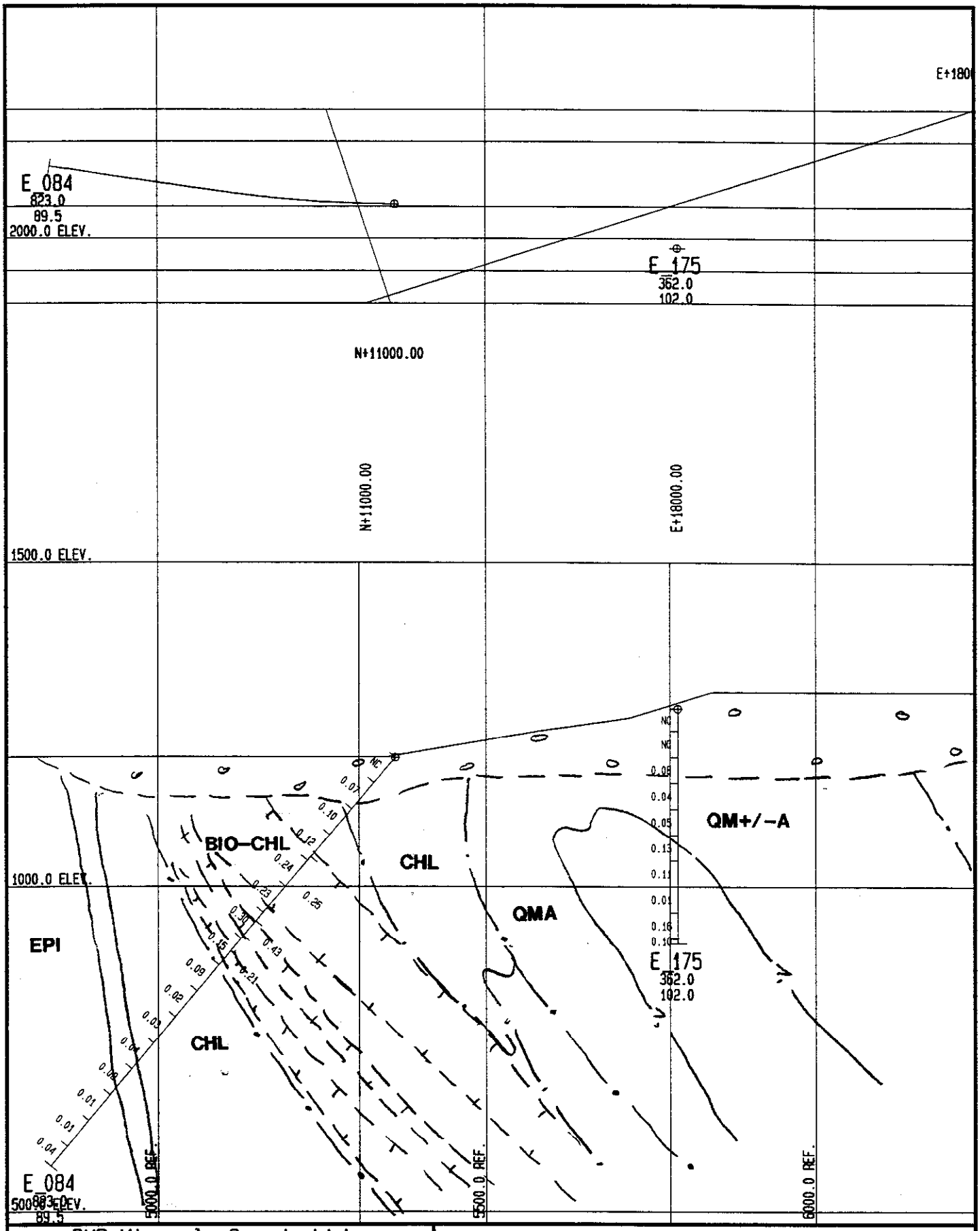
BHP Minerals Canada Ltd.
P.O. Box 370
Port Hardy, BC
V0N 3P0

DATE: 12/16/93 TIME: 11:39:02

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 253
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.



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DATE: 12/16/93 TIME: 14:02:28

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 257
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.

central, higher grade zone. The hanging wall limit of the body was not well defined, however, because of difficulty in placing drill holes around the lake. It was decided to determine the zone limit to the west along strike and its thickness.

Hole E-182 (Section 261), the first hole drilled in this series on the body intersected ≥ 0.50% Cu in a biotite / chlorite (transition) zone directly below the till cover and a minimum zone thickness of about 55 m (180') before intersecting a fault. This was very good results considering that the alterations were transitional between the potentially mineralized biotite zone to the north and an outer chlorite zone to the south, and the zone was open to the north.

Hole E-183 (Section 265) intersected ≥ 0.3% Cu directly below the till cover and a minimum zone thickness of about 37 m (130'), again in the transitional biotite / chlorite zone on the outer part of the copper shell. A zone of similar thickness and grading 0.28% Cu was intersected further down the hole on the south side of the fault.

Holes E-184 and E-185 (Section 271) were only weakly mineralized and appear to have closed the zone to the west. The alterations are a qtz-mag ± amph ± bio mix that suggests a break in the continuity of the alteration sequence along strike. This would be consistent with a NNW striking fault that has been interpreted to underlie the area along the mine road in the area. The qtz-mag alterations suggest that the west side of the fault may have been displace to the south. The chl-qtz-alb alteration encountered in E-185 below the QMA±B zone indicates that the outer part of the potential zone has been tested and potential for further ≥ 0.20% Cu grade material to the south is very limited.

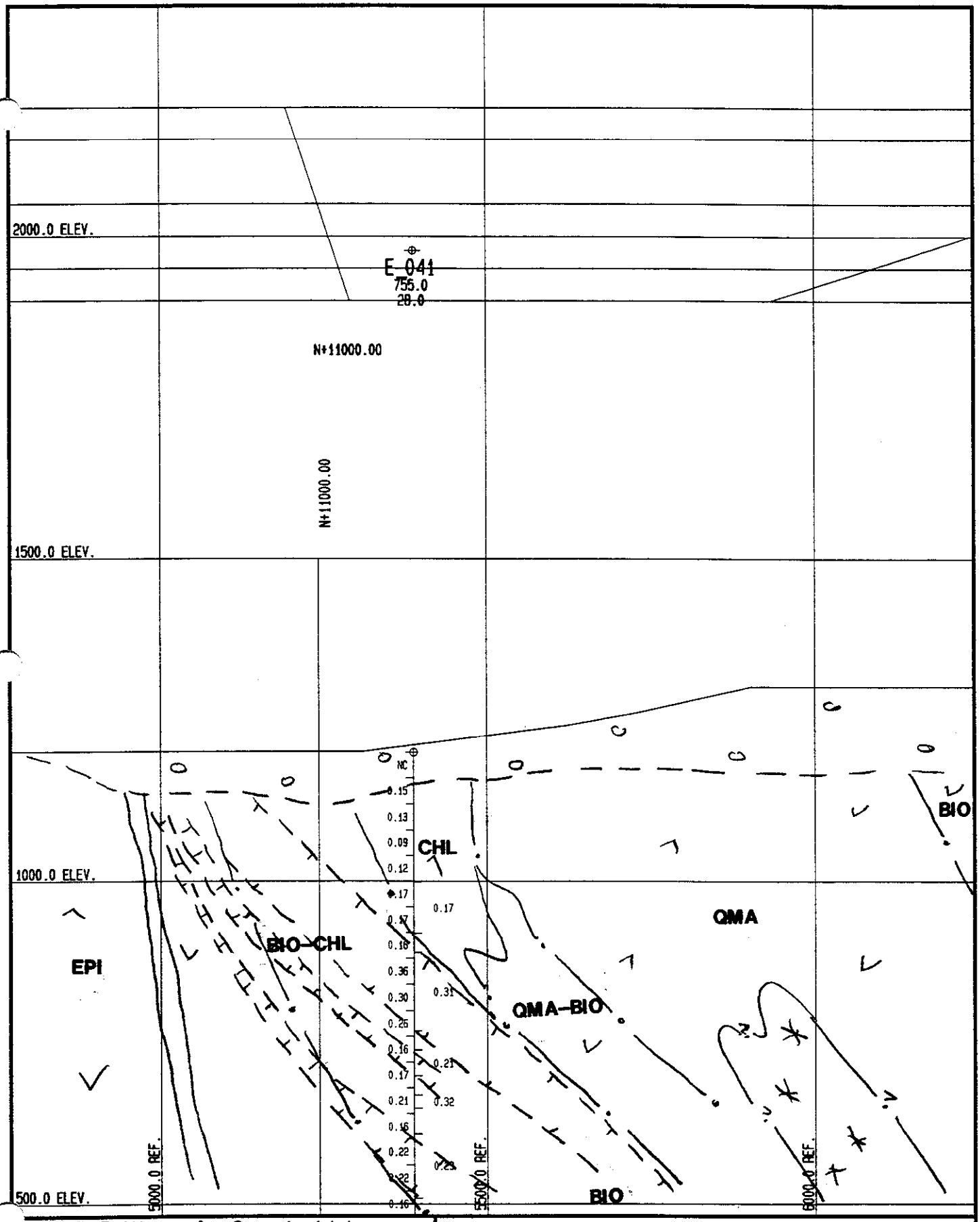
Drilling on the West Bay Zone extended the zone length about 335 m (1,100') west from known data for a total length of about 1 000 m (3,300'). The hanging wall contact is open along much of its length and higher copper grades occur near both ends of the zone.

10. CONCLUSIONS

G Zone

The north side of the zone is untested and may host a mineralized hanging wall limb of the system. Otherwise, drilling confirmed that the zone is small, near surface and low grade. Economic viability with the grades encountered is not likely.

B-G Zone



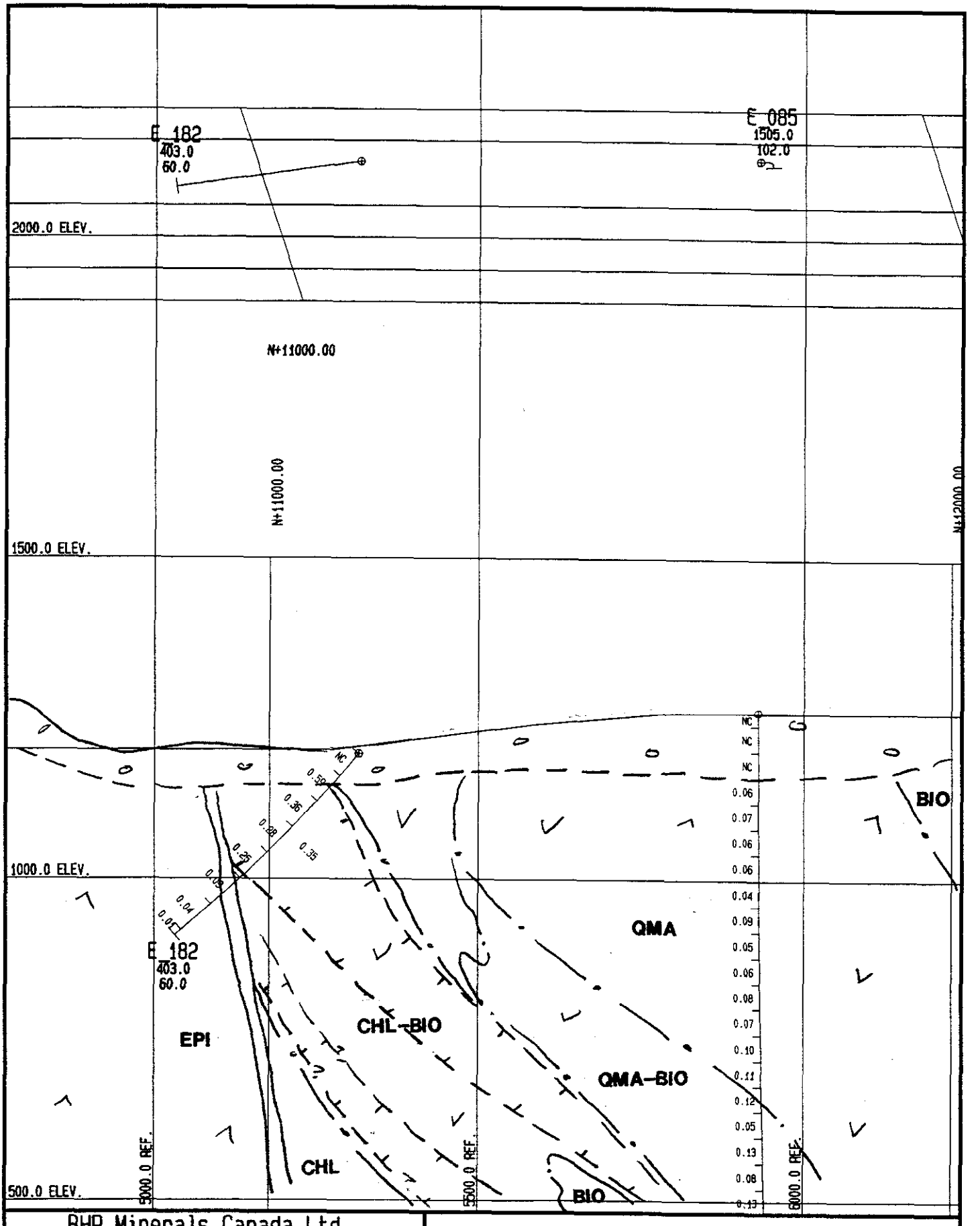
BHP Minerals Canada Ltd.
P.O. Box 370
Port Hardy, BC
V0N 3P0

DATE: 12/16/93 TIME: 14:04:03

SCALE (HOR) 1":200' SCALE (VERT) 1":200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 259
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.



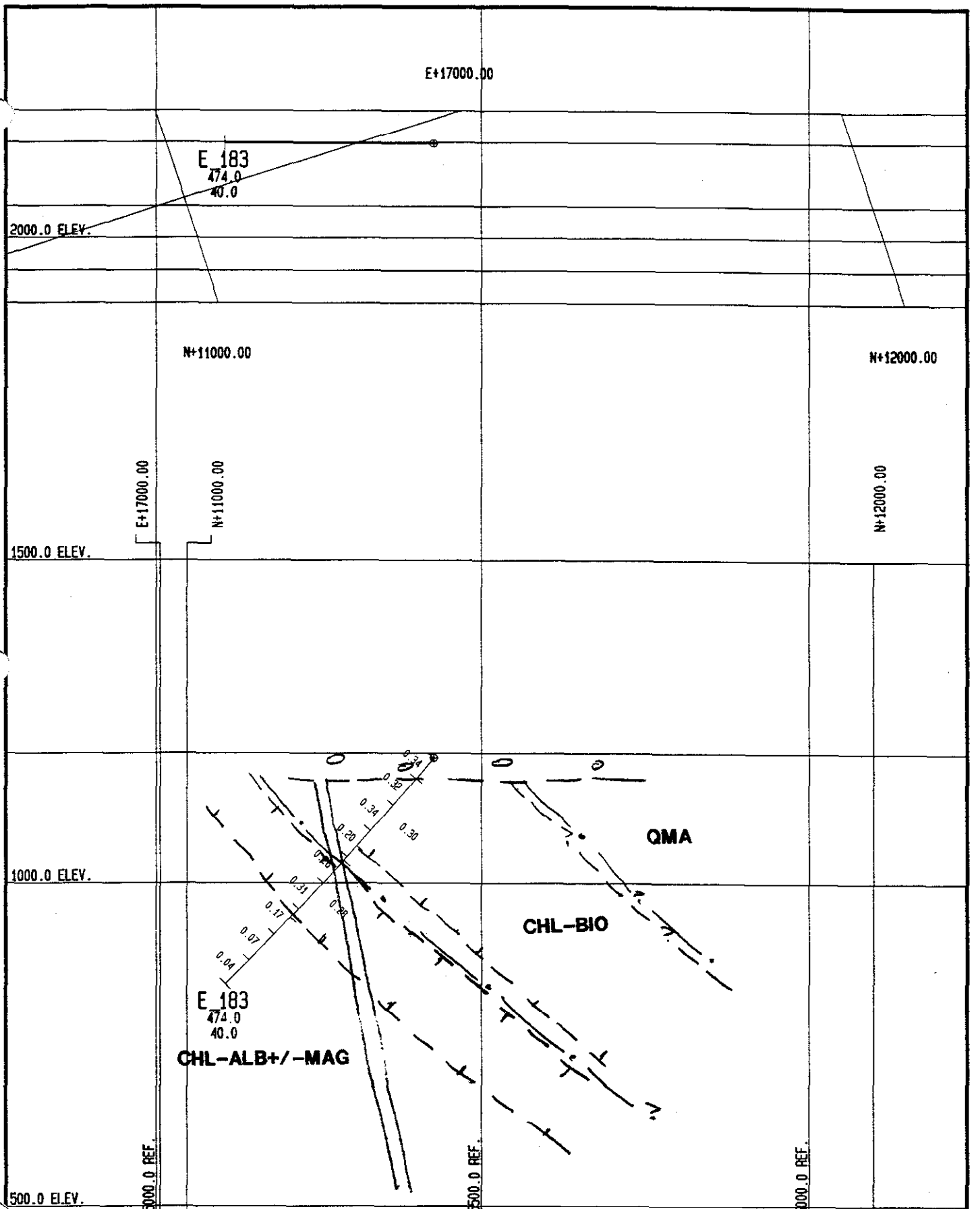
BHP Minerals Canada Ltd.
P.O. Box 370
Port Hardy, BC
V0N 3P0

DATE: 12/16/93 TIME: 14:05:21

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 261
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.



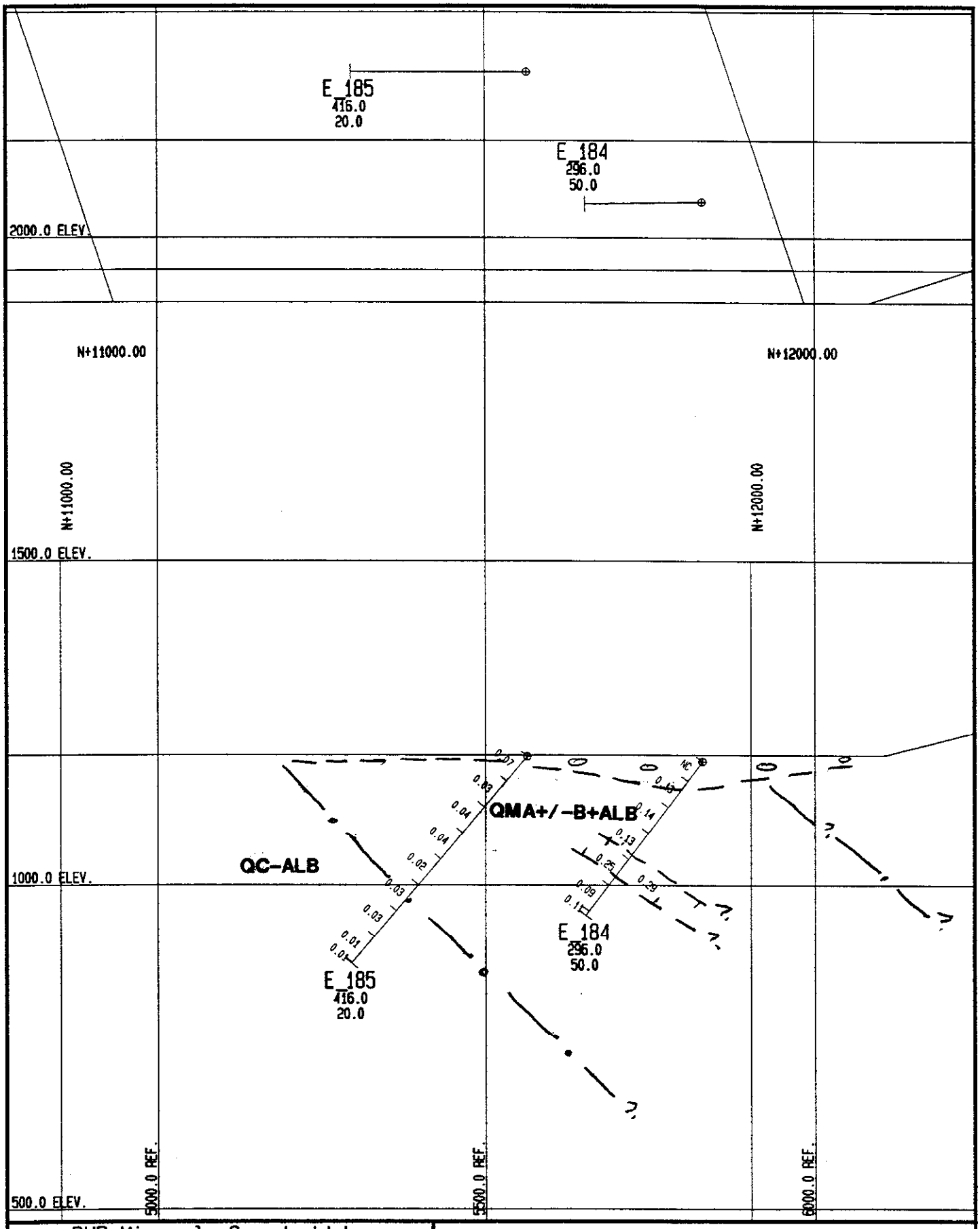
BHP Minerals Canada Ltd.
P.O. Box 370
Port Hardy, BC
V0N 3P0

DATE: 12/16/93 TIME: 14:06:34

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 265
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.



BHP Minerals Canada Ltd.
P.O. Box 370
Port Hardy, BC
V0N 3P0

DATE: 12/16/93 TIME: 14:14:38

SCALE (HOR) 1": 200' SCALE (VERT) 1": 200'

B ZONE DRILLING - GEOLOGY AND COPPER GRADES
SECTION 271
COPPER AT 0.20% Cu CUTOFF & 20' COMPOSITES

Software by GEMCOM Services Inc.

There is a probable break in continuity between the B and G zones, possibly a fault break. There appears to be little potential to extend either the B or G zones in the central direction.

B Zone

The drilling established continuity between sections in the zone and better tied copper distribution to the hydrothermal alteration zones and the quartz-feldspar porphyry intrusives. The zone grade was not enhanced, and economic viability for the zone with average grade < 0.25% Cu is considered unlikely.

West Bay Zone

Technically, this zone provided the best results. Practically, however, the potential to exploit a deposit estimated at < 10 million tons that would require disturbing a lake and part of a fish bearing creek (Stephen's Creek) is very unlikely.

11. RECOMMENDATIONS

The north side of the G Zone bears re-examination and possibly drilling to test the potential for a mineralized hanging wall limb of the deposit.

No further drilling i s recommended on the zones, subject to the results of economic evaluation of the data.

12. COST STATEMENTS

BAY-94 GROUP

OLYMPIC DRILLING AND CONSULTING LTD.

HOLE	LENGTHS FEET/METRES	# ASSAYS	# DAYS	$	
E-168	300/91.4	28	2	$5,039.00	
E-169	300/91.4	29	2	$4,541.00	
E-170	201/61.3	19	1	$2,977.00	
E-171	271/82.6	25	2	$3,946.00	
E-172	211/64.3	19	1	$4,712.00	
E-173	186/56.7	17	1	$3,106.00	
E-174	282/86.0	21	1	$4,179.00	
TOTALS:	1,751/533.7	158	10	$28,500.00	$28,500.00

BHP MINERALS CANADA LTD.

Logging: 1 geologist X 8 days X $200/day =	$1,600.00	
Core Shack: 1 worker X 10 days X $140/day =	1,400.00	
Supervision: 10 days X 25% X $200/day =	500.00	
Assays: 158 X $30/assay =	$4,740.00	
Vehicle: 10 days X $41/day =	451.00	
Core Storage: 476.4 m (1563') X $1.48/m =	703.35	
Overhead: 20% of supervision & labour =	700.00	
Report Preparation: 30% X $2000 = (included data processing costs)	$600.00	
Site Preparation and Reclamation	877.00	
TOTAL BHP COSTS:	$11,571.35	
TOTAL COST =		$40,071.35
TOTAL APPLIED TO BAY-94 GROUP =		**$40,071.35**

MIMAS-94 AND MARY-94 GROUPS

OLYMPIC DRILLING AND CONSULTING LTD.

HOLE	LENGTHS FEET/METRES	# ASSAYS	# DAYS	$	
E-175	362/110.3	13	2	$6,017.00	
E-176	366/111.6	35	1	$5,625.00	
TOTAL:	728/221.9	48	3	$11,642.00	$11,642.00

BHP MINERALS CANADA LTD.

Logging: 1 geologist X 3 days X $200/day =	$	600.00
Core Shack: 1 worker X 3 days X $140/day =		420.00
Supervision: 3 days X 25% X $200/day =		150.00
Assays: 48 X $30/assay =		1,440.00
Vehicle: 3 days X $41/day =		123.00
Core Storage: 184.7 m (606' x $0.45/ft) =		272.70
Overhead: 20% of supervision & labour =		234.00
Report Preparation: 12%X $2000 = (included data processing costs)		240.00
TOTAL BHP COSTS:	$3,479.70	

TOTAL DRILLING COSTS =	$15,121.70
TOTAL APPLIED TO MIMAS:	**$10,500.00**
BALANCE APPLIED TO MARY-94 GROUP:	**$4,621.70**

CAR-94 GROUP

OLYMPIC DRILLING AND CONSULTING LTD.

HOLE	LENGTHS FEET/METRES	# ASSAYS	# DAYS	$	
E-177	422/128.6	40	2	$2,977.00	
E-178	312/95.1	29	1	$3,946.00	
E-179	421/128.3	7	3	$4,712.00	
E-180	267/81.4	6	1	$3,106.00	
E-181	300/91.4	28	1	$4,179.00	
E-182	403/122.8	24	2	$5,039.00	
TOTALS:	2125/647.7	134	10	$33,370.00	$33,370.00

BHP MINERALS CANADA LTD.

Logging: 1 geologist X 10 days X $200/day =	$2,000.00	
Core Shack: 1 worker X 10 days X $140/day =	1,400.00	
Supervision: 10 days X 25% X $200/day =	500.00	
Assays: 134 X $30/assay =	4,020.00	
Vehicle: 10 days X $41/day =	410.00	
Core Storage: 547.1 m (1,795' X $0.45/ft) =	808.00	
Overhead: 20% of supervision & labour =	780.00	
Report Preparation: 37% X $2000 = (included data processing costs)	740.00	
Site preparation and reclamation =	400.00	
TOTAL BHP COSTS:	$10,658.00	
TOTAL DRILLING COSTS:		$44,428.00

TOTAL APPLIED TO CAR-94 GROUP: $44,428.00

KOL-94 GROUP

OLYMPIC DRILLING AND CONSULTING LTD.

HOLE	LENGTHS FEET/METRES	# ASSAYS	# DAYS	$	
E-183	474/144.5	38	2	$4,541.00	
E-184	296/90.2	16	1	$2,977.00	
TOTALS:	830/253.0	53	3	$13,808.00	$13,808.00

BHP MINERALS CANADA LTD.

Logging: 1 geologist X 3 days X $200/day =	$ 600.00	
Core Shack: 1 worker X 3 days X $140/day =	420.00	
Supervision: 3 days X 25% X $200/day =	150.00	
Assays: 53 X $30/assay =	1,620.00	
Vehicle: 3 days X $41/day =	123.00	
Core Storage: 228.0 m (830' x $0.45/ft.) =	333.00	
Overhead: 20% of supervision & labour =	234.00	
Report Preparation: 14% X $2000 = (included data processing costs)	280.00	
TOTAL BHP COSTS:	$3,760.00	
TOTAL DRILLING COSTS =		$17,568.00
TOTAL APPLIED TO KOL-94 GROUP =		**$17,568.00**

APPLE-94 GROUP

OLYMPIC DRILLING AND CONSULTING LTD.

HOLE	LENGTHS FEET/METRES	# ASSAYS	# DAYS	$	
E-185	416/126.8	17	1	$6,430.00	
TOTALS:	416/126.8	17	1	$6,430.00	$6,430.00

BHP MINERALS CANADA LTD.

Logging: 1 geologist X 1 days X $200/day =	$ 200.00	
Core Shack: 1 worker X 1 days X $140/day =	140.00	
Supervision: 1 days X 25% X $200/day =	50.00	
Assays: 17 X $30/assay =	510.00	
Vehicle: 1 days X $41/day =	41.00	
Core Storage: 120.7 m (396' x $0.45/ft) =	178.20	
Overhead: 20% of supervision & labour =	78.00	
Report Preparation: 7% X $2000 = (included data processing costs)	140.00	
TOTAL BHP COSTS:	$1,337.20	
TOTAL DRILLING COSTS =		$7,767.20
TOTAL APPLIED TO APPLE-94 GROUP =		**$7,100.00**

12. REFERENCES

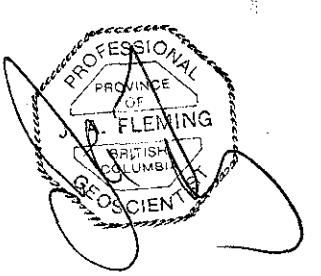
Nixon, G.T., Hammack, J.L., Koyanagi, V.M., Payie, G.J., Panteleyev, A., Massey, N.W.D., Hamilton, J.V., and Haggard, J.W., 1993: Preliminary Geology of the Quatsino - Port McNeill Map Areas, Northern Vancouver Island (1/12,11); in: Geological Fieldwork 1993, Grant, B. and Newel, J.M. Editors, B.C. Ministry of Energy , Mines and Petroleum Resources, Paper 1994-1.

Perelló , J.A., 1989: Arancibia, O., Burt,P., Clark, A.H., Clarke, G., Fleming, J., Himes, M.D., Leitch, C., and Reeves, A., 1989: Porphyry Cu-Mo-Au Mineralization at Island Copper, Vancouver Island, B.C.; Geological Association of Canada, Cordilleran Section, Porphyry Copper Workshop, Vancouver, April (Abstract).

13. STATEMENT OF QUALIFICATIONS

J.A. Fleming, P.Geo.
Chief Geologist
Island Copper Mine, BHP Minerals Canada Ltd., Port Hardy, B.C.

1) Professional Geoscientist, (1992) A.P.E.G. of B.C.
2) Fellow of the Geological Association of Canada
3) B.Sc. (Major Geology) 1971, McGill University
4) Employed as a geologist since 1968 and as Chief Geologist at Island Copper since 1982.



Island Copper Mine
Drill Core Assaying Procedures

Sample Preparation:

Split cores are received in the laboratory and the whole sample received is crushed to 95% less than 2 cm using a jaw crusher. A one quarter fraction of this material is obtained using a Jones riffle splitter (2 passes). This fraction is then dried for 2 hours at 150 °C and crushed to 95 % less tham .5 cm using a cone crusher and split again to 1/16 of the original sample using a Jones riffle splitter (2 more passes). This fraction is then pulverized to 95% less than 150 mesh using a Bico plate pulverizer and placed in a tin top sample bag for assay.

Base Metals;

Drill core samples are analysed for Copper, Molybdenum, Iron, Lead and Zinc as follows.

1) 2.5 g of sample is weighed into a 250 ml digesting flask, pulp standards of similar matrix are carried along with the samples.

2) Samples are digested with 10 ml Nitric acid, 10 ml Hydrochloric acid and 7 ml Perchloric acid on a bare (300 °C) hotplate until they cease to evolve NO_2 fumes (5 minutes) then 20 ml of a solution of 2 % $AlCl_3$ in 50 % Hydrochloric acid is added and the samples are digested a further 5 minutes.

3) Samples are cooled, bulked to 250 ml with deionized water and shaken then allowed to settle.

4) Base metal levels are measured using flame Atomic Absorption Spectometry (A.A.S.).

Precious Metals;

Drill cores are analysed for Gold and Silver using the following method.

1) 5.0 grams of sample is weighed into 250 ml digesting flasks. Pulp standards are carried along with samples.

2) 20 ml of Nitric acid is added to the samples and they are allowed to stand at room temperature for 30 minutes. Then 80 ml of Hydrochloric acid is added and the samples are allowed to stand at room temperature for a further 30 minutes. Samples are then boiled on a padded hotplate (150 °C) for 30 minutes.

3) Samples are cooled and bulked to 250 ml with deionized water then shaken and allowed to settle.

4) This solution is analysed for silver using heated graphite atomization A.A.S..

5) 50 ml of the digest is measured in a 250 ml flask containing 20 ml of Methyl Isobutyl Ketone (MIBK). These flasks are stoppered and shaken mechanically for 3 minutes. The samples are then bulked till the MIBK is near the top of the flask with 10 % Hydrochloric acid and shaken manually for 15 seconds to back extract iron from the MIBK.

6) The MIBK layer is then analysed for gold using heated graphite atomization A.A.S.

APPENDIX II

DRILL LOGS
ASSAYS
RQD / RECOVERY
MAGNETIC SUSCEPTIBILITY

DRILL LOG

HOLE NO. E-185

PROJECT: I.C.M. (BAY LAKE ZONE)
CONTRACTOR: OLYMPIC DRILLING & CONSULTING
DATE STARTED: OCT. 2/93 COMPLETED: OCT. 3/93
LOGGED BY: A.T. REEVES (summary log by JAF)

T.D.: 416'
INCLINATION: -50°
COORDINATES: 16,500.18 E 11709.25 N
SURVEY REFERENCES: MINE GRID

COLLAR ELEVATION: 1191.55
BEARING: 198.0

Footage	ALTERATION: Core Recovery, Oxide, Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, Albite, S.C.C.	STR.: Sulf. Veins, Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
0			.05		3				
					1–3				
			.20		3				
			.15		1–2				
200			.05						200
					2–3				
					3				
			.08		2–3				
400					1–2				400

LOG — SCALE 1" = 200'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

- ash +/- lap. tuff
- some brn biotite
- mt-alb vns
- dusty mt in albic mtx
- 2 small qvs with pyr.
- chloritized amphiboles
- lapilli tuff
- biotite(?)
- mt & small qvs

EOH 416' –
HOLE STOPPED DUE TO LACK OF COPPER MINERALIZATION.

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

0'-21' OVERBURDEN
21'-416'
Light green-grey albite-mag. quartz-chlorite-amphibole +/- sericite altered tuff(?). Amphibole occ. as veinlets + perv(?) & alt'd to chlorite(+). Albite altn is intense with green-black (mag-amp-chl) spots. Pyrite occurs in diss > veinlets. Mag. dissem'd with green chlorite (after amphibole?) rims.

ROCK UNIT
+/- biotite
BON. VOL.

HOLE NO. E-185

DRILL LOG

Page 1 of 7

PROJECT **Island Copper**
CONTRACTOR Olympic Drilling Consulting
DATE STARTED Oct 2/93 COMPLETED Oct 3/93
LOGGED BY AR

T.D. 416'
INCLINATION -50°
COORDINATES 16500.18 E 11709.25 N

COLLAR ELEVATION 1197.55
BEARING 198.0
SURVEY REFERENCES —

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	OTHER	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
0–21																							
21–416																M	.10		3				
																M	.10		3				
																M	.05		3				
																S	.05		3				
																S	.05		1-3				
																S	.05		1-3				

LOG
SCALE 1" = 10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

- sericitic fracture
- partially chloritized amph. vnlt.
- tight narrow vein network → wht zeolite
- brownish-red (hem?) tinted Carbonate/zeol → 50°CA ~1"
- epidote with late zeol/carb vns.
- ash tuff
- 4" @ 60° CA Q - wht zeol/carb + sericite
- qtz-cpy
- very milky matrix with more green amph spots
- lapilli clasts in brownish matrix

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

0-21' OVERBURDEN

21-416' ANDESITE

Light grey green (albitic matrix) with green black (mag-amph-chl) spots. A very hard rock due to the intense albitization. Grain size is v.f. to an ash texture... masked by alt^n?

Mt is mainly disseminated subhedral bleb (to 1mm), often with green chloritic (after amphibole?) rims. Amphibole is present as vnlts.

Sulphides as diss > Frac f.

Zeolites/Carbonates are white and comprise 2-3%

Qt_3 veins are rare.

↓ patchy brown biotite?

ROCK UNIT

HOLE NO. E-185

DRILL LOG

Page 2 of 7

PROJECT **Island Copper**
CONTRACTOR Olympic
DATE STARTED Oct 2/93 COMPLETED Oct 3/93
LOGGED BY AR

T.D. 416'
INCLINATION -50°
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	A	B	F	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 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
80																												
90																	M	.05		1-2					pink hard alt' around vns → kspar 3/8" grey carbonate /? vn @ 30° CA ← mt vnlt w/ alb halo ← cpy, mly (low assays ~100'-110')	21 – 416' ANDESITE Green colour due to the chloritization of mafics. Note amphiboles only partially alt'.	
100																	M	.05		1-2					white zeol/carb @ 60° CA ← white carb/zeol ≈ parallel to CA	96 – as patchy biot alt' is showing an increase, the textures appear to be coarse ash ± lapilli. Very little sulphide is evident, matrix is still intensely albitized. Occasional vns & blebs of epidote (retro?) can be seen.	
110																	M	.10		2-3					← mt-alb vnlts		
120																	M	.10		3					2" intense green-white sericite halo on paper thin q-mly vein @ 60° CA Qtz-Cpy-Carb. vn cpy FF > D	white carb-zeol vns to 1/4"	
130																	M	.25		3					1/2" healed fault breccia w/ wht gtz frags & grey pyritic mx Py, cpy		
140																	M	.20		3					2" wht gtz/carb-zeol @ 20° CA	↓ lapilli	

DRILL LOG

HOLE NO. E-185

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED OCT 2/93 COMPLETED OCT 3/93
LOGGED BY R

T.D. 416'
INCLINATION -50°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

Footage	Frac. Inten	Est. Cu. Mo	FeS_2
140–150	M	.15	2-3
150–160	M	.12	1-2
160–170	S	.05	2-3
170–180	S	.05	1-2
180–190	S	.05	1-2
190–200	M	.02	1-2

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system

- ← bleached haloes on wht qtz-carb vn
- white calc/± zeol @ 45°CA
- PY
- "dusty" mt in milky albitic matrix
- Some round core frags (probable faults.
- grey f.g. QV w/ diss pyr.
- ← lapilli
- ← 1/8" smoky grey QV with pyrite & moly on edges and 1/2" ser selvages @ 70° CA
- ash
- ← fragment 1/2 grey QV with green sericite halo
- ← white Q/± carbonate 60°CA
- 1" Q-moly @ 70°CA,
- lapilli

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

21- 416' ANDESITE

Textures still mainly ash ± lapilli. Intense albitization has given clasts a fuzzy resorbed/corroded look. Some may be remnant bxas? Amphiboles are obvious by their bladed look & green colour (var. actinolite).
Mt is disseminated as blebs that are often coarse and sometimes suggest a gash fill.

For the intensity of the alterations in this rock, the sulphides are surprisingly weak, which may be related to the lack of qtz-veins.
The weak pale brown bt? appears to pre-date amphibole mt vns. I presume that the amph. would show stronger chloritization if the biotite event were later.

(v-low Mo assays) ie: not moly.

ROCK UNIT

HOLE NO. E-185

DRILL LOG

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED Oct 2/93 COMPLETED Oct 3/93
LOGGED BY AR

T.D. 416'
INCLINATION -50°
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	Br A	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
200															M	to S	.05		1-2				
210															M	to S	.05		2-3				
220															M		.05		1-2				
230															M		.05		1-2				
240															M-L								
250															M-L								

LOG
SCALE 1" = 10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

- fracture plane above contorted white carbonate ± zeolite healed fault @ 60° CA
- lapilli – large clasts are more alt'd
- partially chloritized amphiboles
- angular, tight fragmental texture with milky altered matrix
- intense greenish white alt'n assoc. w/ QV's
- healed bxa @ 60° CA (siliceous matrix with white clays)

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

21 – 416' ANDESITE

Still much the same in general appearance. Some lapilli ± breccia zones as noted, otherwise the rock is an albitized ash to fine grained tuff.

White carbonate ± quartz ± zeolite veins predominate. The moderate to strong fracturing is probably due to rough handling of a very brittle rock.

ROCK UNIT

HOLE NO. E-185

DRILL LOG

Page 5 of 7

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED Oct 2/93 COMPLETED Oct 3/93
LOGGED BY AR

T.D. 416' +
INCLINATION -50°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

ALTERATION: Core Recovery; Oxide; Quartz; Sericite; Clay/Pyrop; Biotite; K-spar; Chlorite; Epidote; Carb/Zeo; Garnet; Pyroxene; Amphibole; A; B; r
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 1"=10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system
LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES
ROCK UNIT

260
270
280
290
300
310
320

M - S
M
M - S
M
M
M

0.10
.05
.05
.05
.05
.05

2-3
1-2
2-3
3
3
3

← mt vns
cpy tr
↑ lapilli
↓ ash
↓ lapilli
← py is localized as diss. in chlorite aftd lapilli
cpy tr
ash texture - lapilli
← healed fault? @ 40°
← lapilli (coarse & subangular)
1/4" white carbonate/zeol vns @ 50° CA

21 - 416' ANDESITE

→ some vague brown colouration that may be bt² (or hem dust?)
→ thin white calc/zeol ± qtz veins as before

small (1-2mm) brownish spots may be chlorite

some narrow milky qvs.

310 - chunk sampled before logging.
↓
320

HOLE NO. E-185

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR Olympic
DATE STARTED Oct 2/93 COMPLETED Oct 3/93
LOGGED BY R

T.D. 416'
INCLINATION -50°
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	# L B	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
320																									21-416 ANDESITE	
																									320-320 chunk sampled before logging.	
																	.02	2-3							increase in epidote-chlorite ± pyrite clots.	
330																							330			
																	.02	2-3							– through the hole, one occasionally sees grey chert-like quartz veins. Faint banding is sometimes visible.	
																								Minor mt vns.		
340																							340	← lapilli tent.		
																	.02	2-3								
350																							350		– infill is white zeolite + carbonate + quartz.	
																	.02	2-3						← brown chlorite?		
360																							360	← 30° cA grey silic matrix with white calc. bxc frags ~1"		
																	.02	2-3						40° cA 3/16" white qtz vnlr		
																								3/8" white zeol/carb @ 50°		
370																							370	← 50° cA f.g. smoky grey lapilli:		
																	.02	2-3								
380																										

HOLE NO. E-185

DRILL LOG

Page 7 of 7

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED Oct 2/93 COMPLETED Oct 3/93
LOGGED BY AR

T.D. 416'
INCLINATION -50°
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	A	B	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 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
380																											
390																		.02		3				390	1/4' 50°CA white 1" LZQ	21-416' ANDESITE as above	
400																		.02		2 3				400			
410																		.02		1-2				410	clay seam with gt3-ser below 1/2" QV (smoky) @ 20°CA ← sericitic fracture.		
eoh																		.02		1-2				416			
420																											
430																											

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_185	16500.2	11709.3	1197.6

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	416.0	198.0	-50.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
30.0	40.0	0.07	0.001	3.3	<0.01	0.20	0.003	0.008	18827
70.0	80.0	0.03	0.001	4.0	<0.01	0.10	0.002	0.004	18828
100.0	110.0	0.03	0.001	4.4	<0.01	<0.01	0.003	0.005	18829
110.0	120.0	0.07	0.001	4.0	<0.01	0.30	0.004	0.005	18830
120.0	130.0	0.03	0.001	5.4	<0.01	<0.01	0.003	0.004	18831
130.0	140.0	0.03	0.002	4.2	<0.01	<0.01	0.003	0.003	18832
140.0	150.0	0.06	0.002	2.3	<0.01	0.10	0.003	0.005	18833
170.0	180.0	0.04	0.001	3.3	<0.01	0.20	0.003	0.004	18834
210.0	220.0	0.02	0.001	2.7	<0.01	0.10	0.004	0.004	18835
250.0	260.0	0.03	0.001	4.0	<0.01	0.10	0.003	0.004	18836
280.0	290.0	0.03	0.001	3.7	<0.01	0.20	0.004	0.007	18837
310.0	320.0	0.05	0.001	6.3	0.04	0.10	0.003	0.006	18816
330.0	340.0	0.02	0.002	4.7	0.03	0.10	0.003	0.005	18817
350.0	360.0	0.02	<0.001	3.5	0.02	0.20	0.006	0.007	18818
370.0	380.0	0.01	<0.001	4.0	0.01	0.20	0.005	0.007	18819
390.0	400.0	0.01	<0.001	3.8	0.01	0.20	0.004	0.005	18820
410.0	416.0	0.01	<0.001	2.8	0.01	0.30	0.006	0.047	18841

ISLAND COPPER MINE

ASSAY REQUISITIC AND REPORT FORM

Kayrad Dec 23/93

LAB SENT TO: ICM DATE SENT: Oct 15/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-185	30	40	.07	.001	3.3	.00	.2	.03	.08	188827	15
	70	80	.03	.001	4.0	.00	.1	.02	.04	828	16
	100	110	.03	.001	4.4	.00	.10	.03	.05	829	17
	110	120	.07	.001	4.0	.00	.3	.04	.05	830	18
	120	130	.03	.001	5.4	.00	.10	.03	.04	831	19
	130	140	.03	.002	4.2	.00	.0	.03	.03	832	20
	140	150	.06	.002	2.3	.00	.1	.03	.05	833	21
	170	180	.04	.001	3.3	.00	.2	.03	.04	834	22
	210	220	.02	.001	2.7	.00	.1	.04	.04	835	23
	250	260	.03	.001	4.0	.00	.1	.03	.04	836	24
	280	290	.03	.001	3.7	.00	.2	.04	.07	837	25

ISLAND C PER MINE

ASSAY REQUISITION AND REPORT FORM

QUICK CK PLS Keg. 9810

LAB SENT TO: ICM

DATE SENT: Oct. 3/93

SENT BY/DEPT: J/Geol

TYPE: Check

DATE REPORTED:

REPORTED BY:

(core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-185	310	320	5	1	63	04	1	3	6	18816	38
	330	340	2	2	47	03	1	3	5	18817	39
	350	360	2	0	35	02	2	6	7	18818	40
	370	380	1	0	40	01	2	5	7	18819	41
	390	400	1	0	38	01	2	4	5	18820	42
	410	416	1	0	28	01	3	6	47	18840	← 43

Kaye &

ROCK QUALITY DESIGNATION

HOLE NO.: E185 DATE: Oct 14/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
21	26			61		8		
26	36			120		15		
36	46			114		17		
46	56			120		22		
56	66			121		12		
66	76			118		13		
76	86			118		17		
86	96			120		20		
96	106			122		28		
106	116			120		32		
116	126			119		8		
126	136			120		12		
136	146			122		19		
146	156			121		27		
156	166			117		23		
166	176			84		10		
176	186			118		5		
186	196			112		18		
196	206			121		21		
206	216			122		39		
216	226			120		20		
226	236			121		45		
236	246			120		19		
246	256			118		22		
256	266			120		15		
266	276			119		24		
276	286			120		29		
286	296			121		30		
296	306			120		14		
306	316			122		32		
316	326			120		24		
326	336			120		24		

ROCK QUALITY DESIGNATION

HOLE NO.: E185 DATE: Oct 14/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
336	346			122		30		
346	356			120		34		
356	366			120		28		
366	376			121		24		
376	386			119		40		
386	396			120		30		
396	406			121		33		
406	416			120		28		
EOH								

Keyed

MAGNETIC SUSCEPTIBILITY

LE NO. E185 DATE Oct 14/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
21-30						1.2
30-40						2.6
40-50						1.4
50-60						2.9
60-70						1.4
70-80						3.6
80-90						.87
90-100						2.0
100-110						3.3
110-120						1.9
120-130						.72
130-140						4.6
140-150						.70
150-160						2.5
160-170						1.8
170-180						3.1
180-190						2.1
190-200						1.9
200-210						3.0
210-220						2.8
220-230						3.1
230-240						5.0
240-250						.53
250-260						3.1
260-270						2.1
270-280						0.09
280-290						1.1
290-300						4.1
300-310						1.6
310-320						4.7
320-330						2.6
330-340						2.0
340-350						4.5

MAGNETIC SUSCEPTIBILITY

LE NO. E185 DATE Oct 15/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
350-360						.25
360-370						.57
370-380						2.8
380-390						1.2
390-400						1.6
400-410						.62
410-416						.04
EOH						

HOLE NO. E-183 **DRILL LOG** Page 1 of 1

PROJECT **Island Copper**
CONTRACTOR OLYMPIC DRILLING & CONSULTING
DATE STARTED Sept. 29/93 COMPLETED Oct. 1/93
LOGGED BY J.A. FLEMING

T.D. 474'
INCLINATION -50
COORDINATES 17036.63 E 11391.10 N
SURVEY REFERENCES —
COLLAR ELEVATION 1192.46
BEARING 198°

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	ALB	SCC	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	HEM	Sample No. & Interval	LOG SCALE 1"=200' BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT

COLLARED AT MINE RD - JOE'S 1k RD (C.H. MAP) INTERSECTION TO TEST WEST EXTENSION OF SBS ZONE.

Footage scale: 0, 100, 200, 300, 400

Visual estimates ($CuFeS_2$ / FeS_2):

$CuFeS_2$	FeS_2
.4	3-5
	1-2
.2 to .3	2-3+
	5-8
.3 to .4	3
.2	
.10	3-5
<1	3
	2-3

Log: 0-9 / 08

cpy++ occ as vnlts + diss occ w/ qvs (white); cuts mag-amp vns.
qtz + pyr + cpy vns
— strg seric-clay alt'n a/w shears
— pyrop. alt'n a/w shrs + parv.
— flt @ 205-212
— cpy + sp vns (cpy)
— pyr-sp-calc vns
pyr+ cpy+
qtz + pyr + cpy vns
abd (5%) clots
chl-seric-pyr in reddish (hem?) alt'd fg. mtx
Pyr' Strg. albite alt'n w/.. vns/vnlts pyr.

0'-42' CASING (O.B.)

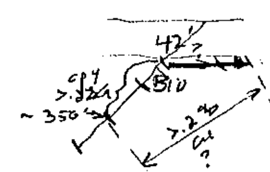
42-160' Bio-mt-alb + amp; chl-seric (scc) + cpy-calc-pyr, hem(?) alt'd ash/xal tuff.

160-212' Mod-strg scc alt'd, then (in mtx) mag + bio alt'd c.g. tuff – lapill tuff. Cpy occ. vnlts > diss w/ loc. cpy >> pyr.

205-212 - strg shr-flt. w/ seric-clay-pyr.

212'-258' Strg. scc alt'd, pyritic feld π bslt/xal tuff. Seric envs occ. on pyr-cpy vns

258'-474' Pinkish-reddish (hem?) alt'd mod scc alt'd lithic(?) tuff w/ scc clots (15-20%) to 15 cm. in feld porp. bslt/xal tuff in ~40% feld lathes & fg albite mtx. Strg. parv. alb alt'n & as envelopes around scc clots. Cpy cuts the clots & occ. in margins, and occ. in fracts. The clots show growth rings (like a sliced cabbage). [see 420'-430']



Comment
The biotite at top indicates that the hole may have hit br. at least ½ way through the mineral zone. Strg. seric-clay alt'n occ. btw 160-258, poss. ass. w/ flt/shr @ 205-212'. Cpy carries into the alt'd zone and into scc alt'd lithic lapilli(?) tuff below.

DRILL LOG

HOLE NO. E-183

PROJECT **Island Copper**
CONTRACTOR OLYMPIC DRILLING CONSULTING
DATE STARTED Sept. 29/93 COMPLETED Oct 1/93
LOGGED BY J. A. FLEMING

T.D. 474'
INCLINATION -50°
COORDINATES 17036.63E 11391.10N
SURVEY REFERENCES —

COLLAR ELEVATION 1192.46
BEARING 198°

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system

"WOBBLE CITY" HOLE. DRILLED TO TEST WEST EXTENSION OF SBS ZONE.

Footage	Frac. Inten	Est. Cu. Mo	FeS_2	MoS_2
42–50	5	.4	3 to 5	tr
50–60	5	.4	3 to 5	tr
60–70	5	.4	3 to 5	tr
70–80	5	.4	3 to 5	
80–90	4 to 5	.4	3 to 5	
90–100	4	.4	3 to 5	

Carb/Zeo (42'): 1% Z+K

Log notes:
- cpy+ mlts > diss.
- 15' int. seric altn + diss pyr/cpy - soft.
- 2" wt qv.
- cpy++ vnlts < 5mm c/w mag
- tuff clasts 3-8mm
- hbn amp vn cut by cpy c/w mag
- alb altn prom. (env on amp ? in mtx)
- 1" gry-wt qv. c/w S_2(tr)
- 4" gry qv cut by wt qtz-calc vns
- dark c mag vnlt & cpy mlts/diss: c alb. env's on mag vns
- 2' pinkish qv.
- wt qv cuts & displ. gry qv + cpy
- ten (phrenite?)
- 1' gry-pinkish qv. w/ tan (phrenite?) diss part. in wlk.
- py+ vnlts/ff
- cpy diss + vnlts
- (tn pyrop al.w(?) banded, no vis qv? c remn seric altd vol. in vn
- cpy++ (90–100)

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

0-42' OVERBURDEN

42'-160'

Biotite-magnetite-albite ±amp ±epi + chlorite-sericite-pyrite-quartz altered basaltic lithic tuff (Bonanza Volc.) (HOM?)

Med-dk brn, gry, grn c runs white, lt grn. Tuffs gen. fg to coarse ash size frags in fg felted * feld-mafic mtx.

Altns: mod-strg brn (at top) bio; Pervasive. Alb. present but not always readily observed. Loc. some comp c/w mag +/- cpy. Loc. plag ⇒ seric-chl-clay (scc) + pyr. c/w shrs/slips. Chl. after amph(?)

Rk strongly fractured in upper part. Epi. occ c calc in vnlts. Alb occ. as env's on mag ± amp ± cpy vns & perv. in mtx.

Mag occ. diss & vnlts c/w ± pyr, amp, cpy.

Cpy occ mainly as fine (< .5mm) vnlts & diss. in vlc near vnlts. Also occ. c gry qtz vns

Scatt'd thin calc. vnlts.

* Bio rapidly gives way to a perv. reddish-altn of mtx which is prob hem

HOLE NO. E-183

DRILL LOG

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED Sept 29/93 COMPLETED Oct 1/93
LOGGED BY J. A. Fleming

T.D. 474'+
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	A/B	STR. Suif. Veins	Frac. Inten	VISUAL EST. Est. Cu, Mo	CuFeS2	FeS2	Cu3FeS3	Fe3O4	MoS2	Sample No. & Interval	LOG SCALE 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
100																										
110																										
120																										
130																										
140																										
150																										
160																										

HOLE NO. E-183

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIK
DATE STARTED Sept 29/93 COMPLETED Oct. 1/93
LOGGED BY J. A. FLEMING

T.D. 474'
INCLINATION
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

ALTERATION: Core Recovery, Oxide, Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, A B, S C
STR.: Sulf. Veins, Frac. Inten
VISUAL EST.: Est. Cu. Mo, CuFeS$_2$, FeS$_2$, Cu$_5$FeS$_4$, Fe$_3$O$_4$, MoS$_2$

Sample No. & Interval

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

Footage	Carb/Zeo	Frac. Inten	Est. Cu. Mo	FeS$_2$
160–170	Lo 240 Cuf + Zeo	3 to 4	.2	2 to 3
170–180		3 – 4	.2	3 to 5
180–190		3 to 4	.15	3
190–200		3 – 4	.2	2 to 3
200–210		3 – 4 to 5	.3	2 to 3
210–220		3	.2	3 to 5

Footage: 160, 170, 180, 190, 200, 210, 220

Log notes (basic geology):

- cpy+ pyr+/-
- cpy+/- in less alt'd volc.
- ~6" flt banded. foliated flt/shr w calc. healed gashes.
- ~ prop. alt'n in fw of flt.
- highly pyritic w tr. cpy seric alt'd shr (?)
- wt calc-zeo healed bxx - ~3 frags in bxx
- ~ lapilli to 3 dia.
- ~ coarse tu pyr-seric alt'd lapill. of dk grn sec alt'd lapilli in tu prop-seric alt'd mtx
- stg seric alt'd shr. / gouge/muck clots & patches of epidote
- ~ cpy vnlts & f.g. diss. in sec alt'd tuff.
- ~ hem. occ. w clots epi-pyr-chl.
- ~ bio(?)-mag alt'd volc w cpy to chr. flt.

Lithologic descriptions:

160-212

Chl-seric alt'd, +/- hem (in mtx) mag+/-bio alt'd c.g. tuff- lapill. tuff- bxx
Change in alt'n & text ≃ of 160'. Mtx f.g. (<1mm) w coarser clasts (lapilli)
Cpy continues as diss & vnlts, often >> pyr. over in sec alt'd volc. & w epi alt'd volc.

Note, the core in less alt'd sections x-crossed w narrow v-shaped, chl coated groves - equiv of wedge failure on core scale

Chuck sampled before logging:
210-220 =
230-240 =
250-260 =
270-280 =
290-300 =

205-212 stg shr/flt zone w stg seric-clay alt'n + pyr.

DRILL LOG

HOLE NO. E-183 | Page 4 of 8

PROJECT: Island Copper | T.D. 474' | COLLAR ELEVATION
CONTRACTOR: OLYMPIC | INCLINATION | | BEARING
DATE STARTED: SEPT 29/93 | COMPLETED: OCT. 1/93 | COORDINATES
LOGGED BY: J. A. FLEMING | SURVEY REFERENCES

LOG SCALE 1"=10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

Footage	Frac. Inten	Est. Cu. Mo	FeS_2	MoS_2
220–230	3 to 4	.2 +	3 to 5	tr
230–240	3 to 4	.2 +	3 to 5 +	
240–250	3 to 4	.2 +	5 to 8	
250–260	3	.2 +	5 to 8	
260–270	3	.2 +	5 to 8	
270–	3	.25	5 to 8	

Log (basic geology):

- cpy+ pyr+ MoS_2+
- 2" wt qv. w/ pyr, moly
- tay altn may be clay/pyrop (soft.) (strg. scc.)
- strg. seric-pyr. altn a/w shrs/slips
- strg. seric altn in bxx vn
- 5mm cpy on
- 6' int seric. altn env w/ 8" wt q.v.
- abd pyr+cpy vns w/ slickslides
- mod-strg. scc altd
- pyr + cpy+pyr (1P) calc. vn;
- tan pyrop(?) a/w pyr vns
- gry qv. (1an) w/ pyr-cpy, sp.
- pyr. diss & vnlts (env) diss grns euhedral + clumps
- little frg rimmed w/ pyr.
- 1" seric-chl envs on 2mm pyr-sp-calc vns
- 2" tan seric + pyrop(?) envs on vn of pyr + sp + calc.
- cpy+ in gry-milky wt q.v. (alb?) & diss. in w/k

Lithologic descriptions, notes & sketches:

212'–258' Bonanza Vlcs (cont'd)

Strg. scc altd (Bio?)+mag-pyr altd feld. π basalt (tuff?) Prom. feld phenos (~40%, x̄ 3mm / range 2–4mm) w/ f.g. (~~brn bio~~) altd feld'c mtx. (don't think sp.) Mag wk-mod. Cpy occ as vnlts (to 1mm thk) ≥ dissem. w/ chl. (after amp?) or w/ calc (late cpy?) Locally cpy >> pyr. where weak scc altn + bio well preserved. Scc occ as perv. soft seric-chl+/-clay altn of feld + wt envs on pyr+/-cpy vns to 1mm.

2nd look – Don't think it's bio

LATE Cpy Sp

Intg. scc altns diminish, from abt 250' ↓ to 258 (TA)

Change @ 258' to darker less scc altd rk - lapilli tuff text. The abv. scc (shrd zone) may represent the contact zone btw feld. π basalt & lapilli tuff

HOLE NO. E-183 **DRILL LOG**

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED Sept 29/93 COMPLETED Oct. 1/93
LOGGED BY J. A. FLEMING

T.D. 474'
INCLINATION |
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, ALB, SCC
STR.: Sulf. Veins, Frac. Inten
VISUAL EST.: Est. Cu. Mo, CuFeS2, FeS2, Cu2FeS4, Fe3O4, MoS2, Hem

LOG SCALE 1"=10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

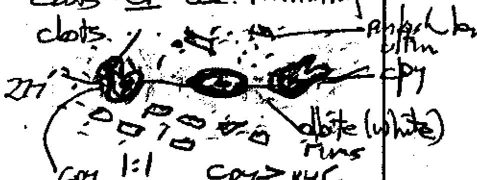
Footage	Frac. Inten	Est. Cu.	FeS2
280–290	3	.35 +	3
290–300	3	.35 +	3
300–310	3	.30 +	3
310–320	3	.35	1 to 2
320–330	3	.3	3 to 3
330–340	3	.35	2 to 3

Basic Geology (log notes):

cpy+ py++ — pyr + mt. grains in rare gry qv.
loc. cpy ≥ pyr.
cpy occ. in grn SCC altd clots/planos & along fracts.
gpy++ Grn. SCC clots to 1 cm (5–10%)
Note grn scc altd clots occ. both scattd & along fracts (see diag)
well defined SCC altn along fracts w dk zoned clots in pinkish f.g. mtx w scc-altd feld lathes
zang. w pyr.
Locally the pinkish hem(?) altn is darker & looks like biotite
thin-banded pink grn color & f.g. grey mtl.
cpy ≥ pyr.
5mm gry-wt q.v. w cpy in core
dk patches of mag-chl altd feld ‖ bdt. – feld laths promn.
cpy pyr. wlts (<1mm)
cpy occ

Lithologic Descriptions:

258–474' Bas. Vone (contd) [PINKISH COLOURED]
From ~260 ft charactd by 10–15% clots of dk-lt grn, zoned, chl-scc-clay(?) [scc] altd lithic clasts(?)/planos(?) [more likely former or growth features] in a pinkish-hem(?) altd [SCC altd] feld. porp. basalt w ~10% feld lathes & f.g. mtx (albite)
Tan altn may be prehnite w hem. in mtx.
NOTE Cpy + pyr. occ. along fracts cutting clots or occ. rimming clots.



Cpy occ. w pyr. in gry-wt q.v. in core & along margins

HOLE NO. E-183

DRILL LOG

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED Sept 29/93 COMPLETED Oct. 1/93
LOGGED BY J.A. FLEMING

T.D. 474'
INCLINATION |
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

Footage	Frac. Inten	Est. Cu. Mo	FeS2	Sample No. & Interval
340–350	3	.25	3	
350–360	3	.2 (-)	3	350
360–370	3	.15 to .2	3 to 6	360
370–380	3	.10	3 to 5	370
380–390	3	.10	3 to 5	380
390–400	3	.10	3 to 6	390

LOG — SCALE 1"=10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

cpy ++ pyr + py > cpy
trace epidote
dk. mag alt'd volc extends to 349
← end of dk rk for streak
pyr > cpy
strong alb alt'n
2-3 cm thk wt-gry-pinkish qvs w/ spots pyr. - no cpy
spots epidote
clots look lk lapilli.
dk gry-blk mag alt'd volc. section pyr ++ cpy
scc confined mainly to clots - btw clots tuff mtx is albitic.
6" v-pyritic band
pyr. mtlz ~1/2 mm thk
pinkish zeo vns +/- calc. (1-2 cm) & cut by ty gry vns

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

258'-474'
Alto Bonanza Volc (cont)
Continued scc alt'd feld porp bslt (tuff?) = dk grn clots of scc - chl +/- pyr ++ cpy. All cut by zeo + gry mtl (v.f.g) - cpy decreasing & pyr. incr. w/ depth. Scatt'd gry q.v.'s +/- pyr +/- cpy.
Incr. in dk, mag alt'd volc. from ~340-350
Some layering of feld in dk feldspathic volc sugg. flow(?) Lt coloured rk looks lk alt'd tuff rk.
~350'-365'
back into light, pinkish alt'd tuff (lam?) w/ grn scc clots - clots smaller than abv. dk section - rk has + 40% feld laths 2-4 mm long.
365-
Mixed dk & lt grn-gry alt'd volc as 340-350

ROCK UNIT

HOLE NO. E-183 **DRILL LOG** Page 7 of 8

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED Sept 29/93 COMPLETED Oct. 1/93
LOGGED BY J.A. FLEMING

T.D. 474'
INCLINATION |
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1"=10'
BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system

Footage	Frac. Inten	Est. Cu. Mo	FeS_2
400–410	3	<.1	3
410–420	3	<.15	3
420–430	3	<.10	3
430–440	3	<.10	3
440–450	3	<.1	≤3
450–460	3	<.1	3/4

LOG notes:

pyrite cpy°
pyr. favours the core or around the clots
~15cm sec clot.
Prom. wt. alb rims around clots & they tend to coalesce as well
tr cpy

discrete spots (1-2mm) brk red Hem.
BEAUTIFUL GROWTH TEXT - LOOKS LIKE A SLICED CABBAGE (sampled @ 427')

pyr + cpy vns (3-5mm) w sec alt. & dk mafic basalt abv & below (1 each side)
slip/band q.v. w sec altn
late bxx of (??) fg. mtl. (see diag)
thin wt. zeo(?) vns

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES:

258-474'
Alto Bonanza Vol. (cont'd)
Same or ll to abv. w incr. pyr. Gen. clots of sec are distinctly zoned & suggest growth text/origin. Some coalesce to form large clots. The mtx btwn clots is gen. hard, albite & pinkish. Pyr. is incr'd w diss & vnlts. No vis. cpy.
Late zeo + calc & late gry fg mtl cut all.

449'

ROCK UNIT

HOLE NO. E-183

DRILL LOG

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED Sept 29/93 COMPLETED Oct. 1/93
LOGGED BY J. A. FLEMING

T.D. 474'
INCLINATION -50°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

Footage	Carb/Zeo	Frac. Inten	Est. Cu. Mo	FeS2
460	1 to 3Z Z + L	3	<.1 <.1	3 to 5
470		3	<.15	3 to 5

Basic geology notes:
- pyr+ cpy+/-
- 6mm qv + pyr w sed envs
- pyr-zeo-calc vn
- tr. cpy in dk volc.
- 2mm qtz-pyr vn w pyrite envs.

474' E.O.H.

STOPPED DUE TO LACK OF COPPER MINERALIZATION

Lithologic descriptions, notes & sketches:

-474 Alt'n Basalt Volc (cont'd)
Tr. cpy in dk volc. nr btm.
Still reddish-brn altd mtx a wt albite.

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_183	17036.6	11391.1	1192.5

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	470.0	198.0	-50.0
470.0	474.0	198.0	-45.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
42.0	50.0	0.34	0.006	4.2	0.17	1.40	0.010	0.017	18909
50.0	60.0	0.19	0.001	5.8	0.05	0.50	0.003	0.005	18910
60.0	70.0	0.34	0.013	3.8	0.13	0.90	0.003	0.004	18911
70.0	80.0	0.30	0.006	5.8	0.08	1.10	0.003	0.005	18912
80.0	90.0	0.38	0.031	4.2	0.20	0.90	0.002	0.004	18913
90.0	100.0	0.44	0.008	3.4	0.08	1.30	0.014	0.020	18914
100.0	110.0	0.35	0.034	3.1	0.12	1.40	0.002	0.005	18915
110.0	120.0	0.29	0.001	7.4	0.20	1.10	0.003	0.009	18916
120.0	130.0	0.31	0.001	7.5	0.08	1.80	0.004	0.015	18917
130.0	140.0	0.43	0.005	6.9	0.05	2.20	0.003	0.008	18918
140.0	150.0	0.24	0.001	6.8	0.04	1.20	0.003	0.006	18919
150.0	160.0	0.17	0.001	7.7	0.03	0.90	0.003	0.005	18920
160.0	170.0	0.22	0.012	8.1	0.04	3.10	0.018	0.053	18921
170.0	180.0	0.27	0.004	7.0	0.08	3.00	0.016	0.043	18922
180.0	190.0	0.16	0.004	6.3	0.06	3.10	0.008	0.069	18923
190.0	200.0	0.17	0.001	5.9	0.04	1.80	0.011	0.030	18924
200.0	210.0	0.17	0.003	6.4	0.06	2.90	0.015	3.100	18925
210.0	220.0	0.22	0.008	5.8	0.04	4.40	0.009	0.029	18815
220.0	230.0	0.30	0.003	5.7	0.04	3.50	0.006	0.030	18926
230.0	240.0	0.28	0.007	8.3	0.05	6.50	0.005	0.021	18814
240.0	250.0	0.30	0.006	7.0	0.03	4.00	0.008	0.049	18927
250.0	260.0	0.26	0.005	6.0	0.03	6.50	0.007	0.073	18813
260.0	270.0	0.36	0.017	5.3	0.03	2.50	0.004	0.034	18928
270.0	280.0	0.38	0.021	3.5	0.04	2.00	0.004	0.045	18812
280.0	290.0	0.14	0.004	3.4	0.03	0.40	0.001	0.016	18929
290.0	300.0	0.38	0.005	3.0	0.07	1.00	0.001	0.005	18811
300.0	310.0	0.31	0.004	4.4	0.07	1.70	0.002	0.007	18930
310.0	320.0	0.23	0.005	4.4	0.04	1.60	0.003	0.039	18931
320.0	330.0	0.22	0.004	4.3	0.06	0.40	0.001	0.003	18932
330.0	340.0	0.16	0.001	4.3	0.03	0.40	0.002	0.003	18933
340.0	350.0	0.09	0.001	7.2	0.01	0.40	0.002	0.005	18934
350.0	360.0	0.14	0.005	4.5	0.03	0.20	0.002	0.006	18935
360.0	370.0	0.16	0.001	6.5	0.05	0.20	0.001	0.004	18936
370.0	380.0	0.09	0.001	5.5	0.04	0.10	0.001	0.002	18937
380.0	390.0	0.06	<0.001	7.0	0.03	0.30	0.002	0.003	18938
390.0	400.0	0.04	<0.001	4.7	0.03	0.10	0.001	0.002	18939
430.0	440.0	0.03	<0.001	4.8	0.04	0.10	0.002	0.003	18940

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
460.0	470.0	0.05	0.001	5.9	0.04	0.10	0.002	0.001	18941

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: ICM DATE SENT: Oct 19/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo X10-3	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb X10-3	ZINC % Zn X10-3	TAG #	
E-183	42	50	34	6	42	17	1.4	910	17	189089	32
	50	60	19	1	58	05	.5	3	5	91 0	33
	60	70	34	13	38	13	.9	3	4	91 1	34
	70	80	30	6	58	08	1.1	3	5	91 2	35
	80	90	38	31	42	20	.9	2	4	91 3	36
	90	100	44	8	34	08	1.3	14	20	91 4	37
	100	110	35	34	31	12	1.4	2	5	91 5	38
	110	120	29	1	74	20	1.1	3	9	91 6	39
	120	130	31	1	75	07	1.8	4	15	91 7	40
	130	140	43	5	69	05	.2	3	8	91 8	41
	140	150	24	1	68	04	1.2	3	6	91 9	42
	150	160	17	1	77	03	.9	3	5	91 20	43
	160	170	22	12	81	04	3.1	18	53	92 1	44
	170	180	27	4	70	08	3.0	16	43	92 2	45
	180	190	16	4	63	06	3.1	8	69	92 3	46
	190	200	17	1	59	04	1.6	11	30	92 4	47
	200	210	17	3	64	06	2.9	15	31	92 5	48
	220	230	30	3	57	04	3.6	6	30	92 6	49

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: ICM DATE SENT: Oct 24, 13 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo x10-3	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb x10-3	ZINC % Zn x10-3	TAG #	
E-183	240	250	30	6	70	03	40	088	49	189271	41
	260	270	36	17	53	03	25	4	34	9278	42
	280	290	14	4	34	03	04	1	16	9279	43
	300	310	31	4	44	07	17	2	7	9301	44
	310	320	23	5	44	04	16	3	39	9311	45
	320	330	22	4	43	06	4	1	3	9322	46
	330	340	16	1	43	03	4	2	3	9333	47
	340	350	9	1	72	01	4	2	5	9344	48
	350	360	14	5	45	02	2	2	6	9355	49
	360	370	16	1	65	05	2	1	4	9366	50
	370	380	9	1	55	04	1	1	2	9377	51
	380	390	6	0	70	02	3	2	3	9388	52
	390	400	4	0	47	03	1	1	2	9399	53
	430	440	3	0	48	04	1	2	3	9401	54
	460	470	5	1	59	04	1	2	1	9411	55

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

Keyed (SR)

LAB SENT TO: ICM

DATE SENT: SEPT 30/93

SENT BY/DEPT: GEOLOGY S.F.

TYPE: CORE

DATE REPORTED:

REPORTED BY:

(core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E183	290	298	38	005	30	07	10	1	5	/88/1	24
"	270	280	38	21	35	04	20	4	45	/88/2	25
"	250	260	26	5	60	03	65	7	73	/88/3	26
"	230	290	29	7	83	05	65	5	21	/88/4	27
"	210	220	22	8	58	04	44	9	29	/88/5	28

Repd (82)

ROCK QUALITY DESIGNATION

HOLE NO.: E183 DATE: Oct 1/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
42	48.5			65		ø		
48.5	53.5			55		ø		
53.5	57			40		ø		
57	63.5			68		4		
63.5	71			46		ø		
71	74			30		ø		
74	76			18		ø		
76	83.5			54		ø		
83.5	88.5			50		5		
88.5	95			70		9		
95	105			116		33		
105	116			110		11		
116	126			116		31		
126	136			118		39		
136	146			116		26		
146	156			120		16		
156	166			118		24		
166	176			119		29		
176	186			120		49		
186	196			118		42		
196	206			119		36		
206	216			120		30		
216	226			115		26		
226	236			118		29		
236	246			120		22		
246	256			121		35		
256	266			120		23		
266	276			118		20		
276	286			119		28		
286	296			120		30		
296	299			34		8		
299	306			82		16		

ROCK QUALITY DESIGNATION

HOLE NO.: E183 DATE: Oct 1 93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
306	316			122		32		
316	326			121		40		
326	336			121		47		
336	345			106		18		
345	351			72		16		
351	361.5			123		37		
361.5	369.5			93		10		
369.5	373.5			48		5		
373.5	382			100		12		
382	392			122		41.		
392	396			48		32		
396	404			96		40		
404	414			122		38		
414	422			94		30		
422	432			120		34		
432	437.5			67		18		
437.5	446			100		23		
446	456			118		20		
456	464			93		14		
464	474			122		52		
EOH								

Keyed

MAGNETIC SUSCEPTIBILITY

LE NO. E183 DATE Oct 1/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
42-50						1.0
50-60						2.8
60-70						1.3
70-80						2.7
80-90						1.2
90-100						1.1
100-110						1.0
110-120						4.1
120-130						3.3
130-140						2.5
140-150						4.7
150-160						4.3
160-170						3.7
170-180						.93
180-190						.87
190-200						.50
200-210						1.7
210-220						.54
220-230						.05
230-240						.05
240-250						.09
250-260						.90
260-270						.06
270-280						.09
280-290						.10
290-300						.05
300-310						.06
310-320						.11
320-330						.71
330-340						.68
340-350						2.0
350-360						.44
360-370						3.1

MAGNETIC SUSCEPTIBILITY

LE NO. E183 DATE Oct 1/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
370-380						3.2
380-390						.95
390-400						1.2
400-410						.04
410-420						.09
420-430						.07
430-440						1.8
440-450						.06
450-460						.07
460-470						1.4
470-474						1.2
EOH						

DRILL LOG

HOLE NO. E-184

Page 1 of 1

PROJECT ICM

CONTRACTOR OLYMPIC DRILLING CONSULTING

DATE STARTED OCT. 1/93 COMPLETED OCT. 2/93

LOGGED BY H. T. REEVES (summary by J.A.F.)

T.D. 296'

INCLINATION -53°

COORDINATES 16773.58 E 11901.26 N

SURVEY REFERENCES

COLLAR ELEVATION 1189.93

BEARING 177.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, Albite, S.C.C.	STR.: Sulf. Veins, Frac. Inten	VISUAL EST.: Est. Cu. Mo, $CuFeS_2$, FeS_2, Cu_5FeS_4, Fe_3O_4, MoS_2	Sample No. & Interval	LOG SCALE 1"=200" BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
0								0-51' OVERBURDEN	
190–220 (0.092% Cu)	190 / 200				<.10; 2-5%; 3-5; 2-3; 7-10; 3-5	100; 200	smoky qtz+pyr. minor lens w pyrite; 2" bx vn w msv py @195; ZnS; carb-zeo; Bxx w zeo-carb-qtz mtx. + cpy; amphibole → chl	51'-296' Pale to medium green quartz-chlorite-albite +/- biotite-magnetite +/- amphibole +/- epidote altered ash-lapilli tuff + flows(?). Late-stage zeolite +/- carbonate healed fractures of mod. intensity. Qtz. veins (smoky gry) scatt'd thru. unit, generally with pyrite. Mag diss + f.f. Cpy occurs as f.f. & dissem (weak)	BONANZA Volcanics
								195-217' qtz zeol-carb healed breccia zone w abd pyr. (5-10%) + perv. soft ser-chl. altn. Cpy. occ. in bxx. w pyr (190'-220' @ 0.092% Cu)	
								Note: minor sphalerite in unit (eg. @195')	
							EOH: 296' HOLE STOPPED DUE TO LACK OF SIGNIFICANT MINERALIZATION.		

HOLE NO. E-184

DRILL LOG

PROJECT Island Copper
CONTRACTOR OLYMPIC DRILLING CONSULTING
DATE STARTED OCT 1/93 COMPLETED OCT 2/93
LOGGED BY A. REEVES AR

T.D. 296'
COLLAR ELEVATION 1189.83
INCLINATION -53°
BEARING 197.0
COORDINATES 16773.58E 11901.26N
SURVEY REFERENCES

Columns: Footage | Core Recovery | Oxide | ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, A L B | STR.: Sulf. Veins, Frac. Inten | VISUAL EST.: Est. Cu. Mo, $CuFeS_2$, FeS_2, Cu_5FeS_4, Fe_3O_4, MoS_2 | Sample No. & Interval | LOG — SCALE 1" = 10' — BASIC GEOLOGY: rock types, metallization, structures alterations, one column system | LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES | ROCK UNIT

Footage	Frac. Inten	Est. Cu	FeS_2
51–60	M	.02	1-2
60–70	M	.05	2-3
70–80	S	.10	5 to 7
80–90	S	.10	5
90–100	S	.05	5
100–110	S	.10	2-3

Footage margin (approx. 83–87'): .13 / .007

Sample column (approx. 92–95'): contorted bxd

Log notes:

- ← QMPy w/ser halves ~20°CA 1"
- ← 2-3" smoky Qtz with 1/8" pyr core @ 70°CA
- ← 1" smoky pink QV with 1/8" pyr as above
- ← cpy diss.
- 1/2" white Qtz. ± carb/pyr & ≃ 1/2" chl-gouge halo @ 20°CA
- ← bxd vein runs approx. parallel to core
- ← cpy on fracture
- 1" smoky QV @ 80° CA
- 1/2" pink-white zeol + epi + sphal + pyr ≈ 20°CA
- ← 3/4" smoky QV cut by pinkish-white zeol/carb vein (70°CA, 20°)
- ← 1" QV + pyr → bxd
- brown v.f. grained bt? (or chlorite?)
- cpy

Lithologic descriptions, notes & sketches:

0–51' OVERBURDEN

51–296' ANDESITE

Very strong similarity to drill-hole E-185. The rock is a pale to medium green colour, very hard, & moderately fractured with white zeolite ± carbonate infill.

Textures are variable from ash to lapilli. In some zones the intense alteration tends to mask textures somewhat. Magnetite is disseminated and as hairline veinlets. Weak-mod epidote alteration suggests that the hole is out from the biotite (slightly) zone (ie propylitic) and not a retrograde feature, but this seems to contradict the evidence of amphibole veins. I believe that this justifies the early mt ± amph assemblage of Arancibia.

shattered core ↓

Rock unit: ← differences are more smoky QV's & pyrite

HOLE NO. E-184

DRILL LOG

Page 2 of 4

PROJECT **Island Copper**
CONTRACTOR Olympic
DATE STARTED Oct 1/93 COMPLETED Oct 2/93
LOGGED BY R

T.D. 296'
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	A	B	F	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
110																									
120																	S	M	.10		3-5				
130																		M	.10		5-7				
140																		M	.15		5				
150																		M	.15		3				
160																		M	.05		2-3				
170																		M	.05		2-3				

LOG
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

51 – 296' ANDESITE

½" Qtz-cpy-py @ 50° CA cut by ⅛" pinkish zeol/calc

v.f. diss cpy

¾" smoky QV w/mt-cpy @ ~30° CA

smoky qtz vn frag in pink/orange zeol-calc matrix

24" of bxd vn ≈ 20° CA msv pyr, qtz, carb-zeol.

v.f.g. cpy ← chloritized amphibole

↓ darker (mt alt^n) unit, fine grained, maybe flow.

← qtz-carb-zeol w/sph.

cpy.

1" white zeol/carb vein @ 40° CA

168-172 – vuggy, brecciated healed fracture zone

½" smoky QV w/pyr centre cut by pink zeol-carb

.14 / .008

.105 / .002

HOLE NO. E-184

DRILL LOG

Page 3 of 4

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED Oct 1 '93 COMPLETED Oct 2 '93
LOGGED BY R

T.D. 296' ↓
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	A L B	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
170																							
.08 / .001															M		.15		2-3				
180																							180
															M		> 1%		7 to 10%				
190																							190
.30 / .001															L		> 0.50		7 to 10	X			
200																							200
.21 / .001															L		> 0.50		7 to 10				
210																							210
.36 / .001															L		> 0.5		7 to 10				
220																							220
.19 / .001															M		.30		5				

LOG
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

msv py-cpy in vein bxa that runs ∥ parallel CA

← v.f. diss/f.fill cpy

py-ser-chl alt'n

½" smoky qtz-mly @ 208'

← msv diss py-ser-chl note sphalerite-cpy

← cpy diss.

← bxa zone with smoky grey qv-cpy frags & carb/zeol healed

← abdt. py+-cpy+ in vein bxa

– msv py-cpy w/ qv at shallow angle to CA cpy+

mt-py-cpy

cpy on micro fractures

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

51-296' ANDESITE

195-217' very strongly brecciated qtz + zeol + carb vein system. This zone has a more pervasive soft ser-chl alt'n probably closely associated with the obvious increase in sulphides. This section has good recovery & RQD, but is likely to introduce a bias due to high Cu% in veins

ROCK UNIT

DRILL LOG

HOLE NO. E-184

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED OCT 1/93 COMPLETED OCT 2/93
LOGGED BY AR

T.D. 296'
INCLINATION
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

Footage	Assay (written in footage column)	STR. Sulf. Veins	Est. Cu. Mo	FeS_2	Sample No. & Interval	Basic Geology notes
230–240	.12 / .001	M	.30	3-5		fine diss cpy & fracfill
240–250	.15 / .001	S	.25	3	240	
250–260	.08 / .001	S	.20	3	250; 50°	4" wide bxa zone healed by white zeol/carb. 3/8" white zeol/carb cuts 1/4" grey-white qtz-cpy
260–270	.06 / .001	S	.20	3	260	vein swarm ≈ parallel to core; 1/2" smoky QV ≈ 60° CA
270–280	.07 / .001	S	.10	2-3	270	white zeol/carbonate ~1" @ 20° CA; vuggy texture with green (chlorite) coating
280–290	.07 / .001	S	.25	2-3	280	vuggy (as above) bxa carbonate infill; frac fill cpy

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

51-296' ANDESITE

— below breccia zone (217') the andesite is again a fine grained to ash tuff with strong albitization (± silica) Partial to completely chloritized amphiboles are discernible. There is a hint of brown (bt?) and traces of fracture fill cpy.

mt as "dust" sized particles

- cpy (with chlorite) is seen mainly as disseminations along micro fractures.

N.B.
eoh @ 296 → same rock ∴ no extra page

ROCK UNIT: (.13%Cu / .001 Mo)

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_184	16773.6	11901.3	1189.8

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	296.0	197.0	-53.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
80.0	90.0	0.13	0.009	7.7	0.03	0.80	0.006	0.038	18838
120.0	130.0	0.14	0.008	6.6	0.03	2.10	0.015	0.130	18839
160.0	170.0	0.05	0.002	5.0	0.02	0.70	0.060	0.043	18840
170.0	180.0	0.08	0.001	5.0	0.04	0.50	0.005	0.017	18896
180.0	190.0	0.30	0.001	7.9	0.04	0.20	0.044	0.239	18897
190.0	200.0	0.31	0.010	9.2	0.06	5.10	0.042	0.234	18898
200.0	210.0	0.21	0.001	7.5	0.04	3.30	0.032	0.102	18899
210.0	220.0	0.36	0.001	7.9	0.09	3.30	0.028	0.064	18900
220.0	230.0	0.19	0.001	7.0	0.03	0.80	0.013	0.029	18901
230.0	240.0	0.12	0.001	7.6	0.03	0.50	0.007	0.015	18902
240.0	250.0	0.15	0.001	7.4	0.01	1.70	0.010	0.022	18903
250.0	260.0	0.08	0.001	5.8	0.01	0.70	0.006	0.009	18904
260.0	270.0	0.06	0.001	5.0	0.01	0.40	0.004	0.008	18905
270.0	280.0	0.07	0.001	4.3	0.02	0.70	0.014	0.018	18906
280.0	290.0	0.07	0.001	4.8	0.02	0.40	0.012	0.012	18907
290.0	296.0	0.13	0.001	5.6	0.02	0.60	0.011	0.019	18908

ISLAND COPPER MINE

ASSAY REQUISITIC AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Oct 18/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #		
E-184	80	90	13	9	77	03	8	6	38	188838	18	26
	120	130	14	8	66	03	21	15	130	8839	14	26
	160	170	5	2	50	02	7	6	43	8840	15	27
	170	180	8	0	50	04	15	5	17	188896	16	27
	180	190	30	1	79	04	12	44	239	8897	17	29
	190	200	31	1	92	06	511	42	234	8898	18	30
	200	210	21	1	75	04	33	32	102	8899	19	31
	210	220	36	1	79	09	33	28	64	8900	20	32
	220	230	19	0	70	03	8	13	29	8901	21	33
	230	240	12	0	78	02	5	7	15	8902	22	34
	240	250	15	0	74	01	17	10	22	8903	23	35
	250	260	8	1	58	01	7	6	9	8904	24	36
	260	270	6	0	50	01	4	4	8	8905	25	37
	270	280	7	0	43	02	7	14	18	8906	26	38
	280	290	7	1	48	02	4	12	12	8907	27	39
	290	296	13	1	56	02	08	11	19	8908	28	10

ROCK QUALITY DESIGNATION Keyed SR PAGE 1 OF 1

HOLE NO.: E184 DATE: Oct 14/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
51	56			60		12		
56	66			121		15		
66	76			120		25		
76	85			105		21		
85	92			80		6		
92	96			48		21		
96	106			118		8		
106	115			102		ø		
115	120			58		ø		
120	126			70		18		
126	136			121		22		
136	146			120		19		
146	156			118		ø		
156	166			120		10		
166	176			121		32		
176	186			122		28		
186	196			120		39		
196	206			122 ~~121~~		74		
206	216			120		82		
216	226			118		15		
226	236			117		8		
236	246			120		17		
246	256			121		12		
256	266			122		39		
266	276			120		27		
276	286			121		44		
286	296			120		9		
EOH								

K96

MAGNETIC SUSCEPTIBILITY

LE NO. E184 DATE Oct 14/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
51-60						3.1
60-70						7.5
70-80						11.0
80-90						4.4
90-100						4.0
100-110						5.0
110-120						2.3
120-130						.45
130-140						2.9
140-150						4.9
150-160						3.5
160-170						3.4
170-180						3.4
180-190						3.6
190-200						1.4
200-210						.57
210-220						.29
220-230						5.6
230-240						7.4
240-250						3.1
250-260						3.4
260-270						4.3
270-280						5.1
280-290						3.8
290-296						2.7
EOH						

HOLE NO. E-181

DRILL LOG

Page 1 of 1

PROJECT I.C.M.

CONTRACTOR OLYMPIC DRILLING & CONSULTING

DATE STARTED SEPT. 26/73 COMPLETED SEPT. 28/73

LOGGED BY J.F. FLEMING

T.D. 300'

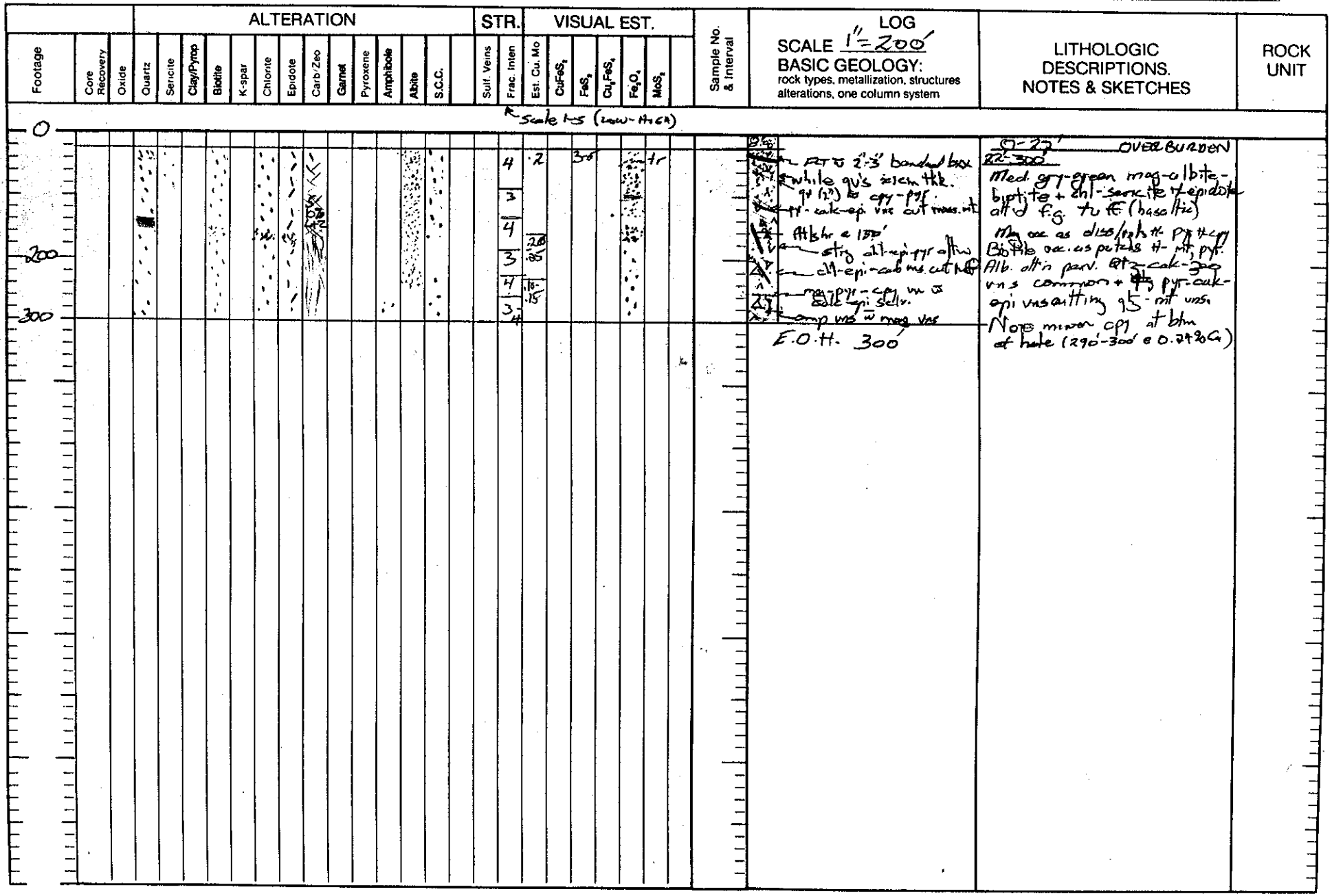
INCLINATION -50°

COORDINATES 19982.47 E 11236.66 N

COLLAR ELEVATION 1237.89

BEARING 198.0

SURVEY REFERENCES



DRILL LOG

HOLE NO. E-181

PROJECT Island Copper

CONTRACTOR OLYMPIC

DATE STARTED SEPT. 26/93 COMPLETED SEPT 28/93

LOGGED BY J. A. FLEMING

T.D. 300'

INCLINATION -50°

COORDINATES 19982.47E 11236.66N

SURVEY REFERENCES —

COLLAR ELEVATION 1237.89

BEARING 198.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb-Zeo, Garnet, Pyroxene, Amphibole, ALB, SCC	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
20–30					4 to 5	.15		3 to 5			[illegible]	20
30–40 (.17 / 0.001)					4 to 5	.2		3 to 10				30
40–50 (.10 / <.001)					4	.15		3 to 5				40
50–60 (.05 / <.001)					4							50

↑ SCALE 1-5 (LOW-HIGH)

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

- str. fractd bkn core
- calc/qtz healed bxx + frags qtz-carb
- flt - 2-3" gouge + str. banded bxx ||| to flt (2 each side) w fg, blk pyr sms
- wt alb. envs on mag. vns
- pyr, mag + cpy ~ in thk qv's (white)
- Banded gy-wt. vn cut by shr

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

0-22' OVERBURDEN

22-300'

Med gry-grn, mag-alb-bio + chl/seri + ep alt'd f.g. Bon. Volc. tuff.

Perv. alb altn of plag (rk mod. hard) w wk-mod scc altn of feld. Feld frg ≥ 40% ⇒ sugary text.

Mag occ. as dissem + vnlts (x ≤ 1mm) +/- pyr +/- cpy.

Bio occ. as patches gen w/ mag-pyr.

Some pinkish altn could be K-spar.

Seri-chl altn is wk-

Qtz-calc-zeo vns common.

Pyr-calc-ep vns also occ. + cut earlier qtz-mag vns.

Pyr. occ. vnlts > diss.

Some of tuff is vuggy/leached looking.

Calc-zeo vns have banding w calc xals (tan) + gry-white banded carb.

← crackled volc healed w qtz-carb vns + later bxin w frags of vn mtl

ROCK UNIT

HOLE NO. E-181

DRILL LOG

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED Sept 26/93 COMPLETED Sept 28/93
LOGGED BY J.A. FLEMING

T.D. 300'
INCLINATION -50°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

ALTERATION: Footage | Core Recovery | Oxide | Quartz | Sericite | Clay/Pyrop | Biotite | K-spar | Chlorite | Epidote | Carb-Zeo | Garnet | Pyroxene | Amphibole | ALB | SCC

STR.: Sulf. Veins | Frac. Inten

VISUAL EST.: Est. Cu. Mo | $CuFeS_2$ | FeS_2 | Cu_5FeS_4 | Fe_3O_4 | MoS_2

Sample No. & Interval

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system.

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

Footage	Assay	Frac. Inten	Est. Cu. Mo	FeS_2	Log notes
60–70	.18 / .001	4	2	3 to 5	silica bxx frags; pyr+t-cpy
70–80	.18 / .001	4	.2	3 to 5	2" wt qv. w pyr-cpy chlo cbe +epi; gy. zeo vns w calc
80–90	.14 / .001	4	2	3 to 5	gy banded silica cuts gy zeo-calc vn
90–100	.16 / .001	3	2	3 to 5	2" bxx w w gy silica mtx + w rock frags in silica
100–110	.21 / .001	3	.25	3 to 5	patches & vny mag in wt alb mtx w diss-cpy
110–120	.11 / .002	3	.2	3 to 5	criss crossed w thin wt banded qtz-carb vns; Scoop ten calc. {Xals w wt calc / Xals in vns; olive grn clay alt'd vole.

22–300' (cont'd)
Alb-mag-bio alt'd Bx tuff (cont'd)
Incr'd crackling of rk & infilling w gy silica + calc. Silica loc: banded + some bxx dykes w fragments of the vein silica

HOLE NO. E-181

DRILL LOG

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED Sept 26/93 COMPLETED Sept 28/93
LOGGED BY J.A. FLEMING

T.D. 300'
INCLINATION -50
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

Footage	ALTERATION (Core Recovery, Oxide, Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb·Zeo, Garnet, Pyroxene, Amphibole, A/B, S/C)	STR. Sulf. Veins	Frac. Inten	VISUAL EST. Est. Cu. Mo	FeS₂	Sample No. & Interval	LOG SCALE 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
120			4	.15	3 to 5			22-300' (cont'd) Alb-mag+bio, +epi altd tuff (cont)	
.20 / .004									
130			4	.15	3 to 5	130	mag vns & patches; pyr-calc-epi vns cut mass. mag	Incr. in qtz-carb vns + late x-cutting gray banded silica vns. Bxx'n w gry silica in mtx	
.20 / .003									
140			4	.10	3 to 5	140	2" tiny calc vn w gry silica core; 2" qv w bxx & carb.; silica healed bxx w 2-rk frags & calc in mtx & epi spots		
.15 / .004									
150			4	.12	3 to 5	150	FLT/SHR; qtz-carb frags + crackle vns assoc. w shr @ low < to CA		
.12 / .003									
160			3	.25	3 to 5 +	160	py; INC 2" gry qv w org. zeo calc stain	SOFT WET {pyr-epi-chl-mag in but (?) by calc-zeo vn. INCR. epi	
.22 / .002							str chl-epi-pyr alt'n of tuff		
170			3	.25	3 to 5 +	170	Tuff grain size d. coarse; 3" qv w calc core. patches to 1" of mag-bio in alb altd tuff	epi spots & patches assoc w pyr-calc vns	
.19 / .004									
180									

DRILL LOG

HOLE NO. E-181

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED SEPT 26/93 COMPLETED SEPT 28/93
LOGGED BY J.A. FLEMING

T.D. 300'
INCLINATION -50°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1"=10'
BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system

Footage	Assay notes	STR. Frac. Inten	Est. Cu	FeS_2	Sample No. & Interval	Log notes	Lithologic Descriptions, Notes & Sketches
180	.17 / .009	3	.15	3 to 3+		1' banded qv. w calc cond; highly cracked & vnd w qtz-calc-zeo + cut by post-m bxx's	22-300 (CONT'D) Aug-mag +/- biot, chl-epi-pyr +/- seric alt'd tuff (cont'd). Incr'd qtz-carb-zeo-py vns & crackling of tuff
190	.10 / .004	3	.20	3 to 5	190	diss. pyr+cpy in mg alt'd volc	
200	.14 / .004	3	.2		200	banded/oriented frags in bxx vn; calc-zeo frags in volc bxx vn; some bandg in bxx vns	
210	.09 / .002	3	.2		210	rd qtz frag; frags volc & qtz-calc-zeo vn; flt-shr w ~1' dk mud/bxx (gg)	
220	.07 / <.001	4	.25		220	volc & qtz-carb frag; diss. cpy in shr'd cracked volc	
230	.06 / .001	4	.15		230	fine diss. mt (spots); chl-epi-calc wa w ep envs on the vns cut by (zeo) stained tuff	
240							

HOLE NO. E-181

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 26/93 COMPLETED SEPT 28/93
LOGGED BY S.A. FLEMING

T.D. 300'
INCLINATION -50°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system

Footage	Assay	Frac. Inten	Est. Cu. Mo	FeS2	Sample No. & Interval
240–250	.07 / .001	4	.15	2-3	
250–260	.13 / .001	4	.10	2 to 3	250
260–270	.12 / .003	4	.10	to 3	260
270–280	.14 / .001	5	.10	3	270
280–290	.15 / .004	4	.16	3	280
290–300	.24 / .002	4	.10	3 to 5	290

Log notes:

- 2 ← crisscrossing wt calc-zeo vns (x̄ = 5 mm) – some w vugs.
- ← dk brn bio spots vns in dk altd tuff.
- 6" gr.-pinkish, frpsh, shtt'd qtz w spots cpy
- mag-pyr-cpy in w calc ± epi selv.
- strg sh/bxx zone w frags calc-zeo-qtz in remn bio altn
- diss cpy in dk alb-bio ± mag altd volc
- v-rot bxx 15 cm w frags calc'd mtl
- highly fract'd/bkn
- amp vns occ w mag vnlts

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

22'-300' (cont'n)
Highly crackled/mn'd w calc-zeo-qtz & mag-alb ± bio altd tuff (contd)

less pyr. than abv. (≤3%) to abt 270'

Note amphib. 1st noted nr btm w mag vns. Still some bio – wk.

Strg. fract'd, bxx'n, veins of calc-zeo ± qtz.

Ep'i occ as env. on carb-zeo-pyr vns. w chl.

ROCK UNIT

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_181	19982.5	11236.7	1237.9

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	300.0	198.0	-50.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
22.0	30.0	0.09	<0.001	3.5	0.09	0.40	<0.001	0.014	18842
30.0	40.0	0.17	0.001	6.1	0.12	0.50	<0.001	0.018	18843
40.0	50.0	0.10	<0.001	7.1	0.10	0.30	<0.001	0.027	18844
50.0	60.0	0.05	<0.001	6.4	0.04	0.10	<0.001	0.018	18845
60.0	70.0	0.10	0.001	6.3	0.06	0.20	<0.001	0.021	18846
70.0	80.0	0.18	0.001	6.0	0.12	0.30	<0.001	0.019	18847
80.0	90.0	0.14	0.001	6.5	0.11	0.20	<0.001	0.035	18848
90.0	100.0	0.10	0.001	9.0	0.07	0.10	<0.001	0.035	18849
100.0	110.0	0.21	0.001	9.6	0.11	0.40	<0.001	0.054	18850
110.0	120.0	0.11	0.002	7.2	0.06	0.30	<0.001	0.112	18851
120.0	130.0	0.20	0.004	12.7	0.10	0.40	<0.001	0.137	18852
130.0	140.0	0.20	0.003	8.7	0.12	0.50	<0.001	0.127	18853
140.0	150.0	0.15	0.004	6.7	0.09	0.04	<0.001	0.085	18854
150.0	160.0	0.12	0.003	4.5	0.10	0.40	<0.001	0.032	18855
160.0	170.0	0.22	0.002	8.9	0.15	0.60	<0.001	0.033	18856
170.0	180.0	0.19	0.004	8.4	0.14	0.40	<0.001	0.031	18857
180.0	190.0	0.17	0.009	8.0	0.12	0.40	0.001	0.032	18858
190.0	200.0	0.10	0.004	7.9	0.05	0.20	<0.001	0.022	18859
200.0	210.0	0.14	0.004	8.7	0.12	0.30	<0.001	0.021	18860
210.0	220.0	0.09	0.002	7.5	0.05	0.30	<0.001	0.022	18861
220.0	230.0	0.07	<0.001	3.1	0.07	0.40	<0.001	0.007	18862
230.0	240.0	0.06	0.001	2.6	0.06	0.30	<0.001	0.007	18863
240.0	250.0	0.07	0.001	3.9	0.04	0.20	<0.001	0.012	18864
250.0	260.0	0.13	0.001	5.5	0.07	0.30	<0.001	0.014	18865
260.0	270.0	0.12	0.003	4.2	0.06	0.40	<0.001	0.010	18866
270.0	280.0	0.14	0.001	4.5	0.15	0.50	<0.001	0.017	18867
280.0	290.0	0.15	0.004	6.7	0.14	0.40	<0.001	0.022	18868
290.0	300.0	0.24	0.002	6.8	0.14	0.40	<0.001	0.014	18869

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: ICM DATE SENT: Oct 8/12 SENT BY/DEPT: Geol TYPE: core

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu .43	MOLY % Mo .022	IRON % Fe 6.3	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb .0400	ZINC % Zn .0400	TAG #	
E-181	22	30	09	000	3.5	09	4	000	014	18842	6
	30	40	17	001	6.1	12	5	000	018	8433	7
	40	50	10	000	7.1	10	3	000	027	8444	8
	50	60	05	000	6.4	04	1	000	018	8455	9
	60	70	10	001	6.3	06	2	000	021	8466	10
	70	80	18	001	6.0	12	3	000	019	8477	11
	80	90	14	001	6.5	11	2	000	035	8488	12
	90	100	10	001	9.0	07	1	000	035	8499	13
	100	110	21	001	9.6	11	4	000	054	8510	14
	110	120	11	002	7.2	06	3	000	112	8521	15
	120	130	20	004	12.7	10	4	000	137	8532	16
	130	140	20	003	8.7	12	5	000	127	8543	17
	140	150	15	004	6.7	09	4	000	085	8554	18
	150	160	12	003	4.5	10	4	000	032	8555	19
	160	170	22	002	8.9	15	6	000	033	8566	20
	170	180	19	004	8.4	14	4	000	031	8577	21
	180	190	17	009	8.0	12	4	001	032	8588	22
	190	200	10	004	7.9	05	2	000	022	8599	23

ISLAND COPPER MINE

ASSAY REQUISITIC AND REPORT FORM

LAB SENT TO: ICM DATE SENT: Oct 5/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-181	200	210	.14	.004	8.17	.12	3	.000	.021	18861	24
	210	220	.09	.002	7.15	.05	3	.000	.022	8611	25
	220	230	.07	.000	3.11	.07	4	.000	.007	8622	26
	230	240	.06	.001	2.16	.06	3	.000	.007	8633	27
	240	250	.07	.001	3.19	.04	2	.000	.012	8644	28
	250	260	.13	.001	5.15	.07	3	.000	.014	8655	29
	260	270	.12	.003	4.12	.06	4	.000	.010	8666	30
	270	280	.14	.001	4.15	.15	5	.000	.017	8677	31
	280	290	.15	.004	6.17	.14	4	.000	.022	8688	32
	290	300	.24	.002	6.18	.14	4	.000	.014	8699	33

ROCK QUALITY DESIGNATION Keyed PAGE 1 OF 1

HOLE NO.: E181 DATE: Oct 7/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
22	26			32		∅		
26	36			108		12		
36	46			122		21		
46	56			115		8		
56	66			120		32		
66	76			117		10		
76	86			120		14		
86	96			115		30		
96	106			120		22		
106	116			118		33		
116	126			115		28		
126	136			115		42		
136	146			117		32		
146	156			120		54		
156	166			120		29		
166	176			122		47		
176	186			115		46		
186	196			122		85		
196	206			121		95		
206	216			122		56		
216	226			120		48		
226	236			120		42		
236	246			106		19		
246	256			108		16		
256	~~265~~ 265			109		26		
265	273			69		12		
273	276			30		∅		
276	281			55		10		
281	291			90		12		
291	296			53		4		
296	300			48		10		
EOH								

Kayes (SP)

MAGNETIC SUSCEPTIBILITY

LE NO. E81 DATE Oct 7/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
22-30						3.8
30-40						4.1
40-50						5.7
50-60						4.4
60-70						5.7
70-80						2.2
80-90						3.3
90-100						8.2
100-110						5.7
110-120						6.1
120-130						6.3
130-140						7.3
140-150						1.6
150-160						1.3
160-170						7.3
170-180						3.8
180-190						4.5
190-200						8.0
200-210						2.6
210-220						1.7
220-230						2.0
230-240						1.4
240-250						3.4
250-260						3.5
260-270						1.5
270-280						2.8
280-290						1.1
290-300						4.5
EOH.						

DRILL LOG

HOLE NO. E-182

PROJECT ICM - BAY LAKE
CONTRACTOR OLYMPIC
DATE STARTED Sept 20/93 COMPLETED Sept 29/93
LOGGED BY JOHN FLEMMING

T.D. 403'
INCLINATION -50°
COORDINATES 17411.41 E 11151.58 N
SURVEY REFERENCES

COLLAR ELEVATION 1194.30
BEARING 190.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
0																	Strong/Mod/Weak/Intense							
[illegible]																	5, m, 3, m, 3 H, L, 3 H	.25/.35, .15, .10, .05		3-5, 3-5, 7-10, 5-7				
200																								200
400																								400

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

CASING - NO CORE
20'
qtz - py - moly vns
chl patches w/ diss mt ± cpy + pyr
chl-seric-pyr ojmt on mt-olb (stock)
mstg pyr-seric (phyllic?)
FLT @ 40° c/A
ZnS occ w/ carb vns

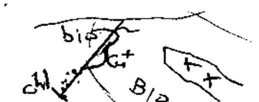
E.O.H. 403'
HOLE STOPPED DUE TO LACK OF Cu

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

0-70' OVERBURDEN
70'-403'
GREEN-GREY CHLORITE +/- BIOTITE - ALBITE - MAGNETITE - QTZ (VEINS) AND SEC ALTERED ANDESITE ASH TUFF (+ FLOW?)
Cut by abd qtz-pyr-cpy ± MoS2 vns + carb. - 200: vns
Mag is diss + hairlines. Bio alt'n is patchy - weak.

282'-300' FAULT ZONE w/ FDO. BXX. FRAGS + STRG SER - CHL - PYR ALTNS
394 EOH V-silic tuff

The strong copper mineralization from 70'-220' is tied to the qtz veins + pyr +/- MoS2, not diss. or ff. The bio., qtz, mag altns and copper grades indicate that the causitive QFP lies to the north of the hole.



ROCK UNIT
Bon. Vol.

HOLE NO. E-182

DRILL LOG

Page 1 of 6

PROJECT **Island Copper**
CONTRACTOR Olympic Drilling Consulting
DATE STARTED Sept 28/93 COMPLETED Sept 29/93
LOGGED BY A. Reeves AR

T.D. 403 ft COLLAR ELEVATION 1194.30
INCLINATION -50° BEARING 190.0
COORDINATES 17411.41E 11151.58N
SURVEY REFERENCES —

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A B C	S P C	STR.: Sulf. Veins	Frac. Inten.	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_2O_3	MoS_2	M C H	Sample No. & Interval
0																									
70																									
.56																S		.35		3-5					
.025																		.025							
80																									
.57																S		.30		3-5					
.002																		.02							
90																									
.79																S		.30		3-5					
.009																		.015							
100																									
.130																M		.30		3-5					
.100																									
110																									
.33																M		.25		3					
.204																									
120																									

LOG
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

0 - 70' OVERBURDEN

nb: 70' - 170' chunk sampled before hole was logged. R

70 - 403' ANDESITE

locally pale green-grey ash ± flow? textures cut by 1/4" - 1/2" grey qtz-mly veins. Very fine dissem. mt "dust" and hairlines. Weak, patchy biot 2ND altn

most of the copper-mly in the section 70-160' appears to be related to quartz veining and not as part of the diss' cpy in a porphyry bt-mt envelope.

1" Qtz-mly+ - cpy

dusty diss mt + hairlines

py, cpy, mly

mly

pinkish colour due to zeolites

bxa with epi

mly

pale pink zeol

hem

ROCK UNIT

HOLE NO. E-182

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED Sept 28/93 COMPLETED Sept 29/93
LOGGED BY R

T.D. 403'
INCLINATION -50°
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	BRT	PPS	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_2FeS_2	Fe_3O_4	MoS_2	Sample No. & Interval	LOG SCALE 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
120																										70 - 403' ANDESITE	
	.33 / .002															S	.2			3			1			- chlorite 'patches' have diss mt ± cpy - py and	
130																											
	.32 / .012															S	.15			3			1				
140																									Calcite fault, deformed vein/± infill	- generally pale coloured tuffs ± flow? cut by abdt carbonate veins ± qtz - mly - cpy	
	.55 / .005															S	.15			3			1			light grey qtz ½" Qtz - mly cut patches with alb halos	
150																										- clasts in 1-2 mm (subangular) size range, some masking by alteration	
	.26 / .006															S	.15										
160																											
	.42 / .007															M	.15										
170																									start of intact core		
	.30 / .015															L	.15										
180																											

HOLE NO. E-182

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR Olympic
DATE STARTED Sept 28/93 COMPLETED Sept 29/93
LOGGED BY AR

T.D. 403' +
INCLINATION -50°
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	A	B	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
180																											
.22 / .003																S	10		2-3							
190																											
.20 / .001																S	10		2-3							
200																									20° wht carbonate	204- dark (mt) altd ground mass with white fspar phenos (→ flow?)	
.26 / .003																M	10		2-3							
210																									bleached sericitic halos on hairline pyrite vns.		
.16 / .002																M	10		3-5						1" grey QV with albitic ± silic bloodied halos @ 40° CA		
220																									10° CA ser-mus / ½" zeol pyr	phyllic chl-ser-pyr alt overprint on mt-alb	
.30 / .005																M	10		3-5							
230																											
.24 / .002																M	.05		<1						pyr-sericite		
240																											

70-403' ANDESITE

strongly fractured & healed by pale pink-white zeolite / calcite vns.

DRILL LOG

HOLE NO. E-182

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 28/93 COMPLETED SEPT 29/93
LOGGED BY [illegible]

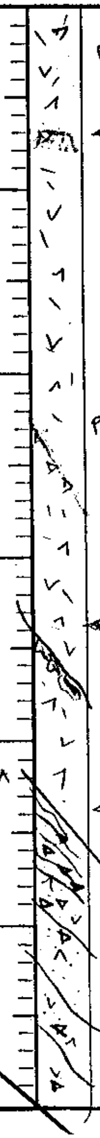
T.D. 403'
INCLINATION -50°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1" = 10'

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

Footage	Assay (written beside footage)	Alteration	Str. (Frac. Inten.)	Est. Cu. Mo	FeS$_2$	Sample No. & Interval	Log notes	Lithologic Descriptions, Notes & Sketches	Rock Unit
240–250	.38 / .010	Chlorite	L to M	.05	7	250	pyr ff > diss.; ← Qtz$_3$ ± moly + pyr → with sericite selvages	70 - 403' ANDESITE; strong phyllic pyr-ser alt^n	
250–260	.28 / .005	Chlorite, Carb/Zeo	L	.05	7-10	260	Py		
260–270	.14 / .005	Chlorite	L	.05	7-10	270	Pyr-clay seam @ 30° CA ~ 1/2"		
270–280	.10 / .002	Chlorite, Carb/Zeo	L	.05	7	280	← Flt @ 15-20° CA healed by zeol/sphalerite		
280–290	N/A	Chlorite	I	.05	7	290	40° CA; ← foliated at upper contact	282 - 300 FAULT ZONE - intensely ser-chl-pyr alt'd zone with rounded bxa frags. Mainly pale grey-red colour but with some dark green chloritic runs.	
290–300	N/A	Chlorite	I	.05	7		55°		



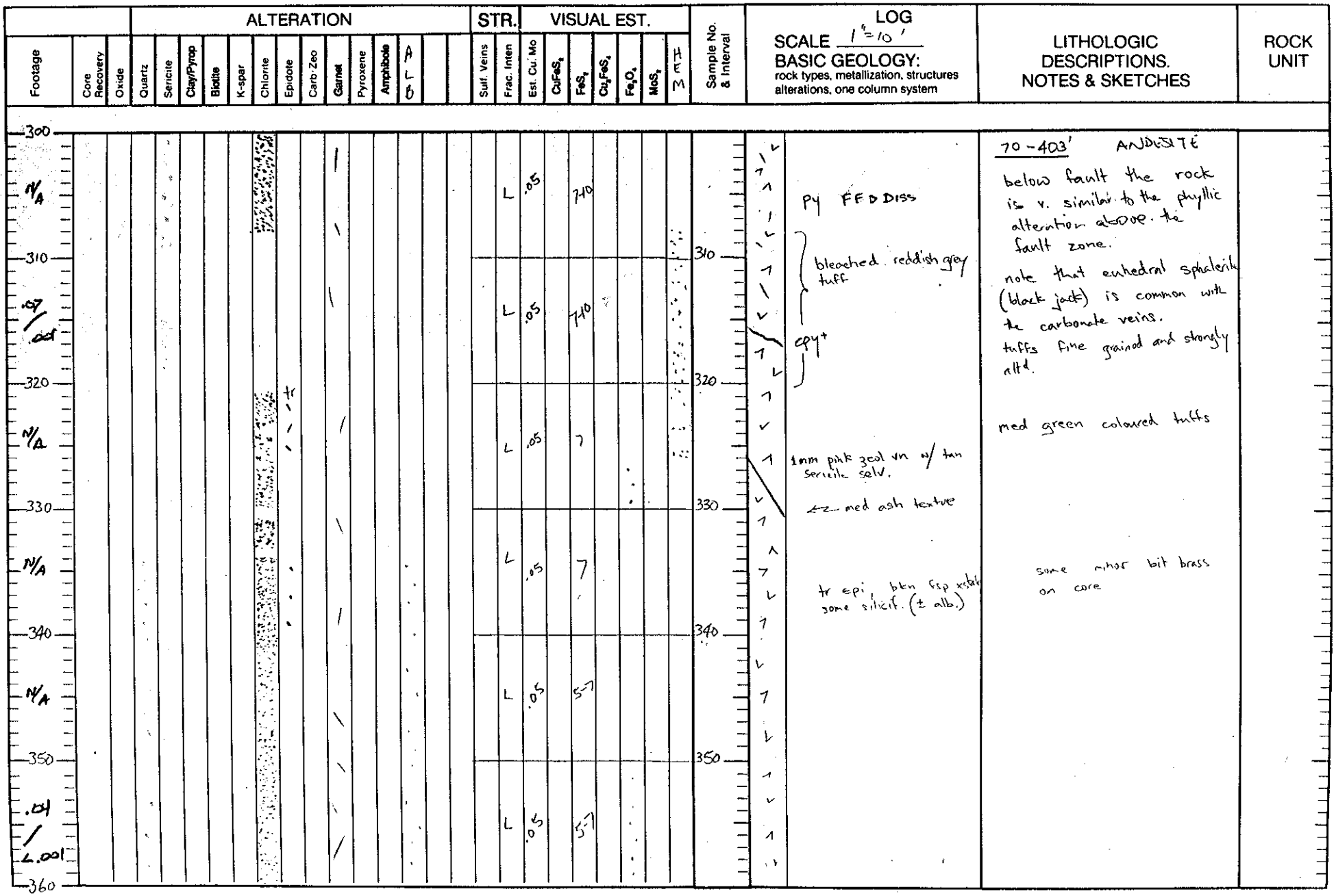
HOLE NO. E-182

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 28/93 COMPLETED SEPT. 29/93
LOGGED BY AR

T.D. 403' ↓
INCLINATION -50°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING



DRILL LOG

HOLE NO. E-182

PROJECT **Island Copper**

CONTRACTOR OLYMPIC

DATE STARTED SEPT 28/93 COMPLETED SEPT 29/93

LOGGED BY [initials]

T.D. 403'

INCLINATION -50°

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	ALB	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	HEM	Sample No. & Interval	LOG SCALE 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
360–370 N/A																L	.05		7						← very hard dark matrix with hem-epi; wk diss mt	70 - 403' ANDESITE	
370–380 N/A																L	.05		7					370	py+		
380–390 N/A																L to M	.05		5-7					380	40° CA; 40° CA		
390–400 .01 / <.001																S	.05		5					390	← low recovery; ← muddy sericitic break ~45° CA	394 - eoh very silic lapilli tuff, harder than unit above fault	
400–403																L			3-5					400			

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_182	17411.4	11151.6	1194.3

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	380.0	190.0	-50.0
380.0	403.0	190.0	-40.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
70.0	80.0	0.50	0.024	3.8	0.13	0.60	0.001	0.009	18806
80.0	90.0	0.57	0.002	4.0	0.50	0.90	0.003	0.012	18870
90.0	100.0	0.70	0.009	3.5	0.19	0.80	0.001	0.008	18807
100.0	110.0	0.30	<0.001	5.4	0.25	0.40	0.004	0.008	18871
110.0	120.0	0.33	0.004	3.2	0.13	0.50	0.001	0.008	18808
120.0	130.0	0.33	0.002	4.4	0.23	0.60	0.004	0.009	18872
130.0	140.0	0.32	0.012	4.1	0.12	0.50	0.002	0.008	18809
140.0	150.0	0.55	0.005	5.2	0.42	3.70	0.012	0.174	18873
150.0	160.0	0.26	0.006	3.1	0.13	0.40	0.001	0.005	18810
160.0	170.0	0.42	0.007	3.5	0.13	0.90	0.004	0.013	18874
170.0	180.0	0.30	0.015	3.6	0.25	0.50	0.004	0.006	18875
180.0	190.0	0.22	0.003	3.9	0.14	0.80	0.005	0.011	18876
190.0	200.0	0.20	0.001	5.2	0.06	2.30	0.016	0.060	18877
200.0	210.0	0.26	0.003	5.5	0.06	5.60	0.040	0.290	18821
210.0	220.0	0.16	0.002	5.1	0.07	1.50	0.005	0.017	18822
220.0	230.0	0.30	0.005	8.9	0.07	6.80	0.028	0.059	18823
230.0	240.0	0.24	0.002	7.1	0.04	1.60	0.008	0.039	18878
240.0	250.0	0.38	0.010	9.0	0.06	4.10	0.012	0.125	18824
250.0	260.0	0.28	0.005	9.1	0.01	2.00	0.005	0.200	18825
260.0	270.0	0.14	0.005	6.3	0.01	1.50	0.013	0.044	18826
270.0	280.0	0.10	0.002	7.2	0.05	2.20	0.018	0.243	18879
310.0	320.0	0.07	0.001	2.8	0.02	1.00	0.003	0.051	18880
350.0	360.0	0.04	<0.001	6.0	0.01	0.30	0.003	0.009	18881
390.0	400.0	0.01	<0.001	4.9	0.01	0.10	0.004	0.002	18882

ISLAND C PPER MINE

ASSAY REQUISITIO AND REPORT FORM

Keyaks(SR) (CHONKS)

LAB SENT TO: ICMI   DATE SENT: 09/08/93   SENT BY/DEPT: [illegible]/GEOL   TYPE: C

DATE REPORTED: ____________   REPORTED BY: ______________   (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #		
E-180	70	80	50	024	38	12	6	001	009	18806	41	19
↓	90	100	70	009	35	19	8	1	8	18807	42	20
	110	120	33	4	32	13	5	1	8	18808	43	21
	130	140	32	012	41	12	5	2	8	18809	44	22
	150	160	26	006	31	12	4	1	005	18810	45	23

ANDI
Sept 28 N/S

PLS CALL JOHN @ 910-[illegible] WHEN DONE. [illegible] CU ASAP - THANKS

ISLAND COPPER MINE
ASSAY REQUISITIC AND REPORT FORM

LAB SENT TO: ICM   DATE SENT: Oct 13/93   SENT BY/DEPT: GEOL   TYPE: CORE

DATE REPORTED: ______   REPORTED BY: ______   (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo X10-3.	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb X10-3	ZINC % Zn X10-3	TAG #	
E-182	80	90	57	2	40	50	9	3	12	18870	39
	100	110	30	0	54	25	4	4	8	871	40
	120	130	33	2	44	23	6	4	9	872	41
	140	150	55	5	52	42	37	12	174	873	42
	160	170	42	7	35	13	9	4	13	874	43
	170	180	30	15	36	25	5	4	6	875	44
	180	190	22	3	39	14	8	5	11	876	[illegible]
	190	200	20	1	52	06	23	16	60	877	46
	230	240	24	2	71	04	16	8	39	878	47
	270	280	10	2	72	05	22	18	243	879	48
	310	320	7	1	28	02	10	3	51	880	49
	350	360	4	0	60	01	3	3	9	881	
	390	400	1	0	49	01	1	4	2	882	Jan 51

ISLAND COPPER MINE

ASSAY REQUISITION AND REPORT FORM

Keyed Dec 2/93 (81)

LAB SENT TO: ICM DATE SENT: Oct 14/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-182	200	210	.26	.003	5.55	.006	5.6	.040	.290	188211	1
	210	220	.16	.002	5.11	.007	1.5	.005	.017	8222	10
	220	230	.30	.005	8.19	.007	6.8	.028	.059	8233	11
	240	250	.38	.010	9.10	.006	4.1	.012	.125	8244	12
	250	260	.28	.005	9.11	.001	2.0	.005	.200	8255	13
	260	270	.14	.005	6.13	.001	1.5	.013	.044	8266	14

Keyed (SR)

ROCK QUALITY DESIGNATION

HOLE NO.: E182 DATE: Oct. 1/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
70	76			72		12		
76	86			118		18		
86	96			117		16		
96	106			110		12		
106	116			100		10		
116	126			104		12		
126	136			98		8		
136	146			115		33		
146	156			105		15		
156	166			103		12		
166	176			120		30		
176	186			121		10		
186	196			119		23		
196	206			121		30		
206	216			120		11		
216	226			121		43		
226	236			120		33		
236	246			122		50		
246	256			120		84		
256	266			122		58		
266	276			121		62		
276	286			122		82		
286	296			118		31		
296	306			121		58		
306	316			122		79		
316	326			120		64		
326	335.5			112		30		
335.5	345.5			122		58		
345.5	356			126		55		
356	369.5	162	(Marker Missing)	160		49		
369.5	376			79		36		
376	386			120		55		

ROCK QUALITY DESIGNATION

HOLE NO.: E182 DATE: Oct 1/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
386	396			120		25		
396	403			80		16		
EOH								

Keyes

MAGNETIC SUSCEPTIBILITY

LE NO. E182 DATE Oct. 4/93.

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
70 - 80						1.6
80 - 90						.66
90 - 100						1.0
100 - 110						.67
110 - 120						2.2
120 - 130						.55
130 - 140						.51
140 - 150						2.5
150 - 160						1.7
160 - 170						.05
170 - 180						.66
180 - 190						.14
190 - 200						.08
200 - 210						2.3
210 - 220						.44
220 - 230						1.0
230 - 240						.74
240 - 250						.07
250 - 260						.04
260 - 270						.08
270 - 280						.05
280 - 290						.04
290 - 300						.06
300 - 310						.03
310 - 320						.05
320 - 330						1.4
330 - 340						1.3
340 - 350						2.4
350 - 360						1.9
360 - 370						2.3
370 - 380						2.8
380 - 390						.89
390 - 403	EOH.					.58

HOLE NO. E-180

DRILL LOG

PROJECT: Island Copper Mine
CONTRACTOR: Olympic Drilling & Consulting
DATE STARTED: Sept. 25/93 COMPLETED: Sept. 26/93
LOGGED BY: H.T. Reeves (Summary by ...)

T.D.: 267'
INCLINATION: -90°
COORDINATES: 19280.82E 11832.42N
SURVEY REFERENCES: Bay Lake (B-Zone)

COLLAR ELEVATION: 1328.20
BEARING: ∅

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
0																	m	.05		5-10				
200																		.02		10				
300																				10				

LOG SCALE 1" = 200'
BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system

pyr++
qtz-pyr-gone vn bdy. (?)
3 gls qtz-pyr. gls + qtz frags
pyr++

EOH: 267'

Stopped due to lack of Cu mineralization

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

0-41' OVERBURDEN
41-267'
Pab grn to grey, alb-chl ± bio ± mt alt'd scattered f.g. tuffs.
Rk v-pyritic (ff & dissd)
From ~220 to EOH, v-strg epi (yellow-grn) alt'n ± alb.

ANALYSIS
Gen. weakly alt'd - perhaps ended in part of epidote (propylitic) zone. Weak mt. in upper part suggests hole may have collared in the outer 'chlorite' zone (ie being drilled away from intrusive centre.)

ROCK UNIT

HOLE NO. E-180

DRILL LOG

Page 1 of 4

PROJECT **Island Copper**

CONTRACTOR Olympic Drilling Consulting

DATE STARTED 25 Sept 93 COMPLETED 26 Sept 93

LOGGED BY A. Reeves AR

T.D. 267' | INCLINATION -90° | COORDINATES 19280.82E 11852.42N

COLLAR ELEVATION 1328.20 | BEARING 0.0 | SURVEY REFERENCES —

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pytop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A B T	S C C	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 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
0																											
41																										0 - 41' OVERBURDEN	
																S	.05	5									
50																									30° CA Qt3-py-ser ~ 3/4"	41 - 267' ANDESITE	
																M	.05	5-7							pyr+	Predominately fine grained tuffs with a moderate chlorite alteration, which has favoured mafics. Minor white patchy sericite alt'n and pervasive softness that suggests a weak Scc wash over an albite ± mt (dusty traces) ± biotite (or brown chlorite?) Sulphides are mostly pyrite (D ± FF)	
60																									mly trc		
																M	.05	7								Overall colour is a pale green to grey colour (with green spots) Clear to translucent grey sugary grains (secondary quartz?)	
70																									ghostlike brown rims on alt'd lapilli?	megascopically this section has some banding that suggests bedding. Under handlens inspection the pyrite veins have some parallelism but overall this may be an alteration effect.	
																M	.05	7									
80																									Pyr FF>D		
																M	.05	7-10									
90																									blue grey v.f.g. tuff	very hard, pyritic	
																M	.05	7-10							bedding?		
100																											

HOLE NO. E-180

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 25 SEPT 93 COMPLETED 26 SEPT 93
LOGGED BY AR

T.D. 267' COLLAR ELEVATION
INCLINATION -90° BEARING
COORDINATES
SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A	B	STR.: Sulf. Veins	Frac. Inten.	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_2FeS_3	Fe_2O_3	MoS_2	M	Sample No. & Interval
100–160																	M	.05		7					
																	M	.10		5–7					
																	M	.05		7–10					
																	M	.05		10					
																	M	.02		7–10					
																	M	.02		7–10					

LOG
SCALE 1"=10'
BASIC GEOLOGY: rock types, metallization, structures alterations, ore column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

100
blue-grey v.f.g. andesite to 109'
broken contact
bleached with white zeol ± carb veins.
110
cpy
120
grey ish cherty zone cut by green/grey hairline
probably silica flooded
130
py^+ FF ≥ D.
py^+
140
diss mt to ½ mm
pinkish hue ... hem dust?
150
v.f.g. to aphanitic
change in grain size .... bedding?
½ - 1mm clasts.
¼ - ⅜" wkl Qtz + pyr
160

41 - 267' ANDESITE
- as on previous page -
inter in albitization? matrix. fine grained tuff with a blue grey colour and abdt pyrite.
bleached from ± 145' - 152' → silica and zeol/carb vein
154' - grain size change but no CN to give bddg attitude ... may be different volcaniclast

HOLE NO. E-180

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR Olympic
DATE STARTED 25 Sept 93 COMPLETED 26 Sept 93
LOGGED BY AR

T.D. 267' | INCLINATION -90° | 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	B T A	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
160–220																M	.05		10				
																M	.10		>10				
																M	.05		>10				
																M	.05		10				
																M	.05		>10				
																M	.02		1–10				

LOG
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

← lapilli textures

"GILS."

Pyr 10-15

} contorted vein

ABDT GILS

decr in GILS.

← white qtz - pyr

← sphalerite

py^+ D >> FF

msv diss pyr @ 50° CA

narrow white carb te vns

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

41-267' ANDESITE

168 - start of a vein system containing some smoky qtz frags, abdt hydrocarbon, carbonate, zeolite and pyrite. The core runs ∝ parallel to the vein.

Pale - med blue-grey-green hard albitic fine ash to lapilli tuff. Very pyritic FF ≤ Diss chalcopyrite poor.

ROCK UNIT

HOLE NO. E-180

DRILL LOG

Page 4 of 4

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 25 SEPT 93 COMPLETED 26 SEPT 93
LOGGED BY R

T.D. 267' | INCLINATION -90°
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	A	B	r	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_3	MoS_2	Tr	M	Sample No. & Interval	LOG: SCALE 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
220																														
230																	M	.02		7 - 10							230	blk gibsonite vn @ 20°CA bxn, vn / flt x 4" @ 20°CA	41-267' ANDESITE V. Strong yellow-green epidote alt'n (with pinkish hem=zeo?) gives 226-235' a skarny appearance. White calcite veins (± zeol), are common. Pyrite FF ≥D.	
240																	M	.02		7 - 10							240	Pyr+ FF ≥D Strong epi ± alb. alt'n in green-grey ash tuffs.		
250																	M	.02		10							250	brown chlorite? seen as haloes on some veins		
260																	M	.02		10							260	hbl phenos		
267'																											eoh			

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_180	19280.8	11852.4	1328.2

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	267.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
50.0	60.0	0.01	0.004	6.1	0.02	0.20	0.004	0.009	18890
90.0	100.0	0.04	0.001	7.3	0.02	0.40	0.006	0.058	18891
130.0	140.0	0.07	0.002	10.4	0.03	0.30	0.005	0.010	18892
170.0	180.0	0.17	0.002	7.8	0.05	3.90	0.120	0.680	18893
210.0	220.0	0.06	0.001	5.6	0.01	0.50	0.007	0.023	18894
250.0	260.0	0.08	0.003	7.6	0.04	0.30	0.004	0.052	18895

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: ICM DATE SENT: Oct 14/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-180	50	60	.01	.04	6.1	.02	.2	.004	.009	188901	33
	90	100	.04	.01	7.3	.02	.4	.006	.058	189101	34
	130	140	.07	.02	10.4	.03	.3	.005	.110	189201	35
	170	180	.17	.02	7.8	.05	.39	.120	.680	189301	36
	210	220	.06	.01	5.6	.01	.5	.007	.023	189401	37
	250	269	.08	.03	7.6	.04	.3	.004	.052	189501	38

Keyed SD.

ROCK QUALITY DESIGNATION

HOLE NO.: E180 DATE: Oct 7/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	INTERVAL CUMULATIVE	RECOVERY INCHES	RECOVERY %	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
42	44			24		ø		
44	57	(Marker Missing)		125		26		
57	67			122		92		
67	77			118		44		
77	87			120		30		
87	97			117		ø		
97	107			120		22		
107	117			121		55		
117	127			118		44		
127	137			120		31		
137	147			120		20		
147	157			122		56		
157	167			119		27		
167	177			122		84		
177	187			120		55		
187	197			120		37		
197	207			121		55		
207	217			120		57		
217	227			122		50		
227	237			120		61		
237	247			118		48		
247	257			120		53		
257	267			122		57		
~~267~~ EOH								

Keyser

MAGNETIC SUSCEPTIBILITY

LE NO. E180 DATE Oct 7/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
42-50						.15
50-60						.03
60-70						.01
70-80						.02
80-90						.02
90-100						.04
100-110						.22
110-120						.16
120-130						.05
130-140						.21
140-150						.02
150-160						.01
160-170						.01
170-180						.02
180-190						.03
190-200						.06
200-210						.03
210-220						.04
220-230						.04
230-240						.02
240-250						.01
250-260						.01
260-267						.09
EOH						

DRILL LOG

HOLE NO. E-179

Page 1 of 1

PROJECT: Island Copper Mine
CONTRACTOR: Olympic Drilling & Consulting
DATE STARTED: Sept. 22/93 COMPLETED: Sept. 25/93
LOGGED BY: A.T. Reeves (Summary by JT)

T.D. 421'
INCLINATION: -60°
COORDINATES: 21097.23E 11116.05N
SURVEY REFERENCES: Between B & E Zones

COLLAR ELEVATION: 1284.36
BEARING: 198.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	CuFeS$_2$	FeS$_2$	Cu$_5$FeS$_4$	Fe$_3$O$_4$	MoS$_2$	Sample No. & Interval
0																								
200																	H / I / M	.05		3 / 5-10 / 3-5				200
400																								400
500																								

LOG

SCALE 1" = 200'

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

casing - no core.

FLT @ 182-212.5

Alb at 40-60° c/a w/ qtz-ons + mt + cpy(?)

zeot sandy qtz qv's + mt

2 ft flt zone

10" gauge in sh @ (40°?)

E.O.H. 421'
Stopped due to lack of copper mineralization

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

0-170' OVERBURDEN

170-182'
Dk grn chl-seric (scc) alt'd (+ qtz veins) andesite tuff. (5-7% pyr.)

182-212.5' FAULT ZONE w abd. zeo/carb vnlts

213-402'
Pale grn, chl-mt-alb-qtz + bio - seric (scc) alt'd ash tuff.
Abd. milky alb. as env. on narrow mt. vns (w chl)

402-421 FAULT ZONE
Qtz vn frags, bx & gouge

ANALYSIS
Hole drilled in the chl-mt (inner transition) zone. The bio-mt zone prob. further south or at depth.
The low Cu grades coupled w presence of some biotite alt'n suggests the mineralized zone is weak.

ROCK UNIT

HOLE NO. E-179

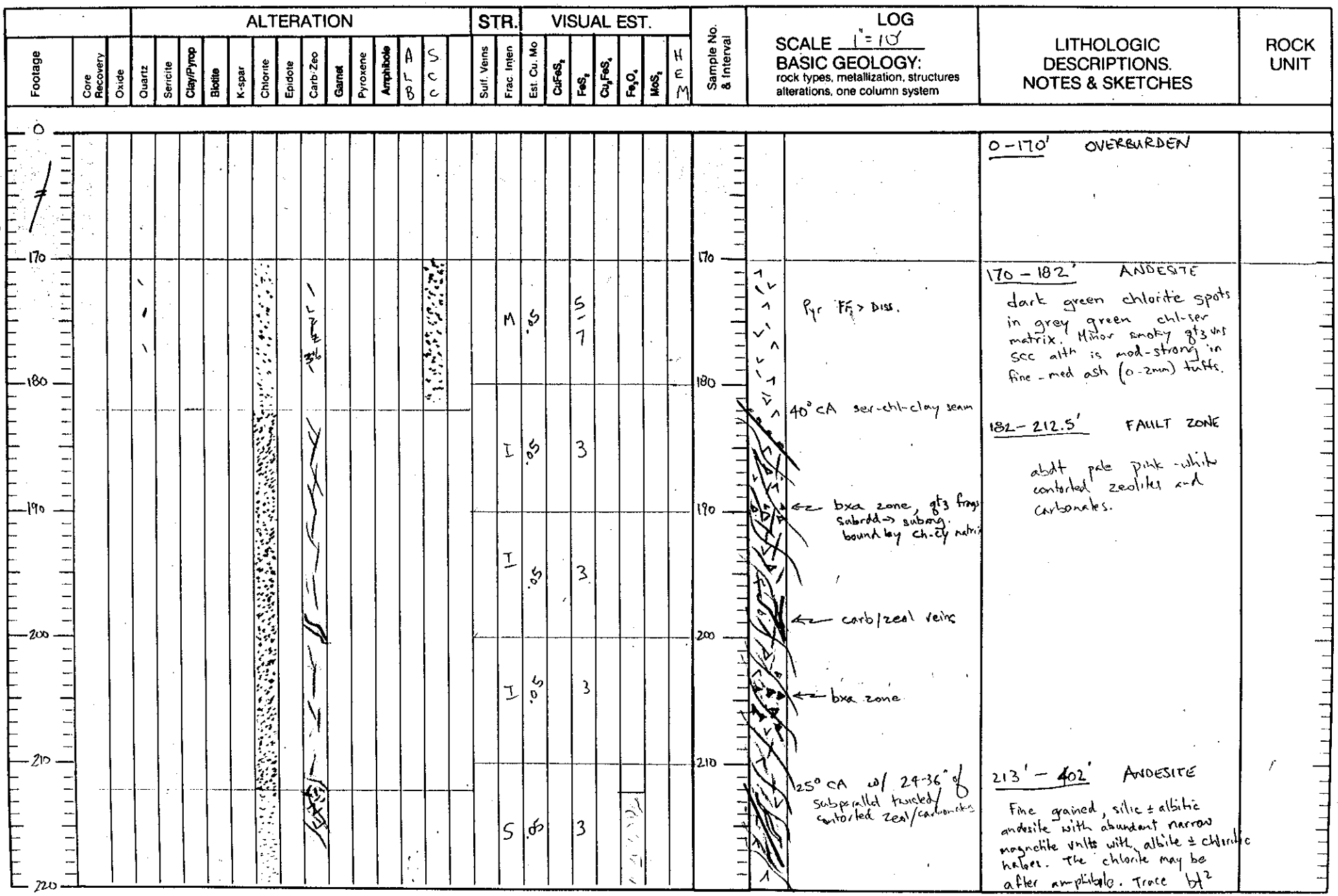
DRILL LOG

Page 1 of 5

PROJECT **Island Copper**
CONTRACTOR OLYMPIC DRILLING CONSULTING
DATE STARTED 22SEP93 COMPLETED 25SEP93
LOGGED BY A. REEVES

T.D. 421'
INCLINATION -60°
COORDINATES 21097.23E 11116.05N
SURVEY REFERENCES —

COLLAR ELEVATION 1284.36
BEARING 198.0



0-170' OVERBURDEN

170-182' ANDESITE

dark green chloritic spots in grey green chl-ser matrix. Minor smoky gt3 vns scc alth is mod-strong in fine-med ash (0-2mm) tuffs.

182-212.5' FAULT ZONE

abdt pale pink-white contorted zeolites and carbonates.

213'-402' ANDESITE

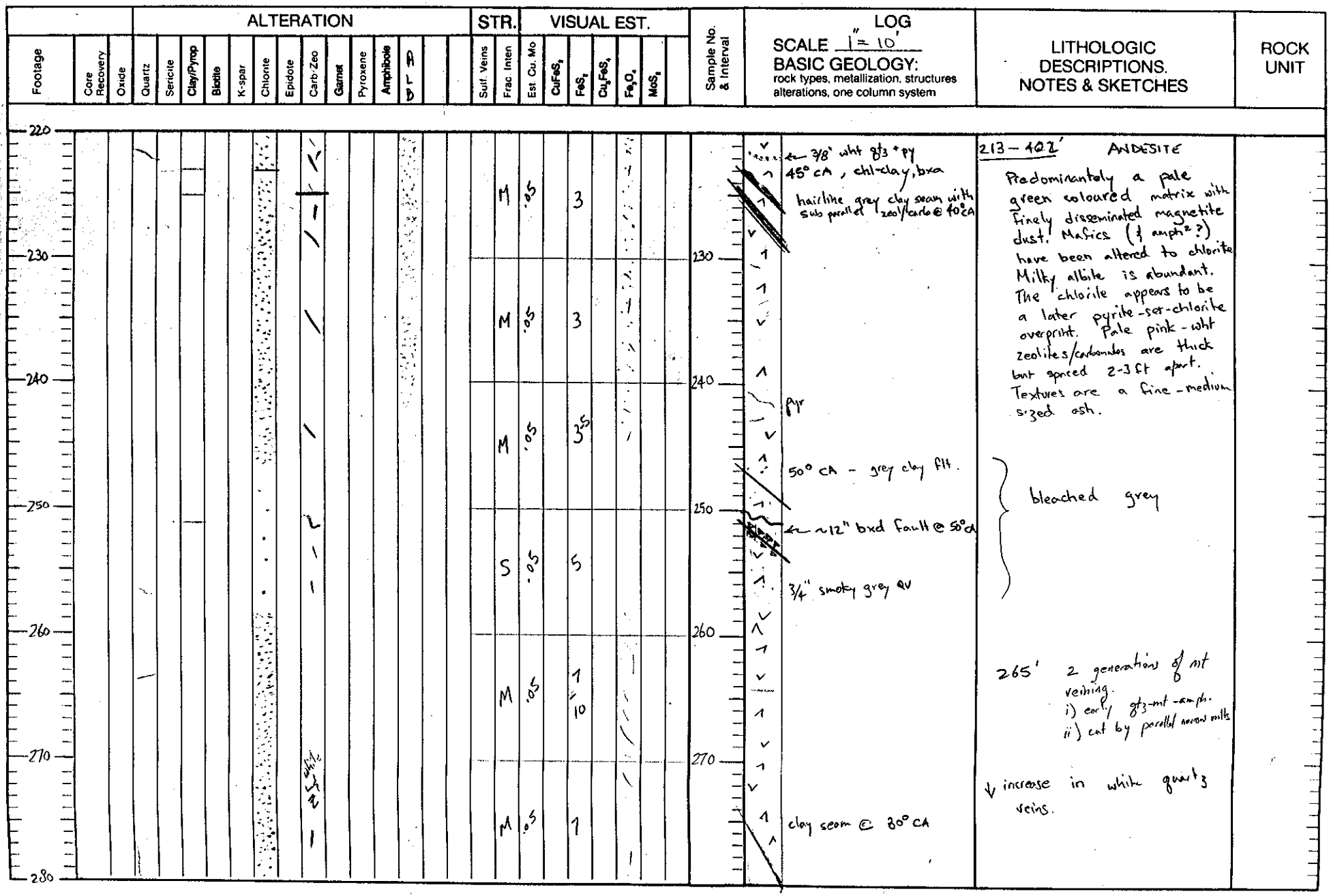
Fine grained, silic ± albitic andesite with abundant narrow magnetite vnlts with albite ± chloritic halos. The chlorite may be after amphibole. Trace bt?

HOLE NO. E-179

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 22Sept 93 COMPLETED 25 Sept 93
LOGGED BY AR

T.D. 421 ft COLLAR ELEVATION
INCLINATION -60° BEARING 198.0
COORDINATES
SURVEY REFERENCES



HOLE NO. E-179

DRILL LOG

Page 3 of 5

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 22 SEPT 93 COMPLETED 25 SEPT 93
LOGGED BY AR

T.D. 421 ft
INCLINATION -60°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING 198.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A B	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
280																										
290															M	.10			5							
300															M	.05			5							
310															M	.05			5							
320															M	.05			3-5							
330															S	.05			3-5							
340															S	.05			3-5							

½" wht qtz with mod diss-msv mag & cpy

½" wht-pale pink zeol & smoky qtz @ 50° CA

1" clay-gouge-brx flt

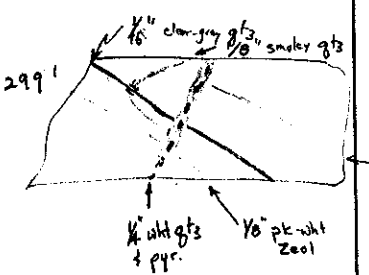
py

pk zeol/±carb ~1" narrow flt @ 50° CA

brxd spun core probable fault

213-402' ANDESITE

Pale green-grey fine grained tuffs. Occasional patchy remnant bt?. wk-mod diss. mt. dust.



wk pyr-ser overprint

HOLE NO. E-119

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 22 SEPT 93 COMPLETED 25 SEPT 93
LOGGED BY R

T.D. 421 1 COLLAR ELEVATION
INCLINATION -60° BEARING 198.0
COORDINATES
SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	B T A	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
340																							
															M	.05		5	1-3				
350																							
															M	.05		5	3				
360																							
															M	.05		5					
370																							
															M	.05		5	3-5				
380																							
															M	.10		5	3				
390																							
															M	.05		5	3				
400																							

LOG
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

213-402' ANDESITE

As described previously

- zeol along bnd chl- fault ~25° CA
- smoky grey qvs to ⅛"
- network hairline mt
- ¼" smoky
- ½" convoluted pink zeol.
- sub rdd qv vn frags
- qtz3 vn ~ 10-15° to CA
- qv ± parallel to CA (→ not silica flooding)
- brown chlorite?
- clot & cpy
- ½" mt & Mt.
- 8-10" pyr-ser flt ± 70°
- 6" pyritic fault with tan sericite halos @ 70° CA

nb: Patchy brown "biotite" may really be brown chlorite

weak pervasive sericite overprint probably structural as at 396' & 394'

ROCK UNIT

HOLE NO. E-179

DRILL LOG

Page 5 of 5

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 22 SEPT 93 COMPLETED 25 SEPT 93
LOGGED BY AR.

T.D. 421'
INCLINATION -60°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING 198.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A L B	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
400																										
410																								410	24° Flt Zone w/ bxa (carb) gouge, sericite ± @ 70° CA subordd contorted zeol subparallel to fault. ← rubble. clay seam 50° CA	213 - 402' ANDESITE 402 - 421' FAULT ZONE Abdt pale pink gash filling laumontite, bxd qtz vn frags, rubble, & gouge zones suggest that this hole was stopped while still in a major fault.	
420																								420	← 10" comminuted rock & consolidated gouge @ ~60° CA 55° CA		

HOLE-ID	EAST	NORTH	ELEV
E_179	21097.2	11116.1	1284.4

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	420.0	198.0	-60.0
420.0	421.0	198.0	-53.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
170.0	180.0	0.09	0.003	9.8	0.12	0.30	0.003	0.010	18883
210.0	220.0	0.09	0.003	6.0	0.09	0.60	0.003	0.010	18884
250.0	260.0	0.10	0.011	7.8	0.07	0.40	0.005	0.017	18885
290.0	300.0	0.09	0.008	8.4	0.07	0.60	0.012	0.038	18886
330.0	340.0	0.11	0.004	7.0	0.05	0.80	0.004	0.024	18887
370.0	380.0	0.25	0.024	6.4	0.19	1.00	0.004	0.008	18888
410.0	420.0	0.13	0.005	6.9	0.09	0.60	0.003	0.012	18889

ISLAND COPPER MINE

ASSAY REQUISITI[illegible] AND REPORT FORM

√ Keyed Dec [illegible]

LAB SENT TO: ICM DATE SENT: Oct 14/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-179	170	180	.09	.003	9.8	.12	3	.003	.10	188833	26
	210	220	.09	.003	6.0	.09	6	.003	.10	88834	27
	250	260	.10	.011	7.8	.07	4	.005	.17	88835	28
	290	300	.09	.008	8.4	.07	6	.012	.38	88836	29
	330	340	.11	.004	7.0	.05	8	.004	.24	88837	30
	370	380	.25	.024	6.4	.19	10	.004	.08	88838	31
	410	420	.13	.005	6.9	.09	6	.003	.12	88839	32

Keyed.

ROCK QUALITY DESIGNATION

HOLE NO.: E179 DATE: Oct. 1/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	INTERVAL CUMULATIVE	RECOVERY INCHES	RECOVERY %	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
171	181			120		16		
181	191			115		22		
191	201			112		8		
201	211			118		18		
211	221			116		42		
221	231			115		35		
231	241			114		32		
241	251			105		24		
251	261			107		22		
261	271			120		36		
271	276			58		32		
276	282			55		18		
282	287			58		37		
287	292			50		18		
292	297			61		30		
297	302			60		19		
302	307			60		11		
307	312			62		21		
312	317			58		11		
317	322			57		8		
322	330.5			102		15		
330.5	333.5			32		4		
333.5	339			58		12		
339	341			24		4		
341	346			62		24		
346	351			59		38		
351	356			59		14		
356	361			53		22		
361	366			59		20		
366	371			60		26		
371	376			58		27		
376	381			57		10		

ROCK QUALITY DESIGNATION

HOLE NO.: E-179 DATE: Oct 1/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
381	386			56		9		
386	391			58		38		
391	396			60		11		
396	401			60		24		
401	406			58		16		
406	411			60		26		
411	416			58		15		
416	421			62		21		
EOH								

Kevin SE

MAGNETIC SUSCEPTIBILITY

LE NO. E179 DATE Oct 13/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
170-180						1.9
180-190						.17
190-200						.84
200-210						.25
210-220						2.5
220-230						3.8
230-240						1.6
240-250						.86
250-260						.06
260-270						.06
270-280						3.2
280-290						2.3
290-300						1.3
300-310						3.2
310-320						.44
320-330						1.4
330-340						1.2
340-350						2.9
350-360						1.9
360-370						3.6
370-380						1.1
380-390						1.3
390-400						1.0
400-410						1.1
410-421						1.9
EOH.						

TRAVERSE DATA INPUT

SETUP	BACKSIGHT	FORESIGHT	H.INST.	H.EDM.	H.TARG.	H.PRISM	EDM DIST.	H.A.	Z.A.
1373	WRT	6478	5.100	4.900	2.300	2.300	1545.400	181-02-13.0	089-14-30.0
6478	1373	6404	3.750	3.950	3.500	3.500	228.670	153-43-39.0	088-25-19.0
6404	6478	6490	4.000	4.200	3.400	3.400	228.130	152-50-24.0	091-22-53.0
6490	6404	6271	3.900	4.100	3.400	3.400	617.060	147-30-43.0	090-27-55.0
6271	6490	6486	3.800	4.000	3.400	3.400	311.240	176-38-29.0	090-13-48.0
6486	6271	6504	4.000	4.200	3.300	3.300	136.970	187-37-30.0	090-42-58.0
6504	6486	6503	3.800	4.000	3.500	3.500	307.840	159-00-09.0	093-57-30.0
6503	6504	E179	3.850	4.050	5.200	5.200	382.048	159-11-59.0	092-18-18.0

REDUCTION OF EDM DISTANCES - Reference Elevation = 1000.000
Hor. Scale Factor = 1.00000000 Vert. Scale Factor = 1.00000000

SETUP	BACKSIGHT	FORESIGHT	H.INST.	H.EDM.	H.TARG.	H.PRISM	H.A.	Z.A.	HOR. DIST.	VERT. DIST.
1373	WRT	6478	5.100	4.900	2.300	2.300	181-02-13.0	089-14-30.0	1545.241	20.502
6478	1373	6404	3.750	3.950	3.500	3.500	153-43-39.0	088-25-19.0	228.580	6.298
6404	6478	6490	4.000	4.200	3.400	3.400	152-50-24.0	091-22-53.0	228.060	-5.499
6490	6404	6271	3.900	4.100	3.400	3.400	147-30-43.0	090-27-55.0	617.030	-5.003
6271	6490	6486	3.800	4.000	3.400	3.400	176-38-29.0	090-13-48.0	311.233	-1.247
6486	6271	6504	4.000	4.200	3.300	3.300	187-37-30.0	090-42-58.0	136.957	-1.711
6504	6486	6503	3.800	4.000	3.500	3.500	159-00-09.0	093-57-30.0	307.101	-21.249
6503	6504	E179	3.850	4.050	5.200	5.200	159-11-59.0	092-18-18.0	381.734	-15.363

FINAL RESULTS FOR OPEN TRAVERSE
****

INITIAL STATION = 1373 INITIAL BACKSIGHT = WRT
Northing : 9243.820 Northing : 5985.266
Easting : 22875.970 Easting : 22593.058
Elevation : 1303.430 Elevation : 1351.903

SETUP	BACKSIGHT	FORESIGHT	H.D.	H.A.	Z.A.	ADJUSTED FORESIGHT STATION COORDINATES		
		*********				**********		
1373	WRT	6478	1545.417	181-02-13.0	089-14-30.0	10780.599N	23037.465E	1326.732EL
6478	1373	6404	228.673	153-43-39.0	088-25-19.0	10995.018N	22958.262E	1333.281EL
6404	6478	6490	228.113	152-50-24.0	091-22-53.0	11149.288N	22790.297E	1328.382EL
6490	6404	6271	617.047	147-30-43.0	090-27-55.0	11257.266N	22182.788E	1323.879EL
6271	6490	6486	311.234	176-38-29.0	090-13-48.0	11293.684N	21873.694E	1323.032EL
6486	6271	6504	136.961	187-37-30.0	090-42-58.0	11327.616N	21741.007E	1322.020EL
6504	6486	6503	307.815	159-00-09.0	093-57-30.0	11292.039N	21435.973E	1301.072EL
6503	6504	E179	382.099	159-11-59.0	092-18-18.0	11116.052N	21097.227E	1284.359EL

DRILL LOG

HOLE NO. E-178

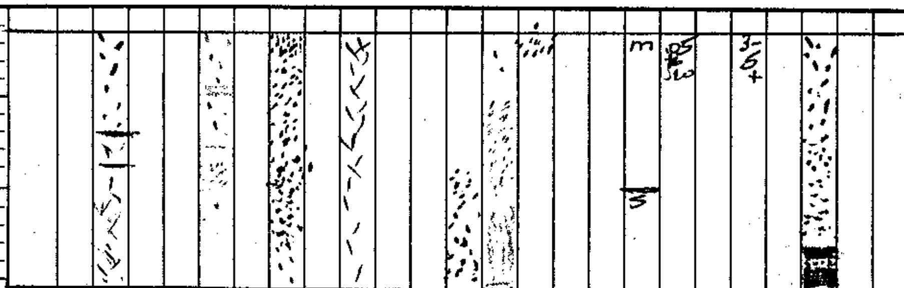
Page 1 of 1

PROJECT: Island Copper Mine
CONTRACTOR: Olympic Drilling & Consulting
DATE STARTED: Sept. 21/93 COMPLETED: Sept. 22/93
LOGGED BY: A.T. Reeves (Summary by JF)

T.D. 312'
INCLINATION -90°
COORDINATES 22822.09E 10523.90N
SURVEY REFERENCES

COLLAR ELEVATION 1287.83
BEARING ø

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	CuFeS$_2$	FeS$_2$	Cu$_x$FeS$_4$	Fe$_3$O$_4$	MoS$_2$	Sample No. & Interval	LOG — SCALE 1" = 200' — BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
0																											



Log notes:
- late smoky qtz vn
- cuts carb-zeo vns
- qtz-pyr-gls vns
- amp → chl.
- chrs @ 40° t/a w/ gls, actk.
- qtz-Mo-py vns not altd
- zeo-pyr-gls vns

EOH. 312'

Hole stopped due to wk mineralization in the core alt'n zone.

0-22' OVERBURDON

22-58' Bio-mt-chl-seric (scc) +/- qtz alter fg- ash tuff. Bio partially → chl. Gls: obc, but some qtz-pyr. vns.

58-73' FAULT BRECCIA w/ qtz vn frags

73-312' Andesite +/- bxa (crackle) /// to 22-58' w/ incr. alb. alt'n. Incr. qtz-mt-amp alt'n to btm of hole.

ANALYSIS

Hole drilled from bio-mt zone into qtz-mt-amp (core) zone. The boundaries of zone are not sharp, but @260' the bio is absent & mt altn becomes intense. Thus by 298' hole is clearly in the QMA zone.

The porphyry clearly lies close to & below btm of hole.

HOLE NO. E-178

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR Olympic Drilling Consulting
DATE STARTED Sept 21/93 COMPLETED Sept 22/93
LOGGED BY A. Reeves

T.D. 312'
INCLINATION -90
COORDINATES 22822.09 E 10523.90 N
SURVEY REFERENCES —

COLLAR ELEVATION 1287.83
BEARING Ø

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A L B	S P C	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: BASIC GEOLOGY (SCALE 1"=10'): rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
0																										0-22 OVERBURDEN	OVER
20																											
30																M	.05	1-3						PYR$^{1-3}$ FF>D	22-58 ANDESITE PRIMARILY MEDIUM TO FINE ASH TEXTURES. WEAK PERVASIVE BIOT, PARTIALLY RETRO TO CHLORITE MINOR WHITE QTZ VEINS W/ DISS MAGN.	BVAT
40																M	.05	3-5						contorted zeol/calc/GILS/PYR+ late ½" smoky Qtz-Gils vein cuts zeol/calc swarm	37' ½mm mag vnlts; 1mm GILS/CALC; 2-3mm pale pink ZEOL/CALC; PARAGENESIS: 1.) mag vnlts 2.) GILS/CALC 3.) PINK ZEOL 4.) ?thick grey Qtz/GILS	
50																M	.05	3-5						1.5" Grey QV/GILS @ 45°CA ← frags of QV/GILS → "RDD" PYR vnlts		
60																L	.05	5						40° CA - ¼" QPM PYR+		
70																I → healed	.05	3-5						~2" G,X @ 30° CA; 30°; ← Very fine diss PYR + smaller bxa frags @ 69'	58-73' FAULT BRECCIA LATE BRECCIA CONTAINS SUBANG. - SUBROUNDED FRAGS: → OF SMOKY GREY QTZ-GILS VNS, → WHITE CALC/ZEOL GOUGE IS CHLORITIC WITH MOD. DISS PYR & WASH FILLING OF BLACK GILS.	

HOLE NO. E_178

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 21/93 COMPLETED SEPT. 22/93
LOGGED BY AR

T.D. 312
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

Footage	STR. Frac. Inten	Est. Cu. Mo	FeS_2
70–80	S-healed	.05	3-5
80–90	M	.05	3-5
90–100	M	.05	3-5
100–110	M	.05	3-5
110–120	M healed	.05	3-5
120–130	M-healed	.05	3-5

Log notes:

Pyrite FL/50°CA/6"B

3/8" pink zeol / black gils.

white ZEOL/CARB vns

← abdt fine chocolate biot w/ late pyr-chl-epi "No cpy!"

1/2" grey QV @ 30° CA

1/2" white/lab pink ZEOL/CARB

← ~1/2" QPZ @ 60° cuts earlier Qtz-Alb

3/4" QV, 1/2" QV } ≈ 60° CA

2" BXD FL @ 50° CA

3/4" grey QV @ 40° CA

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

58-73' FAULT BRECCIA

73- ANDESITE (± BXA)

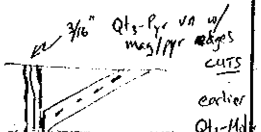
AS ABOVE

Colour is generally a light to medium green grey, with patchy med-grained flaky biotite that has been partially to completely retrograded to chlorite. Paler, milky zones, appears to be moderate - strong albitic alteration.

102 - CONTORTED BRECCIA (12")

(BRECCIA TEXTURES RELATED TO VEIN SYSTEMS)

120'



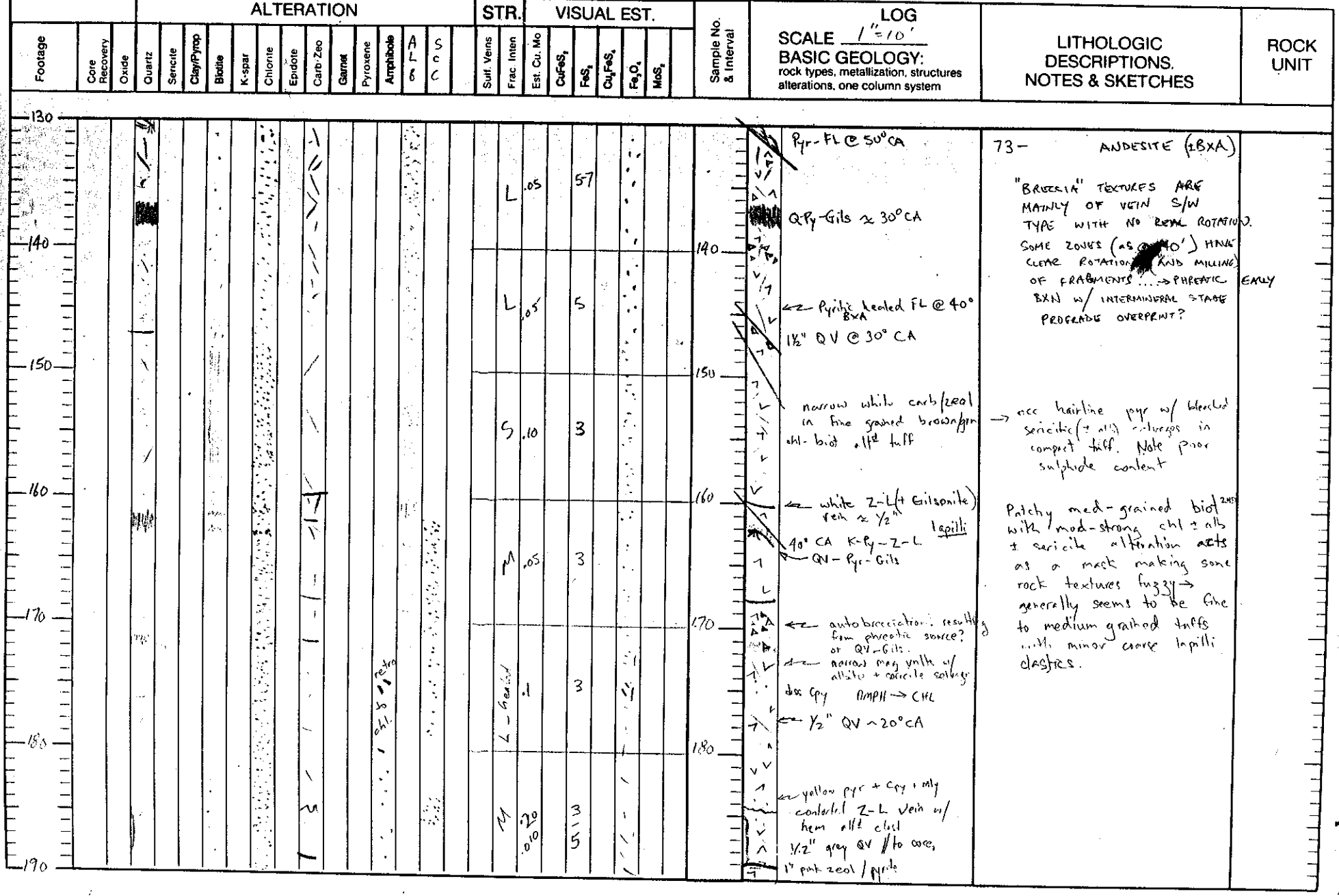
ROCK UNIT

HOLE NO. E-178

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR Olympic
DATE STARTED Sept 21/93 COMPLETED Sept 22/93
LOGGED BY AR

T.D. 312' | COLLAR ELEVATION
INCLINATION -90° | BEARING
COORDINATES
SURVEY REFERENCES



HOLE NO. E-178

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED Sept 21/93 COMPLETED Sept 22/93
LOGGED BY AR

T.D. 312' | COLLAR ELEVATION
INCLINATION -90° BEARING
COORDINATES
SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A	B	C	S	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
190																										
200																		M	.15			3 1 5				
210																		S	.10			3 1 5				
220																		S	.10			5				
230																		S	.05			3 1 5				
240																		S	.10 .01			5				
250																		M								

LOG
SCALE 1"=10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

40° CA - ¼" Z, Gtz.
← alt'd xstal tuff? porphyritic frag ½" lapilli
zeol healed flt @ 50° CA ~ 1"; v.f. diss sulph.
1' QV-Pyr ~ 40° CA
Gtz (± Qtz3 bx) Zeol Vein @ 40° CA ~ ½" (x2)
← dense green/grey f.g. tuff with hairline magnetite vnlts.
½" grey QV @ 40° CA
Qtz_3 - Gtz.
Q Pyr vns.
cpy ← increasing Q veining
Q-mly ± cpy
mag hairlines ≥ dissem.
Qtz_3 py - mly ~ 20° CA ½"

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

73 - ANDESITE

194'

3a? pyr-chl

Parogenesis:
1.) Hairline magnetite
2.) Narrow white Qtz_3
3.) Qtz_3 (¼") pyrite on sulve ± py ± mag on edges
4.) Pyr - white zeol ± carb
5.) Pinkish zeol/carb.

ROCK UNIT

HOLE NO. E-178

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 21 93 COMPLETED SEPT 22/93
LOGGED BY AR

T.D. 312' 1
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

ALTERATION | STR. | VISUAL EST. | Sample No. & Interval | LOG SCALE 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system | LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES | ROCK UNIT

Footage | Core Recovery | Oxide | Quartz | Sericite | Clay/Pyrop | Biotite | K-spar | Chlorite | Epidote | Carb-Zeo | Garnet | Pyroxene | Amphibole | B | T | A | C | N | S | Sulf Veins | Frac. Inten | Est. Cu. Mo | $CuFeS_2$ | FeS_2 | Cu_2FeS_2 | Fe_3O_4 | MoS_2

250
260
270
280
290
300
310

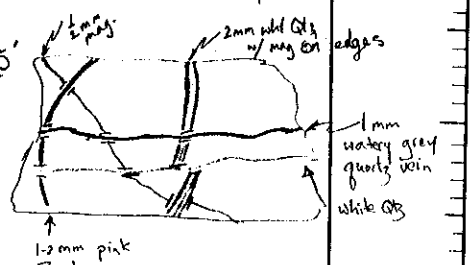
M .05 3
L .05 3
S .05 1-3
S .05 1-3
M .05 1-3
M .05 1-3

← vein bxn
1" QV @ 35° CA
1/2mm pyr vnlt @ 50° CA
1/2" QV
← Qtz stock work pyr
← bright green partially chloritized amphibole
40° CA Zeol/Pyr/Gils. ~1"

73- ANDESITE

Light-med green albitized andesitic tuffs. Magnetite as hairlines & disseminations. Greenish colour is due to retro grade chloritization of earlier biotite 2ND and amphibole.

265'



PARAGENESIS
1.) Magnetite vnlts ← Olga's early Fe metasom.?
2.) Qtz_3 - Magnetite
3.) Quartz (white)
4.) Pink Zeol /± Carb
5.) Watery grey Qtz veins

Hole shut off due to lack of visible chalcopyrite and alterations which indicate nearness to intrusive.

eoh @ 312'

AR

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_178	22822.1	10523.9	1287.8

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	312.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
22.0	30.0	0.19	0.014	5.0	0.07	0.50	0.003	0.007	18777
30.0	40.0	0.16	0.003	5.1	0.07	0.40	0.005	0.004	18778
40.0	50.0	0.22	0.003	6.7	0.07	0.40	0.004	0.004	18779
50.0	60.0	0.17	0.004	7.3	0.06	0.30	0.004	0.004	18780
60.0	70.0	0.14	0.002	4.2	0.06	0.40	0.004	0.003	18781
70.0	80.0	0.11	0.001	2.7	0.06	0.50	0.004	0.004	18782
80.0	90.0	0.24	0.006	6.0	0.06	0.80	0.003	0.008	18783
90.0	100.0	0.24	0.012	5.8	0.06	0.80	0.002	0.007	18784
100.0	110.0	0.18	0.008	4.0	0.03	0.70	0.003	0.004	18785
110.0	120.0	0.27	0.008	4.6	0.05	0.70	0.002	0.004	18786
120.0	130.0	0.22	0.008	5.8	0.03	0.60	0.002	0.004	18787
130.0	140.0	0.24	0.019	4.9	0.07	0.50	0.003	0.005	18788
140.0	150.0	0.27	0.013	5.8	0.07	0.70	0.003	0.006	18789
150.0	160.0	0.12	0.006	5.1	0.03	0.20	0.003	0.006	18790
160.0	170.0	0.10	0.007	5.0	0.03	0.30	0.003	0.006	18791
170.0	180.0	0.11	0.007	4.2	0.04	0.30	0.003	0.005	18792
180.0	190.0	0.11	0.007	4.0	0.04	0.30	0.003	0.005	18793
190.0	200.0	0.11	0.007	4.3	0.03	0.30	0.004	0.005	18794
200.0	210.0	0.10	0.006	4.4	0.02	0.30	0.004	0.004	18795
210.0	220.0	0.09	0.005	5.0	0.02	0.20	0.004	0.005	18796
220.0	230.0	0.11	0.006	5.1	0.03	0.30	0.004	0.010	18797
230.0	240.0	0.11	0.007	4.2	0.02	0.30	0.005	0.006	18798
240.0	250.0	0.11	0.006	3.7	0.02	0.30	0.003	0.005	18799
250.0	260.0	0.11	0.150	4.7	0.02	0.20	0.003	0.005	18800
260.0	270.0	0.08	0.008	7.4	0.01	0.10	0.004	0.005	18801
270.0	280.0	0.07	0.005	7.0	0.02	0.20	0.004	0.006	18802
280.0	290.0	0.08	0.005	7.0	0.03	0.30	0.005	0.006	18803
290.0	300.0	0.05	0.001	5.2	0.03	0.20	0.004	0.005	18804
300.0	312.0	0.07	0.002	6.6	0.02	0.30	0.003	0.005	18805

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

Keyd SP

LAB SENT TO: I/C DATE SENT: Sept 24/93 SENT BY/DEPT: Geol TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-178	22	30	19	14	50	07	5	3	7	187729	
	30	40	16	3	51	07	4	5	4	7778	30
	40	50	22	3	67	07	4	4	4	7779	31
	50	60	17	4	713	06	3	4	4	7780	32
	60	70	14	2	412	06	4	4	3	7781	33
	70	80	11	1	217	06	5	4	4	7782	34
	80	90	24	6	610	06	8	3	3	7783	35
	90	100	24	12	558	06	9	2	7	7784	36
	100	110	18	8	410	03	7	3	4	7785	37
	110	120	27	16	416	05	7	2	4	7786	38
	120	130	22	8	518	03	6	2	4	7787	39
	130	140	24	19	419	07	5	3	5	7788	40
	140	150	27	13	518	07	7	3	6	7789	41
	150	160	12	6	511	03	2	3	6	7790	42
	160	170	10	7	510	03	3	3	6	7791	43
	170	180	11	7	412	04	3	3	5	7792	44
	180	190	11	7	410	04	3	3	5	7793	45
	190	200	11	7	413	03	3	4	5	7794	46

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

Keyed 82

LAB SENT TO: I/C DATE SENT: Sept 24/93 SENT BY/DEPT: Geol TYPE: Core

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-178	200	210	10	6	44	02	3	4	4	187955	47
	210	220	9	5	50	02	2	4	5	79 6	48
	220	230	11	6	51	03	3	4	10	797	49
	230	240	11	7	42	02	3	5	6	798	50
	240	250	11	6	37	02	3	3	5	799	51
	250	260	11	15	47	02	2	3	5	800	52
	260	270	8	8	74	01	1	4	5	801	53
	270	280	7	5	76	02	2	4	6	802	54
	280	290	8	5	70	03	3	5	6	803	53
	290	300	5	1	52	03	2	4	5	804	54
	300	312	7	2	66	02	3	3	5	805	55

ROCK QUALITY DESIGNATION Keyes (52)

PAGE 1 OF 2

HOLE NO.: E178 DATE: Sept 22/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
22	27			55		10		
27	30			30		ø		
30	35			58		26		
35	42			84		36		
42	47			52		9		
47	52			60		8		
52	57			60		8		
57	62			61		31		
62	67			62		33		
67	72			61		40		
72	77			61		47		
77	82			57		42		
82	87			56		23		
87	92			61		28		
92	97			62		16		
97	102			59		24		
102	107			61		19		
107	112			62		25		
112	117			60		37		
117	122			55		24		
122	127			61		35		
127	132			60		27		
132	137			61		19		
137	142			59		33		
142	146.5			54		21		
146.5	152			61		5		
152	156.5			52		ø		
156.5	161.5			61		16		
161.5	166.5			60		~~16~~ 19		
166.5	171.5			60		19		
171.5	176.5			62		49		
176.5	180			~~60~~32		~~32~~ 22		

ROCK QUALITY DESIGNATION

HOLE NO.: E178 DATE: Sept 23/93 LOGGED BY: S Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
180	184.5			51		14		
184.5	189.5			60		34		
189.5	192			27		11		
192	196			54		5		
196	201.5			60		17		
201.5	206.5			59		15		
206.5	211			54		4		
211	222			122		32		
222	232			122		41		
232	242			118		8.		
242	252			120		34		
252	262			120		57		
262	272			121		70		
272	282			118		21		
282	292			117		30		
292	302			118		36		
302	312			122		43		
EOH.								

Kay

MAGNETIC SUSCEPTIBILITY

LE NO. E178 DATE Sept 22/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
20-30						1.4
30-40						1.1
40-50						1.0
50-60						.10
60-70						.03
70-80						.27
80-90						.58
90-100						1.0
100-110						.48
110-120						.81
120-130						.48
130-140						.95
140-150						2.8
150-160						1.1
160-170						2.0
170-180						2.7
180-190						1.3
190-200						3.7
200-210						3.2
210-220						3.9
220-230						2.3
230-240						1.3
240-250						3.1
250-260						2.8
260-270						29.0
270-280						11.0
280-290						10.0
290-300						17.0
300-312						26.0
EOH.						

TRAVERSE DATA INPUT

SETUP	BACKSIGHT	FORESIGHT	H.INST.	H.EDM.	H.TARG.	H.PRISM	EDM DIST.	H.A.	Z.A.
1373	WRT	E178	4.900	5.100	4.000	4.000	1281.340	172-37-39.0	090-44-22.0

REDUCTION OF EDM DISTANCES - Reference Elevation = 1000.000
Hor. Scale Factor = 1.00000000 Vert. Scale Factor = 1.00000000

SETUP	BACKSIGHT	FORESIGHT	H.INST.	H.EDM.	H.TARG.	H.PRISM	H.A.	Z.A.	HOR. DIST.	VERT. DIST.
1373	WRT	E178	4.900	5.100	4.000	4.000	172-37-39.0	090-44-22.0	1281.216	-16.503

FINAL RESULTS FOR OPEN TRAVERSE

INITIAL STATION = 1373 INITIAL BACKSIGHT = WRT

Northing :	9243.820	Northing :	5985.266
Easting :	22875.970	Easting :	22593.058
Elevation :	1303.430	Elevation :	1351.903

SETUP	BACKSIGHT	FORESIGHT	H.D.	H.A.	Z.A.	ADJUSTED FORESIGHT STATION COORDINATES		
1373	WRT	E178	1281.311	172-37-39.0	090-44-22.0	10523.902N	22822.085E	1287.827EL

DRILL LOG

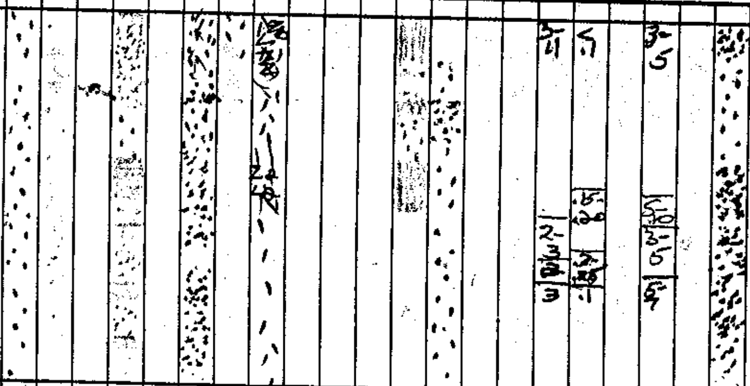
HOLE NO. E-177

PROJECT Island Copper Mine
CONTRACTOR Olympic Drilling & Consulting
DATE STARTED Sept. 19/93 COMPLETED Sept. 21/93
LOGGED BY J. A. Fleming

T.D. 422'
INCLINATION -90°
COORDINATES 23366.15 E 10262.49 N
SURVEY REFERENCES

COLLAR ELEVATION 1245.50
BEARING 0

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	CuFeS2	FeS2	Cu5FeS4	Fe3O4	MoS2	Sample No. & Interval	LOG SCALE 1"=200' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
0																← 1-5 (Low-High)											
0–422																3-4; 2-3; 3	5; 1.5-2.0; 2.5; 1		3-5; 5-1.0; 5; 5								



Basic geology notes (0–422'):

- 8-20' casing/no core
- cpy tr
- blk gils in bxx
- qtz-carb-zeo vns
- 100-104' qv's, pyr (5-10%)
- qtz + seric/pyr @ 2 lr.
- qtz tr pyr vns @ same env.
- ct. m'ld by gry q.v.
- cpy occ @ pyr. vns
- 5% cpy; cpy diss @ pyr
- cpy tr-; qtz-pyr vns cut hbl π
- high pyr (5-10%)

EOH: 422'

SYNOPSIS

The hole intersected mod-strg bio-mt altn & grades of cu were gen ≤ .30% Cu. Thus the system is prob. no better than a 0.3% Cu potential (but we know THIS!) The hbl. π clearly predates the ~~related~~ QFP intrusion(s) to which the bio-mt altns are related.

Lithologic descriptions:

0-20' Overburden

20-230'

Brownish, lt. grn-white, pyritic, bio-mt-qtz-alb-chl tr seric (scc) alt'd x'al - lapilli tuff.

Mag occ. diss. or vnlts (1-2mm)

alb → seric-clay (?);
bio → chl tr seric

Min veins

1) mt-pyr w alb envs. (Kspar?) tr cpy
2) py-chl-carb-zeo tr gyp +/- qtz

230'-422'

Dk grn - med brn, chl-mt-bio alt'd hornblende porphyry w scatt'd qvs.

Comm ~60% hbl phenos wkly alt'd chl. Aphan. mtx wk-med bio-mag alt'd.

Mag occ. in mtx & rep hbl. w chl & pyr.

Qtz occ as gry qtz vns to 2' +/- pyr (||| to abv. tuff)

Vn. sets 1) gry qv +/- pyr
2) wt qtz + zeo + pyr tr chl

Cpy occ. diss. & in vnlts w pyr.

HOLE NO. E-177

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT. 19/93 COMPLETED SEPT. 21/93
LOGGED BY J. A. FLEMING

T.D. 422'
INCLINATION -90°
COORDINATES 23366.15 E 10262.49 N
SURVEY REFERENCES

COLLAR ELEVATION 1245.50
BEARING 0.0

Column headings: Footage | Core Recovery | Oxide | ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, ALB, SEC | STR.: Surf. Veins, Frac. Inten | VISUAL EST.: Est. Cu. Mo, $CuFeS_2$, FeS_2, Cu_5FeS_4, Fe_3O_4, MoS_2 | Sample No. & Interval | LOG — SCALE 1" = 10' — BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system | LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES | ROCK UNIT

Footage: 0, 10, 20, 30, 40, 50, 60

Interval	Surf. Veins	Frac. Inten	FeS_2
20–30	3 to 4	<1	3-5
30–40	3 to 4	<1	3 to 5
40–50	3 to 4	<1 to 4	3 to 5
50–60	3 to 4	<1	3 to 5

Log notes:

- 2mm pyr vn w spotty pyr - narrow (1mm) alb envs + calc
- qv (1mm) c pyr + seric. envs. - cuts lapilli clast (1cm)
- pyr-chl vn cuts mag vn w alb. envs.
- alb rims on lapilli
- lighter grey alt'd tuff - strg. alb altn
- qtz. calc healed bxx
- 6" int seric along str w 1' wide seric alt'n env.
- BULL GILSONITE in BXX.
- pyr + calc pyr. vn 1cm thk
- st/org. zeo vns
- 1" gouge/clay/bxx + strg seric altn.
- qtz-carb-zeo vns

Lithologic descriptions:

0-20' CASING - NO CORE

20'-230'
Altered Bonanza xtal-lapilli tuff - pyritic, mag. bio-alb alt'd.
Brown, lt. grn, grey, white.
Comp: feld +40%, ≤1mm; qtz ≈5%(?) as scatt'd grains; mafics ≤5%(?).
Altn's: strg-mod greasy brn. biotite, gen. strg. albite; alb → seric-clay(?); bio → chl ± seric.
Mag. occ. as dissem. (≤1mm) or vnlts (1-2mm) ± pyr.
Bio. occ. interstitial to feld ± altn of feld. - locally strg altn as discrete grains.
Pyr ≈3-5% w vnlts/ff > diss.
Diss. pyr as clots ≤.5mm.
Vnlts ~ .5-1mm.

Vn. sets
- pyr. mag w alb envs (± epi)
- pyr. chl-carb-zeo ± epi ± qtz

HOLE NO. E-177

DRILL LOG

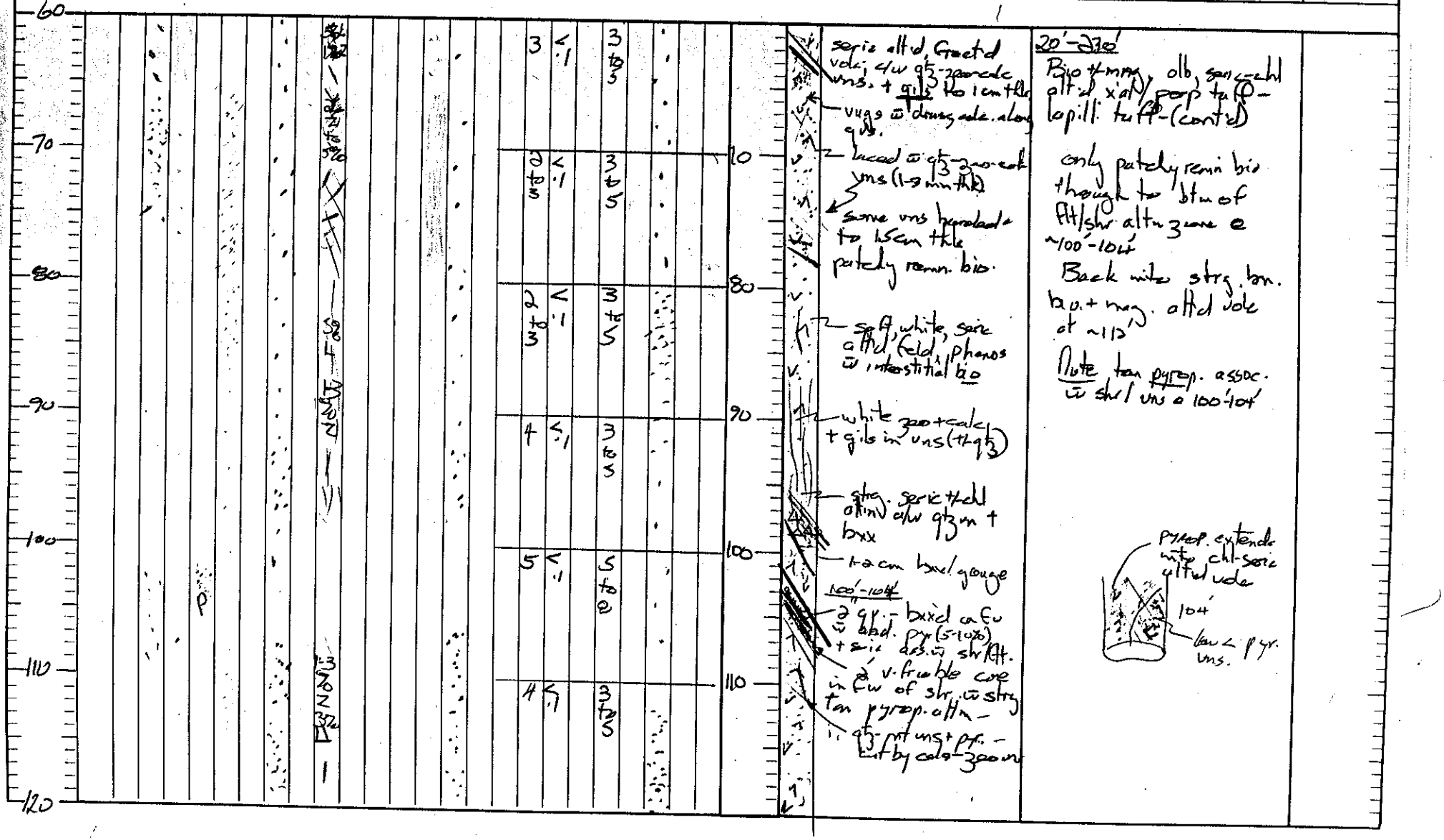
Page 2 of 7

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED Sept. 19/93 COMPLETED Sept. 21/93
LOGGED BY J. A. FLEMING

T.D. 422'
INCLINATION -90°
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	A L B	S C U	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 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
60																											
70																											
80																											
90																											
100																											
110																											
120																											



HOLE NO. E-177

DRILL LOG

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED Sept. 17/93 COMPLETED Sept. 21/93
LOGGED BY J. A. Fleming

T.D. 422'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1"=10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

Footage	Frac. Inten	Est. Cu. Mo	FeS₂
120–130	4	<.1	3 to 5
130–140	3	<.1	3 to 5
140–150	3	<.1	3 to 5
150–160	3	<.1	3 to 5
160–170	3	<.1	3 to 5
170–180	3	<.1	3 to 5

Carb/Zeo: 1-2, 2-3, 3-4, 4 (hand notations)

Log notes

pyr vnlts + diss
pyr. mag vns in perv. brn, bio-altd volc
shrd, bxd w calc-gil-zeo healed fracts
qtz-mt-py vns (to 1cm)
1-2cm wt qtz w spots mag to anh
1.5" qv w seric-pyr-ff altn envs/2" + late carb + gils
6" crushed core.
qv cut by wt zeo vn.
3" qv w 1cm core pyr. w seric alw pyr vns in hw.
38
spots tan-pinkish grn chl-seric mtx prob. prehnite
1cm qv w seric env. + cored of calc + gils
Bxx oss w shrs - w clots pyr. + blk (gils?/cc?) in fracts in bxx
1-2cm th qvs w pyr cores - cut by wt qtz-zeo-calc-gils vns (+pyr)
1cm qv crackled, infilled w pyr, calc, zeo, gil(?) seric altm envs. + minor pyr.
gry qtz vns + pyr cut by white qtz-zeo-calc-gil vns
+3" gry qv.
minor gps
thin gry zeo + calc vns.

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

22-230'
Bio-mag + chl-seric altd tuff (cont'd) - xtal porph tuff
Strg. brn. bio altn to ~120' & H grn chl-seric altd w patches brn bio (remn) after bio'
Feld xtals in tuff shard-like. - bkn-subhedral.
Sections of strg scc altn w abd pyr. diss + vnlts. - cut by gry qVs w pyr + seric envs + xcut by qtz-zeo-pyr-calc vns.
Only patches of remn bio. Alb. largely altd to seric.

ROCK UNIT

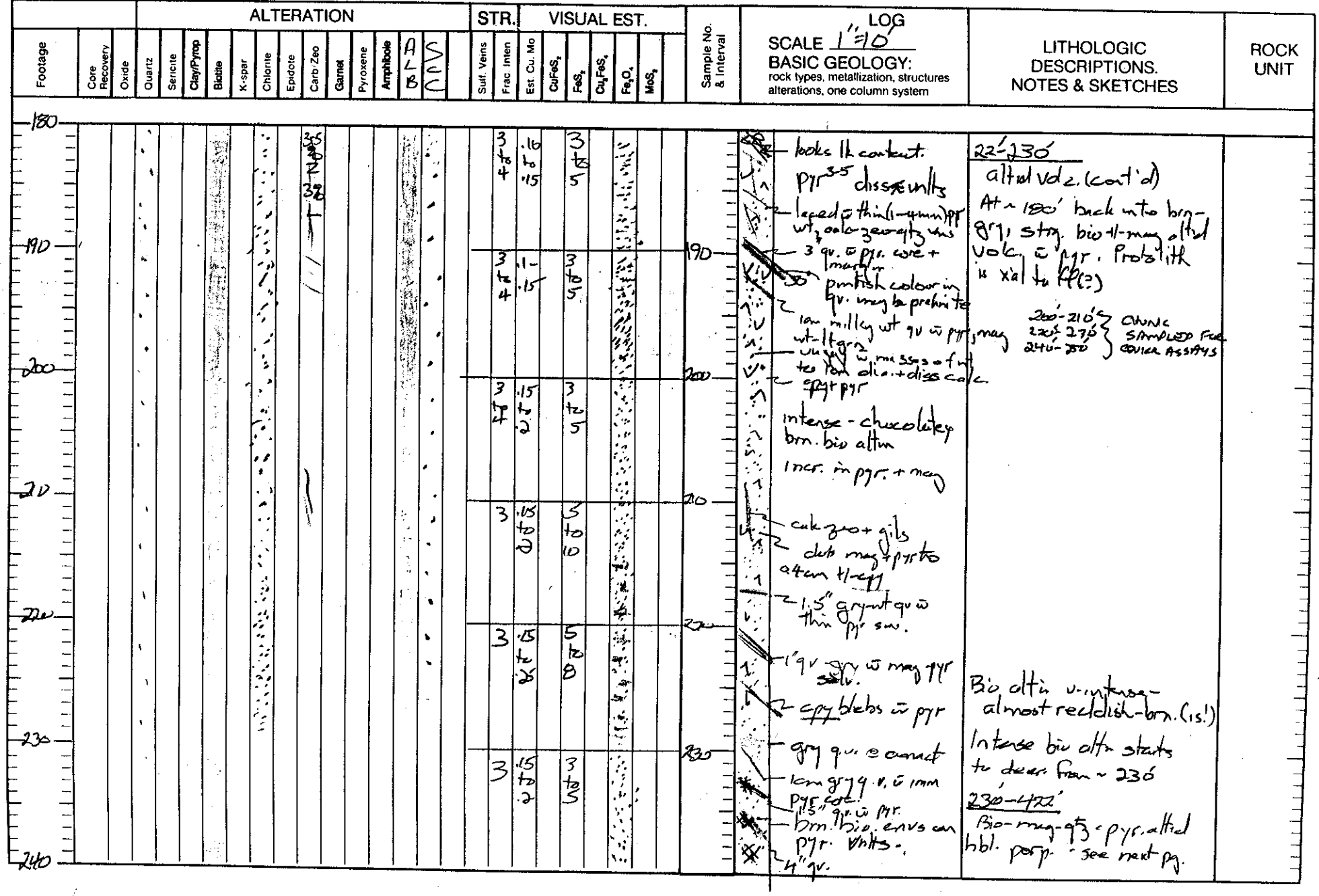
HOLE NO. E-177

DRILL LOG

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED Sept. 19/93 COMPLETED Sept. 21/93
LOGGED BY J. A. FLEMING

T.D. 422'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING



HOLE NO. E-177

DRILL LOG

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED Sept. 19/93 COMPLETED Sept. 21/93
LOGGED BY J. A. FLEMING

T.D. 422'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

Footage	Frac. Inten	Est. Cu. Mo	FeS_2	MoS_2	Sample No. & Interval
240–250	2 to 3	.10 to .15	3 to 5		
250–260	2	.10	3 to 5		250
260–270	2	.20	3 to 5 V≈0		260
270–280	2	.15	3 to 5 0≈V	+	270
280–290	2	.25 to .35	3 to 5		280
290–300	2	.2 to .25	3 to 5		290

Alteration column notes: 22 / 43 (at 250'); 22 / 40 (at ~275').

LOG — SCALE 1"=10' — BASIC GEOLOGY:

- pyr-mt vns (1-2mm) Pyr: diss & vnlts
- 2mm pyr w/ selv. of mt + 1cm bio-chl +/- seric envs.
- 3mm wt q.v. w/ pyr. core.
- 1mm pyr, chl, mt, cmp?
- gry q.v's 1-3cm thk
- 3mm pyr. vn cuts q.vs.
- pyr + qtz in hbl x'al along q.v. @ 247'

- honey coloured alt'n @ pyr. vn.
- 1-2mm wt (zeo? qtz) vns w/ pyr + dk grn chl env. - cut the wt q.v. (1cm)
- cpy
- MoS2
- 5mm thk, org qtz-zeo-calc vn cuts gry q.v.
- mag. pref'ly alt's the mafic phenos
- dots of cpy to 2mm in w/ pyr in bio alt'd porp.
- 10" gry qv - cut by calc. vn.
- gry qv. cut by wt, qtz, zeo, pyr vn
- series of 1-2mm pyr. vns @ ≈ 30° c/a cpy w/ pyr vns.

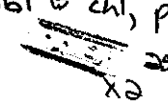
LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

230'-422'

Dk grn to med. brn, chl-bio-mag alt'd hornblende porphyry

Comp: ≈ 60% hbl phenos x̄ ≈ .5mm, to 1cm, euhedral. w/ fg-aphanitic feld'c mtx.

Alt: hbl. phenos wk chl'd. Mtx wk-str bio alt'd. Qtz occ as q.v's to 2" (x̄ ≈ 1cm) - gry qtz + pyr. (as in abv. tn). Mag both in mtx & replacing hbl w/ chl, pyr.



In the lighter alt'd (seric) π the mag occ. in the hbl. phenos.

ROCK UNIT

HOLE NO. E-177

DRILL LOG

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED Sept. 17/73 COMPLETED Sept. 21/73
LOGGED BY J. A. Fleming

T.D. 422'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

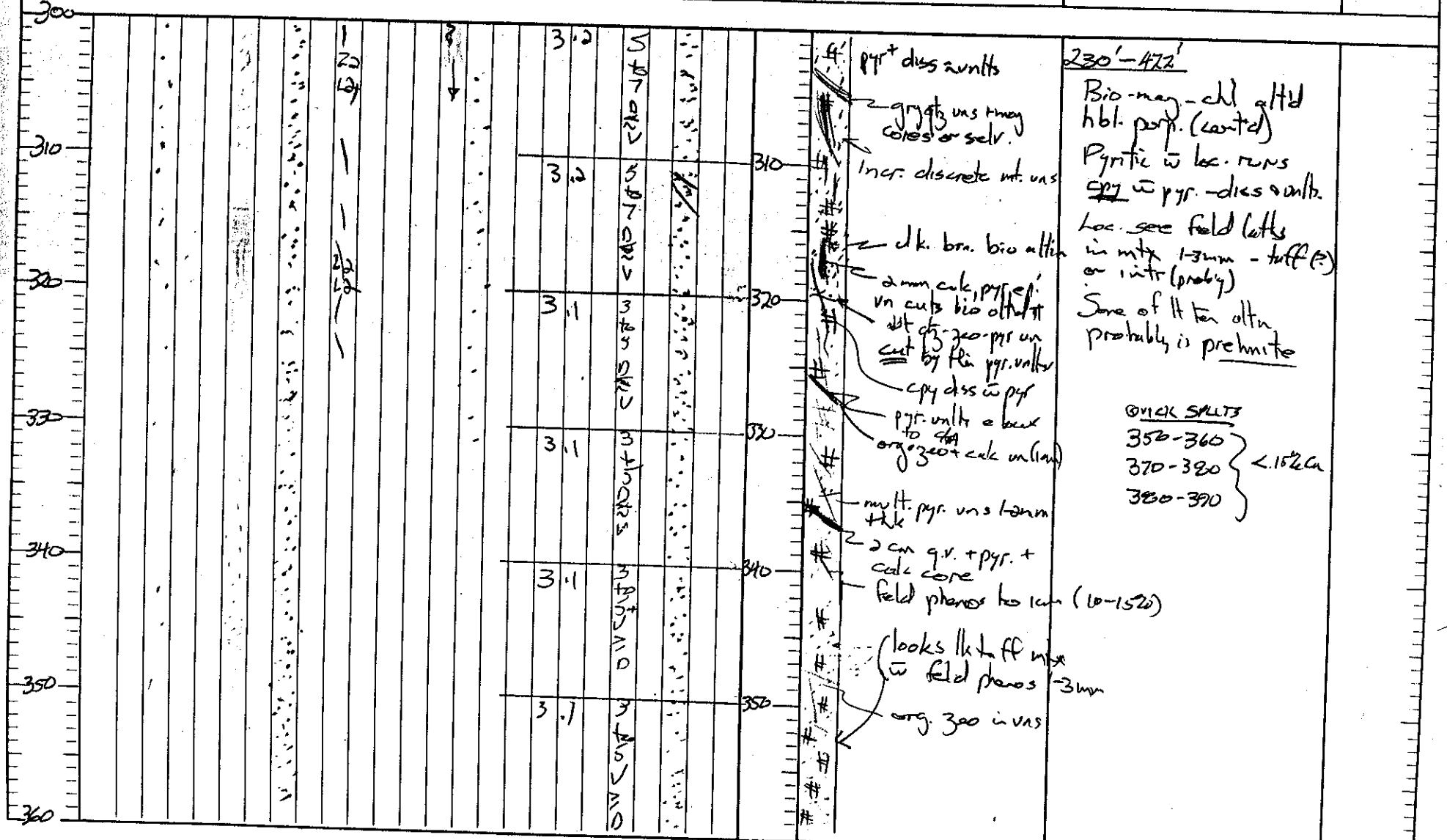
COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A/D	MVN	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 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT



230'-472'

Bio-mag-chl altd hbl. porp. (contd)
Pyritic w loc. runs cpy w pyr-diss & vnlts.
Loc. see feld clasts in mtx 1-3mm - tuff(?) or intr (probly)
Some of lt tan altn probably is prehnite

QUICK SPLITS
350-360
370-380
380-390
} <.15% Cu

DRILL LOG

HOLE NO. E-177

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED Sept. 19/93 COMPLETED Sept 21/93
LOGGED BY J.A. FLEMING

T.D. 422'
INCLINATION -90°
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	ALB	SIL	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	CuFeS2	FeS2	Cu5FeS4	Fe3O4	MoS2	Sample No. & Interval	LOG SCALE 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
360–370																3	.1			5 to 8 V D					pyr vns (≤1mm) w bio envs.; 1cm vnt. vn	230'–422' Bio-mag-chl-pyr alt'd hbl porp. (cont'd)	
370–380																3	.1			3 to 8 D V				370	3" gry qv w py, calc; patchy bio; 2 cm org zeo-calc qtz vn		
380–390																3	.1			5 to 8 D V				380	narrow bleached env. (in bio alt'd rk) on pyr. vns.; looks like cpy in w pyr.	Note bio altn at btm has a resinous look to it. – may not all be bio.	
390–400																3	.1			5 D V				390	2" gry q.v. w pyr. calc; red-org 380 vn; ??		
400–410																3	.1			5+ D V				400	1cm calc+gyps vn	In last 20' the hbl phenos are sparse – or not as obvious – prob still in hbl π, but the fg. bio. alt'd rk at btm looks ‖ to the bio alt'd tuff (eg. at top.)	
410–420																3	.1			5+ D V				410	banded qtz-pyr w serie of bio envs + late calc-gyps; thin (≤1mm) pyr. vns.; ? HBL π (?)		

422' – END OF HOLE

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_177	23366.2	10262.5	1245.5

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	422.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
20.0	30.0	0.11	0.002	6.3	0.03	0.50	0.002	0.005	18734
30.0	40.0	0.09	0.006	5.5	0.03	0.30	0.002	0.007	18697
40.0	50.0	0.14	0.009	4.9	0.03	0.50	0.002	0.004	18742
50.0	60.0	0.10	0.008	4.4	0.05	0.40	0.004	0.005	18698
60.0	70.0	0.10	0.002	4.4	0.02	0.50	0.004	0.004	18743
70.0	80.0	0.12	0.007	4.9	0.06	0.50	0.004	0.004	18699
80.0	90.0	0.16	0.002	6.1	0.03	0.70	0.003	0.004	18744
90.0	100.0	0.09	0.006	5.9	0.05	0.50	0.004	0.005	18745
100.0	110.0	0.07	0.004	7.6	0.04	0.40	0.001	0.002	18746
110.0	120.0	0.12	0.002	6.3	0.04	0.60	0.002	0.005	18747
120.0	130.0	0.13	0.003	5.7	0.03	0.60	0.002	0.004	18748
130.0	140.0	0.13	0.014	6.1	0.05	0.40	0.003	0.003	18749
140.0	150.0	0.16	0.004	8.2	0.05	0.40	0.003	0.002	18750
150.0	160.0	0.23	0.004	6.7	0.06	0.50	0.002	0.004	18751
160.0	170.0	0.23	0.005	6.0	0.07	0.50	0.001	0.007	18752
170.0	180.0	0.22	0.004	6.4	0.06	0.80	0.003	0.006	18753
180.0	190.0	0.17	0.013	10.1	0.05	0.60	0.002	0.008	18754
190.0	200.0	0.22	0.004	11.1	0.06	0.70	0.004	0.011	18755
200.0	210.0	0.19	0.003	10.9	0.05	0.60	0.004	0.016	18756
210.0	220.0	0.26	0.006	11.3	0.07	0.80	0.003	0.014	18757
220.0	230.0	0.22	0.003	9.8	0.06	0.70	0.003	0.010	18758
230.0	240.0	0.29	0.006	8.7	0.12	0.80	0.003	0.010	18759
240.0	250.0	0.11	0.006	6.1	0.03	0.40	0.003	0.008	18760
250.0	260.0	0.29	0.006	9.3	0.07	1.00	0.002	0.011	18761
260.0	270.0	0.17	0.004	7.5	0.04	0.60	0.002	0.016	18762
270.0	280.0	0.06	0.002	5.8	0.01	0.30	0.002	0.010	18763
280.0	290.0	0.15	0.009	9.7	0.03	0.60	0.002	0.008	18764
290.0	300.0	0.14	0.008	9.6	0.03	0.60	0.003	0.008	18765
300.0	310.0	0.31	0.007	10.7	0.11	1.00	0.002	0.011	18766
310.0	320.0	0.31	0.010	10.7	0.09	1.10	0.002	0.018	18767
320.0	330.0	0.23	0.010	11.0	0.04	0.80	0.003	0.010	18768
330.0	340.0	0.23	0.003	10.0	0.03	0.70	0.003	0.009	18769
340.0	350.0	0.11	0.003	9.7	0.02	0.50	0.003	0.012	18770
350.0	360.0	0.06	<0.001	7.6	0.02	0.30	0.007	0.005	18713
360.0	370.0	0.05	0.003	9.2	0.03	0.30	0.002	0.008	18771
370.0	380.0	0.12	0.002	8.2	0.03	0.30	0.004	0.004	18715
380.0	390.0	0.17	0.004	8.5	0.02	0.60	0.003	0.008	18772
390.0	400.0	0.06	<0.001	7.1	0.02	0.20	0.004	0.004	18715

BHP MINERALS CANADA - Island Copper Mine

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
400.0	410.0	0.11	0.005	7.3	0.02	0.40	0.007	0.014	18773
410.0	422.0	0.10	0.003	7.9	0.01	0.40	0.003	0.012	18774

Please Rush

ISLAND C PPER MINE
ASSAY REQUISITION AND REPORT FORM

Keyed SKO

LAB SENT TO: I/C DATE SENT: Sept 20/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-177	30	40	.09	.06	5.5	.03	.03	.02	.07	18697	49
	50	60	.10	.08	4.4	.05	.04	.04	.05	6698	50
	70	80	.12	.07	4.9	.06	.05	.04	.04	6699	51

Logged by Phone
Sept 20/93

Please call John Fleming at home with copper results: 7595

ISLAND C[illegible]PER MINE

ASSAY REQUISITION AND REPORT FORM

Keyed (SH)

LAB SENT TO: I/C **DATE SENT:** Sept 20/93 **SENT BY/DEPT:** GEOL **TYPE:** CORE

DATE REPORTED: ____ **REPORTED BY:** ____ **(core / perc / other)**

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-177	200	210	13	4	61	04	01	4	17	18712	52
	220	230	24	9	80	09	07	3	7	18711	53
	240	250	11	0	61	02	03	2	5	18710	54

Rush PLEASE Keg… (8R)

ISLAND COPPER MINE

ASSAY REQUISITION AND REPORT FORM

Cu reported by phone 10:4? Sept 21 93

LAB SENT TO: JC **DATE SENT:** Sept 21/93 **SENT BY/DEPT:** Green **TYPE:** core

DATE REPORTED: ____________ **REPORTED BY:** ______________ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-177	350	360	06	0	76	02	3	7	5	18713	35
	370	380	12	2	82	03	3	4	4	714	36
	390	400	06	0	71	02	2	4	4	715	37

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

[illegible]

LAB SENT TO: E177 DATE SENT: Sept 24/93 SENT BY/DEPT: [illegible] TYPE: [illegible]

DATE REPORTED: ______ REPORTED BY: ______ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #
E-177	20	30	11	2	63	03	5	2	5	18734
	40	50	14	9	49	03	5	2	4	18742
	60	70	10	2	44	02	5	4	4	743
	80	90	16	2	61	03	7	2	4	744
	90	100	09	6	59	05	5	4	5	745
	100	110	07	4	76	04	4	1	2	746
	110	120	12	2	63	04	6	2	5	747
	120	130	13	3	57	03	6	2	4	748
	130	140	13	14	61	05	4	2	3	749
	140	150	16	4	82	05	4	2	2	750
	150	160	23	4	67	06	5	2	4	751
	160	170	23	5	60	07	5	1	7	752
	170	180	22	4	64	06	8	2	6	753
	180	190	17	13	101	05	6	2	8	754
	190	200	22	4	111	06	7	4	14	755
	200	210	19	3	109	05	6	4	16	756
	210	220	26	6	113	07	8	2	14	757
	220	230	22	3	98	06	7	3	10	758

ISLAND COPPER MINE

ASSAY REQUISITION AND REPORT FORM

Kayed (SK)

LAB SENT TO: IC DATE SENT: Sept 23/83 SENT BY/DEPT: Geol TYPE: Core

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-177	230	240	29	6	87	12	8	2	10	187591	
	240	250	11	6	61	03	4	3	8	7600	
	250	260	29	6	93	07	10	2	11	7601	
	260	270	17	4	75	04	6	2	16	7602	
	270	280	6	2	58	01	3	2	10	7603	
	280	290	15	9	97	03	6	2	8	7604	
	290	300	14	8	96	03	6	3	8	7605	
	300	310	31	7	1017	11	10	2	11	7606	
	310	320	31	10	1017	09	11	2	18	7607	
	320	330	23	10	110	04	8	2	10	7608	
	330	340	23	3	100	03	7	3	9	7609	
	340	350	11	3	97	02	5	2	12	7700	
	360	370	05	3	92	03	3	2	8	7701	
	380	390	17	4	85	02	6	3	8	7702	
	400	410	11	5	73	02	4	7	14	7703	
	410	422	10	3	79	01	4	2	12	7704	

Keyed (SR)

ROCK QUALITY DESIGNATION

HOLE NO.: E177 DATE: Sept 22/93 LOGGED BY: S Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
20	22			17		ø		
22	30			90		4		
30	37			80		ø		
37	42			56		7		
42	45			36		11		
45	50			54		12		
50	55			56		8		
55	62			84		16		
62	72			116		45		
72	82			118		36		
82	92			116		35		
92	102			117		49		
102	112			121		28		
112	122			115		12		
122	132			122		5		
132	142			85		10		
142	152			122		43		
152	162			122		71		
162	172			120		51		
172	182			120		26		
182	192			122		42		
192	202			118		31		
202	212			121		30		
212	222			121		38		
222	232			120		34		
232	242			120		64		
242	252			122		40		
252	257			61		18		
257	262			62		8		
262	267			62		13		
267	272			60		10		
272	277			62		25		

ROCK QUALITY DESIGNATION

HOLE NO.: E177 DATE: Sept 22/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
277	282			58		16		
282	287			62		18		
287	292			62		16		
292	297			60		14		
297	302			61		9		
302	306			47		8		
306	311			58		19		
311	316			60		13		
316	321			62		36		
321	326			60		11		
326	331			60		18		
331	336			62		13		
336	341			62		9		
341	346			60		10		
346	351			61		17		
351	356			61		12		
356	361			58		9		
361	366			62		19		
366	371			57		14		
371	376			62		13		
376	381			61		12		
381	386			60		16		
386	391			62		10		
391	396			61		8		
396	399			36		5		
399	402			37		4		
402	411			106		27		
411	413			24		11		
413	422			103		26		
EOH								

Keyed SRO

MAGNETIC SUSCEPTIBILITY

LE NO. E177 DATE Sept 22/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
20-30						3.3
30-40						2.0
40-50						1.2
50-60						1.4
60-70						2.6
70-80						1.5
80-90						2.8
90-100						.44
100-110						2.9
110-120						2.5
120-130						1.8
130-140						1.1
140-150						.87
150-160						.30
160-170						1.7
170-180						1.9
180-190						4.2
190-200						12.0
200-210						5.3
210-220						5.1
220-230						2.5
230-240						1.4
240-250						3.8
250-260						4.5
260-270						6.1
270-280						7.1
280-290						4.4
290-300						3.8
300-310						2.9
310-320						4.3
320-330						4.8
330-340						2.6
340-350						2.5

MAGNETIC SUSCEPTIBILITY

LE NO. E177 DATE Sept 22/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
350-360						1.3
360-370						8.4
370-380						3.0
380-390						1.3
390-400						3.4
400-410						1.0
410-422						3.3
EOH						

TRAVERSE DATA INPUT

SETUP	BACKSIGHT	FORESIGHT	H.INST.	H.EDM.	H.TARG.	H.PRISM	EDM DIST.	H.A.	Z.A.
1373	WRT	6467	4.900	5.100	2.300	2.300	977.540	215-37-01.0	094-13-43.0
6467	1373	E177	3.450	3.650	5.200	5.200	313.570	112-03-49.0	087-34-25.0

REDUCTION OF EDM DISTANCES - Reference Elevation = 1000.000
Hor. Scale Factor = 1.00000000 Vert. Scale Factor = 1.00000000

SETUP	BACKSIGHT	FORESIGHT	H.INST.	H.EDM.	H.TARG.	H.PRISM	H.A.	Z.A.	HOR. DIST.	VERT. DIST.
1373	WRT	6467	4.900	5.100	2.300	2.300	215-37-01.0	094-13-43.0	974.868	-72.061
6467	1373	E177	3.450	3.650	5.200	5.200	112-03-49.0	087-34-25.0	313.285	13.277

FINAL RESULTS FOR OPEN TRAVERSE

INITIAL STATION = 1373 INITIAL BACKSIGHT = WRT
Northing : 9243.820 Northing : 5985.266
Easting : 22875.970 Easting : 22593.058
Elevation : 1303.430 Elevation : 1351.903

SETUP	BACKSIGHT	FORESIGHT	H.D.	H.A.	Z.A.	ADJUSTED FORESIGHT STATION COORDINATES		
1373	WRT	6467	977.339	215-37-01.0	094-13-43.0	9984.242N	23510.118E	1233.969EL
6467	1373	E177	313.497	112-03-49.0	087-34-25.0	10262.488N	23366.151E	1245.497EL

DRILL LOG

HOLE NO. E-175

PROJECT I.C.M.
CONTRACTOR OLYMPIC
DATE STARTED Sept. 16/93 COMPLETED Sept. 18/93
LOGGED BY Allan Reeves (Summary by JF)

T.D. 362'
INCLINATION -90°
COORDINATES 18065.61 E 11440.95 N
SURVEY REFERENCES

COLLAR ELEVATION 1274.42
BEARING Ø

Footage	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	Sulf. Veins	Frac. Inten	Est. Cu. Mo	CuFeS$_2$	FeS$_2$	Cu$_2$FeS$_4$	Fe$_3$O$_4$	MoS$_2$	Sample No. & Interval
0																	I	.05	3-5					
200																	S		5-7					200
																			2-3					
400																			5-7					400

Intense/Strong/Mod/Weak

LOG, SCALE 1" = 200'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

FLT @ 102'-103' @ 60° t/a
FLT(?) - missing 3' core
FLT @ 180'-184' w/ pyr.
CT @ 50° t/w seric/gouge 2"
FLT @ 40° t/a @ 238-243'
FLT CT BTW. Ø's
Pervas. scc altd Ø pyritic
pnk (hard) mtx.

E.O.H. 362'
HOLE STOPPED IN Ø DUE TO LACK OF Cu MINERALIZATION.

ANALYSIS:
MAY HAVE COLLARED CLOSE TO WBS FAULT. BELOW FLT. HOLE INTO QTZ-MAG-AMP ALT'D VOLC AND QTZ-MT. STKWK. HOLE MISSED THE BIOTITE ZONE (i.e. ZONE MISSING HERE) AS TOO CLOSE TO THE Ø.

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

0-102' OVERBORDEN
102-103 FAULT (WEST BAY SPLAY?) w/ 14" foliated gouge/bxx
103'-139' Med-dk grn chl-mt alt'd tuffs, minor amp vnlts +/- chl alt'd.
139'-142' FAULT (?) NO CORE
142'-181' qtz-mt-alb. alt'd (stockwk bxx). Alb. envs occ. on mt vns. Qtz vns offset by qtz-mt vns.
181-184' FAULT w/ msv pyr qtz bxx in chl-seric gouge
184-195' Stkwk bxx (as abv.)
195-207' Pink zeo +/- hem stained bxx (int. bxx?)
207-213 Stkwk bxx
213-219 chl-seric alt'd brecciated rhyodacite porphyry (QFP)
219'-238' Rhyodacite Ø - bio → chl; minor diss mt. trace of cpy, org zeo.
238'-243' FAULT w/ abd pyr in chl-seric gouge.
243'-319' green-grey rhyodacite porphyry. Wk chl-mag alt'n, feld phenos → scc. Cut by org zeo/carb vns.
319'-325' Late (?) RDP w/ pk zeo, +/- kspar in qv's.
326'-362' Main (?) QFP (RDP) scc alt'd cut by qtz-mag +cpy vnlts.

ROCK UNIT

HOLE NO. E-175

DRILL LOG

Page 1 of 5

PROJECT **Island Copper**
CONTRACTOR Olympic Drilling
DATE STARTED Sept 16/93 COMPLETED Sept 18/93
LOGGED BY Allan Reeves

T.D. 362'
INCLINATION -90°
COORDINATES 18065.61 E 11440.95 N
SURVEY REFERENCES —

COLLAR ELEVATION 1274.42
BEARING ∅

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A	B	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
0–100																	I = intense							
100–110																I		.05		10 3				
110–120																I		.05		3				
120–130																I		.05		3-5				
130–140																I		.05		3-5				
140–150																		.05		3-5				

LOG
SCALE 1" = 10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

0–102 OVERBURDEN

note: @ 39' strong water producing structure. (soil / till ?)

60° CA

102–103 FAULT (West Bay?)
~14" of foliated, comminuted breccia, gouge. Very dark green-gold → abdt finely diss sulphides.

103–139 ANDESITE
medium to dark green fine-grained trifts. Sparse (but thick gtz-veins) Very strongly fractured / broken → poorly healed by carbonate-zeol veins. Partially chloritized amphibole vns. Magnetite shows some hematization when diss... some hairlines.

120'
½mm white carb
½ mm amph vnlt w/ no chlorit halron.

← white carb/zeol

139–142 FAULT (inferred)
- bad ground as per driller
- no recovery

142–181 ANDESITE S/W BXA
- typical gtz-mag stockwork seen in other Bay Lake holes

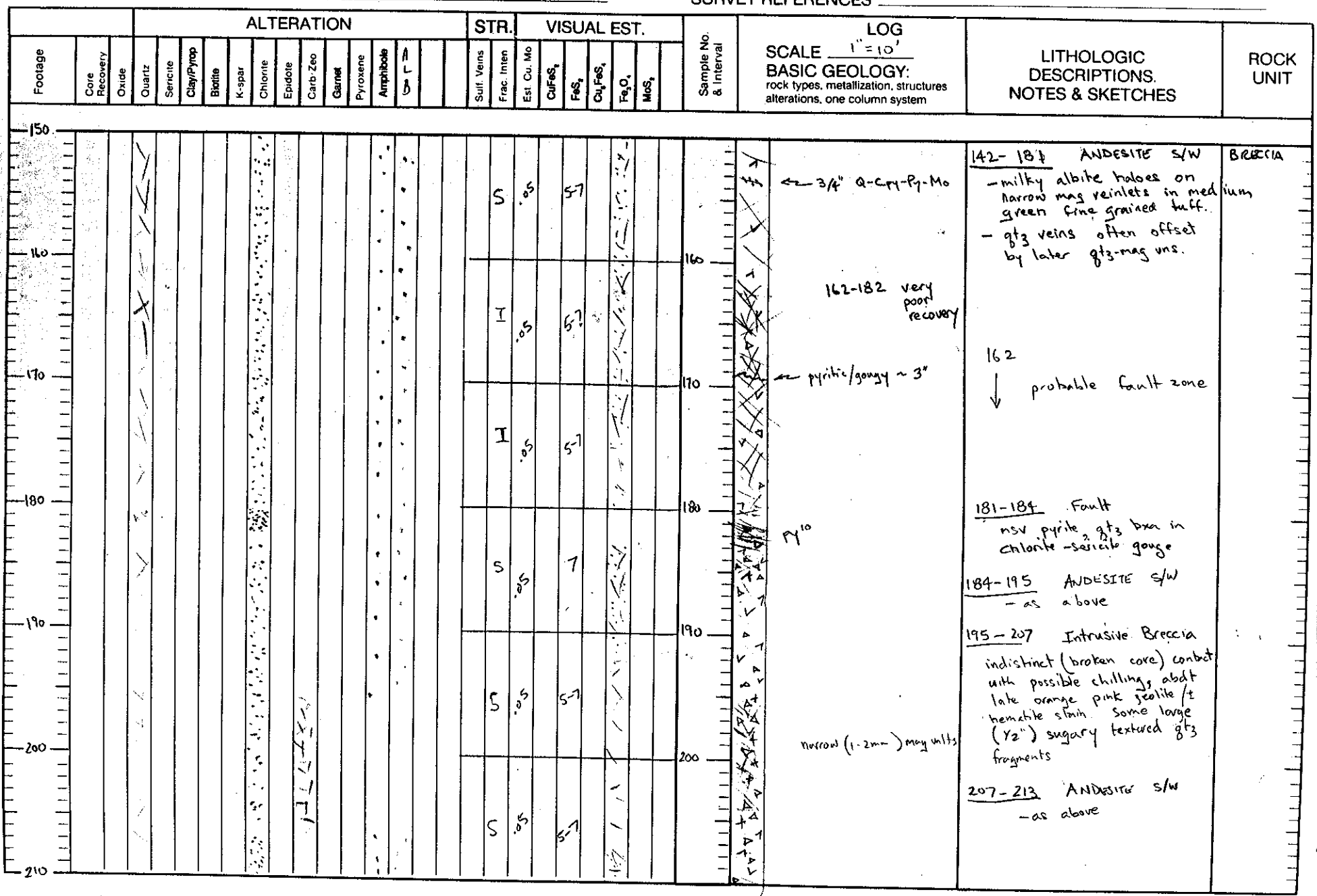
HOLE NO. E-175

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 16/93 COMPLETED SEPT 18/93
LOGGED BY AR

T.D. 362'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING



DRILL LOG

HOLE NO. E-175

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 16/93 COMPLETED SEPT 18/93
LOGGED BY R

T.D. 362'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system

Footage	Frac. Inten	Est. Cu. Mo	FeS_2	Sample No. & Interval
210–220	S	.05	5	220
220–230	L	.02	5-7	230
230–240	L	.02	5-7	240
240–250	L	.02	5	250
250–260	L	.02	5	260
260–270	L	.02	5	

Log notes:
- ~214: 50° CA / KX @ B ~2"
- ~222: ½" msv cpy @ 70° CA
- ~239: 40° CA / BX PG
- ~260: 50° CA grey white sericite

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

207-213 ANDESITE s/w
as above

213-219 RHYODACITE PORPHYRY — ROCK UNIT: 3XA
→ probably an early intermineral phase as there are odd qtz frags (w pyr. rims) in a green chloritic groundmass, moderate diss pyr, no mag, minor QV, qtz eyes (?) to 1cm (5-10%) sericitic fsp phenos, ~3% (5-10) orange-pink zeol carb

219-238 RHYODACITE Ø
→ main phase with minor diss mag in wkly chloritized matrix. more recog. phenos. primary biot → chlorite trace cpy; salmon red zeol

238-243 FAULT
major pyritic fault with sericite-chlorite mud/gouge and quartz fragments.

243- RDP
→ main phase; med green with trace ?primary mag and chloritized primary biot. books. Qtz phenos are whiter and more coarse grained than above unit qtz-mag veins narrower & less common

HOLE NO. E-175

DRILL LOG

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED SEPT 16/93 COMPLETED SEPT 18/93
LOGGED BY R

T.D. 362'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

Footage	STR.	Frac. Inten	Est. Cu. Mo	FeS2	Sample No. & Interval	LOG (SCALE 1"=10'; BASIC GEOLOGY: rock types, metallization, structures alterations, one column system)	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
270–280	L	.02		3		1" B,X,G 40° CA; ← Q, Mo, CPY abdt salmon zeolite	243-319' Rhyodacite Porphyry → mainly green grey colour with chl-alb matrix; qtz phenos variable to 1.5cm (~10-15%); fsp phenos to 3mm (15-20%) often with pale green scc alt'n; minor chloritized biot books; very fine diss mag 'dust'?; cut by late orange-salmon zeol/carb	
280–290	M	.02		2	280	healed flt ~ 25° CA; ~12" BFX @ 40° CA		
290–300	M	.02		2	290	gougy → flt inferred; FLT @ 40° CA 2" GBX		
300–310	M	.02		3	300	sphalerite; narrow qtz-moly		
310–320	L	.02		3 to 5	310	PY; Fault contact with fresh RDP; 70° CA	319-325 - Late? RDP hard, pink, zeol ± kspar no OVs, primary biot / hbl with partially chloritization	
320–330					320	← partially chl'd primary biot books & mafics; fault inferred	326 - Main RDP	

Alteration columns: Core Recovery, Oxide, Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, ALB, SCC. Str. columns: Sulf. Veins, Frac. Inten. Visual Est.: Est. Cu. Mo, CuFeS2, FeS2, Cu5FeS4, Fe3O4, MoS2.

Footage: 270, 280, 290, 300, 310, 320, 330

HOLE NO. E-175 **DRILL LOG**

PROJECT **Island Copper**

CONTRACTOR OLYMPIC

DATE STARTED SEPT 16/93 COMPLETED SEPT 18/93

LOGGED BY R

T.D. 362'

INCLINATION -90°

COORDINATES

SURVEY REFERENCES

COLLAR ELEVATION

BEARING

Footage	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb·Zeo	Garnet	Pyroxene	Amphibole	ALB	SCC	Sulf. Veins	Frac. Inten	Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval	LOG SCALE 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
330–340																		.10 / .020		5 to 7					Qt3-moly; cpy	325 – 362 Main RDP — Moderate pervasive SCC alt; — narrow (≤1/4") Qt3-Moly ± Cpy vnlts	
340–350																		.05 / .010		5 – 7				340	40° CA X B G 1"; Q Mo Py – ½"; ← abdt red-orange zeolite infill ± hem. stain?		
350–362							?											.05 / .010		7				350; 360	Py-Ser → clay seam @ 60° CA; ← granodiorite?; ← hard pink matrix; e.o.h.		

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_175	18065.6	11441.0	1274.4

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	362.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
110.0	120.0	0.08	0.004	8.4	0.03	0.70	0.002	0.010	18684
130.0	140.0	0.01	0.001	7.3	<0.01	0.20	0.002	0.006	18685
150.0	160.0	0.04	0.001	12.2	0.07	5.20	0.026	0.045	18686
170.0	180.0	0.07	0.007	13.1	0.04	1.30	0.010	0.020	18687
190.0	200.0	0.01	<0.001	8.7	0.01	0.60	0.010	0.014	18688
210.0	220.0	0.10	0.001	9.1	0.05	2.00	0.015	0.063	18689
230.0	240.0	0.36	0.003	14.2	0.07	2.30	0.018	0.079	18690
250.0	260.0	0.01	0.001	4.5	0.02	1.60	0.046	0.120	18691
270.0	280.0	0.01	0.009	5.2	0.02	0.90	0.061	0.184	18692
290.0	300.0	0.01	0.009	3.5	<0.01	0.30	0.010	0.019	18693
310.0	320.0	0.01	0.004	4.2	<0.01	0.70	0.021	0.065	18694
330.0	340.0	0.27	0.017	5.2	0.09	7.80	0.007	0.068	18695
350.0	360.0	0.10	0.006	5.5	0.05	1.70	0.012	0.062	18696

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 20/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-175	110	120	.08	.004	8.4	.03	7	.002	.010	18684	34
	130	140	.01	.001	7.3	.00	2	.002	.006	685	35
	150	160	.04	.001	12.2	.07	5.2	.026	.045	686	36
	170	180	.07	.007	13.1	.04	11.3	.010	.020	687	37
	190	200	.01	.000	8.7	.01	6	.010	.014	688	5 38
	210	220	.10	.001	9.1	.05	2.0	.015	.063	689	6 39
	230	240	.36	.003	14.2	.07	2.3	.018	.079	690	7 40
	250	260	.01	.001	4.5	.02	1.6	.046	.120	691	8 41
	270	280	.01	.009	5.2	.02	1.9	.061	.184	692	9 42
	290	300	.01	.009	3.5	.00	1.3	.010	.019	693	10 43
	310	320	.01	.004	4.2	.00	1.7	.021	.065	694	11 44
	330	340	.27	.017	5.2	.09	7.8	.007	.068	695	12 45
	350	360	.10	.006	5.5	.05	1.7	.012	.062	696	13 46

ANDI SEPT 20 N/S

ROCK QUALITY DESIGNATION

Key

HOLE NO.: E 175 DATE: Sept 20/93 LOGGED BY: S. Oakley.

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
102	112			90		ø		
112	122			60		ø		
122	132			45		ø		
132	142			40		ø		
142	152			60		ø		
152	162			70		ø		
162	172			40		ø		
172	182			65		ø		
182	192			90		5		
192	202			110		4.		
202	212			80		ø		
212	217			58		10		
217	222			60		23		
222	224.5			28		4		
224.5	229.5			60		26		
229.5	236.5			80		18		
236.5	242			50		9		
242	247			61		20		
247	252			60		36		
252	257			60		31		
257	262			61		35		
262	267			61		22		
267	272			59		16		
272	277			60		44		
277	282			61		46		
282	287			59		19		
287	292			45		8		
292	297			61		31		
297	302			54		18		
302	307			62		22		
307	312			61		13		
312	317			60		26		

Keyes (5)

ROCK QUALITY DESIGNATION

HOLE NO.: E175 DATE: Sept 20/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
317	321			48		21		
321	326			61		37		
326	331			59		11		
331	336			60		21		
336	341			62		40		
341	346			61		37		
346	351			61		32		
351	356			62		24		
356	362			62		27		
EOH								

Keyed SP

MAGNETIC SUSCEPTIBILITY

LE NO. E175 DATE Sept 20/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
102-110						2.4
110-120						2.4
120-130						7.6
130-140						5.3
140-150						11.0
150-160						12.0
160-170						5.4
170-180						12.0
180-190						11.0
190-200						10.0
200-210						6.8
210-220						4.6
220-230						1.4
230-240						1.5
240-250						.36
250-260						.69
260-270						.29
270-280						.07
280-290						.28
290-300						.84
300-310						1.0
310-320						.38
320-330						.46
330-340						.01
340-350						.10
350-362						1.1
EOH						

DRILL LOG

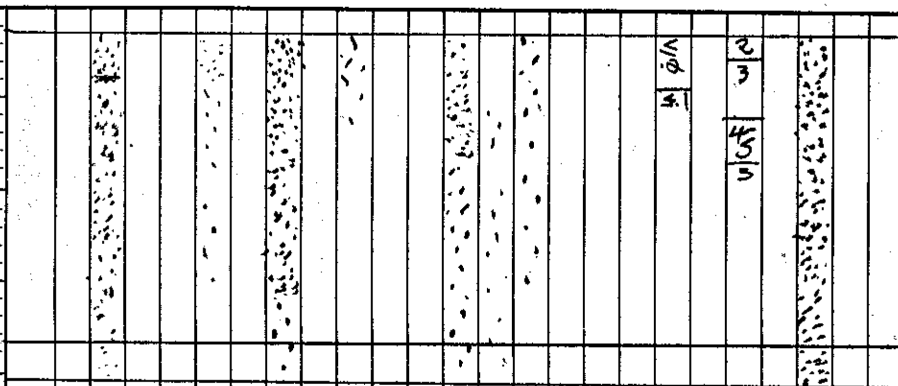
HOLE NO. E-176

PROJECT: Island Copper Mine
CONTRACTOR: Olympic Drilling + Consulting
DATE STARTED: Sept. 18/93 COMPLETED: Sept. 19/93
LOGGED BY: Barry Quiroz (Summary by JF)

T.D. 366'
INCLINATION -90°
COORDINATES 23369.57E 10826.14N
SURVEY REFERENCES: Bay Lake (G Zone)

COLLAR ELEVATION 1317.74
BEARING Ø

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
0 – 400																								200, 400



LOG SCALE 1" = 200'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

- casing - no core
- qtz-mt-pyr ± cpy vns (1-3cm)
- Bdg @ 30-40° c/a
- 1 Bx zone w/ qtz frags
- abd amp w/ pyr + cpy
- bxx zone 250'-313' cut by qtz-mt+py vns
- Int. qtz-mt-pyr veining
- E.O.H. 366.5'
- STOPPED DUE TO LACK OF ≥ 0.20% Cu mineralization

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

0-22' CASING IN OB

22-76' Dk grn, bio-mt-qtz +/- alb - amp-chl altd andesitic tuff. Mt gen fg w/ py + cpy. Amp. occ as fine vnlts mainly w/ qtz + mt.

76'-136' Strg mag-qtz-chl-amp-alb +/- bio altd bedded crystal (?) tuff (rhyolite tuff?)

136'-162' dk-grn qtz-mt-chl +/- amp + alb altd tuff

162'-250' bdd xtal tuff (ll to 76'-136')

250'-313' clast supported (top) to mtx supported (btm) bxx w/ qtz (vn?) and tuff frags

313'-366.5' dk grn qtz-mt-chl altd tuff. Qtz-mt veins incr. w/ depth.

ANALYSIS

Incr. in qtz + mt veining toward btm indicates that DDH approaching QF.P. Main [illegible] (copper zone) partially intersected at top of hole. Need DDH further out from Ø.

ROCK UNIT

HOLE NO. E-176

DRILL LOG

Page 1 of 6

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 18 SEP/93 COMPLETED SEP 19/93
LOGGED BY BARRY QUIROZ

T.D. 366'
INCLINATION -90°
COORDINATES 23369.57E 10826.14N
SURVEY REFERENCES BAY LAKE (G ZONE)

COLLAR ELEVATION 1317.74
BEARING 0.0

LOG
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

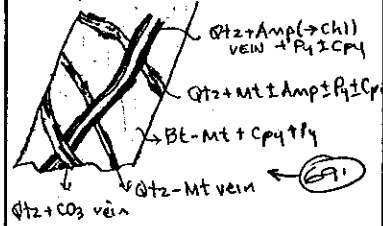
Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A L B	S C C	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_3FeS_4	Fe_2O_4	MoS_2	Sample No. & Interval
30																		≤.1		2%			tr	
40																		.1		2			tr	
50																		≤.2		3%			local <1%	
60																		≤.2		3%			tr	
70																		≤.2		3%			tr	
80																		≤.1		3%			tr	

- MOST OF Mt IS IN VERY FINE VEINLETS
- AMPHIBOLE + Mt VEIN ± Py ± Cpy
- LOCALLY Py + Cpy FINELY DISS.
- 32'-41' STRONG SILICIFICATION ZONE w/ AD. Mt VEINLETS
- LOCALLY FINELY DISS Cpy.
- Cpy + Mo IN ASSOC. W/ Amph.
- 41'-58' SAME AS 32'-41'
- THICK QTZ + Py VEIN (3cm)
- LOCALLY FINE DISS. Cpy
- Py ± Cpy (-2) VERY FINE VEINS
- THICK QTZ + Mt + Py ± Cpy VEINS (1-2cm)
- STRONG SILICIFICATION
- Amp + Mt ± Cpy vein
- Cpy finely diss in Bt ± Mt

0-22' CASING.

22'-76': Dark green andesitic tuff. From 22 to 31' MOST OF Mt ocurrs as massive very fine veinlets w/ qtz or qtz + Amp ± Py; in some places Mt ocurrs finely diss. w/ Py ± Cpy.
From 31' to 76' increase the silicification and qtz veining and Mt content.
The Biotite + Mt ocurrs as patchy w/ finely diss. Cpy.

The amphibole ocurrs as fine veins mostly in assoc. with qtz ± Mt



76'-136' Mostly of core is dominated by a requence of fine grain crystal (?) tuff (rhyolitic tuff?). Tuff has a well preserved bedding (30°-40°).
Most of Texture totaly obliterated by intense alteration. Locally intense Mt mostly in massive veinlets and in assoc. w/ qtz ± Amphiboles.
Amphibole (→chl) ocurrs as a very fine veinlets.

HOLE NO. E-176

DRILL LOG

Page 2 of 6

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 18 SEP/93 COMPLETED SEP 19/93
LOGGED BY BARRY QUIROZ

T.D. 366'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAY LAKE (G ZONE)

COLLAR ELEVATION
BEARING

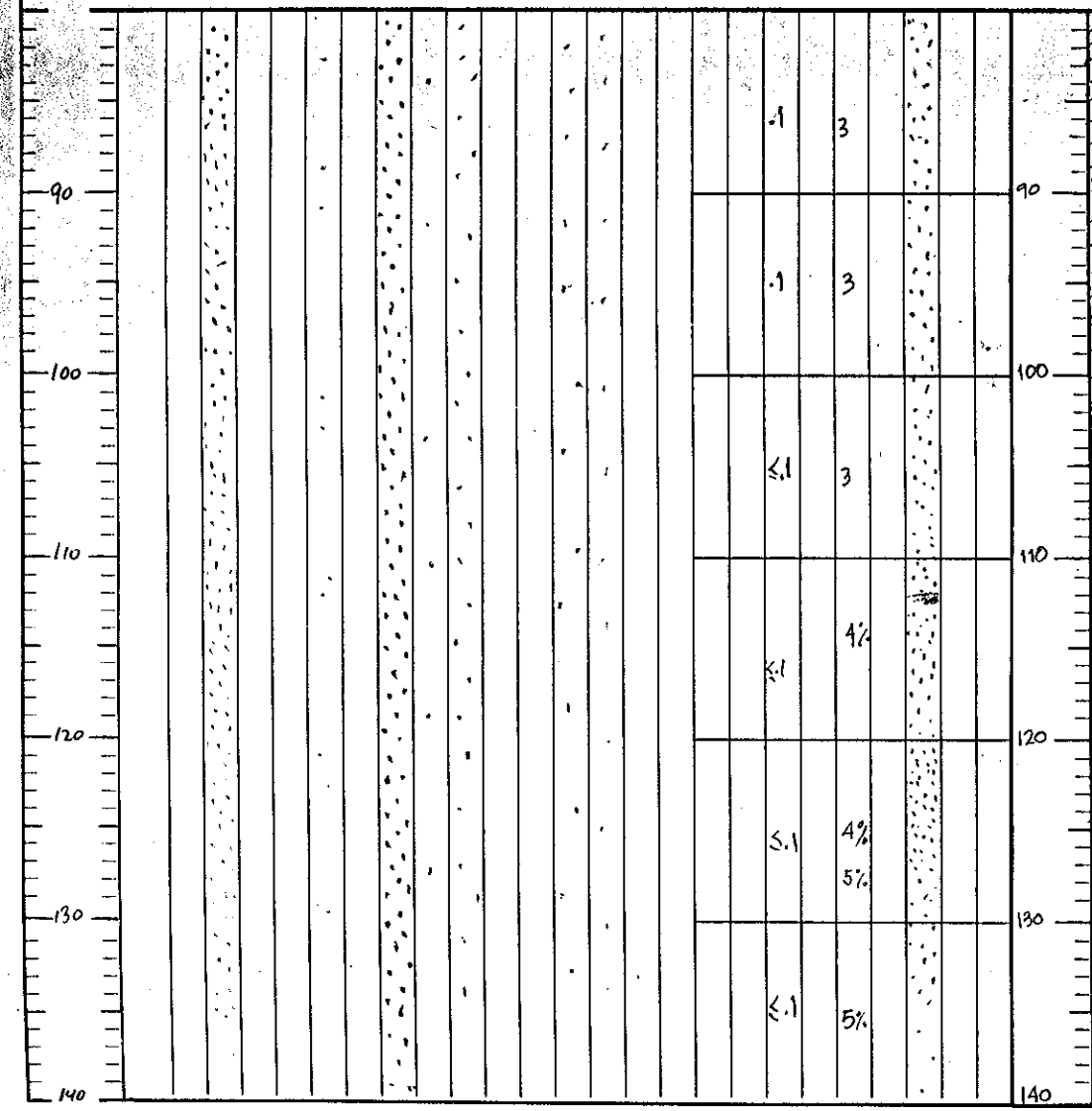
Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A F B	S C C	STR.: Sulf Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_2O_3	MoS_2	Sample No. & Interval

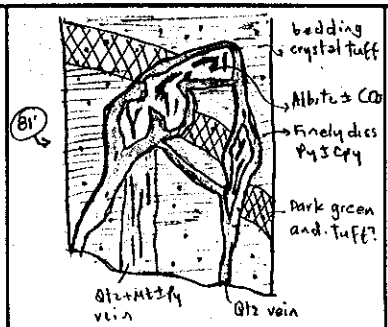
LOG
SCALE 1" = 10'
BASIC GEOLOGY:
rock types, metallization, structures
alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

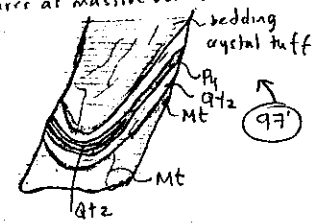
ROCK UNIT

90
100
110
120
130
140





112'-123' Abundant Magnetite mostly occurs as massive vein and assoc. w/ qtz.



136'-162' Dark green andesitic tuff. Low content of Mt. Mostly of Mt occurs as very fine massive veins, or in assoc. w/qtz ± Amp. Most of sulfide Mineralization is Py and occurs finely diss.

HOLE NO. E-176

DRILL LOG

Page 3 of 6

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEP/8/93 COMPLETED SEP 19/93
LOGGED BY DARRY QUIROZ

T.D. 366'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAY LAKE (6 ZONE)

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	ABL	SSCN	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
																		<.1		4			tr	
																		<.1		4			tr	
																		<.1		3			tr	
																		<.1		3			local cbl	
																		<.1		5%			tr	
																		<.1		3			tr	

LOG
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

- Qtz-Amp ± Py VEIN
- Amp ± Py veins (very fine)
- Py ± Cpy (<2)
- Finely diss.
- STRONG SILICIFICATION w/ Qt+Mt±Amp VEINS
- CONTACT?
- Abundante Qtz ± Py; Qt-Mt ± Py; Mt ± Py and Amphibole ± Qt ± Mt veins.
- Finely diss Py ± Cpy (<2)
- strong silicification moderately broken and bx.
- zone w/ rich Py content occurs as veinlets in assoc. w/ magnetite.

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

162'-250' core dominated by a sequence of crystal tuff's with well preserved bedding (30-40°). Same description as 76-136'.

In some places higly broken and brecciated; mostly of frag. ore qtz (after qtz veins?)

The contactac between this sequence and andesitic tuff (above) is a zone highly broken and bx with strong silicification wich obliterated the original texture.

193'-196' dark green andesitic tuff same description as 136-162'

ROCK UNIT

HOLE NO. E-176

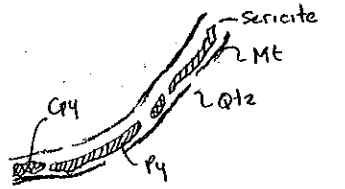
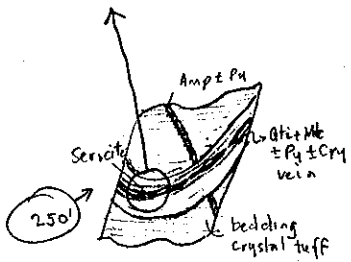
DRILL LOG

Page 4 of 6

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEP 18/93 COMPLETED SEP 19/93
LOGGED BY BARRY QUIROZ

T.D. 366'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAY LAKE (G ZONE)

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	BT A	SCC	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 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
210																		<.1		3			tr	210	Thick qtz+Mt vein	from 207' to 290' the sequence is dominated by green-dark green andesite tuff. The dissemination of sulfide (Py±Cpy) is better in this kind of rock.	
220																		<.1		3			tr	220	Cpy-Py finely diss and veinlets in assoc. w/amp +Mt in st+int alteration Abundant amphiboles with Py±Cpy(qtz)		
230																		<.1		3			tr	230			
240																		<1		3			tr	240	Qt+Mt±Py veins		
250																		<.1		3			tr	250	Qtz-Mt±Py±Ser vein	250'-313' Breccia zone. The Bx varies from clast-supported in the top to matrix-supported in bottom. The Brecciation intensity decrease in the bottom in the contact with the tuff. The frag. varies in shape and size. The frag. are qtz (after qtz veins?) (1-2 cm) and volcanics frag (≤5cm) (80% clast - 20% matrix average).	
260																		<.1		3			tr	260	Finely diss. Cpy		

HOLE NO. E-196

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEP 18/93 COMPLETED SEP 19/93
LOGGED BY BARRY QUIROZ

T.D. 366'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAT LAKE (G ZONE)

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A	L	B	S	C	C	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
																						<.1		3				
																						<.1		4				
																						<.1		3				
																						<.1		3				
																						<.1		3				

LOG
SCALE 1"=10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

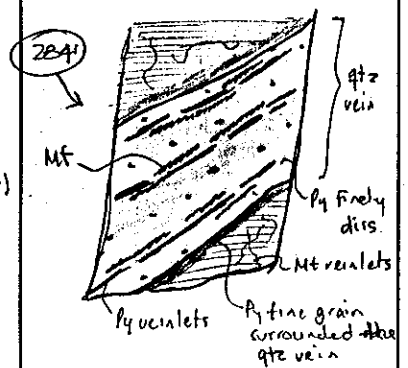
LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

270
280
290
300
310
320

Locally finely diss. Cpy
Thick qtz±Py vein (2cm)
Abundant qtz±Mt±Py veins
Locally finely diss Cpy
Thick qtz-Mt±Py veins (2cm)
STRONG SILICIFICATION with abundant Mt
Qtz-Mt±Py veins
Abundant Py veinlets

The matrix is SiO_2 + CO_3.



313'-366.5' Green dark green andesitic tuff. In some places interlayered with pale crystal(?) tuff. Core dominated by dark gree-green andesitic tuff. The qtz-Mt veining increase at depth.

HOLE NO. E-176

DRILL LOG

Page 6 of 6

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEP 18/93 COMPLETED SEP 19/93
LOGGED BY BARRY RUIROZ

T.D. 366'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAT LAKE (G ZONE)

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A	B	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 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
330																		<.1		4			tr	330	qtz-Mt+Py vein Intense qtz-Mt+Py veining		
																		<.1		3			tr				
340																								340	Intense qtz-Mt±Py veining		
																		<.1		3			tr				
350																								350			
																		<.1		3			tr				
360																		<.1		3			tr	360	strong silicification with intense qtz-Mt veining (±Py).		
366																										END HOLE TOTAL DEPTH 366.5'	

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_176	23369.6	10826.1	1317.7

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	366.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
22.0	30.0	0.08	0.004	5.0			0.001	0.003	18700
30.0	40.0	0.07	0.005	4.3			0.001	0.005	18701
40.0	50.0	0.16	0.009	6.4			0.001	0.007	18702
50.0	60.0	0.20	0.008	5.1			0.001	0.006	18703
60.0	70.0	0.15	0.009	6.0			0.001	0.008	18704
70.0	80.0	0.14	0.011	7.0			0.001	0.009	18705
80.0	90.0	0.11	0.009	4.7			0.001	0.010	18706
90.0	100.0	0.09	0.010	5.0			0.001	0.004	18707
100.0	110.0	0.15	0.009	5.3			0.001	0.006	18708
110.0	120.0	0.14	0.010	6.3			0.001	0.007	18709
120.0	130.0	0.22	0.013	6.6			0.001	0.007	18716
130.0	140.0	0.19	0.009	6.3			0.001	0.008	18717
140.0	150.0	0.12	0.007	7.0			0.001	0.007	18718
150.0	160.0	0.09	0.007	5.9			0.001	0.007	18719
160.0	170.0	0.16	0.012	5.1			0.001	0.005	18720
170.0	180.0	0.16	0.010	4.5			0.001	0.006	18721
180.0	190.0	0.10	0.007	7.0			0.001	0.012	18722
190.0	200.0	0.11	0.010	4.3			0.001	0.006	18723
200.0	210.0	0.14	0.007	5.0			0.001	0.008	18724
210.0	220.0	0.16	0.017	5.0			0.001	0.009	18725
220.0	230.0	0.13	0.009	5.1			0.001	0.007	18726
230.0	240.0	0.11	0.010	4.7			0.001	0.007	18727
240.0	250.0	0.20	0.013	4.7			0.001	0.011	18728
250.0	260.0	0.13	0.011	5.6			0.001	0.011	18729
260.0	270.0	0.11	0.008	5.7			0.001	0.009	18730
270.0	280.0	0.10	0.024	6.1			0.001	0.007	18731
280.0	290.0	0.11	0.017	5.7			0.001	0.009	18732
290.0	300.0	0.10	0.008	6.2			0.001	0.012	18733
300.0	310.0	0.13	0.010	7.2			0.001	0.010	18735
310.0	320.0	0.12	0.013	6.6			0.001	0.010	18736
320.0	330.0	0.11	0.008	8.5			0.001	0.010	18737
330.0	340.0	0.10	0.007	8.2			0.001	0.012	18738
340.0	350.0	0.06	0.006	8.1			0.001	0.011	18739
350.0	360.0	0.04	0.005	7.3			0.001	0.009	18740
360.0	366.0	0.07	0.007	6.0			0.001	0.010	18741

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I C DATE SENT: Sept 21/93 SENT BY/DEPT: Geol TYPE: Core

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-176	22	30	08	004	510	2	3	001	003	187000	1
	30	40	07	5	43	3	3	1	5	701	2
	40	50	16	9	614	4	15	1	7	702	3
	50	60	20	8	511	5	17	1	6	703	4
	60	70	15	009	610	2	15	1	8	704	5
	70	80	14	011	710	3	15	1	9	705	6
	80	90	11	9	47	1	4	1	010	706	7
	90	100	09	010	510	2	14	1	4	707	8
	100	110	15	009	513	2	15	1	6	708	9
	110	120	14	010	613	2	16	1	7	709	10
	120	130	22	013	66	3	17	1	7	187116	11
	130	140	19	009	63	4	15	1	8	717	12
	140	150	12	7	710	3	13	001	7	718	13
	150	160	09	7	519	3	18	1	7	719	14
	160	170	16	012	511	2	17	1	5	720	15
	170	180	16	010	45	3	15	1	6	721	16
	180	190	10	007	710	1	14	1	012	722	17
	190	200	11	010	43	2	13	1	006	723	18

#NDI SEPT 21/93

ISLAND COPPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 21/13 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-176	200	210	.14	.007	5.0	.1	.7	.001	.008	187124	19
	210	220	.16	.017	5.0	1.0	1.4	.1	.009	7125	20
	220	230	.13	.009	5.1	.8	1.3	.1	.007	7126	21
	230	240	.11	.010	4.7	.1	1.3	.1	.007	7127	22
	240	250	.20	.013	4.7	.3	1.5	.1	.011	7128	23
	250	260	.13	.011	5.6	.3	1.5	.1	.011	7129	24
	260	270	.11	.008	5.7	.2	1.4	.1	.009	7130	25
	270	280	.10	.024	6.1	.2	1.4	.1	.007	7131	26
	280	290	.11	.017	5.7	.3	1.3	.1	.009	7132	27
	290	300	.10	.008	6.2	.2	1.3	.1	.012	7133	28
	300	310	.13	.010	7.2	.3	1.4	.1	.010	7134	29
	310	320	.12	.013	6.6	.3	1.5	.1	.010	7136	30
	320	330	.11	.008	8.5	.3	1.4	.1	.010	7137	31
	330	340	.10	.007	8.2	.2	1.4	.1	.012	7138	32
	340	350	.06	.006	8.1	.1	1.2	.1	.011	7139	33
	350	360	.04	.005	7.3	.1	1.2	.1	.009	7140	34
	360	366.5	.07	.007	6.0	.2	1.2	.1	.010	7141	35

ANDI SEPT 21 N/S

Keyed

ROCK QUALITY DESIGNATION

HOLE NO.: E 176 DATE: Sept 20/93 LOGGED BY: S. Oakley.

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
22	31			65		ø		
31	42			115		8		
42	52			112		35		
52	62			115		18		
62	72			120		38		
72	77			60		9		
77	82			60		14		
82	87			59		15		
87	92			60		16		
92	97			60		33		
97	102			60		38		
102	107			62		43		
107	112			58		39		
112	117			60		38		
117	122			61		31		
122	126			45		9		
126	131			54		15		
131	136			58		8		
136	141			58		5		
141	145			48		15		
145	148.5			40		4		
148.5	152			30		5		
152	157			61		14		
157	161			45		13		
161	166			60		26		
166	171			61		31		
171	176			60		8		
176	180.5			40		ø		
180.5	185.5			58		35		
185.5	190.5			61		11		
190.5	195.5			59		23		
195.5	202			74		20		

Keyes GE

ROCK QUALITY DESIGNATION

HOLE NO.: E176 DATE: Sept 20/93 LOGGED BY: S. Oakley.

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
202	212			104		10		
212	222			116		18		
222	232			113		17		
232	242			110		23		
242	252			118		19		
252	262			116		48		
262	272			118		47		
272	282			114		44		
282	292			120		57		
292	302			119		49		
302	312			121		36		
312	322			118		42		
322	332			119		52		
332	342			117		23		
342	352			118		28		
352	362			120		35		
362	366.5			50		17		
EOH								

Keyed

MAGNETIC SUSCEPTIBILITY

LE NO. E176 DATE Sept 20/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
20-30						1.6
30-40						1.5
40-50						2.7
50-60						2.7
60-70						1.7
70-80						1.7
80-90						4.4
90-100						5.0
100-110						7.8
110-120						6.5
120-130						8.0
130-140						.87
140-150						.16
150-160						1.9
160-170						2.5
170-180						1.6
180-190						2.7
190-200						1.0
200-210						1.2
210-220						3.0
220-230						2.0
230-240						4.3
240-250						1.8
250-260						1.3
260-270						3.7
270-280						2.4
280-290						3.8
290-300						6.3
300-310						3.3
310-320						1.4
320-330						3.3
330-340						3.8
340-350						6.5

MAGNETIC SUSCEPTIBILITY

LE NO. E176 DATE Sept 20/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
350-360						7.8
360-366	0					8.2
EOH						

TRAVERSE DATA INPUT

SETUP	BACKSIGHT	FORESIGHT	H.INST.	H.EDM.	H.TARG.	H.PRISM	EDM DIST.	H.A.	Z.A.
1373	WRT	6478	4.975	5.195	2.320	2.320	1545.400	181-02-13.0	089-14-30.0
6478	1373	E176	3.750	3.950	5.200	5.200	335.300	256-11-36.0	091-15-51.0

REDUCTION OF EDM DISTANCES - Reference Elevation = 1000.000
Hor. Scale Factor = 1.00000000 Vert. Scale Factor = 1.00000000

SETUP	BACKSIGHT	FORESIGHT	H.INST.	H.EDM.	H.TARG.	H.PRISM	H.A.	Z.A.	HOR. DIST.	VERT. DIST.
1373	WRT	6478	4.975	5.195	2.320	2.320	181-02-13.0	089-14-30.0	1545.241	20.502
6478	1373	E176	3.750	3.950	5.200	5.200	256-11-36.0	091-15-51.0	335.213	-7.395

FINAL RESULTS FOR OPEN TRAVERSE

INITIAL STATION = 1373 INITIAL BACKSIGHT = WRT
Northing : 9243.820 Northing : 5985.266
Easting : 22875.970 Easting : 22593.058
Elevation : 1303.430 Elevation : 1351.903

SETUP	BACKSIGHT	FORESIGHT	H.D.	H.A.	Z.A.	ADJUSTED FORESIGHT STATION COORDINATES		
1373	WRT	6478	1545.414	181-02-13.0	089-14-30.0	10780.599N	23037.465E	1326.587EL
6478	1373	E176	335.330	256-11-36.0	091-15-51.0	10826.137N	23369.570E	1317.742EL

DRILL LOG

HOLE NO. E-173

PROJECT IGM
CONTRACTOR OLYMPIC
DATE STARTED SEPT. 14/93 COMPLETED SEPT. 15/93
LOGGED BY BARRY QUIROZ

T.D. 186'
INCLINATION -90°
COORDINATES 18621.91 E 11240.75N
SURVEY REFERENCES BAY LK (B ZONE)
COLLAR ELEVATION 1240.17
BEARING 0.0

Footage	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.		Sulf. Veins	Frac. Inten	Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2		Sample No. & Interval
100'								5-15					?						<1		2-4					100'
200'																										200'

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

- qtz-mt+/-py @ 30°-40° c/n
- QFP cut by qtz-mt+/-py+/-cpy vns
- intr. bxx w bio alt'd volc frag
- qtz-mt-pyr alt'd QFP
- qtz stkwk'd bxx
- volc stkwk'd qtz-mt+/-py vns

EOH: 186'
STOPPED DUE TO LOW EST. COPPER MINERALIZATION

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

0-22' OVERBURDEN
22-186'
Dark green, quartz-mt, chlorite +/- bio + amphibole(?) alt'd andesitic tuff/stkwk bxx
Rock cut by QFP dykes @ 44'-46', 66'-76', 102-113' with strong bxx developed btw dykes. The dykes are cut by qtz-mt+/-pyr vns. Bxx's contain frags of bio-mt alt'd volc w cpy which are cut by qtz-mt+/-pyr vns and also show qtz-mt vn frags. The mtx of bxx appears to be porphyry (QFP). The intr bxx changes w depth to stockwk'd volc. w abd qtz-mt+/-pyr vns

ANALYSIS:
This is part of marginal bxx (qtz-mt-amp. zone) w v-complex bxx & intrusive paragenesis/textures. All appear to have been cut by qtz-mt+/-py vns. The bxx. w qtz vn frags. & bio. alt'd frags. prob. the latest stage.

ROCK UNIT

DRILL LOG

HOLE NO. E-173

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEP/14/93 COMPLETED SEP 15/93
LOGGED BY BARRY QUIROZ

T.D. 186'
INCLINATION -90°
COORDINATES 18621.91E 11240.75N
SURVEY REFERENCES BAY LAKE (B ZONE)

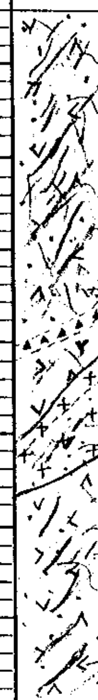
COLLAR ELEVATION 1240.17
BEARING 0.0

Footage	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	ALB	SCC	Sulf. Veins	Frac. Inten	Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
10																								10
20																								20
~27																			<.1	3%			tr	
30																								30
~36																			<.1	3%			tr	
40																								40
~46																			<.1	3%			tr	
50																								50
~55																			<.1	4%			tr	
60																								60

LOG

SCALE 1" = 10'

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



- IN PLACES ABUNDANT Py
- Cpy LOCALLY FINELY DISS. IN ASSOCIATION WITH BIOTITE-Mt
- MOSTLY OF VEINS ARE Qtz-Mt (± Py)
- PRINCIPAL ATTITUDE OF Qt-Mt ± Py VEINS (30-40°)
- FRAGMENTAL QTZ-VEINS
- BX WITH QTZ FRAG. (AFTER QTZ VEIN? PEBBLES DIKE?)
- STRONG SILICIFICATION AND Qtz-Mt VEINS.
- Qt+Mt ± Cpy VEIN
- MOSTLY OF VEINS ARE Qt-Mt ± Py
- HEMATITE AFTER Py
- LOCALLY Py RICH (± Cpy)
- Qtz-Mt ± Py ± Ser vein
- THICK Qt-Mt VEIN WITH ABUNDANT Py (± Cpy?)

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

22'-44' DARK GREEN ANDESITIC TUFF: IN SOME PLACES THE VOLCANIC TEXTURE TOTALLY OBLITERATED BY STRONG CHLORITE ALTERATION AND Qtz-Mt ± Py (± Amphibole?) VEINS. THE AMPHIBOLE (?) CRYSTAL ARE PARTIAL TO TOTALLY ALTERED TO CHLORITE.
LOCALLY OCURRS BIOTITE-Mt ALT WITH Cpy AS FINELY DISS.

44' CONTACT BETWEEN BONANZA VOLCANICS AND QFP. THE PORPHYRY TEXTURE SHOWS SUBROUNDED QTZ-EYES (1/2 cm Ø) WITH SUBHEDRAL TO ANHEDRAL K-SPAR PHENOS. MOSTLY OF K-SPAR PHENOS ARE ALBITIZED ?

48'-66' SAME AS 22'-44' BUT IS MORE STRONG BOTH CHLORITE AND Qtz-Mt VEINS

ROCK UNIT

HOLE NO. E-193

DRILL LOG

Page 2 of 3

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 14/93 COMPLETED SEPT 15/93
LOGGED BY BARRY QUIROZ

T.D. 186'
INCLINATION ↓
COORDINATES
SURVEY REFERENCES BAY LAKE (B ZONE)

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A L B	S C C	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
60																								
70																		<.1		3%			tr	
80																		<.1		3%			tr	
90																		<.1		3%			tr	
100																		<.1		4%			tr	
110																		<.1					tr	
120																		≤.1					tr	

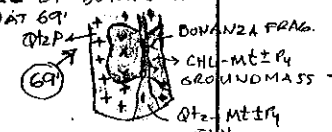
LOG
SCALE 1" = 10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

CONTACT?
Qt-Mt(±Py) VEINS
CONTACT? PORPHYRY DIKE?
FINELY DISS. PY IN MATRIX LOCALLY Cpy
Qt-Mt ± Py VEINS
THICK QT2-Mt VEIN (3cm)
CONTACT?
Py RICH MATRIX
LOCALLY Qt-Mt± Cpy VEINS
Cpy FINELY DISS IN ASSOC. WITH BIOTITE-Mt IN BONANZA FRAGMENTS.
Qt+Mt ± Py VEINS
CONTACT?
Py IN MATRIX AND Qt±Mt VEINS.
$Py \pm Cpy^{-2}$ IN MATRIX IN ASSOC. WITH CHL-Mt.
Qt-Mt± Py VEINS
HIGHLY BROKEN Qt2-Mt VEINS
Qt2-Mt ± Py VEINS
LOCALLY Cpy IN BONANZA FRAG.
Qt2 FRAG (AFTER Qt2 VEINS)

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

66'-70' QT2 PORPHYRY. DIFFERENT PORPHYRY AT 44'-48'. MOSTLY PHENOS ARE QT2 IN QT2-K-SPAR APANITIC MATRIX. MOSTLY OF MICAS CONTENT ARE ALTERED TO SERICITE. CONTAINS FRAG OF BONANZA VOLCANICS(!) AT 69'

(QT2 PHENOS ≤.5 cm)



70'-81' THIS ZONE IS HIGHLY BROKEN AND BRECCIATED. MOSTLY FRAGMENTS ARE QT2 (AFTER QT2-VEINS?).

81-102' THIS ZONE IS HIGHLY BROKEN AND BRECCIATED TOO. THE PORPHYRY IS SAME AS 66'-70'. CONTAIN BONANZA VOLCANICS FRAGMENT WITH Bt-Mt ALTERATION. THE BONANZA FRAGMENTS INCRESE AT THE LOWER PORTION. THE SULFIDE MINERALIZATION OCURRS IN: (1) BONANANZA FRAG. Cpy FINELY DISS IN ASSOC. WITH BIOTITE-Mt ALT, (2) IN Qt-Mt ± Py ± Cpy^{-2} VEINS. MOSTLY OF SULFIDE MINERALIZATION IN PORPHYRY IS Py OCURRING PRINCIPALLY IN MATRIX. AMPHIBOLES AND MAFFIC MIN. ARE PARTIALLY TO TOTALLY ALTERED TO CHLORITE? SERICITE OCURRS LOCALLY. THE Mt CONTENT IS STRONGER WHERE THE BONANZA FRAG. ARE

102'-113' QTP. IN THE UPPER ZONE THE TEXTURE IS TOTALLY OBLITERATED BY STRONG SILICIFICATION AND Qt ± Mt VEINS. IN SOME PLACES RELICT TEXTURE SHOWS SILICIFIED QT2 AND K-SPAR? PHENOS IN A MATRIX TOTALLY SILICIF. THE Qt±Mt VEINING IS MORE INTENSE IN THE LOWER PORTION (CONTACT ZONE)

113'-140' TRANSITIONAL ZONE(?) BETWEEN QFP AND BONANZA VOLC. (MARGINAL BX?) THIS ZONE IS HIGHLY BROKEN AND BRECCIATED SAME AS 81'-102'
SOME MICAS? ALTERED TO SERICITE

ROCK UNIT

HOLE NO. E-173

DRILL LOG

Page 3 of 3

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 14 SEP / 93 COMPLETED 15 SEP / 93
LOGGED BY BARRY QUIROZ

T.D. 186'
INCLINATION 90°
COORDINATES
SURVEY REFERENCES BAY LAKE (B ZONE)

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A	S	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_3FeS_3	Fe_3O_4	MoS_2	Sample No. & Interval
120																								
130																		<.1		3%		tr		130
																		<.1		3%		tr		
140																		.1		4%		tr		140
150																		.1		5%		tr		150
160																		.1		4%		tr		160
170																		.1		4%		tr		170
180																								180

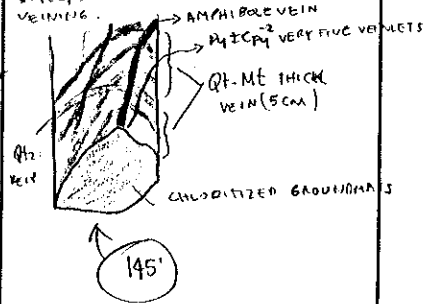
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

- Qtz+Mt± Py VEINS
- THICK Qt-Mt ± Py VEIN (2 cm WIDE)
- Py RICH CONTACT
- Py LOCALLY Cpy IN ASSOC. WITH Qt-Mt VEINS
- Qtz-Mt± Py VEINING
- AMPHIBOLE VEINS Qtz & Mt-Py Py-RICH ASSOC. TO Qt-Mt VEINS
- BONANZA XENOLITHS
- LOCALLY Cpy WITH Mt VEIN
- Py RICH ASSOC. WITH THICK Qt-Mt VEINS (5cm)
- Py RICH MATRIX
- TRANSITIONAL CONTACT
- THICK Qtz-Py VEINS (10cm) MINOR Qt-Mt ± Py
- LOCALLY Cpy IN ASSOC. WITH Qtz-Mt VEINS
- LOCALLY Py RICH

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

146'-186' AT 140' GRADATIONAL CONTACT BETWEEN ZONE HIGHLY BROKEN & BX AND BONANZA VOLCANICS. HIGHLY Qtz-Mt STOCKWORKED
THE Mt CONTENT IS HIGH, MOSTLY IS ASSOC. WITH Qt VEINS (BUT OCCURS AS MASSIVE (IN SOME PLACES) AND ASSOC. WITH AMPHIBOLE VEIN.

FROM 169'-166' SAME TRANSITIONAL CONTACT THAN 133'-140' (MARGINAL BX?) WITH THE SAME MINERALIZATION STYLE, BUT WITH STRONGER Qt-Mt VEINING.



TOTAL DEPTH 186'

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_173	18621.9	11240.8	1240.2

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	186.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
20.0	30.0	0.08	0.003	5.0			0.004	0.010	18646
30.0	40.0	0.12	0.004	6.3			0.005	0.011	18647
40.0	50.0	0.11	0.001	5.1			0.004	0.006	18648
50.0	60.0	0.14	0.002	9.7			0.009	0.043	18649
60.0	70.0	0.08	<0.001	8.1			0.005	0.014	18650
70.0	80.0	0.04	0.001	8.3			0.006	0.016	18651
80.0	90.0	0.04	0.003	6.1			0.005	0.017	18652
90.0	100.0	0.03	<0.001	6.8			0.023	0.082	18653
100.0	110.0	0.04	<0.001	3.2			0.017	0.062	18654
110.0	120.0	0.03	<0.001	4.1			0.008	0.034	18655
120.0	130.0	0.03	<0.001	5.9			0.007	0.046	18656
130.0	140.0	0.04	<0.001	6.2			0.005	0.021	18657
140.0	150.0	0.04	<0.001	6.2			0.005	0.027	18658
150.0	160.0	0.05	<0.001	7.1			0.007	0.082	18659
160.0	170.0	0.03	<0.001	5.9			0.005	0.021	18660
170.0	180.0	0.07	<0.001	8.3			0.007	0.079	18661
180.0	186.0	0.04	<0.001	9.2			0.006	0.029	18662

ISLAND C PER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 16/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-173	20	30	.08	.003	5.50	.02	.6	.04	.10	186460	32
	30	40	.12	.004	6.63	.05	.6	.05	.11	6461	33
	40	50	.11	.001	5.51	.31	.7	.04	.06	6462	34
	50	60	.14	.002	9.17	.03	1.0	.09	.43	6463	35
	60	70	.08	.000	8.81	.03	.4	.05	.14	6464	36
	70	80	.04	.001	8.53	.00	.2	.08	.16	6465	37
	80	90	.04	.003	6.11	.00	.2	.05	.17	6466	38
	90	100	.03	.000	6.68	.01	.4	.23	.82	6467	39
	100	110	.04	.000	3.12	.00	.4	.17	.62	6468	40
	110	120	.03	.000	4.11	.00	.2	.08	.34	6469	41
	120	130	.03	.001	5.19	.00	.2	.07	.46	6470	42
	130	140	.04	.000	6.12	.00	.1	.05	.21	6471	43
	140	150	.04	.000	6.12	.00	.5	.05	.27	6472	44
	150	160	.05	.000	7.11	.00	.4	.07	.82	6473	45
	160	170	.03	.000	5.59	.00	.4	.05	.21	6474	46
	170	180	.07	.000	8.13	.05	1.8	.07	.79	6475	47
	180	186	.04	.000	9.12	.00	.1	.06	.29	6476	48

Keyed

ROCK QUALITY DESIGNATION Sept 15/93 (SP)

HOLE NO.: E173 DATE: Sept 15/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
20	27			54		9		
27	35			36		4		
35	39			24		ø		
39	47			88		23		
47	57.5			92		4		
57.5	64			66		9		
64	~~75~~ 71.5			70		8		
71.5	75			30		ø		
75	78			36		10		
78	87			88		ø.		
87	95			72		4		
95	97			15		ø		
97	107			80		5		
107	117			90		9		
117	127			90		4		
127	135			65		ø		
135	145			105		12		
145	156			118		20		
156	167			122		22		
167	177			117		23		
177	186			100		4		
EOH								

Keyed

MAGNETIC SUSCEPTIBILITY

LE NO. E173 DATE Sept 15/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
20-30	[redacted]					5.5
30-40						4.2
40-50						1.8
50-60						6.1
60-70						6.5
70-80						11.0
80-90						3.4
90-100						5.1
100-110						2.5
110-120						1.4
120-130						3.7
130-140						3.0
140-150						2.9
150-160						3.9
160-170						4.0
170-180						3.7
180-186.						7.0
EOH.						

HOLE NO. E-174

DRILL LOG

PROJECT ICM.
CONTRACTOR OLYMPIC DRILLING & CONSULTING
DATE STARTED Sept 15/93 COMPLETED Sept 16/93
LOGGED BY Barry Quiroz (Summary by JF)

T.D. 282'
INCLINATION -90°
COORDINATES 18633.78 E 11500.05 N
SURVEY REFERENCES BAY LAKE (B-ZONE)

COLLAR ELEVATION 1311.73
BEARING 0.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval	LOG SCALE 1"=200' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
100																			3-4	2-3 / 3 / 1/8			tr	200	qtz-mt±amp±cpy vns; qtz mt-amp±cpy vn; pyr.-hem vnlts; 2' π dike cut by qtz-pyr vn; mt-pyr±cpy vns	0-72' OVERBURDEN 72-282' Green to dk. grn. bio-mt-chl-amp qtz ± alb alt'd. andesitic tuff. Bio-mt finely dissem. Amp. occ. as vnlts w/ mt, qtz, mt-qtz vns. Amp alt'd. to chlorite. Stages: 1) mt±cpy vn 2) mt-amp± cpy vns 3) qtz-mt±amp±cpy vns	Bon Volc
200																											
300																								300	E.O.H. 282' STOPPED DUE TO LACK OF +0.20% Cu IN DDH.	ANALYSIS The mt-amp±cpy & other vn sets appear to post-date the mt-bio dissem. altn. This could be an overprinting of two porp. alteration events (ie a late qtz-mt-amp assemblage over a earlier bio-mt assemb.) Cu assays are gen. <0.25%Cu	

HOLE NO. E-174

DRILL LOG

Page 1 of 4

PROJECT **Island Copper**

CONTRACTOR OLYMPIC DRILLING.

DATE STARTED SEP 15/93 COMPLETED SEP 16/93

LOGGED BY BARRY QUIROZ

T.D. 282' COLLAR ELEVATION 1311.73

INCLINATION -90° BEARING 0.0

COORDINATES 18633.78E 11500.05N

SURVEY REFERENCES BAY LAKE (B ZONE)

ALTERATION | STR. | VISUAL EST. | Sample No. & Interval | LOG SCALE 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system | LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES | ROCK UNIT

Footage | Core Recovery | Oxide | Quartz | Sericite | Clay/Pyrop | Biotite | K-spar | Chlorite | Epidote | Carb-Zeo | Garnet | Pyroxene | Amphibole | A L B | S C C | Suit Veins | Frac. Inten | Est. Cu. Mo | $CuFeS_2$ | FeS_2 | Cu_3FeS_4 | Fe_2O_3 | MoS_2

0 10 80 90 100 110 120

70 80 90 100 110 120

PORPHYRY? PORPHIRITIC TX? CONTACT

VERY FINE DISS. CPY

GOOD FINELY DISS. CPY ASSOC. WITH Bt+Mt

Qtz Mt (2cm) VEIN WITH CPY-PY

Qtz-Mt±Amp±Cpy VEINS

GOOD FINELY DISS-CPY IN ASSOC WITH Bt-Mt ALTERATION

Qt-Amphibole±Cpy VEINS

Mt. Amphibole ± Cpy VEINS

VERY FINE AMPH (⇒CHL) VEINLETS ± CPY

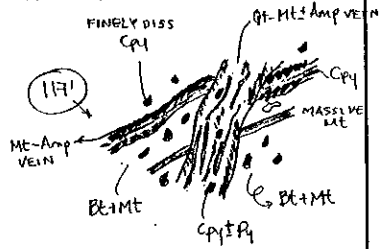
LOCALLY Cpy VERY FINE VEINLETS

GOOD FINELY DISS Cpy OCCURS IN VERY FINE VEINLETS TOO.

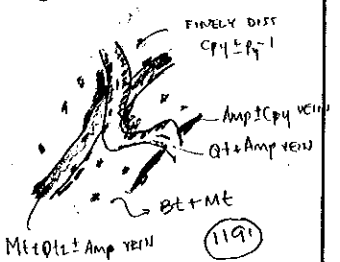
Mt+Qtz VEIN CONTAINS Cpy+Py

.3	2%						tr		
.3	2%						tr		
.4	3%						tr		
.4	2%						tr		
.3	2%						tr		

72'- GREEN TO DARK GREEN ANDESITIC TUFF. MOSTLY OF Mt IS FINELY DISS IN ASSOC WITH BIOTITE. AMPHIBOLES OCCURS IN VERY FINE VEINLETS AND IN ASSOC. WITH Mt; Qt; Mt-Qtz.



Bt+Mt GROUNDMASS CUTING BY 3 STAGES? : (1) LEAST?)
(1) Mt±Cpy VEINS
(2) Mt+Amp ± Cpy VEINS
(3) Qt+Mt±Amp±Cpy VEINS



HOLE NO. E-174

DRILL LOG

Page 2 of 4

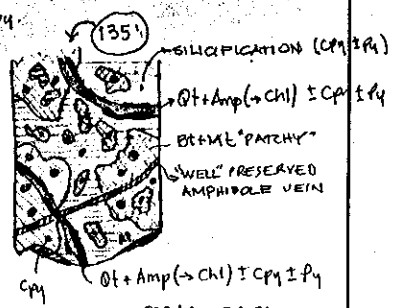
PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED 15 SEPT/93 COMPLETED 16 Sept/93
LOGGED BY BARRY QUIROZ

T.D. 282'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAY LAKE (B ZONE)

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A B C	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
120																										
130																	.4	3			local tr			→ GOOD DISS. Cpy (FINELY DISS)		
																								→ Qtz-Mt-Amp±Py±Cpy±Mo VEIN (8cm WIDE).		
140																	≥.3	3			tr			→ AMPHIBOLE±Cpy±Py VEINS		
																								→ Mt+Amp±Cpy VEINS		
																								→ AMPHIBOL±Cpy VEINLETS		
																								→ MASSIVE Mt±Cpy VEIN		
150																	≥.3	3			tr			→ INTENSE Qtz VEINING WITH HIGH Py CONTENT		
																								→ Py±SERICITE-VEINLETS		
																								→ Py±HEMATITE VEINLETS		
																	.3	3			tr			→ Qtz+Py VEIN		
160																										
																								→ Qtz-Mt±Cpy VEIN		
																	≥.3	3			tr			→ THICK Qtz±Mt±Amp (Py±Cpy) VEIN		
170																								→ GOOD FINELY DISS. Cpy IN Bt+Mt		
																	.4	3			tr					
180																										

128'-141' INCREASE SILICIFICATION AND BIOTITE+Mt ALT. OCURRS AS PATCHY WITH HIGH CONTENT OF Cpy.



PARAGENESIS:
(1) Bt+Mt ± Cpy ± Py
(2) SiO_2 INTRODUCTION (Cpy ± Py?)
(3) AMPHIBOLE ± Cpy ± Py
(4) Qtz-AMPHIBOLE ± Cpy ± Py

HOLE NO. E-174

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLIMPYC DRILLING
DATE STARTED 15 SEPT/93 COMPLETED 16 SEPT/93
LOGGED BY BARRY QUIROZ

T.D. 282'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAY LAKE (B ZONE)
COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	ALB	SCC	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
180–190																		.3		3			tr	190
190–200																		.3		3			tr	200
200–210																		≤.3		4			tr	210
210–220																		.2		3				220
220–230																		≤.2		4. 5				230
230–240																		≤.2		4				240

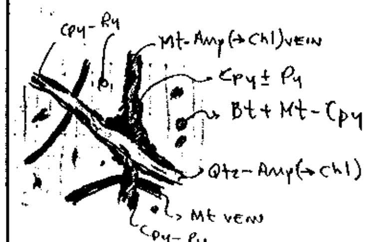
LOG SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

- GOOD DISS. CPY.
- LOCALLY CPY AS VERY FINE VEINLETS.
- QTZ+PY VEIN
- PORPHYRITHIC DIKE
- MT±PY±CPY VEINS
- BROKEN AND BRECCIATED QTZ+PY VEINS. ZONE WITH HIGH PY.
- C VEINLETS.

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

182'-183' STRONG SILICIFICATION AND ALBITIZED(?)

190' INCREASE QTZ VEINING AND DECREASE THE BIOTITE+MT ALT.



206'-208' PORPHYRITHIC DIKE! QTZ + K-SPAR PHENOS (≤1CM) IN QTZ-FELDSPAR APHANITHIC MATRIX. STRONG SILICIFICATION ASOCIATED TO THIS PORPHYRY.

231'-234' INTENSE QTZ VEINING HIGHLY BROKEN AND BRECCIATED (A SHEAR ZONE?)

ROCK UNIT

HOLE NO. E-174

DRILL LOG

PROJECT **Island Copper**

CONTRACTOR OLIMPYC DRILLING

DATE STARTED 15 SEP / 93 COMPLETED 16 SEPT / 93

LOGGED BY BARRY QUIROZ

T.D. 282' COLLAR ELEVATION

INCLINATION BEARING

COORDINATES

SURVEY REFERENCES BAY LAKE (B ZONE)

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A L B	S C C	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 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
240																											
250																		.1		4				250	ABUNDANT Mt VEINLETS CUTTING BY Qtz+Mt VEINS Qtz-Mt ± Py ± Cpy VEINS		
																		.1		5							
260																		<.1		5				260	Qtz+Py ± Cpy(-3) VEINS INTENSE SILICIF. ZONE	257'-282' ZONE HIGHLY BROKEN AND BRECCIATED. MOSTLY OF FRAG. ARE Qtz (AFTER PQT2-VEINS). HIGH CONTENT OF Py IN THE MATRIX IN SOME PLACES THICK Py VEINS (1 cm)	
270																		<.1		8				270	Py RICH VEINLETS HIGH Py CONT IN MATRIX HIGH HEMATITE HOSTED IN VERY FINE VEINLETS		
280																								280 282'	END HOLE TOTAL DEPTH 282'		

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_174	18633.8	11500.1	1311.7

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	282.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
74.0	80.0	0.19	0.014	7.3			0.003	0.015	18663
80.0	90.0	0.23	0.019	8.2			0.003	0.012	18664
90.0	100.0	0.23	0.014	8.8			0.003	0.009	18665
100.0	110.0	0.14	0.007	7.6			0.003	0.008	18666
110.0	120.0	0.20	0.009	10.1			0.003	0.008	18667
120.0	130.0	0.22	0.012	7.5			0.002	0.007	18668
130.0	140.0	0.23	0.017	7.7			0.003	0.008	18669
140.0	150.0	0.23	0.013	8.1			0.003	0.008	18670
150.0	160.0	0.25	0.012	7.3			0.003	0.019	18671
160.0	170.0	0.18	0.015	6.5			0.002	0.007	18672
170.0	180.0	0.24	0.011	6.0			0.002	0.010	18673
180.0	190.0	0.21	0.010	5.8			0.004	0.011	18674
190.0	200.0	0.21	0.007	5.0			0.003	0.006	18675
200.0	210.0	0.23	0.005	6.4			0.003	0.077	18676
210.0	220.0	0.23	0.008	7.7			0.004	0.013	18677
220.0	230.0	0.16	0.006	7.1			0.004	0.018	18678
230.0	240.0	0.15	0.004	7.4			0.003	0.014	18679
240.0	250.0	0.14	0.004	7.1			0.003	0.011	18680
250.0	260.0	0.16	0.005	7.6			0.004	0.034	18681
260.0	270.0	0.10	0.003	7.4			0.003	0.011	18682
270.0	282.0	0.11	0.003	11.0			0.003	0.027	18683

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 17/93 SENT BY/DEPT: Geol TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-174	74	80	.19	.14	7.3	.09	4	3	.15	18663	11
	80	90	.22	.19	8.2	.07	5	3	.12	664	12
	90	100	.23	.14	8.8	.09	4	3	.9	665	13
	100	110	.14	.7	7.6	.07	4	3	.8	666	14
	110	120	.20	.9	10.1	.11	4	3	.8	667	15
	120	130	.22	.12	7.5	.12	5	2	.7	668	16
	130	140	.23	.17	7.7	.10	5	3	.8	669	17
	140	150	.22	.13	8.1	.14	5	3	.8	670	18
	150	160	.29	.12	7.3	.10	7	3	.19	671	19
	160	170	.18	.15	6.5	.08	5	2	.7	672	20
	170	180	.24	.11	6.0	.08	5	2	.18	673	21
	180	190	.21	.10	5.8	.10	5	4	.11	674	22
	190	200	.21	.7	5.0	.11	6	2	.6	675	23
	200	210	.23	.5	6.4	.08	7	3	.77	676	24
	210	220	.23	.8	7.7	.07	8	4	.13	677	25
	220	230	.16	.6	7.1	.07	9	4	.18	678	26
	230	240	.15	.4	7.4	.03	5	3	.14	679	27
	240	250	.14	.4	7.1	.06	6	3	.11	680	28

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 17/93 SENT BY/DEPT: GEOL. TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-174	250	260	.16	.005	7.6	.009	7	.004	.34	186811	29
	260	270	.10	.003	7.4	.008	7	.003	.11	186822	30
	270	282	.11	.003	11.0	.006	15	.003	.27	186833	31

ROCK QUALITY DESIGNATION

Keyed Sept 16/93 SD

HOLE NO.: E174 DATE: SEPT 16/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	INTERVAL CUMULATIVE	RECOVERY INCHES	RECOVERY %	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
74 (82)	82			96		5		
82	87			61		16		
87	92			61		8		
92	97			62		29		
97	102			60		10		
102	107			62		8		
107	112			60		13		
112	117			60		11		
117	122			58		12		
122	127			58		4		
127	132			61		30		
132	137			60		22		
137	142			61		25		
142	147			60		27		
147	152			58		5		
152	157			59		4		
157	162			62		21		
162	167			60		32		
167	172			61		16		
172	177			60		20		
177	182			61		13		
182	187			58		21		
187	192			62		9		
192	197			60		8		
197	202			61		14		
202	207			60		12		
207	212			61		21		
212	217			60		8		
217	222			62		14		
~~222~~	~~227~~					3		
222 ~~227~~	232			122		22		
~~232~~	~~237~~							

ROCK QUALITY DESIGNATION

HOLE NO.: E174 DATE: Sept 16/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
232	242			108		22		
242	248			66		6		
248	252			49		4		
252	262			120		24		
262	272			86		23		
272	282			120		39		
EOH								

Keyd

MAGNETIC SUSCEPTIBILITY

LE NO. E174 DATE Sept 16/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
72-80						6.4
80-90						8.2
90-100						9.0
100-110						4.1
110-120						5.2
120-130						10.0
130-140						8.0
140-150						5.3
150-160						8.3
160-170						7.8
170-180						6.6
180-190						7.0
190-200						6.7
200-210						4.9
210-220						3.7
220-230						5.4
230-240						6.4
240-250						5.1
250-260						4.0
260-270						5.9
270-282						6.2
EOH						

HOLE NO. E-172

DRILL LOG

PROJECT ICM
CONTRACTOR OLYMPIC DRILLING & CONSULTING
DATE STARTED Sept. 13/93 COMPLETED Sept. 14/93
LOGGED BY Barry Quiroz (Summary by JAF)

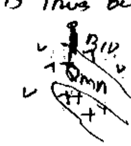
T.D. 211'
INCLINATION -90°
COORDINATES 19677.12E 10751.93N
SURVEY REFERENCES BAY LAKE (B ZONE)

COLLAR ELEVATION 1195.94
BEARING 0.0

Footage	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	Albite	S.C.C.	Sulf. Veins	Frac. Inten	Est. Cu. Mo	CuFeS2	FeS2	Cu5FeS4	Fe3O4	MoS2	Sample No. & Interval	LOG SCALE 1"=200' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
100																		2-3, 5-1		5, 3-6, 2				100'	casing - no core; porph text poss. porp. dyke(?); qtz stockwk + pyr, qtz + mt +/- cpy; cpy occ. w bio-amt	0-27' OVERBURDEN 27-211' Dark green strongly quartz-magnetite-chlorite +/- biotite +/- epidote altered andesitic tuff (lithic? xal?) Strong chl. altn of tuff. Mt occ. mainly as diss. but also w qtz + cpy. Early mag +/- py vns cut by qtz-chl + cpy + pyr and qtz-mt + cpy vns. Cpy occ. both in qtz vns and as fine diss. ass. w bio-mt.	
200																								200'	incr. silicn, weaker chl. altn; cpy mainly fg. diss w bio-amt		

E.O.H. = 211'
Stopped due to low est. Cu grades
(actual grades @ ~0.2% Cu)

Analysis:
Looks lk inner biotite-mt zone and/or the transition to the qtz-mt-amph zone.
Strong chl altn may be of amphiboles(?)
The QFP is thus below the DDH



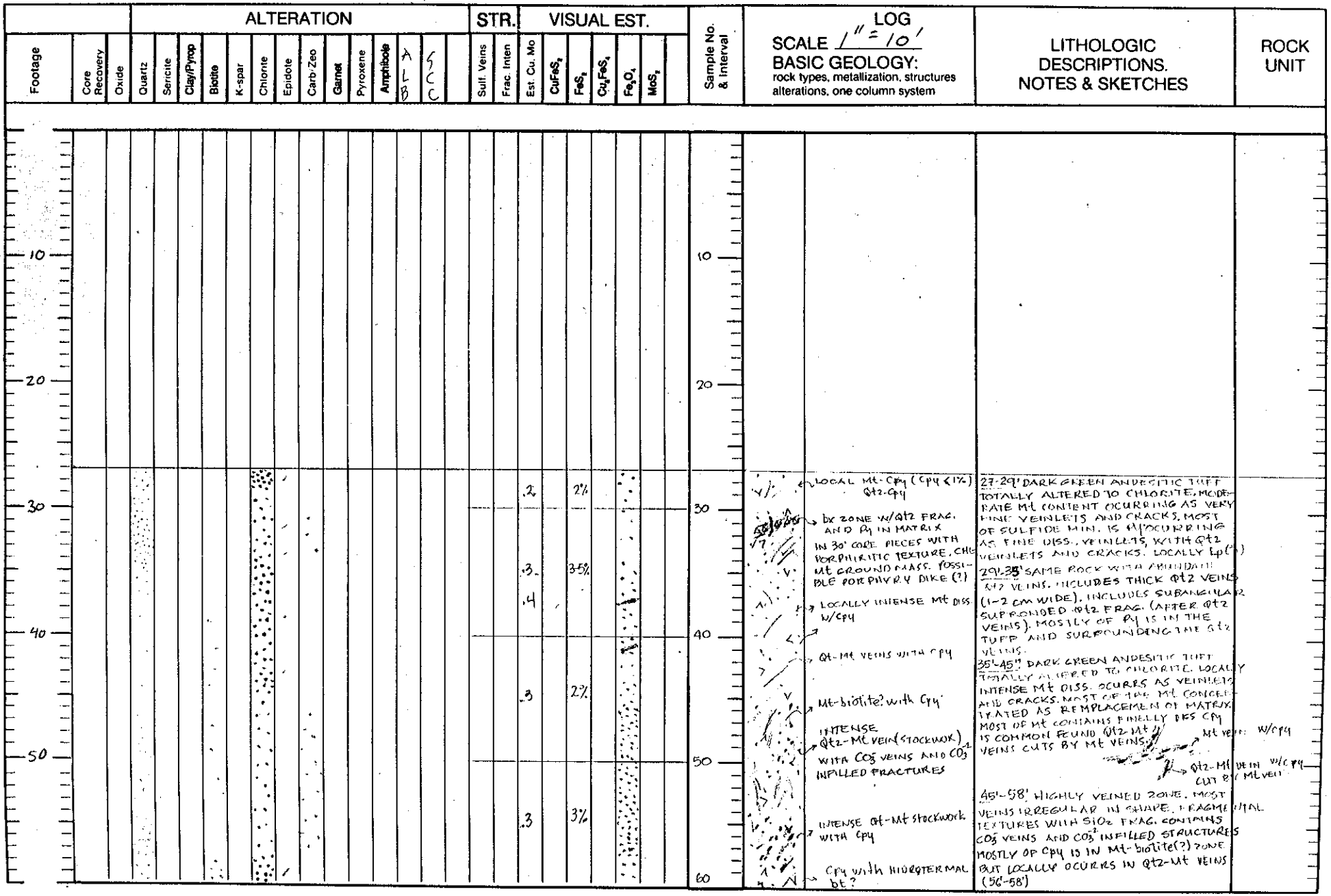
HOLE NO. E-172

DRILL LOG

Page 1 of 4

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 13/93 COMPLETED SEP 14/93
LOGGED BY BARRY QUIROZ

T.D. 211'
INCLINATION -90°
COORDINATES 19677.12E 10751.93N
SURVEY REFERENCES BAY LAKE (B ZONE)
COLLAR ELEVATION 1195.94
BEARING 0.0



HOLE NO. E-172

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEPT 13/93 COMPLETED SEPT 14/93
LOGGED BY BARRY QUROZ

T.D. 211'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAY LAKE (BZONE)

COLLAR ELEVATION
BEARING

Column headings: Footage | Core Recovery | Oxide | ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, ALB, SCC | STR.: Sulf. Veins, Frac. Inten | VISUAL EST.: Est. Cu. Mo, $CuFeS_2$, FeS_2, Cu_5FeS_4, Fe_3O_4, MoS_2 | Sample No. & Interval | LOG — SCALE 1" = 10' — BASIC GEOLOGY: rock types, metallization, structures alterations, one column system | LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES | ROCK UNIT

Footage (sample interval)	Est. Cu. Mo	FeS_2
60–70	.2	2%
70–80	.2	2%
80–90	.2	3%
90–100	<.2	3%
100–110	<.1	3%
110–120	<.1	3% / 5%

LOG – BASIC GEOLOGY (60'–120')

- Qt-Mt ± Py VEINS
- LOCALLY Qtz-Ep VEINS
- ZEO? VEINS
- CHLORITE-Mt with Cpy OCURRING AS FINE DISS AND VERY FINE VEINLETS
- ZEO? VEINS
- LOCALLY Qtz-Mt VEINS WITH Cpy
- GOOD DISS Cpy
- bt ± Mt with FINE DISS. Cpy
- VERY FINE Mt VEINLETS WITH Py
- HEMATITE STAINED (AFTER PY)
- INTENSE SILICIFICATION Qtz WITH Py ± SERICITE
- Qtz-Mt-VEINS W/Cpy
- Qtz-Mt VEIN (2CM) with Cpy.
- FRAGMENTAL TX. W/QTZ FRAG. (AFTER QT VEIN) Py IN MATRIX
- FRAGMENTAL QTZ VEINS WITH Py + Cpy^{2} IN THE MATRIX

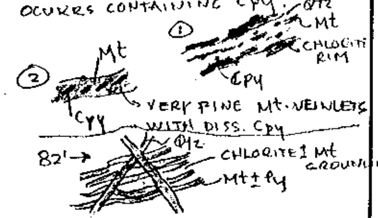
LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES

58'-62' ANDESITIC TUFF. PARTIAL TO TOTALLY ALTERED TO CHLORITE. MOST OF Mt CONTEN OCURRS AS DISS. WITH bt (biotite?) / LOCALLY OCURRS AS Qt-Mt VEINS (VERY FINE). THE Qtz VEINS INCREASE IN 60-62'. MOST OF Py OCURRS IN Qt-Mt VEINS.

62'-80' ANDESITIC TUFF (PORPHIRITIC TEXTURE WITH Qtz and CHLORITIZED PHENO'S IN CHLORITE ± Mt GROUNDMASS). THICK Qtz VEINS (2cm)

80'-120' DARK GREEN ANDESITIC TUFF IN SOME PLACES STRONG Mt, AS VERY FINE VEINLETS (ALONE AND W/Qtz)

TWO TYPES OF Mt VEINS OCURRS CONTAINING Cpy:



111'-112' FRAGMENTAL TEXTURE WITH INTENSE SILICIFICATION AND QTZ FRAG (AFTER Qtz VEINS). HIGH Py CONTENT IN MATRIX.

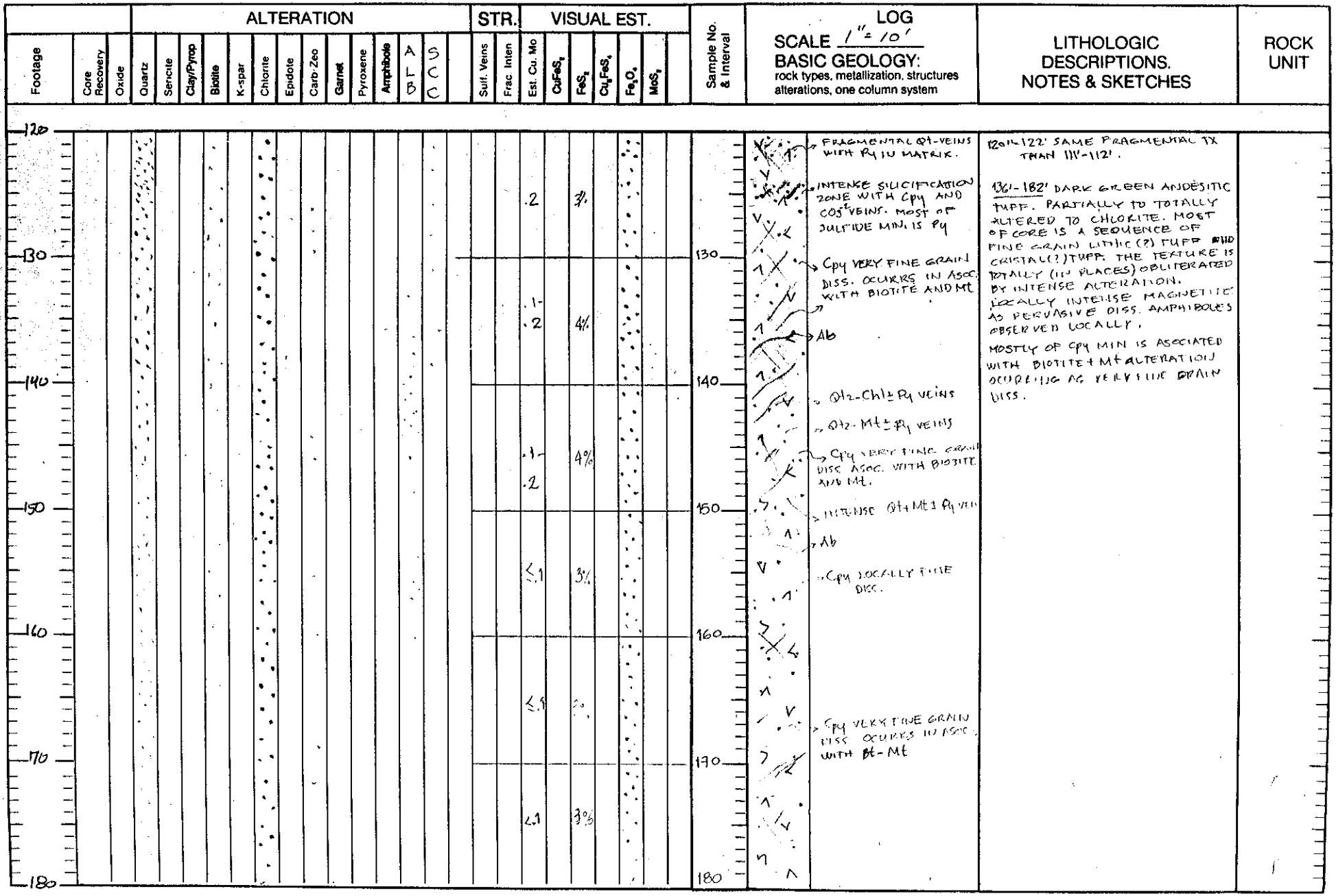
PARAGENESIS:
1) Mt VEINS
2) Qtz-Chl ± Cpy ± Py
3) Qtz-Mt ± Cpy

HOLE NO. E-172

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEP 13/93 COMPLETED SEP 14/93
LOGGED BY BARRY QUIROZ

T.D. 211' COLLAR ELEVATION
INCLINATION -90° BEARING
COORDINATES
SURVEY REFERENCES BAY LAKE (B ZONE)



120'-122' SAME FRAGMENTAL TX THAN 111'-112'.

136'-182' DARK GREEN ANDESITIC TUFF. PARTIALLY TO TOTALLY ALTERED TO CHLORITE. MOST OF CORE IS A SEQUENCE OF FINE GRAIN LITHIC (?) TUFF AND CRISTAL(?) TUFF. THE TEXTURE IS TOTALLY (IN PLACES) OBLITERATED BY INTENSE ALTERATION. LOCALLY INTENSE MAGNETITE AS PERVASIVE DISS. AMPHIBOLES OBSERVED LOCALLY.

MOSTLY OF Cpy MIN IS ASSOCIATED WITH BIOTITE + Mt ALTERATION OCURRING AS VERY FINE GRAIN DISS.

HOLE NO. E-172

DRILL LOG

Page 4 of 4

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED SEP/13/93 COMPLETED SEP/14/93
LOGGED BY BARRY QUIROZ

T.D. 211'
INCLINATION -90°
COORDINATES
SURVEY REFERENCES BAY LAKE (B ZONE)

COLLAR ELEVATION
BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A L B	S C C	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
190																		<.1		3%				190
200																		<.1		2%				200
210																		<.1		2%				210

LOG
SCALE 1"=10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

Qtz+Ep VEINS WITH CPY VEINE GRAIN DISS.

CPY VERY FINE GRAIN DISS. IN ASSOC. WITH BIOTITE-Mt. MOST OF SULFIDE MIN. IS Py.

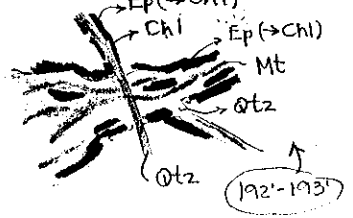
CPY IN BIOTITE-Mt

END OF HOLE

TOTAL DEPTH 211'

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

182-211' SAME LITOLOGY THAN 136-182'. HERE THE SILICIFICATION IS MORE INTENSE. THE BIOTITE-Mt IS RESTRICTED TO SOME PLACES. THE INTENSITY OF CHLORITE ALTERATION IS LOWER THAN 136-182'
MOST OF CPY OCURRS IN ASSOC. WITH BIOTITE+Mt AS VERY FINE GRAIN DISS.



ROCK UNIT

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_172	19677.1	10751.9	1195.9

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	211.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
20.0	30.0	0.19	0.002	6.9			0.025	0.095	18627
30.0	40.0	0.38	0.003	13.2			0.008	0.029	18628
40.0	50.0	1.18	0.003	13.0			0.002	0.024	18629
50.0	60.0	0.18	0.002	5.4			0.002	0.021	18630
60.0	70.0	0.17	0.003	5.9			0.003	0.014	18631
70.0	80.0	0.16	0.002	5.5			0.001	0.008	18632
80.0	90.0	0.31	0.005	5.7			0.003	0.013	18633
90.0	100.0	0.24	0.003	5.7			0.001	0.079	18634
100.0	110.0	0.14	0.003	9.1			0.003	0.035	18635
110.0	120.0	0.15	0.004	5.0			0.002	0.040	18636
120.0	130.0	0.19	0.004	5.8			0.001	0.042	18637
130.0	140.0	0.28	0.004	6.8			0.002	0.035	18638
140.0	150.0	0.22	0.005	6.3			0.001	0.008	18639
150.0	160.0	0.18	0.003	8.4			0.011	0.032	18640
160.0	170.0	0.12	0.003	6.1			0.002	0.010	18641
170.0	180.0	0.18	0.006	5.9			0.001	0.008	18642
180.0	190.0	0.19	0.003	6.8			0.003	0.032	18643
190.0	200.0	0.20	0.003	4.7			0.003	0.044	18644
200.0	211.0	0.22	0.005	8.3			0.002	0.011	18645

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 15/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-172	20	30	119	2	69	103	9	25	95	186271	25
	30	40	238	2	1312	124	18	8	229	6288	26
	40	50	1118	3	1130	152	12	2	224	6299	27
	50	60	118	2	54	109	16	2	211	6300	28
	60	70	117	3	59	106	15	2	114	6311	29
	70	80	116	2	55	106	13	1	8	6322	30
	80	90	131	5	57	111	11	2	112	6333	31
	90	100	124	2	57	109	17	1	79	6344	32
	100	110	114	2	911	107	10	1	25	6355	33
	110	120	115	4	50	114	16	2	40	6366	34
	120	130	119	4	58	106	18	1	42	6377	35
	130	140	128	4	68	108	18	2	35	6388	36
	140	150	122	5	63	109	15	1	8	6399	37
	150	160	118	3	84	104	10	11	32	6401	38
	160	170	112	3	61	106	13	2	10	6411	39
	170	180	118	6	59	107	13	1	8	6422	40
	180	190	119	3	68	107	10	2	32	6433	41
	190	200	120	3	47	105	17	3	44	6444	42

ISLAND C PPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 15/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-172	200	211	22	5	83	08	5	2	11	186453	43

Keypunched Sept 15/93 SO

ROCK QUALITY DESIGNATION

HOLE NO.: E172 DATE: Sept. 15/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
20	27	(NOT	BEDROCK)	8		Ø		
27	57			66		5		
57	67			80		Ø		
67	75			75		4		
75	77			15		Ø		
77	87			70		Ø		
87	94.5			55		Ø		
94.5	104.5			108		16		
104.5	114.5			110		14		
114.5	119			54		20		
119	127			90		19		
127	131			40		Ø		
131	139			90		10		
139	142			30		Ø		
142	149			66		4		
149	154.5			50		Ø		
154.5	159			52		9		
159	163.5			54		4		
163.5	167			42		18		
167	177			100		14		
177	187			105		16		
187	197			118		28		
197	206			80		5		
206	211			40		6		
EOH								

Keyel

MAGNETIC SUSCEPTIBILITY

LE NO. E 172 DATE Sept 15/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
20-30						1.5
30-40						3.0
40-50						9.0
50-60						7.0
60-70						4.5
70-80						5.8
80-90						4.3
90-100						2.2
100-110						5.2
110-120						5.3
120-130						5.0
130-140						3.7
140-150						1.5
150-160						4.8
160-170						4.4
170-180						5.7
180-190						5.2
190-200						2.2
200-211						4.3
EOH						

HOLE NO. DDH-E-171

DRILL LOG

Page 1 of 1

PROJECT **Island Copper**

CONTRACTOR OLYMPIC

DATE STARTED August 31/93 COMPLETED Sept 2/93

LOGGED BY Andrew McIntosh

T.D. 271'

INCLINATION -90°

COORDINATES 18959.10E 11472.00N

COLLAR ELEVATION 1283.22

BEARING 0.0

SURVEY REFERENCES —

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	ANT	SNK	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
			trace		?			trace		trace					weak trace									

LOG SCALE 1" = 100'

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

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

23'-271' EOH

Medium to dark grey Quartz/Mag. altered Fine grained volcanic.

Variable carbonate from 0-5% per 10 ft section. Trace to moderate biotite from 80'-165'. Disseminated chalcopyrite from 23' to 190' peaking at ≤1% from 70'-120'. Average is less than ½% in other areas. chalcopyrite was not found in greater than trace amounts below 190', where carbonate and possible k-spar? (or possibly hem. stained albite) alteration increases downward.

Average pyrite content is ≤2%

ROCK UNIT

HOLE NO. PDITE-171

DRILL LOG

Page 1 of 5

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED Aug 31/93 COMPLETED Sept 2/93
LOGGED BY Andrew McIntosh

T.D. 271'
INCLINATION -90° 1
COORDINATES 18959.10E 11472.00N
SURVEY REFERENCES —

COLLAR ELEVATION 1283.22
BEARING 0.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A	B	C	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
																										OVERBURDEN 0-23'		
30																			.1 to .2		3					20% quartz veins moderate to strong magnetite < ½% cpy 2cm albite vein 1% cpy	Medium to dark grey quartz magnetite altered Fine grained volcanic. Variable carbonate from 0 – 5%. per 10ft. section. Trace to moderate biotite	23-EOH
																			...		10					60cm intense sericite 10% pyrite.		
40																			.1		3 to 5					minor diss cpy 10% qz veins ≤ 1cm 5% carbonate.		
																			.25 to .3		3 to 5					10% qz/carb veins ≤ 1% diss cpy		
50																			.25 to .3		5					50cm qz carb vein cpy mar contacts. visible Moly.		
																										30% qz/carb 1-2 % graphite ½-1% cpy minor visible moly minor magnetite.		
60																			.3		3 to 5					Similar to 50 to 60' moderate albite ≤ 5% carbonate		
																			1		...					15cm albite/quartz vein moderate albite minor carbonate ≥ 1% cpy diss. + stringer visible moly minor amphibole minor patchy biotite		
70																			.4		1 to 2							
80																												

HOLE NO. DDH-E-171

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 31/93 COMPLETED Sept 2/93
LOGGED BY Andrew McTavish

T.D. 271
INCLINATION 90°
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	A	B	C	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
80															T				.3 to .4	.3 .4	3					20-30% quartz ≤10% magnetite patchy biotite 1% + cpy	Quartz magnetite altered volcanic. minor to moderate biotite. minor graphite or pyrobitumen	
90															r											3cm quartz + albite. 1cm quartz + albite 3mm qz + graphite		
															a				-3		3					3mm albite		
100															c											3cm qz-calcite 10-20% qz. vein ≤ 1cm 1% diss. cpy		
															e				.3 to .4		2							
110																			.3		3					Patchy biotite		
															↑											15cm qz, alb. vein		
120																			.2		2					40cm 25% carbonate (irregular vein) ≃ ½% diss. cpy		
															↓											10-20% qz veins, minor graphite/ minor biotite.		
130																			.1 to .2		2					10% carbonate. < ½% cpy		
																										1cm qz-carb vein		
140																										1cm qz vein		

HOLE NO. DDH-EG-171

DRILL LOG

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED August 31/93 COMPLETED Sept 2/93
LOGGED BY Andrew McIntosh

T.D. 271'
INCLINATION
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb-Zeo, Garnet, Pyroxene, Amphibole, ALB, SCC
STR.: Sulf. Veins, Frac. Inten
VISUAL EST.: Est. Cu. Mo, CuFeS$_2$, FeS$_2$, Cu$_5$FeS$_4$, Fe$_3$O$_4$, MoS$_2$

LOG — SCALE 1" = 10' — BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system

Footage	Alteration	Est. Cu. Mo	FeS$_2$	Sample No. & Interval
140–150	SCC: Trace	.2 to .3	2	
150–160		.2	1 to 2	150
160–170	Carb-Zeo: trace (160–180); SCC: trace	.2	1 to 2	160
170–180		.1	1 to 2	170
180–190	SCC: trace	.1	1 to 2	180
190–200	K-spar: ?; Carb-Zeo: weak; Garnet: ?	trace	1 to 2	190

Log notes:

minor carbonate
½ to 1% cpy
patchy biotite
10-20% quartz
10% qz veins ≤ 1mm
5mm qz vein
Patchy biotite
≥ ½% cpy
2cm qz vein
1cm qz/carb/graphite
graphitic qz/carb vein
10% 1-5mm qz veins
1cm
15cm qz vein.
2cm qz, mag vein.
40cm moderate albite, actinolite (med. green)
2cm qz vein
minor diss cpy
20% qz veins ≤ 5mm
2cm irregular near verticle qz vein
minor diss cpy in qz, mag altn.
40cm qz, calcite vein 5% py
10% qz veins, minor pyrobitumen
~2% ≤ 1mm calcite veins
2cm qz vein, graphitic
1cm calcite + quartz
1% orange zeolites.

LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES:

dark grey
qz, mag, biotite
altered fine grained volcanic.

no biotite

decreasing qz, mag alteration; increasing carbonate.

198-199 – 20% orange/brown garnet? possible kspar

ROCK UNIT

HOLE NO. DDH-E-171

DRILL LOG

PROJECT **Island Copper**

CONTRACTOR OLYMPIC

DATE STARTED Aug 31/93 COMPLETED Sept 2/93

LOGGED BY Andrew McIntosh

T.D. 271'

INCLINATION

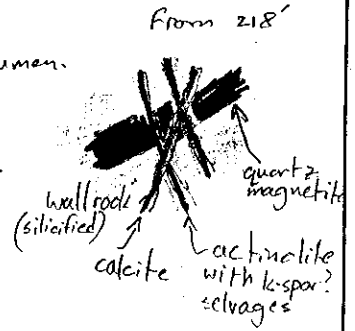
COORDINATES

SURVEY REFERENCES

COLLAR ELEVATION

BEARING

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A	B	S	C	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
200																trace				trace		3					60% quartz veins 2% py 2% pyrobitumen minor biotite minor cpy minor carb		
																											40% qz veins ≤ 2cm (one irregular near vert) vein		
210						?				trace	?									trace		3				210	1cm calcite with pyrobitumen. ← k-spar? garnet?	From 218'	
																											50cm intense qz-calcite alteration 5% py.		
220																										220	K-spar with actinolite overprinted by carbonate veins?		
																											strong magnetite		
																											2cm calcite breccia 1cm pyrobitumen.		
																trace				trace		2 to 3					minor carbonate w/ corrugate qz, mag amphibole, biotite.		
230																										230	same as 223-230		
																trace				trace		2 to 3					10-20% quartz veins ≤ 1cm		
																											10% qz-calcite veins with pyrobitumen minor biotite		
240																trace				trace		5				240	1cm intense SCC		
																											1cm carbonate vein		
																											10-20% ≤ 1cm qz. veins. 10cm 50% py		
250																										250	5cm qz vein 20% ≤ 2cm qz veins. ← minor biotite		
																trace				trace		3 to 5					1cm quartz-albite vein.		
260																											10% qz veins 5% calcite stringers.		



HOLE NO. DDH-E-171

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 31, 93 COMPLETED Sept 2 93
LOGGED BY Andrew McIntosh

T.D. 271 COLLAR ELEVATION
INCLINATION -1 BEARING
COORDINATES
SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A-L B	S P C	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 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
260																											
							?								face					3					30cm quartz vein 5% carbonate stringers. ≤ 1mm 50% quartz veins.	Increasing carbonate alteration ↓	
270																								270			
																									271' EOH		

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_171	18959.1	11472.0	1283.2

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	271.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
20.0	30.0	0.18	0.038	7.1	0.08	0.70	0.005	0.007	18484
30.0	40.0	0.12	0.006	4.2	0.10	0.60	0.004	0.005	18485
40.0	50.0	0.19	0.044	4.3	0.08	2.00	0.004	0.009	18486
50.0	60.0	0.30	0.010	5.6	0.11	1.40	0.002	0.007	18451
60.0	70.0	0.20	0.010	5.8	0.13	0.60	0.004	0.008	18487
70.0	80.0	0.19	0.019	16.4	0.11	0.50	0.003	0.008	18452
80.0	90.0	0.22	0.012	5.4	0.13	0.40	0.003	0.007	18488
90.0	100.0	0.21	0.015	5.9	0.10	0.50	0.004	0.007	18489
100.0	110.0	0.21	0.012	5.2	0.09	0.50	0.004	0.007	18490
110.0	120.0	0.23	0.012	4.6	0.11	0.50	0.004	0.005	18491
120.0	130.0	0.19	0.007	4.0	0.08	0.60	0.002	0.004	18453
130.0	140.0	0.26	0.012	6.6	0.11	0.60	0.004	0.007	18492
140.0	150.0	0.23	0.011	5.7	0.10	0.50	0.001	0.003	18454
150.0	160.0	0.23	0.010	7.2	0.13	0.50	0.004	0.005	18493
160.0	170.0	0.15	0.005	6.9	0.11	0.60	0.002	0.002	18455
170.0	180.0	0.16	0.006	7.3	0.07	0.40	0.004	0.007	18494
180.0	190.0	0.11	0.005	7.2	0.06	0.50	0.005	0.006	18495
190.0	200.0	0.09	0.005	6.3	0.06	0.40	0.004	0.006	18496
200.0	210.0	0.11	0.006	5.9	0.08	0.30	0.004	0.006	18497
210.0	220.0	0.06	0.002	5.9	0.06	0.30	0.005	0.005	18498
220.0	230.0	0.07	0.002	7.6	0.06	0.30	0.004	0.007	18499
230.0	240.0	0.07	0.003	6.9	0.04	0.20	0.004	0.005	18500
240.0	250.0	0.07	0.003	9.6	0.04	0.90	0.004	0.010	18501
250.0	260.0	0.07	0.003	8.5	0.04	0.40	0.004	0.007	18502
260.0	271.0	0.06	0.002	8.8	0.04	0.20	0.004	0.009	18503

RUSH

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: A/C DATE SENT: SEPT - 93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-171	50	60	.30	.010	5.6	.11	1.4	.002	.007	15	76
	70	80	.19	.019	1.64	.11	.5	.003	.008	15	B1

RUSH

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

REPORTED TO ALLAN REBUS SR 10Y 1/93 JS

LAB SENT TO: I/C DATE SENT: Sept 1/92 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-171	120	130	.19	.007	4.0	.08	.6	.002	.004	184530	
	140	150	.23	.011	5.7	.10	.5	.001	.003	184534	
	160	170	.15	.005	6.9	.11	.6	.002	.002	184535	

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 7/93 SENT BY/DEPT: Geol TYPE: Core (core / perc / other)
DATE REPORTED: _____ REPORTED BY: _____

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #		
E-171	20	30	.18	.038	7.1	.08	7	5	7	E184841	1	33
	30	40	.12	.006	4.2	.10	6	4	5	48542	2	34
	40	50	.19	.044	4.3	.08	2.0	4	9	48643	3	35
	60	70	.20	.010	5.8	.13	6	4	8	48744	4	36
	80	90	.22	.012	5.4	.13	4	3	7	48845	5	37
	90	100	.21	.015	5.9	.10	5	4	7	48946	6	38
	100	110	.21	.012	5.2	.09	5	4	7	49047	7	39
	110	120	.23	.012	4.6	.11	5	4	5	49148	8	40
	130	140	.26	.012	6.6	.11	6	4	7	49249	9	41
	150	160	.23	.010	7.2	.13	5	4	5	49350	10	42
	170	180	.16	.006	7.3	.07	4	4	7	49451	11	43
	180	190	.11	.005	7.2	.06	5	5	6	49552	12	44
	190	200	.09	.005	6.3	.06	4	4	6	49653	13	45
	200	210	.11	.006	5.9	.08	3	4	6	49754	14	46
	210	220	.06	.002	5.9	.06	3	5	5	49855	15	47
	220	230	.07	.002	7.6	.06	3	4	7	49956	16	48
	230	240	.07	.003	6.9	.04	2	4	5	50057	17	49
	240	250	.07	.003	9.6	.04	9	4	10	50158	18	50

ISLAND COPPER MINE

ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: I/C DATE SENT: Sept 7/93 SENT BY/DEPT: Geol TYPE: Core

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
171	250	260	.07	.003	8.15	.004	.004	.004	.007	185021	51
	260	271	.06	.002	8.88	.004	.002	.004	.009	185033	52

Keypunched Sept 7/93

ROCK QUALITY DESIGNATION

HOLE NO.: E-171 DATE: Sept. 2 /93 LOGGED BY: SV

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	INTERVAL CUMULATIVE	RECOVERY INCHES	RECOVERY %	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
22	26			42		4		
26	33			35		16		
33	~~40~~ 36			15		0		
36	40			45		0		
40	47			86		18		
47	56			103		10		
56	65			107		15		
65	67			18		0		
67	76			60		4		
76	77			11		0		
77	81			40		0		
81	84.5			43		0		
84.5	87			29		4		
87	97			108		0		
97	105			100		4		
105	108			29		4		
106	~~114~~			66		0		
114	117			26		5		
117	125			92		4		
125	127			20		0		
127	137			100		8		
137	145			110		5		
145	154.5			108		4		
154.5	164			116		10		
164	172.5			127		4		
172.5	184			131		19		
184	193			101		14		
193	198			70		4		
198	204.5			67		0		
204.5	212.5			110		5		
212.5	221			112		5		

ROCK QUALITY DESIGNATION

HOLE NO.: E-171 DATE: Sept. 3/93 LOGGED BY: noi

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
221	224.5			46		5		
224.5	227			36		0		
227	235			95		13		
235	244			120		19		
244	252			113		14		
252	257			62		4		
257	265			103		22		
265	271			78		4		

Keyed 270

MAGNETIC SUSCEPTIBILITY

LE NO. E-171 DATE Sept. 2/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
20-30						3.3
30-40						.07
40-50						.59
50-60						.99
60-70						3.6
70-80						10
80-90						4.7
90-100						3.4
100-110						7.9
110-120						5.5
120-130						3.1
130-140						2.9
140-150						3.2
150-160						8.2
160-170						6.6
170-180						5.3
180-190						3.1
190-200						4.9
200-210						.95
210-220						3.3
220-230						9.0
230-240						6.0
240-250						5.4
250-260						6.2
260-270						4.0

HOLE NO. DDH - E - 169

DRILL LOG

Page 1 of 1

PROJECT **Island Copper**

CONTRACTOR OLYMPIC

DATE STARTED August 29/93 COMPLETED August 30/93

LOGGED BY Andrew McIntosh

T.D. 300'

INCLINATION -90°

COORDINATES 19375.65E 10866.75N

COLLAR ELEVATION 1203.86

BEARING 0.0

SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A	B	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
								trace					weak	weak	trace									

LOG
SCALE 1" = 100'
BASIC GEOLOGY:
rock types, metallization, structures
alterations, one column system

0-20' CASING

10cm QFP dyke

5cm QFP dyke

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

20'-300'(EOH)
Quartz magnetite amphibole altered fine grained volcanic. ≥ 20% quartz and ≥ 10% magnetite. chalcopyrite for entire length, reaching 1% in 90' to 100'. Average cpy is < ½%. Minor biotite 20'-40'. Moderately SCC altered non magnetic volcanic (med. green) is present in the lower half of the hole, representing 3-5% of the rock. Minor visible Moly throughout. 5% carb-zeo in top 80'

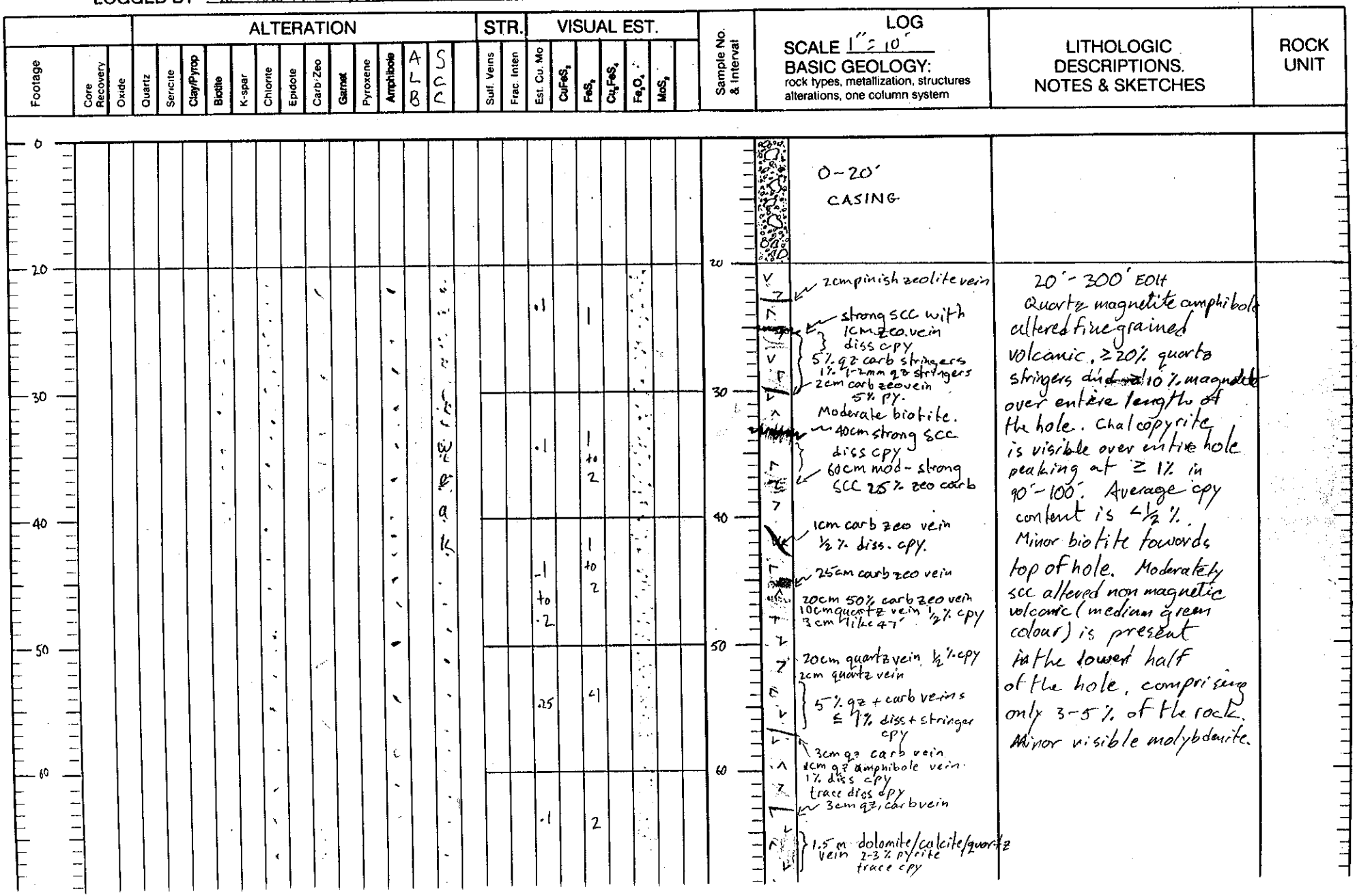
ROCK UNIT

HOLE NO. DDH-E-169

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 29/93 COMPLETED August 30/93
LOGGED BY Andrew McIntosh

T.D. 300'
INCLINATION -90°
COORDINATES 19375.65E 10866.75N
COLLAR ELEVATION 1203.86
BEARING 0.0
SURVEY REFERENCES



20'-300' EOH
Quartz magnetite amphibole altered fine grained volcanic, ≥ 20% quartz stringers did 10% magnetite over entire length of the hole. Chalcopyrite is visible over entire hole peaking at ≥ 1% in 90'-100'. Average cpy content is < ½%. Minor biotite towards top of hole. Moderately scc altered non magnetic volcanic (medium green colour) is present in the lower half of the hole, comprising only 3-5% of the rock. Minor visible molybdenite.

DRILL LOG

HOLE NO. DDH-E-169

PROJECT Island Copper

CONTRACTOR OLYMPIC

DATE STARTED August 29/93 COMPLETED August 30/93

LOGGED BY Andrew McIntosh

T.D. 300'

INCLINATION

COORDINATES

SURVEY REFERENCES

COLLAR ELEVATION

BEARING

LOG SCALE 1" = 10'

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

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	ALB	SCC	STR.: Suff. Veins	Frac Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval	LOG / BASIC GEOLOGY	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
70–80															Trace			.25 to .3		1				80	1cm carb-zeo vein; 30cm qz, carb, zeo } ≤1% cpy; 1-2cm orange zeo vein; 1-2% diss cpy		
80–90																		.35		<1				90	5mm carb zeo, minor hematite; ½% diss cpy; 20% qz veins; 2% diss cpy; visible Moly. in qz veins		
90–100																		.4		<1 / 1				100	1-2% disc cpy; 10-20% quartz stringers; 10cm QFP		
100–110															Trace			.2		<1				110	½% diss + stringer cpy; 10-20% quartz veins.; 40cm 50% qz, carb vein		
110–120																		.2		1				120	10-20% quartz stringers; minor carbonate		
120–																		.2		2					3cm qz vein trace cpy; 5% carb zeo veins ≤2cm; 5cm intense chlorite with gauge 10% py.; 1-2cm orange zeo		

DRILL LOG

HOLE NO. DDH-E-169

Page 3 of 5

PROJECT **Island Copper**

CONTRACTOR OLYMPIC

DATE STARTED August 29/93 COMPLETED August 30/93

LOGGED BY Andrew McIntosh

T.D. 300'

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	A	B	C	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
130																												
140																			.3+	1					140	1-2cm 1-2% cpy diss + vein 2cm qz/carb vein, 5% cpy 2cm qz vein 2-3% cpy 2% diss cpy.		
																										≤ ½% diss cpy		
																			.2	1						10% qz carb veins 5cm hem. stained aFP 5% primary biotite		
150																									150	15cm qz/carb/zeo.		
																										30cm 20% carb/zeo veins.		
																			.3	2 1						≤ 1% diss cpy		
160																									160	10% carb zeo over 30 cm.		
																			.1 to .2	1 to 2						5m intense qz, carb, zeo moderate magnetite minor cpy		
																										10% - 20% quartz and carb veins.		
170																									170	2cm carb zeo vein		
																				1 2						5% carb zeo veins over 40cm ½% diss cpy		
																			.1	to 3						20% quartz veins.		
180																									180	≤ 5% ≤ 1cm carb/zeo veins		
																			.1	2						50cm 60% qz 1% cpy		

HOLE NO. DDH-E-169

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 29/93 COMPLETED August 30/93
LOGGED BY Andrew McLeod

T.D. 300
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	A	B	C	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
			trace																.1 to .2				2 to 3		
																			.1				1		
																			.1 to .2				2		
																			.3				2		
																			.2 to .3				1		
																			.1				2		

LOG
SCALE 1" = 10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

190
200
210
220
230
240

20% quartz stringers minor carb zeo
½% diss cpy

1m 75% quartz flooding
≤ 1% cpy

1cm qz vein trace cpy
3cm qz vein minor carb. trace cpy
1-2cm 90% mag, 5% cpy 5% py
2cm like 201

5% qz/carb stringers

5% ≤ 6mm carb zeo ≤1% diss cpy stringers

80% quartz veining
5% py minor cpy

minor biotite
50% qz veins, 2-3% cpy

≤½% diss cpy

10cm like 222
highly fractured

20% qz stringers
1% diss + stringer py

3cm quartz vein
minor cpy
patchy biotite

10cm qz vein minor cpy

15cm qz vein like 243

40cm (no dereak chlorite after actinolite.

HOLE NO. DDH-E-169

DRILL LOG

Page 5 of 5

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 29/93 COMPLETED August 30/93
LOGGED BY Andrew McIntosh

T.D. 300'
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	A	S	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
250																									Strong actinolite 4% py		
																		.1 to .2		1 to 2					10% qz veins minor cpy		
260																								260	1% dis. py		
																		.1 to .2		1					← 4cm qz/carb vein minor cpy; 60% qz over 40cm ½% cpy; ½% diss. cpy		
270																								270	40cm qz vein minor cpy		
																		.1 to .2		< 1					2-3cm qz. vein ½% cpy; same as 272 } ≤ ½ cpy; same as 272 } diss and fracture coatings		
280																		.2		1				280	~ qz, albite mag. vein minor cpy.		
																									20% grey quartz veins with py, mag, cpy; 10% strong actinolite with chlorite (greenstone appearance) minor carbonate.		
290																		.1		1				290	same as 280 - 290 less cpy		
																									1cm carb zeo vein 30cm strong chlorite after actinolite		
300																								300	300' EOH		

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_169	19375.7	10866.8	1203.9

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	300.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
20.0	30.0	0.23	0.001	9.2	0.10	0.80	0.002	0.014	18410
30.0	40.0	0.20	0.001	7.2	0.07	0.20	0.003	0.028	18411
40.0	50.0	0.16	0.001	7.2	0.09	0.80	0.010	0.065	18412
50.0	60.0	0.18	<0.001	6.2	0.11	0.50	0.004	0.029	18413
60.0	70.0	0.17	0.002	5.3	0.08	0.80	0.003	0.007	18414
70.0	80.0	0.38	0.007	7.8	0.16	1.30	0.005	0.110	18415
80.0	90.0	0.29	0.004	8.2	0.14	0.90	0.002	0.008	18416
90.0	100.0	0.27	0.004	7.3	0.07	0.30	0.002	0.006	18417
100.0	110.0	0.24	0.003	8.1	0.12	1.00	0.002	0.027	18418
110.0	120.0	0.24	0.003	8.1	0.05	0.90	0.004	0.025	18419
120.0	130.0	0.23	0.002	6.5	0.06	1.20	0.004	0.035	18420
130.0	140.0	0.35	0.004	8.7	0.21	0.70	0.002	0.007	18401
140.0	150.0	0.16	0.002	6.4	0.08	0.40	0.002	0.004	18456
150.0	160.0	0.49	0.007	7.2	0.24	1.30	0.003	0.023	18402
160.0	170.0	0.33	0.002	4.9	0.10	0.70	0.002	0.051	18457
170.0	180.0	0.20	0.003	7.1	0.05	0.70	0.076	0.065	18403
180.0	190.0	0.14	0.002	6.8	0.06	0.40	0.002	0.015	18458
190.0	200.0	0.24	0.004	8.5	0.06	0.50	0.029	0.021	18404
200.0	210.0	0.17	0.002	6.7	0.04	0.40	0.002	0.097	18459
210.0	220.0	0.20	0.004	7.0	0.07	1.00	0.082	0.084	18405
220.0	230.0	0.20	0.002	9.5	0.08	0.30	0.003	0.012	18460
230.0	236.0	0.20	0.003	8.2	0.05	0.50	0.026	0.018	18406
236.0	240.0	0.17	0.002	8.8	0.05	0.30	0.002	0.024	18461
240.0	250.0	0.18	0.003	8.4	0.04	0.40	0.002	0.056	18462
250.0	260.0	0.19	0.004	9.4	0.06	0.80	0.002	0.039	18463
260.0	270.0	0.21	0.002	8.2	0.05	0.50	0.002	0.046	18464
270.0	280.0	0.22	0.001	7.5	0.12	<0.01	0.002	0.014	18465
280.0	290.0	0.22	0.001	10.6	0.09	0.30	0.002	0.094	18466
290.0	300.0	0.11	0.001	11.4	0.03	0.30	0.002	0.042	18467

ISLAND COPPER MINE

ASSAY REQUISITION AND REPORT FORM

Keyed Sept 16/93 D.

LAB SENT TO: I/C DATE SENT: Sept 13/93 SENT BY/DEPT: Geol TYPE: Core

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
6-169	20	30	.23	.01	9.2	.10	8	.2	.14	184101	29
	30	40	.20	.01	7.2	.07	12	.3	.28	11	30
	40	50	.16	.01	7.2	.09	8	.10	.65	12	31
	50	60	.18	.00	6.2	.11	5	.4	.29	13	32
	60	70	.17	.02	5.3	.08	8	.3	.7	14	33

45 46 47 48 49

Rush for John Fleming

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

Keyed Sept 16/05

LAB SENT TO: [illegible]
DATE SENT: [illegible]
DATE REPORTED:
SENT BY/DEPT: [illegible]
REPORTED BY:
TYPE:
(core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-169	130	140	35	38 004	87	21	7	002	007	18401	39
E-169	150	160	49	41 007	72	24	12	003	023	18402	40

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

Keyed Sept 16/93

LAB SENT TO: [illegible]
DATE SENT: [illegible]
DATE REPORTED:
SENT BY/DEPT: [illegible]
REPORTED BY:
TYPE: [illegible] (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-169	170	180	20	3	71	05	7	76	65	18403	41
	190	200	24	4	85	06	5	29	21	04	42
	210	220	20	4	70	07	10	82	84	05	43
	230	236	20	3	82	05	5	26	18	06	44

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

Keyed Sept 16/93 (8R).

LAB SENT TO: IC **DATE SENT:** Sept [illegible] /93 **SENT BY/DEPT:** [illegible] **TYPE:** ______

DATE REPORTED: ______ **REPORTED BY:** ______ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-169	70	80	38	007	78	16	13	005	110	18415	50
	80	90	29	004	82	14	9	004	008	41[illegible]	51
	90	100	27	004	73	07	3	002	006	41[illegible]	52
	100	110	24	003	81	12	10	002	027	418	53
	110	120	24	003	81	05	9	004	025	419	54
	120	130	23	002	65	06	12	004	035	4[illegible]	55
	140	150	16	002	64	08	4	002	004	18456	1
	160	170	33	002	49	10	7	002	051	457	2
	180	190	14	002	68	06	4	002	015	458	3
	200	210	17	002	67	04	4	002	097	459	4
	220	230	20	002	95	08	3	003	012	46[illegible]	5
	236	240	17	002	88	05	3	002	024	461	6
	240	250	18	003	84	04	4	002	056	462	7
	250	260	19	004	94	06	8	002	039	[illegible]	8
	[illegible]	[illegible]	21	002	82	05	5	002	046	464	9
	270	280	22	001	75	12	<01	002	014	465	10
	280	290	22	001	106	09	3	002	094	466	11
	290	300	11	001	114	03	3	002	042	467	12

[illegible signature]

Keypunched Sept 7/93 (BE)

ROCK QUALITY DESIGNATION

HOLE NO.: E-169 DATE: Sept 2/893 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSIT
20	27			70		6		
27	33			60		5		
33	40			80		8		
40	47			84		13		
47	54			82		8		
54	57			27		4		
57	67			115		21		
67	76			100		ø		
76	86			113		20		
86	97			106		14		
97	107			98		16		
107	117			95		20		
117	127			118		36		
127	136			85		10		
136	147			105		8		
147	157			117		5		
157	167			120		35		
167	177			115		8		
177	185			80		4		
185	189.5			56		9		
189.5	197			75		7		
197	201			48		8		
201	211			121		36		
211	219			~~60~~ 72		~~14~~ 13		
219	224			60		14		
224	230			65		5		
230	235			55		ø		
235	237			16		ø		
237	241			50		8		
241	243.5			30		ø		
243.5	247			35		ø		
247	251			50		14		

ROCK QUALITY DESIGNATION

HOLE NO.: E169 DATE: Sept 2/93 LOGGED BY: S. Oakley

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSI
251	261			122	~~135~~	15		
261	267			58		5		
267	277			124		34		
277	283			74		31		
283	287			48		ø		
287	294			84		16		
294	297			31		ø		
297	300			37		10		
EOH								

Keyed

MAGNETIC SUSCEPTIBILITY

LE NO. E-169 DATE Sept 1/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
20-30						10
30-40						3.5
40-50						3.6
50-60						5.8
60-70						2.9
70-80						12
80-90						6.9
90-100						10
100-110						6.4
110-120						9.6
120-130						4.2
130-140						7.1
140-150						6.1
150-160						6.0
160-170						5.8
170-180						5.4
180-190						6.1
190-200						7.2
200-210						9
210-220						4.9
220-230						12
230-240						10
240-250						8.9
250-260						8.8
260-270						10.0
270-280						11
280-290						13
290-300						7.0

DRILL LOG

HOLE NO. DDH-E-170

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 30/93 COMPLETED Aug 31/93
LOGGED BY Andrew McIntosh

T.D. 201'
INCLINATION -90°
COORDINATES 19124.10E 11131.25N
SURVEY REFERENCES —

COLLAR ELEVATION 1227.04
BEARING 0.0

Footage	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	ALB	SCC	Sulf. Veins	Frac. Inten	Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_5FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval	LOG SCALE 1" = 100' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
0–100								trace							trace										0-10' OVERBURDEN	0-130' and 154-201' EOH Quartz Magnetite, amphibole altered tuff. 10-20% magnetite ≥ 20% quartz. Trace biotite. Trace chalcopyrite reaching ≤ ½% in 100'-110'. Average 2-3% pyrite.	
100																								100	½% cpy		
100–200								weak trace							weak trace										QFP volcanic (0-130')	130'-154' QFP Medium grained quartz feldspar porphyry. Moderate sericite alteration of plag. 5% euhedral 1mm biotite + chlorite.. Weakly to moderately magnetic.	
200																								200	201' EOH		

HOLE NO. DDH-E-170

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 30/93 COMPLETED Aug 31 93
LOGGED BY Andrew McIntosh

T.D. 201'
INCLINATION -90°
COORDINATES 19124.10E 11131.25N
SURVEY REFERENCES —

COLLAR ELEVATION 1227.04
BEARING 0.0

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pytop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	A	B	SCC	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
0																										0–10' OVERBURDEN		
10															trace				trace	3 to 5						20 to 30% quartz veins ≤ 2cm. 5% carbonate and orange zeolites 3–5% py. trace cpy weak pervasive carbalfn.	Quartz Magnetite amphibole altered fine grained volcanic. 10 to 20% magnetite. Patchy carbonate alteration.	
20															trace					2 to 3						20–30% quartz veins 5% carbonate.		
30															trace					3 to 5						4cm quartz, calcite breccia vein 20% qz, carb veins 60% quartz breccia veins 10% carb. 5% py trace cpy 30–40% qz veins ≤ 15cm trace cpy minor carb		
40															trace					2 to 3						30cm moderate SCC 1% diss cpy over 5cm 10–20% qz veins 50% qz over 30cm minor diss cpy		
50															trace					<1								
60																												

HOLE NO. DDH-E-170

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 31/93 COMPLETED Sept 1
LOGGED BY Andrew McKnight

T.D. 201'
INCLINATION -1
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	A L B	S C C	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
60																									10% qz veins	Quartz, mag-amphibole altered lapilli tuff. Most volcanic features are obliterated.	
																									10cm intense SCC.		
																									10% qz veins minor carbonate stringers		
70																		trace	1					70	20cm qz vein.		
																									30cm 50% qz, carb, breccia vein		
80																		trace	≤1					80	½% diss. cpy trace moly		
																									10cm qz vein ∠ ½% diss cpy		
																									20% ≤ 1cm grey qz veins		
90																		trace	≤1					90	30cm qz vein 2% py trace cpy		
																									∠ ½% cpy		
																									30cm 20-30% fine grained actinolite. trace cpy		
100																		.1	2 to 3					100	60% qz veins ½-1% cpy		
																									10-20% qz veins ≤ ½% cpy		
110																		.1 to .2	1 to 2					110	QFP Fragments		
																		trace	1 to 2 ... <1						Approx. contacts QFP		
120																											

HOLE NO. VDH-E-170

DRILL LOG

PROJECT Island Copper
CONTRACTOR Olympic
DATE STARTED August 30/93 COMPLETED Aug 31/93
LOGGED BY Andrew McIntosh

T.D. 201'
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	A	L	S C C	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
120																												
130																			trace		2 to 3					20%-30% Qz stringers minor cpy		
140																			trace		1 to 2					30cm Qz, mag altered volcanic. trace cpy 1-2% carb. stringers ≤1mm 5% diss. and stringer magnetite	QFP. Quartz Feldspar Porphyry Moderate sericite alteration of plag. 5% euhedral 1mm biotite crystals. Weak to moderately magnetic.	
																			trace		1 to 2					60cm brecciated Qz, mag altered volcanic		
150																			trace		1 to 2 ... 5					See 132' to 140.5 trace cpy 2m rubble.		
																			trace		5					approximate contact. 2cm carbonate breccia vein.		
160																			trace		5					20%-30% Quartz veins 5% chloritic clots with < 20% pyrite.		
170																			.1		3 to 5					Same as 160-170 minor diss. cpy rubble 177-189		
180																												

HOLE NO. DDH-E-170

DRILL LOG

PROJECT **Island Copper**

CONTRACTOR OLYMPIC

DATE STARTED August 30/93 COMPLETED Aug 31/93

LOGGED BY Andrew McTaggart-Cowan

T.D. 201' COLLAR ELEVATION

INCLINATION -1- BEARING

COORDINATES

SURVEY REFERENCES

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A L B	S C C	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_9FeS_8	Fe_3O_4	MoS_2	Sample No. & Interval	LOG SCALE 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
180																									Rubble 177'-189'	Intensely quartz magnetite altered volcanic.	
																		1		3 to 5					QFP Fragments 40-60% quartz veins. minor diss cpy minor carbonate		
190																		1		3							
200																									201' EOH		

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_170	19124.1	11131.3	1227.0

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	201.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
10.0	20.0	0.12	0.004	8.0	0.05	0.40	0.007	0.091	1846
20.0	30.0	0.12	0.003	6.5	0.06	0.40	0.003	0.018	1846
30.0	40.0	0.13	0.005	8.6	0.05	0.40	0.003	0.022	1847
40.0	50.0	0.11	0.003	7.4	0.04	0.40	0.004	0.032	1847
50.0	60.0	0.09	0.003	7.9	0.03	0.30	0.004	0.017	1847
60.0	70.0	0.11	0.002	7.8	0.02	0.40	0.005	0.058	1847
70.0	80.0	0.10	0.002	9.1	0.02	0.30	0.005	0.038	1847
80.0	90.0	0.11	0.003	10.6	0.02	0.20	0.005	0.022	1847
90.0	100.0	0.13	0.003	10.0	0.03	0.50	0.004	0.111	1847
100.0	110.0	0.15	0.003	8.4	0.02	0.40	0.004	0.043	1847
110.0	120.0	0.07	0.002	5.8	0.01	0.30	0.004	0.059	1847
120.0	130.0	0.11	0.001	8.7	0.02	0.40	0.004	0.030	1847
130.0	140.0	0.07	<0.001	5.0	0.01	0.30	0.005	0.069	1848
140.0	150.0	0.05	0.001	6.3	0.01	0.30	0.004	0.032	1840
150.0	160.0	0.08	0.001	6.2	0.02	0.30	0.005	0.042	1848
160.0	170.0	0.12	0.002	12.3	0.03	0.40	0.003	0.046	1840
170.0	180.0	0.11	0.001	8.1	0.02	0.30	0.003	0.026	1848
180.0	190.0	0.12	0.002	6.7	0.02	0.10	0.002	0.019	1840
190.0	201.0	0.08	0.003	9.2	0.01	0.20	0.004	0.021	1848

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

Keyed Sept 16/93 (2)

LAB SENT TO: [illegible] DATE SENT: ~~SEPT~~ SEPT 3 93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo X10-3	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb X10-3	ZINC % Zn X10-3	TAG #	
E-170	10	20	.12	4	8.0	.05	4	7	0.11	184688	33
	20	30	.12	3	6.5	.06	4	3	0.18	69	34
	30	40	.13	5	8.6	.05	4	3	0.22	70	35
	40	50	.11	3	7.4	.04	4	4	0.32	71	36
	50	60	.09	3	7.9	.03	3	4	0.17	72	37
	60	70	.11	2	7.8	.02	4	5	0.58	73	38
	70	80	.10	3	9.1	.02	3	5	0.38	74	39
	80	90	.11	3	10.6	.02	2	5	0.23	75	40
	90	100	.13	3	10.0	.03	5	4	1.11	76	41
	100	110	.15	3	8.4	.02	4	4	0.43	77	Jan 4/94
	~~110~~	~~120~~								~~78~~	
	~~120~~	~~130~~								~~79~~	
	~~130~~	~~140~~								~~80~~	
	~~140~~	~~150~~								~~81~~	
	~~150~~	~~160~~								~~82~~	
	~~160~~	~~170~~								~~83~~	
	~~170~~	~~180~~								~~84~~	
	~~180~~	~~190~~								~~85~~	

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

Keyed Sept 16/93 (SR)

LAB SENT TO: ALS DATE SENT: Sept 14/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-170	110	120	.07	.02	5.18	.01	.3	.04	.59	184786	#13
	120	130	.11	.01	8.17	.02	.4	.04	.30	79	#14
	130	140	.07	.00	5.10	.01	.3	.05	.69	80	#15
	~~140~~	~~150~~					.3			~~81~~	
	150	160	.08	.01	6.12	.02	.3	.05	.42	81	#16
	170	180	.11	.01	8.11	.02	.3	.03	.26	82	#17
	190	201	.08	.03	9.12	.01	.2	.04	.21	83	#18

RUSH

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

Keyed Sept 16/93 (SD)

LAB SENT TO: "C" DATE SENT: AUG 31 '93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-170	180	190	.12	.002	6.7	.02	1	.002	.019	184107	30
	165	175	.12	.002	12.3	.03	4	.003	.046	08	31
	140	150	.05	.001	6.3	.01	3	.004	.032	09	~~32~~

Keymarked Sept 7/93 (88)

ROCK QUALITY DESIGNATION

HOLE NO.: E-170 DATE: Sept. 2 /93 LOGGED BY: NOL

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSITY
10	15			10		4		
15	26			92		46		
26	36.5			91		48		
36.5	46			68		5		
46	47			17		4		
47	57			102		29		
57	66			103		0		
66	69			21		0		
69	77			71		6		
77	81.5			56		6		
81.5	83			10		0		
83	87			47		5		
87	90			36		0		
90	93			34		9		
93	95			27		6		
95	98			37		4		
98	101			18		5		
101	106			59		15		
106	115			125		53		
115	124			116		13		
124	134			127		32		
134	137			35		9		
137	142.5			/		/	SPLIT	
142.5	143.5			/		/	"	
143.5	145.5			/		/	"	
145.5	157			/		/	"	
157	164			/		/	"	
164	167			/		/	"	
167	172.5			/		/	"	
172.5	174			23		7		

ROCK QUALITY DESIGNATION

HOLE NO.: E-170 DATE: Sept. 2/93 LOGGED BY: NOL

FOOTAGE (FT) FROM	TO	INTERVAL INCHES	CUMULATIVE	RECOVERY INCHES	%	TOTAL CUM. PIECES ≥ 4"	RQD %	FRACTURE INTENSIT
174	177			30		4		
177	187			60		0		
187	191			31		0		
191	196			39		7		
196	197			17		10		
197	201			48		13		

Kayak

NPL

MAGNETIC SUSCEPTIBILITY

LE NO. E-170

DATE SEPT. 2/03

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
10 - 20						4.1
20 - 30						3.0
30 - 40						5.5
40 - 50						7.0
50 - 60						8.7
60 - 70						10
70 - 80						6.9
80 - 90						12
90 - 100						11
100 - 110						10
110 - 120						5.4
120 - 130						10
130 - 140						4.9
140 - 150						4.4
150 - 160						5.8
160 - 170						14
170 - 180						9.6
180 - 190						5.2
190 - 200						19

HOLE NO. DDH-E 168 / **DRILL LOG** Page 1 of 6

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 27/93 COMPLETED August 28/93
LOGGED BY Andrew McIntosh

T.D. 300' COLLAR ELEVATION 1240.22
INCLINATION -90° BEARING 0.0
COORDINATES 19382.25E 11215.55N
SURVEY REFERENCES —

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole			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 1" = 100' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
																									0-25' OVERBURDEN		
100		trace		trace																				100		25'-85' Medium to dark grey green crystal ash tuff. Most original vole. features have been obliterated by moderate to strong scc, albite, and carbonate alteration. ≤ 10% quartz, carbonate, and zeolite veins. Moderately magnetic, Minor Epidote. Trace to ½ % chalcopyrite. 1 to 3% pyrite.	
200		trace		trace																				200		85'-170' Quartz magnetite amphibole ± biotite altered Fine grained vole. 1 to 3% pyrite. Up to 1% chalcopyrite but ½ % is more common.	
300																								300		170' - 220 similar to 25'-85' 220 - 300 (EOH) similar to 85'-170'	

HOLE NO. DDH-E-168 DRILL LOG Page 1 OF 5

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 27/93 COMPLETED August 28/93
LOGGED BY ANDREW McINTOSH

T.D. 300' COLLAR ELEVATION 1240.22
INCLINATION -90° BEARING 0.0
COORDINATES 19382.25E 11215.55N
SURVEY REFERENCES —

Footage	Core Recovery	Oxide	ALTERATION: Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb/Zeo	Garnet	Pyroxene	Amphibole	A L B	S C C	STR.: Sulf. Veins	Frac. Intens	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_2O_3	MoS_2	Sample No. & Interval	LOG SCALE 1"=10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
25																									OVERBURDEN 0-25'		
30																		<2		2 to 3					<1% diss. cpy 2cm calcite vein 5-10% qz, carb, zeo stringers and ≤2cm veins 10cm qz albite vein 05% cpy, ep 5cm same as 33' trace cpy 3cm qz albite vein trace cpy Trace diss. cpy 15cm qz/albite vein, 5% cpy, ep 5% 1-5mm qz/carb/zeo stringers.	Medium to dark grey green crystal ash tuff. Most original volcanic features have been obliterated by moderate to strong scc, albite, and carbonate alteration. Abundant qz, carb, zeo veins (≤10%). Moderately magnetic. Minor epidote mostly confined to qz veins.	25-85'
40																		.2		1 to 2							
50																		.2		1 to 2					40cm intense quartz-carbonate alteration 5mm strong sericite. 54.5-59 2½% diss + stringer cpy 5-10% qz+carb stringers. ≤1mm mag. stringers. 10cm qz vein 5% py trace cpy Trace diss cpy 20cm same as 62.5'	Increasing carb zeo veins ↓	
60																		.1		1 to 2							
70																											

HOLE NO. DDH-E-168 DRILL LOG Page 2 of 5

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED August 27/93 COMPLETED August 28/93
LOGGED BY Andrew McIntosh

T.D. 300'
INCLINATION 90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb-Zeo, Garnet, Pyroxene, Amphibole, A, B, C

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 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

Footage	Est. Cu. Mo	FeS_2	Sample No. & Interval	BASIC GEOLOGY	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
70	trace	2 to 3		5 Ft intense q$_z$-carbonate altn trace diss. cpy 3 Ft		25-85
80			80	≤ 1½ % diss cpy 2 Ft like 80'	decreasing quartz carbonate alteration	
90	.1 to .2	1 to 2	90	trace cpy in ≤ 1-2% q$_z$ stringers		85-170
100	.3	1 to 2	100	1-2% q$_z$-carb stringers ≤ 1% diss. cpy 1-2% mag-stringers minor biotite 1cm strong sericite 2% 1-2mm q$_z$/calcite veins - trace cpy - minor diss. cpy 30cm 20% magnetite ≤½% cpy	Unit 85-170 Quartz magnetite biotite amphibole altered fine grained volcanic 5-10% magnetite in stringers and disseminations. Minor green amphibole stringers. Abundant chalcopyrite upto 1% over several feet. ≤ ½ % cpy is common. Abundant quartz stringers and silica flooding. Biotite is only found in patches and is not pervasive.	
110	.1 to .2	2	110	3cm q$_z$, py vein 15% py 3% cpy ≤ 10% magnetite ≤ ½ % diss. cpy moderate biotite	Increasing biotite and magnetite. ↓ Actinolite? stringers	
120	.1 to .2	2 to 3	120	Same as 110 to 120 5cm grey q$_z$ vein 1% cpy - diss.		
130						

HOLE NO. QDH-E-168

PROJECT Island Copper
CONTRACTOR OLYMPIC
DATE STARTED August 27/93 COMPLETED August 28/93
LOGGED BY Andrew McIntosh

T.D. 300'
INCLINATION 90°
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	A L B	S C C	STR.: Sulf. Veins	Frac. Inten	VISUAL EST.: Est. Cu. Mo	$CuFeS_2$	FeS_2	Cu_2FeS_4	Fe_3O_4	MoS_2	Sample No. & Interval
130																								
140																		trace		1 to 2				
150																		.1 to .2		1				
160																		.1		1				
170																		.1 to .2		2 to 3				
180																		.1 to .2		2 to 3				
190																								

LOG
SCALE 1" = 10'
BASIC GEOLOGY:
rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

Same as 110 to 120

← 60cm grey qz vein. 5% py 1% cpy

5cm qz vein 5% cpy
trace diss cpy

← 40cm pale green with 5% carb stringers

← 1cm qz, mag vein 5% cpy

trace diss, cpy

3-5% ≤5mm qz stringers

1cm calcite.

≤ ½% disseminated chalcopyrite

← 3cm qz vein trace cpy

≤ ½% diss and stringer cpy. Moderate silica flooding. Abundant dark green amphibole.

Grey quartz veins ≤ 3cm ≤ 1% cpy 2-3% mag minor diss. py

← 15cm carbonate vein minor py

3-5% ≤5mm carb stringers. Equal amounts of grey quartz stringers

≤ ½% disseminated and vein cpy
10-20% quartz stringers
2-3% carbonate stringers.

decreasing qz, amph, mag, biotite alteration

↓

No biotite 170 – 220

Increasing carbonate content

↓

85-170

170-220 similar to 25-85

HOLE NO. DDH-E-168 **DRILL LOG** Page 4 of 5

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 27/93 COMPLETED August 28/93
LOGGED BY Andrew McIntosh

T.D. 300'
INCLINATION 90°
COORDINATES
SURVEY REFERENCES

COLLAR ELEVATION
BEARING

ALTERATION: Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb/Zeo, Garnet, Pyroxene, Amphibole, A-B-C

STR.: Sulf. Veins, Frac. Inten

VISUAL EST.: Est. Cu Mo, $CuFeS_2$, FeS_2, Cu_3FeS_3, Fe_2O_3, MoS_2

Footage: Core Recovery, Oxide

Sample No. & Interval

LOG
SCALE 1" = 10'
BASIC GEOLOGY: rock types, metallization, structures alterations, one column system

LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES

ROCK UNIT

Footage	Est. Cu Mo	FeS_2	Sample No. & Interval	BASIC GEOLOGY	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES
190	trace	2 to 3		20% carbonate veins ≤ 5cm	decreasing carbonate ↓ Increasing Quartz magnetite amphibole alteration (QMA) 220 – EOH (300)
200	trace	2 to 3	200	10-20% carbonate veins ≤ 5cm; 3cm qz vein 1% cpy; 10% qz-carb stringers ≤ 1cm minor diss cpy	
210	trace	3 to 5	210	60cm quartz breccia vein 60% qz, mag, amph. altered volcanic, minor carb. trace cpy; 40cm same as 207'; 10cm carbonate vein; 1cm dolomite vein; 30cm quart/carb breccia 50% volc frags. moderate sec 10% py 10-20% qz veins and carb veins	
220	.1	3 to 5	220	quartz carbonate altered lapilli tuff. Some fragment altered to qz, mag, py, cpy. moderate sec	
230	.2	2	230		coarse angular ash supported volcanic breccia. Weak-patchy pervasive carbonate alteration of albite altered ash matrix Strong quartz, amphibole, magnetite alteration of angular Fragments (50%). Weak disseminated cpy and py throughout. 3-5% ≤1cm carbonate + quartz veins → post QMA alteration.
240	.1	1 to 2	240	20 cm volcanic block QMA altered minor cpy; 30cm intersection of strongly magnetic volc block 30-40% mag. ≤ ½% cpy	
250					

Weak pervasive

HOLE NO. DDH-E 168

DRILL LOG

PROJECT **Island Copper**
CONTRACTOR OLYMPIC
DATE STARTED August 27/93 COMPLETED August 28/93
LOGGED BY Andrew McIntosh

T.D. 300'
INCLINATION 90°
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	A	S	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 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
250																											
260								weak		weak					v. weak			.1	1	1				260	Strong QMA ≤30% mag minor carb stringers. 5-10% qz veins ≤1cm ← 2cm qz vein, 5% mag ≤1cm qz vein	See bottom of p 4 minor disseminated cpy (≤ 1/2 %)	
270								weak							weak			trace		1				270	Same as 250-260 minor epidote ← 30cm qz, carbonate breccia vein. 15cm >50% magnetite. 5cm like 2 of 10% py trace cpy ← 10cm qz carb. breccia minor sulphides. ≥ 50% mag over 30 cm 1/2 % cpy		
280															trace			trace		1				280	≤ 50% magnetite		
290															trace			trace		<1				290	3cm calcite vein 2cm quartz vein trace cpy		
300															trace			trace		1				300	2cm calcite breccia vein 20cm calcite stockwork		

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_168	19382.3	11215.6	1240.2

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	300.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
25.0	30.0	0.17	0.008	6.9	0.05	0.90	0.003	0.071	1840
30.0	40.0	0.16	0.009	5.1	0.08	1.10	0.002	0.056	1842
40.0	50.0	0.26	0.008	7.6	0.06	1.20	0.004	0.051	1839
50.0	60.0	0.21	0.008	6.6	0.11	0.90	0.008	0.020	1839
60.0	70.0	0.22	0.008	5.8	0.13	1.10	0.003	0.023	1842
70.0	80.0	0.22	0.008	7.8	0.08	1.60	0.022	0.053	1842
80.0	90.0	0.19	0.008	7.4	0.09	3.30	0.030	0.105	1842
90.0	100.0	0.25	0.012	6.7	0.12	1.00	0.004	0.012	1839
100.0	110.0	0.26	0.015	7.5	0.09	0.90	0.003	0.046	1842
110.0	120.0	0.19	0.012	8.1	0.11	0.60	0.002	0.019	1842
120.0	130.0	0.17	0.008	8.3	0.09	0.30	0.002	0.012	1842
130.0	140.0	0.21	0.007	7.0	0.11	0.90	0.002	0.010	1842
140.0	150.0	0.17	0.005	6.7	0.10	0.60	0.001	0.008	1842
150.0	160.0	0.14	0.008	5.8	0.06	0.60	0.001	0.009	1843
160.0	170.0	0.16	0.006	7.2	0.07	0.50	0.002	0.009	1843
170.0	180.0	0.12	0.002	7.4	0.06	0.40	0.003	0.007	1843
180.0	190.0	0.06	0.003	9.0	0.02	0.40	0.003	0.007	1843
190.0	200.0	0.07	0.004	6.0	0.04	0.40	0.002	0.006	1843
200.0	210.0	0.08	0.004	6.7	0.04	0.50	0.002	0.006	1843
210.0	220.0	0.08	0.004	5.7	0.05	0.50	0.002	0.009	1843
220.0	230.0	0.07	0.005	5.5	0.04	0.40	0.002	0.007	1843
230.0	240.0	0.10	0.004	6.1	0.07	0.40	0.003	0.010	1843
240.0	250.0	0.10	0.007	6.5	0.04	0.40	0.002	0.014	1843
250.0	260.0	0.13	0.004	9.7	0.07	0.30	0.002	0.012	1844
260.0	270.0	0.06	0.001	8.3	0.04	0.10	0.001	0.008	1844
270.0	280.0	0.07	0.002	9.2	0.02	0.20	0.002	0.011	1844
280.0	290.0	0.05	0.002	11.8	0.02	0.10	0.001	0.014	1844
290.0	300.0	0.03	0.001	13.0	<0.01	0.20	0.002	0.018	1844

RUSH

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

AR

LAB SENT TO: E-155 DATE SENT: AUG. 28/93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu std, .43	MOLY % Mo std, .032	IRON % Fe std 6.3	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb .0400	ZINC % Zn .0400	TAG #	
E-168	40	50	.26	.008	7.3	.06	1.2	.004	.051	183971	12
	50	60	.21	.008	6.6	.11	.9	.008	.020	98	13
	90	100	.25	.012	6.7	.12	1.0	.004	.012	99	14

ISLAND COPPER MINE

ASSAY REQUISITION AND REPORT FORM

AR

LAB SENT TO: I/C DATE SENT: AUG 30 93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #		
E-1688	250	300	.17	.008	6.99	.005	.09	.003	.071	184600	1	49
	300	400	.16	.009	5.91	.008	.11	.002	.056	184201	2	50
	600	700	.22	.008	5.98	.013	.11	.003	.023	22	3	51
	700	800	.22	.008	7.18	.008	.16	.022	.053	23	4	52
	800	900	.19	.008	7.14	.009	.33	.030	.105	24	5	53
	1000	1100	.26	.015	7.75	.009	.09	.003	.046	25	6	54
	1100	1200	.19	.012	8.11	.011	.06	.002	.019	26	7	55
	1200	1300	.17	.008	8.13	.009	.03	.002	.012	27	8	56
	1300	1400	.21	.007	7.10	.011	.09	.002	.010	28	9	57
	1400	1500	.17	.005	6.17	.010	.06	.001	.008	29	9	
	1500	1600	.14	.008	5.18	.006	.06	.001	.009	30	10	
	1600	1700	.16	.006	7.12	.007	.05	.002	.011	31	11	
										32		
										33		
										34		
										35		
										36		
										37		

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

AR

LAB SENT TO: I/C DATE SENT: 4/06 31 '93 SENT BY/DEPT: GEOL TYPE: CORE

DATE REPORTED: _____ REPORTED BY: _____ (core / perc / other)

HOLE #	FROM (ft / m)	TO	COPPER % Cu	MOLY % Mo	IRON % Fe	GOLD ppm Au	SILVER ppm Ag	LEAD % Pb	ZINC % Zn	TAG #	
E-168	170	180	.12	.02	7.4	.06	.4	.3	.7	184332	15
	180	190	.06	.03	9.0	.02	.4	.3	.7	33	16
	190	200	.07	.04	6.0	.04	.4	.2	.6	34	17
	200	210	.08	.04	6.7	.04	.5	.2	.6	35	18
	210	220	.08	.04	5.7	.05	.5	.2	.9	36	19
	220	230	.07	.05	5.5	.04	.4	.2	.7	37	20
	230	240	.10	.04	6.1	.07	.4	.3	1.0	38	21
	240	250	.10	.07	6.5	.04	.4	.2	1.4	39	22
	250	260	.13	.04	9.7	.07	.3	.2	1.2	40	23
	260	270	.06	.01	8.3	.04	.1	.1	.8	41	24
	270	280	.07	.02	9.2	.02	.2	.2	1.7	42	25
	280	290	.05	.02	11.8	.02	.1	.1	1.4	43	26
	290	300	.03	.01	13.0	<.01	.2	.2	1.8	44	27

Keyed SR

MAGNETIC SUSCEPTIBILITY

LE NO. E-168 DATE _____

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVA AVERAGE
25-30						3.3
30-40						1.4
40-50						3.4
50-60						3.7
60-70						4.9
70-80						.32
80-90						6.1
90-100						3.1
100-110						9.2
110-120						10
120-130						9.7
130-140						7,0
140-150						? K as C
150-160						
160-170						
170-180						
180-190						9.2
190-200						6
200-210						5.5
210-220						3.0
220-230						3.5
230-240						11
240-250						13
250-260						14
260-270						16
270-280						15
280-290						18
290-300						18

APPENDIX I

ISLAND COPPER
ASSAY LABORATORY PROCEDURES

Island Copper Mine
Drill Core Assaying Procedures

Sample Preparation:

Split cores are received in the laboratory and the whole sample received is crushed to 95% less than 2 cm using a jaw crusher. A one quarter fraction of this material is obtained using a Jones riffle splitter (2 passes). This fraction is then dried for 2 hours at 150 ^{o}C and crushed to 95 % less tham .5 cm using a cone crusher and split again to 1/16 of the original sample using a Jones riffle splitter (2 more passes). This fraction is then pulverized to 95% less than 150 mesh using a Bico plate pulverizer and placed in a tin top sample bag for assay.

Base Metals;

Drill core samples are analysed for Copper, Molybdenum, Iron, Lead and Zinc as follows.

1) 2.5 g of sample is weighed into a 250 ml digesting flask, pulp standards of similar matrix are carried along with the samples.

2) Samples are digested with 10 ml Nitric acid, 10 ml Hydrochloric acid and 7 ml Perchloric acid on a bare (300 ^{o}C) hotplate until they cease to evolve NO_2 fumes (5 minutes) then 20 ml of a solution of 2 % $AlCl_3$ in 50 % Hydrochloric acid is added and the samples are digested a further 5 minutes.

3) Samples are cooled, bulked to 250 ml with deionized water and shaken then allowed to settle.

4) Base metal levels are measured using flame Atomic Absorption Spectometry (A.A.S.).

Precious Metals;

Drill cores are analysed for Gold and Silver using the following method.

1) 5.0 grams of sample is weighed into 250 ml digesting flasks. Pulp standards are carried along with samples.

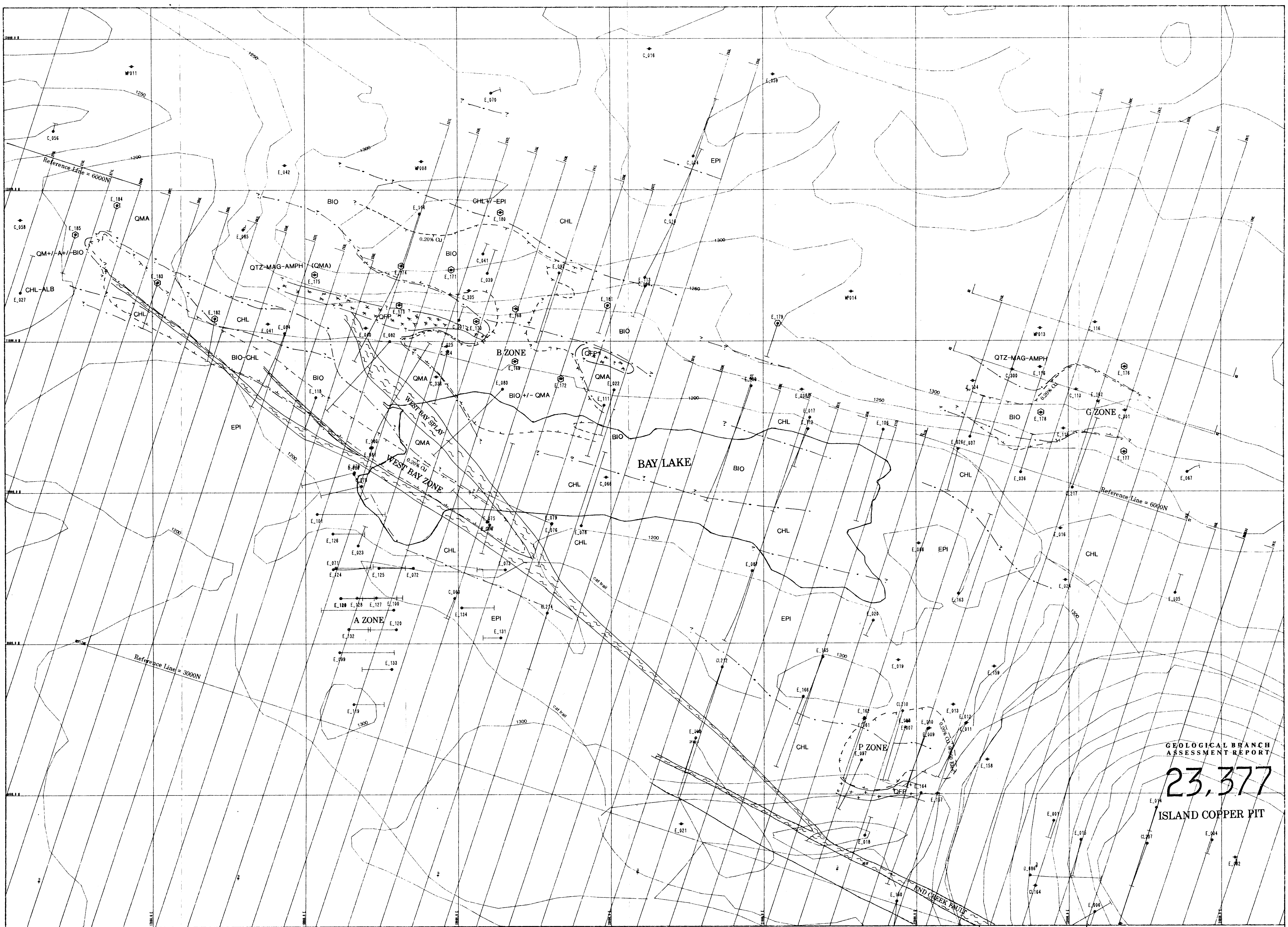
2) 20 ml of Nitric acid is added to the samples and they are allowed to stand at room temperature for 30 minutes. Then 80 ml of Hydrochloric acid is added and the samples are allowed to stand at room temperature for a further 30 minutes. Samples are then boiled on a padded hotplate (150 ^{o}C) for 30 minutes.

3) Samples are cooled and bulked to 250 ml with deionized water then shaken and allowed to settle.

4) This solution is analysed for silver using heated graphite atomization A.A.S..

5) 50 ml of the digest is measured in a 250 ml flask containing 20 ml of Methyl Isobutyl Ketone (MIBK). These flasks are stoppered and shaken mechanically for 3 minutes. The samples are then bulked till the MIBK is near the top of the flask with 10 % Hydrochloric acid and shaken manually for 15 seconds to back extract iron from the MIBK.

6) The MIBK layer is then analysed for gold using heated graphite atomization A.A.S.



Quartz-Feldspar Porphyry

1993 Drill Holes

Island Copper Mine
P.O. Box 370
Port Hardy, BC
V0N 2P0

DATE: 05/18/94 TIME: 09:31:52

BHP Minerals Canada Ltd.

DRILL HOLES - B, G AND WEST BAY ZONES
ALTERATIONS AND 0.20% Cu CONTOUR AT 1140 ELEV
EXCLUDES A ZONE "C" HOLES

FIGURE 7

SCALE(HORIZONTAL) 1":200' SCALE(VERTICAL) 1":200'