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GEOLOGICAL BRANCH
ASSESSMENT REPORT

22,926

1. INTRODUCTION

Between the 11th of January and the 20th of February, 1993, ten diamond drill holes (Table 1) totalling 2662.3 meters (8734.5 feet) were drilled immediately to the west of the Island Copper pit. The program was designed to test for $\geq 0.20\%$ Cu grade porphyry copper type mineralization in three target areas 1) the P-Zone, 2) the area between the P-Zone and the G-Zone, and 3) south of the End Creek Fault. The P-Zone contained a known deposit of copper-molybdenum-gold(?) mineralization that required further drill testing to determine the economic viability. The other two areas were considered of low potential, but worthy of drill testing due to their proximity to the pit.

2. LOCATION AND ACCESS

The survey area (Figures 1 & 2) is located on the north shore of Rupert Inlet in the Nanaimo Mining Division. It falls on NTS map sheet 92L/11E with co-ordinates $50^{\circ} 36'$ and $127^{\circ} 31'$.

Access to the area is by way of paved road from Port Hardy located some 18 km to the north, and by logging roads and dozer trails to the drill sites.

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 125 meters. The drill area lies immediately west of the Island Copper open pit on Mineral Leases #250 and #253 owned by BHP Minerals Canada Ltd. and Gordon Milbourne (Figure 3).

5. EXPLORATION HISTORY

The Island Copper porphyry copper-molybdenum-gold deposit was discovered in 1967 and exploitation of the deposit by open-pit mining has taken place since late 1971. The deposit occurs mainly in hydrothermally altered, crackled and brecciated basalt tuffs of the lower Jurassic Bonanza Volcanics where intruded by 180 million year old rhyodacite porphyry dykes of the Island Plutonic Suite.

Exploration activity in 1966 through 1969 in the area that led to the discovery of the deposit also delineated mineralization in the A, B, G and P Zones around Bay Lake (Figure 4). Results of drilling these targets since their discovery has been reported in various papers, assessment reports and internal company reports.

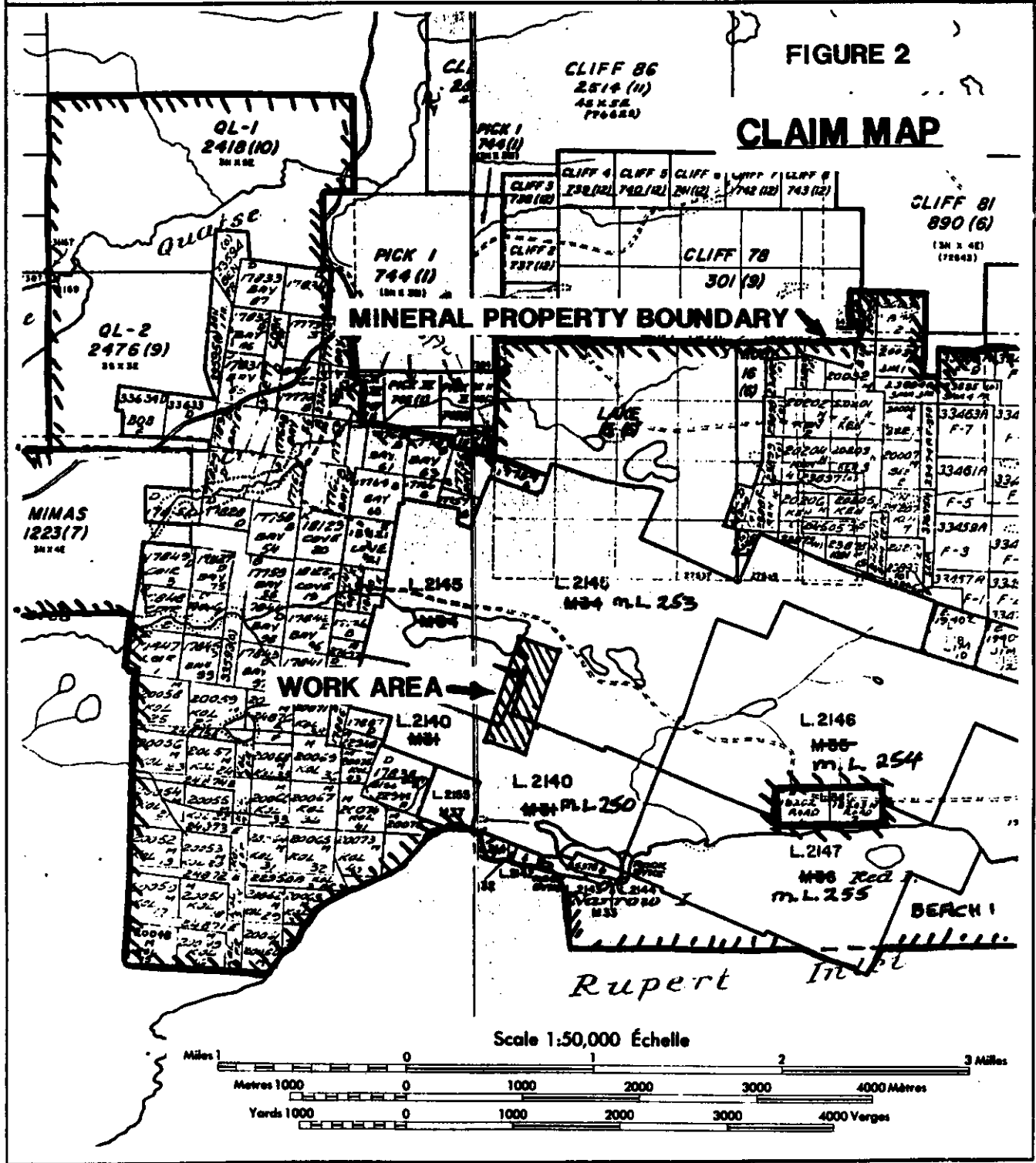
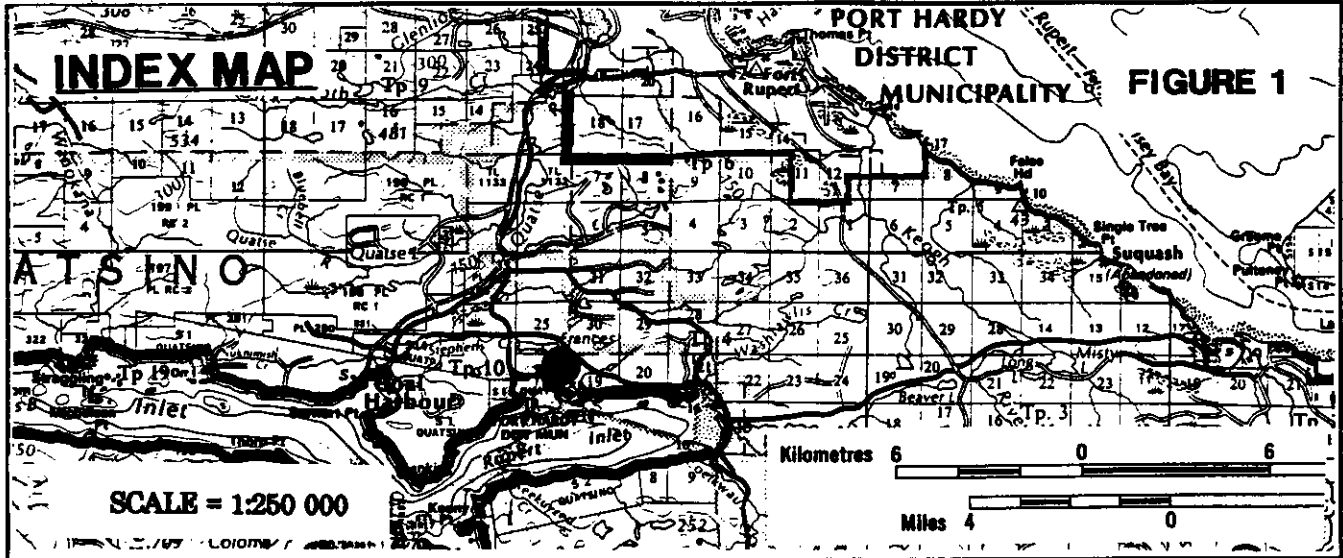
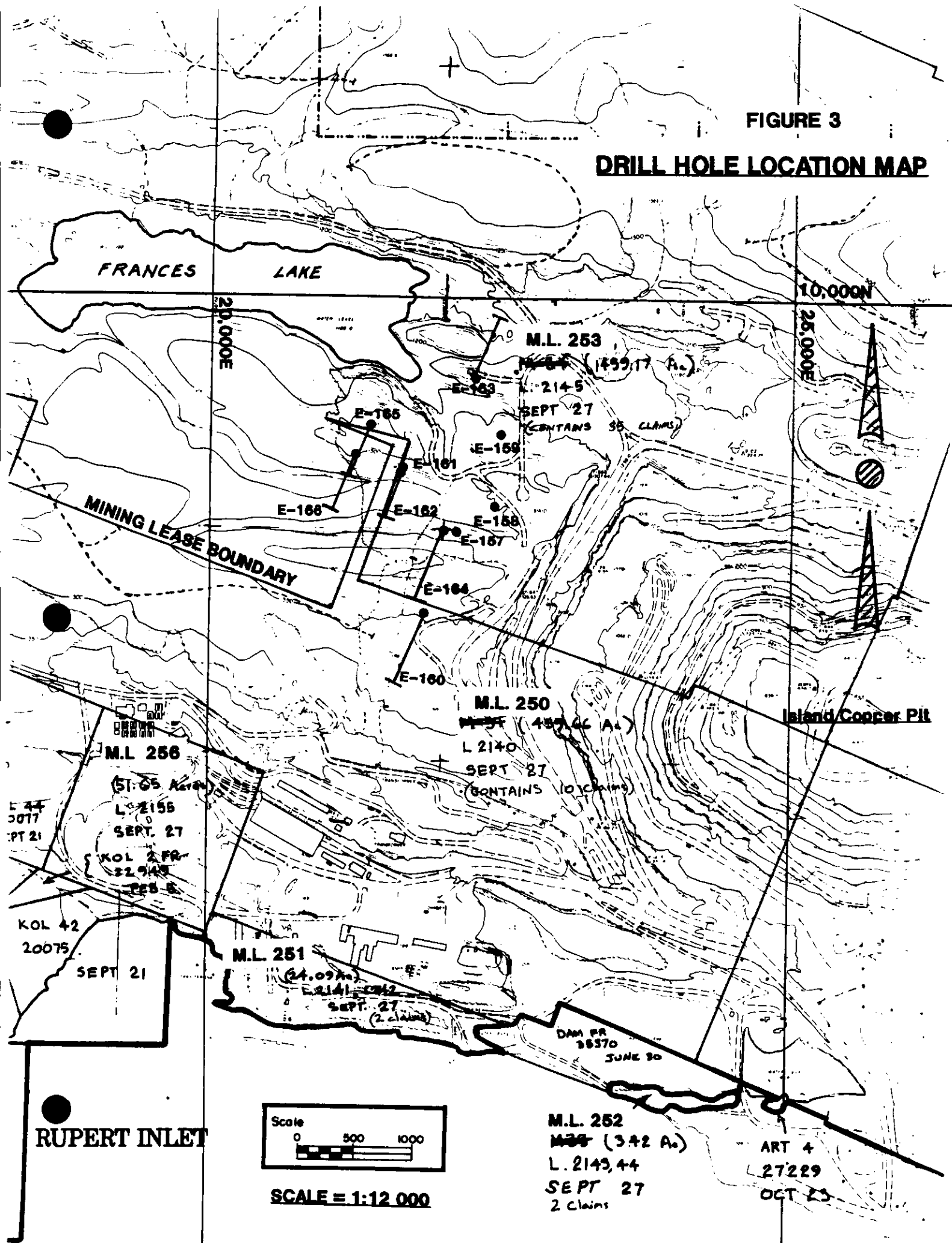
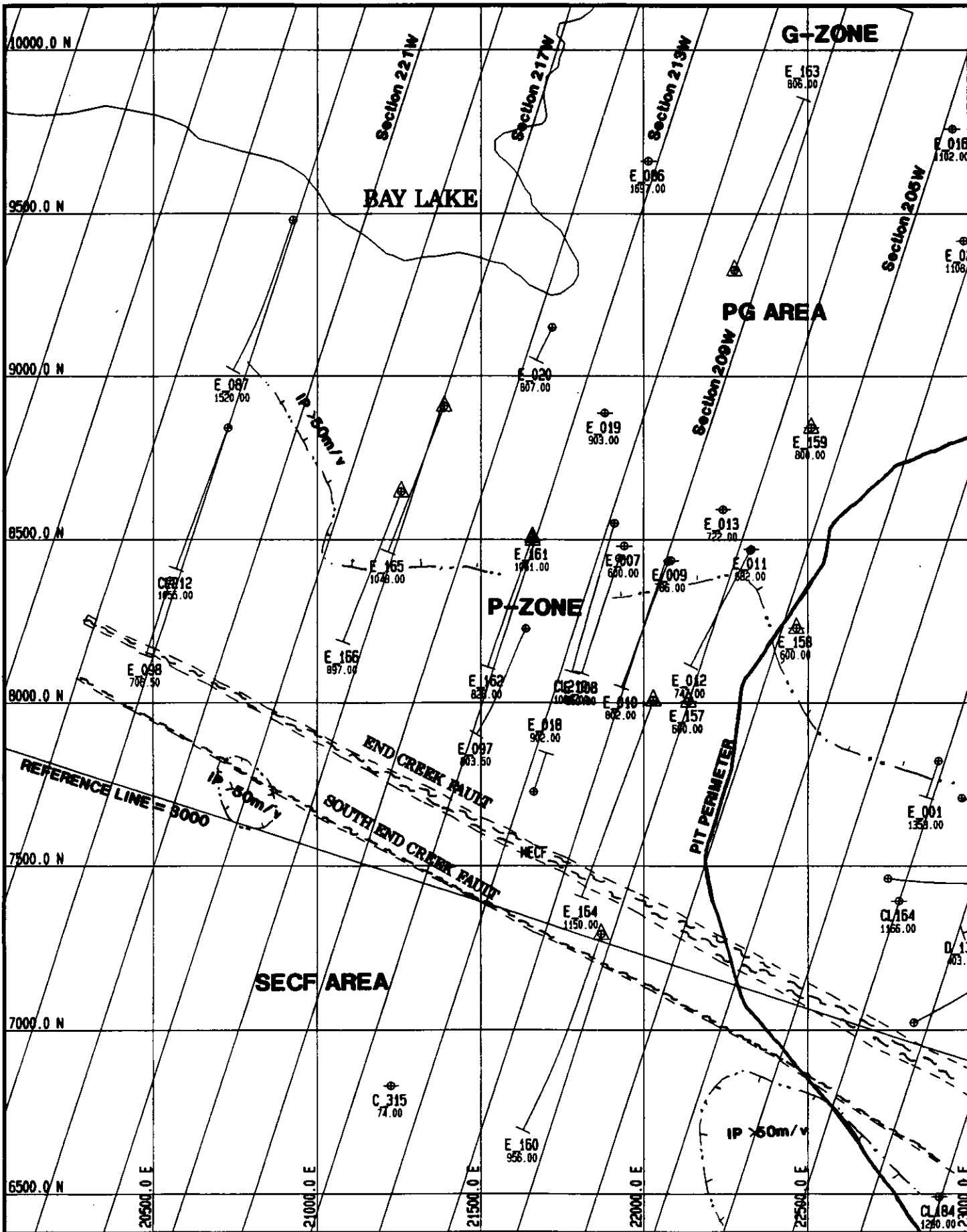


FIGURE 3

DRILL HOLE LOCATION MAP





BHP Minerals Canada Ltd.

P.O. Box 370
Port Hardy, BC
V0N 3P0

DATE: 04/06/93 TIME: 00:52:45

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

**WEST END DIAMOND DRILLING
Location Map**

F.Y. 1993 Holes as Triangles

Figure 4

6. OBJECTIVES

P-Zone

The P-Zone (Figure 5) contains a small porphyry copper deposit that lies to the northwest of and at a higher elevation than the west end of the north limb of the Island Copper deposit. Although the P-Zone is separated from the main deposit, the alteration - mineralization associations and styles are similar to the main ore-zone and suggest that the P-Zone is tied to an extension of the "main" Island Copper porphyry.

The deposit consists of disseminated and veined copper - molybdenum mineralization occurring mainly in chlorite - magnetite and biotite - magnetite altered Bonanza volcanics basalt tuffs and flows. The copper mineralization is all chalcopyrite. No gold data was available for the P-Zone prior to this program.

Seven holes (E-157, E-158, E-161, E-162, E-164, E-165 and E-166) totalling 1881.5 meters (6,173) feet were drilled to determine the zone limits and to provide sufficient data on which to perform an economic evaluation of the deposit. Recent pit optimization studies indicated that the deposit might be economic if the drilling could increase the tonnage and grade.

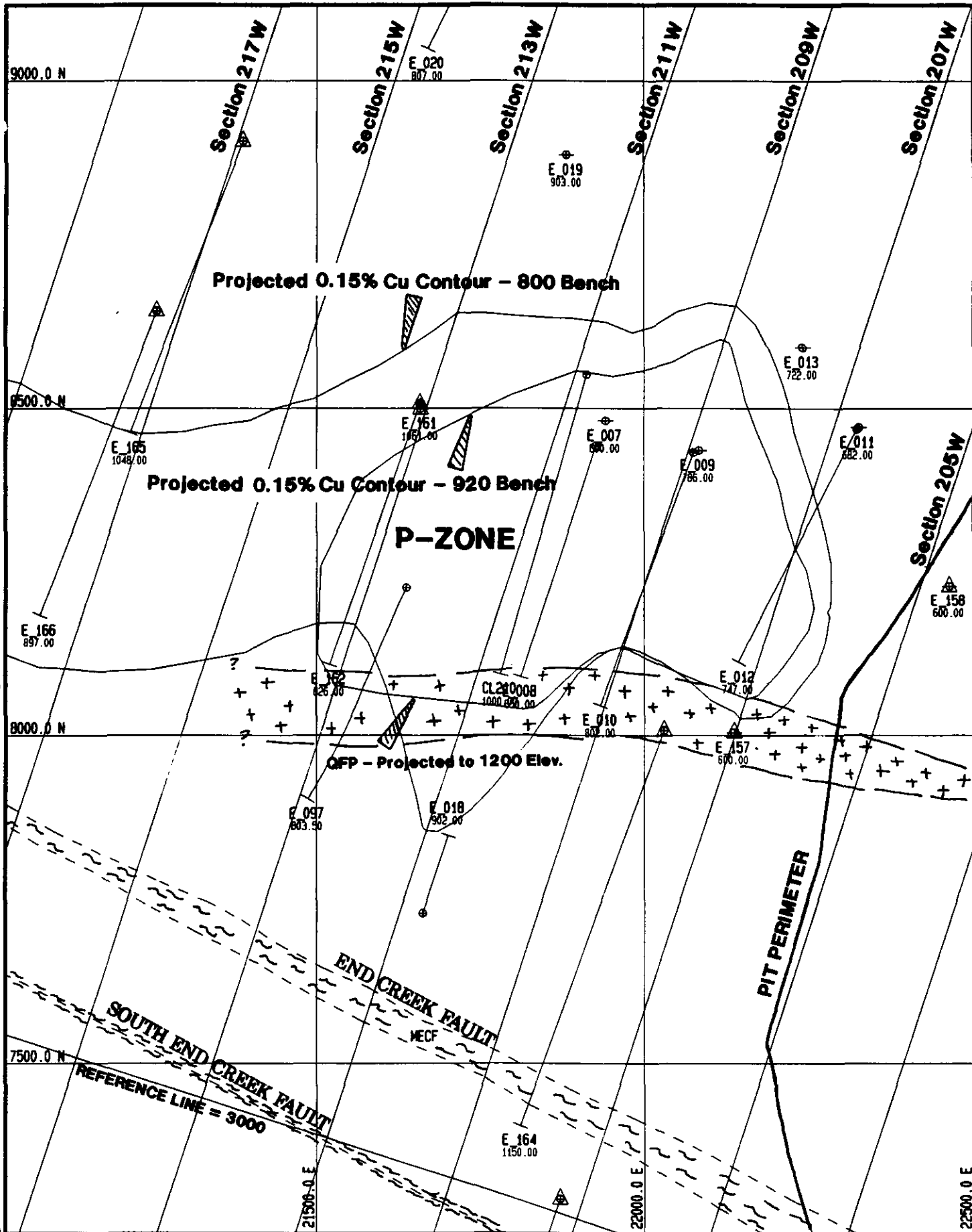
P-Zone to G-Zone (PG)

The area between the P and G zones was interpreted to be underlain by unmineralized epidote and sericite - clay -chlorite (SCC) altered volcanic rocks. However, the possibility existed that the G-Zone mineralization might extend south towards the P-Zone rather than plunge to the north as interpreted. Two holes (E-159 and E-163) totalling 489.5 meters (1,606 feet) were drilled to test this potential.

South of End Creek Fault (SECF)

The target was selected mainly on the basis of i) the occurrence of anomalous (0.1-0.2% Cu) copper mineralization encountered south of the fault in in-pit development hole D-165, ii) the lack of deep holes testing the I.P. anomaly south of the fault, and iii) the proximity of the target area to the pit.

One hole (E-160) was collared south of the fault and drilled to a length of 323.4 meters (956 feet) to test the target area. A second hole (E-164) drilled in the P-Zone was extended to 350.5 meters (1150 feet) to penetrate the fault at depth.



BHP Minerals Canada Ltd.

P.O. Box 370
 Port Hardy, BC
 V0N 3P0

DATE: 04/05/93 TIME: 23:39:35

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

**P-ZONE DIAMOND DRILLING
 Location Map**

F.Y. 1993 Holes as Triangles

Figure 5

7. WORK PERFORMED

The drill program was designed and supervised by the author and A.T. Reeves, P.Geo., staff geologists at Island Copper Mine. The core was logged by D.J. Pawliuk, P.Geo., of Vancouver, B.C.. Graphic logs at scales of 1:120 and 1:2 400 are included in Appendix II. The drill hole collar data are summarized in Table 1.

The core was measured for 1) magnetic susceptibility using a KDA Instruments Model K2 Susceptibility Meter, 2) rock quality designator (RQD) and 3) recovery. The core was split and sampled on 3.05 meter (10 foot) intervals or 3.05 meters (10 feet) every 12.2 meters (40 feet) where the estimated grade of the mineralization was $\geq 0.15\%$ Cu or $< 0.15\%$ Cu, respectively. The samples were assayed for copper, molybdenum, gold, silver, lead and zinc at the Island Copper assay laboratory. Assay results are included in Appendix II and a summary of laboratory methods is included in Appendix I.

The drilling results have been plotted on 1:2 400 scale cross-sections, and the lithologies, alterations, structures and the zones of $\geq 0.2\%$ Cu mineralization reinterpreted on sections (Figures following page 15) and/or plans.

TABLE 1

Diamond Drilling -- January 11 to February 20, 1993

HOLE	CO-ORDS ¹	ELEV ²	AZIM	DIP	LENGTH ³	SECT ⁴	START	FINISH
E_157	E 22135.5 N 8004.5	1349.8	0	-90	182.9 (600.0)	207	01/12	01/14
E_158	E 22463.8 N 8228.0	1278.3	0	-90	182.9 (600.0)	205	01/15	01/17
E_159	E 22510.0 N 8844.0	1279.2	0	-90	243.8 (800.0)	206	01/19	01/21
E_160	E 21871.0 N 7291.6	1373.0	199	-50	291.4 (956.0)	207	01/22	01/27
E_161	E 21658.9 N 8499.2	1281.8	0	-90	323.4 (1061.0)	213	01/27	01/30
E_162	E 21657.9 N 8506.8	1281.7	199	-64	251.8 (826.0)	213	01/31	02/03
E_163	E 22275.8 N 9326.8	1219.8	22	-46	245.7 (806.0)	209	02/03	02/06
E_164	E 22029.9 N 8007.4	1329.3	200	-59	350.5 (1150.0)	208	02/06	02/11
E_165	E 21388.6 N 8908.8	1307.5	201	-66	319.4 (1048.0)	217	02/12	02/17
E_166	E 21257.9 N 8647.9	1297.8	201	-60	270.4 (887.0)	217	02/17	02/20

Total: 10 holes and 2662.3 meters (8734.5) feet

1. BHP mine grid co-ordinate system (in feet)
2. Elevation in feet with Sea Level = 1000 feet
3. Meters / Feet
4. Section numbers = feet in 100's increasing to west.

8. DRILLING RESULTS

The P-Zone drilling (Figures 4 & 5) confirmed continuity of the ≥ 0.20 Cu zone at least 183 m (600') to the west to section 217W as postulated, but closed the zone to the east and the south. The PG holes encountered unmineralized volcanic rocks as predicted and condemned this area for further porphyry exploration. The SECF hole was unmineralized and wrote off the mineral potential in the immediate area. However, some weak copper mineralization encountered at the bottom of hole E-164 may be located south of the fault, but this is not certain.

A summary of the justification, results and interpretation of each hole in the drilling program is provided below. Alteration sections 205W, 207W, 209W, 213W and 217W, and ore-inventory sections 209W, 213W and 217W are included for reference following page 15 at the end of the text of this report. Drill hole logs and assay sheets are included in Appendix II.

E-157

TD: 182.9 m (600') SECTION: 207W

TARGET: P-Zone - southeastward extension of zone

RESULTS: Casing: 36.9 m (121') 36.9 - 182.9 m (121 - 600'): weakly mineralized, chlorite - sericite \pm magnetite altered dacite porphyry.

SIGNIFICANT INTERCEPTS:

128.0 - 140.2 m (420 - 460') -- 12.2 m (40') @ 0.20% Cu

INTERPRETATION: The hole was drilled its entire length in dacite porphyry. This is probably the westward continuation of a narrow, steeply dipping dyke mapped in the pit (Figure 3) and encountered 183 m (600') to the west in hole E-97. This hole did not provide any information about the P-Zone mineralization other than that at least part of the zone is occupied by a weakly mineralized porphyry dyke. This is considered to be an intra-mineral dyke due to the presence of weak copper mineralization.

E-158

TD: 183 m (600') SECTION: 205W

TARGET: P-Zone - eastward extension of P-Zone.

RESULTS: Casing: 4.0 m (13'); 4.0 - 147.8 m (13 - 485'): chlorite - sericite and chlorite - epidote \pm magnetite altered, medium to fine-grained basaltic flows, ash tuff, lapilli tuff and volcanic breccia. Alterations change abruptly across a fault zone extending from 146.9 m (482') to 159.1 m (522') to a chlorite - magnetite assemblage.

SIGNIFICANT INTERCEPTS: nil

INTERPRETATION: The P-Zone either plunges steeply to the east or is truncated by a fault. The chlorite - magnetite alterations encountered in the bottom of the hole below the fault zone are probably part of the P-Zone alteration zoning.

E-159**TD:** 243.8 m (800') **SECTION:** 206W**TARGET:** PG Area - extension of G-Zone mineralization to south.**RESULTS:** Casing: 6.7 m (22'); 6.7 - 243.8 m (22 - 800'): chlorite - epidote and chlorite - sericite (SCC) altered, medium grained basaltic ash tuff and lapilli tuff.**SIGNIFICANT INTERCEPTS:** nil**INTERPRETATION:** The area lies in the epidote altered zone between the P and G porphyry systems. This along with hole E-163 condemn this area for economic copper mineralization.**E-160****TD:** 291.4 (956') **SECTION:** 207W**TARGET:** SECF Area - near-surface extension of mineralized porphyry system hypothesized to exist south of the fault based on mineralization intersected in in-pit hole D-165.**RESULTS:** Casing: 24.4 m (80'0); 24.4 - 291.4 m (80 - 956'): hematite - epidote - chlorite ± magnetite altered basaltic lapilli tuffs.**SIGNIFICANT INTERCEPTS:** nil**INTERPRETATION:** There is no clear evidence of the epidote alterations being part of a porphyry system south of the fault rather than a faulted off part of the Island Copper deposit.**E-161****TD:** 323.4 m (1061') **SECTION:** 213W**TARGET:** P-Zone: Extension of zone about 120 m (400') to west.**RESULTS:** Casing: 6.4 m (21'); 6.4 - 323.4 m (21 - 1061): sequence of basalt ash and lapilli tuffs, and volcanic breccias; 36.6 - 51.8 m (120 - 170'): chlorite - epidote altered; sphalerite occurs in quartz - sphalerite - pyrite ± chalcopyrite veins; 51.8 - 59.7 m (170 - 196'): fault zone; 59.7 - 97.5 m (196 - 320'): chlorite - magnetite ± epidote altered; lower contact marked by several faults; 106.7 - 295.7 m (350 - 970'): biotite - chlorite - magnetite altered with associated copper - molybdenum mineralization; 295.7 - 307.8 m (970 - 1010'): fault zone; 307.8 - 323.4 m (1010 - 1061'): biotite and quartz - magnetite - amphibole altered with copper grades (0.20% Cu.**SIGNIFICANT INTERCEPTS:**

112.7 - 246.9 m (70 - 810') -- 134.1 m (440') @ 0.33% Cu

256.0 - 295.7 m (840 - 970') -- 39.6 m (130') @ 0.26% Cu

INTERPRETATION: This hole cut through the standard Island Copper alteration assemblages starting in the epidote zone and ending in the outer part of the quartz - magnetite zone. The sphalerite occurs as veins peripheral to the main copper zone as is common in the pit. The ≥0.20% Cu zone is entirely within the biotite alteration zone. The alteration zone boundaries are marked by faults [e.g @ 51.8 m (170'), 106.7 m (350') and 307.8 m (1010')] which may have juxtaposed the alteration zones. The thickness of the mineralized zone and intensity of alterations coupled with

the interpreted moderate dip to the north indicate that the weakly altered porphyry encountered in hole E-97 is an intra- or late-mineral porphyry.

E-162

TD: 251.8 m (826') **SECTION:** 213W

TARGET: P-Zone - up-dip extension of P-Zone mineralization encountered in E-160.

RESULTS: Casing: 6.7 m (22'); 6.7 m - 160.6 m (22 - 527'): interbedded ash and lapilli basaltic tuffs; 163.7 - 251.8 m (537 - 826'): fine grained massive basalt flow; 26.7 - 233.5 m (22 - 110'): epidote - chlorite altered; 33.5 - 42.6 m (110 - 140'): fault zone; 42.6 - 85.3 m (140 - 280'): chlorite - magnetite ± epidote ± biotite altered; 85.3 - 182.9 m (280 - 600'): biotite - magnetite altered; chalcopyrite occurs in quartz - pyrite ± magnetite veins/veinlets; quartz - magnetite veins increase with depth; 182.9 - 251.8 m (600 - 826'): quartz - magnetite - amphibole ± biotite altered, minor chalcopyrite.

SIGNIFICANT INTERCEPTS:

106.7 - 170.7 m (350 - 560') -- 64 m (210') @ 0.24% Cu

INTERPRETATION: The hole intersected the targeted up-dip extension of the P-Zone mineralization in hole E-161. The ≥0.20% Cu zone is narrower and lower grade than in E-161. The alteration zones encountered in E-161 are also found in E-162 in the same relative sequence.

E-163

TD: 245.7 m (806') **SECTION:** 209W

TARGET: PG Area - possible southward extension of the G-Zone to the northeast of Bay Lake.

RESULTS: Casing: 18.3 m (60'); 18.9 - 245.7 m (62 - 806'): Basaltic lapilli tuff with local ash tuff interbeds with 1 to 2 per cent gilsonite veinlets throughout; 18.9 - 91.4 m (62 - 300'): weakly epidote - chlorite and sericite - clay - chlorite (SCC) altered; 91.4 - 245.7 m (300 - 806'): chlorite - magnetite and SCC altered with SCC alteration decreasing with depth; tuff is moderately silicified from about 121.9 m (400').

SIGNIFICANT INTERCEPTS: nil

INTERPRETATION: The results are consistent with a northward dipping G-Zone porphyry system. The hole intersected the epidote zone to 91.4 m (300') and the G-Zone chlorite alteration zone to the end of the hole. The hole condemns the area east of Bay Lake between holes E-86 and E-24 for a porphyry copper deposit.

E-164**TD:** 350.5 m (1150') **SECTION:** 208W**TARGET:** P-Zone - up-dip extension of the zone south of the porphyry dyke.**RESULTS:** Casing: 34.1 m (112'); 34.1 - 201.8 m (112 - 662'): pyrophyllite - sericite - quartz - chlorite ± dumortierite (dumortierite @ 68.3 - 192.0 m (224 - 630')) altered lapilli tuff; rock cut by numerous thin (≤.3m) dacite dykes; 201.8 - 205.4 m (662 - 674'): pyritic fault; 205.4 - 245.1 m (674 - 804.6'): chlorite - magnetite - quartz ± biotite altered volcanics; 219.8 - 227.8 m (721 - 747.5'): SCC altered dacite porphyry; 245.2 - 287.4 m (804.6-943'): End Creek Fault Zone; 287.4 - 350.5 m (943 - 1150'): chlorite - magnetite ± biotite ± amphibole altered interbedded ash and lapilli basaltic tuffs; locally minor chalcopyrite.**SIGNIFICANT INTERCEPTS:**

201.2 - 213.4 m (660 - 700') -- 12.2 m (40') @ 0.28% Cu

222.5 - 249.9 m (730 - 820') -- 27.4 m (90') @ 0.26% Cu

INTERPRETATION: The hole intersected the edge of the pyrophyllite breccia zone and continued into the chlorite-magnetite altered volcanics. The chlorite - magnetite alterations and spotty chalcopyrite intersected in the hole near the bottom would support the concept of a mineralized system south of the fault if this is actually from south of the fault. However, pit mapping and other drill hole data indicate that the hole did not completely penetrate the End Creek Fault zone.**NOTE:** Hole stopped due to adverse drilling conditions.**E-165****TD:** 319.4 m (1048') **SECTION:** 217W**TARGET:** P-Zone - extension of the zone west to section 217W.**RESULTS:** Casing: 3.7 m (12'); 3.7 - 319.7 m (12 - 1049'): lapilli basalt tuff with interbeds of ash tuff, locally finely bedded; approximately 3.7 - 94.5 m (12 - 310'): epidote - chlorite altered; contact marked by pyrophyllite and clay altered sheared and brecciated tuff at 94.5 - 108.2 m (310 - 355'); 108.2 - 189.0 m (355 - 620'): chlorite - magnetite ± biotite altered; contact again marked by series of narrow faults at 182.9 - 193.5 m (600 - 635'); 193.5 - 319.7 m (635 - 1049'): biotite - chlorite - magnetite - quartz - sericite ± epidote (retrograde) altered with chalcopyrite occurring as disseminations and in quartz - pyrite ± magnetite ± molybdenite ± amphibole veins/veinlets; amphibole noted from about 213.4 m (700').**SIGNIFICANT INTERCEPTS:**

204.2 - 256.0 m (670 - 840') -- 51.8 m (170') @ 0.32% Cu

262.1 - 292.6 m (860 - 960') -- 30.5 m (100') @ 0.23% Cu

INTERPRETATION: The hole intersected the P-Zone mineralization 122 m (400') west along strike from hole E-161. The zone of ≥0.20% Cu is narrower in this hole showing that the zone is diminishing to the west.

E-166**TD:** 270.4 m (887') **SECTION:** 217W**TARGET:** P-Zone - extension of the zone up-dip from hole E-165.**RESULTS:** Casing: 6.7 m (22'); 6.7 - 270.4 m (22 - 887'): interbedded ash and lapilli tuffs; approximately 6.7 - 70.0 m (22 - 200'): chlorite - epidote ± magnetite and chlorite - sericite - clay (SCC) altered; 70.0 - 170.7 m (200 - 560'): chlorite - magnetite - quartz ± epidote ± biotite altered; quartz - pyrite ± sphalerite ± molybdenite ± magnetite veins increase in density with depth; 170.7 - 270.4 m (560 - 887'): biotite - chlorite - magnetite - quartz altered; abundant quartz - pyrite ± chalcopyrite ± magnetite ± molybdenum ± sphalerite veins; no amphibole noted.**SIGNIFICANT INTERCEPTS:**

167.6 - 219.5 m (550 - 720') -- 51.8 m (170') @ 0.26% Cu

INTERPRETATION: The hole intersected the up-dip extension of the zone from E-165. This hole and E-165 both indicate that the ≥0.20% Cu zone has both diminished in volume and plunged down to the west from holes E-161/162. The potential for near-surface and more substantial mineralization between section 217W and section 223W the west is low.**8. INTERPRETATION OF RESULTS****P-Zone**

The drilling has limited the zone of +0.20% Cu to west of section 205W, but has extended it 183 m (600') to the west to section 217W. The zone extension plunges moderately to the west and is diminished in thickness. The potential of a significant volume of ≥0.20% Cu between sections 217W and the fence of holes on section 223W is therefore low.

The definition of the south limit of the deposit is complicated by the crosscutting dacite porphyry encountered in E-157 (section 205W) and the wedge-shaped zone of pyrophyllite ± dumortierite altered breccia occurring adjacent to the End Creek Fault. However, mineralization encountered in hole E-164 (section 209W) between the porphyry and the pyrophyllite breccia zone indicates that additional mineralization may lie to the west as the pyrophyllite-breccia zone is interpreted to pinch out to the west along the fault.

The copper mineralization consists of chalcopyrite occurring as fine disseminations and veinlets primarily in biotite - magnetite and chlorite - magnetite altered inter-layered basaltic tuffs and flows of the Bonanza Volcanics formation. Molybdenite occurs in quartz - pyrite ± magnetite ± chalcopyrite veins and with chalcopyrite in veinlets. With the exception of the ≥0.20% Cu zone in hole E-161, the molybdenum grade of the P-Zone is low,

generally less than 0.010% Mo. The gold grades of the samples assays are similar to the ICM gold grades with $\geq 0.2\%$ Au grades mainly associated with the $\geq 0.30\%$ Cu grade mineralization.

Pyrite is ubiquitous in the P-Zone, but generally occurs in amounts less than three per cent with higher concentrations associated with faults and shears with accompanying sericite \pm clay alterations. Pyrite occurs principally in veins and veinlets. Quartz \pm magnetite \pm chalcopyrite \pm epidote \pm molybdenite \pm sphalerite \pm zeolite \pm calcite are common associations depending upon the alteration zone in which the pyrite occurs. Pyrite and chalcopyrite mineralization have a strong association with the mafic components of the volcanic rocks with the sulphides preferentially occurring in the dark chlorite-magnetite altered pyroclasts compared to the more felsic, light coloured matrix.

The alteration model developed for the Island Copper - Bay Lake porphyry systems (Cargill et al., 1974; Perello et al., 1989) applies well to the P-Zone. The zone is believed to be tied to a westward extension of the Island Copper "Main" porphyry. This porphyry has not been identified in the P-Zone drilling, but the geometry of the alteration zones indicate that the porphyry lies just below the deepest P-Zone drill holes. There is insufficient drilling to determine whether or not the P-Zone is separated by a fault from the ICM deposit.

The porphyry intersected in hole E-157 and further to the west in hole E-97 is most likely a branch off the "main" porphyry conduit. It is probably an intra-mineral porphyry that has intruded up along the "main" porphyry as it appears to crosscut the main alteration zones and the $\geq 0.20\%$ Cu zone, it is weakly mineralized, and it is generally weakly altered,. This is a common relationship in the ICM deposit.

Albitization is associated with the P-Zone system as it is with the Island Copper and satellite porphyry systems. As the alteration is found in all the prograde alteration zones and it is not always recognized without thin-section work, it has not been included in the capsule descriptions in the previous section.

Gilsonite occurs on the north side of the P-Zone outside of the $\geq 0.20\%$ Cu zone. The gilsonite occurs in late-stage veins with zeolite \pm calcite \pm sphalerite \pm pyrite. Calcite and zeolite are common in the P-Zone occurring in veins and as breccia matrix. Sphalerite occurs mainly in the outer (epidote) alteration zone in veins \pm calcite \pm zeolite \pm gilsonite \pm pyrite \pm chalcopyrite.

P-Zone to G-Zone

Holes E-159 and E-163 (Figure 4) encountered principally epidote zone alterations and no significant intercepts of $\geq 0.20\%$ Cu mineralization. This confirms the interpretation of the P and G zones as separate mineralized porphyry centres with overlapping outer (epidote) alteration zones (Perello, 1989). The area east of Bay Lake is sufficiently drill tested to write-off any potential for near surface, economic, porphyry copper mineralization between the P and G zones.

South of End Creek Fault

Drill holes E-160 and E-164 (Figure 4) failed to either prove or disprove the model of a mineralized porphyry system south of the End Creek Fault. The model for such a system was based on mineralization intersected in a development hole (D-165) drilled from the pit. The mineralization in the hole is believed to be from south of the fault. Consequently, the area to the west of E-164 can still be considered as prospective ground. However, the potential for an economic deposit is low.

Hole E-160 (section 207W) was drilled its entire length in epidote - hematite - pyrite altered volcanics typical of almost all the core drilled south of the fault. This could be interpreted to be part of the outer alteration zone of an underlying, mineralized porphyry system or as is conventionally viewed as a fault (ECF) displaced outer shell of the Island Copper deposit.

Hole E-164 (section 209W) encountered spotty copper mineralization in chlorite - magnetite - albite(?) \pm biotite \pm K-spar altered volcanics south of the interpreted intersection of the End Creek Fault. Adverse drilling conditions were encountered and the hole had to be stopped before it could be determined if it was entirely through the fault zone.

Pit mapping has shown the existence of a fault plane south of and sub-parallel to the End Creek Fault. This is called the South End Creek Fault as it may be part of the End Creek Fault zone. There have been occurrences of $\geq 0.20\%$ Cu mineralization in the pit in areas believed to lie between the two fault planes. Thus, the copper mineralization and the chlorite - magnetite \pm biotite altered volcanics in hole E-164 that occur south of the End Creek Fault projection may also occur between the fault planes. Hole E-164 may have been stopped in the South End Creek Fault.

9. RECOMMENDATIONS

P-Zone

Further drilling of the P-Zone is contingent on favourable results of pit optimization studies using the current data set and zone interpretation.

P-Zone to G-Zone

No further drilling is required in this area. The area is written-off for an economic porphyry copper deposit.

South of the End Creek Fault

Based on the ambiguous results of holes E-160 and E-164, one additional hole should be drilled. Failure to encounter near-surface $\geq 0.15\%$ Cu mineralization would write-off the SECF area.

10. COST STATEMENTS

10.1 Apple-93 Group

Contractor's Costs:

<u>Hole #</u>	<u>Lengths</u>	<u>Drilling* Cost</u>	
E-157	182.9 m	\$ 8,220.63	
E-158	182.9 m	9,455.35	
E-159	243.8 m	10,253.05	
E-160	291.4 m	13,759.98	
E-161	<u>323.4 m</u>	<u>14,139.83</u>	
Total	1 224.4 m	\$55,828.84	\$ 55,828.84

BHP Minerals Canada Ltd's. Costs:

Core Logging:		
1 geologist x 16 days x \$200 / day		\$ 3,200.00
Core Shack Labour		
1 labourer @ \$140 / day x 20 days		2,800.00
Supervision:		
1 supervisor x 20 days x 25% x \$200 / day		1,000.00
Overhead:		
20% (max) of Supervision & Labour		1,370.00
Assays:		
212 samples x \$30 / sample		6,360.00
Vehicle:		
1 truck @ \$41 / day x 16 days		656.00
Core Storage:		
1224.4 m @ \$1.48 / m		1,807.65
Report Preparation:		800.00
TOTAL:		<u>\$73,822.49</u>

Total Drilling = 1 224.4 meters (4,017 feet)

Unit Cost = \$60.29 per meter (\$18.38 per foot)

* Drilling Contractor: Olympic Drilling & Consulting Ltd.

10. COST STATEMENTS (Continued)

10.2 Lake-93 Group

Contractor's Costs:

<u>Hole #</u>	<u>Lengths</u>	<u>Drilling* Cost</u>	
E-162	251.8 m	\$11,475.79	
E-163	245.7 m	10,601.53	
E-164	<u>350.5 m</u>	<u>17,878.01</u>	
Total	848.0 m	\$39,955.33	\$ 39,955.33

BHP Minerals Canada Ltd's. Costs:

Core Logging:		
1 geologist x 11 days x \$200 / day		\$ 2,200.00
Core Shack Labour		
1 labourer @ \$140 / day x 14 days		1,960.00
Supervision:		
1 supervisor x 14 days x 25% x \$200 / day		700.00
Overhead:		
20% of Supervision & labour		867.00
Assays:		
154 samples x \$30 / sample		4,620.00
Vehicle:		
1 truck @ \$41 / day x 11 days		451.00
Core Storage:		
848.0 m (2782') @ \$1.48 / m		1,251.90
Report Preparation:		640.00
TOTAL:		<u>\$52,645.23</u>

Total Drilling = 848.0 meters (2,782 feet)

Unit Cost = \$62.08 per meter (\$18.92 per foot)

* Drilling Contractor: Olympic Drilling & Consulting Ltd.

10. COST STATEMENTS (Continued)

10.3 Cove-93 Group

Contractor's Costs:

<u>Hole #</u>	<u>Lengths</u>	<u>Drilling* Cost</u>	
E-165	319.7 m	\$14,368.18	
E-166	<u>273.4 m</u>	<u>11,871.85</u>	
Total	593.1 m	\$26,240.03	\$ 26,240.03

BHP Minerals Canada Ltd's. Costs:

Core Logging:		
1 geologist x 8 days x \$200 / day		\$ 1,600.00
Core Shack Labour		
1 labourer @ \$140 / day x 10 days		1,400.00
Supervision:		
1 supervisor x 10 days x 25% x \$200 / day		500.00
Overhead:		
20% (max) of Supervision & Labour		662.91
Assays:		
110 samples x \$30 / sample		3,300.00
Vehicle:		
1 truck @ \$41 / day x 8 days		328.00
Core Storage:		
593.1 m @ \$1.48 / m		877.79
Report Preparation:		400.00
TOTAL:		<u>\$35,308.73</u>

Total Drilling = 593.1 meters (1,946 feet)

Unit Cost = \$59.53 per meter (\$18.14 per foot)

* Drilling Contractor: Olympic Drilling & Consulting Ltd.

11. REFERENCES

Cargill, D.G., Lamb, J., Young, M.J. and Rugg, E.S. (1976): Island Copper; in Porphyry Copper Deposits of the Canadian Cordillera, Sutherland Brown, A., Editor, Canadian Institute of Mining and Metallurgy, Special Volume 15, pages 206-218.

Perello, J.A., Arancibia, O.N., 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 1989, Abstract.

12. STATEMENTS OF QUALIFICATIONS

J.A. Fleming, P.Geol.

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.

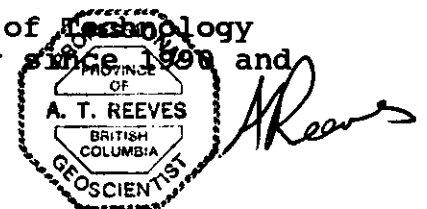


A.T. Reeves, P.Geol.

Geologist

Island Copper Mine, BHP Minerals Canada Ltd., Port Hardy, B.C.

- 1) Professional Geoscientist, (1991) A.P.E.G. of B.C.
- 2) B.Sc. (1989) University of Waterloo
- 3) Dipl. T., Mining, (1979) B.C. Institute of Technology
- 4) Employed as a geologist at Island Copper since 1990 and as a geotechnician from 1979 - 1990.



UN-NUMBERED FIGURES

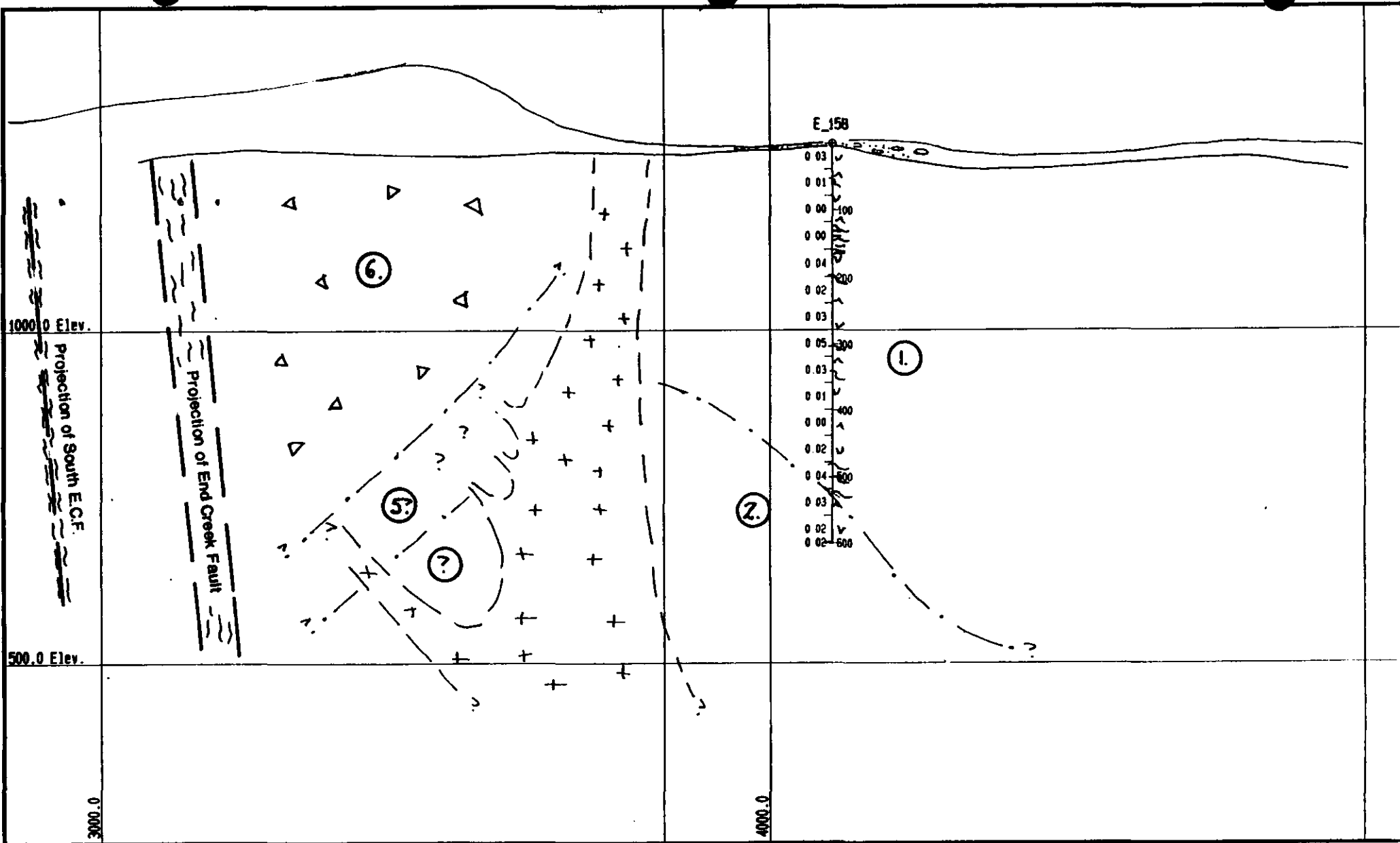
P-ZONE DRILLING

ALTERATIONS

Section 205W	Scale = 1:2400
Section 207W	Scale = 1:2400
Section 209W	Scale = 1:2400
Section 211W	Scale = 1:2400
Section 213W	Scale = 1:2400
Section 217W	Scale = 1:2400

MINERAL RESOURCE

Section 207W	Scale = 1:2400
Section 209W	Scale = 1:2400
Section 211W	Scale = 1:2400
Section 213W	Scale = 1:2400
Section 217W	Scale = 1:2400



BHP Minerals Canada Ltd.

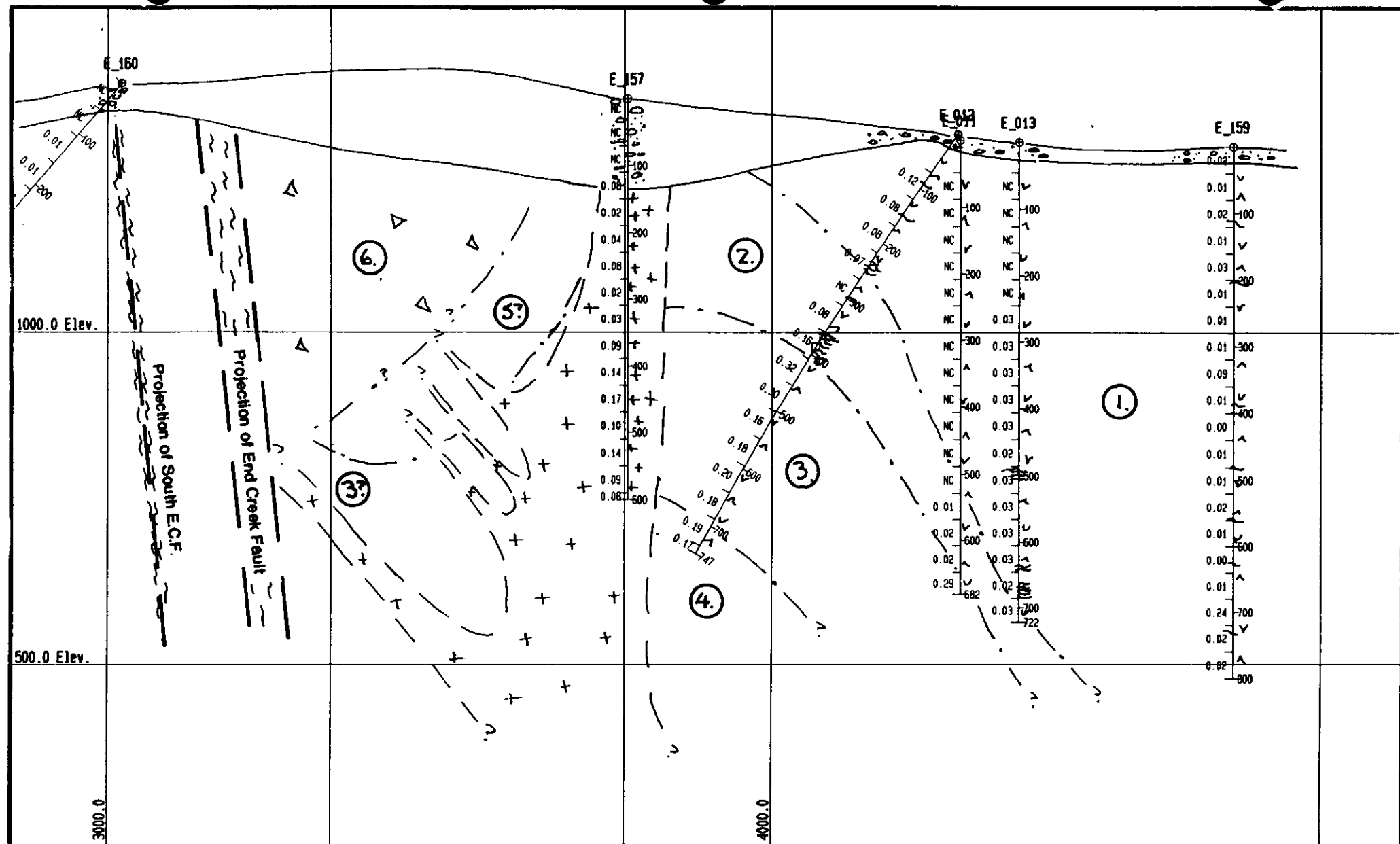
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 Port Hardy, BC
 V0N 3P0

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**P-ZONE -- SECTION 205W
 ALTERATIONS**

1=epidote; 2=chlorite; 3=biotite; 4=quartz-
 magnetite; 5=sericite; 6=pyrophyllite



BHP Minerals Canada Ltd.

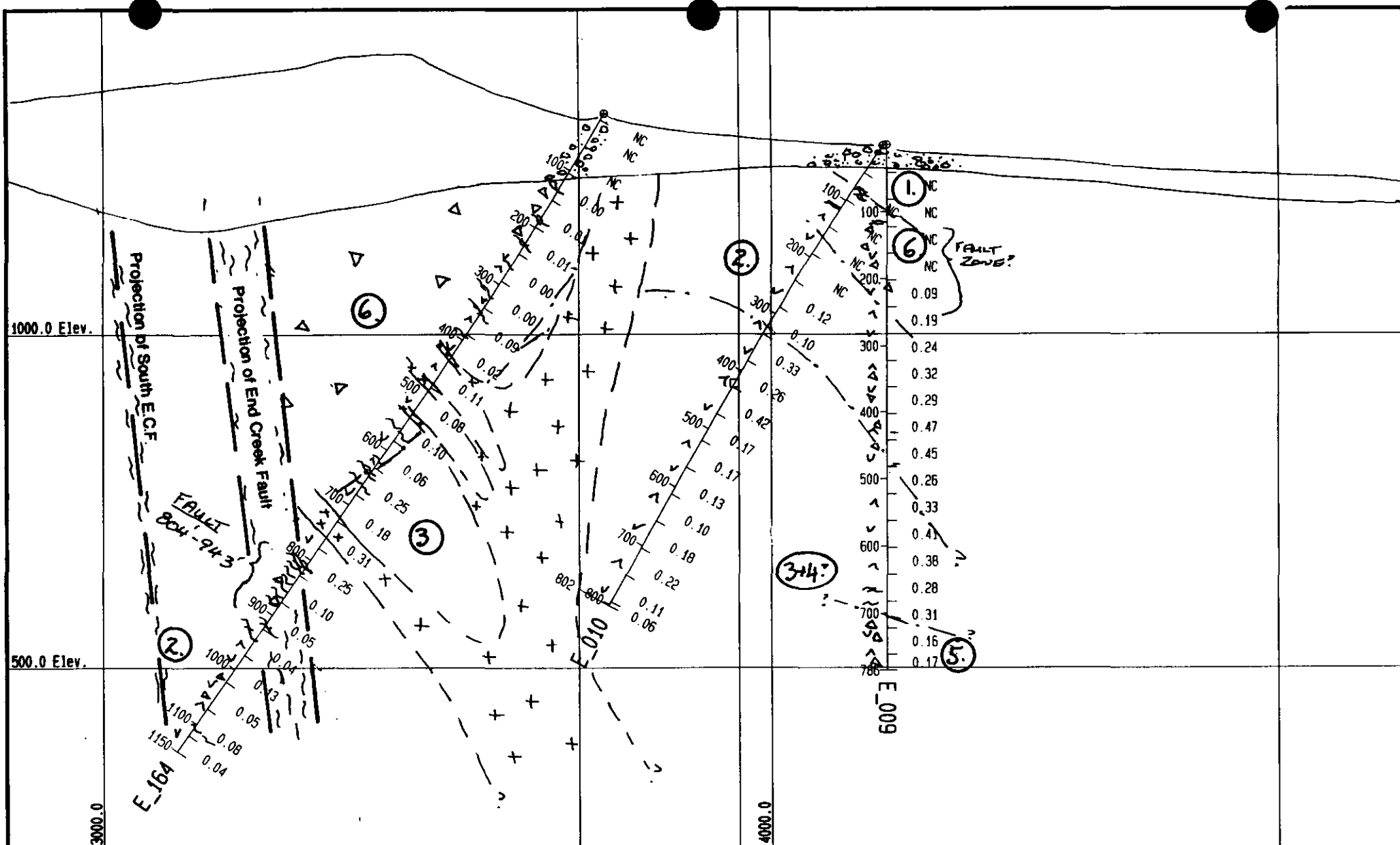
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VON 3P0

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P-ZONE -- SECTION 207W ALTERATIONS

1=epidote; 2=chlorite; 3=biotite; 4=quartz-
magnetite; 5=sericite; 6=pyrophyllite



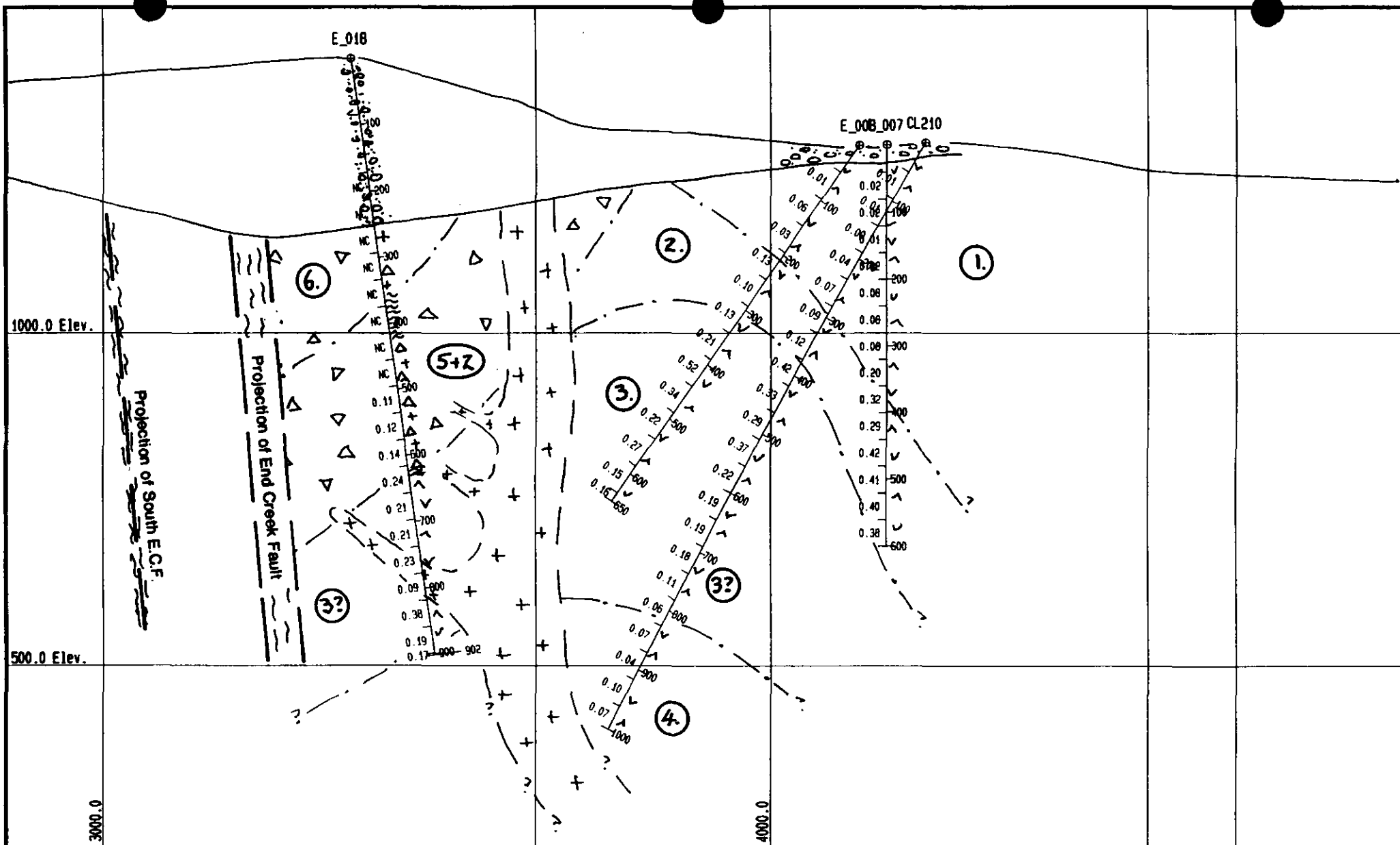
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 P.O. Box 370
 Port Hardy, BC
 V0N 3P0

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

P-ZONE -- SECTION 209W ALTERATIONS

1=epidote; 2=chlorite; 3=biotite; 4=quartz-
 magnetite; 5=sericite; 6=pyrophyllite



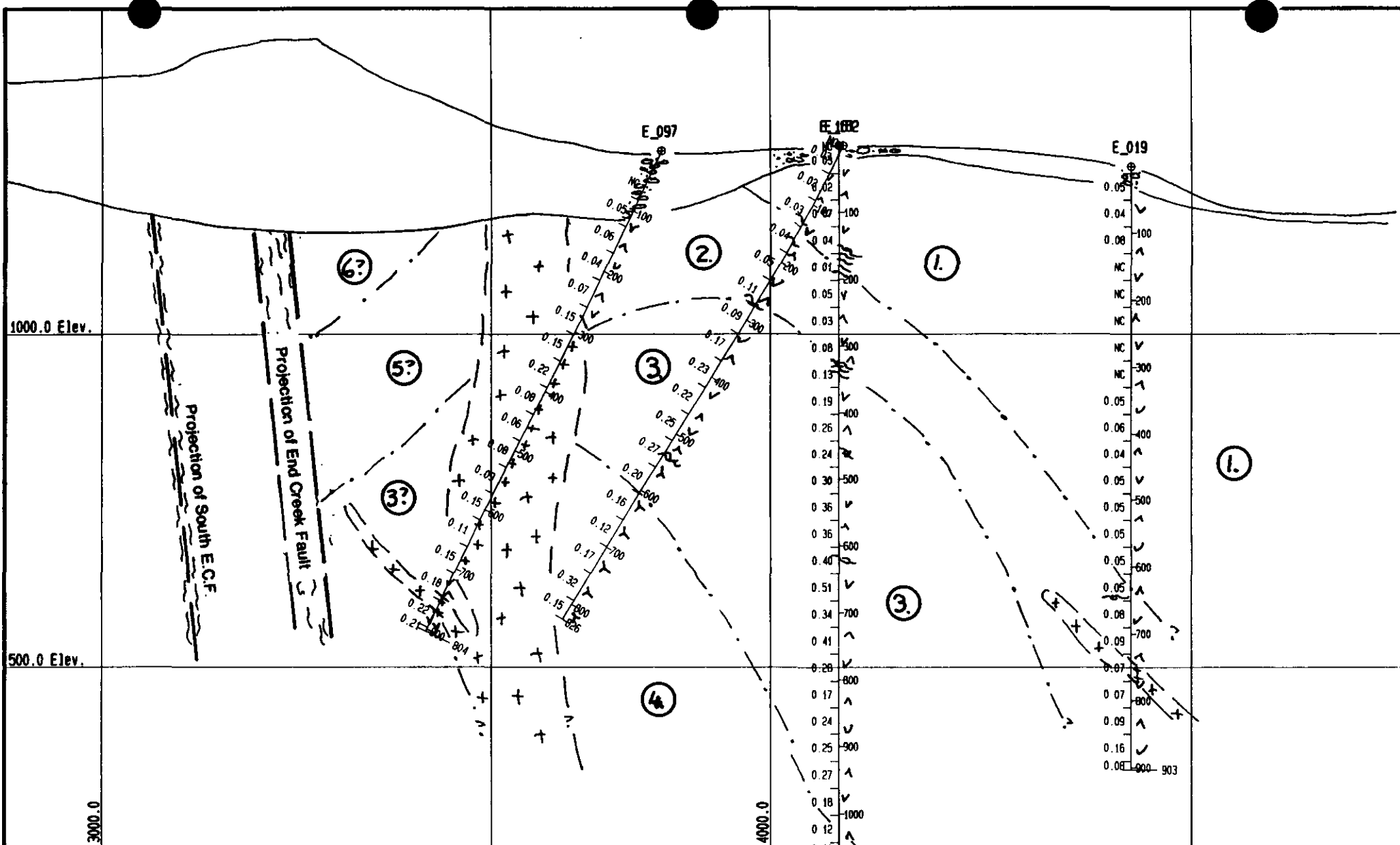
BHP Minerals Canada Ltd.
 P.O. Box 370
 Port Hardy, BC
 V0N 3P0

P-ZONE -- SECTION 211W ALTERATIONS

1=epidote; 2=chlorite; 3=biotite; 4=quartz-
 magnetite; 5=sericite; 6=pyrophyllite

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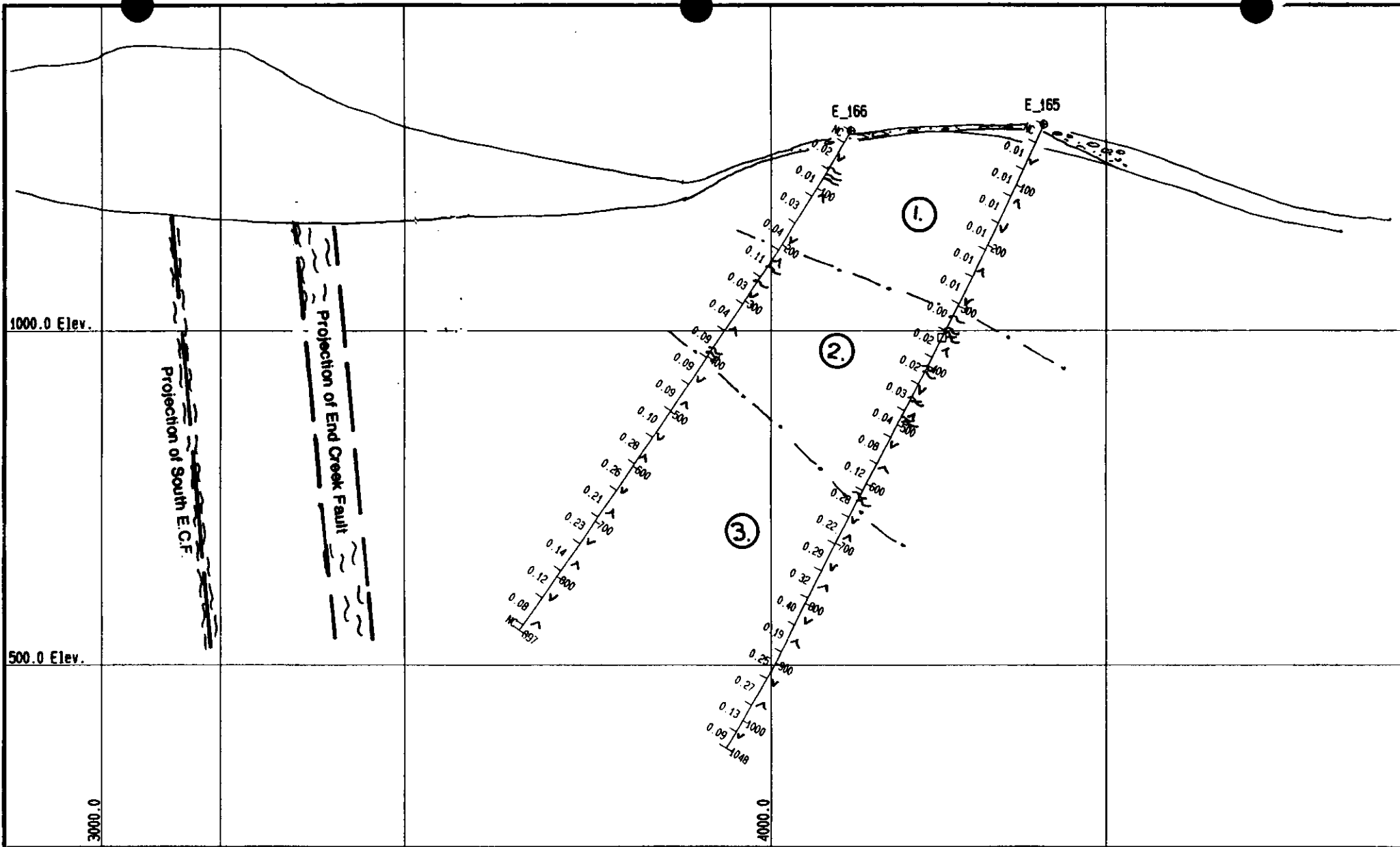
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 Port Hardy, BC
 V0N 3P0

DATE: 04/04/93 TIME: 13:50:48

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P-ZONE -- SECTION 213W ALTERATIONS

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 magnetite; 5=sericite; 6=pyrophyllite



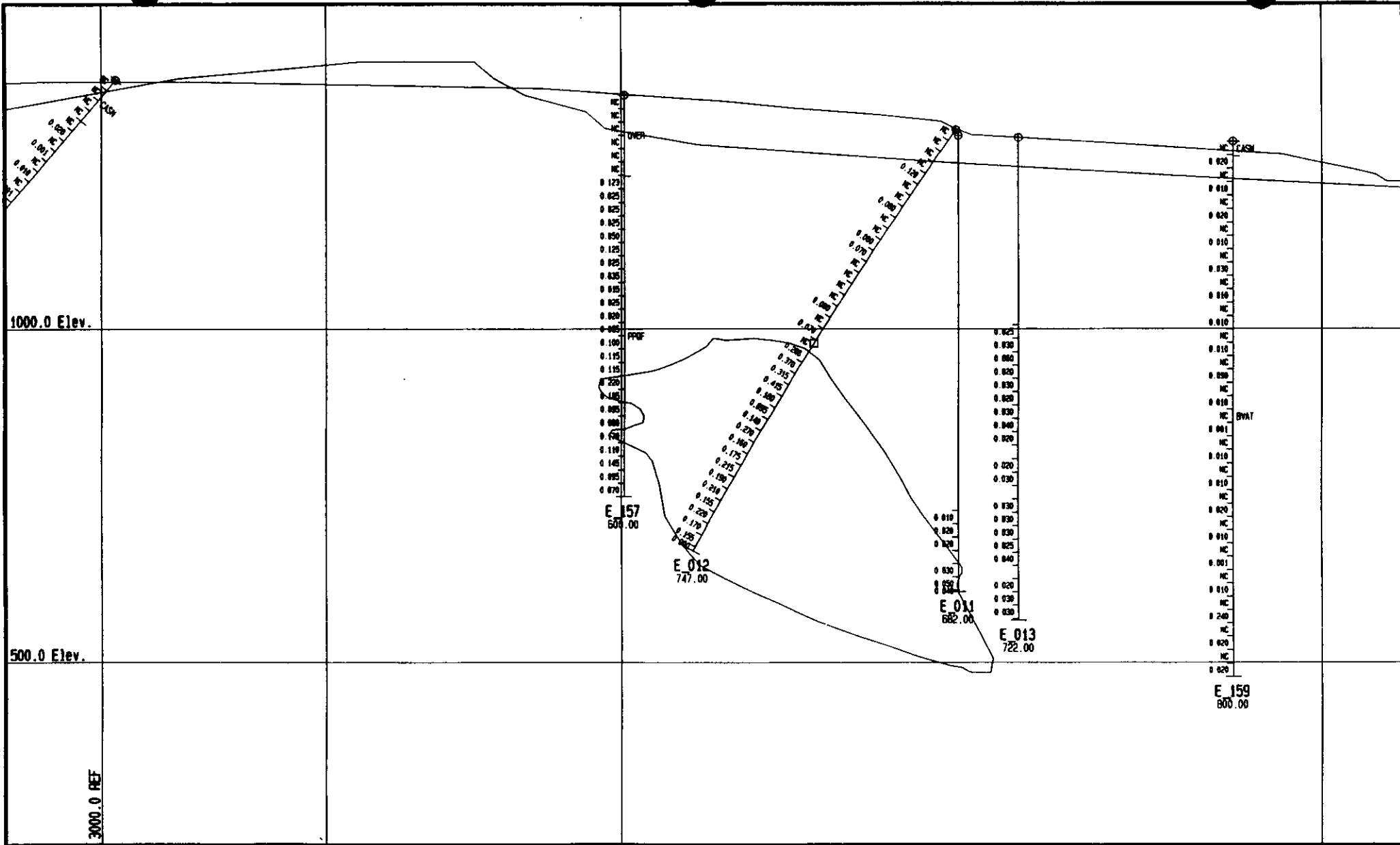
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 P.O. Box 379
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 V0N 3P0

DATE: 04/04/93 TIME: 15:31:21

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P-ZONE -- SECTION 217W ALTERATIONS

1=epidote; 2=chlorite; 3=biotite; 4=quartz-
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BHP Minerals Canada Ltd.

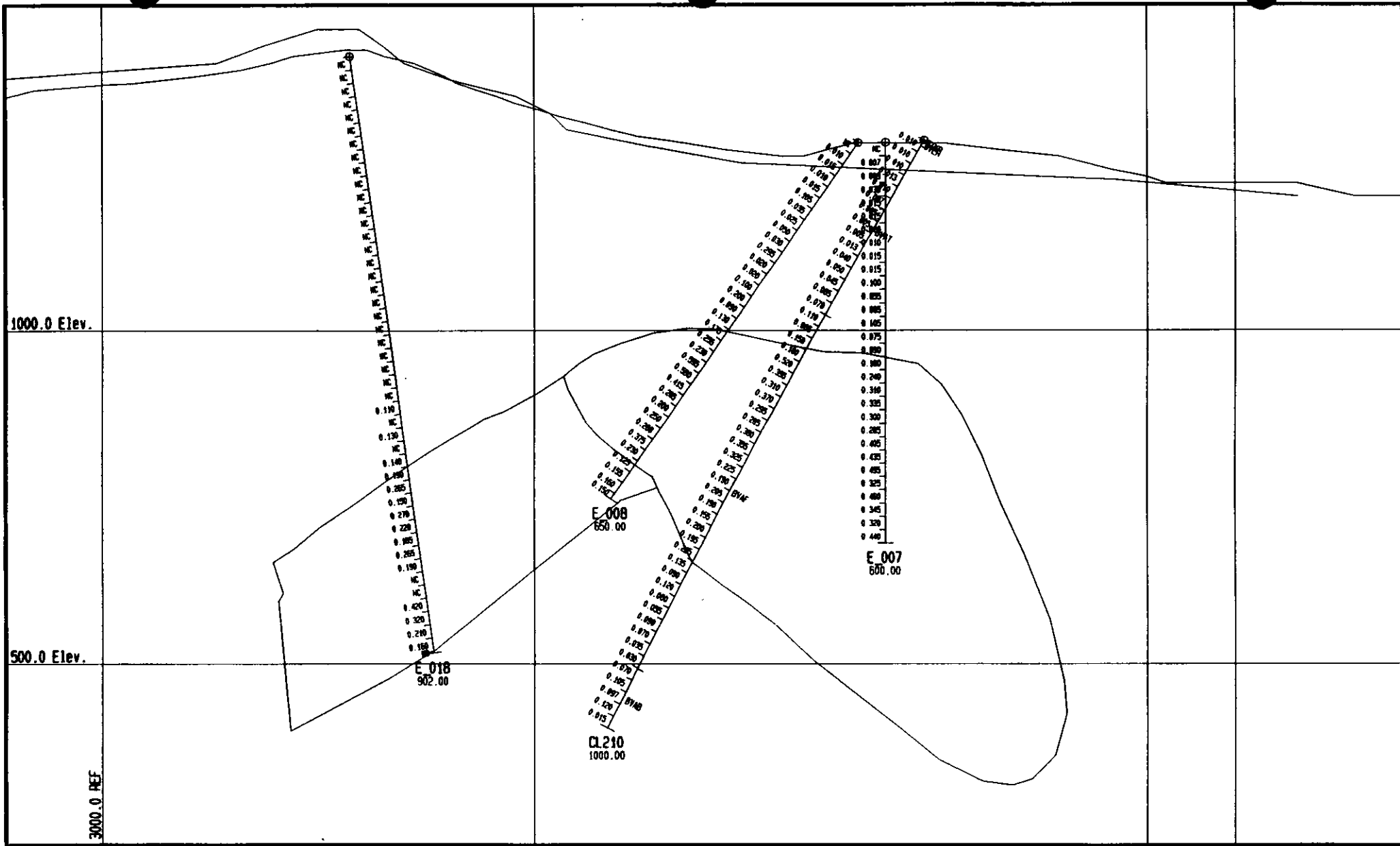
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Port Hardy, BC
V0N 3P0

DATE: 04/06/93 TIME: 07:07:16

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P-ZONE -- MINERAL RESOURCE SECTION 207W

Boundary = 0.15% Cu Contour



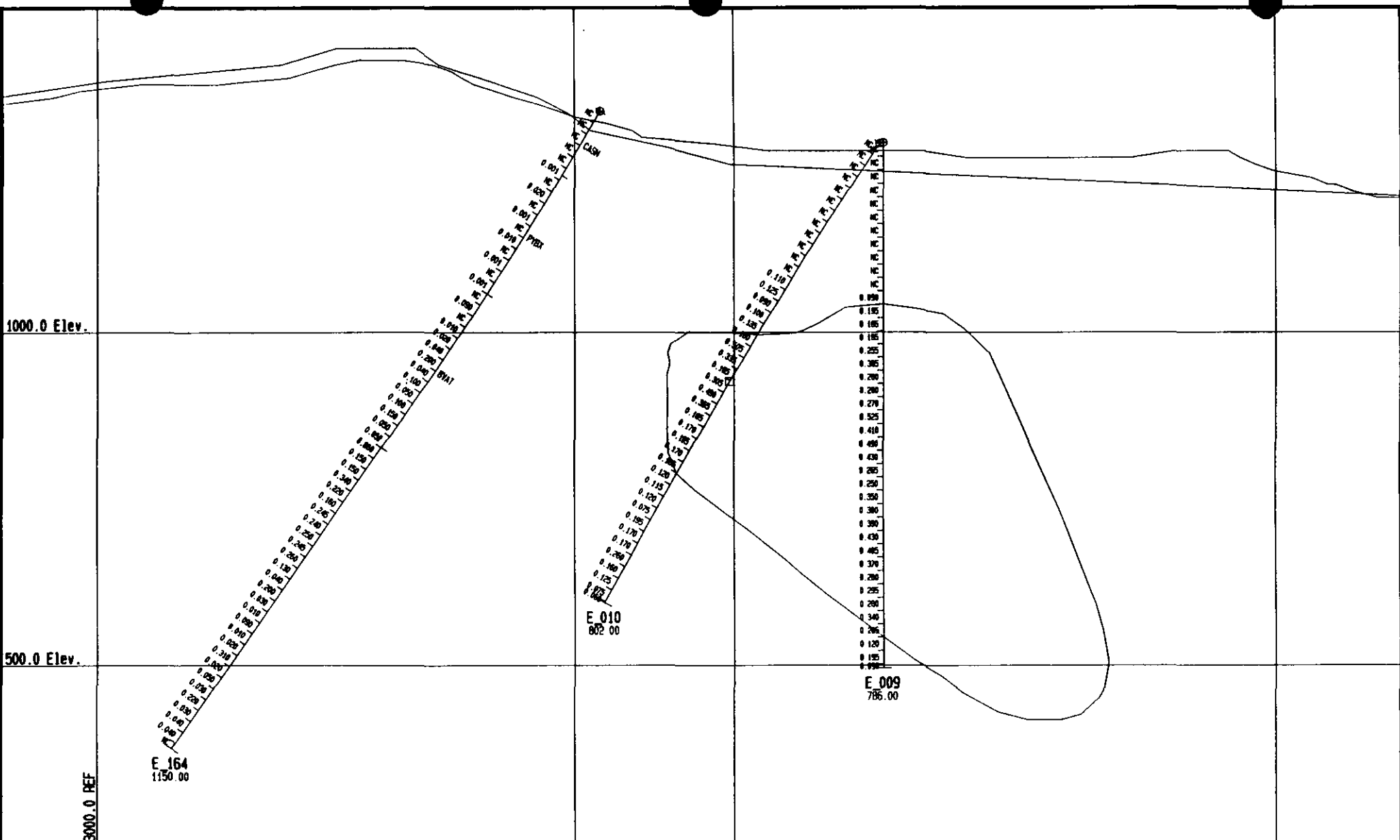
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 P.O. Box 370
 Port Hardy, BC
 V0N 3P0

**P-ZONE -- MINERAL RESOURCE
 SECTION 211W**

DATE: 04/06/93 TIME: 07: 26: 29

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

Boundary = 0.15% Cu Contour



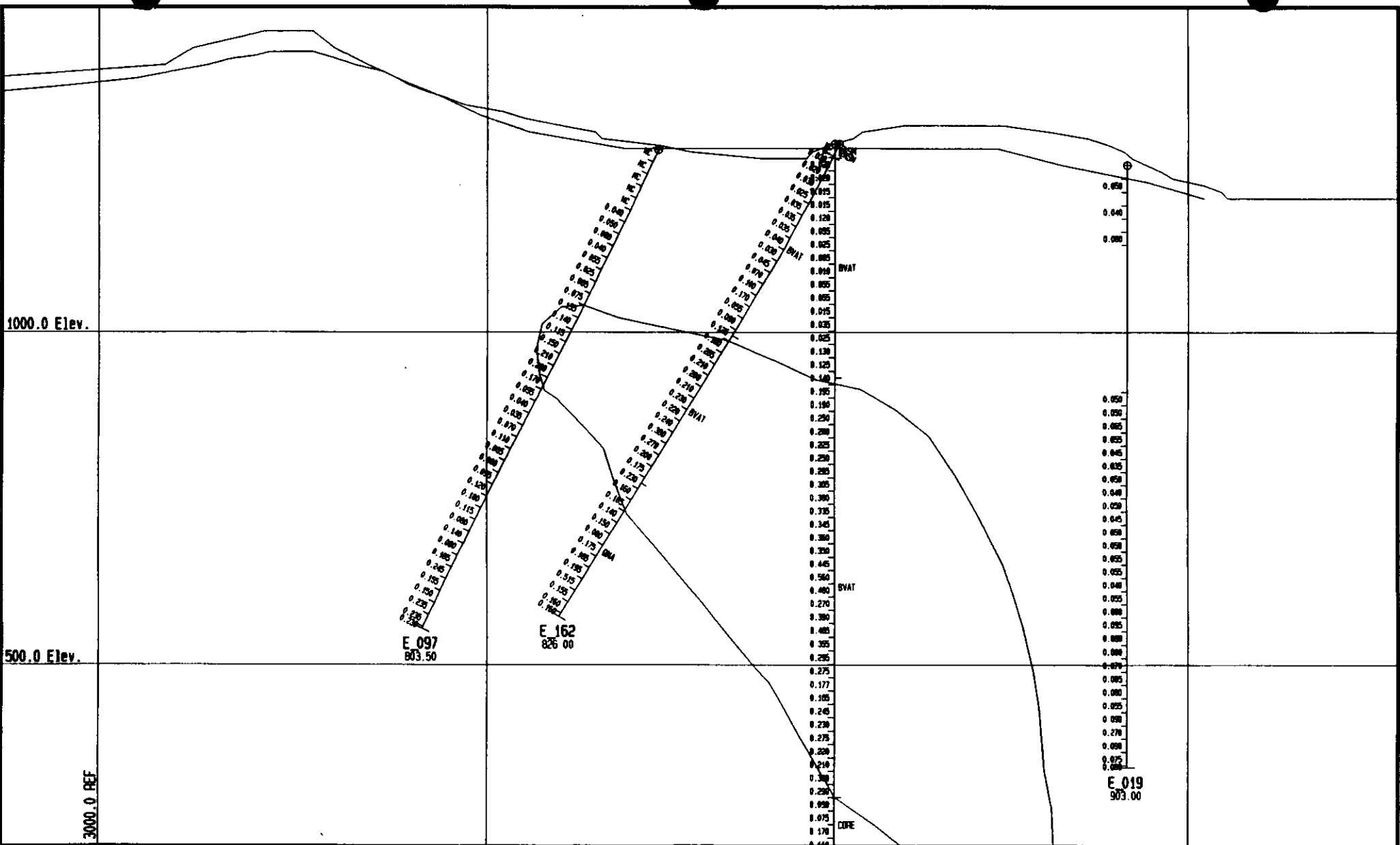
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 P.O. Box 370
 Port Hardy, BC
 V0N 3P0

DATE: 04/06/93 TIME: 07:20:37

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P-ZONE -- MINERAL RESOURCE
 SECTION 209W

Boundary = 0.15% Cu Contour



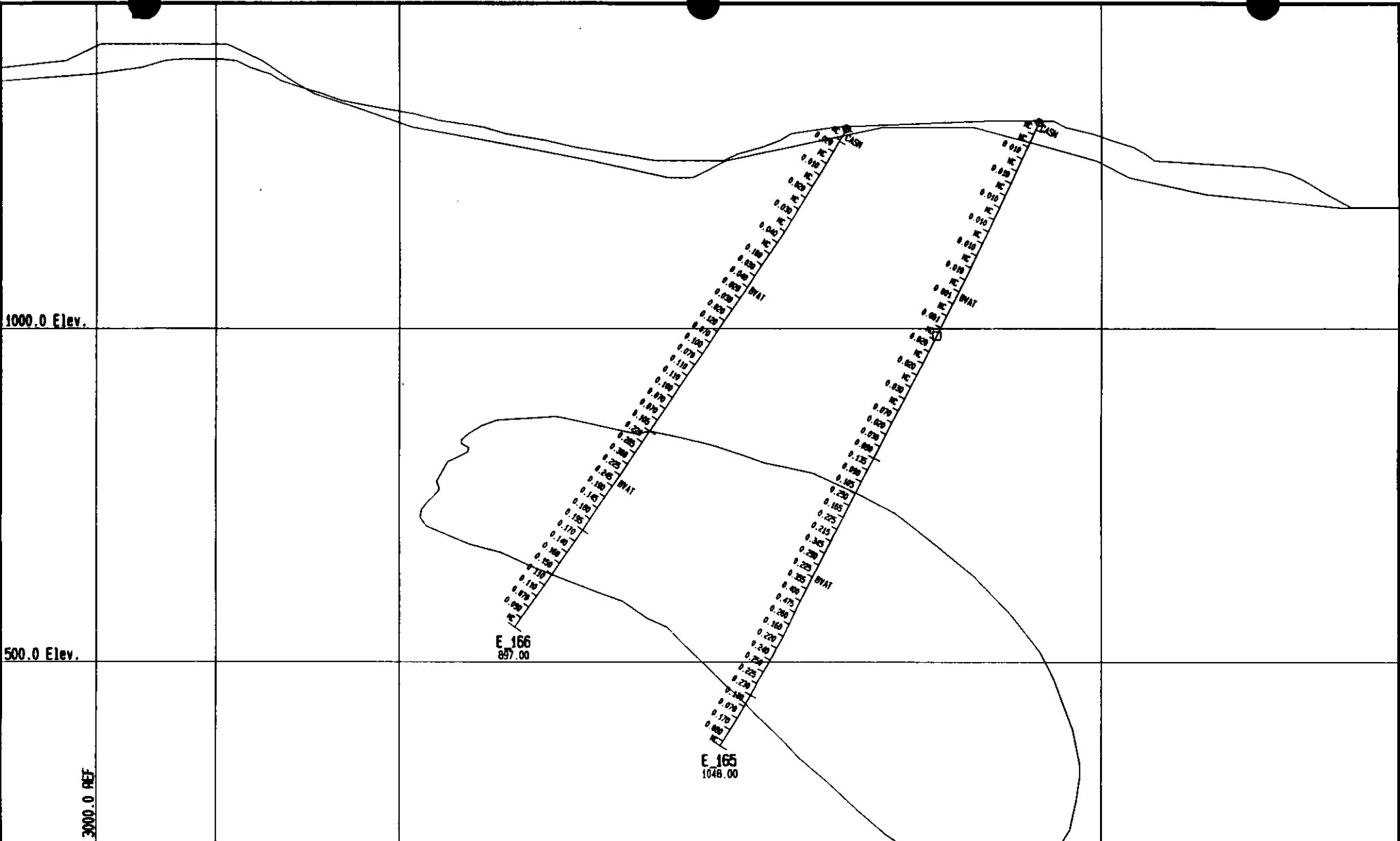
BHP Minerals Canada Ltd.
 P.O. Box 370
 Port Hardy, BC
 VON 3P0

DATE: 04/06/93 TIME: 07:28:25

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

P-ZONE -- MINERAL RESOURCE
 SECTION 213W

Boundary = 0.15% Cu Contour



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

**P-ZONE -- MINERAL RESOURCE
 SECTION 217W**

DATE: 04/06/93 TIME: 07:30:23

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

Boundary = 0.15% Cu Contour



Province of
British Columbia

Ministry of
Energy, Mines and
Petroleum Resources

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

DIAMOND DRILLING TYPE OF REPORT/SURVEY(S)

TOTAL COST
\$73,822.49

AUTHOR(S) J.A. Fleming, P.Geo.

SIGNATURE(S)

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED

April 19, 1993

YEAR OF WORK 1993

PROPERTY NAME(S) APPLE-93 GROUP

COMMODITIES PRESENT COPPER, MOLYBDENUM, GOLD

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN

NANAIMO

MINING DIVISION

NTS

92L/11E

LATITUDE 50° 36'

LONGITUDE

127° 31'

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123, Mining or Certified Mining Lease ML 12 (claims involved)].

APPLE 1 FR., APPLE 1 (9 UNITS), APPLE #2 (18 UNITS), APPLE #3 (9 UNITS), APPLE #4 (18 UNITS), APPLE #6 (4 UNITS), APPLE #7 - 10, MIMAS (12 UNITS), JUNO (15 UNITS), COVE 18, COVE 20, ART NO. 6 FR., COIR 7, COIR FR., COIR 4, BAY 54, BAY 82, M.L. 250, M.L. 253

OWNER(S)

BHP MINERALS CANADA LTD

(1)

(2)

GORDON MILBOURNE

MAILING ADDRESS

BOX 370,
PORT HARDY, B.C.
VON 2P0

C/O LADNER DOWNS,
1200-700 WEST GEORGIA ST.
VANCOUVER, B.C. V7Y 1A8

OPERATOR(S) (that is, Company paying for the work)

BHP MINERALS CANADA LTD.

(1)

(2)

MAILING ADDRESS

BOX 370,
PORT HARDY, B.C.
VON 2P0

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):

The area north of Rupert and Holberg Inlets is underlain by the Upper Triassic (Vancouver Group) to Lower Jurassic (Bonanza Group) volcanic and sedimentary succession. Jurassic quartz-diorite to porphyritic granodiorite stocks with minor quartz-feldspar porphyry dykes cut the gently southwestward dipping succession. These units are overlain by Cretaceous (Kyuquot and Queen Charlotte groups) sediments. The work area is underlain by basaltic tuffs and flows of the Bonanza volcanics formation intruded by dykes of dacite porphyry. Porphyry copper-molybdenum-gold mineralization occurs in the work area and in the Island Copper deposit that is situated directly to the east of the work area.

REFERENCES TO PREVIOUS WORK ASSESSMENT REPORT #'S 17297, 18744

FILMED

FILMED

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	COST APPORTIONED
GEOLOGICAL (scale, area)			
Ground			
Photo			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core	1224.4 m; 5 DDH, NQ	M.L. 250, M.L. 253	\$67,462.49
Non-core			
RELATED TECHNICAL			
Sampling/assaying	212 samples	M.L. 250, M.L. 253	\$6,360.00
Petrographic			
Mineralogic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Legal surveys (scale, area)			
Topographic (scale, area)			
Photogrammetric (scale, area)			
Line/grid (kilometres)			
Road, local access (kilometres)			
Trench (metres)			
Underground (metres)			
			TOTAL COST \$73,822.49

FOR MINISTRY USE ONLY	NAME OF PAC ACCOUNT	DEBIT	CREDIT	REMARKS:
Value work done (from report)				
Value of work approved				
Value claimed (from statement)				
Value credited to PAC account				
Value debited to PAC account				
Accepted Date	Rept. No.			Information Class



Province of
British Columbia

Ministry of
Energy, Mines and
Petroleum Resources

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)
DIAMOND DRILLING

TOTAL COST
\$52,645.23

AUTHOR(S) J.A. Fleming, P.Geo. SIGNATURE(S) *J.A. Fleming*

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED April 19, 1993 YEAR OF WORK 1993

PROPERTY NAME(S) LAKE-93 GROUP

COMMODITIES PRESENT COPPER, MOLYBDENUM, GOLD

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN

MINING DIVISION NANAIMO NTS 92L/11E

LATITUDE 50° 36' LONGITUDE 127° 31'

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]:

BAY 92, KOL 15 - 22, KOL 27 - 33, KOL 40 - 44, KOL 1 FR. - 7 FR., KEY FR., LAKE, RUBY, KEN 1 - 8, SPAM 21 FR. - 22 FR., BEE 1 - 2, F1 FR. - F3 FR., SPAM 3 FR., SLIM FR., BIM 1 - 4, F-1 - 15, TAR 2, TAR 4, TAR 6, JIM 10, JIM 12, JIM 14, JIM 16, M.L. #250, M.L. #253.

OWNER(S)
(1) BHP MINERALS CANADA LTD (2) GORDON MILBOURNE

MAILING ADDRESS
BOX 370, PORT HARDY, B.C. VON 2P0
C/O LADNER DOWNS, 1200-700 WEST GEORGIA ST. VANCOUVER, B.C. V7Y 1A8

OPERATOR(S) (that is, Company paying for the work)
(1) BHP MINERALS CANADA LTD. (2)

MAILING ADDRESS
BOX 370, PORT HARDY, B.C. VON 2P0

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):
The area north of Rupert and Holberg Inlets is underlain by the Upper Triassic (Vancouver Group) to Lower Jurassic (Bonanza Group) volcanic and sedimentary succession. Jurassic quartz-diorite to porphyritic granodiorite stocks with minor quartz-feldspar porphyry dykes cut the gently southwestward dipping succession. These units are overlain by Cretaceous (Kyuquot and Queen Charlotte groups) sediments. The work area is underlain by basaltic tuffs and flows of the Bonanza Volcanics Formation intruded by dykes of dacite porphyry. Porphyry copper-molybdenum-gold mineralization occurs in the work area and in the Island Copper deposit that is situated directly to the east of the work area.

ASSESSMENT REPORT #'S 17297, 18744

REFERENCES TO PREVIOUS WORK

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	LAKE-93	ON WHICH CLAIMS	COST APPORTIONED
GEOLOGICAL (scale, area)				
Ground				
Photo				
GEOPHYSICAL (line-kilometres)				
Ground				
Magnetic				
Electromagnetic				
Induced Polarization				
Radiometric				
Seismic				
Other				
Airborne				
GEOCHEMICAL (number of samples analysed for)				
Soil				
Silt				
Rock				
Other				
DRILLING (total metres; number of holes, size)				
Core	848.0 m, 3 DDH, NQ	M.L. 253		\$48,025.23
Non-core				
RELATED TECHNICAL				
Sampling/assaying	154 samples	M.L. 253		\$4,620.00
Petrographic				
Mineralogic				
Metallurgic				
PROSPECTING (scale, area)				
PREPARATORY/PHYSICAL				
Legal surveys (scale, area)				
Topographic (scale, area)				
Photogrammetric (scale, area)				
Line/grid (kilometres)				
Road, local access (kilometres)				
Trench (metres)				
Underground (metres)				
TOTAL COST				\$52,645.23

FOR MINISTRY USE ONLY	NAME OF PAC ACCOUNT	DEBIT	CREDIT	REMARKS:
Value work done (from report)				
Value of work approved				
Value claimed (from statement)				
Value credited to PAC account				
Value debited to PAC account				
Accepted Date	Rept. No.			Information Class



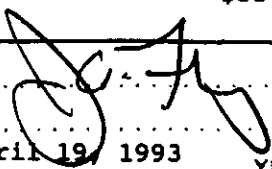
Province of
British Columbia

Ministry of
Energy, Mines and
Petroleum Resources

ASSESSMENT REPORT
TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)
DIAMOND DRILLING

TOTAL COST
\$35,308.73

AUTHOR(S) J.A. Fleming, P.Geo. SIGNATURE(S) 

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED April 19, 1993 YEAR OF WORK 1993

PROPERTY NAME(S) COVE-93 GROUP

COMMODITIES PRESENT COPPER, MOLYBDENUM, GOLD

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN NANAIMO

MINING DIVISION NTS 92L/11E

LATITUDE 50° 36' LONGITUDE 127° 31'

NAMES and NUMBERS of all mineral tenures in good standing (when work was done) that form the property [Examples: TAX 1-4, FIRE 2 (12 units); PHOENIX (Lot 1706); Mineral Lease M 123; Mining or Certified Mining Lease ML 12 (claims involved)]

APPLE 5 (20 UNITS), QL-1 (15 UNITS), QL-2 (9 UNITS), ART 10 FR., BOB #1, BOB #2, COVE. 17 - 20, ART 6 FR., CORK FR., BAR, BAR FR., KOL #23 - #26, KOL #34 - #38, KOL 8 FR., KOL 9 FR., MIMAS (12 UNITS), JUNO (15 UNITS), COIR 4, BAY 54, BAY 68, BAY 82, BAY 84, BAY 94, M.L. #253

OWNER(S)
(1) BHP MINERALS CANADA LTD (2) GORDON MILBOURNE

MAILING ADDRESS
BOX 370, PORT HARDY, B.C. VON 2P0
C/O LADNER DOWNS, 1200-700 WEST GEORGIA ST. VANCOUVER, B.C. V7Y 1A8

OPERATOR(S) (that is, Company paying for the work)
(1) BHP MINERALS CANADA LTD (2)

MAILING ADDRESS
BOX 370, PORT HARDY, B.C. VON 2P0

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):
The area north of Rupert and Holberg Inlets is underlain by the Upper Triassic (Vancouver Group) to Lower Jurassic (Bonanza Group) volcanic and sedimentary succession. Jurassic quartz-diorite to porphyritic granodiorite stocks with minor quartz-feldspar porphyry dykes cut the gently southwestward dipping succession. These units are overlain by Cretaceous (Kyuquot and Queen Charlotte groups) sediments. The work area is underlain by basaltic tuffs and flows of the Bonanza Volcanics Formation intruded by dykes of dacite porphyry. Porphyry copper-molybdenum-gold mineralization occurs in the work area and in the Island Copper deposit that is situated directly to the east of the work area.

REFERENCES TO PREVIOUS WORK ASSESSMENT REPORT #'S 17297, 18744

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	COVE-93 ON WHICH CLAIMS	COST APPORTIONED
GEOLOGICAL (scale, area)			
Ground
Photo
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic
Electromagnetic
Induced Polarization
Radiometric
Seismic
Other
Airborne			
GEOCHEMICAL (number of samples analysed for)			
Soil
Silt
Rock
Other
DRILLING (total metres; number of holes, size)			
Core	593.1 m; 2 DDH, NQ	M.L. 253	\$32,008.73
Non-core
RELATED TECHNICAL			
Sampling/assaying	110 samples	M.L. 253	\$3,300.00
Petrographic
Mineralogic
Metallurgic
PROSPECTING (scale, area)			
PREPARATORY/PHYSICAL			
Legal surveys (scale, area)
Topographic (scale, area)
Photogrammetric (scale, area)
Line/grid (kilometres)
Road, local access (kilometres)
Trench (metres)
Underground (metres)
			TOTAL COST \$35,308.73

FOR MINISTRY USE ONLY	NAME OF PAC ACCOUNT	DEBIT	CREDIT	REMARKS:
Value work done (from report)	
Value of work approved	
Value claimed (from statement)	
Value credited to PAC account	
Value debited to PAC account	
Accepted	Rept. No.	Information Class

Appendix 1

**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 than .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 NO₂ fumes (5 minutes) then 20 ml of a solution of 2 % AlCl₃ 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 Spectrometry (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 2

PROJECT Island Copper
 CONTRACTOR Olympic Drilling & Consulting Ltd.
 DATE STARTED Jan 12, 1993 COMPLETED Jan 14/93
 LOGGED BY David Pawliuk

T.D. 600.0 FT COLLAR ELEVATION 1349.8
 INCLINATION -90° BEARING
 COORDINATES 22135.5 E / 8004.5 N
 SURVEY REFERENCES L 207.03 S 780.85

Footage	ALTERATION											STR.			VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1" = 200'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT			
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Claymat	Pyroxene	Amphibole	Alb.K	Surf. Vens	Frac Inter	Est. Cu. Mo	Cu/Fes	Fe ₂					Cu/Fes	Fe ₂ O ₃	Mn ₂ O ₃
NR core																										
0																								0.0 - 125.7' CASING 0.0 - 82' FILL 82 - 121 OVERBURDEN 121 - 125.7 CASING		
200																								200 sph? bands rimmed by py. hem (70%) - py (30%) cubical calcite vials hem (90%) - py (8%) - cpy (2%) corroded quartz eyes	125.7 - 600.0 QUARTZ-FELDSPAR PORPHYRY Coarse grained with subhedral waxy grey quartz eyes av. 0.15 to 0.3" across which form 30 to 40% of rock volume. Off-white feldspar phenos subhedral, av. 20.12" long, with sericite atth of rims. Increase in magnetite content from 514' to 540'.	
400																								400 py on fault slip. cpy v. finely disse to 0.05 sooty py laminae; cpy specks. retrograde(?) ep. cpy specks in section with little py, more epidote		
600																								600 12" fault bre with hem, py and garnet in matrix.		

HOLE NO. E 157

DRILL LOG

Page 2 of 8

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawlinski

T.D. 600'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT										
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-feldspar	Chlorite	Epidote	Carb. Zeo		Garnet	Pyroxene	Amphibole	Sulf. Veins	Frac. Inten.					Est. Cu Mo	CuFeS ₂	FeS	CuFeS ₂	Fe ₂ O ₃	MoS ₂				
180																								+			fault; 2" crushed core @ 75°		<p>QFP hard, competent rock unit. Occ. py-rich bands to 0.5" wide throughout; py also as local irregular disseminated masses. About 2% disseminated pyrite throughout as tiny specks to euhedral cubes 0.1" across. Rare off-white calcite/ orange zoelite veinlets. Quartz veinlets appear at about 288' feet depth, and are non-existent in upper part of hole. Sericite alt'n much less abundant below 524' where rock indurated by silica; pyrite also more abundant below 524'.</p>	
190																								+			2 speckles bright orange zeol along irregular fractures.			
200																								+			fault along fracture @ 38°			
210																								+			0.0" wide hem (60%) - py (40%) vein @ 40°			
220																								+			irreg. small (<.1") py vnts.			
230																								+			fault; 2" crushed, finely bkn core + clayey gouge @ 25°			
240																								+			fault; 3/4" clay + bkn @ 45°			
250																								+			fault; 3" crushed bkn core w. abund. py @ 30°			
260																								+			fault; 0.05" grey clay on slip @ 45°			
270																								+			py band 0.5" @ 35°			
280																								+			abund. py near fault @ 50°			
290																								+			hem? (90%) - py (8%) - cp (2%)			
300																								+			iron masses to 1/10" across in adjacent			

HOLE NO. E 157

DRILL LOG

Page 4 of 8

PROJECT Island Copper
CONTRACTOR _____
DATE STARTED _____ COMPLETED _____
LOGGED BY D. Pawlik

T.D. 600'
INCLINATION -90°
COLLAR ELEVATION _____
BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	ALTERATION													STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Calc-Zeo	Garnet	Pyroxene	Amphibole		Sulf Veins	Frac Inter	Est Cu Mo	CuFeS ₂	FeS ₂					CuFeS ₂	Fe ₃ O ₄	MoS ₂				
300																.01	.5								+			125.7 - QFP As above except less chlorite, more sericite		
310																.01	1								+	hem py vlt 0.15" wide @ 25° corroded qtz eyes to 0.5" across.				
320																.01	1-2								+					
330																									+					
340																.01	1								+					
350																.03	1								+					
360																.01	2								+					

Additional annotations and descriptions from the log:

- 310-320: fault slip @ 30°
- 320-330: 0.05' sooty py + clay on slip at 50°
- 330-340: fault slip @ 45°
- 340-350: fault slip @ 45°
- 350-360: fault; 1" clayey gouge + f. bkn core on fracture at 25° to c.a.; uncertain orientation.
- 360-370: healed fault, slip @ 40° to c.a.
- 370-380: pyrite on fault slip at 15°
- 380-390: Fault zone @ 255° to c.a.; intensely fractured core

HOLE NO. E 157

DRILL LOG

Page 7 of 8

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY Paulouk

T.D. 600' COLLAR ELEVATION _____
 INCLINATION -90° BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION												STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1/10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene		Amphibole	Al ₂ SiO ₅	Sulf Vens	Frac Inten	Est Cu Mo	CuFes					FeS	Cu ₂ Fes	FaO	MoS			
480																											+	small specks retrograde(?) epidote.	125.7 - 600.0 QFP As above; increase in silica, chlorite and magnetite content below 514'. Rock a medium green-grey colour from 526' to 542' as result of sil-mag-cht attn.	
490																	.02	5-1								+	small specks cp			
500																		.03	.5								+	} moderately fractured QV 0.1" @ 25°		
510																			.04	1							+	} moderately fractured QV 0.2" @ 30° retrograde epidote yellowish green mass 0.4" across. small fault(?) @ 20° QV ~ 0.5" @ 50° QV 0.2" @ 10° vein qtz fragments		
520																			.08	1								+	QV 0.3" @ 60°	up to 1" x 0.8" within QFP.
530																			.04	1								+	QV 0.2" @ 10° cp mass 0.1" across, greenish sulphide.	
540																			.2	.5								+	fault; small amount of clay on irregular fracture at 60° fault; 12" crushed core and clayey, pyritic gouge between	

HOLE NO. E 157

DRILL LOG

Page 8 of 8

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY David Pawlinski

T.D. 600'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION													STR.		VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1" : 10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT			
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blasite	K-spar	Chlorite	Epidote	Carb Zool	Garnet	Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inter	Est Cu, Mo	CuFeS ₂	FeS ₂	CuFeS ₂					FeO ₂	Moss	
570																	.03	1	.	.	.	.	.	570		<p>125.7 = 600.0 QFP grey As above; light greenish to light cream - orange grey, large waxy grey qtz eyes as for overlying QFP. Slight increase in calcite/ceolite attr with depth, as well as typical moderately silicified patches. Hard, competent rock.</p>	
550																	.05	.5	.	.	.	.	.	550		<p>moderately to finely broken core. fault; 2" f. bkn core, ? orientation 2 cp v.f. specks as irregular masses.</p>	
540																	.05	.5	.	.	.	.	.	540		<p>fault; 4" crushed core between slips @ 55° QV 0.3" @ 265° cp specks in section with little pyrite, more epidote.</p>	
530																	.05	.5	.	.	.	.	.	530		<p>fault; clayey slip @ 40° QV 0.2" @ 30°</p>	
520																	.02	1	.	.	.	.	.	520		<p>fault(?) irreg. fractures @ 35° to c.a. fault breccia over 12"; QFP and vein qtz fragments in sandy matrix w. hematite and pyrite and brown garnets. No cp seen.</p>	
510																	.02	.5	.	.	.	.	.	510		<p>fault slip @ 15° 0.04" speck moly</p>	
500																	.02	.5	.	.	.	.	.	500		<p>qtz vlt 0.2" wide at 15° wide subparallel c.a. eroded by carb-zool vlt 0.25" small specks cp, v.f. diss chalky grey qtz vlt</p>	
590																	.09	.5	.	.	.	.	.	590		<p>600.0' END OF HOLE</p>	

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_157	22135.5	8004.5	1349.8

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	600.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
126.0	130.0	0.03	0.002	3.5	0.02	0.20	0.003	0.019	17222
130.0	140.0	0.16	0.003	9.1	0.07	1.30	0.022	0.100	17223
140.0	150.0	0.03	0.002	4.0	0.03	0.60	0.006	0.245	17224
150.0	160.0	0.02	0.003	5.5	0.07	0.60	0.006	0.082	17096
160.0	170.0	0.02	0.002	2.6	0.02	0.50	0.039	0.215	17225
170.0	180.0	0.03	0.001	3.8	0.03	0.60	0.012	0.460	17226
180.0	190.0	0.02	0.001	3.2	0.02	0.50	0.024	0.152	17227
190.0	200.0	0.03	0.002	2.8	0.02	0.50	0.004	0.109	17097
200.0	210.0	0.07	0.002	7.7	0.05	1.10	0.005	0.540	17228
210.0	220.0	0.03	0.002	5.0	0.01	0.50	0.010	0.100	17229
220.0	230.0	0.02	0.001	4.7	0.01	0.20	0.003	0.035	17230
230.0	240.0	0.23	0.003	5.7	0.07	3.90	0.008	0.182	17098
240.0	250.0	0.02	0.001	3.6	0.01	0.30	0.016	0.045	17231
250.0	260.0	0.03	0.001	4.3	0.01	0.30	0.004	0.052	17232
260.0	270.0	0.03	0.001	3.7	0.01	0.10	0.004	0.020	17233
270.0	280.0	0.04	0.005	4.6	0.01	0.40	0.005	0.063	17099
280.0	290.0	0.02	0.001	4.1	0.01	<0.01	0.002	0.008	17234
290.0	300.0	0.01	0.001	3.3	0.01	0.10	0.006	0.006	17235
300.0	310.0	0.01	0.001	2.5	0.01	<0.01	0.002	0.005	17236
310.0	320.0	0.04	0.001	2.1	0.01	0.10	0.001	0.015	17100
320.0	330.0	0.01	0.001	3.0	0.01	<0.01	0.001	0.002	17237
330.0	340.0	0.03	0.001	5.9	0.02	0.30	0.005	0.031	17238
340.0	350.0	0.04	0.001	3.9	0.01	0.40	0.003	0.010	17239
350.0	360.0	0.09	0.002	4.7	0.03	0.90	0.003	0.050	17101
360.0	370.0	0.06	0.001	4.6	0.03	1.30	0.043	0.101	17240
370.0	380.0	0.14	0.002	5.9	0.02	1.10	0.011	0.021	17241
380.0	390.0	0.09	0.001	3.1	0.01	1.20	0.002	0.032	17242
390.0	400.0	0.14	0.002	2.2	0.03	0.60	0.003	0.012	17102
400.0	410.0	0.13	0.004	3.3	0.02	0.80	0.019	0.039	17243
410.0	420.0	0.10	0.003	1.8	0.30	0.30	0.001	0.005	17244
420.0	430.0	0.21	0.002	2.1	0.05	0.80	0.002	0.033	17245
430.0	440.0	0.23	0.001	1.6	0.01	1.40	0.007	0.148	17103
440.0	450.0	0.18	0.002	2.2	0.18	2.80	0.016	0.066	17246
450.0	460.0	0.19	0.001	2.1	0.04	0.70	0.003	0.016	17247
460.0	470.0	0.08	0.001	2.1	0.03	0.80	0.002	0.007	17248
470.0	480.0	0.11	0.001	2.1	0.01	0.40	0.004	0.026	17104
480.0	490.0	0.07	0.001	1.5	0.03	0.40	0.001	0.009	17249
490.0	500.0	0.09	0.001	2.0	0.04	0.40	0.001	0.008	17250

DATE: 04/06/93

PAGE: 1

TIME: 15:46:27

BHP MINERALS CANADA - Island Copper Mine

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
500.0	510.0	0.15	0.002	2.4	0.10	0.50	0.002	0.006	17251
510.0	520.0	0.19	0.001	2.3	0.01	0.50	0.002	0.013	17105
520.0	530.0	0.16	0.001	2.7	0.11	0.90	0.002	0.013	17252
530.0	540.0	0.16	0.001	3.6	0.11	1.50	0.032	0.061	17253
540.0	550.0	0.17	0.002	4.0	0.19	1.40	0.016	0.083	17254
550.0	560.0	0.12	0.001	2.3	0.01	0.70	0.007	0.020	17106
560.0	570.0	0.11	0.001	3.4	0.19	0.60	0.002	0.016	17255
570.0	580.0	0.08	0.001	4.4	0.24	1.30	0.022	0.375	17256
580.0	590.0	0.06	0.001	3.5	0.22	0.80	0.015	0.078	17257
590.0	600.0	0.08	<0.001	2.4	0.02	0.20	0.002	0.009	17107

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: IC

DATE SENT: Jan 26/93

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-157	360	370	6	0	46	03	13	43	101	172406
	370	380	14	2	59	02	11	11	21	2417
	380	390	9	1	31	01	12	2	32	2428
	400	410	13	4	33	02	8	19	39	2439
	410	420	10	3	18	03	3	1	5	24410
	420	430	21	2	21	05	8	2	33	24511
	440	450	18	2	22	18	28	16	66	24612
	450	460	19	1	21	04	7	3	16	24713
	460	470	8	0	21	03	8	2	7	24814
	480	490	7	0	15	03	4	1	9	24915
	490	500	9	0	20	08	14	1	8	25016
	500	510	15	2	24	10	5	2	6	25117
	520	530	16	1	27	11	9	2	13	25218
	530	540	16	1	36	19	15	32	61	25319
	540	550	17	2	40	19	14	16	83	25420
	560	570	11	1	34	19	16	2	16	25521
	570	580	8	1	44	24	13	22	375	25622
	580	590	6	1	35	22	8	15	78	25723

54

55

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: IC

DATE SENT: Jan 26/93

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-157	126	130	03	2	35	002	02	3	19	17222	1
	130	140	16	3	91	007	13	22	100	223	2
	140	150	03	2	40	003	06	6	245	224	3
	160	170	02	2	26	002	05	39	1215	225	4
	170	180	03	1	38	03	06	12	1460	226	5
	180	190	02	1	32	02	05	24	152	227	6
	200	210	07	2	77	05	11	5	540	228	7
	210	220	03	2	50	01	05	10	100	229	8
	220	230	02	1	47	01	02	3	35	230	9
	240	250	02	1	36	01	03	16	45	231	10
	250	260	03	1	43	01	03	4	52	232	11
	260	270	03	1	37	01	01	4	20	233	12
	280	290	02	1	41	01	00	2	8	234	13
	290	300	01	1	33	01	01	6	6	235	14
	300	310	01	1	25	01	00	2	5	236	15
	320	330	01	1	30	01	00	1	2	237	16
	330	340	03	1	59	02	03	5	31	238	17
	340	350	04	1	39	01	04	3	10	239	18

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: 1/c

DATE SENT: Jan 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-1157	150	160	02	003	55	07	06	006	087	1709619
	190	200	03	002	28	02	05	004	109	09726
	230	240	23	003	57	07	39	008	182	098 21
	270	280	04	005	46	01	04	005	063	099 22
	310	320	04	001	21	01	01	001	015	100 23
	350	360	09	004	47	03	09	003	050	101 24
	390	400	14	002	22	03	06	003	012	102 25
	430	440	23	001	16	01	14	007	149	103 26
	470	480	11	001	21	01	04	004	026	104 27
	510	520	19	001	25	01	05	002	013	105 28
	550	560	12	001	23	01	07	007	020	106 29
	590	600	08	000	24	02	02	002	009	107 30

RECOVERY AND RQD%

HOLE: E_157

LOGGED BY: S. OAKLEY

DATE: JAN. 4, 1993

FOOTAGE		RECOVERY		PERCENTAGE	
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"
126	127	14	5	116.67%	41.67%
127	137	117	54	97.50%	45.00%
137	147	118	96	98.33%	80.00%
147	157	120	89	100.00%	74.17%
157	167	120	91	100.00%	75.83%
167	177	121	93	100.83%	77.50%
177	187	118	72	98.33%	60.00%
187	197	121	93	100.83%	77.50%
197	207	119	74	99.17%	61.67%
207	217	121	56	100.83%	46.67%
227	237	120	81	100.00%	67.50%
237	247	119	74	99.17%	61.67%
247	257	118	56	98.33%	46.67%
257	267	120	76	100.00%	63.33%
267	277	121	43	100.83%	35.83%
277	287	124	49	103.33%	40.83%
287	297	120	51	100.00%	42.50%
297	307	118	55	98.33%	45.83%
307	317	122	37	101.67%	30.83%
317	327	118	36	98.33%	30.00%
327	337	101	31	84.17%	25.83%
337	347	123	58	102.50%	48.33%
347	357	117	60	97.50%	50.00%
357	367	120	43	100.00%	35.83%
367	377	119	78	99.17%	65.00%
377	387	115	26	95.83%	21.67%
387	397	96	5	80.00%	4.17%
397	407	119	29	99.17%	24.17%
407	417	117	19	97.50%	15.83%
417	427	117	41	97.50%	34.17%
427	437	120	61	100.00%	50.83%
437	447	123	29	102.50%	24.17%
447	457	121	58	100.83%	48.33%
457	467	117	59	97.50%	49.17%
467	477	122	47	101.67%	39.17%
477	487	121	63	100.83%	52.50%
487	497	120	58	100.00%	48.33%
497	507	120	44	100.00%	36.67%
507	517	113	54	94.17%	45.00%
517	527	120	69	100.00%	57.50%

RECOVERY AND RQD%

527	537	121	55	100.83%	45.83%
537	545	85	18	88.54%	18.75%
545	554	108	72	100.00%	66.67%
554	564	123	32	102.50%	26.67%
564	574	118	45	98.33%	37.50%
574	584	124	60	103.33%	50.00%
584	594	117	58	97.50%	48.33%
594	600	85	28	118.06%	38.89%

MAGNETIC SUSCEPTIBILITY

LE NO. E-157

DATE Jan. 14/93

Pg 1 of 2

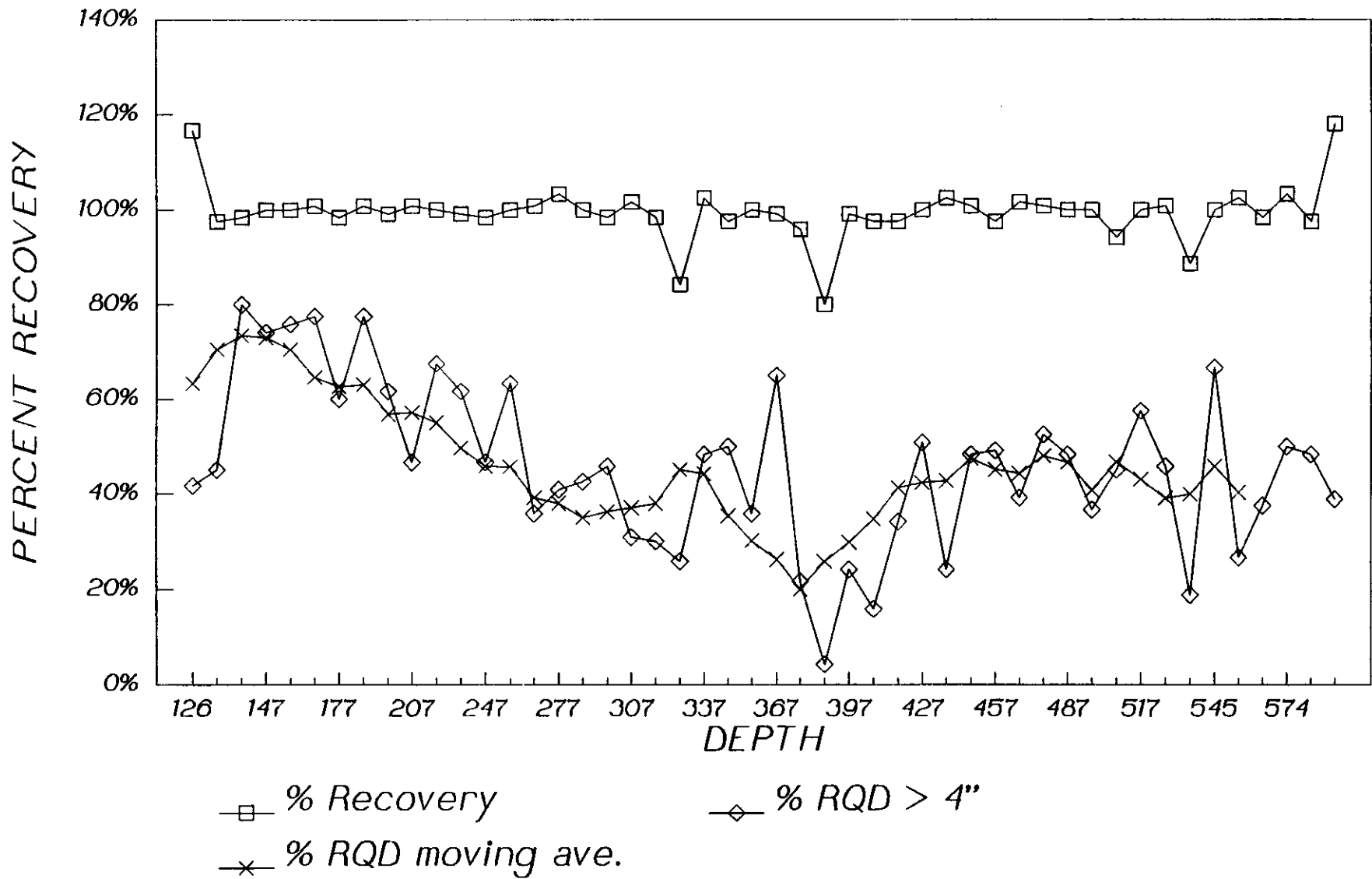
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
126-130						.01
130-140						.01
140-150						.03
150-160						.01
160-170						.01
170-180						.02
180-190						.01
190-200						.04
200-210						.01 .01
210-220						.03
220-230						.07
230-240						.01
240-250						.19
250-260						.23
260-270						.04
270-280						.06
280-290						.02
290-300						.02
300-310						.03
310-320						.01
320-330						.01
330-340						.02
340-350						.01
350-360						.02
360-370						.01
370-380						.03
380-390						.03
390-400						.02
400-410						.01
410-420						.02
420-430						.04
430-440						.03
440-450						.02
450-460						.03

ROCK QUALITY DESIGNATION

E-157



HOLE NO. E 158

DRILL LOG

Page 1 of 1

PROJECT Island Copper

T.D. 600.0 FT

COLLAR ELEVATION 1278.3

CONTRACTOR Olympic Drilling & Consulting Ltd

INCLINATION -90°

BEARING ---

DATE STARTED Jan. 15/93 COMPLETED Jan. 17/93

COORDINATES 22463-75E

8227.95N

LOGGED BY David Pawliuk

SURVEY REFERENCES L 204.59 STN 1094.94

Footage	ALTERATION											STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1:200'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blasite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet		Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est. Cu. Mo					CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS ₂
<u>NQ core</u>																										
0.0-13.0																						0.0-13.0 CASING	<p>13.0-600.0 BONANZA VOLCANICS. Light greyish green medium to fine grained basaltic flow/ash tuff; coarse grained lapilli tuff/volcanic breccia below 423'.</p> <p>Silicified sections below 528' contain much more magnetite than adjacent clay-alt'd sections. Preferential magnetite alt'n of larger clasts has occurred.</p>	<p>0.0-13.0 CASING</p> <p>13.0-600.0 BONANZA VOLCANICS. Light greyish green medium to fine grained basaltic flow/ash tuff; coarse grained lapilli tuff/volcanic breccia below 423'.</p> <p>Silicified sections below 528' contain much more magnetite than adjacent clay-alt'd sections. Preferential magnetite alt'n of larger clasts has occurred.</p>		
100																						100			<p>fault zone @ 45°</p> <p>cpy (?) very finely disseminated.</p> <p>soft, sericite- and clay-altered at faults.</p> <p>py vlt's to 0.1" @ 40°</p> <p>chl-rich rim on ep mass</p> <p>py vlt's.</p> <p>coarse gr. volc bxa clasts to 1"</p> <p>cpy masses to 0.1" in gte-hem-py vlt's</p> <p>irregular wispy py vlt's with occ. cpy specks</p> <p>faults @ ~ 60°</p> <p>cpy v. finely diss.</p> <p>tuff banding @ 65°</p>	
200																						200				
300																						300				
400																						400				
500																						500				
600																						600				

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 600'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT			
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Alb. Xc	Sulf Veins	Frac Inten	Est Cu Mo					CuFeS	FeS	CuFeS	Fe_{2}O_{3}	Moss
130																								130- BONANZA VOLCANICS Light grey-brown, phyrophyllite(?) rich for most of interval. Light creamy green sections w. epidote + aqua coloured chlorite. Abundant faults as above with local poor core recovery.	
140																								fault; 4" f. bkn @ 55° fault; 0.5" f. bkn and gouge on slip @ 35° fault; 6" f. bkn + gouge @ 30° fault; 12" f. bkn; ? orientation. - fault zone; crushed, finely to moderately broken core throughout clayey slip @ 50° yellow-green epidote; pale maroon, v. finely diss hematite from 147.7-149.4.	
150																								fault slip @ 27° aqua coloured chlorite. fault; 13" f. bkn core + gouge @ about 70° to c.a.	
160																								fault slip at 22° fault; 2" f. bkn core; ? orientation. fault; 13" f. bkn core; ? orientation. cp (?) speck	
170																								fault; upper fracture @ 25° to c.a. FAULT ZONE; crushed, finely bkn core + gouge. fault slip @ 60° slip @ 60°	
180																								v. fine specks of cp (?)	188.0-192.1 Fault zone with sand from 188.5-191.3.

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY David Pawliuk

T.D. 600' COLLAR ELEVATION _____
 INCLINATION -90° BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.		VISUAL EST.					Sample No & Interval	LOG		LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay (prop)	Blaine	K-spar	Chlorite	Epidote	Calc Zeo	Garnet	Pyroxene	Amphibole	Al ₂ O ₃	Sulf Vens	Frac Inten	Est Cu Mo		CuFeS ₂	FeS			CuFeS ₂	Fe ₃ O ₄	MoS ₂	SCALE <u>1":10'</u>	BASIC GEOLOGY: rock types, metallization, structures alterations, one column system		
190																								188.5-191.3	Fault zone with sand seam from 188.5-191.3	BONANZA VOLCANICS Light greyish brown with local creamy white patches to 204' depth; this rock has undergone moderate clay mineral alt'n as above. Below 204' rock bleached, light grey-green with up to 5 or 7% yellowish green epidote as irregular masses, discontinuous veinlets and as subround spots up to 0.3x0.6" across. Moderate to intense pyrophyllite (?) alt'n appears to be confined to the faulted, intensely brecciated rock above 204'. Below 204' weak clay mineral alteration; rock easily scratched with steel. Also below 204' rock contains say 2% chlorite.	BONANZA VOLCANICS		
200																	.03	5						200	fault; 3.5" white clay-rich gouge on pyrophyllite slip @ 59° fault slip at 36° ep specks to 0.08" fault @ 15°				
210																	.02	3+						210	fault slip @ 30° fault @ 52°; 4" gouge of blk core. fault @ 20° fault @ 35°				
220																	.02	2						220	fault @ 60° 5 pyrite veinlets to 0.1" @ 40°				
230																	.01	1						230	fault; 0.8" pyritic gouge on slip @ 55° to c.a.				
240																	.01	1						240					
250																	.01	2						250	fault; 0.2" f. blk + gouge on fracture @ 45° bright green chlorite s. irregular pyrite veinlets to 0.17" wide within fault matrix fault; 5" greenish cream, pyritic, clayey gouge on pyritic slip				

PROJECT Island Copper

T.D. 600.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -90°

BEARING _____

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY D. Pawliuk

SURVEY REFERENCES _____

Footage	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								
	Core Recovery	Oxide	Quartz	sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zao		Garnet	Pyroxene	Amphibole	Hb. *	Sulf Veins					Frac Inter	Est Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	
250																										fault, 0.1" gouge + f. bkn core @ 50° shear of clayey gouge on slip @ 45°	15.0 - BONANZA VOLCANICS Pale greyish green to pale brownish green, bleached to brownish white or greenish white where intense clay mineral alteration has occurred at faults. Local dark maroon to dark brown patches where hematite abundant. Iron oxide in rock mainly hematite; only local slight magnetism. Faults within interval characterized by finely to moderately broken core pieces separated by thin seams of clay lining fracture sfcs, rather than clayey gouge seams 2 to 5" wide as are present from 188 to 204' above. Volcanic fairly soft, can be scratched with steel. Weak to locally intense clay mineral alteration throughout.	
260																									fault slip @ ~40° chlorite-rich rim 0.1" wide surrounds epidote mass 0.7" across.			
270																									fault, 3.5" pyritic, clayey gouge, at 70° to c.a.			
280																									fault @ 10° to c.a.; 0.4" clayey gouge fault; 3" f. bkn core + gouge between slips @ 60° pyrite vlt 0.1" wide @ 15°			
290																									fault; 0.5" f. bkn core + gouge @ 40° small fault @ 71°			
300																									fault @ 55°; 8" crushed finely broken core. fault @ 70° fault @ 60°; 2" f. bkn core + gouge.			
310																									300.9 - 302.6 Fault about 35° to c.a. fault; 0.1" f. bkn pyritic core on fracture at 35°			

PROJECT Island Copper

CONTRACTOR

DATE STARTED COMPLETED

LOGGED BY D. Pawlink

T.D. 600'

INCLINATION -90°

COORDINATES

SURVEY REFERENCES

COLLAR ELEVATION

BEARING

Footage	ALTERATION												STR.	VISUAL EST.					Sample No & Interval	LOG	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT				
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zoo	Garnet	Pyroxene		Amphibole	Albite	Sulf Veins	Frac. Inten.	Est. Cu Mo		CuFeS ₂			FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	SCALE 1:10'
310																								SCALE 1:10' BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	13.0- BONANZA VOLCANICS Light greyish green to medium green to locally light cream-brown and black sections. Medium to fine grained, basaltic volcanic rock. weak to locally intense (pale creamy-brown sections) clay mineral alteration throughout. Easily scratched by steel in most places. Greenish black intervals contain abundant hematite!	
320																								py vlt 0.1" @ 20° coarse volcanic breccias, clasts to 1" across fault, 0.8" f. bkn, pyritic core between fractures @ 30° fault, 0.1" clayey gouge slip at 30° fault, 0.3" f. bkn @ 50°		
330																								cp speck 0.04" across	discontinuous py vlt's to 0.1" wide, some with envelopes of up to 0.5" wide cp speck 0.4" wide along py vlt.	
340																								fault, clayey slip @ 20° fault, 1" f. bkn @ 65° fault, clayey slip @ 45° fault, 0.6" f. bkn + gouge at 55°		
350																								fault, f. bkn, pyritic core 0-15" wide @ 20° fault, 0.15" pyritic gouge @ 35° to c.a.	pale brown bleached wallrock	
360																										
370																										

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawliuk

T.D. 600' COLLAR ELEVATION _____
 INCLINATION -90° BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT										
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biopite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet		Pyroxene	Amphibole	Alb:K	Sulf Veins	Frac Inter					Est. Cu. Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂				
370																															
380																															
390																															
400																															
410																															
420																															
430																															

13.0 -
 BONANZA VOLCANICS
 Medium to light greyish green,
 medium to fine grained basaltic
 flow/ash tuff. Finer-grained
 than most of overlying
 volcanic with coarser clasts
 here to say max 0.4"
 across. Less epidote, less clay
 mineral alt'n, fewer faults and
 fewer pyrite veinlets than
 within overlying volcanic
 Weak silica alt'n throughout as
 rock often cannot be scratched
 with steel. Uniform, rather
 monotonous rock to 423'
 which is top of moderately
 brecciated section.

fault, clayey slip along
 zeolite veinlet @ 35°
 cpy masses to 0.1" across
 within qtz-hem-py
 vfts

? amphibole
 alteration in irreg.
 masses to 0.1 x 0.5"

cpy. fine diss.

py vfts to 0.05" wide.

off-white to brown
 carbonate veinlet 0.5"
 @ 17° to c.a.

breccia w. irregular
 py-amphibole(?) - clays - cpy.

bands/veins of qtz-carb-
 py-amphibole(?) - clays - cpy.

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawluk

T.D. 600
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blotite	K-spat	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Pyrite	FeS	CuFeS					FeO	MoS
490																			fault @ 50° irreg, discont. py vltts.	13.0 - BONANZA VOLCANICS Medium to dark greenish grey to pale brownish grey. Medium grained basaltic flow (?) to ~523.4' 523.4 - 600.0' Medium to locally coarse grained lapilli volcanic breccia. Silicified intervals are darker coloured and contain much more magnetite than adjacent clay-altered sections.	BONANZA VOLCANICS
500																		.03 4	fault @ 40°; crushed, finely broken, py-rich over 1" at bottom of fault zone.		
510																		.05 2	fault @ 40°; f. bkn 0.3" fault; 2" crushed, pyritic core between fractures at 50° fault slip @ 55°		
520																		.10 2	fault; 0.15" f. bkn on fracture @ ~20° go v. finely diss.		
530																		.05 3	fault; 0.2" white, clayey gouge + f. bkn core on smooth slip @ 60° fault @ 80°; 1.5" clayey gouge + f. bkn core.		
540																		.04 5	fault; 6" crushed, finely broken, pyrite-rich core between fractures @ 60° fault; 0.5" finely bkn @ 60°		
550																		.02 3	fault; clayey slip @ 65° fault; 0.5" finely bkn + clayey gouge @ 55° irregular py vltts to 0.05" wide		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawluk

T.D. 600' COLLAR ELEVATION _____
 INCLINATION -90° BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No. & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT																				
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet		Pyroxene	Amphibole	Est. Cu Mo	CuFeS ₂	FeS	Cu ₂ FeS ₄					Fe ₂ O ₃	MoS ₂																		
550																																										
560																																										
570																																										
580																																										
590																																										
600																																										

13.0 - 600.0'
 BONANZA VOLCANIC S.
 Lapilli tuff as above.
 Medium greenish grey
 except for interval 596.0 - 592.5'
 which is light brown to
 cream coloured due to
 clay mineral alteration.
 Hard, moderately silicified
 rock for the most part.
 Irregular magnetite - chlorite
 clots to about 1" across
 present, these occasionally
 rim pyrite masses.

cp v. finely diss.

tuff (?) interbeds
 0.2" thick @
 65° to c.a.

fault, 2.1" finely broken
 core of clayey gouge
 between fractures @
 50°.

cp very finely diss

600.0' END
 OF HOLE

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_158	22463.8	8228.0	1278.3

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	600.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
30.0	40.0	0.03	0.001	6.2	0.01	0.30	0.003	0.013	17116
70.0	80.0	0.01	<0.001	10.8	0.01	0.40	0.016	0.104	17117
110.0	120.0	<0.00	<0.001	3.7	0.01	0.10	0.005	0.016	17118
150.0	160.0	<0.00	0.001	3.7	0.01	0.20	0.002	0.025	17119
190.0	200.0	0.05	0.001	15.2	0.07	4.70	0.009	0.128	17120
230.0	240.0	0.01	<0.001	7.8	0.03	0.90	0.032	0.092	17121
270.0	280.0	0.04	0.001	7.1	0.01	1.30	0.005	0.214	17122
310.0	320.0	0.05	0.001	5.9	0.01	0.90	0.005	0.094	17123
350.0	360.0	0.02	0.001	8.6	0.02	0.70	0.010	0.139	17124
390.0	400.0	0.01	<0.001	3.8	0.01	0.40	0.008	0.043	17125
430.0	440.0	<0.00	<0.001	6.0	0.04	0.70	0.009	0.068	17126
470.0	480.0	0.02	0.001	7.6	0.01	0.30	0.004	0.042	17127
510.0	520.0	0.05	0.001	8.5	0.01	0.60	0.007	0.117	17128
550.0	560.0	0.03	0.001	8.9	0.01	0.10	0.004	0.020	17129
590.0	600.0	0.02	0.001	6.2	0.01	0.10	0.003	0.021	17130

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/c

DATE SENT: Jan 19/93

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-158	30	40	03	001	62	01	3	003	013	17116
	70	80	01	000	108	01	4	016	104	117
	110	120	00	000	37	01	11	005	016	118
	150	160	00	001	37	01	2	002	025	119
	190	200	05	001	152	07	47	009	128	120
	230	240	01	000	78	03	9	022	092	121
	270	280	04	001	71	01	13	005	214	122
	310	320	05	001	59	01	9	005	094	123
	350	360	02	001	86	02	17	010	139	124
	390	400	01	000	38	01	4	008	043	125
	430	440	00	000	60	04	17	009	068	126
	470	480	02	001	76	01	3	004	042	127
	510	520	05	001	85	01	6	007	117	128
	550	560	03	001	89	01	11	004	020	129
	590	600	02	001	62	01	11	003	021	130 <i>gem</i>

RECOVERY AND RQD%

LOGGED BY: S. OAKLEY

HOLE: E_158

DATE: JAN. 17,

FOOTAGE		RECOVERY		PERCENTAGE	
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"
13	17	39	4	81.25%	8.33%
17	27	105	5	87.50%	4.17%
27	37	100	5	83.33%	4.17%
37	47	85	0	70.83%	0.00%
47	57	115	13	95.83%	10.83%
57	67	93	0	77.50%	0.00%
67	77	113	14	94.17%	11.67%
77	87	75	0	62.50%	0.00%
87	97	80	4	66.67%	3.33%
97	107	105	15	87.50%	12.50%
107	117	85	0	70.83%	0.00%
117	127	85	8	70.83%	6.67%
127	137	106	25	88.33%	20.83%
137	147	88	0	73.33%	0.00%
147	157	115	27	95.83%	22.50%
157	167	80	17	66.67%	14.17%
167	177	87	0	72.50%	0.00%
177	187	45	11	37.50%	9.17%
187	197	107	10	89.17%	8.33%
197	207	117	0	97.50%	0.00%
207	217	122	23	101.67%	19.17%
217	227	122	46	101.67%	38.33%
227	237	120	40	100.00%	33.33%
237	247	122	64	101.67%	53.33%
247	257	120	16	100.00%	13.33%
257	267	121	39	100.83%	32.50%
267	277	123	55	102.50%	45.83%
277	287	122	25	101.67%	20.83%
287	297	121	48	100.83%	40.00%
297	307	121	54	100.83%	45.00%
307	317	120	52	100.00%	43.33%
317	327	119	73	99.17%	60.83%
327	337	119	59	99.17%	49.17%
337	347	101	11	84.17%	9.17%
347	357	122	36	101.67%	30.00%
357	367	119	68	99.17%	56.67%
367	377	121	59	100.83%	49.17%
377	387	122	61	101.67%	50.83%
387	397	122	31	101.67%	25.83%
397	407	121	41	100.83%	34.17%

RECOVERY AND RQD%

407	417	123	73	102.50%	60.83%
417	427	123	64	102.50%	53.33%
427	437	119	43	99.17%	35.83%
437	447	120	21	100.00%	17.50%
447	457	120	61	100.00%	50.83%
457	467	122	58	101.67%	48.33%
467	477	118	45	98.33%	37.50%
477	487	117	51	97.50%	42.50%
487	497	121	56	100.83%	46.67%
497	507	119	53	99.17%	44.17%
507	517	120	23	100.00%	19.17%
517	527	120	52	100.00%	43.33%
527	537	122	44	101.67%	36.67%
537	547	121	57	100.83%	47.50%
547	557	120	68	100.00%	56.67%
557	567	122	79	101.67%	65.83%
567	577	120	55	100.00%	45.83%
577	587	123	33	102.50%	27.50%
587	597	120	47	100.00%	39.17%
597	600	42	15	116.67%	41.67%

MAGNETIC SUSCEPTIBILITY

LE NO. E-158

DATE Jan 17/93

Pg 1 of 2

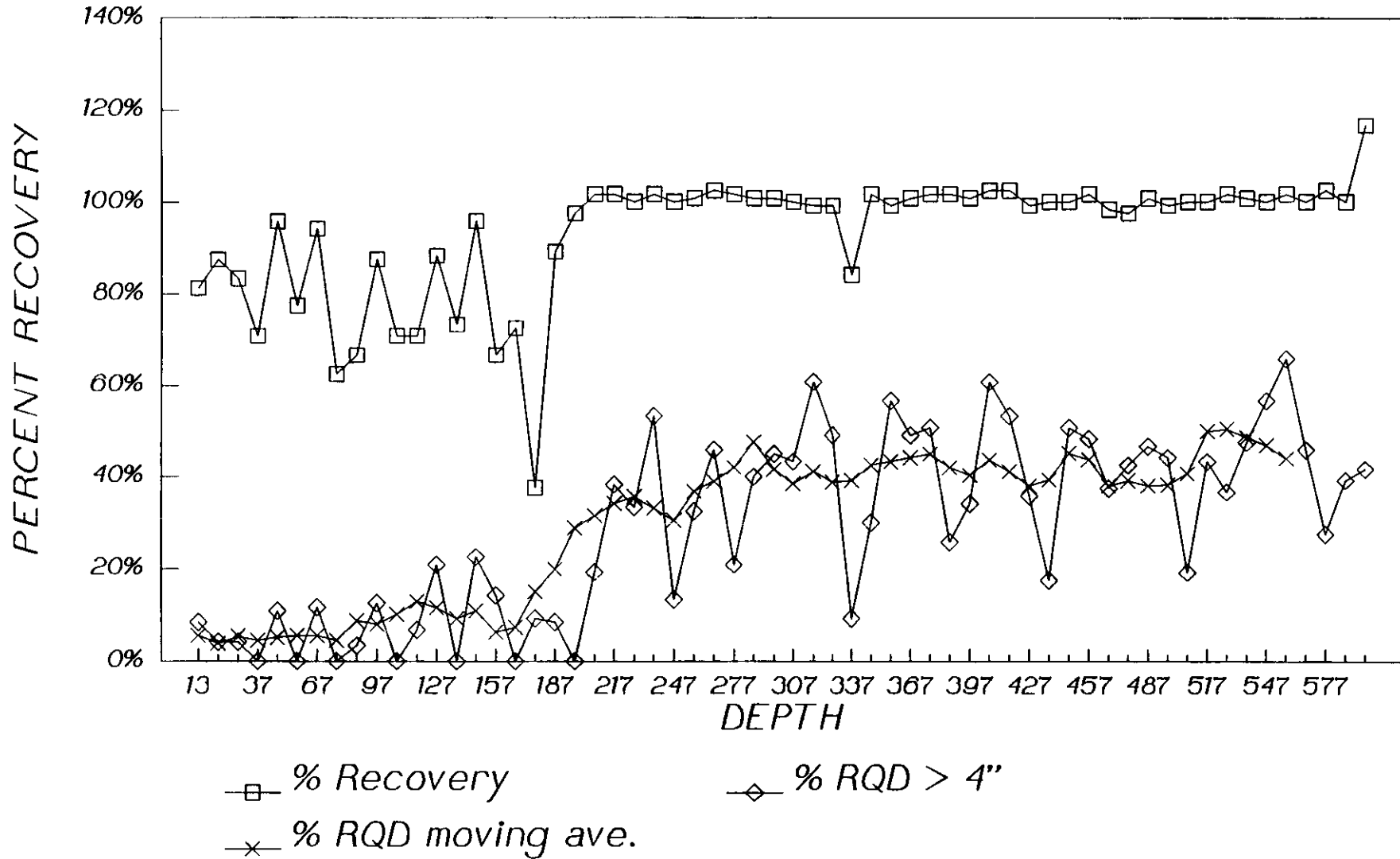
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
13-20						.03
20-30						.03
30-40						.03
40-50						.18
50-60						.03
60-70						.02
70-80						.03
80-90						.53
90-100						.87
100-110						1.6
110-120						.05
120-130						Ø
130-140						.01
140-150						.02
150-160						.02
160-170						Ø
170-180						.01
180-190						.02
190-200						-.02
200-210						.02
210-220						.03
220-230						.03
230-240						.03
240-250						.02
250-260						.01
260-270						.02
270-280						.04
280-290						.02
290-300						.02
300-310						.02
310-320						.02
320-330						.01
330-340						.03
340-350						.05

Recovery and RQD

E_158



PROJECT Island Copper

T.D. 800.0

COLLAR ELEVATION 1279.2

CONTRACTOR Olympic Drilling & Consulting Ltd.

INCLINATION -90.0°

BEARING

DATE STARTED January 19, 1993 COMPLETED January 21, 1993

COORDINATES 22510.0 E // 8844.0 N

LOGGED BY David Pawliuk

SURVEY REFERENCES

Footage	ALTERATION											STR.		VISUAL EST.						Sample No. & Interval	LOG SCALE <u>1":10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT			
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Ca-sulf	Pyroxene	Amphibole	Al ₂ X	Sulf Veins	Frac Inter	Est Cu Mo	Cu-Fe ₂ S ₃	FeS ₂					Cu-FeS ₂	Fe ₂ O ₃	MoS ₂
20	NQ Core																									
20-30																									0.0-22.0' CASING 22.0-800.0 BONANZA VOLCANICS Greyish green except bleached to light greyish brown from 22.0'- 26.0' at top of hole. Rock medium grained ash tuff/ lapilli tuff with larger clasts up to 1" across, the larger clasts average ~ 0.07" diameter. Rock unit fairly uniform, massive with local faint banding. Occasional epidote as hairline veinlets lining fractures or rarely as bands to 1" wide. Rock hard, weakly to locally moderately shaly.	
30-40																	.02	Z					V orange-brown limonite on fracture etc. V fine dusty maroon hematite near QV margin 0.2" wide quartz (90%) - py (10%) ven 0.4' @ 15°			
40-50																		.02	S				V irregular pyrite lens 0.6x0.15" contains cpy ~ 0.1" across at centre.			
50-60																		.02	S				V cpy v. finely diss, and rare pyrrhotite?			
60-70																		.02	S							
70-80																		.03	S				V at 24" to c.a. fault(?) at 35" to c.a.			
80																		.02	I				V py vlt 0.07" wide @ 55° py vlt 0.05" @ 25° cpy finely diss.			

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawliuk

T.D. 800.0'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION										STR.		VISUAL EST.					Sample No. & Interval	SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est Cu Mo	CuFeS					FeS	CuFeS	FeO	MoS		
80																											
90																.02	1									22.0 - BONANZA VOLCANICS Light greyish green to medium greyish brown to off-white, lapilli/ash tuff as above.	
100																.02	2								up v. fine speck		
110																.04	2								fault slip @ 30° fault; clayey slip @ 40° fault; 1.7" clayey, sericitic gouge + f. bkn core @ 55° fault; 0.8" clayey, pyritic gouge on irreg. fracture @ 20° QV1-6" @ 46" w. carb, ankerite, py.		
120																.04	3								quartz (75%) - py (20%) - zeol (5%) vein 0.5" @ 35°		
130																.05	5								irregular py vlt. to 0.1" wide.		
140																.08	3								136.5 - 138.0 Breccia zone at 30°; probable healed fault.		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawluk

T.D. 800'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG		LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT								
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet	Pyroxene	Amphibole	Alb:K	Sulf Veins	Frac Inter	Est. Cu Mo		CuFeS ₂	FeS ₂			CuFeS ₂	Fe ₂ O ₃	MoS ₂	SCALE <u>1"=10'</u>	BASIC GEOLOGY: rock types, metallization, structures alterations, one column system			
200																		.01	.5							200			22.0- BONANZA VOLCANICS Light greyish green medium grained ash/lapilli tuff as above. Rare lapilli-size subround chsts to 1.5" across as at 230' depth. Rock moderately silicified throughout, except slightly less silicified than from 140'-196'. Also fewer epidote bands and vesicles than above; less mag/hem.	
210																		.01	.5							210				
220																		.01	.5							220				
230																		.01	.5							230				
240																		.01	.5							240				
250																		.01	.5							250				
260																		.01	.5							260				

fault @ 30°

band of coarse grained volcanic breccia.

speck up

HOLE NO. E 157

DRILL LOG

PROJECT Island Copper

T.D. 800'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -90°

BEARING _____

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DP

SURVEY REFERENCES _____

Footage	ALTERATION														STR.			VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT			
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Bitite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet	Pyroxene	Amphibole	Sulf Veins	Frac Inter	Est Cu-Mo	Cu-Fe-s	Fe-s	Cu-Fe-s	Fe ₂ O ₃	Mos									
320																		.01	.5								320-330		22.0 - BONANZA VOLCANICS As above; fresh, relatively unaltered volcanic. Medium green to dark greyish green-black.	
330																		.01	.5								330-340		carb-gillsonite py ven 0.5" @ 30°	
340																		.03	.5								340-350		qtz-zed-py-sph-cp w/0.4" wide @ 29° 2 fault; 0.1" crushed core on fracture @ 35° py-sph-rich band 2" wide @ 40° fault @ 38°	
350																		.03	1								350-360		sphalerite (50%) + py (25%) - qtz (23%) - cp (2%) veinlet 0.3" wide @ 35°	
360																		.02	1								360-370		subhedral, stubby white calcite crystals to 0.25" w. occ. subhedral cubes of pyrite to 0.03" acc. oss.	
370																		.01	.5								370-380		pyrite + sphalerite brown gillsonite	
380																														

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawliuk

T.D. 800'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.		VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT								
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene	Amphibole	Sulf Veins	Fract Inten	Est Cu Mo	CuFeS ₂					FeS ₂	CuFeS ₂	FeO _x	MnO ₂				
380																									380	V	flesh colored zeolite(?) veinlets	22.0 - BONANZA VOLCANICS Medium green to dark green to light grey-green; lapilli tuff mainly below 394' with angular to locally subround clasts to 1.5" across average size of coarser clasts say "0.2" to "0.3" across. Ash tuff to 394'	
390																								390	V	pyrite vlt 0.15" wide subparallel c.a. contains galena(?)			
400																								400	V	fault, 13" f. bkn, crushed core & clayey gouge between slips @ 55°			
410																								410	V	pyrite-rich band 1.3" wide above clayey fault slip @ 28° gillsonite-py-carb vein 0.8" @ 10° py vlt 0.1" wide @ 40° fault, clayey slip @ 36°			
420																									430	V	low reddish hematite		
440																									440	V	calcite-gillsonite-gtz vein 0.6" wide @ 40°		

HOLE NO. E 159

DRILL LOG

Page 8 of 13

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawliuk

T.D. 800'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____

COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zoo	Garnet	Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est. Cu. Mo	CuFeS	FeS					CuFeS	Fe ₂ O ₃	MnS				
440																											22.0-		BONANZA VOLCANICS
450																													Medium green to light grey-green. Lapilli tuff
460																													to 462' Ash tuff 462-479, lapilli tuff 479-484, ash tuff 484 -
470																													Banding with ash tuff @ 35° to 70° to c.a., mainly @ ~60° to c.a.
480																													Rock weakly to moderately silicified throughout; can be scratched by steel.
490																													epidote band 2" wide @ 50°
500																													epidote halo 0.1" either side brown pyrite vft 0.1" wide @ 55° to c.a. cp? within py bleb pyrite veins, lensas. py vein 0.6" @ 35° fault; 1" f. bkn core + gouge on slip @ 55° to c.a. 50° banding 65° laminae to 0.8" wide in f. → m. gr. ash tuff cp speck

PROJECT Island Copper
CONTRACTOR _____
DATE STARTED _____ COMPLETED _____
LOGGED BY DJP

T.D. 800'
INCLINATION -90°
COLLAR ELEVATION _____
BEARING _____
COORDINATES _____
SURVEY REFERENCES _____

Footage	ALTERATION													STR.		VISUAL EST.							Sample No & Interval	LOG SCALE <u>1":10</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT				
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zeo	Garnet	Pyroxene	Amphibole	Albite	Sulf. Vens	Frac. Inten	Est. Cu Mo	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₃ O ₄	MeS ₂								
620																		.01	4								V	cp?; trace pyritic fault slip @ 45°	22.0 - BONANZA VOLCANIC S. Light greyish green to medium green. Lapilli tuff to 650.7 as above. Ash tuff often finely laminated at 40° to core axis below 650.7' depth. More abundant pyrite both finely disseminated and in discontinuous veinlets than within overlying rock.	
630																		.01	2								V	qtz-zeol vlt 0.25" @ 48° cp speck finely laminated on a mm scale @ 60°		
640																											V	fault slip @ 40°		
640																		.4	6								Epide rim on py mass	qtz(60%) - py(30%) - carb(10%) band (?vein?) 2.8" wide @ 45° to c.a. contains		
650																											V	2 sub-round cp blebs 0.1" across.		
650																		.10	5								V	qtz(50%) - py(50%) band 2" wide @ 30° contains irregular cp masses through centre of band. bleached, qtz-rich envelopes along margins of py vlt.		
660																											V	discontinuous cp vlt py vlt 0.10" wide @ 15° py vlt 0.15" wide @ 10°		
670																		.04	3								V	faint maroon finely disseminated cp v fine specks laminæ likely coloured by hematite.		
670																		.03	3								V	cp specks		
680																											V	py vlt to 0.1" wide		

HOLE NO. E159

DRILL LOG

Page 13 of 13

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Paulink

T.D. 800.0 FT COLLAR ELEVATION _____
 INCLINATION -90° BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION															STR.	VISUAL EST.					Sample No & Interval	LOG SCALE 1":10' BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS NOTES & SKETCHES	ROCK UNIT																	
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet	Pyroxene	Amphibole					Sulf Veins	Frac Inten	Est Cu Mo	CuFeS					FeS	CuFeS	Fe ₃ O ₄	MoS													
740																																										
																			.03	1																						
750																			.03	3																						
760																			.03	2																						
770																			.03	4																						
																			.02	2																						
790																			.02	3																						
800																																										

say 10% chocolate brown gilsonite (?)

py-rich bands to about 0.5" wide.

2 small, wispy, irregular py vts.

speck up ~ 0.05 x 0.02 across along py vlt. finely dis. mag. hematite (?) within silicified

py vein 0.5 x 0.35"

sp speckles on outside rim of irregular py masses, (non- +) gilsonite to 200.

patches of brownish white, intensely silicified tuff w. diss py patches to 2.5 x 1.2" across

22.0 - 800.0'
 BONANZA VOLCANICS
 medium green-grey to light grey, medium grained ash tuff with local faint banding at about 50° to c.s. Hard, competent rock generally moderately silicified.

hematite (?) within silicified
 800.0' END OF HOLE

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_159	22510.0	8844.0	1279.2

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	800.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
30.0	40.0	0.02	0.001	5.5	0.01	0.30	0.005	0.012	17202
70.0	80.0	0.01	<0.001	5.4	0.01	0.30	0.005	0.010	17203
110.0	120.0	0.02	0.002	5.7	0.01	0.20	0.006	0.048	17204
150.0	160.0	0.01	0.001	5.7	0.01	0.20	0.006	0.017	17205
190.0	200.0	0.03	<0.001	8.3	0.01	0.40	0.014	0.132	17206
230.0	240.0	0.01	<0.001	6.5	0.01	0.40	0.008	0.020	17207
270.0	280.0	0.01	<0.001	5.9	0.01	0.50	0.014	0.024	17208
310.0	320.0	0.01	<0.001	6.9	0.01	0.50	0.010	0.028	17209
350.0	360.0	0.09	0.001	10.9	0.01	0.70	0.009	0.265	17210
390.0	400.0	0.01	0.001	11.0	0.01	0.30	0.008	0.055	17211
430.0	440.0	<0.00	<0.001	7.8	0.01	0.10	0.005	0.027	17212
470.0	480.0	0.01	<0.001	9.1	0.01	0.10	0.005	0.019	17213
510.0	520.0	0.01	<0.001	7.1	0.01	0.60	0.009	0.056	17214
550.0	560.0	0.02	<0.001	7.5	0.01	0.30	0.007	0.033	17215
590.0	600.0	0.01	0.001	10.2	0.01	0.10	0.006	0.036	17216
630.0	640.0	<0.00	0.001	9.3	0.01	0.20	0.005	0.029	17217
670.0	680.0	0.01	0.001	11.6	0.01	0.10	0.004	0.033	17218
710.0	720.0	0.24	0.003	19.2	0.01	1.40	0.010	0.035	17219
750.0	760.0	0.02	0.001	12.2	0.02	0.10	0.006	0.021	17220
790.0	800.0	0.02	0.001	10.0	0.01	0.20	0.006	0.057	17221

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/c

DATE SENT: _____

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-1159	30	40	02	001	55	201	3	005	012	17202	13
	70	80	01	000	54	101	3	005	010	203	14
	110	120	02	002	57	101	2	006	048	204	15
	150	160	01	001	57	101	2	006	017	205	16
	190	200	03	000	83	101	4	014	132	206	17
	230	240	01	000	65	101	4	008	020	207	18
	270	280	01	000	59	101	5	014	024	208	19
	310	320	01	000	69	101	5	010	028	209	20
	350	360	09	001	109	101	7	009	265	210	21
	390	400	01	001	110	101	3	008	055	211	22
	430	440	00	000	78	101	11	005	027	212	23
	470	480	01	000	91	101	11	005	019	213	24
	510	520	01	000	71	101	6	009	056	214	25
	550	560	02	000	75	101	3	007	033	215	26
	590	600	01	001	102	01	11	006	036	216	27
	630	640	00	001	93	01	2	005	029	217	28
	670	680	01	001	116	01	11	004	033	218	29
	710	720	24	003	192	01	14	010	035	219	30

RECOVERY AND RQD%

HOLE NO.: E_159

LOGGED BY: S. Oakley

DATE: JAN. 21, 1992

FOOTAGE		RECOVERY		PERCENTAGE	
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"
22	27	59	8	98.33%	13.33%
27	37	121	35	100.83%	29.17%
37	47	122	33	101.67%	27.50%
47	57	115	4	95.83%	3.33%
57	65	94	9	97.92%	9.38%
65	75	120	31	100.00%	25.83%
75	85	117	37	97.50%	30.83%
85	96	127	49	96.21%	37.12%
96	105	108	16	100.00%	14.81%
105	108	37	0	102.78%	0.00%
108	118	118	51	98.33%	42.50%
118	128	121	27	100.83%	22.50%
128	138	122	67	101.67%	55.83%
138	148	118	56	98.33%	46.67%
148	158	120	32	100.00%	26.67%
158	168	121	30	100.83%	25.00%
168	178	122	24	101.67%	20.00%
178	188	120	39	100.00%	32.50%
188	198	121	33	100.83%	27.50%
198	208	114	14	95.00%	11.67%
208	218	122	53	101.67%	44.17%
218	228	120	25	100.00%	20.83%
228	238	125	46	104.17%	38.33%
238	248	122	48	101.67%	40.00%
248	258	121	62	100.83%	51.67%
258	268	120	66	100.00%	55.00%
268	278	121	85	100.83%	70.83%
278	288	122	67	101.67%	55.83%
288	298	118	58	98.33%	48.33%
298	308	120	33	100.00%	27.50%
308	318	122	64	101.67%	53.33%
318	328	118	77	98.33%	64.17%
328	338	118	50	98.33%	41.67%
328	338	118	50	98.33%	41.67%
338	348	123	54	102.50%	45.00%
348	358	121	51	100.83%	42.50%
358	368	119	48	99.17%	40.00%
368	378	123	21	102.50%	17.50%

RECOVERY AND RQD%

378	388	122	35	101.67%	29.17%
388	398	118	36	98.33%	30.00%
398	408	122	55	101.67%	45.83%
408	418	119	69	99.17%	57.50%
418	428	119	44	99.17%	36.67%
428	438	121	16	100.83%	13.33%
438	448	120	56	100.00%	46.67%
448	458	119	64	99.17%	53.33%
458	468	121	59	100.83%	49.17%
468	478	122	53	101.67%	44.17%
478	488	115	46	95.83%	38.33%
488	498	120	53	100.00%	44.17%
498	508	118	37	98.33%	30.83%
508	518	117	66	97.50%	55.00%
518	528	121	56	100.83%	46.67%
528	538	122	31	101.67%	25.83%
538	548	121	72	100.83%	60.00%
548	558	123	59	102.50%	49.17%
558	568	122	38	101.67%	31.67%
568	578	119	47	99.17%	39.17%
578	588	119	65	99.17%	54.17%
588	598	120	39	100.00%	32.50%
598	608	122	47	101.67%	39.17%
608	618	119	49	99.17%	40.83%
618	628	120	39	100.00%	32.50%
628	638	122	65	101.67%	54.17%
638	648	120	46	100.00%	38.33%
648	658	119	66	99.17%	55.00%
658	668	120	74	100.00%	61.67%
668	678	120	57	100.00%	47.50%
678	688	120	68	100.00%	56.67%
688	698	122	23	101.67%	19.17%
698	708	120	29	100.00%	24.17%
708	718	122	54	101.67%	45.00%
718	728	122	34	101.67%	28.33%
728	738	117	23	97.50%	19.17%
738	748	118	30	98.33%	25.00%
748	758	122	69	101.67%	57.50%
758	768	122	61	101.67%	50.83%
768	778	120	82	100.00%	68.33%
778	788	120	99	100.00%	82.50%
788	798	119	95	99.17%	79.17%
798	801	35	32	97.22%	88.89%

MAGNETIC SUSCEPTIBILITY

LE NO. E-159

DATE Jan 21/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
22-30						.02
30-40						.03
40-50						.02
50-60						.05
60-70						.04
70-80						.03
80-90						.05
90-100						.04
100-110						.01
110-120						.01
120-130						.01
130-140						.01
140-150						.02
150-160						.08
160-170						.07
170-180						.62
180-190						.58
190-200						.03
200-210						.02
210-220						.03
220-230						.01
230-240						.03
240-250						.06
250-260						.04
260-270						.07
270-280						.06
280-290						.03
290-300						.14
300-310						.04
310-320						.04
320-330						.05
330-340						.03
340-350						.02
350-360						.03

MAGNETIC SUSCEPTIBILITY

LE NO. E-159

DATE Jan 21/93

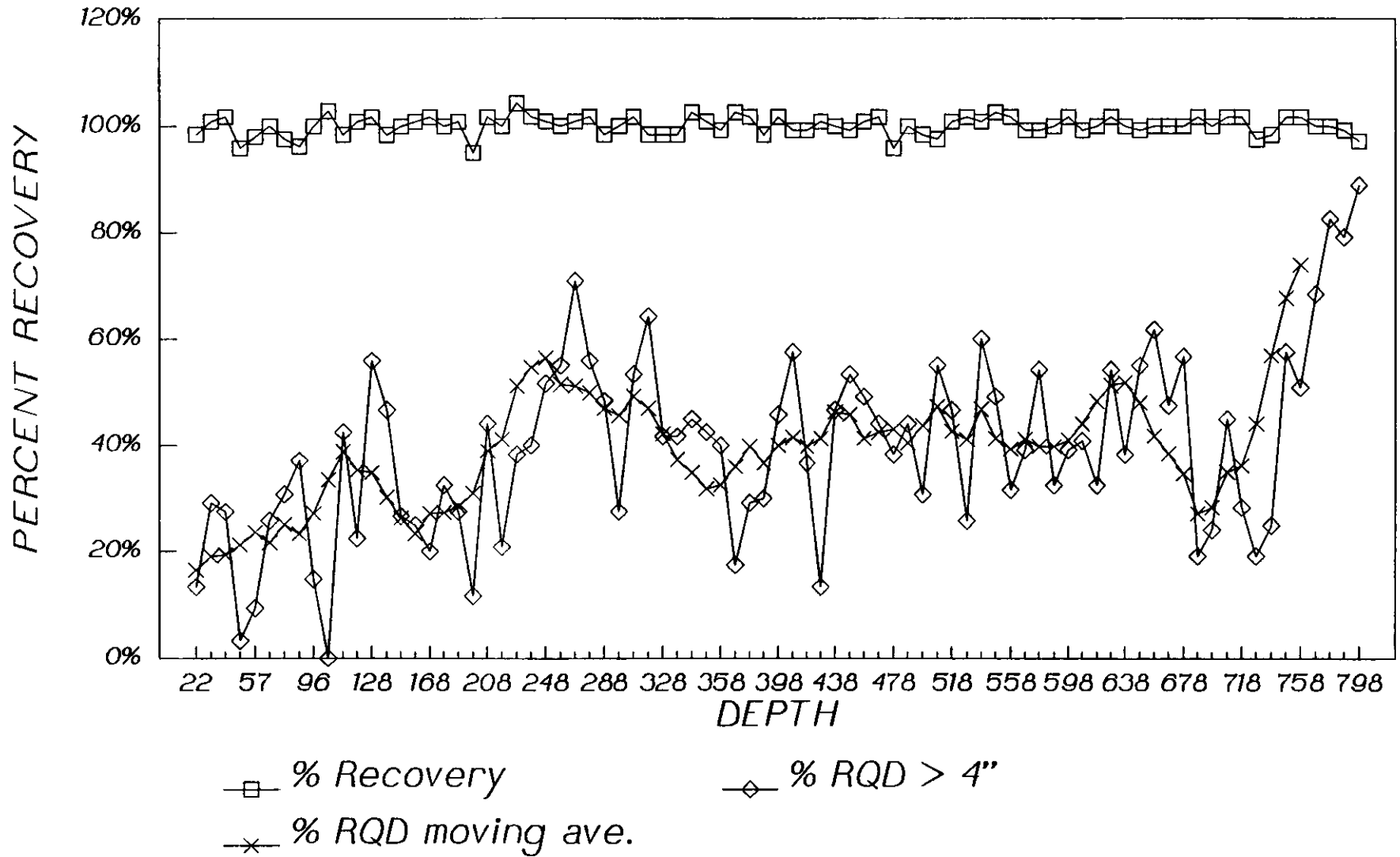
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
360-370						.03
370-380	•					.27
380-390						.03
390-400						.03
400-410						.03
410-420						.04
420-430						.03
430-440						.04
440-450						.03
450-460						.05
460-470						.06
470-480						.01
480-490						.03
490-500						.02
500-510						.02
510-520	•					.02
520-530						.04
530-540						.03
540-550						.05
550-560						.05
560-570						.04
570-580						.04
580-590						.03
590-600						.03
600-610						.03
610-620						.04
620-630						.04
630-640						.03
640-650						.02
650-660						.04
660-670						.03
670-680						.04
680-690						.05
690-700						.03

Recovery and RQD

E_159



PROJECT **Island Copper**
 CONTRACTOR Olympic Drilling & Consulting Ltd.
 DATE STARTED Jan 22/93 COMPLETED Jan 27/93
 LOGGED BY David Pawliuk

T.D. 956.0 FT COLLAR ELEVATION 1373.0'
 INCLINATION -50° BEARING 199°
 COORDINATES 21871.0 E 7291.6 N
 SURVEY REFERENCES

Footage	ALTERATION										STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1" = 200'</u> BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidoite	Carb Zoo	Garnet	Pyroxene	Amphibole		Soil Veins	Frac Inten	Est Cu Mo					CuFes	FeS	CuFes	FeO	MoS

0																							0.0-80 CASING	
100																							80-956.0' BONANZA VOLCANICS	
200																							Greenish grey to grey medium to coarse grained lapilli tuff. Red brown, disseminated primary hematite in upper part of hole.	
300																								
400																								
500																								
600																								
700																								
800																								
900																								

mod. fractured with
calcite + ep vlt.

pyritic fault slip.

irregular pale ep masses
appear to have chloritic
rims.

scarlet hem vlt
with ser(?) selvages.

cpy specks within bxa
of various lithologies.

reddish hem selvage on
ep vlt.

cpy speckles along
transition between
hem + magnetite.
volc. bxa band

cpy as irregular, elongate
lenses near margins of
vein quartz material.

irregular scarlet hem
vlt to 0.15" wide

iron oxide ~ 70% hem, 30% mag

irregular cpy masses
to 0.05" within ep vlt

banding 40°

carb vlt bxa 10" wide

py-ep-zeol band cut
by later calcite vlt.

0.05" back of black
margin of zeol vlt.

secondary biotite flakes at
rim of small Qtz mass.

v fine diss cpy(?) along

HOLE NO. E 160

DRILL LOG

Page L of 15

PROJECT Island Copper

CONTRACTOR Olympic Drilling & Consulting Ltd.

DATE STARTED Jan. 22/93 COMPLETED Jan. 27/93

LOGGED BY David Pawliuk

T.D. 956.0'
INCLINATION -50°
COORDINATES 21871.0 E / 7291.6 N
SURVEY REFERENCES _____

COLLAR ELEVATION 1373.0
BEARING 199°

Footage	ALTERATION														STR.	VISUAL EST.							Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT		
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Alk. K		Sulf Veins	Frac Inten	Est Cu Mo	CuFes	FeF	CuFes	FeO					Mos	
70	<i>NO core throughout hole.</i>																											
70-80																											0.0 - 80 CASING, 80 - BONANZA VOLCANICS. Light greenish grey to medium grey with local red-brown patches where disseminated hematite present. Rock mainly medium to coarse grained lapilli tuff to 121', and medium grained ash tuff below 121'. Clasts within lapilli tuff up to about 1" across, generally subangular. Rock spotted by about 2% light yellowish green epidote. Sm 1% off-white carbonate veinlets up to 0.25" wide. Occ. orange zeolite vlt's lining irregular fractures. Hematite in upper part of hole is likely primary.	
80-90																	.01	1							80-90		To 87' depth rock somewhat bleached, weathered with clays + sericite present. } Iron oxide mainly magnetite; here both above + below so speaks to 0-1% + carb. vein 0.8" at 35° fault; pyritic slip @ 30°	
90-100																	.25	4							90-100		moderately fractured w. calcite + epidote vlt's lining fractures. Fault: 1" gorge + f. bk. between slips @ 20°	
100-110																	.03	1							100-110		prob. healed fault; brecciated calcite vein material within band 1.3" wide @ 28°	
110-120																	.02	.5							110-120		cp(?) finely diss.	
																	.02	.5									fault; clayey slip @ 65° fault; pyritic slip @ 33°	

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY P. J. F.

T.D. 956.0'
 INCLINATION 50°
 COORDINATES _____
 SURVEY REFERENCES _____

COLLAR ELEVATION _____
 BEARING 199°

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT															
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est Cu Mo					CuFeS	FeS	Cu ₂ FeS	Fe ₂ O ₃	Moss										
																							140	.02	.5								V	fault, 0.7" f. bkn + clayey gouge on slip @ 82°	BONANZA VOLCANICS Light greenish grey to medium grey, except red brown hematite-rich from 147 to 164' depth. Mainly ash tuff locally faintly laminated at about 50° to c.a. where seen. Minor lapilli tuff/volcanic breccia interbeds. From 175' down rock andesite porphyry w. euhedral plagioclase phenocrysts, massive, hard rock.	
																							150	.1	.5								V	speck cp cp to 0.4" x 0.1" within ep-rich band or vlt		
																							160	.01	<.5								V	fault; Dol gouge on slip @ 40° fault; clayey slips @ 30° v. fine speck cp laminae @ 40°		
																							170	.01	.5								V	fault; 1" f. bkn + hem-rich gouge @ 55° 164.0-165.3 volcanic breccia band with subangular clasts to 1/2" band @ 22° to c.a.		
																							180	.01	<.5								V	irregular masses of pale coloured, retrograde epidote appear to have chloritic rims. cp speck in ep vlt. scarlet hematite with sericite(?) v. fine diss mag.		in vlt's to 0.1" wide selvages.

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 956.0' COLLAR ELEVATION _____
 INCLINATION -50° BEARING 199°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT				
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Sulf Veins	Frac Inter	Est Cu Mo	CuFeS ₂	FeS ₂					Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	
190																.05	.5						✓	2 cp specks py vlt 0.2" @ 50° ✓ ep v. fine diss	<p>BONANZA VOLCANICS Light greenish grey to greyish maroon, massive, hard, silica-indurated, andesite porphyry. Euhedral plag laths usually weakly sericitized. Darker coloured (maroon) sections contain finely diss. magnetite. Rock generally hard + cannot be scratched with steel.</p>	<p>BONANZA VOLCANICS</p>
200															.01	.5						✓	2 cp speck			
210															.01	.5						✓				
220															.01	.5						✓				
230															.01	.5						✓	carb-zeol. on 1" 5 43			
240															.01	.5						✓	2 pervasive silica has replaced (?) magnetite			
250															.01	.5						✓				

PROJECT Island Copper

T.D. 956'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -50°

BEARING 199°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY D. Pawliuk

SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG		LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est Cu Mo		CuFeS ₂	FeS ₂			Cu ₂ FeS ₄	Fe ₃ O ₄	MoS ₂	SCALE <u>1:10'</u>	BASIC GEOLOGY: rock types, metallization, structures alterations, one column system
250																							✓	irreg py mass.	BONANZA VOLCANICS		
260																.01	<.5							✓		As above, except for the absence of light greenish grey, silica-epidote altered andesite porphyry below about 287'. Only traces local epidote below 287'.	
270																.01	<.5							✓	hairline to 0.05" wide scarlet hem vlt.	Hard, silica-indurated rock cannot be scratched with knife; much of the silica above 287' appears to be a product of alteration.	
280																.01	.5							✓		Below 287' rock dark brownish grey to black, massive and appears relatively unaltered although it also contains pyroxene silica. Magnetite finely diss. throughout rather than segregated within clots.	
290																.02	<.5							✓	cp irreg. mass 0.05" irregular scarlet hematite vlt. contain irreg. py + cp masses. Hem appears to have replaced both the magnetite and partly the sulphide masses as well.		
300																.01	<.5							✓			
310																.01	<.5							✓			

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY Pawliuk

T.D. 956.0'
 INCLINATION -50°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING 199°

Footage	ALTERATION											STR.	VISUAL EST.	Sample No & Interval	LOG SCALE <u>1:110'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT									
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Carnet							Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est Cu Mo	CuFeS	FeS	CuFeS	FeO	MoS
310																									breccia. Subangular to subround clasts of various lithologies to about 1" across.	BONANZA VOLCANICS
320																.01	<.5								fault: 8" crushed, blk cong + clayey gouge on fracture to 60'	As above, except for patches and bands of light yellowish green epidote form about 5% of rock volume from 347 to 389' depth.
330																.02	<.5								carb vtt 0.3" @ 20° carb vtt 0.35" @ 35°	Epidote occurs mostly as speckles within volcanic, also occasionally as small, irregular veinlets.
340																.01	<.5								carb(70%) - ep(30%) vtt 0.25" @ 20°	Epidote patches have faint boundaries.
350																.01	<.5								ep? v. fine diss	
360																.01	<.5									reddish hematite selvage along epidote vtt.
370																.01	<.5									

HOLE NO. E 160

DRILL LOG

Page 6 of 15

PROJECT Island Copper

T.D. 956.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -50°

BEARING 199°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY Paulink

SURVEY REFERENCES _____

Footage	ALTERATION												STR.	VISUAL EST.					Sample No & Interval	LOG		LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene		Amphibole	Sulf Veins	Frac Inten	Est Cu Mo	Cu/Fe, Fe, Cu/Fe, Fe ₂ O ₃ , MoS ₂		SCALE <u>1:10'</u>	BASIC GEOLOGY: rock types, metallization, structures alterations, one column system		
370																			✓	v. finely diss maroon hematite	BONANZA VOLCANICS steel grey-black with local light creamy green patches where epidote abundant. Medium grained andesite porphyry as above with euhedral plagioclase laths. Occ. hairline to 0.1" wide scarlet hematite veinlets lining fractures spcs. Slightly less carb/zeol vlt. than in overlying rock.		
380																		✓	pale orange carb/zed vlt 0.35" @ 43°				
390																		✓	light orange zeolite(?) within clay + ep-altered interval. Zeolite(?) diss within rock rather than as discrete vlt.				
400																		✓	cream coloured carb. vein 1.0" @ 52°				
410																		✓	speck cp 0.03" across.				
420																		✓	few cp speckles along transition between hematite + magnetite				
430																		✓	discontinuous cp rim 0.08" across. around irregular pyrite mass				

PROJECT Island Copper

T.D. 956.0'

COLLAR ELEVATION

CONTRACTOR

INCLINATION -50°

BEARING 199°

DATE STARTED

COMPLETED

COORDINATES

LOGGED BY Pawliuk

SURVEY REFERENCES

Footage	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												
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zeo	Garnet	Pyroxene		Amphibole	White	Sulf. Veins	Frac. Inten	Est. Cu, Mo	CuFeS ₂					FeS ₂	Cu ₂ FeS ₄	Fe ₃ O ₄	MoS ₂								
550																																			
560																																			
570																																			
580																																			
590																																			
600																																			
610																																			

BONANZA VOLCANICS
Lapilli tuff as above to 563.2'. From 563.2' rock fine to medium grained, massive porphyritic andesite. Andesite weakly fractured with more abundant gtt - white calcite vlt's than seen higher in this hole; vlt's max 0.2" wide, randomly oriented. Iron oxide content decreasing with increasing depth. Silica alt'n also decreasing; rock can be easily scratched with steel in much of this interval.

fault, 4.5" crushed, finely broken core and clayey gouge on fractures at 65°

v. finely diss ep(?)

irregular py vlt 0.15" wide @ 80° to c.a.

v. f. speck ep

PROJECT Island Copper

T.D. 956.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -50°

BEARING 199°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY D. Paulink

SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blotite	K-spar	Chlorite	Epidote	Carb Zeo		Garnet	Pyroxene	Amphibole	Sulf Veins	Frac Inter	Est Cu, Mo					Cu/Fe _s	Fe _s	Cu/Fe _s	Fe ₂ O ₃	MoS ₂
670																								670-672 volc. bx with speckles of thruout.	<p>BONANZA VOLCANICS</p> <p>Dark reddish brown to light greyish green to black. Medium to fine grained porphyritic andesite as above to 705.2'</p> <p>Below 705.2' rock medium to coarse grained lapilli tuff. Fault contact between these two rock units. Dark brown red grease stains core from 686 to 723'. Iron oxides within lapilli tuff about 70% here, 30% mag. Coarser clasts within lapilli tuff increase in size from av ~ 0.1" to 711' then av. say 0.2-0.25" below this lapilli tuff contains less epidote, chlorite and also less carb/zeol vts than overlying porphyritic andesite. Probably not in vicinity of mineralized intrusive system as lapilli tuff would likely be more altered + mineralized than it is.</p>	BONANZA VOLCANICS
680																							fault, 1.7" f. bkn core between smooth slips @ 50° fault, 0.5" crushed core @ 30° fault slip @ 50°			
690																								fault, 2.5" f. bkn core and clayey gouge on fracture @ 35° to c.a. cream coloured carb vein 1.6" @ 85° cream coloured carb vein 0.8" @ 70°		
700																								occ. irreg. scarlet lens vts to 0.15" wide		
710																								fault, 1" f. bkn core + grey clayey gouge on fracture @ 20°		
720																								fault, 0.3" f. bkn core on slip @ 65°		
730																								fault, 0.2" f. bkn core on fracture @ ~ 35°		

HOLE NO. E 160

DRILL LOG

Page 14 of 15

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY J. D. Pawliuk

T.D. 956.0' COLLAR ELEVATION _____
 INCLINATION -50° BEARING 199°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT										
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo		Garnet	Pyroxene	Amphibole	Sulf. Vains	Frag. Inten					Est. Cu Mo	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS ₂				
850																												carbonate vein breccia zone 10" wide @ 70°	BONANZA VOLCANICS Lapilli tuff as above to 853.8'. Medium grey to steel grey medium grained ash tuff. Local coarser lapilli tuff interbeds. Ash tuff fairly massive, only locally faintly banded. Ash tuff to 891.5'	
860																												v. finely diss py(?)	891.5' - 923.0'	
870																												smooth pyritic fault slip @ 35°	Steel grey to black, fine to medium grained porphyritic andesite. Generally massive but locally brecciated above 913'.	
880																												speck cp ~ 0.03" across		
890																												milky grey, irregular below fault.	lar qtz vlt in brecciated zone	
900																												fault; 0.8" crushed, f. bkn core + gouge or hematite-coated slip @ 47°		
910																												broken carbonate vein 1" wide @ 40°		
																												py-ep-zeol band 1.5" wide @ 70° cut by later white calcite vlt 0.05" wide @ 40°		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawlink

T.D. 956.0
 INCLINATION -50°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING 199°

Footage	ALTERATION											STR.	VISUAL EST.							Sample No & Interval	LOG	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT				
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est Cu Mo	CuFeS ₂	FeS ₂		CuFeS ₂			Fe ₂ O ₃	MoS ₂	SCALE <u>1:10'</u>	BASIC GEOLOGY: rock types, metallization, structures alterations, one column system
910																										BONANZA VOLCANICS To 923.0' fine grained porphyritic andesite as above. 923.0 - 956.0 Medium greyish green to reddish maroon to steel grey coarse grained lapilli tuff with coarser clasts average about 0.5" max 1.5 to 2" in ash tuff matrix. 956.0' END OF HOLE small quartz mass	volcanic andesite tuff
920															.01	<.5											
930															.01	<.5											
940															.01	<.5											
950															.01	<.5											

abundant finely disseminated hematite
 book of black secondary(?) biotite flakes 0.05" across at margin of orange zeol. vlt.
 v. fine diss cp(?) around rim of carb vlt 0.7" 242°

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_160	21871.0	7291.6	1373.0

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	421.0	199.0	-50.0
421.0	821.0	200.0	-47.0
821.0	956.0	206.0	-46.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
110.0	120.0	0.02	<0.001	3.2	0.01	0.40	0.004	0.012	17258
150.0	160.0	<0.00	<0.001	6.3	<0.01	0.20	0.014	0.023	17259
190.0	200.0	0.01	<0.001	6.4	0.01	0.10	0.005	0.007	17260
230.0	240.0	<0.00	<0.001	6.0	<0.01	0.30	0.004	0.006	17261
270.0	280.0	0.01	<0.001	5.7	<0.01	0.20	0.002	0.004	17262
310.0	320.0	0.01	<0.001	5.0	<0.01	0.40	0.010	0.021	17263
350.0	360.0	0.02	<0.001	4.9	<0.01	0.40	0.011	0.016	17264
390.0	400.0	0.01	<0.001	4.7	<0.01	0.20	0.003	0.006	17265
430.0	440.0	0.01	<0.001	5.0	<0.01	0.10	0.002	0.003	17266
470.0	480.0	0.01	<0.001	5.3	<0.01	0.20	0.005	0.007	17267
510.0	520.0	0.01	<0.001	4.7	<0.01	0.20	0.002	0.003	17268
550.0	560.0	<0.00	<0.001	3.2	<0.01	0.10	0.001	0.001	17269
590.0	600.0	0.01	<0.001	4.7	0.01	0.20	0.002	0.004	17270
630.0	640.0	0.02	<0.001	6.1	<0.01	0.30	0.002	0.007	17271
670.0	680.0	0.07	0.001	11.4	0.04	2.70	0.096	0.813	17272
710.0	720.0	0.01	0.001	5.0	<0.01	0.20	0.011	0.111	17273
750.0	760.0	0.01	<0.001	5.9	<0.01	0.20	0.005	0.013	17274
790.0	800.0	<0.00	<0.001	2.2	<0.01	0.10	0.002	0.003	17275
830.0	840.0	0.01	<0.001	6.0	<0.01	0.20	0.003	0.009	17276
870.0	880.0	0.01	<0.001	6.1	<0.01	0.10	0.002	0.006	17277
910.0	920.0	0.01	0.001	4.6	0.10	<0.01	0.002	0.005	17278
950.0	956.0	0.01	<0.001	3.9	0.10	<0.01	0.002	0.004	17279

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/C

DATE SENT: Jan 28/93

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-1160	110	120	2	0	32	01	4	4	12	17258	1
	150	160	0	0	63	01	12	14	23	259	2
	190	200	1	0	64	01	11	5	7	260	3
	230	240	0	0	60	01	3	9	8	261	4
	270	280	1	0	57	01	2	2	4	262	5
	310	320	1	0	50	01	4	10	21	263	6
	350	360	2	0	49	01	4	11	16	264	2
	390	400	1	0	47	01	12	3	6	265	8
	430	440	1	0	50	01	11	2	3	266	9
	470	480	1	0	53	01	12	5	7	267	10
	510	520	1	0	47	01	12	2	3	268	11
	550	560	0	0	32	01	11	1	1	269	12
	590	600	1	0	47	01	2	2	4	270	13
	630	640	2	0	61	01	3	2	7	271	14
	670	680	7	1	114	04	27	96	8/3	272	15
	710	720	1	1	50	01	12	11	11/1	273	16
	750	760	1	0	59	01	12	5	13	274	17
	790	800	0	0	22	01	11	2	3	275	14

Recovery and RQD %

HOLE: E_160

LOGGED BY: S. OAKLEY

DATE: JAN. 25, 1993

FOOTAGE		RECOVERY		PERCENTAGE	
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"
80	84	47	16	97.92%	33.33%
84	94	115	12	95.83%	10.00%
94	104	120	36	100.00%	30.00%
104	106	26	0	108.33%	0.00%
106	116	121	10	100.83%	8.33%
116	126	122	31	101.67%	25.83%
126	136	122	27	101.67%	22.50%
136	146	120	56	100.00%	46.67%
146	156	122	36	101.67%	30.00%
156	164	99	27	103.13%	28.13%
164	174	116	21	96.67%	17.50%
174	184	120	51	100.00%	42.50%
184	194	122	43	101.67%	35.83%
194	205	134	29	101.52%	21.97%
205	215	113	52	94.17%	43.33%
215	225	123	25	102.50%	20.83%
225	235	122	43	101.67%	35.83%
235	245	119	57	99.17%	47.50%
245	255	116	55	96.67%	45.83%
255	265	112	35	93.33%	29.17%
265	275.5	122	74	96.83%	58.73%
275.5	285.5	122	71	101.67%	59.17%
285.5	296	120	44	95.24%	34.92%
296	306	119	37	99.17%	30.83%
306	316	122	32	101.67%	26.67%
316	326	123	31	102.50%	25.83%
326	336	120	20	100.00%	16.67%
336	346	122	25	101.67%	20.83%
346	356	116	4	96.67%	3.33%
356	366	122	27	101.67%	22.50%
366	376	122	20	101.67%	16.67%
376	386	118	23	98.33%	19.17%
386	396	120	38	100.00%	31.67%
396	406	122	40	101.67%	33.33%
406	416	120	48	100.00%	40.00%
416	426	121	46	100.83%	38.33%
426	436	110	13	91.67%	10.83%
436	446	115	19	95.83%	15.83%
446	455	108	51	100.00%	47.22%
455	465	122	63	101.67%	52.50%

Recovery and RQD %

465	475	122	41	101.67%	34.17%
475	485	120	15	100.00%	12.50%
485	495	118	46	98.33%	38.33%
495	505	117	13	97.50%	10.83%
505	515	118	14	98.33%	11.67%
515	525	120	29	100.00%	24.17%
525	535	120	9	100.00%	7.50%
535	545	121	21	100.83%	17.50%
545	555	121	41	100.83%	34.17%
555	565	120	34	100.00%	28.33%
565	575.5	125	28	99.21%	22.22%
575.5	585.5	121	29	100.83%	24.17%
585.5	596	122	24	96.83%	19.05%
596	606	123	62	102.50%	51.67%
606	616	121	49	100.83%	40.83%
616	625	101	20	93.52%	18.52%
625	635	120	37	100.00%	30.83%
635	645	120	26	100.00%	21.67%
645	655	118	6	98.33%	5.00%
655	665	121	50	100.83%	41.67%
665	675	118	41	98.33%	34.17%
675	685	115	13	95.83%	10.83%
685	686	15	0	125.00%	0.00%
686	696	123	38	102.50%	31.67%
696	706	122	41	101.67%	34.17%
706	716	118	49	98.33%	40.83%
716	726	119	51	99.17%	42.50%
726	736	118	29	98.33%	24.17%
736	746	120	28	100.00%	23.33%
746	756	110	12	91.67%	10.00%
756	766	118	43	98.33%	35.83%
766	776	120	42	100.00%	35.00%
776	782	72	22	100.00%	30.56%
782	792.5	128	29	101.59%	23.02%
792.5	801	88	0	86.27%	0.00%
801	811	120	11	100.00%	9.17%
811	816	61	0	101.67%	0.00%
816	826	120	22	100.00%	18.33%
826	836	121	61	100.83%	50.83%
836	846	122	40	101.67%	33.33%
846	856	121	13	100.83%	10.83%
856	866	122	43	101.67%	35.83%
866	877	126	25	95.45%	18.94%
877	886	115	26	106.48%	24.07%
886	896	121	34	100.83%	28.33%

Recovery and RQD %

896	906	122	42	101.67%	35.00%
906	916	121	34	100.83%	28.33%
916	926	118	32	98.33%	26.67%
926	936	121	31	100.83%	25.83%
936	946	122	49	101.67%	40.83%
946	956	120	40	100.00%	33.33%

MAGNETIC SUSCEPTIBILITY

LE NO. E-160

DATE Jan 25/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
80-90						.06
90-100						.06
100-110						.03
110-120						.02
120-130						.05
130-140						.05
140-150						.63
150-160						.72
160-170						.88
170-180						1.2
180-190						.96
190-200						.83
200-210						2.1
210-220						.74
220-230						.02
230-240						.20
240-250						2.6
250-260						.98
260-270						3.9
270-280						2.5
280-290						4.7
290-300						3.4
300-310						3.2
310-320						2.2
320-330						2.4
330-340						3.0
340-350						2.1
350-360						1.6
360-370						1.8
370-380						1.1
380-390						3.0
390-400						3.5
400-410						3.5
410-420						4.2

MAGNETIC SUSCEPTIBILITY

LE NO. E-160

DATE Jan 26/93

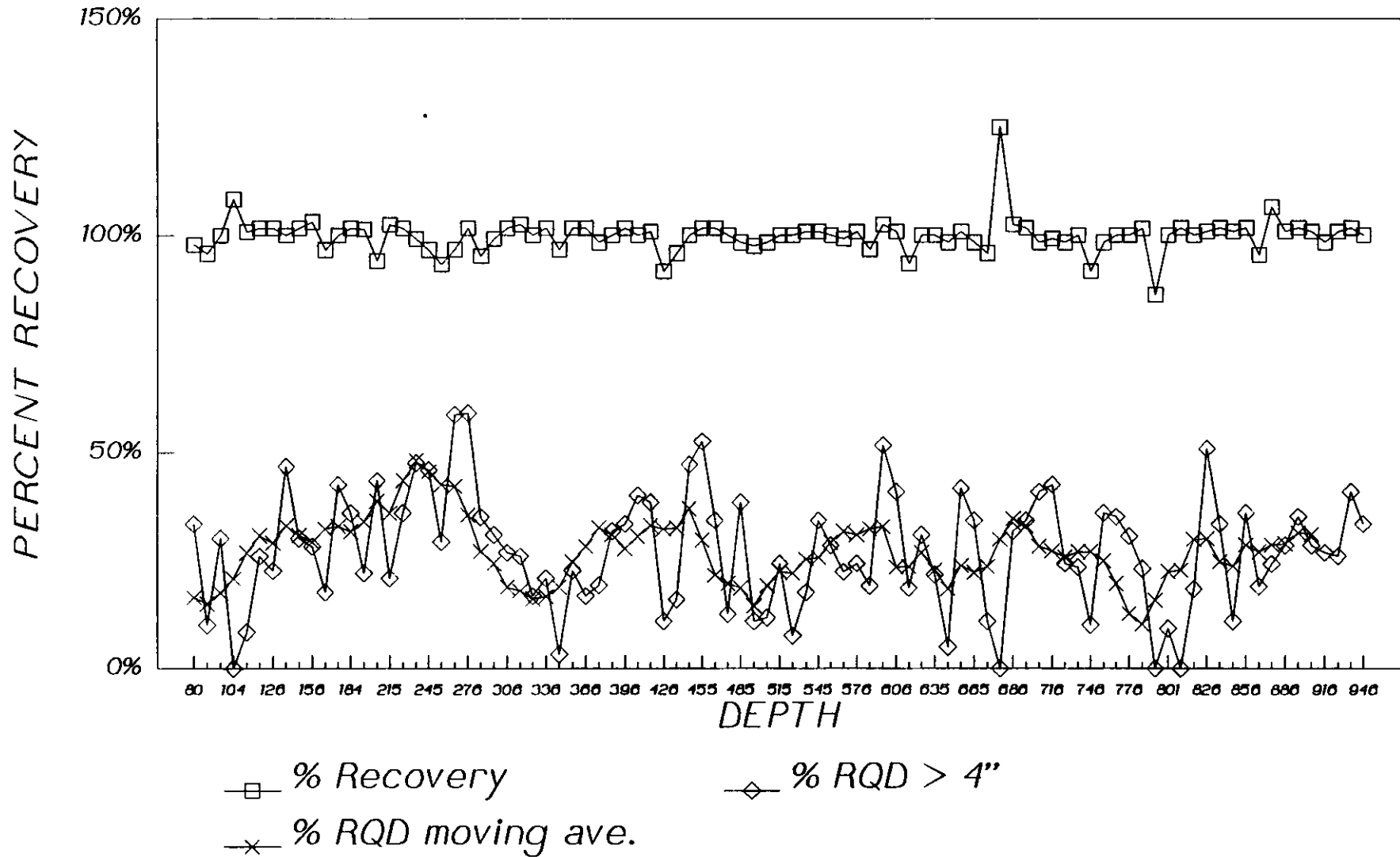
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
420-430						2.3
430-440						3.9
440-450						2.8
450-460						3.0
460-470						3.0
470-480						3.3
480-490						3.0
490-500						1.9
500-510						1.8
510-520						.79
520-530						.55
530-540						.04
540-550						.22
550-560						.20
560-570						.24
570-580						.39
580-590						1.0
590-600						.09
600-610						.05
610-620						2.6
620-630						2.9
630-640						2.3
640-650						.81
650-660						.58
660-670						.22
670-680						.06
680-690						1.4
690-700						3.4
700-710						.64
710-720						1.0
720-730						.75
730-740						1.9
740-750						2.4
750-760						1.0

Recovery and RQD %

E_160



PROJECT Island Copper

CONTRACTOR Olympic Drilling & Consulting Ltd.

DATE STARTED January 27, 1993 COMPLETED January 30, 1993

LOGGED BY David Pawliuk

T.D. 1061.0'

COLLAR ELEVATION 1281.8

INCLINATION -90°

BEARING ---

COORDINATES 21658.852E

8499.194N

SURVEY REFERENCES L 213.1

S 1110.0

Footage	ALTERATION										STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Basalt	K-spar	Chlorite	Epidoie	Carb Zeo		Charnel	Pyroxene	Amphibole	Sulf Veins	Frac Inten					Est Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS_{2}
NQ core throughout hole																									
20																							0.0 - 21.0 CASING 21.0 - 1061.0'		
30																							grayish white QV 3" wide bounded by sericitic fault at 50° fault at 45° QV 0.3" at 40° Banding at 39° gillsonite-carb vein 0.8" at 40° 2" dusty reddish disseminated hem 80° banding cp (?) specks	BONANZA VOLCANICS Medium green-grey with local off-white bands where quartz veins present. Medium grained ash full with coarser clasts up to about 0.1" across. Locally faintly banded with bands ranging from 39° to 80° to core. Pale yellowish green epidote mainly as spots to 2" across, less often as fine streaks and veinlets. Little magnetite present, only locally weakly magnetic rocks.	
40																									
50																									
60																							Banded pale brown and white Qtz vein w. 12% pyrite between fault slip at 40° (top) + 30° (bottom) small cp speck ~ 0.03" across.	NOT Easily changed After comparison of core with similar altered Bonanza basaltic full in specimen D134-77. Mineral earlier logged as chlorite, likely secondary amphibole, and mineral logged as quartz likely albite.	
70																									
80																									

HOLE NO. E 161

DRILL LOG

Page 2 of 10

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 1061.0'
 INCLINATION -90°
 COLLAR ELEVATION _____
 BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No. & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet		Pyroxene	Amphibole	4/6/8	Sulf. Veins	Frac. Inten.	Est. Cu Mo					CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	Moss
80																									21.0 - BONANZA VOLCANICS As above		
90																									carb-gillsonite vein 0.5" @ ~12° to c.a.	102.0-107.3 Mod. fractured, w/ky brecciated. 107.3-113.4 Fault breccia with subangular volc. + vn. Qtz frags up to 1" x 2" across. Volc. frags variably alt'd by ser, Qtz, chl.	
100																									cp bleb 0.03"		
110																									fault Qtz-rich band 0.4" @ 45° w. py, cp py vlt's to 0.15" @ 20° w. bleached, sericitic selvages locally crosscut by brown gillsonite (?) vlt. cp 0.12 x 0.08" within sil mats		
120																									sericite + grey clay on fault fracture @ 25° cp masses to 0.1" across. say 5-7% f. diss py in irreg. masses. patchy chl-ser in.		
130																									py (50%) - sph (20%) - ankerite? (10%) - calcite (8%) - cp (2%) - Qtz (10%) - vein 2-3" wide @ 10° to c.a.		
140																									fault along sericite-coated (0.03") irreg. fract. @ 25° Qtz-sph-cp-py vlt 0.1" @ 33° py as subround blebs, subhedral xtals a.u. 0.1" across. healed fault occupied by off-white QV 0.1" @ 25° Qtz-sph-py-cp vlt 0.3" @ 15° Qtz-sph-py-cp vlt's 0.15" @ 15°		

HOLE NO. E 161

DRILL LOG

Page 3 of 10

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pawlik

T.D. 1061.0
 INCLINATION -90°
 COLLAR ELEVATION _____
 BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION												STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT																
	Core Recovery	Oxide	Quartz	Sericite	Chlorite	Biotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet	Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inter	Est. Cu Mo	CuFeS ₂	FeS ₂					CuFeS ₂	Fe ₂ O ₃	MoS ₂													
140																								✓ clear, elongate plag laths cp speck							21.0 - BONANZA VOLCANICS Light green, fine to med. grained ash tuff to 157.5'. From 157.5 - 197.3 light grey-brown with local medium greenish grey bands above 171'. 170.5-196.5 FAULT ZONE Moderately to intensely fractured, crushed and brecciated ? lapilli tuff. Abund. off-white, sericite along fractures. Weak to locally moderate, spotty waxy brown pyrophyllite aff'n. Mod to locally intense silica aff'n. Pyrite mainly confined to intervals from 170.9-172.6, and 183.7-184.3 where it occurs as rounded masses to 0.4" + subhedral xstls to 0.2" which undergone rotation within fault.								
150																							0.3" ground py on flt slip ∅ 45°																
160																							bleached, ser selvages on py vlt 0.1" ∅ 40°																
170																							flts to 0.1" ∅ ~ 30° dbs randomly oriented. ser. selvages																
180																							fault ∅ 32°																
190																							irreg. hairline py vlt along fracture sfls.																
																							ser. flt ∅ 30°																
																							spotty py along fracture																
																								occ. black hem (?) wispy on hairline fractures.															
																								fault w abund py ∅ 40°															
																								fault ∅ 50°															
																								sooty py as elongate cp specks															
200																								fault ∅ 60°															

196.5 -
 Medium greenish to brownish grey,
 med. gr., med. albitized lapilli
 tuff w. dk green-black
 chl-mag clots + abund. dusty, diss mag
 throughout. Clots variably replaced
 by pervasive silica; some have
 lens 2" x 0.3" fast boundaries,
 others discrete, sharp edges.

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Pauluk

T.D. 1061.0'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION										STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT											
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zoo		Garnet	Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inter					Est Cu Mo	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS ₂					
200																																
210																																
220																																
230																																
240																																
250																																
260																																

local v. fine diss cp in mag masses.
 cp to 0.05"
 QV 0.3" @ 60° milky grey
 2 gillsonite 10% over 2"
 Qtz-carb off 0.25" @ 20°
 white QV 0.3" @ 45°
 0.05" grey gouge on slip @ 60°
 cpy + v. fine diss f irreg masses.
 35°; 0.8" crushed core
 QV 0.3" @ 70° py
 fault; 4" f. blk core + gouge above slip @ 66°
 blue amph lines hairline
 fractures @ ~ 35°
 cp speck .03?
 35°
 carb-gtz off 0.2" @ 50°
 45°

196.5-
 BONANZA. Moderately
 albitized lapilli tuff/ta as
 above with dk chl-mag
 clots throughout as well as
 dusty diss mag. Light
 brown-grey to light greenish
 grey, hard rock.

PROJECT Island Copper

T.D. 10610'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -90°

BEARING _____

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY D. Pauluk

SURVEY REFERENCES _____

Footage	ALTERATION												STR.		VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet	Pyroxene	Amphibole		Sulf Veins	Frac Inten	Est Cu Mo	CuFeS,	FeS,	CuFeS,					FeO,	MoS,				
320																												196.5 - BONANZA VOLCANIC S. Medium greenish grey to light grey-brown to steel grey, interbanded volcanic lapilli tuff, ash tuff, Coarsest fragments up to 1.5 or 2" across. Local biotite alt'n as faint patches bands. Rock generally as above.		
330																														
340																												fault; 1" mod. crushed spore + sericite between fractures @ ~50° fault @ 10°, grey clay coating fracture s.d.c fault; 0.5" f. blk + sericite @ 45°		
350																														
360																												fault; 0.7" py un to 18°		
370																												py-cpy-sph alt 0.2" @ 35° fault; 0.1" grey clay or slip @ 25°		
380																												py-cpy-sph alt 0.2" @ 12°		

PROJECT Island Copper

T.D. 1061.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -90°

BEARING _____

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY Paulink

SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1":10'</u> BASIC GEOLOGY: rock types metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT									
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biitite	K-spar	Chlorite	Epidote	Carb Zeo		Garnet	Pyroxene	Amphibole	Albite	Sulf Veins					Frac Inten	Est Cu Mo	CuFeS,	FeS,	CuFeS,	Fe ₂ O ₃	MoS ₂		
380																											2 cp v.f. diss in feet cpy speck 0.1" in "clots" retrograde ep mass along late calcite vlt	1965- BONANZA VOLCANICS light grey brown to chocolate brown to pale creamy grey, inter banded lapilli (~70%) and ash (30%) tufts, medium grained. Weak to moderate biotite alth' increasing intensity w. depth.	ROCK UNIT
390																										waxy grey QV 0.25" 30°.			
400																											hairline, discontinuous cpy vlt's; cpy also v. finely diss		
410																											cpy + possibly 2 generations of biotite; dark, biot-rich band within lighter colored grey-brown biotite-altered rock.		
420																											gillsonite (?) vlt's.		
430																											2 cp as larger masses to 0.1" across		
440																											cpy vlt's; discontinuous.		
																											bleached pale brown clay mineral selvages along white carb vlt's.		
																											Kspar? pink, brownish within 3" of zeol vlt 0.3" @ 30°		

HOLE NO. E 161

DRILL LOG

 Page 7 of 18

 PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D Pawluk

 T.D. 1061.0'
 INCLINATION -90°
 COLLAR ELEVATION _____
 BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION												STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations. one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT				
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene		Amphibole	Albite	Sulf veins	Frac. Inten.	Est Cu. Mo	Cu/Fes					Fe/S	Cu/Fes	Fe/O	Mgs
500																										<p>196.5 - BONANZA VOLCS. Light brown to steel grey to pale grey, med. to fine grained ash tuff (?). Moderately fractured w. abundant watery grey albite as faint, hairline vlt's along fracture. Some of this vlt material may be quartz. Less abundant red/carb vlt's than above.</p>	
510																										<p>cpy as irreg masses, f. d'ss + lenses along hairline fracture</p> <p>QV 1.5" @ 67°</p>	
520																										<p>pale brown QV 1.4" @ 65° faint mag-cpy-py vlt w. albite? selvages</p> <p>fault slip @ 40°</p>	
530																										<p>QV 0.5" @ 75°</p> <p>abundant discontinuous, hairline py + cpy veinlets along primary (?) laminae @ 35° within ash tuff.</p>	
540																										<p>QV 0.4" @ 30° w. albitic(?) selvages, mag-cpy-py - amph? vlt's 0.1" @ 40° w. albite? selvages</p> <p>pale aqua sericite(?)</p>	
550																										<p>moly specks to 0.04" w/serpy hairline moly vlt's within QV's</p> <p>QV 0.5" @ 40° abund. cpy along fracture etc.</p>	
560																											

HOLE NO. E 161

DRILL LOG

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PROJECT Island Copper

T.D. 1061.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -90°

BEARING _____

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyro	Biotite	K-spar	Chlorite	Epidote	Carb Zoo		Garnet	Pyroxene	Amphibole	Sulf Veins	Frac Inter					Est Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	
560																						560	wispy vlt diss moly, cpy, pyro. i.	moly + as faint dis masses along hairline cracks. 1965 - off-white QV 0.3" @ 25° centred by blebs of cpy, py, moly QV 0.8" @ 60°	BONANZA VOLCANICS Light greenish grey to steel grey with local medium brown, biotite-altered patches. Less biotite and more chlorite, more zeol/carb vlt than within overlying ash tuff(?).		
570																						570	abundant pyrophyllite bright green chl. hairline yellowish ep vlt.	pyrite-qtz-cpy-moly vein 1" wide @ 38°			
580																						580	light brown QV 2" @ 75°	QV 0.6" @ 45°	remnant biot clots within albite(?) - altered volc. contain cpy-py blebs.		
590																						590	cpy + v. fine diss hairline cpy-mag vlt @ ~60°	QV 0.7" @ 70°			
600																						600	QV 1.3" @ 60° contains hairline py-sph-cpy-moly vlt. parallel QV margin.	QV 0.25" @ 70° QV 2" @ 80°			
610																						610	qtz-cpy-mag-py vlt 0.03" wide @ 30°. mag vlt w. albite selvages.	QV 1" @ 60°			
620																						620	QV 0.2" @ 60° py vlt 0.15" @ 35° contains 2 large specks (~0.08") cpy QV 0.5" @ 80° w. pyrophyllite.				

HOLE NO. E 161

DRILL LOG

Page 11 of 18

PROJECT Island Copper

T.D. 1061.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -90°

BEARING _____

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zoo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten	Est Cu Mo					CuFAS	FeS	CuFAS	FeO	MoS
620																									621-624 fault zone of crushed fine blk core @ 60' to c.e. abund py crushed py vein 2-7 @ 350 contains cpy py band 1.2" @ 500. QV2" @ 500. QV0.8" @ 235°	196.5- BANANZA VOLCANICS. Dark brownish grey to light green-grey to locally pale grey brown, medium grained, locally faintly banded ash tuff. Generally abundant diss, blk + vlt py to 642'. Fewer carb/zed vlt than above.	
630																									sooty py bands to 0.1" @ 300 contain cpy blebs to 0.1" + moly		
640																									mag-chl-spy vlt w. albite(?) selvages QV's 0.3" @ 225° py diss along fractures QV1" @ 32°		
650																									QV 0.3" @ 45° wispy mag vlt cpy + v. fine diss, +		diss along hair line fractures, + also irreg masses to 0.1"
660																									QV0.6" @ 50° QV 0.6" @ 45°		
670																									QV0.8" @ 52°		
680																									QV 0.25" @ 48° QV 0.6" @ 50°		

DRILL LOG

PROJECT Island Copper

T.D. 1061.0' COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -90° BEARING _____

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION													STR.	VISUAL EST.							Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole		Alb. X	Sulf Veins	Frac. Inten.	Est. Cu Mo	CuFeS ₂	FeS	Cu ₂ FeS ₄					Fe ₂ O ₃	MoS ₂			
180																											2 albik selvage rims chl-ep- mag masses that contain speck cp.	196.5 - BONANZA VOLCANICS		
690																												2 QV 1" @ 60°	Smoky bluish brown to medium grey to pale green-grey	
700																												QV 1" @ 40° QV 3.5" @ 45° w. irregular py, cpy, ser. + chl along fractures.	Medium grained ash tuff w. occ. lapilli tuff in beds.	
710																												2 moly vlt ~ 0.04"		
720																												zeol. vlt to 0.5" @ 25° QV 1.0" @ 60° offset 2.3" along fault slip containing zeol vlt @ 35° to c.a.		
730																												QV 0.5" @ 50° QV 1" @ 70° cpy, mag + moly vlt		
740																												QV 1.5" @ 70°		
																												QV 0.4" @ 60° cpy + v. finely d. s + irreg masses to 0.1"		
																												QV 1.5" @ 45°		
																												wispy cpy + mag vlt		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 10610' COLLAR ELEVATION _____
 INCLINATION -90° BEARING _____
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION													STR.	VISUAL EST.						Sample No & Interval	LOG	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT		
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole		Albite	Surf Vens	Frac Inten	Est Cu Mo	CuFeS ₂	FeS		CuFeS ₂			FeO	MoS ₂	SCALE 1" : 10'	BASIC GEOLOGY:
740																									196.5 - <u>BOWANZA</u> smoky grey-brown with local greenish grey and greenish brown patches medium grained ash tuft. Rock faintly spotted by mag (FeS) clots below about 747'. From 765 to 790', + from 795 to 800' the core was split before being logged.	
750																									cpy v. finely dias. wispy mag-cpy-py vlt's QV 0.7" ∠ 40° vugs to 0.4" x 0.5" lined by tiny calcite xtals.	
760																									QV 0.6" ∠ 45° contains mag, moly, cpy, py orange zeol. vein 0.5" ∠ 30° amphibole along qtz vlt.	
770																									QV 0.8" ∠ 32°	
780																									QV 2.3" ∠ 60° amphibole + albite	
790																									QV 0.3" ∠ 45°	
800																										

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Paulik

T.D. 1061.0'
 INCLINATION -90°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spr	Chlorite	Epidote	Carb Zoo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inter					Est Cu Mo	CuFeS ₂	FeS	CuFeS ₂	FeO	MoS ₂
860																								cpy v. fine diss occ. hairline ults. faint albite? selvage a wispy mag vlt.	196.5 - BONANZA VOLCS. Dark greyish brown to dark brown to steel grey, fairly massive medium grained ash tuft. Lapilli-size clasts present below 913' Slightly less biot alt. than above; fewer carb/zoo. ults.		
870																								QV 1" @ 50° w. mag selvages. Mag, chl, amph, py, cpy within QV.			
880																								py vlt 0.05" wide with mag selvages; cpy finely diss haloe			
890																								QV 0.8" @ 55° below chloritic vlt @ 55°			
900																								banded qtz-mag-amph QV 0.7" @ 45° w mag	chl-py-cpy vlt 0.7" @ 70°		
910																								QV 0.5" @ 45° mag (60%) - qtz (40%) vlt 0.4" @ 65°			
920																								qtz (80%) - mag (20%) vlt 0.3" @ 30° QV 0.4" @ 55° w mag QV 0.5" @ 30° w mag QV 0.3" @ 75° w. 0.2" mag selvages + both cut by late retrograde (?) epidote vlt 0.03" wide mag-qtz vlt 0.3" @ 65°			

PROJECT Island Copper

T.D. 1061.0

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -90°

BEARING _____

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION												STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT				
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene		Amphibole	Sulf. Veins	Frac Inten	Est Cu Mo	CuFeS ₂	FeS ₂					Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	
980																									py lenses + band 0.25" @ 50° gtz (90%) py (90%) vt (90%) 4.60" 990 50° 550 1000 1010 1020 1030 1040	196.5- BONANZA VOLCS. 979.0-982.8 Fault zone as above. 982.8-1007.0 Moderately to locally intensely fractured and brecciated ash tuff (?). Pale yellow to pale brown to pale green clay mineral alt'n throughout. Abundant py throughout mainly as wispy vlt's up to 0.2" wide lining irregular fractures. Py also as irregular bands and lenses to 0.8" x 2" also finely disseminated. Off-white to pale grey sericite lines irreg fractures + fault slips over interval Quartz, carbonate, zeolite and pyrite vlt's have been broken and offset during brecciation. 1007.6- Dark greenish brown to greyish brown biotite - alt'd ash tuff as above 979'.	
990																									fault slips @ 50° fault slips @ 25° QV 1.3" @ 50° py vlt 0.2" @ 20° QV 0.5" @ 43° fault slip 0.4" crushed core on slip @ 35° along upper margin of gtz (40%) - py (60%) vein 3" wide QV 0.8" @ 60° w. py. abundant bright green sericite (?) QV w. py 2" @ 35° py band 0.6" @ 60° fault, 0.5" clay + crushed core @ 35° carb va bre 1.5" @ 25°		
1000																									carb va bre 5" @ 30° QV w. py 3" @ 30° QV 1.6" @ 30° QV 0.6" @ 90° w. mag hbl'd veinlet 0.2" @ 20° cut by late gtz vlt. QV 0.6" @ 35° QV 0.3" @ 58° with mag-py-cpy. QV 9" wide at 50° QV 4.5" @ 45° gtz-mag vein 1.1" @ 65°		
1010																									vlt's speck bonite (?) py diss.		
1020																											
1030																											
1040																											

PROJECT Island Copper

T.D. 1061'

COLLAR ELEVATION

CONTRACTOR

INCLINATION -90°

BEARING

DATE STARTED COMPLETED

COORDINATES

LOGGED BY D. Pawluk

SURVEY REFERENCES

Footage	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						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Bitite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene		Amphibole	AlkX	Sulf Veins	Frac Inten	Est Cu Mo	CuFas.					FeS.	CuFas.	FeO.	MoS.		
1090										X		X															1007.0 - 1061.0' BONANZA VOLCANICS As above "		
1050																.1			.5								1050	QV w. mag 2" @ 40° QV 0.4" @ 33° irreg mass amphibole within QV w. 0.5" x 0.2" across QV 2.5" @ 58° w. mag, amph, py, cp QV 1.4" @ 53° w. mag, amph, py, cp py vts - long irregular hairline fracture fault slip @ 25° fault; crushed, py-rich rock 0.5" wide, @ 60° QV w. mag 1-3" @ 50°	
1060																.3		1									1060		

1061' END OF HOLE.

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_161	21658.9	8499.2	1281.8

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	1061.0	0.0	-90.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
22.0	30.0	0.02	<0.001	7.4	0.02	1.30	0.025	0.051	17285
30.0	40.0	0.03	<0.001	7.0	0.03	3.30	0.018	0.067	17286
40.0	50.0	0.02	<0.001	7.3	0.01	0.60	0.029	0.113	17287
50.0	60.0	0.02	<0.001	8.2	0.01	0.30	0.002	0.011	17288
60.0	70.0	0.02	<0.001	7.6	0.01	0.30	0.005	0.061	17289
70.0	80.0	0.01	<0.001	6.7	0.01	0.20	0.002	0.023	17290
80.0	90.0	0.02	<0.001	7.4	0.01	0.40	0.001	0.028	17291
90.0	100.0	0.01	<0.001	7.5	0.01	0.20	0.006	0.013	17292
100.0	110.0	0.03	<0.001	8.2	0.01	0.40	0.006	0.023	17293
110.0	120.0	0.21	0.004	6.6	0.08	2.20	0.066	0.685	17294
120.0	130.0	0.06	<0.001	8.7	0.03	1.00	0.006	0.445	17295
130.0	140.0	0.05	<0.001	8.0	0.03	1.20	0.014	0.450	17296
140.0	150.0	0.03	<0.001	10.5	0.02	0.20	0.003	0.110	17297
150.0	160.0	0.02	<0.001	8.6	0.02	0.30	0.003	0.125	17298
160.0	170.0	0.01	<0.001	8.2	0.21	2.00	0.002	0.060	17299
170.0	180.0	<0.00	<0.001	3.4	0.02	0.20	<0.001	0.030	17300
180.0	190.0	0.01	<0.001	2.0	0.01	0.20	<0.001	0.052	17301
190.0	200.0	0.01	<0.001	3.0	0.03	0.30	0.005	0.234	17302
200.0	210.0	0.03	0.001	5.6	0.01	0.20	0.003	0.018	17303
210.0	220.0	0.08	0.001	4.1	0.01	0.30	0.003	0.014	17304
220.0	230.0	0.08	0.001	3.3	0.03	0.60	0.005	0.092	17305
230.0	240.0	0.03	0.001	2.4	0.01	0.20	0.002	0.009	17306
240.0	250.0	0.01	0.001	2.3	0.01	0.20	0.002	0.022	17307
250.0	260.0	0.02	0.001	2.4	0.02	0.20	0.002	0.031	17308
260.0	270.0	0.03	0.001	4.9	0.01	0.30	0.003	0.023	17309
270.0	280.0	0.04	0.001	5.3	0.01	0.30	0.003	0.053	17310
280.0	290.0	0.04	0.001	6.2	0.01	0.20	0.020	0.046	17311
290.0	300.0	0.01	0.001	1.4	0.01	0.20	0.002	0.009	17312
300.0	310.0	0.14	0.004	5.8	0.01	0.30	0.007	0.027	17313
310.0	320.0	0.12	0.002	5.1	0.02	0.50	0.009	0.023	17314
320.0	330.0	0.16	0.003	6.2	0.05	1.20	0.015	0.053	17315
330.0	340.0	0.09	0.002	4.0	0.02	0.60	0.015	0.035	17316
340.0	350.0	0.09	0.004	4.9	0.01	0.80	0.006	0.043	17317
350.0	360.0	0.19	0.002	6.0	0.03	0.50	0.004	0.032	17318
360.0	370.0	0.19	0.003	3.8	0.04	0.30	0.009	0.026	17319
370.0	380.0	0.20	0.011	5.9	0.04	0.60	0.007	0.024	17320
380.0	390.0	0.16	0.004	6.0	0.06	0.20	0.003	0.006	17321
390.0	400.0	0.22	0.004	4.1	0.08	0.40	0.002	0.004	17322

DATE: 04/06/93

PAGE: 4

TIME: 15:46:29

BHP MINERALS CANADA - Island Copper Mine

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
400.0	410.0	0.19	0.006	2.9	0.06	0.40	0.001	0.018	17323
410.0	420.0	0.31	0.006	3.4	0.11	0.30	0.002	0.012	17324
420.0	430.0	0.29	0.013	3.6	0.10	0.60	0.003	0.007	17325
430.0	440.0	0.23	0.003	3.3	0.10	0.40	0.003	0.005	17326
440.0	450.0	0.21	0.003	3.8	0.11	0.20	0.002	0.005	17327
450.0	460.0	0.24	0.006	3.2	0.09	0.20	0.005	0.007	17328
460.0	470.0	0.26	0.006	3.4	0.11	0.20	0.002	0.005	17329
470.0	480.0	0.24	0.006	3.5	0.12	0.30	0.002	0.003	17330
480.0	490.0	0.27	0.005	1.9	0.09	0.40	0.002	0.003	17331
490.0	500.0	0.32	0.017	2.4	0.05	0.40	0.002	0.006	17332
500.0	510.0	0.33	0.011	3.6	0.16	0.40	0.002	0.006	17333
510.0	520.0	0.28	0.013	4.3	0.15	0.50	0.002	0.005	17334
520.0	530.0	0.29	0.005	3.6	0.09	0.30	0.004	0.009	17335
530.0	540.0	0.47	0.008	4.1	0.14	0.80	0.003	0.027	17336
540.0	550.0	0.33	0.011	3.5	0.43	0.40	0.002	0.005	17337
550.0	560.0	0.34	0.006	3.8	0.45	0.40	0.002	0.005	17338
560.0	570.0	0.35	0.025	5.6	0.29	0.60	0.002	0.011	17339
570.0	580.0	0.34	0.004	8.3	0.11	0.60	0.003	0.006	17340
580.0	590.0	0.35	0.008	4.7	0.14	0.40	0.003	0.013	17341
590.0	600.0	0.37	0.012	3.9	0.15	0.50	0.002	0.007	17342
600.0	610.0	0.49	0.008	4.1	0.32	0.30	0.003	0.007	17343
610.0	620.0	0.21	0.013	6.4	0.20	0.40	0.003	0.011	17344
620.0	630.0	0.37	0.106	17.6	0.16	3.90	0.014	0.089	17345
630.0	640.0	0.52	0.017	7.4	0.13	2.50	0.033	0.600	17346
640.0	650.0	0.51	0.005	6.8	0.26	0.70	0.003	0.012	17347
650.0	660.0	0.61	0.012	4.3	0.40	1.00	0.002	0.007	17348
660.0	670.0	0.53	0.012	4.1	0.29	1.20	0.002	0.017	17349
670.0	680.0	0.43	0.019	4.0	0.43	0.90	0.002	0.012	17350
680.0	690.0	0.26	0.012	3.0	0.10	0.70	0.002	0.007	17351
690.0	700.0	0.28	0.010	5.5	0.13	0.80	0.003	0.018	17352
700.0	710.0	0.36	0.018	4.8	0.19	0.80	0.002	0.012	17353
710.0	720.0	0.42	0.014	4.0	0.19	0.90	0.003	0.020	17354
720.0	730.0	0.53	0.015	6.0	0.25	1.00	0.003	0.010	17355
730.0	740.0	0.44	0.015	4.6	0.17	0.80	0.002	0.006	17356
740.0	750.0	0.45	0.038	5.0	0.26	1.20	0.009	0.013	17357
750.0	760.0	0.26	0.028	4.1	0.09	0.70	0.006	0.014	17358
760.0	765.0	0.23	0.020	4.0	0.08	0.30	0.003	0.008	17359
765.0	770.0	0.29	0.010	5.0	0.13	0.80	0.001	0.016	17282
770.0	780.0	0.33	0.011	6.5	0.12	0.90	0.001	0.018	17281
780.0	790.0	0.28	0.020	5.7	0.10	0.80	0.001	0.014	17280
790.0	795.0	0.22	0.034	3.5	0.07	0.80	0.001	0.010	17360
795.0	800.0	0.32	0.025	5.5	0.15	0.90	0.001	0.009	17283
800.0	805.0	0.20	0.012	4.2	0.08	0.80	0.002	0.016	17361
805.0	810.0	0.21	0.041	3.5	0.13	0.70	0.001	0.009	17284
810.0	820.0	0.15	0.009	2.0	0.07	0.80	0.002	0.006	17362
820.0	830.0	0.19	0.021	3.1	0.05	1.00	0.003	0.008	17363
830.0	840.0	0.14	0.029	3.4	0.05	0.50	0.002	0.007	17364
840.0	850.0	0.27	0.029	3.8	0.09	0.60	0.002	0.006	17365
850.0	860.0	0.22	0.019	3.9	0.09	0.60	0.002	0.006	17366
860.0	870.0	0.18	0.021	4.6	0.08	0.50	0.002	0.004	17367
870.0	880.0	0.28	0.015	4.4	0.11	0.80	0.001	0.005	17368

DATE: 04/06/93

PAGE: 5

TIME: 15:46:47

BHP MINERALS CANADA - Island Copper Mine

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
880.0	890.0	0.28	0.011	4.0	0.11	0.80	0.001	0.006	17369
890.0	900.0	0.27	0.020	5.0	0.09	0.60	0.002	0.008	17370
900.0	910.0	0.23	0.021	4.7	0.06	0.60	0.002	0.010	17371
910.0	920.0	0.21	0.020	4.8	0.07	0.60	0.002	0.009	17372
920.0	930.0	0.23	0.021	5.2	0.09	0.80	0.002	0.012	17373
930.0	940.0	0.19	0.014	5.3	0.06	0.70	0.002	0.008	17374
940.0	950.0	0.29	0.022	5.0	0.17	0.70	0.002	0.005	17375
950.0	960.0	0.35	0.031	5.6	0.24	1.20	0.003	0.025	17376
960.0	970.0	0.39	0.014	4.7	0.22	1.00	0.002	0.006	17377
970.0	980.0	0.19	0.021	10.0	0.13	0.80	0.007	0.017	17378
980.0	990.0	0.08	0.009	14.3	0.09	1.50	0.027	0.034	17379
990.0	1000.0	0.10	0.016	12.4	0.04	2.00	0.025	0.060	17380
1000.0	1010.0	0.10	0.013	8.2	0.04	0.40	0.005	0.008	17381
1010.0	1020.0	0.05	0.008	5.3	0.02	0.30	0.003	0.021	17382
1020.0	1030.0	0.12	0.025	4.4	0.07	0.30	0.002	0.004	17383
1030.0	1040.0	0.22	0.040	4.2	0.14	0.50	0.002	0.005	17384
1040.0	1050.0	0.12	0.025	3.9	0.07	0.30	0.001	0.003	17385
1050.0	1061.0	0.10	0.014	5.5	0.05	0.70	0.005	0.016	17386

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/c

DATE SENT: Jan 31/93 (Frist)

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-161	22	30	022	0	74	02	13	025	051	17285	1
	30	40	03	0	70	03	33	018	067	286	2
	40	50	02	0	73	01	6	029	113	287	3
	50	60	02	0	82	01	3	002	011	288	4
	60	70	02	0	76	01	3	005	067	289	5
	70	80	01	0	67	01	2	2	023	290	6
	80	90	02	0	74	01	4	1	028	291	7
	90	100	01	0	75	01	2	006	013	292	8
	100	110	03	0	82	01	4	6	023	293	9
	110	120	01	004	66	03	22	066	1685	294	10
	120	130	06	0	87	03	10	006	445	295	11
	130	140	05	0	80	03	12	014	450	296	12
	140	150	03	0	105	02	2	003	110	297	13
	150	160	02	0	86	02	3	3	125	298	14
	160	170	01	0	82	21	20	2	060	299	15
	170	180	00	0	34	02	2	0	030	300	16
	180	190	01	0	20	01	2	0	052	301	17
	190	200	01	0	30	03	3	005	234	302	18

Armi Feb/93

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/C

DATE SENT: Feb 1/93

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-1161	200	210	03	1001	56	01	2	003	018	17303	19
	210	220	08	001	41	01	3	003	014	304	20
	220	230	08	001	33	03	16	005	092	305	21
	230	240	03	001	24	01	2	002	009	306	22
	240	250	01	001	23	01	2	002	022	307	23
	250	260	02	1001	24	02	4	002	031	308	24
	260	270	03	1001	49	01	3	003	023	309	25
	270	280	04	1001	53	01	3	003	053	310	26
	280	290	04	001	62	01	2	020	046	311	27
	290	300	01	001	14	01	2	002	009	312	28
	300	310	14	1004	58	01	3	007	027	313	29
	310	320	12	1002	51	02	5	009	023	314	30
	320	330	16	1003	62	05	12	015	053	315	31
	330	340	09	1002	40	02	16	015	035	316	32
	340	350	09	004	49	01	8	006	043	317	33
	350	360	19	002	60	03	5	004	032	318	34
	360	370	19	003	38	04	3	009	026	319	35
	370	380	20	1011	59	04	16	007	024	320	36

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: IC

DATE SENT: Feb 3/93

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-161	380	390	16	004	60	06	2	003	006	17321
	390	400	22	004	41	08	4	002	004	322
	400	410	19	006	29	06	4	001	018	323
	410	420	31	006	34	11	3	002	012	324
	420	430	29	013	36	10	6	003	007	325
	430	440	23	003	33	10	4	003	005	326
	440	450	21	003	38	11	2	002	005	327
	450	460	24	006	32	9	2	005	007	328
	460	470	26	006	34	11	2	002	005	329
	470	480	24	006	35	12	3	002	003	330
	480	490	27	005	19	09	4	002	003	331
	490	500	32	017	24	05	4	002	006	332
	500	510	33	011	36	16	4	002	006	333
	510	520	28	013	43	15	5	002	005	334
	520	530	29	005	36	09	3	004	009	335
	530	540	47	008	41	14	8	003	027	336
	540	550	33	011	35	43	4	002	005	337
	550	560	34	006	38	45	4	002	005	338

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/C

DATE SENT: Feb 3/93

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-1161	560	570	35	10.25	5.6	.29	6	00.2	011	17339
	570	580	34	00.4	8.3	.11	6	00.3	006	340
	580	590	35	00.8	4.7	.14	5	00.3	013	341
	590	600	37	01.2	3.9	.15	5	00.2	007	342
	600	610	49	00.8	4.1	.32	3	00.3	007	343
	610	620	21	01.3	6.4	.20	4	00.3	011	344
	620	630	37	11.06	17.6	.16	39	01.4	089	345
	630	640	52	01.7	7.4	.13	25	03.3	600	346
	640	650	51	00.5	6.8	.26	7	00.3	012	347
	650	660	61	01.2	4.3	.40	10	00.2	007	348
	660	670	53	01.2	4.1	.29	12	00.2	017	349
	670	680	43	01.9	4.0	.43	9	00.2	012	350
	680	690	26	01.2	3.0	.10	7	00.2	007	351
	690	700	28	01.0	5.5	.13	8	00.3	018	352
	700	710	36	01.8	4.8	.19	8	00.2	012	353
	710	720	42	01.4	4.0	.19	9	00.3	020	354
	720	730	53	01.5	6.0	.25	10	00.3	010	355
	730	740	44	01.5	4.6	.17	8	00.2	006	356

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**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/C

DATE SENT: Feb 4/93

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-161	740	750	45	38	50	26	12	9	13	17357	37
	750	760	26	28	41	09	7	6	14	358	36
	760	765	23	20	40	08	8	3	8	359	28
	790	795	22	34	35	07	8	1	10	360	40
	800	805	20	12	42	08	8	2	16	361	41
	810	820	15	9	20	07	8	2	6	362	42
	820	830	19	21	31	05	10	3	8	363	43
	830	840	14	29	34	06	5	2	7	364	44
	840	850	27	29	38	09	6	2	6	365	45
	850	860	22	19	39	09	6	2	6	366	46
	860	870	18	21	46	02	5	2	4	367	47
	870	880	28	15	44	11	8	1	5	368	48
	880	890	28	11	40	11	8	1	6	369	49
	890	900	27	20	50	09	6	2	6	370	50
	900	910	23	21	47	06	6	2	10	371	51
	910	920	21	20	48	07	6	2	9	372	52
	920	930	23	21	52	09	8	2	12	373	53
	930	940	19	14	53	06	7	2	8	374	54

RECOVERY AND RQD%

HOLE NO.: E_161

LOGGED BY: S. OAKLEY

DATE: JAN. 31, 1993

FOOTAGE		RECOVERY		PERCENTAGE	
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"
22	27	64	10	106.67%	16.67%
27	37	120	28	100.00%	23.33%
37	47	120	77	100.00%	64.17%
47	57	121	43	100.83%	35.83%
57	67	118	37	98.33%	30.83%
67	77	118	20	98.33%	16.67%
77	87	121	42	100.83%	35.00%
87	97	119	35	99.17%	29.17%
97	107	119	59	99.17%	49.17%
107	117	120	91	100.00%	75.83%
117	127	118	75	98.33%	62.50%
127	137	119	87	99.17%	72.50%
137	147	119	66	99.17%	55.00%
147	157	121	57	100.83%	47.50%
157	167	118	33	98.33%	27.50%
167	177	118	18	98.33%	15.00%
177	187	120	9	100.00%	7.50%
187	197	120	25	100.00%	20.83%
197	207	121	42	100.83%	35.00%
207	217	122	47	101.67%	39.17%
217	227	122	69	101.67%	57.50%
227	237	121	50	100.83%	41.67%
237	247	118	60	98.33%	50.00%
247	257	120	42	100.00%	35.00%
257	267	121	22	100.83%	18.33%
267	277	121	46	100.83%	38.33%
277	287	120	34	100.00%	28.33%
287	297	119	58	99.17%	48.33%
297	307	120	43	100.00%	35.83%
307	317	120	39	100.00%	32.50%
317	327	121	36	100.83%	30.00%
327	337	121	35	100.83%	29.17%
337	347	120	47	100.00%	39.17%
347	357	118	34	98.33%	28.33%
357	367	121	57	100.83%	47.50%
367	377	119	65	99.17%	54.17%
377	387	122	17	101.67%	14.17%
387	397	119	37	99.17%	30.83%
397	407	122	36	101.67%	30.00%
407	417	116	12	96.67%	10.00%

RECOVERY AND RQD%

417	427	122	13	101.67%	10.83%
427	437	120	12	100.00%	10.00%
437	447	122	24	101.67%	20.00%
447	457	121	18	100.83%	15.00%
457	467	118	40	98.33%	33.33%
467	477	121	21	100.83%	17.50%
477	487	120	33	100.00%	27.50%
487	497	123	59	102.50%	49.17%
497	507	121	20	100.83%	16.67%
507	517	122	15	101.67%	12.50%
517	527	120	12	100.00%	10.00%
527	537	121	47	100.83%	39.17%
537	547	120	35	100.00%	29.17%
547	557	122	34	101.67%	28.33%
557	567	123	66	102.50%	55.00%
567	577	121	47	100.83%	39.17%
577	587	122	33	101.67%	27.50%
587	597	121	24	100.83%	20.00%
597	607	119	20	99.17%	16.67%
607	617	120	27	100.00%	22.50%
617	627	122	36	101.67%	30.00%
627	637	121	71	100.83%	59.17%
637	647	120	54	100.00%	45.00%
647	657	121	44	100.83%	36.67%
657	667	120	53	100.00%	44.17%
667	677	121	38	100.83%	31.67%
677	687	120	44	100.00%	36.67%
687	697	123	29	102.50%	24.17%
697	707	120	25	100.00%	20.83%
707	717	122	44	101.67%	36.67%
717	727	121	53	100.83%	44.17%
727	737	122	29	101.67%	24.17%
737	747	114	29	95.00%	24.17%
747	757	123	35	102.50%	29.17%
757	767	122	35	101.67%	29.17%
767	777	122	19	101.67%	15.83%
777	787	118	30	98.33%	25.00%
787	797	119	29	99.17%	24.17%
797	807	119	35	99.17%	29.17%
807	812	63	17	105.00%	28.33%
812	817	60	15	100.00%	25.00%
817	827	120	39	100.00%	32.50%
827	837	120	34	100.00%	28.33%
837	847	122	30	101.67%	25.00%
847	857	121	43	100.83%	35.83%

RECOVERY AND RQD%

857	867	121	26	100.83%	21.67%
867	877	120	55	100.00%	45.83%
877	887	122	34	101.67%	28.33%
887	897	118	28	98.33%	23.33%
897	907	120	23	100.00%	19.17%
907	917	121	28	100.83%	23.33%
917	927	122	34	101.67%	28.33%
927	937	121	16	100.83%	13.33%
937	947	120	21	100.00%	17.50%
947	957	121	32	100.83%	26.67%
957	967	119	13	99.17%	10.83%
967	977	122	15	101.67%	12.50%
977	987	122	32	101.67%	26.67%
987	997	120	37	100.00%	30.83%
997	1007	121	41	100.83%	34.17%
1007	1017	119	29	99.17%	24.17%
1017	1027	121	14	100.83%	11.67%
1027	1032.5	60	11	90.91%	16.67%
1032.5	1043	124	44	98.41%	34.92%
1043	1047	50	4	104.17%	8.33%
1047	1057	116	10	96.67%	8.33%
1057	1061	50	5	104.17%	10.42%

MAGNETIC SUSCEPTIBILITY

LE NO. E-161

DATE Jan 31/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
22-30						.06
30-40						.07
40-50						.11
50-60						.06
60-70						.13
70-80						.10
80-90						.05
90-100						.25
100-110						.03
110-120						.04
120-130						.09
130-140						.09
140-150						.06
150-160						.02
160-170						.08
170-180						.01
180-190						.02
190-200						.03
200-210						2.5
210-220						.87
220-230						.02
230-240						.79
240-250						.01
250-260						.80
260-270						4.9
270-280						3.1
280-290						3.9
290-300						.04
300-310						3.1
310-320						.77
320-330						1.1
330-340						1.4
340-350						.08
350-360						.22

MAGNETIC SUSCEPTIBILITY

LE NO. E-161

DATE Jan 31/93

INTERVAL: VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
360-370						.73
370-380						.06
380-390						2.1
390-400						2.9
400-410						.04
410-420						2.2
420-430						.81
430-440						.29
440-450						3.3
450-460						.43
460-470						1.2
470-480						2.2
480-490						.79
490-500						.05
500-510						.26
510-520						2.4
520-530						3.0
530-540						1.0
540-550						1.2
550-560						1.0
560-570						.09
570-580						1.9
580-590						1.0
590-600						4.3
600-610						2.7
610-620						1.9
620-630						.02
630-640						1.0
640-650						2.8
650-660						4.0
660-670						2.1
670-680						.96
680-690						2.0
690-700						3.3

MAGNETIC SUSCEPTIBILITY

LE NO. E 161

DATE Jan 31/93

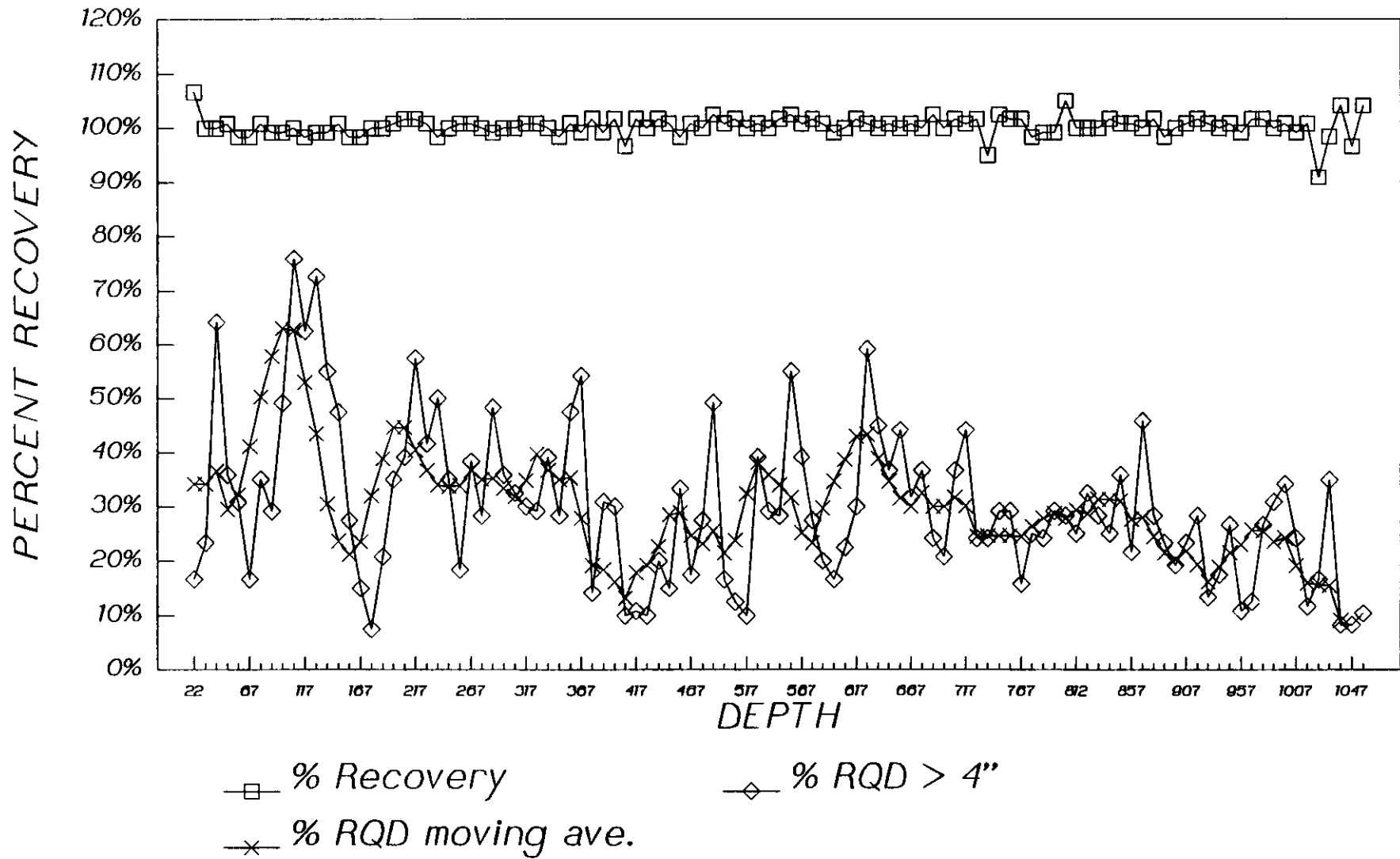
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
700 - 710						4.0
710 - 720						2.5
720 - 730						4.0
730 - 740						4.5
740 - 750						1.8
750 - 760						4.5
760 - 770						2.8
770 - 780						4.9
780 - 790						4.4
790 - 800						1.7
800 - 810						1.4
810 - 820						1.3
820 - 830						2.7
830 - 840						.83
840 - 850						1.0
850 - 860						4.1
860 - 870						3.9
870 - 880						5.4
880 - 890						2.2
890 - 900						4.8
900 - 910						5.5
910 - 920						1.4
920 - 930						8.2
930 - 940						7.9
940 - 950						9.4
950 - 960						4.9
960 - 970						2.7
970 - 980						1.3
980 - 990						2.0
990 - 1000						.04
1000 - 1010						.42
1010 - 1020						2.6
1020 - 1030						9.5
1030 - 1040						8.7

Recovery and RQD%

E_161



HOLE NO. E 162

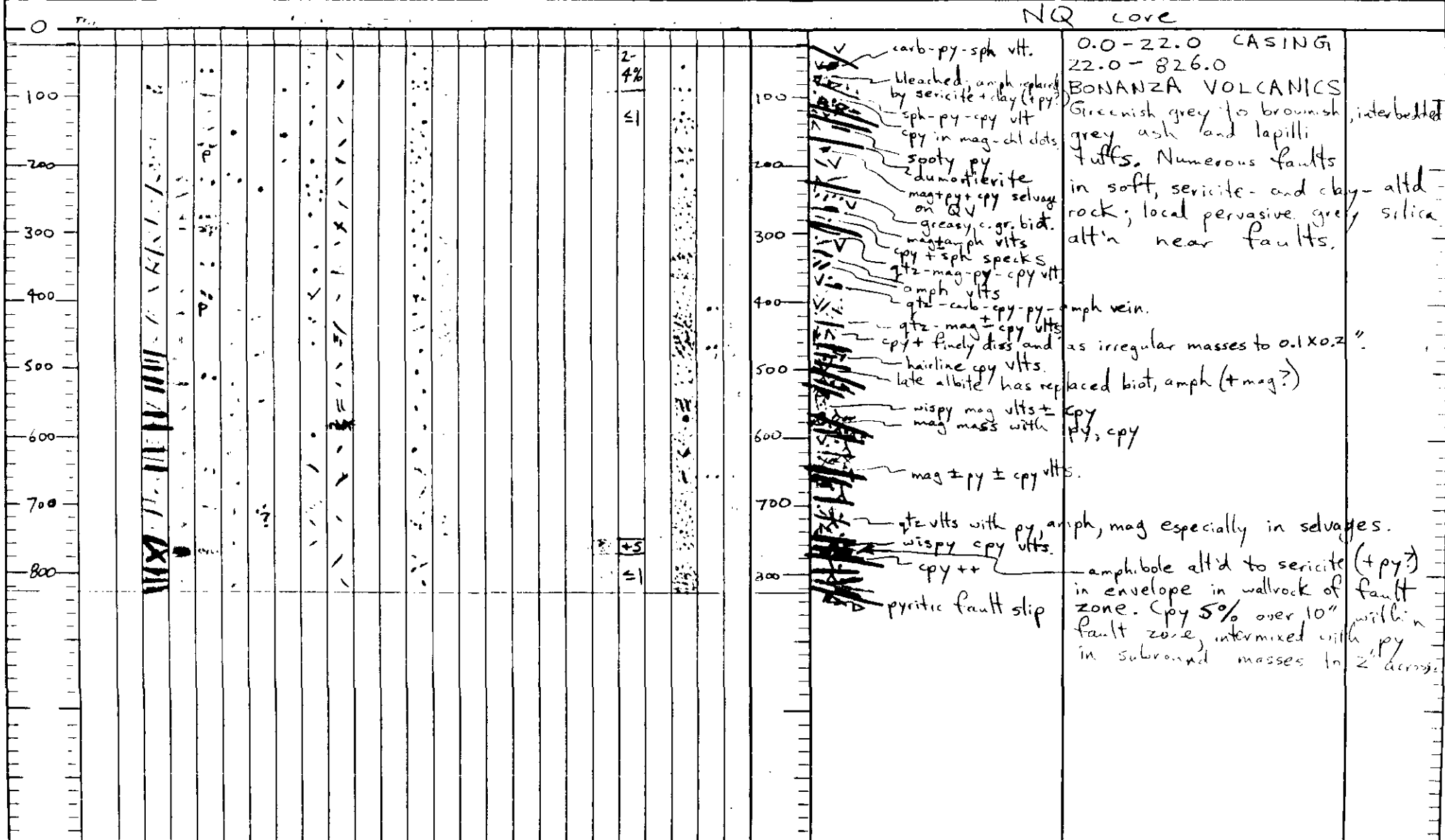
DRILL LOG

Page 1 of 1

PROJECT Island Copper
CONTRACTOR Olympic Drilling & Consulting Ltd.
DATE STARTED Jan. 31/93 COMPLETED Feb. 3/93
LOGGED BY David Pawliuk

T.D. 826.0 FT COLLAR ELEVATION 1281.716'
INCLINATION -65° BEARING 199°
COORDINATES 21657.894 E // 8506.770 N
SURVEY REFERENCES _____

Footage	ALTERATION											STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:200'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet	Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten.	Est. Cu Mo	CuFeS ₂					FeS_{2}	CuFeS_{2}	Fe_{2}O_{3}	MoS_{2}	U.S.



PROJECT Island Copper

T.D. 826.0 FT

COLLAR ELEVATION 1281.716

CONTRACTOR Olympic Drilling & Consulting

INCLINATION -65°

BEARING 199°

DATE STARTED Jan 31/93 COMPLETED Feb. 3/93

COORDINATES 21657.894E / 8506.770N

LOGGED BY David J. Pawliuk

SURVEY REFERENCES

Footage	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					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biote	K-spar	Chlorite	Epidote	Carb Zoo	Garnet		Pyroxene	Amphibole	Sulf Vems	Frac Inten	Est Cu Mo					CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	Mos ₂
20																								NQ core throughout		
30																.02	3							py as diss blebs w. 0.06" across, occ. wispy vlt's.	0.0 - 22.0' CASING 22.0 - 826.0' BONANZA VOLCANICS As for upper part E 161 (vertical hole from same drillsite). Light greenish grey to light greyish brown to light green, medium grained ash tuff (?). Generally massive rock. Yellow-green eg tiny specks & spots, bands and faint, irregular masses up to 2 or 3" across. Rock hard, pervasively albitized up to say 30% rock volume.	
40															.01	2								fault(?) 1.5" crushed pyritic ore on sericite- coated fracture @ 50°		
50															.01	3								as fault? slip w. 0.08" ser + py @ 45° + bleached envelope 0.5" wide	Very finely disseminated bluish green secondary amph. biot (?) throughout, locally to ~10%. Epidote 2-7.5%. Occ. white calcite vlt's.	
60															.02	2								carb-py-sph vlt 0.4" @ 30°		
70															.02	4								speck cpy 65.7-68.4 bleached, amph replaced by ser. + clay (tuff?) @ 75°		
80															.03	4								2 sph (vlt's) + cpy (speckles) sph-py-cpy vlt 0.4" @ 45° py as blebs, subbed	68.7-75.4 vlt. ex. top. ill. cut into bet. with contacts @ ~75" to c.a. + coarser clasts to ~1" across.	
																								py as blebs, subbed		x tals + irregular wispy vlt's.

PROJECT **Island Copper**

CONTRACTOR Olympic Drilling & Consulting Ltd

DATE STARTED _____ COMPLETED Feb.

LOGGED BY D. Pawlick

T.D. 826-0'

INCLINATION -65°

COORDINATES _____

SURVEY REFERENCES _____

COLLAR ELEVATION _____

BEARING 199°

Footage	ALTERATION												STR.				VISUAL EST.						Sample No & Interval	LOG SCALE <u>1":10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT	
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est Cu Mc	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₃ O ₄	MoS ₂						
140																										22.0- BONANZA VOLCANICS Medium greenish grey to pale brown-grey; lopylltuff throughout with subangular clasts up to 2" x 0.7" across, av. size ~ 0.25" across. Also ash tuff interbeds. More albite(?) and less silica than above. Much less epidote.	
150																	.04	.5								carb-zeol vein @ 65°	
160																	.05	.5								vertical cpy specks in mag clots. Dumortierite irreg masses in discoloration up to 0.15" at ~ 15° to c.a. below HTS @ 130, only v. small specks @ 192', 195'.	
170																	.03	1								fault; 6" moderately to finely bkn. core w. sericite + clays. Cannot measure orientation.	
180																	.03	.5								sericite + clay clots to 1.5" in siliceous matrix below fault fault slip @ 65°; pale aquia sericite "halo" across 4"	
190																	.02	.5								2 mag mainly segregated into round clots to 2" across + also a minor amt finely diss. albite (+ ser?) selvages to 2 mm wide around mag-amph clots.	
200																	.06	.5								mag+py+cpy selvage an aqte-rich band or vein 0.5" @ 65° calcite x tabs in vlt. 0.35' @ 35° to c.a.	

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 826.0'
 INCLINATION -65°
 COLLAR ELEVATION _____
 BEARING 199°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT										
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blakite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet		Pyroxene	Amphibole	Albite	Surf Vens	Frac Inten	Est Cu Mo					CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MnS ₂					
260																																
270																																banding @ 45°.
280																																small slip @ 50°; 0.75' crushed core.
290																																yellow-green ep rims mag masses
300																																QV 0.6" @ 30°
310																																Py vlt 0.15" @ 70°
320																																cpy + sph
276-281																																276-281 rock obscured by red grease.
280-285																																white sericite on fault slip @ 30° to c.a. @ bottom of 3' wide int. brxd interval w. dom atz + zeol + py vlt + cpy as subground masses to 0.4 x 0.2" across
290-295																																Occ. sph speckles. calcite-qtz on 1.7" @ 40°
295-300																																QV 0.3" @ 50° offset along slip parallel c.a. occupied by QV 0.2" wide.
300-305																																40% pale orange zeolite across 12" core length as irregular veins to 1" wide @ about 30° to c. a.
305-310																																QV 0.5" @ 32°
310-315																																qtz-mag-py-cpy vlt 0.15" @ 15°
315-320																																QV 0.6" @ 80°
320-325																																qtz-rich band 1" @ 65°

22.0'
 BONANZA JOLCS.
 Light to dark greenish grey, to pale grey with local steel grey and medium brown patches. Interbedded ash + lapilli tuff(?) as above except biotite alt'n increasing with depth. Local patches where rock has undergone moderate sericite and clay mineral alteration.
 573.4 Py vlt 0.25" wide contains cpy + sph within central part.

PROJECT Island Copper
 CONTRACTOR _____
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T.D. 826.0' COLLAR ELEVATION _____
 INCLINATION -65° BEARING 199°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT									
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zeo	Garnet		Pyroxene	Amphibole	Albite	Sulf. Veins	Frac. Inten.					Est. Cu Mo	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS ₂			
770																	.12	<.5											22.0 - BONANZA VOLCANICS Dark brown grey to light, watery grey interbedded medium grained lapilli and ash tufts(?). Fewer carb/zed vlt's than within overlying interval, and more quartz veins; locally rock appears to have been pervasively silicified + albitized.	
750																	.2	.5											qtz-amph+py vlt 0.3" along clayey slip @ 40° ep+as irreg + 0.1x0.2 and finely diss+vlt's	
760																	.2	<.5											qv 0.4" @ 75° qtz(40%) - calcite(60%) vein 0.8" @ 50° contain retro ep specks	
770																	.15	<.5											qtz-cpy vlt moly specks to 0.06" across QV 0.7" @ 60° QV 2" @ 50° QV 0.7" @ 40°	
780																	.18	<.5											fract wispy diss moly qtz-rich band 1.2" @ 30° K-spar alt along lower contact.	
790																	.12	.5											hardline cpy vlt's qtz rich band 1.2" @ 28° QV 0.8" @ 60° QV 0.5" @ 40°	
500																													late albit(?) has replaced biot, amph (+mag?) qtz-rich band 4.5" wide @ 35° QV 3.5" @ 45° pale grey green sericite(?) masses fo 0.1" across.	

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
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T.D. 826.0' COLLAR ELEVATION _____
 INCLINATION -65° BEARING 199°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Al ₂ SiO ₅	Sulf Veins	Frac Inten	Est Cu Mo					CuFes,	FeS,	CuFes,	Fe ₂ O ₃ ,	MoS,
500																								QV 0.4" @ 25° QV 0.5" @ 70° QV 0.9" @ 60° QV 0.4" @ 55° QV 2.7" @ 75° QV 0.25" @ 40° QV 0.9" @ 70° QV 0.8" @ 80° QV 1.2" @ 65° QV 1.2" @ 35° QV 0.2" @ 70°	22.0 - BOVANZA VOLCANICS. Light to medium grey, often with a brownish (biotite) or greenish (amphibole) cast. Abundant watery grey quartz veins; silica also as pervasive alt'n near fault zone. Locally abundant pale coloured sericite and clay lining irregular fractures and filling clots in the vicinity of the fault zone.	
510																								QV 0.9" @ 70° QV 0.8" @ 80° QV 1.2" @ 65° QV 1.2" @ 35° QV 0.2" @ 70°	510 - Fault zone; moderately broken core with ground core between 526 + 536'.	
520																								QV 1.2" @ 35° QV 0.2" @ 70°	526 - 537' Fault zone; moderately broken core with ground core between 526 + 536'.	
530																								QV 0.2" @ 70°	Below 537' volcanic fine grained massive flow(?)	
540																								QV 0.2" @ 70°		
550																										
560																										

PROJECT Island Copper

T.D. 826.0

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -65°

BEARING 199°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo		Garnet	Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten					Est Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	P ₂ O ₅	MoS ₂	
560																	.12	.5						560-570	QVI" @ 60° qtz-rich band 2-5" @ 60° Healed pyritic fault slip @ 65°	22.0 - BOJANZA VOLCANICS Light greenish grey to medium brownish grey, fine to medium grained fairly massive flow (?). As for 557' down above, with magnetite finely disseminated rather than occurring within vesicles or dots.		
570																	.07	.5						570-580	carb on brx w. 70% volc. wallrock frags, 30% carb, 2% py, 1% mag. Healed ft slip @ 30° QVI 1.32" @ 60°			
580																	.08	1						580-590	fault slip @ 25° carb-qtz vein brx			
590																		.08	.5						590-600			intensely silicified with qtz bands or veins @ ~70° to c.a.
600																	.06	.5						600-610				
610																		.04	<.5						610-620	fault slip @ 57° sph specks in qtz v/t. qtz-rich band 3" @ 45° QV 0.8" @ 60°		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
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T.D. 826.0
 INCLINATION -65°
 COORDINATES _____
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 COLLAR ELEVATION _____
 BEARING 199°

Foliage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inter					Est Cu Mo	Cu-Fe-S	Fe-S	Cu-Fe-S	Fe ₂ O ₃	MoS_{2}
560																								560-570 QV1.2" @ 60° Qtz-rich band 2.5" @ 60° Healed pyritic fault slip @ 65° 65° carb on bxa w. 70% volc. wallrock frags, 30% carb, 2% py, 1% mag. healed ft slip @ 30°	22.0 - BOJANZA VOLCANICS Light greenish grey to medium brownish grey, fine to medium grained fairly massive flow (?). As for 557' down above, with magnetite finely disseminated rather than occurring within vesicles or dots.	
570																							570-580 QV1.3" @ 60° fault slip @ 25° carb-qtz vein bxa			
580																							580-590 QV1.7" @ 65° fault slip @ 25° carb-qtz vein bxa			
590																							590-600 QV1.8" @ 70° intensely silicified with Qtz bands or veins @ ~70° to c.a.			
600																							600-610 QV1.6" @ 70° fault slip @ 25° sph. pecks in Qtz vlt.			
610																							610-620 QV0.8" @ 60° Qtz-rich band 3" @ 45°			
620																										

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
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T.D. 826.0 COLLAR ELEVATION _____
 INCLINATION -65° BEARING 199°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten					Est Cu Mo	CuFeS ₂	FeS ₂	CuFeS	Fe ₃ O ₄	MoS ₂
620																									2 cpy + finely diss. QV 0.2" @ 60°	<p>22.0 - BONANZA VOLCANICS Medium grey to light greenish grey, fine grained basaltic flow (?). Less biotite, amphibole + carb/zeol vlt's than in overlying interval. Magnetite generally finely disseminated throughout unit rather than segregated into clots or veinlets. Massive rock unit.</p>	
630																									QV 0.4" @ 50° PY-qtz v. 0.7" on slip @ 50° QV 0.2" @ 45°, amph selvages QV 0.3" @ 55° offset 0.6" along slip subparallel c.a. occupied by py vlt. + calcite.		
640																									fault(?) slip @ 20° QV 0.6" @ 45° 641.3 - 643.7 Qtz-rich band or "vein" @ ~ 60° contains mag diss + fine vlt's + amph clots. mag + py + cpy vlt's		
650																									QV 1.7" @ 52° QV 3.3" @ 35° w. red hem + py vlt's lining fractures parallel vein margins		
660																									QV 0.4" @ 55° fault? @ 40° specks moly, cpy		
670																									QV 1" @ 20° QV 0.8" @ 40° cpy v. fine diss.		
680																									maroon, dusty disseminated hematite. Qtz (45%) - py (5%) v. 2.8" @ 40° Qtz-mag-amph-cpy-py-moly vlt 0.4" @ 60°		

PROJECT Island Copper

T.D. 826.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -65°

BEARING 199°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION										STR.		VISUAL EST.						Sample No & Interval	SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT			
			Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	A/C	Sulf Vens	Frac Inter	Est Cu Mo	CuFeS	FeS	CuFeS					FeO	MoS	
740																									22.0 - BONANZA VOLCANICS Dark brownish grey to medium grey to pale grey, fine grained basalt flow (?) as above.		
750																.06	.5									QV 1.5" subparallel c.a. w/ py, mag, cp speckles	
760																.05	4.5									760 Fault, 10' x 2' UK w/ 2' ? 4' to c.a. wispy cpy vfts	
770																.08	2									QV 0.4" @ 70° QV 5" @ 20° cpy patches to form cont fracture zones in QV ven Qtz (90%) - vol. (10%) over 4" @ 40° lines 1" @ 20° QV 2.5" @ 15° w/	
780																1.0	10									QV 0.2" @ 27° smear sericite (clay) on slip @ 42°. Amphiboles altered to sericite in 6" envelope along fault.	
790																.03	.5									QV 0.6" @ 70° w/ py 40° cpy ++ QV 0.25" @ 30° 47°	
800																.01	4.5									QV 0.4" @ 25° w. mag-amph-ser selvages. QV 0.8" @ 55° QV 4" @ 55° w. amphib. QV 0.6" @ 50° w. py.	

PROJECT Island Copper
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T.D. 826.0' COLLAR ELEVATION _____
 INCLINATION -65° BEARING 199°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.							Sample No & Interval	SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Quartz		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten	Est Cu, Mo	CuFeS ₂					FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	
800																								800 - 810			banded Qtz-mag-py ven 2.5" @ 50° QV 1.4" @ 50° w. mag selvages Qtz-mag-py-amph-cpy vlt 0.4" @ 30° 810 QV 4.5" @ 65° QV 0.3" @ 45° QV 0.5" @ 55°; black mag-rich band 0.4" wide in centre of vein, parallel margins, QV 2.7" @ 40° QV 2.2" @ 50° QV 1.2" @ 40° QV 1.6" @ 50° w. mag+amph-rich selvages. QV 0.7" @ 60° w. mag-rich selvages. 820 QV 0.4" @ 20° QV 0.5" @ 58° w. mag selvages. pyritic fault slip @ 60°, 4" moderately bkn core. mod. fractured core. QV 0.75" @ 23° 22.0 - 826.0' BONANZA VOLCANICS As above, except for increase in Qtz veins, veinlets + mag veinlets, 826' END OF HOLE	
810																							810 - 820					
820																							820 - 826.0'					

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_162	21657.9	8506.8	1281.7

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	250.0	199.0	-63.5
250.0	500.0	199.0	-58.5
500.0	826.0	199.0	-58.5

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
22.0	30.0	0.03	0.001	8.9	<0.01	0.30	0.003	0.024	17387
30.0	40.0	0.03	0.001	7.6	<0.01	0.70	0.037	0.083	17388
40.0	50.0	0.02	0.001	8.4	<0.01	0.60	0.007	0.063	17389
50.0	60.0	0.02	0.001	7.9	<0.01	0.50	0.014	0.062	17390
60.0	70.0	0.02	0.001	8.4	<0.01	0.40	0.007	0.045	17391
70.0	80.0	0.04	0.001	9.7	0.01	0.80	0.006	0.256	17392
80.0	90.0	0.03	0.001	6.9	0.01	0.80	0.005	0.146	17393
90.0	100.0	0.02	0.001	7.4	0.02	0.40	0.007	0.124	17394
100.0	110.0	0.03	0.001	7.1	<0.01	0.30	0.009	0.058	17395
110.0	120.0	0.04	0.001	3.4	<0.01	0.30	0.003	0.041	17396
120.0	130.0	0.01	0.001	2.8	<0.01	0.20	0.002	0.036	17397
130.0	140.0	0.06	0.002	3.2	0.04	2.20	0.050	0.179	17398
140.0	150.0	0.03	0.003	3.1	<0.01	0.30	0.004	0.011	17399
150.0	160.0	0.04	0.001	6.4	<0.01	0.20	0.003	0.017	17400
160.0	170.0	0.03	0.001	2.9	0.02	1.60	0.006	0.041	17401
170.0	180.0	0.05	0.001	4.4	<0.01	0.30	0.002	0.044	17402
180.0	190.0	0.02	0.001	3.1	<0.01	0.10	0.001	0.011	17403
190.0	200.0	0.04	0.001	3.0	<0.01	0.10	0.002	0.004	17404
200.0	210.0	0.05	0.003	2.7	<0.01	0.20	0.003	0.013	17405
210.0	220.0	0.04	0.003	1.3	<0.01	0.20	0.003	0.008	17406
220.0	230.0	0.07	0.007	2.4	<0.01	0.30	0.009	0.023	17407
230.0	240.0	0.07	0.005	3.5	<0.01	0.20	0.002	0.007	17408
240.0	250.0	0.07	0.006	3.3	<0.01	0.40	0.007	0.025	17409
250.0	260.0	0.13	0.007	5.0	<0.01	0.20	0.002	0.005	17410
260.0	270.0	0.07	0.008	3.4	<0.01	0.30	0.001	0.006	17411
270.0	280.0	0.27	0.009	5.3	0.06	2.70	0.070	0.083	17412
280.0	290.0	0.05	0.007	2.4	<0.01	0.30	0.003	0.018	17413
290.0	300.0	0.06	0.021	2.4	<0.01	0.50	0.004	0.092	17414
300.0	310.0	0.11	0.003	3.8	0.02	0.30	0.004	0.011	17415
310.0	320.0	0.07	0.003	2.1	0.01	0.10	0.001	0.003	17416
320.0	330.0	0.09	0.004	3.0	0.01	0.20	0.002	0.006	17417
330.0	340.0	0.16	0.004	4.9	<0.01	0.50	0.002	0.020	17418
340.0	350.0	0.12	0.004	3.6	0.02	0.30	0.001	0.004	17419
350.0	360.0	0.24	0.004	4.9	0.03	0.80	0.002	0.016	17420
360.0	370.0	0.18	0.006	4.6	0.02	0.30	0.002	0.006	17421
370.0	380.0	0.35	0.019	4.9	0.06	1.10	0.007	0.014	17422

DATE: 04/06/93

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BHP MINERALS CANADA - Island Copper Mine

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
380.0	390.0	0.30	0.009	5.2	0.08	0.60	0.002	0.005	17423
390.0	400.0	0.12	0.005	4.4	0.04	0.20	0.002	0.006	17424
400.0	410.0	0.20	0.008	5.0	0.09	0.40	0.002	0.007	17425
410.0	420.0	0.20	0.003	5.1	0.11	0.50	0.001	0.004	17426
420.0	430.0	0.24	0.004	6.4	0.16	0.60	0.001	0.005	17427
430.0	440.0	0.18	0.008	7.3	0.09	0.40	0.003	0.005	17428
440.0	450.0	0.22	0.003	7.1	0.13	0.60	0.002	0.005	17429
450.0	460.0	0.24	0.003	6.3	0.08	0.70	0.001	0.006	17430
460.0	470.0	0.24	0.003	3.7	0.07	0.70	0.002	0.005	17431
470.0	480.0	0.20	0.001	4.4	0.05	0.70	0.002	0.003	17432
480.0	490.0	0.22	0.004	4.6	0.09	0.50	0.001	0.003	17433
490.0	500.0	0.26	0.008	3.4	0.07	0.90	0.001	0.004	17434
500.0	510.0	0.30	0.013	6.0	0.16	1.00	0.008	0.135	17435
510.0	520.0	0.42	0.010	3.2	0.16	0.90	0.002	0.006	17436
520.0	530.0	0.27	0.003	3.1	0.23	1.10	0.003	0.062	17437
530.0	540.0	0.27	0.007	3.4	0.14	0.50	0.001	0.007	17438
540.0	550.0	0.20	0.003	5.2	0.13	0.50	0.001	0.004	17439
550.0	560.0	0.20	0.003	6.6	0.11	0.30	0.001	0.003	17440
560.0	570.0	0.18	0.003	5.9	0.26	0.40	0.003	0.006	17441
570.0	580.0	0.17	0.004	4.4	0.12	0.50	0.004	0.025	17442
580.0	590.0	0.27	0.005	4.2	0.45	0.70	0.003	0.007	17443
590.0	600.0	0.19	0.004	5.3	0.12	0.50	0.006	0.028	17444
600.0	610.0	0.16	0.002	4.8	0.14	0.70	0.005	0.028	17445
610.0	620.0	0.16	0.003	3.9	0.07	0.50	0.002	0.006	17446
620.0	630.0	0.18	0.003	4.9	0.15	0.50	0.003	0.008	17447
630.0	640.0	0.19	0.016	7.2	0.11	0.50	0.005	0.040	17448
640.0	650.0	0.12	0.005	5.5	0.09	0.60	0.003	0.013	17449
650.0	660.0	0.16	0.003	6.3	0.09	0.70	0.002	0.010	17450
660.0	670.0	0.17	0.003	7.2	0.09	0.80	0.002	0.027	17451
670.0	680.0	0.13	0.003	6.0	0.08	1.20	0.002	0.016	17452
680.0	690.0	0.06	0.002	4.6	0.04	0.80	0.007	0.042	17453
690.0	700.0	0.10	0.001	5.1	0.05	0.70	0.003	0.009	17454
700.0	710.0	0.19	0.002	7.7	0.04	0.50	0.004	0.250	17455
710.0	720.0	0.16	0.002	5.6	0.07	0.90	0.003	0.023	17456
720.0	730.0	0.20	0.004	7.5	0.08	0.40	0.003	0.012	17457
730.0	740.0	0.13	0.003	5.6	0.05	0.60	0.003	0.012	17458
740.0	750.0	0.20	0.003	6.0	0.09	0.80	0.003	0.088	17459
750.0	760.0	0.19	0.003	7.5	0.03	0.80	0.004	0.018	17460
760.0	770.0	0.15	0.002	6.7	0.05	0.50	0.002	0.012	17461
770.0	780.0	0.88	0.005	14.5	0.13	7.80	0.012	0.093	17462
780.0	790.0	0.19	0.004	8.1	0.07	0.90	0.004	0.012	17463
790.0	800.0	0.12	0.004	7.3	0.04	0.40	0.004	0.012	17464
800.0	810.0	0.12	0.004	9.1	0.06	0.30	0.002	0.007	17465
810.0	820.0	0.20	0.008	6.1	0.12	0.50	0.002	0.006	17466
820.0	826.0	0.16	0.005	6.2	0.05	0.60	0.003	0.006	17467

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/c

DATE SENT: Feb 8/93

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-1162	22	30	03	100	89	<10	3	003	024	17387	31
	30	40	03	1	76	<10	7	1037	083	388	32
	40	50	02	1	84	<10	16	1007	1063	389	33
	50	60	02	1	79	<10	15	1014	1062	390	34
	60	70	02	1	84	<10	4	1007	1045	391	35
	70	80	04	1	97	80	7	6	256	392	36
	80	90	03	1	69	80	7	5	146	393	37
	90	100	02	1	74	80	4	7	124	394	38
	100	110	03	1	71	<10	3	9	1058	395	39
	110	120	04	1	34	<10	3	3	1041	396	40
	120	130	01	1	28	<10	2	2	1036	397	41
	130	140	06	2	32	04	22	1050	1179	398	42
	140	150	03	3	31	<10	3	4	011	399	43
	150	160	04	1	64	<10	2	3	017	400	44
	160	170	03	1	29	02	16	6	1041	401	45
	170	180	05	1	44	<10	3	2	1044	402	46
	180	190	02	1	31	<10	11	1	1011	403	47
	190	200	04	1	30	<10	1	2	004	404	48

ANNI FEB/MIS

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/c

DATE SENT: Feb 10/93 (Feb 9/93) 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-162	380	390	30	1009	52	8	6	002	005	17423A1	26
	390	400	12	5	44	4	012	2	6	424	27
	400	410	195	8	50	9	04	2	7	425	28
	410	420	20	3	51	11	5	1	4	426	29
	420	430	24	4	64	16	6	1	5	427	30
	430	440	18	8	73	9	4	3	5	428	31
	440	450	22	3	71	13	6	2	5	429	32
	450	460	24	3	63	8	7	1	6	430	33
	460	470	24	3	37	7	7	2	5	431	34
	470	480	20	1	44	5	7	2	3	432	35
	480	490	22	4	46	9	5	1	3	433	36
	490	500	26	8	34	7	9	1	004	434	37
	500	510	30	1013	60	16	10	8	135	435	38
	510	520	42	1010	32	16	9	2	006	436	39
	520	530	27	3	31	23	11	3	062	437	40
	530	540	27	7	34	14	5	1	1007	438	41
	540	550	20	3	52	13	5	1	4	439	42
	550	560	20	3	66	11	3	1	3	440	43

Andi Feb 9/93

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: IC

DATE SENT: Feb 10/93

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-1162	560	570	18	3	59	26	4	3	6	17441	44
	570	580	17	4	44	12	5	4	25	442	45
	580	590	27	5	42	45	7	3	7	443	46
	590	600	19	4	53	12	5	6	28	444	47
	600	610	16	2	48	14	7	5	28	445	48
	610	620	16	3	39	7	5	2	6	446	49
	620	630	18	3	49	15	5	3	8	447	50
	630	640	19	16	72	11	5	5	40	448	51
	640	650	12	5	55	9	6	3	13	449	52
	650	660	16	3	63	9	7	2	10	450	53
	660	670	17	3	72	9	18	2	27	451	54
	670	680	13	3	60	8	12	2	16	452	45
	680	690	06	2	46	4	8	7	42	453	46
	690	700	10	1	51	5	7	3	9	454	47
	700	710	19	2	77	4	5	4	250	455	48
	710	720	16	2	56	7	9	3	23	456	49
	720	730	20	4	75	8	14	3	12	457	50
	730	740	13	3	56	5	6	3	12	458	51

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: IC

DATE SENT: Feb 9/93

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-1162	200	210	05	003	27	K01	2	003	013	17405	49
	210	220	04	3	113	K01	2	3	008	406	50
	220	230	07	7	214	K01	3	9	023	407	51
	230	240	07	5	315	K01	2	2	7	408	52
	240	250	07	6	313	K01	14	7	025	409	53
	250	260	13	7	50	K01	2	2	5	410	54
	260	270	07	8	34	K01	3	1	6	411	55
	270	280	27	009	53	06	27	070	083	412	56
	280	290	05	007	24	K01	3	3	018	413	57
	290	300	06	021	214	K01	5	4	092	414	58
	300	310	11	3	318	02	2	4	011	415	59
	310	320	07	3	21	01	11	1	003	416	60
	320	330	09	4	310	01	2	2	6	417	61
	330	340	16	4	49	K01	5	2	020	418	62
	340	350	12	4	316	02	3	1	4	419	63
	350	360	24	4	419	02	8	2	016	420	64
	360	370	18	6	416	02	3	2	006	421	65
	370	380	35	019	49	06	11	7	014	422	66

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Anti Fur/NIC

RECOVERY AND RQD%

HOLE NO. E_162

LOGGED BY: S. OAKLEY

DATE: FEB. 3, 1993

FOOTAGE		RECOVERY		PERCENTAGE	
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"
22	26	57	10	118.75%	20.83%
26	36	119	37	99.17%	30.83%
36	46	123	21	102.50%	17.50%
46	56	121	39	100.83%	32.50%
56	66	120	40	100.00%	33.33%
66	76	122	56	101.67%	46.67%
76	86	110	59	91.67%	49.17%
86	96	120	51	100.00%	42.50%
96	106	116	14	96.67%	11.67%
106	116	118	28	98.33%	23.33%
116	126	120	14	100.00%	11.67%
126	136	113	30	94.17%	25.00%
136	146	120	52	100.00%	43.33%
146	156	121	46	100.83%	38.33%
156	162	72	9	100.00%	12.50%
162	166	50	34	104.17%	70.83%
166	176	120	41	100.00%	34.17%
176	186	119	28	99.17%	23.33%
186	196	122	49	101.67%	40.83%
196	206	120	58	100.00%	48.33%
206	216	121	52	100.83%	43.33%
216	226	118	50	98.33%	41.67%
226	236	118	57	98.33%	47.50%
236	246	120	40	100.00%	33.33%
246	256	119	24	99.17%	20.00%
256	266	120	37	100.00%	30.83%
266	276	118	49	98.33%	40.83%
276	286	119	42	99.17%	35.00%
286	296	120	58	100.00%	48.33%
296	306	122	66	101.67%	55.00%
306	316	117	56	97.50%	46.67%
316	326	121	41	100.83%	34.17%
326	336	120	36	100.00%	30.00%
336	346	115	16	95.83%	13.33%
346	356	122	64	101.67%	53.33%
356	366	123	38	102.50%	31.67%
366	376	120	33	100.00%	27.50%
376	386	121	54	100.83%	45.00%
386	396	119	69	99.17%	57.50%
396	406	122	53	101.67%	44.17%
406	416	120	32	100.00%	26.67%

RECOVERY AND RQD%

416	426	120	19	100.00%	15.83%
426	436	109	13	90.83%	10.83%
436	446	119	9	99.17%	7.50%
446	450	49	0	102.08%	0.00%
450	456	74	19	102.78%	26.39%
456	466	122	25	101.67%	20.83%
466	476	123	38	102.50%	31.67%
476	486	120	17	100.00%	14.17%
486	496	116	25	96.67%	20.83%
496	506	121	29	100.83%	24.17%
506	516	122	35	101.67%	29.17%
516	526	120	58	100.00%	48.33%
526	536	52	6	43.33%	5.00%
536	546	113	42	94.17%	35.00%
546	556	123	36	102.50%	30.00%
556	566	117	11	97.50%	9.17%
566	576	124	34	103.33%	28.33%
576	586	120	48	100.00%	40.00%
586	596	122	36	101.67%	30.00%
596	606	120	16	100.00%	13.33%
606	616	119	12	99.17%	10.00%
616	626	122	22	101.67%	18.33%
626	636	118	25	98.33%	20.83%
636	646	118	32	98.33%	26.67%
646	656	122	36	101.67%	30.00%
656	666	120	28	100.00%	23.33%
666	674	89	6	92.71%	6.25%
674	684	119	34	99.17%	28.33%
684	686	30	17	125.00%	70.83%
686	696	118	37	98.33%	30.83%
696	706	120	39	100.00%	32.50%
706	713	85	17	101.19%	20.24%
713	723	121	23	100.83%	19.17%
723	733	122	24	101.67%	20.00%
733	740	84	9	100.00%	10.71%
740	746	71	18	98.61%	25.00%
746	756	122	49	101.67%	40.83%
756	761	60	8	100.00%	13.33%
761	766	59	10	98.33%	16.67%
766	776	120	37	100.00%	30.83%
776	786	121	38	100.83%	31.67%
786	796	122	33	101.67%	27.50%
796	806	120	36	100.00%	30.00%
806	816	123	50	102.50%	41.67%
816	826	122	42	101.67%	35.00%

MAGNETIC SUSCEPTIBILITY

LE NO. E-162

DATE Feb 3/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
22-30						.07
30-40						.11
40-50						.05
50-60						.08
60-70						.04
70-80						.05
80-90						.02
90-100						1.5
100-110						1.2
110-120						.03
120-130						.07
130-140						.02
140-150						.06
150-160						1.9
160-170						.02
170-180						4.3
180-190						4.9
190-200						4.1
200-210						.42
210-220						.03
220-230						.02
230-240						3.9
240-250						.20
250-260						4.4
260-270						1.7
270-280						.05
280-290						.03
290-300						.04
300-310						1.5
310-320						1.2
320-330						.04
330-340						1.4
340-350						3.6
350-360						.11

MAGNETIC SUSCEPTIBILITY

LE NO. E-162

DATE Feb 4/93

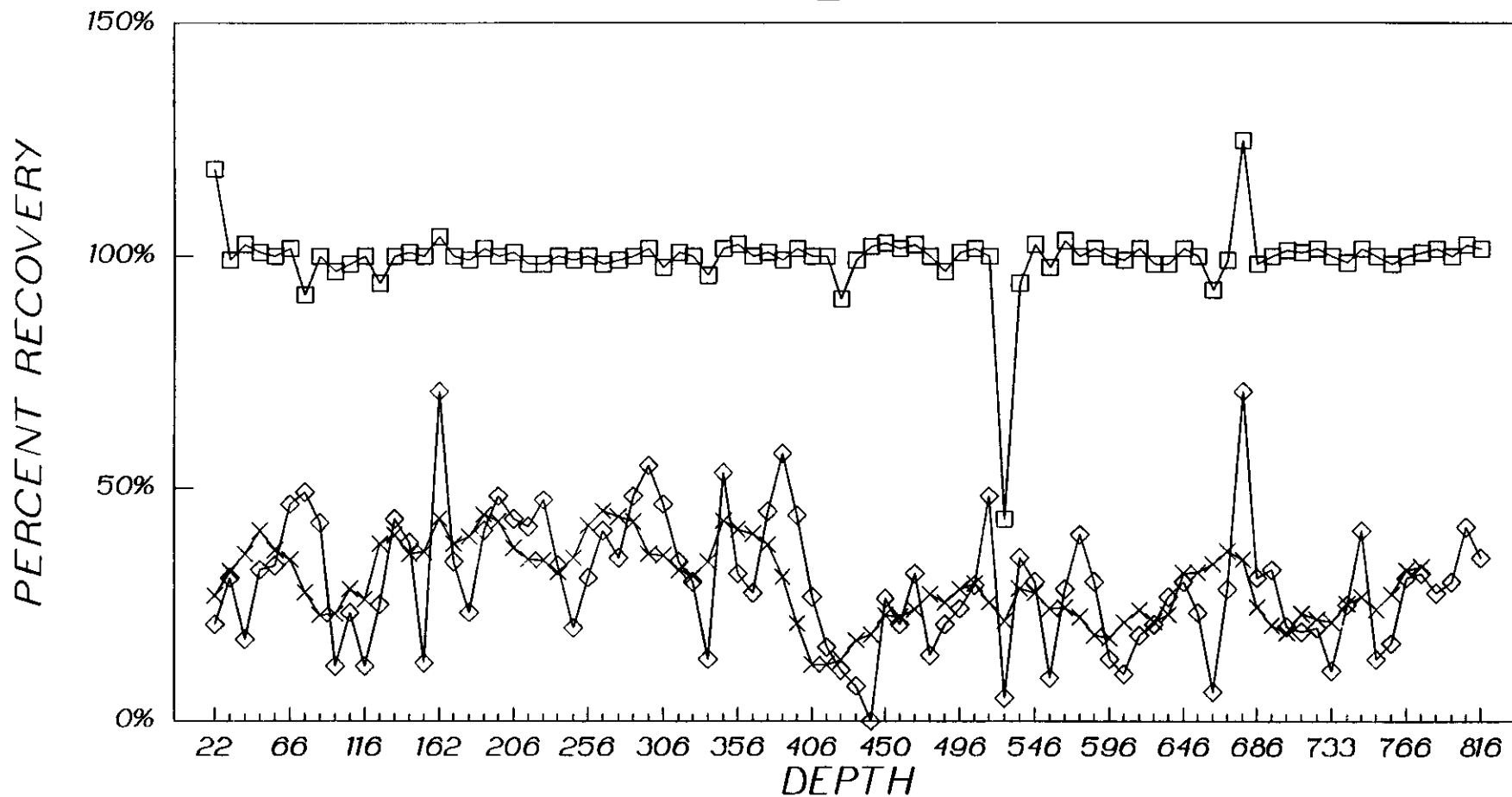
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
360-370						1.4
370-380						1.0
380-390						3.7
390-400						4.2
400-410						3.4
410-420						2.2
420-430						4.4
430-440						5.8
440-450						6.1
450-460						4.6
460-470						1.6
470-480						1.2
480-490						3.4
490-500						.48
500-510						.66
510-520						.27
520-530						.03
530-540						.07
540-550						1.5
550-560						4.5
560-570						2.0
570-580						.47
580-590						.59
590-600						1.7
600-610						2.1
610-620						.95
620-630						2.1
630-640						3.3
640-650						3.8
650-660						3.5
660-670						3.2
670-680						3.0
680-690						4.4
						4.5

Recovery and RQD %

E_162



—□— % Recovery
—◇— % RQD > 4"
—×— % RQD moving ave.

PROJECT Island Copper
 CONTRACTOR Olympic Drilling & Consulting Ltd.
 DATE STARTED Feb. 3, 1993 COMPLETED Feb. 6, 1993
 LOGGED BY David Pawliuk

T.D. 806.0 FT COLLAR ELEVATION 1219.754
 INCLINATION -50° BEARING 022°
 COORDINATES 22275.755 E // 9326.802 N ground; approx. colla
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:200'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blattie	K-spar	Chlorite	Epidote	Carb Zeo	Clay	Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten	Est Cu Mo	CuFeS ₂					FeS ₂	CuFeS	FeO	MoS ₂		
0																									NQ core			
100																										py (98%) - cpy (2%) vlt. 5% gillsonite across 12 inches. py (tcpy?) band abundant gillsonite.	0.0 - 60.0 CASING 60.0 - 806.0 BONANZA VOLCANICS Green-grey basaltic lapilli tuff with local ash tuff interbeds. 1 to 2% gillsonite vein lets throughout.	
200																												
300																										py band cpy v. finely diss abundant gillsonite py band		
400																										mag-py clots replaced by late silica (? albite). qtz vein bva contains py, ser, amph, chl. trace cpy in chl-mag clot 23 parallel qtz-carb-py vltts @ 75° across pyritic fault slip.		
500																										small cpy specks fine grained biot in patches up to 0.75' x 1'		
600																										py masses rimmed by magnetite. carb-gillsonite & py vltts. py-qtz vltts chl in clots replaced by off-white clays		
700																										bka vein qtz frags within fault zone dumontierite, and larger py masses often in dusty diss black mag band cut by later py-qtz vltts.		
800																											chl clots qtz vltts.	

PROJECT Island Copper

CONTRACTOR Olympic Drilling & Consulting Ltd.

DATE STARTED February 3/93 COMPLETED Feb. 06/93

LOGGED BY David J. Pawliuk

T.D. 806.0 FT

COLLAR ELEVATION 1219.8

INCLINATION -50°

BEARING 022°

COORDINATES 22275.8 E / 9326.8 N ground; approx. colla.

SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT								
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inter					Est. Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂		
60																								<i>NQ core throughout</i>					<p>0.0 - 60.0 CASING 60.0 - 806.0 BONANZA VOLCANICS Medium greyish green to light greenish grey basaltic lapilli tuff with clasts up to 0.9" across. Local interbeds of ash tuff. 1 to 2% dark brown gillsonite as irregular, wispy veinlets up to 0.10" wide throughout. Core somewhat broken to moderately broken 60' to 100'. Rock weakly to moderately fractured with off-white calcite veinlets to max about 1" wide lining irregular fracture stcs.</p>
70																.01	2								Amph vlt.				
80																.01	1												
90																.02	2								2 specks epy to ~0.04" across				
100																.02	1								carb-gillsonite-gtz vlt form band 1.1" wide @ 65°				
110																.02	2								py (98%) - epy (2%) vlt 0.15" @ 45°				
120																									gillsonite rims py xrls				
																									fault @ 60°				
																									fault; 0.5" finely bkn w. sericite, clay & gills white on fracture @ ~ 70°				
																									5% gillsonite across 12°				
																									35°				
																									50°				
																									fault as above @ 30° fault @ 50° fault; 7" s of, clay & sericite-rich crushed finely bkn core along slip @ 55°				

PROJECT Island Copper
CONTRACTOR _____
DATE STARTED _____ COMPLETED _____
LOGGED BY Pawluk

T.D. 806 COLLAR ELEVATION _____
INCLINATION -50° BEARING 022°
COORDINATES _____
SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT								
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Al ₂ SiO ₅	Sulf Veins	Frac Inter					Est. Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	Mos.		
120																										60.0- <i>BANANZA VOLCANICS</i> light to medium greyish green to light greenish brown (gillsonite)		
130																										vt 0.1" subparallel c.a. w. sericitic selvages abundant gillsonite	As above except fewer calcite veinlets, and gillsonite more as pervasive stain patches esp. near faults, rather than as irregular veinlets as above. More sericite att'd interval than above; more clay att'd.	
140																										amph vt 0.03" wide faults, 0.05" f. bkn + grey clay on fracture @ 25°		
150																										fault, 0.1" f. bkn + grey slip @ 25°	Some of the dark brown mineral identified as gillsonite may be greasy, rather coarse- grained secondary biotite.	
160																										fault, 1" clayey gouge + soft, f. bkn core on smooth slip @ 35°		
170																										fault, 0.6" soft, irregularly sericitized core on fracture @ 70° to c.a.		
180																										fault, 0.1" sericite on slip @ 45° fault, 1.5" crushed, bkn 0.5" soft, f. bkn between slips @ 55° fault, 3-5" soft, int. sericitized + clay att'd core fracture @ 50° soft, crushed core fault, 0.5" ser + py - c. a. slip @ 30°		

PROJECT Island Copper

T.D. 806'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -50°

BEARING 022°

DATE STARTED _____

COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blasite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Al/Gr	Sulf. Veins	Frac. Inlen	Est. Cu Mo					CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	
180																												
190																												
200																												
210																												
220																												
230																												
240																												

clayey slip @ 60°
spec. py
mag ~ 90% v. fine
diss, 10% as clots
to 0.1" across.
gillsonite selvages
on carb ults.

0.3" f. bkn @ 55°
60°
fault(?); sericite on
irregular fracture @
3 fault, 12" crushed core
between fractures @ 55°

0.3" f. bkn @ 70°
60°
fault; 1" soft gouge +
finely bkn core on
smooth chloritic slip
@ 20°
diss. py-rich band parallel
fault @ 35°

py bands to 0.3" wide @ 50°
60°
3 faults; 3" soft, altered, finely bkn core on each of 2
fractures @ 50° to e.a.

60.0-
BANANZA VOLCANICS.
light greenish grey to light brown-grey to medium greyish green to brown; variable colour.
Medium to coarse grained ash tuff(?) with larger off-white feldspars av. 1-2 mm in length.
Patched moderate to intense clay and sericite alt'n as in above interval.
Gillsonite (?) both as wispy ults throughout and as more pervasive-style mineral adjacent to faults, as above.

213.8-218.5 Breccia interval with abundant dk brown gillsonite (biotite??), pyrite as irregular masses + irregular masses of off-white sericite + clay minerals. Moderately brecciated throughout.

PROJECT Island Copper

CONTRACTOR _____

DATE STARTED _____

COMPLETED _____

LOGGED BY DJP

T.D. 806

COLLAR ELEVATION _____

INCLINATION 50°

BEARING 022°

COORDINATES _____

SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT										
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet	Pyroxene	Amphibole		Sulf. Veins	Frac. Inten	Est. Cu Mo	CuFeS ₂					FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	Mos.						
300																											V			15° fault occupied by carbonate vlt 0.4" wide. f. diss py + moly band 0.3" @ 50°	60.0-	BONANZA VOLCANICS
310																	03										70°			speck cpy	medium greyish green to light brownish grey with local patches off-white medium brown and yellowish green. Basaltic lapilli tuft with larger clasts subangular and up to about 0.5" across. Fe-rich patches of mod. intense sericite + clay mineral within than in overlying intervals. More abundant calcite veins, veinlets than above.	
320																	03										50°			fault, pyritic slip @ 70°		
330																	03										70°			3 specks cpy cpy f. diss mass mag-py (±cpy) vlt		
340																											50°			calcite xtl in veinlet 0.3" wide @ 50°		
350																											50°			gillsonite on fault slip @ 35°		
360																											50°			abundant gillsonite (?)		
																	02										50°			fault zone w. crushed, mostly, f. bkn core @ 50°		
																	02										70°			fault zone as above		
																	02										50°					

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 806' COLLAR ELEVATION _____
 INCLINATION -50° BEARING 022°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blende	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten					Est Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	
360																										<p>qtz-carb-silic vlt 0.25" fault, 1.5" crushed, finely bkn core betw. fractures @ 60° fault slip @ 43° - cpy v. fine diss - py band 0.35" @ 40° discontinuous py vlt @ 0.04" wide with sericite selvages calcite-gillsonite vein bxa 1.3" @ 46° py-magt cpy? dots partly replaced by later albite (silica?) py + gillsonite + calcite vlt 0.3" @ 60° mag-py dots replaced by late silica (? albite). qtz vein bxa, band 1.2" pyrite, sericite, amp retro(?) ep speckles large fault @ 35° qtz vlt 0.5" @ 53° along</p>	<p>60.0 - BONANZA VOLCS Light grey-green with local dk green spots; much more even-colored, less altered than overlying intervals. Fewer faults than above with associated sericite + clay mineral alt'n. mottled from ~363.8 to 367.3 where earlier chlorite-mag alt'n overprinted by silica-chlorite (?sericite)-clay alt'n. 418.7-421.5 FAULT ZONE. soft, waxy light yellow brown-green clay alt'd + sericite-alt'd rock along fault strike @ 35° to 38° to c.d. Clays waxy, translucent, probably mostly pyrophyllite. "wide subparallel c.a. contains k.f.bole, chlorite. along lower qtz vein bxa contact. clayey fault slip.</p>	
370																												
380																												
390																												
400																												
410																												
420																												

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 806' COLLAR ELEVATION _____
 INCLINATION -50° BEARING 022
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Sulf Veins	Frac Inten	Est Cu, Mo					CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MnS ₂	
540																								0.7" f. blk + dayey gouge @ 60°	60.0- BONANZA VOLCANICS Light brown to light greenish grey-brown to medium green-grey altered lapilli tuft, as above except rock here softer with more abundant pyrophyllite. Less carbonate veinlets, quartz veinlets than above.		
550																								1.5" @ 75° fault; 3" dayey gouge soft, finely blk core @ 45° local spots pale aqua sericite speck cpy lower margin of fault zone @ 40° to c.a.			
560																								20° 40°	0.05" rusty py on slip @ 20° to c.a.	556.0-568.8 Fault zone. Finely to moderately blk, crushed, clay- and sericite- alt'd core and dayey gouge. Good core recovery.	
570																								45° 50° 40°	small cpy specks		
580																								50° 40°	← dusty diss mag.		
590																								75°	← py vltc to 0.06" wide. ← Qtz-py vlt 0.2" @ 25° ← carb + gillsonite vltc to 0.25" wide ← dk to medium brown, f. gr. biot, in patches up to 0.75" x 1" across. ← py diss specks as 0.03" + as discontinuous vltc.		
600																											

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 806' COLLAR ELEVATION _____
 INCLINATION -50° BEARING 022°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.		VISUAL EST.					Sample No & Interval	SCALE LOG BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT			
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Sulf Vems	Frac Inter	Est Cu Mo	CuFeS ₂					FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS_{2}
660																						fault; sooty py on slip @ 85°; 1.5" carb-gtz - gillsonite - py in above fault. gillsonite as vtt's + as selvages on carb vtt's. fault; chlorite on fracture @ 80°	60.0 - BONANZA VOLCANICS Light greenish grey light grey - brown altered lapilli tuft as above.	
670																.03	2					qtz - carb - gillsonite - py vlt 0.3" @ 35° qv w. gillsonite 0.9" @ 80°		
680																.02	1-2					carb on loca band, 0.8" @ 60° py - qtz vlt 0.3" @ 15°		
690																.02	3					chlorite alt'd to light brown clay (pyrophyllite) qtz - py - gillsonite - carb (tr) vlt 0.3" @ 15°		
700																.03	3					fault; 0.25" f. bkn + gouge on fracture @ 45° qtz - py - moly vlt 0.2" @ 20°		
710																.08	1					fault; 0.1" clayey gouge on slip @ 50° banded qtz - py - carb vlt 0.3" @ 50° finely banded bxd qtz - py - carb vein 1" @ 75° py - qtz - carb - gillsonite vlt 0.5" @ 60°		
720																.02	2					py - qtz vlt 0.1" @ 70° with finely diss py in selvages wide where chlorite replaced by clay? gillsonite. qv 0.5" @ 50° with fault zone. fault; 6" crushed, bkn core between slips @ 50°	0.2"	

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 806'
 INCLINATION -50°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING 022°

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blatte	K-spar	Chlorite	Epidote	Carb Zoo	Garnet		Pyroxene	Amphibole	Albite	Soft Veins	Frac Inten					Est Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂
780																									qtz-gillsonite vein bra band 0.7" @ 55° py speck	60.0 - 806.0 BONANZA VOLCANICS light greenish grey to light grey, hard, silica- indurated rock with soft, dk green chlorite clots often with sericite (?) selvages as above.	light green with
790																	.03	2						carb-gillsonite-py 0.6" @ 50° fault, 0.2" finely bkn, pyritic core @ fracture @ 50°			
																	.02	2						fault @ about 45°; 2" mod. bkn core.			
800																	.03	2						healed fault bra band 0.9" @ 30° to c.a. w. gillsonite + py py vltts to 0.05" wide black, mag-rich band 0.5" @ ~10° w. dusty diss. mag bands cut by later py-qtz vltts. mag band as above, 0.3" @ ~20° to c.a. milky grey QV 0.2" @ 70°	mag;		
																										806.0 FT END OF HOLE	

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_163	22275.8	9326.8	1219.8

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	300.0	22.0	-48.5
300.0	600.0	22.0	-46.0
600.0	806.0	22.0	-44.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
70.0	80.0	0.01	0.001	5.4	0.01	0.10	0.001	0.005	17468
110.0	120.0	<0.00	0.001	6.8	0.03	0.10	0.001	0.009	17469
150.0	160.0	<0.00	0.001	7.0	0.01	<0.01	0.001	0.011	17470
190.0	200.0	<0.00	<0.001	7.1	0.01	0.10	0.002	0.007	17471
230.0	240.0	<0.00	0.001	6.0	0.01	0.10	0.004	0.049	17472
270.0	280.0	<0.00	0.002	7.3	0.01	0.40	0.002	0.007	17473
310.0	320.0	0.02	0.001	6.6	0.04	0.40	0.002	0.012	17474
350.0	360.0	0.01	0.001	8.5	0.01	0.10	0.003	0.021	17475
390.0	400.0	<0.00	0.001	6.3	0.01	0.20	0.002	0.010	17476
430.0	440.0	<0.00	<0.001	6.3	0.01	0.10	0.002	0.009	17477
470.0	480.0	<0.00	<0.001	7.5	0.02	0.10	0.001	0.007	17478
510.0	520.0	0.02	<0.001	6.8	0.02	0.10	0.001	0.007	17479
550.0	560.0	<0.00	<0.001	7.7	0.03	<0.01	0.001	0.004	17480
590.0	600.0	<0.00	<0.001	9.4	0.02	<0.01	0.001	0.007	17481
630.0	640.0	<0.00	<0.001	7.0	0.02	<0.01	0.001	0.004	17482
670.0	680.0	<0.00	<0.001	7.1	0.02	0.10	0.001	0.007	17483
710.0	720.0	<0.00	<0.001	5.9	0.02	<0.01	0.002	0.013	17484
750.0	760.0	<0.00	0.001	4.6	0.02	0.30	0.001	0.011	17485
790.0	800.0	0.01	<0.001	7.1	0.01	<0.01	0.004	0.006	17486

2025-01-15

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: 1/c

DATE SENT: Feb 11/93

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-163	70	80	01	1	54	01	01	1	5	1746831
	110	120	0	1	68	03	01	1	9	46932
	150	160	0	1	70	01	00	1	11	47033
	190	200	0	0	71	01	01	2	7	47134
	230	240	0	1	60	01	01	4	49	47235
	270	280	0	2	73	01	04	2	7	47336
	310	320	2	1	66	04	04	2	12	47437
	350	360	1	1	85	01	01	3	21	47538
	390	400	0	1	63	01	02	2	10	47639
	430	440	0	0	63	01	01	2	9	47740
	470	480	0	0	75	02	01	1	7	47841
	510	520	2	0	68	02	01	1	7	47942
	550	560	0	0	77	03	00	1	4	48043
	590	600	0	0	94	02	00	1	7	48144
	630	640	0	0	70	02	00	1	4	48245
	670	680	0	0	71	02	01	1	7	48346
	710	720	0	0	59	02	00	2	13	48447
	750	760	0	1	46	02	03	1	11	48548

RECOVERY AND RQD%

HOLE NO. E_163

LOGGED BY: S. OAKLEY

DATE: FEB. 7, 1993

FOOTAGE		RECOVERY		PERCENTAGE	
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"
60	66	65	11	90.28%	15.28%
66	76	118	17	98.33%	14.17%
76	86	115	9	95.83%	7.50%
86	96	117	19	97.50%	15.83%
96	104	92	14	95.83%	14.58%
104	114	120	16	100.00%	13.33%
114	116	25	4	104.17%	16.67%
116	126	122	51	101.67%	42.50%
126	136	120	29	100.00%	24.17%
136	146	122	16	101.67%	13.33%
146	156	122	63	101.67%	52.50%
156	166	118	66	98.33%	55.00%
166	176	119	29	99.17%	24.17%
176	186	121	53	100.83%	44.17%
186	196	123	25	102.50%	20.83%
196	206	120	29	100.00%	24.17%
206	216	117	47	97.50%	39.17%
216	226	119	76	99.17%	63.33%
226	236	121	64	100.83%	53.33%
236	246	119	40	99.17%	33.33%
246	256	120	31	100.00%	25.83%
256	266	121	36	100.83%	30.00%
266	276	102	29	85.00%	24.17%
276	286	118	35	98.33%	29.17%
286	296	120	32	100.00%	26.67%
296	306	122	25	101.67%	20.83%
306	316	118	31	98.33%	25.83%
316	326	118	54	98.33%	45.00%
326	336	120	34	100.00%	28.33%
336	346	121	11	100.83%	9.17%
346	356	117	33	97.50%	27.50%
356	366	121	56	100.83%	46.67%
366	376	118	32	98.33%	26.67%
376	386	120	37	100.00%	30.83%
386	396	120	44	100.00%	36.67%
396	406	122	31	101.67%	25.83%
406	416	121	39	100.83%	32.50%
416	426	121	46	100.83%	38.33%
426	436	120	81	100.00%	67.50%
436	446	120	40	100.00%	33.33%

RECOVERY AND RQD%

446	456	119	29	99.17%	24.17%
456	466	120	47	100.00%	39.17%
466	476	116	41	96.67%	34.17%
476	486	118	59	98.33%	49.17%
486	496	120	61	100.00%	50.83%
496	506	120	16	100.00%	13.33%
506	516	120	46	100.00%	38.33%
516	526	119	63	99.17%	52.50%
526	536	120	28	100.00%	23.33%
536	546	118	6	98.33%	5.00%
546	556	116	42	96.67%	35.00%
556	566	120	0	100.00%	0.00%
566	576	110	11	91.67%	9.17%
576	586	120	31	100.00%	25.83%
586	596	122	35	101.67%	29.17%
596	606	120	30	100.00%	25.00%
606	616	120	58	100.00%	48.33%
616	626	121	62	100.83%	51.67%
626	636	121	64	100.83%	53.33%
636	646	119	59	99.17%	49.17%
646	656	119	71	99.17%	59.17%
656	666	122	77	101.67%	64.17%
666	676	120	81	100.00%	67.50%
676	686	119	63	99.17%	52.50%
686	696	122	58	101.67%	48.33%
696	706	120	71	100.00%	59.17%
706	716	118	74	98.33%	61.67%
716	726	121	56	100.83%	46.67%
726	736	121	43	100.83%	35.83%
736	746	120	47	100.00%	39.17%
746	756	119	51	99.17%	42.50%
756	766	120	48	100.00%	40.00%
766	776	118	35	98.33%	29.17%
776	786	122	69	101.67%	57.50%
786	796	120	55	100.00%	45.83%
796	806	122	37	101.67%	30.83%

MAGNETIC SUSCEPTIBILITY

LE NO. E163

DATE Feb 7/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
60-70						.03
70-80						.31
80-90						.04
90-100						.03
100-110						.02
110-120						.02
120-130						.05
130-140						.09
140-150						.03
150-160						.02
160-170						.04
170-180						.05
180-190						.33
190-200						.42
200-210						.03
210-220						.02
220-230						.02
230-240						.04
240-250						.03
250-260						.28
260-270						.04
270-280						.08
280-290						.18
290-300						.03
300-310						.03
310-320						.02
320-330						.91
330-340						.18
340-350						.08
350-360						.04
360-370						.42
370-380						.40
380-390						.35

MAGNETIC SUSCEPTIBILITY

LE NO. E-163

DATE Feb 8/93

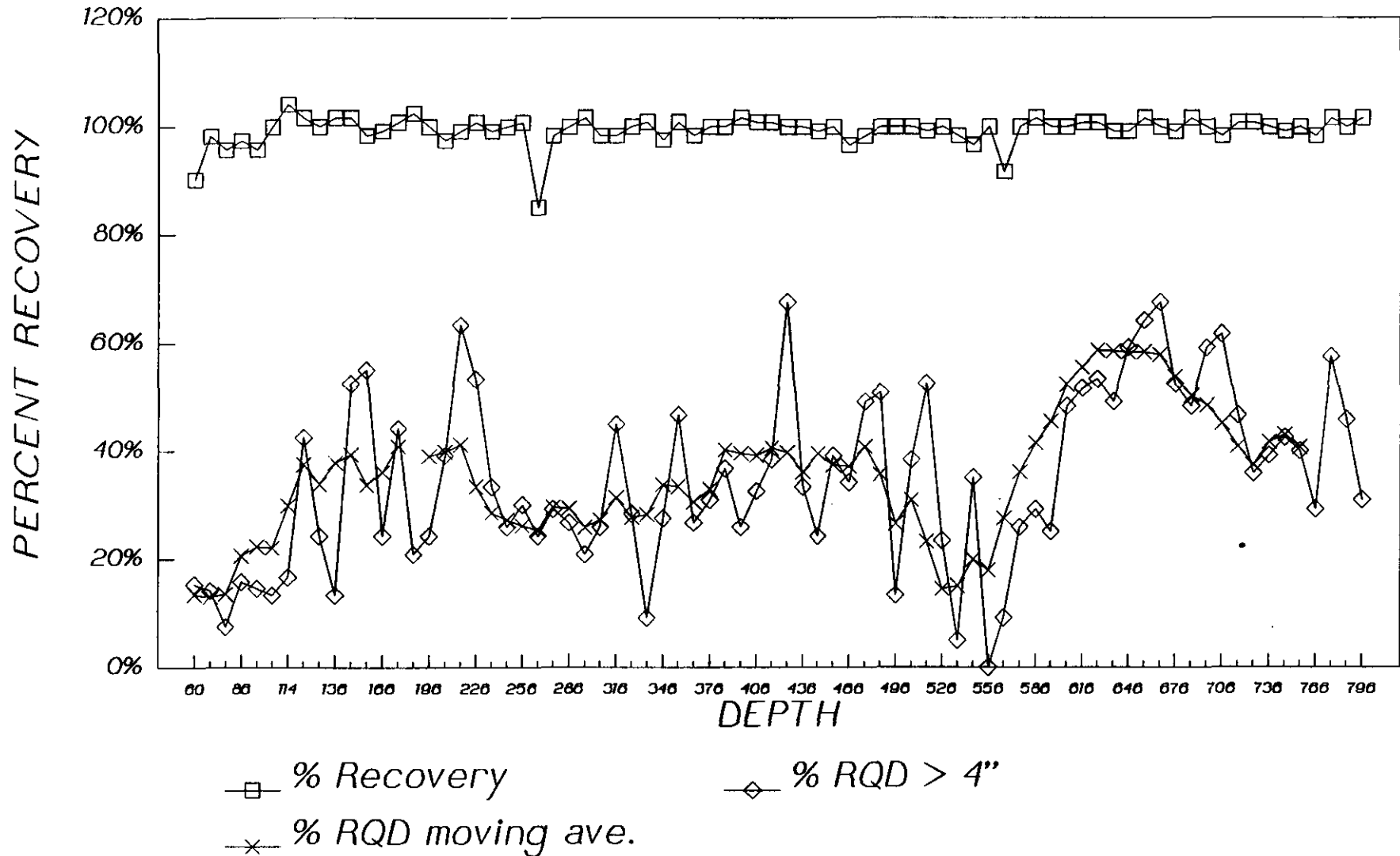
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
390-400						1.3
400-410						.64
410-420						.43
420-430						1.4
430-440						.88
440-450						.14
450-460						.81
460-470						.26
470-480						.31
480-490						.10
490-500						.08
500-510						1.6
510-520						.10
520-530						.02
530-540						.20
540-550						.35
550-560						.41
560-570						.02
570-580						.06
580-590						.56
590-600						1.5
600-610						.77
610-620						1.0
620-630						4.2
630-640						1.5
640-650						.18
650-660						.98
660-670						2.7
670-680						.21
680-690						.06
690-700						.07
700-710						1.7
710-720						.46

Recovery and RQD %

E_163



PROJECT Island Copper

CONTRACTOR Olympic Drilling & Consulting Ltd.

DATE STARTED Feb. 6/93 COMPLETED Feb. 11/93

LOGGED BY David Pawluk

T.D. 1150.0 FT

COLLAR ELEVATION 1329.3

INCLINATION -55°

BEARING 200°

COORDINATES 22029.9 E

8007.4 N

SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:200'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biitite	K-spar	Chlorite	Epidote	Carb Zeo		Garnet	Pyroxene	Amphibole	A/B/C/D	Sulf Veins					Frac Inter	Est Cu Mo	CuFeS	FeS	CuFeS	Fe ₂ O ₃	Moss
0																									0 - 112.0 CASING	
100																									112.0 - 721.0 BONANZA VOLCANICS Generally light grey-brown medium to coarse grained lapilli tuff with subangular clasts up to 1.5" across. Rock unit has been moderately to intensely altered with silica, sericite and clays; clots of pale coloured clays, and sericite formed by the alteration of chlorite clots, give the rock a spotted appearance. Dumortierite seen from 224 to about 630±. Occ. bands + frags of QFP below 348 with subhedral Qtz eyes av. 3-4 mm.	
200																									QFP bands bright aqua sericite py-cpy vlt py and py-cpy ± Qtz vlt QFP w. cpy specks and py-cpy vlt cpy vlt 25% cpy across 2.5" chl selvage on volc frag greasy biot sooty py gouge py ± cpy ± moly band 1.5"	
300																									fine cpy specks in chl clots + rimming py. qtz-py-cpy-moly vlt bxn with vein Qtz frags qtz-py-sph-cpy vlt	
400																									40° TOP END CK FLT ZONE RV 10"	
500																									Fragment of vein Qtz sph-py-cpy 0.8x0.4 in fault zone carb/zed vein bxa QFP-cpy band in RV.	
600																									qtz-cpy-py vlt py-sph and cpy vlt py rimmed by chl. py-sph-cpy vlt. py vlt cut by cap vlt py-hold vlt. healed fault bxa. chld mess 3"x2" with mag selvage	
700																									721.0 - 747.5 QFP. Light cream grey, med. → coarse grained with Qtz eyes av. 0.2-0.3". White to pale green blocky feldspar phenos intensely altered to waxy clays. About 1% diss py throughout.	
800																									747.5 - 1150.0 BONANZA VOLCANICS Dark grey green to dark brown lapilli tuff/Volc bxa as above QFP.	
900																									804.6 - 943.0 END CREEK Crushed, intensely fractured with banding at 40° to 50° to c.a. Numerous sooty py bands.	FAULT
1000																										
1100																										

PROJECT Island Copper

CONTRACTOR Olympic Drilling & Consulting
 DATE STARTED Feb. 6/93 COMPLETED Feb. 11/93
 LOGGED BY David J. Pawliuk

T.D. 1150.0 FT COLLAR ELEVATION 1329.3
 INCLINATION -55° BEARING 200°
 COORDINATES 22029.9 E / 8007.4 N
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1":10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zeo		Garnet	Pyroxene	Amphibole	Molyb.	Sulf Vains					Frac Inter	Est Cu Mo	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS_{2}
100																								<u>NQ core throughout</u>		
110																								0.0 - 112.0 CASING 112.0 - BONANZA VOLCANICS Light brown grey to light grey with local creamy white and pale brown spots. Intensely altered, coarse grained lapilli full with subangular clasts up to 1.5" across. Rock has been moderately silicified throughout, and indurated by pale watery grey silica. Clots of pale colored clays and sericite give the rock a spotted appearance; these clots formed from the alteration of dark green-black chlorite. Occasional chlorite remnants occur in clots. Numerous faults marked by intervals of soft, crushed, finely broken core and sericite + clayey gouge occur throughout the upper part of the hole. Weakly to locally intensely fractured core. Light brown waxy pyrophyllite throughout generally 10 to 40% rock volume. Occ. spots pale to bright aqua sericite.		
120																								30°; 6" f. bkn + clayey gouge sooty diss py bands 0.3" and 0.7" along fault 17" across @ 22° to c.a.		
130																								py band 0.25" along fault @ 40°		
140																								300 irregular fracture bottom large fault zone from 117.6 - 128.4' fault 0.0.3' @ 30°		
150																								134.2 - 135.7 fault w. finely bkn core + py py band 0.3" @ 30° with cpy + sph		
160																								0.7" f. bkn @ ~30° cpy + moly brecciated; mod bkn + ground core 0.5" @ 20° w. cpy 40-1X 0.25" mass w trace moly		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY Paul Link

T.D. 1150.0
 INCLINATION -55°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING 200°

Footage	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				
	Core Recovery	Oxide	Quartz	Sericite	Clay (Prob)	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene		Amphibole	Sulf Veins	Frac Inten	Est Cu Mo	CuFeS	FeS					CuFeS	FeO	MoS ₂	
160																									162.0 - Basal VOLCANICS Light brown grey to buff magnesian in color of white spars and bands. Altered brecciated by the buff a show.		
170																									170 - 175 1.4" fault zone w/ clayey gouge, orientation QV 0.5" @ 80°		
180																									180 - 185 QV 0.2" @ 85° 0.05" clayey slip @ 40° grey clay - fault slip @ 45° to c.a. waxy grey QV 0.35" QV 0.2" @ 40° @ 50° finely diss cpy across 4'	176.5 - 208.0 Fault Zone. Crushed, moderately to finely blk core throughout, intensely fractured rock. Upper contact @ ~30°, lower @ ~60°.	
190																									190 - 195 Fault; finely blk n core + clayey gouge over 7" ore length; @ 25° 2' blk + gouge @ 50° sandy py + clay on slip @ 50°		
200																									200 - 205 Fault; finely blk n core + clayey gouge over 7" ore length; @ 25° 2' blk + gouge @ 50° sandy py + clay on slip @ 50°		
210																									210 - 215 Fault; finely blk n core + clayey gouge over 7" ore length; @ 25° 2' blk + gouge @ 50° sandy py + clay on slip @ 50°		
220																									220 - 225 Fault; finely blk n core + clayey gouge over 7" ore length; @ 25° 2' blk + gouge @ 50° sandy py + clay on slip @ 50°		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 1150.0'
 INCLINATION -55°
 COORDINATES _____
 SURVEY REFERENCES _____

COLLAR ELEVATION _____
 BEARING 200°

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT			
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrox	Biadite	K-spar	Chlorite	Epidote	Carb Zeo	Quartz		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten					Est Cu Mo	CuFeS ₂	FeS ₂
280																							112.0- BONANZA VOLCANICS Light grey brown to light grey, brown to locally dark greenish grey, brecciated and altered lapilli tuff as above. The dark greenish grey patches have more magnetite and more chlorite than seen so far in this hole. For the most part of this interval only local remnants of the dark chlorite clots are present, as in the overlying intervals.	
290																							uv fine diss cpy QV 0.2" @ 60° qtz-py-cpy-moly vlt fractured core. QV 0.15" @ 25° with sooty py selvages QV 0.15" @ 70° slip @ 60° under grey QV 8" @ 65° to c.a.; irregular margins. fault; 0.3" white clay gouge + f. blk core @ 35° to c.a. fault; 1.5" white clayey gouge along upper margin of 5" clay-alt'd band. Fault @ 60° fault; 2" soft, clay- alt'd core on slip @ 40° to c.a. fault; 0.7" white clayey gouge + f. blk at 50° qtz-py-cpy-moly vlt 6.3" @ 60° small slip @ 55°	
300																								
310																								
320																								
330																								
340																								

HOLE NO. E 169

DRILL LOG

Page 6 of 18

PROJECT Island Copper

T.D. 1150.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -55°

BEARING Z.00°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT											
	Core Recovery	Oxide	Quartz	Sericite	Clay Prop.	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet		Pyroxene	Amphibole	Sulf Veins	Frac Inter	Est Cu Mo					CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂						
400																													small speck cpy	400-410	EXPANZA VOLCANIC S	
410																													crushed blk core over 4" core length	410-420	light greenish grey to light brown brown type of coarse grained lapilli tuff / volcanic breccia 15' above except remnant of dark green chlorite clots more abundant here than in overlying interval. Rock also slightly less silicified softer + contains more clays than above. More S-C-C att'n than pyrophyllitic att'n above. Also less dumontierite than above. Occasional irreg. lens lenses, dykes QFP as above, say about 2-3% rock volume.	
420																													py-vlt 0.05" @ 35°	420-430		
430																													QV 0.2" @ 30°	430-440		
440																													py-cpy vlt's to 0.05" wide @ 25 to 30° to c.a. specks cpy in QFP	440-450		
450																													QFP dyke 4.5" @ 37° fault; 0.8" crushed core along fracture @ 40°	450-460		
460																													py-cpy vlt's to 0.05" py-cpy-gtz vlt 0.2" @ 60°	460-470		
470																													py-cpy vlt 0.06" @ 50°	470-480		
480																													py 0.07" @ 65° cpy vlt's 0.05" @ 65°	480-490		
490																													fault; 0.3" gouge + f. blk between sandy pyritic slip @ 20° to c.a.	490-500		
500																													py-gtz-aph-cpy vein 0.35" @ 15° long imp. fault slip	500-510		
510																													← dusty line very fine speck line	510-520		
520																													dumontierite spots to 5 mm. across.	520-530		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 1150.0' COLLAR ELEVATION _____
 INCLINATION -55° BEARING 200°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION												STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
	Core Recovery	Oxide	Quartz	Sericite	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole	Other	Sulf Veins	Frac Inten	Est. Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂				
520																							
530																							
540																							
550																							
560																							
570																							
580																							

112.0' -
 0.05" f. blk + ch. on slip @ 25°
 cpy to 0.05 in all directions to d. porphyphy
 pyrophyllite band 3 x 0.2
 fine clay or trache @ 25°
 QFP band (dyke) 6' @ 60° with Qtz eyes @ 0.2" diameter
 260° irregular contact
 55° cpy vlt in QFP
 60°
 0.2" @ 25° cpy, py to 0.08"
 fault @ 55° 0.3" f. blk + gouge
 0.1" gouge + f. blk @ 45°
 1.5" gouge + f. blk @ 35°
 25% cpy, 25% py in rind 2.5" wide @ 50°
 rimmed below fault
 cpy + v. fine diss and in laminae @ 28°
 Q1 0.3" @ 70° w. py, cpy
 fault; sooty py + clay on slip @ 45° at upper margin 3 f. blk core + gouge over 15" core length
 round dumortierite mass 0.7 x 0.4"
 QV 0.2" @ 60° w. fine specks cpy
 80° 0.8" gouge + finely blk core

Basaltic volcanic breccia with patches light creamy grey. Brecciated silicified lapilli stuff intruded by QFP dykes. QFP also forms matrix between volcanic breccia fragments. General decrease in pyrophyllite + dumortierite content with increasing depth, and increased silica content.

QFP dyke @ 548' bleached with less chlorite than other QFP in hole; this QFP also contains dust, hem

PROJECT Island Copper
CONTRACTOR
DATE STARTED COMPLETED
LOGGED BY DJP

T.D. 1150.0'
INCLINATION -55°
COORDINATES
SURVEY REFERENCES
COLLAR ELEVATION
BEARING 200°

Table with columns: Footage, Alteration (Core Recovery, Oxide, Quartz, Sericite, Clay/Pyrop, Biotite, K-spar, Chlorite, Epidote, Carb Zeo, Garnet, Pyroxene, Amphibole), STR. (Sulf Veins, Frac Inter, Est Cu Mo), VISUAL EST. (CuFeS2, FeS, CuFeS, FeO, MoS), Sample No & Interval, SCALE LOG (BASIC GEOLOGY), LITHOLOGIC DESCRIPTIONS, ROCK UNIT.

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 1150.0' COLLAR ELEVATION _____
 INCLINATION 55° BEARING 200°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT																							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blende	K-spar	Chlorite	Epidote	Carb Zeo	Carnet	Pyroxene	Amphibole	Al ₂ SiO ₅	Sulf Vains	Frac Inten	Est Cu Mo					CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	Moss,																		
715																																												
710																																												
720																																												
730																																												
740																																												
750																																												
760																																												

py + finely diss
 ...
 QV 0.3" @ 10°
 amphibole as short
 vlt + as selvages on
 mag chnts.
 ...
 clayey fault slip @ 60°
 bleached, clay-altered +
 broken from 114.4-116.5
 QV 0.75" @ 55°
 0.55"
 0.7"
 0.75"
 60°
 55°
 20.5"
 270.5"
 730"
 volc.
 wedge
 discrete low volc. contact
 w. RFP @ 55°
 35° upper volc. contact
 fault, 3" crushed, fault
 gouge @ 40°, f. bkn +
 py in euhedral hbl
 phenos
 QV 0.3" @ 35° w. moly + py
 QV 0.4" @ 70° w. moly
 ...
 1" crushed on fracture @ 20°
 fault, 1.5" f. bkn +
 clayey gouge on irreg.
 fracture @ ~ 55°
 fault, 0.5" crushed @ 50°
 7" crushed @ 50°
 ...
 2 irreg. diss mass (70%)
 with boronite (?) with

721.0-747.5 QFP Light cream
 grey to light grey-green
 coarse grained with subhedral
 watery grey quartz eyes throughout
 as 0.2-0.3" across. White to pale
 green blocky feldspar pl. 0.5
 subhedral to euhedral almost
 completely altered to waxy clays.
 About 1% diss py throughout
 Feldspars as < 0.1" lengths. Both
 upper + lower RFP/volc. contacts are
 faults; numerous bands of crushed,
 bkn core within RFP.
 747.5-
 BONANZA VOLCANICS
 Dark grey-green to dark brown
 kpilli tuft/volcanic bra generally
 as for rock above QFP.

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 1150.0' COLLAR ELEVATION _____
 INCLINATION -55° BEARING 200°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1:10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT																													
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zoo	Garnet	Pyroxene	Amphibole	Other	Sulf Vens	Frac Inter	Est Cu Mo	CuFeS ₂					FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS ₂																									
760																									760-770	cpy + numerous specks QV 0.25 @ 70° w. cpy Fault, bkn QV 0.8" @ -60° angular vein qtz frag 2:5 X 1.3" Fault, 1" crushed core @ 70° to c.a. QV 0.3" @ 50° QV 0.4" @ 65° QV 0.3" @ 70° vt & diss. cpy 0.1" @ 55°	770-780	QV 1.2" @ 65° 1.5" f. bkn + gauge @ 35° QV 0.5" @ ~55° irreg. cpy 0.05" wide @ 55° QV 0.9" @ 45°; tr cpy QV 0.8" @ 55°	780-790	QV 0.25" @ ~35° QV 0.7" @ 40° offset 2" across slip parallel c.a. QV 0.3" @ 65° w. py, mag, cpy 40° top End Creek fault zone.	790-800	QV 10" @ 60°; fault on lower contact.	800-810	QV 1" @ ~35° fault banding @ 40° QV 3" @ 35° w. py, cpy	810															804.6 - 943.0 END CREEK FAULT ZONE. Volcanic crushed intensely fractured and broken throughout with banding @ 40° at top of interval (804.6). Rock broken into elongate lenses + bands which parallel fault orientation. Pale grey to light greyish brown quartz veins within fault zone are late features which generally are less broken and crushed than the volcanic wallrock. Primary texture within volcanic rock obscured during fault crushing. Numerous sooty brown bands of py-rich crushed rock from 804.6 to 810; occ. pyritic bands below 810'.	Locally light greenish grey or pale grey, basalt flows? with sulfidated plagioclase lath 0.05 - 0.07" in length. Medium to fine grained rock.

PROJECT Island Copper

T.D. 1150.0

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -55°

BEARING 200°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	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							
	Core Recovery	Oxide	Quartz	Sericite	Clay type	Biotite	K-spar	Chlorite	Epidote	Carb Zeo		Garnet	Pyroxene	Amphibole	Sulf veins	Frac Inten					Est Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂	
820																									2V 2.7° 280° w py.	(113) EMMAVA VOLCANIC 807.0 - 943.0 ETC. CIPER FAULT ZONE Pale grayish brown to locally light greenish grey w. occ. red brownish grey patches Crushed, intensely fractured, often finely broken and brecciated, coarse as above Soft; can often make impressions with fingertips. Moderate clay mineral a thin throughout except in darker coloured which are not crossed by fault and contain finely dis- s. magnetite. Rock has pale, bleached appearance to 867.5' below that more chlorite and pyrite are present and rock is darker coloured. Carb/zeol vltls also appear below 867' more above that depth.	
830																								fault banding 45°			
840																								fault banding 50°			
850																								dusty hem			
860																								fault 45°			
870																								fragment of vein As-sph-py-ep 0.8x0.4" across within fault zone.			
880																								fault 40°			

PROJECT Island Copper

CONTRACTOR _____

DATE STARTED _____ COMPLETED _____

LOGGED BY DJP

T.D. 1150.0'

COLLAR ELEVATION _____

INCLINATION -55°

BEARING 200°

COORDINATES _____

SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT												
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inter					Est Cu Mo	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS ₂						
940																									940						faulting @ 60°	747.5 - YEMANZA VOLCANICS 804.6 - 943.0 EMB CREEK FAULT ZONE	
950																									950					black mag-rich clasts to 0.5" across	Light green - grey with local dark greenish grey in black patches above		
960																									960					few specks diss red hem helped light grey-green silicified fault zone @ 55°	96.5 - 97.0 zone Fm lapilli tuff/volcanic breccia with coarse clasts subangular av. ~0.25" across		
970																									970					light yellow-green ep had 0.5" @ 55° Qtz 0.2" @ 75° py-ep ult 0.1" @ 80°	Fewer red/carb ults than in overlying interval. Below bottom of fault cone rock harder, more competent than above with pervasive albite and silica alt'ng and much less mag below 975'		
980																									980					off-white, blk carb ults to 0.2" subparallel c.a. Smear of sandy py on fault slip @ 45° irregular wispy py lenses			
990																									990					qtz-ep-py ult 0.35" @ 12° to c.a. K-spar stain near qtz + carb ults. py (70%) - qtz (25%) cpy (5%) ult 0.2" @ 15° qtz (80%) - py (20%) - sph (tr) ult 0.15" @ 70° py-sph ult 0.1" subparallel c.a. with pale brown albitized (?) selvages 0.1" wide 994 - 996' 3% cpy greenish white b.x.d			
1000																									1000					as discontinuous ults to 0.2" @ 20° to c.a. qtz vein 0.5" @ 31° w. sph-py-cpy			

HOLE NO. 107
 PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

DRILL LOG
 T.D. 1150.0 COLLAR ELEVATION _____
 INCLINATION -5° BEARING 200°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	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			
	Core Recovery	Oxide	Quartz	Sericite	Clay Prop	Blotite	K-spar	Chlorite	Epidote	Carb Zoo	Garnet	Pyroxene	Amphibole		Other	Sulf. Veins	Frac Inter	Est. Cu Mo	CuFeS ₂	FeS ₂					Cu ₂ FeS ₄	Fe ₂ O ₃	MoS ₂
1000																											
1010																											
1020																											
1030																											
1040																											
1050																											
1060																											

cpy blebs to 0.2' rimmed by black chl.
 - closely spaced, intensely to mod. fractured.
 2-3% cpy, 1% moly, 2% py in band wide with chl.
 bleached, pale coloured selvages to ± 0.8" wide along hairline sulphide vlt's @ 60° to c.a. finely diss cpy speckles. py-sph-cpy vlt 0.1" @ 25°
 volcanic bxa/tuff contact (banding) 58°
 fault slip w. 0.3' crushed core @ 40°
 cpy + moly + py diss. healed fault; 0.5" crushed @ 40° to c.a. py vlt 0.1" @ 60°
 healed fault @ 0.25" @ about 15° reddish hem py vlt's 0.05" - 0.15" later carb/zeol vlt's.

1017.5 -
 MORANZA VOLCANIC S
 Light greyish green to light grey-brown to locally pale cream-green and medium grey in spots. Ash and lapilli tuffs to 1023'; below 1023' rather coarse grained volcanic breccia with subangular clasts ranging up to 2.5" across.
 " @ ~ 65° to c.a. cut by vlt's.

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY D. Paulink

T.D. 1150.0
 INCLINATION -55°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING 200°

Footage	ALTERATION													STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT																								
	Core Recovery	Oxide	Quartz	Sericite	Pyrop Chlorite	Biotite	K-spar	Chlorite	Epidote	Carb Zeo	Garnet	Pyroxene	Amphibole		Sulf Veins	Frac Inter	Est. Cu Mo	CuFeS ₂	FeS ₂					CuFeS ₂	Fe ₂ O ₃	MoS ₂																					
1170																																															
1150																																															
1140																																															
1150																																															

117.5 - 1150.0
 BONAFIDE VOLCANICS
 Medium to dark
 greyish grey, fine to
 medium grained ash
 of basaltic composition.
 Minor lapilli
 interbeds.
 Local dark green - black
 hornblende patches
 up to
 3" X 2" across.
 breccia band 15"
 wide with angular
 clasts to 2" X 0.75"
 across.
 0.05" cherty zone
 on fault slip
 60°
 1150.0' END
 OF HOLE

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_164	22029.9	8007.4	1329.3

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	600.0	200.0	-59.0
600.0	830.0	200.0	-55.0
830.0	1150.0	200.0	-55.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
112.0	120.0	<0.00	<0.001	2.8	0.01	0.20	0.005	0.014	17487
150.0	160.0	0.02	<0.001	0.8	<0.01	0.10	0.002	0.013	17488
190.0	200.0	<0.00	<0.001	2.1	<0.01	0.10	0.003	0.020	17489
230.0	240.0	0.01	<0.001	1.5	<0.01	0.30	0.004	0.022	17490
270.0	280.0	<0.00	<0.001	3.9	<0.01	0.20	0.003	0.017	17491
310.0	320.0	<0.00	<0.001	0.6	<0.01	0.20	0.004	0.013	17492
350.0	360.0	0.09	0.001	3.8	0.02	0.60	0.004	0.012	17493
390.0	400.0	0.01	0.001	1.5	<0.01	0.20	0.002	0.016	17494
410.0	420.0	0.02	0.009	2.8	0.01	0.30	0.004	0.024	17495
430.0	440.0	0.04	0.001	2.7	0.03	0.70	0.004	0.090	17496
450.0	460.0	0.20	<0.001	4.3	0.05	2.80	0.010	0.412	17497
470.0	480.0	0.04	<0.001	1.4	0.01	0.60	0.003	0.020	17498
490.0	500.0	0.10	<0.001	2.4	<0.01	0.70	0.008	0.028	17499
510.0	520.0	0.05	<0.001	2.2	<0.01	0.40	0.012	0.039	17500
530.0	540.0	0.10	<0.001	2.7	0.01	0.50	0.005	0.027	17501
550.0	560.0	0.15	0.001	2.4	0.01	0.80	0.130	0.026	17502
570.0	580.0	0.05	0.002	1.7	0.01	0.20	0.003	0.014	17503
590.0	600.0	0.05	0.012	2.7	0.01	0.20	0.003	0.022	17504
610.0	620.0	0.06	0.007	1.3	<0.01	0.20	0.003	0.009	17505
630.0	640.0	0.15	0.004	3.7	0.02	0.50	0.003	0.013	17506
650.0	660.0	0.15	0.005	4.1	<0.01	0.80	0.002	0.008	17507
660.0	670.0	0.45	0.010	6.8	0.50	37.60	0.076	0.075	17508
670.0	680.0	0.23	0.007	4.1	0.21	10.00	0.019	0.027	17509
680.0	690.0	0.24	0.004	4.5	0.09	2.40	0.022	0.052	17510
690.0	700.0	0.20	0.003	4.8	0.10	1.10	0.017	0.051	17511
700.0	710.0	0.15	0.003	4.7	0.10	0.50	0.007	0.009	17512
710.0	720.0	0.17	0.007	5.4	0.07	0.70	0.005	0.006	17513
720.0	730.0	0.16	0.011	3.2	0.11	0.80	0.004	0.009	17514
730.0	740.0	0.33	0.008	3.9	0.30	2.50	0.007	0.009	17515
740.0	750.0	0.19	0.006	7.7	0.04	1.50	0.004	0.011	17793
750.0	760.0	0.29	0.009	4.9	0.18	1.90	0.004	0.008	17516
760.0	770.0	0.20	0.011	6.3	0.05	0.20	0.002	0.008	17794
770.0	780.0	0.30	0.011	6.4	0.10	0.60	0.006	0.009	17517
780.0	790.0	0.26	0.003	6.6	0.06	0.80	0.003	0.007	17795
790.0	800.0	0.23	0.005	7.7	0.12	0.20	0.003	0.002	17518
800.0	810.0	0.25	0.009	6.7	0.06	1.60	0.008	0.075	17796

DATE: 09/06/93

PAGE: 1

TIME: 08:22:00

BHP MINERALS CANADA - Island Copper Mine

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
810.0	820.0	0.27	0.005	5.4	0.22	1.20	0.008	0.017	17519
820.0	830.0	0.17	0.004	6.7	0.02	1.20	0.004	0.034	17797
830.0	840.0	0.09	0.003	3.4	0.04	0.40	0.006	0.003	17520
850.0	860.0	0.04	0.002	2.9	0.02	0.10	0.004	0.001	17521
870.0	880.0	0.20	0.002	8.0	0.03	1.40	0.004	0.023	17522
890.0	900.0	0.03	0.001	7.8	0.01	0.30	0.006	0.058	17523
910.0	920.0	0.01	<0.001	5.3	<0.01	0.20	0.006	0.030	17524
930.0	940.0	0.09	0.001	9.9	0.01	1.50	0.016	0.089	17525
950.0	960.0	0.01	0.001	7.5	<0.01	0.40	0.023	0.085	17526
970.0	980.0	0.02	0.001	7.3	0.02	0.40	0.008	0.175	17527
990.0	1000.0	0.31	0.002	4.9	0.08	1.70	0.002	0.002	17528
1010.0	1020.0	0.02	0.003	2.3	0.01	0.20	0.002	0.001	17529
1030.0	1040.0	0.05	0.001	6.2	0.01	0.60	0.012	0.062	17530
1050.0	1060.0	0.03	0.001	5.1	0.01	0.30	0.002	0.001	17531
1070.0	1080.0	0.22	0.002	5.4	0.03	1.00	0.003	0.007	17532
1090.0	1100.0	0.03	0.001	6.7	<0.01	0.20	0.001	0.001	17533
1110.0	1120.0	0.04	0.001	7.3	0.01	0.50	0.002	0.001	17534
1130.0	1140.0	0.04	0.001	5.8	0.01	0.30	0.003	0.001	17535

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: IC

DATE SENT: Feb 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-164	112	120	0	0	28	01	2	5	14	17487	44
	150	160	2	0	18	4	11	2	13	488	45
	190	200	0	0	21	4	11	3	20	489	46
	230	240	1	0	15	4	13	4	22	490	47
	270	280	0	0	39	4	12	3	17	491	48
	310	320	0	0	6	4	12	4	13	492	49
	350	360	9	1	38	02	6	4	12	493	50
	390	400	1	1	15	4	12	2	16	494	51
	410	420	2	9	28	01	13	4	24	495	52
	430	440	4	1	27	03	17	4	90	496	53
	450	460	20	0	43	05	28	10	1412	497	54
	470	480	4	0	14	01	16	3	20	498	55
	490	500	10	0	24	4	17	8	28	499	56
	510	520	5	0	22	4	14	12	39	500	57
	530	540	10	0	27	01	15	5	27	501	1
	550	560	15	1	34	101	18	13	26	502	2
	570	580	5	2	17	101	12	3	14	503	3
	590	600	5	12	24	01	12	3	22	504	4

Jan

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/C

DATE SENT: Feb 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-1164	610	620	06	1007	13	< 01	2	003	009	17505	1 32
	630	640	115	4	37	02	5	3	013	506	2 33
	650	660	115	5	41	< 01	18	2	8	507	3 34
	660	670	145	010	68	50	3716	1076	1075	508	4 35
	670	680	23	7	41	21	1010	019	1027	509	5 36
	680	690	24	4	45	09	24	022	1052	510	6 37
	690	700	20	3	48	10	11	017	051	511	7 38
(Cw 15) ←	700	710	15	3	47	10	5	7	009	512	8 39
	710	720	17	7	54	07	7	5	6	513	9 40
	720	730	116	011	32	11	8	4	9	514	10 41
	730	740	133	8	39	30	25	7	9	515	11 42
	750	760	29	9	49	18	19	4	8	516	12 43
	770	780	30	1011	64	10	6	6	9	517	13 44
	790	800	23	5	77	12	2	3	2	518	14 45
	810	820	27	5	54	22	12	8	017	519	15 46
	830	840	109	3	34	04	4	6	3	520	16 47
	850	860	104	2	29	102	11	1004	11	521	17 48

Andi Feb 16/93

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/C

DATE SENT: Feb 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-1164	870	880	20	10	80	03	14	004	023	17522	1	49
	890	900	03	1	78	01	3	6	058	523	2	50
	910	920	01	0	53	< 01	12	6	030	524	3	51
	930	940	09	1	919	101	15	016	089	525	4	52
	950	960	01	1	75	< 01	14	023	085	526	5	53
	970	980	02	1	73	02	4	008	175	527	6	54
	990	1000	31	2	49	08	17	2	002	528	7	55
	1010	1020	02	3	23	01	12	2	001	529	8	56
	1030	1040	05	1	62	01	16	012	062	530	9	57
	1050	1060	03	1	51	01	13	2	1	531	10	58
	1070	1080	02	2	54	03	110	3	7	532	11	59
	1090	1100	03	1	67	< 01	12	1	1	533	12	60
	1110	1120	04	1	73	01	5	2	1	534	13	61
	1130	1140	04	1	58	01	3	003	1	535	14	62

ANDI Feb 17/MS

RECOVERY AND RQD %

HOLE NO. E_164

LOGGED BY: S. OAKLEY

DATE: FEB. 10, 1993

FOOTAGE		RECOVERY		PERCENTAGE		
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"	
112	114	24	0	100.00%	0.00%	
114	117	35	0	97.22%	0.00%	
117	127	118	0	98.33%	0.00%	
127	137	120	17	100.00%	14.17%	
137	147	110	18	91.67%	15.00%	
147	156	75	5	69.44%	4.63%	
156	167	76	0	57.58%	0.00%	
167	177	121	49	100.83%	40.83%	
177	187	119	29	99.17%	24.17%	
187	197	115	18	95.83%	15.00%	
197	207	120	19	100.00%	15.83%	
207	217	118	30	98.33%	25.00%	
217	227	115	16	95.83%	13.33%	
227	234	55	0	65.48%	0.00%	
234	237	32	4	88.89%	11.11%	
237	247	106	11	88.33%	9.17%	
247	257	98	26	81.67%	21.67%	
257	264	80	7	95.24%	8.33%	
264	273	94	19	87.04%	17.59%	
273	277	50	30	104.17%	62.50%	
277	283.5	73	0	93.59%	0.00%	
283.5	294	116	14	92.06%	11.11%	
294	299	55	8	91.67%	13.33%	
299	307	94	4	97.92%	4.17%	
307	317	106	0	88.33%	0.00%	
317	327	116	16	96.67%	13.33%	
327	337	120	41	100.00%	34.17%	
337	347	120	48	100.00%	40.00%	
347	357	119	42	99.17%	35.00%	
357	367	121	54	100.83%	45.00%	
367	377	121	29	100.83%	24.17%	
377	387	109	26	90.83%	21.67%	
387	397	91	20	75.83%	16.67%	
397	405	96	19	100.00%	19.79%	
405	407	26	12	108.33%	50.00%	
407	417	120	46	100.00%	38.33%	
417	427	116	31	96.67%	25.83%	
427	437	122	21	101.67%	17.50%	
437	447	120	13	100.00%	10.83%	
447	457	119	43	99.17%	35.83%	

RECOVERY AND RQD %

457	467	119	48	99.17%	40.00%
467	477	120	56	100.00%	46.67%
477	487	120	51	100.00%	42.50%
487	497	119	26	99.17%	21.67%
497	507	120	72	100.00%	60.00%
507	517	112	35	93.33%	29.17%
517	527	108	51	90.00%	42.50%
527	533	70	12	97.22%	16.67%
533	543	122	50	101.67%	41.67%
543	553	122	52	101.67%	43.33%
553	563	118	31	98.33%	25.83%
563	573.5	122	49	96.83%	38.89%
573.5	583.5	121	29	100.83%	24.17%
583.5	593.5	118	38	98.33%	31.67%
593.5	599	62	0	93.94%	0.00%
599	607	96	19	100.00%	19.79%
607	617	111	17	92.50%	14.17%
617	627	122	64	101.67%	53.33%
627	637	115	19	95.83%	15.83%
637	646	98	6	90.74%	5.56%
646	656	117	36	97.50%	30.00%
656	657	10	0	83.33%	0.00%
657	667	117	29	97.50%	24.17%
667	676	104	26	96.30%	24.07%
676	682	67	11	93.06%	15.28%
682	687	60	21	100.00%	35.00%
687	697	118	32	98.33%	26.67%
697	706.5	104	21	91.23%	18.42%
706.5	716.5	108	32	90.00%	26.67%
716.5	727	121	52	96.03%	41.27%
727	737	118	62	98.33%	51.67%
737	747	120	45	100.00%	37.50%
747	757	119	36	99.17%	30.00%
757	767	116	33	96.67%	27.50%
767	777	120	61	100.00%	50.83%
777	784	78	31	92.86%	36.90%
784	794	118	47	98.33%	39.17%
794	804	122	50	101.67%	41.67%
804	813	110	46	101.85%	42.59%
813	823	121	75	100.83%	62.50%
823	833	120	16	100.00%	13.33%
833	837	37	8	77.08%	16.67%
837	847	121	26	100.83%	21.67%
847	857	118	19	98.33%	15.83%
857	867	122	28	101.67%	23.33%

RECOVERY AND RQD %

867	877	115	10	95.83%	8.33%
877	887	119	26	99.17%	21.67%
887	897	119	37	99.17%	30.83%
897	907	120	54	100.00%	45.00%
907	917	118	33	98.33%	27.50%
917	927	123	69	102.50%	57.50%
927	937	116	42	96.67%	35.00%
937	947	121	46	100.83%	38.33%
947	957	122	58	101.67%	48.33%
957	967	120	41	100.00%	34.17%
967	977	123	47	102.50%	39.17%
977	987	118	87	98.33%	72.50%
987	997	121	90	100.83%	75.00%
997	1007	120	72	100.00%	60.00%
1007	1017	115	51	95.83%	42.50%
1017	1027	121	32	100.83%	26.67%
1027	1037	122	14	101.67%	11.67%
1037	1047	120	12	100.00%	10.00%
1047	1056	107	0	99.07%	0.00%
1056	1066	119	25	99.17%	20.83%
1066	1076	123	19	102.50%	15.83%
1076	1086	121	28	100.83%	23.33%
1086	1095	108	9	100.00%	8.33%
1095	1104	106	11	98.15%	10.19%
1104	1107	36	0	100.00%	0.00%
1107	1117	121	17	100.83%	14.17%
1117	1127	120	29	100.00%	24.17%
1127	1137	121	23	100.83%	19.17%
1137	1147	119	11	99.17%	9.17%
1147	1150	33	0	91.67%	0.00%

MAGNETIC SUSCEPTIBILITY

LE NO. E-164

DATE Feb 10/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
112-120						.01
120-130						Ø
130-140						.01
140-150						.02
150-160						.01
160-170						.01
170-180						.02
180-190						.04
190-200						.03
200-210						.02
210-220						.03
220-230						.04
230-240						.03
240-250						.02
250-260						.01
260-270						.04
270-280						1.1
280-290						1.6
290-300						.02
300-310						.44
310-320						.01
320-330						.03
330-340						.01
340-350						.02
350-360						.02
360-370						.01
370-380						.02
380-390						.01
390-400						.02
400-410						.01
410-420						.02
420-430						.02
430-440						.01

MAGNETIC SUSCEPTIBILITY

LE NO. E164

DATE Feb 11/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
440-450						.02
450-460						.03
460-470						.02
470-480						.04
480-490						.04
490-500						.03
500-510						.02
510-520						.02
520-530						.03
530-540						.04
540-550						.02
550-560						.01
560-570						.02
570-580						.04
580-590						.03
590-600						.03
600-610						.04
610-620						.02
620-630						.03
630-640						.03
640-650						.02
650-660						.02
660-670						.03
670-680						.69
680-690						.57
690-700						.42
700-710						2.0
710-720						1.8
720-730						.09
730-740						.04
740-750						.02
750-760						2.2
760-770						1.4

MAGNETIC SUSCEPTIBILITY

LE NO. E 164

DATE Feb 14/93

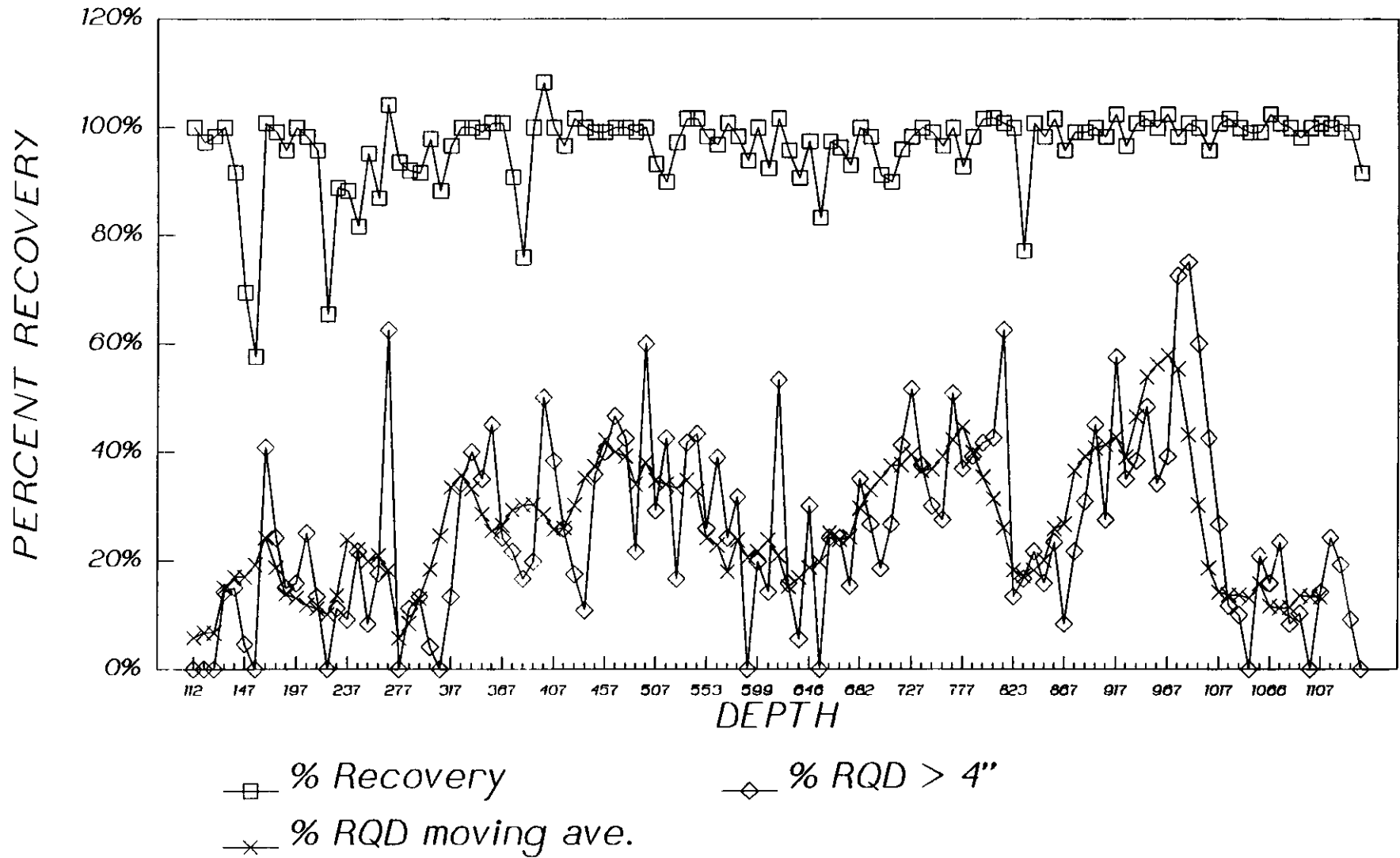
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
770-780						1.8
780-790						5.1
790-800						7.3
800-810						2.2
810-820						1.1
820-830						.06
830-840						.63
840-850						.02
850-860						1.0
860-870						.05
870-880						.34
880-890						.41
890-900						1.3
900-910						1.1
910-920						1.8
920-930						.22
930-940						.70
940-950						2.7
950-960						2.5
960-970						2.2
970-980						1.3
980-990						.52
990-1000						.03
1000-1010						.60
1010-1020						.02
1020-1030						.97
1030-1040						.82
1040-1050						1.7
1050-1060						1.3
1060-1070						1.3
1070-1080						1.2
1080-1090						2.9
1090-1100						1.8

Recovery and RQD %

E_164



PROJECT Island Copper
 CONTRACTOR Olympic Drilling & Consulting Ltd.
 DATE STARTED Feb. 12, 1993 COMPLETED Feb. 17, 1993
 LOGGED BY David Pawliuk

T.D. 1048.0 FT COLLAR ELEVATION 1307.53Z
 INCLINATION -65° BEARING Z01° az.
 COORDINATES 21388.616 E // 8908.803 N
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1" = 200'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT														
	Core Recovery	Oxide	Quartz	Sericite	Chlorphylopy	Blaine	K-spar	Chlorite	Episote	Carb-Zeo		Garnet	Pyroxene	Amphibole	Albite	Sulf. Vens					Frac Inter	Est. Cu. Mo	CuFeS ₂	FeS	CuFeS ₂	P ₂ O ₅	MoS ₂							
0																												limonite along fractures						
100																														NQ core				
200																																py + sph specks	0.0-12.0 CASING	
300																																py-ep-gtz vlt. gillsonite vlt. qtz-carb-py-cpy-sph moly(?) vlt. w. ep. silic.	12.0-1049.0 BONANZA VOLCANICS	
400																																qtz-py-biot-gillsonite-cpy aqua sericite vlt. qtz-py-moly band albite replaced tuff hairline cpy vlt. matrix	Greyish green coarse to medium grained lapilli tuff with subangular to subround clasts av. ~0.3" across, up to 1.5". Local medium to fine grained ash tuff interbeds, locally finely laminated on a mm scale. Quartz veins become more abundant with increasing depth. Biotite replaced by later silica in lowermost part of hole.	
500																																cpy v. finely diss. in ep mass with moly? py as blebs in clay alt'd section; xtals elsewhere		
600																																sandy py sph-py-cpy vlt cpy f. diss. & hairline vlt		
700																																irregular mag vlt. py(70%) - cpy(30%) band. qtz(50%) - py(35%) banded qtz(50%) py-gtz-sph-cpy py-cpy both sooty py both above		
800																																mag vlt with amphib serelvages cpy + sph diss. py band along qv; grey silicified envelopes along fractures and some py		
900																																qv with py(70%) cpy(30%) - moly(?) band 0.6" wide, vlt.s. qtz-py-cpy-sph band or vein 0.5" along slip. cpy(60%) - py(35%) moly(5%) band.		
1000																																qtz-py-cpy ± sph mag-gtz-amph- ~70% py, 2% cpy mag vlt w. v. fine cpy dis. qtz-py-cpy ± sph vlt.s over 8.5" cpy vlt over 8.5" cpy diss. sph vlt.s laminae of mag, cpy, py parallel vein margins.		

HOLE NO. E 165

DRILL LOG

Page 1 of 18

PROJECT Island Copper
 CONTRACTOR Olympic Drilling & Consulting Ltd.
 DATE STARTED Feb. 12/93 COMPLETED Feb. 17/93
 LOGGED BY David Pawliuk

T.D. 1048.0' COLLAR ELEVATION 1307.5'
 INCLINATION -65° BEARING 201°
 COORDINATES 21388.6 E / 8908.8 N
 SURVEY REFERENCES _____

Footage	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			
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zoo		Garnet	Pyroxene	Amphibole	Albite	Sulf. Veins					Frac. Inten	Est. Cu. Mo	Cu/Fer	Fe/Fer	Cu/Fer	Fa.O.	MoS.
NO core throughout																							
0																					0.0 - 12.0 CASINGS		
10																					12.0 - overburden yellow brown limonite spotted on fracture sfcs to 28'	BONANZA VOLCANICS. Pale green grey, bleached lapilli tuff with coarse clasts subangular to subround, av. 0.2 to 0.3" across and up to 1.5x1.0" in size. Hard, competent rock with generally good core recovery. Rock spotted by 1 to 3% yellow-green epidote which locally occurs as patches up to about 4" by 2", often spotted with disseminated pyrite speckles.	
20	/																.01	|			dis red hem		
30	/																.03	|			cpy + sph with pyrite in finely diss masses + specks.		
40	/																.04	|			cpy(?) cpy + sph specks to 0.07"		
50	/																.02	.5			cpy(?)		Pale aqua sericite(?) pervasively stains unit. Local red brown, v. fine grained biotite - rich (hematite??) bands to 1" wide. Iron oxide in upper part of hole predominantly reddish brown hematite.
																	.03	|			py-ep-ptz vlt. 0.1" D33° gillsonite vlt. to 0.05"		

HOLE NO. E 165

DRILL LOG

Page 2 of 18

PROJECT Island Copper

T.D. 1048'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -65

BEARING 201°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No. & Interval	LOG SCALE 1" = 10' BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet		Pyroxene	Amphibole	Albite	Sulf. Vens	Frac Inter	Est. Cu. Mc					CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	Mos.		
60																											12.0'	BONANZA VOLCANICS	
70																	.04	1										As above except rock slightly darker green (more chlorite?) more gillsonite and calcite vlt's than above.	
80																	.02	1										qtz-py-sph-epy vlt 0.25 at 35' with ep selvages	
90																	.03	1										irregular qtz carb vlt 0.3" wide @ 60' contains sph, moly(?) + has epidote selvages ~0.6" wide.	py, epy, wide.
100																	.02	.5										gillsonite; irregular vlt's sph(?) irregular gillsonite mass ~1.5 x 1" within epidote-rich interval.	
110																	.01	.5											
120																	.02	1										gillsonite	

HOLE NO. E 165

DRILL LOG

Page 3 of 18

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 1048-0
 INCLINATION -65
 COLLAR ELEVATION _____
 BEARING Z01
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.							Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metalization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Chalcopyrite	Biotite	K-spar	Chlorite	Epidote	Caro-Zeo		Garnet	Pyroxene	Amphibole	Albite	Sulf. Veins	Frac Inten	Est Cu Mo					CuFeS ₂	FeS ₂	CuFeO ₂	Fe ₂ O ₃	Moss
120																											
130																											
140																											
150																											
160																											
170																											
180																											

12.0 - BONANZA VOLCANICS
 Medium green to light greyish green volcanic rock. Lapilli tuff as above to 133.7' depth; medium grained ash tuff below 133.7' → ~167' then flow.
 Decreased epidote content with increasing depth.
 More abundant fine pyrite veinlets than above, and the veinlets in this interval have bleached pale brown to pale greenish white selvages of clay minerals.

gillsonite vlt 0.05" @ 30°
 py+sph vlt 0.05" @ 15°
 softer rock can be scratched with a knife.
 py vlt 0.2" @ 50° within clay-alt'd band 3" wide.
 clayey fault slip @ 55°
 cpy blebs to 0.1"
 irregular qtz-py-greasy biot-gillsonite - cpy vlt to 0.5"
 py vlt 0.2" @ 75° w/ ep selvages.
 black chl (+ ampt) rough vlt w/ ep selvages.
 amygdulose to 0.3" long filled by qtz, zeol, calcite.
 bright aqua sericite masses to 0.2".
 gillsonite + greasy, coarse grained biotite as vlt @ ~20° to c.a.
 ep spots av. ~0.1" rimmed by dk green chl + amch(?)

01 3
 02 2
 02 3
 06 2
 12 2
 06 2
 01 2

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 10480
 INCLINATION -65
 COLLAR ELEVATION _____
 BEARING 201
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Bitite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten	Est Cu Mo					CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MnS ₂
180																									1" clay gouge + f. blk core @ 60°		
190																									wispy, hairline, irregular vltz greasy, coarse gr. bitite + gillsonite 3" gouge + f. blk @ 45° dusty diss red hem envelope on py vlt.	12.0- BONANZA VOLCANICS Medium green to pale creamy brown to light green to brown. Patchy nodular to intense clay mineral alt'n.	
200																									py-qtz vlt 0.3" @ 35° randomly oriented py vltz to 0.15" wide. gillsonite mass 0.6x 0.2" across.	Basaltic flow (?) to fault @ 183.5' then ash tuff to 193.3' then mainly coarse grained lapilli tuff/volcanic bre with abundant subangular coarse clasts up to 3" x 1.2" across.	
210																									fine laminae of qtz-py-moly band or "vein" 1" wide between fault slips @ 60° amph vltz to 0.05"		
220																									albite replacing matrix of lapilli tuff. py specks		
230																											
240																									yellow brown, waxy pyrophyllite appears. pale aqua sericite clayey fault slip @ 35°		

PROJECT Island Copper
CONTRACTOR _____
DATE STARTED _____ COMPLETED _____
LOGGED BY DJP

T.D. 1048.0' COLLAR ELEVATION _____
INCLINATION -65° BEARING 201°
COORDINATES _____
SURVEY REFERENCES _____

Footage	Core Recovery	Chide	ALTERATION										STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT			
			Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene		Amphibole	Altk	Sulf Vens	Frac Inten	Est Cu Mo					CuFeS ₂	FeS ₂	CuFeS	PbO	MoS_{2}
360															.02	.5				15° V	sph(?) speck abund. greasy biot along irreg fracture discont; irreg py vlt			12.0- BONANZA VOLCANICS	
370															.02	1				qtz-py-cpy vlt 0.4" wide @ 35° along clayey fault			Pale yellow-brown (clay- altd) to medium green- grey to pale brownish grey to locally greenish black		
380															.02	1				white sericite + alb 0.1" along slip parallel ca.			medium to coarse grained lapilli tuff		
390															.02	2				0.15" gillsonite @ 25° 2 mag v. fine diss. irreg gillsonite-carb vlt subparallel ca.			Moderately to locally broken core below	393!	
400															.02	2				mag vlt to 0.15" usually w. v. fine diss. cpy specks			Sericite off-white to aque coloured.		
410															.03	1				3" wide band w. 20% sooty + f. diss py.			along fracture @ 40° core.		
420															.03	.5				0.4" white ser. + f. bkn ? orientation; 6" f. bkn gillsonite vlt.			fine to med. f. bkn + cpy @ ~ 65° to ca.		
															.02	.5				fault, ~ 12° f. bkn + cpy @ ~ 65° to ca.			sph-py-cpy vlt 0.1" @ 30° fault, 3" white sericite, clay gouge f. bkn @ 35° core v. fine diss in near clt.		

HOLE NO. E/65

DRILL LOG

Page 8 of 18

PROJECT Island Copper

CONTRACTOR _____

DATE STARTED _____ COMPLETED _____

LOGGED BY DJP

T.D. 1048.0

INCLINATION -65°

COORDINATES _____

SURVEY REFERENCES _____

COLLAR ELEVATION _____

BEARING 201°

Footage	ALTERATION												STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT																							
	Core Recovery	Oxide	Quartz	Sericite	Chlor/Pyro	Blaine	K-epid	Chlorite	Epidoite	Carb/Zeo	Garnet	Pyroxene		Amphibole	Albite	Sulf. Veins	Frac Inten	Est. Cu. Mo					CuFeS	FeS	CuFeS ₂	P.F.P.	Met.																		
720																																													
730																																													
740																																													
750																																													
760																																													
770																																													
780																																													
790																																													

12.0-
BONANZA VOLCANICS
 Medium greenish grey to pale brown to light grey medium to coarse grained lapilli tuft. Black to green-black mag-chl clots subground to irregular av. 2.0-2" diameter spots the darker coloured sections of the interval. Mag within clots and locally also finely disseminated. More abundant carb/zeol vltts than above.

greasy biot. + gillsonite fault, 0.25" f. bkn on chloritic slip @ 65°
 py-qtz vlt 0.05" @ 30° w. mag-rich selvages.
 healed slip @ 20°
 banded zeol-qtz-carb on 0.8" @ 30° to c.a.
 cpy f. diss + hairline vlt @ 45°
 70°; 6" f. bkn + gouge
 sph-py-cp vlt @ ~80°
 zeol-carb on bra band 3" wide @ 25°
 0.05" sooty py gouge + 0.3" qtz-py vlt along fault @ 45° to c.a.
 v. faint amphib. selvages on mag clots.
 0.2" waxy grey qtz vlt along slip @ 45°
 irreg, faint, discontinuous mag vltts.
 1.5" crushed, f. bkn w. vein qtz pieces + sooty py along margins @ 50°
 10" crushed, f. bkn + gouge @ 50°

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DTP

 T.D. 1048-0'
 INCLINATION -65°
 COLLAR ELEVATION _____
 BEARING 201°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	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								
	Cone Recovery	Oxide	Quartz	Sericite	Chlorite	Blende	K-spar	Chlorite	Epidote	Carb./Zeo	Quartz	Pyroxene	Amphibole	Albite	Sulf. Veins	Frac. Inten	Est. Cu. Mo	CuFes.					FeFes.	CuFes.	FeO.	Magnet.				
100																										500 py band 1.2" wide	(py(70%) - cpy(30%)) band 0.3" @ 60°	12.0 - BONANZA VOLCANICS Dark greenish grey to pale greyish brown or tan; local black patches. Medium grained lapilli tuff with local ash tuff interbeds. Often mottled with dark mag-chl dots; in most sections mag has preferentially replaced the minerals within the larger clasts. Mag also finely disseminated.		
110																											carb-py vlt 0.25" @ 45°			
140																											qtz(50%) - py(35%) - cpy(15%) box band 2" wide @ 73° sulfide blebs to 0.2"			
500																											euhedral white calcite xtals to 0.1" long line fracture etc. qtz-zeol-py vlt 0.25" @ 30° qtz vlt 0.2" @ 35° with py-cpy-sph			
510																											qtz-zeol-py vlt 0.25" @ 30° qtz vlt 0.2" @ 35° with py-cpy-sph			
520																											qtz vlt 0.2" @ 35° py-cpy-sph			
530																											0.02 .5			
																											0.03 .5			
																											0.15 2			
540																											pale orange zeol vein 1" @ 40° grey QV 0.2" @ 45° qtz-carb-py-spy-sph vlt 0.35" @ 60° banded qtz(60%) - py(30%) - cpy(20%) vein 3" wide @ 65° orange K-spar altn. of large clasts adjacent to carb vlt			

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJR

T.D. 1048-0' COLLAR ELEVATION _____
 INCLINATION -65° BEARING 201°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metalization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blaine	K-spar	Chlorite	Epoxide	Calc-Zeo	Garnet		Pyroxene	Amphibole	Surf Veins	Frac Inter	Est Cu. Mc					CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	Mag ₂
540																						0.06		<p>tiny cpy speck</p> <p>mag vlt X-cuts laminae</p> <p>laminae @ 50°</p>	<p>12.0 - BONANZA VOLCANIC S.</p> <p>Pale greyish brown to dark greenish grey to light grey interbedded layer of tuff and ash tuff. Ash tuff interbeds often finely laminated on a mm scale. Less chl, mag and amph than within overlying interval.</p>	
550																					2	2	<p>py-gtz-sph vlt 0.15" @ 35°</p> <p>py-gtz-sph-qty vlt 0.7" @ 65° to ca.</p>			
560																					2	2	<p>60% py in band 1.7" @ 50°</p> <p>irreg py-qty-sph vlt to 0.2" @ 65° to ca.</p> <p>qtz-py vlt 0.25" long dip @ 40°</p> <p>bedded slip @ 45°</p> <p>2.6" f.bkn, crushed on fracture @ 50°</p>			
570																							<p>cpy-py vlt 0.05" @ 60°</p>			
580																							<p>fault, 1" f.bkn, ? orientation</p>			
590																							<p>0.7" inter-laminated qtz-sooty py-qty specks @ 55°</p> <p>fault, 0.2" gouge + f. bkn @ 40°</p>			
600																							<p>fract chl clots almost completely replaced by later sili ca.</p>			

HOLE NO. E 165

DRILL LOG

Page 12 of 18

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 1048.0'
 INCLINATION -65°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING 201°

Footage	Core Recovery	Oxide	ALTERATION											STR.	VISUAL EST.						Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT					
			Quartz	Sericite	Chl/Pyrop	Blaine	K-spar	Chlorite	Epidoite	Carb-Zeo	Garnet	Pyroxane	Amphibole		Sulf. Veins	Frac. Inten.	Est. Cu. Mo.	Cu/Fes.	Fe/S.	Cu/Fes.					Fe ₂ O ₃	MoS ₂			
660																					.13	3				14	← cpy v.f. diss. ← py-zed. vlt 0.4" @ 40°	12.0 - BONANZA VOLCANICS Light greenish grey to pale grey-brown to locally medium greenish grey medium grained ash tuff → Fine grained lapilli tuff. More QV's than within overlying interval.	
670																					.3	1				670-675 QV1.25 @ 45°	fault; 12" crushed, bkn core between sooty py bands to 2" wide both above + below fault; @ 45°.		
680																					.19	2				680-685 QV0.7 @ 50°	sp. py lens 0.8x0.2" along fault slip @ 50° QV 0.6" @ 45° cpy speckles ± moly in + adjacent to QV. 70° fault. bkn QV ~ 1.5" wide @ 30°		
690																					.1	2				690-695 QV0.7 @ 50°	35° fault sooty py bands to 0.7" wide. QV 0.8" @ 40° 3 crushed, mag bkn @ 45° w. 5% sooty py bands, lenses. 2 mag v. finely diss; only occ. dots.		
700																					.15	2				700-705 QV0.7 @ 70°	fault; 1" f. bkn @ 45° 60° QV 0.25" @ 20° w. cpy, py, sph		
710																					.15	5				710-715	← mag vlt w. sph selvage. qtz-rich band or vein 5.5" wide @ 70° to c.a.		
720																					.15	5				720-725	← cpy + sph diss. QV 0.25" @ 70° qtz-rich band 0.7" @ 70° QV 0.5" @ 30° w. cpy lenses to 0.05" wide 0.3" long.		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 1048.0' COLLAR ELEVATION _____
 INCLINATION -65° BEARING 201°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.						Sample No. & Interval	LOG SCALE 1"=10' BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Biotite	K-spar	Chlorite	Epidote	Carb. Zoo	Garnet	Pyroxene	Amphibole	Al. G.	Sulf Veins	Frac. Inten.	Est. Cu, Mo	CuFeS ₂		FeS ₂	CuFeS ₂		Fe ₂ O ₃	MnS ₂				
720																								37			12.0- BONANZA VOLCANICS	
730																								21			Light to medium greenish grey with local pale grey bands + patches. Medium grained ash tuff and fine grained lapilli tuff for the most part with local fine-grained ash tuff interbeds which are banded on a cm scale, usually at about 55° to c.a. Fewer faults and less broken less clay + sericite alt'n than in overlying interval.	
740																								14			waterly grey silicified envelopes along fractures + py vlt.s. QV 0.2" @ 70° w. hairline cpy vlt in centre py band 0.8" along QV 0.9" @ 60°; cpy speckles in QV healed box band 3" @ 70°. S QV 0.35" w. py, sph on slip @ 50°. hairline moly vlt on fracture @ 63°. QV 1.5" @ 45° w. py, cpy, sph. QV 1.2" @ 70° w. py, moly. QV 2.5" @ 70° w. cpy, py, moly. 0.6" py (70%) - cpy (30%) band along bottom margin ser. along fault slip @ 25°.	
750																								31				
760																								37			QV 2.5" @ 60° w. py-cpy-sph-moly. waterly grey QV 0.1" @ 80° w. 0.05% selvages of int. sil band 3" @ 60° contains 20% py as curved vlt.s wide + also diss. Sph specks. or vein 0.5" along slip @ 45°.	
770																								34			qtz-py-cpy-sph band 0.35" @ 75° to c.a. py-cpy-sph band 0.6" @ 60°. Irregular py vlt 0.08" wide @ ~20°. Irregular fault slip @ ~40°. cpy spots a fracture etc.	
780																												

PROJECT Island Copper
CONTRACTOR _____
DATE STARTED _____ COMPLETED _____
LOGGED BY DJP

T.D. 1048.0'
INCLINATION -65°
COLLAR ELEVATION _____
BEARING 201°
COORDINATES _____
SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT																							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyro	Biotite	K-spar	Chlorite	Epidoite	Carb-Zeo		Garnet	Pyroxene	Amphibole	Sulf. Veins	Frac Inter					Est. Cu. Mo	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	Moss																	
900																																											
910																																											
920																																											
930																																											
940																																											
950																																											
960																																											

py band 0.5" @ 75°
 QV0.35" @ 40° w. mag-
 amph-cpy-ep (retro)
 w/ep mag+amph
 +cpy vlt

12.0'
 BONANZA VOLCANICS
 Light greenish grey to
 medium grey-brown,
 medium to fine grained ash
 tuff. Less biotite than in
 overlying interval.

fault, 0.3" pale grey clay
 gouge + f. bkn core @ 60°
 ~70% py, 2% cpy over
 8.5"
 QV1.4" @ 65° w. mag, cpy, py
 cpy + v. fine diss.

QV2" @ 70° w. py, cpy, moly cut by later zeol/carb vlt + sgs aqua
 to selvage

QV0.3" @ 60° sericite

fault; 0.8" siliified band f. bkn carb vlt pieces @ 30°
 QV0.75" @ 40° w. mag
 QV0.25" @ 45° w. mag
 QV0.8" @ 60°
 QV2.5" @ 65° along fault slip.

clay att'd sericite 0.75" wide above + below slip @ 25°
 amph selvages on 1.0" wide qtz vlt
 qtz and py-rich band 1.3" @ 45°
 QV1.5" @ 65° contains py-cpy vlt 0.04" wide near center
 QV0.45" @ 70°
 retro (?) ep vlt 0.03" @ 40° contains moly + py specks.

cpy + diss masses
 QV0.3" @ 65°
 mag vlt 0.3" @ 65° contains occ. v. fine diss cpy specks.
 QV0.25" @ 80°
 amph dot or lens 1.2" x 0.1"
 qtz-mag band 0.8" @ 40°

HOLE NO. E 165

DRILL LOG

Page 17 of 18PROJECT Island CopperT.D. 1048.0

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -65°BEARING 201°

DATE STARTED _____

COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	ALTERATION												STR.	VISUAL EST.						Sample No. & Interval	LOG SCALE <u>1"=10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Clay/Pyrop	Blaske	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet	Pyroxene		Amphibole	Al ₂ SiO ₅	Sulf Veins	Frac Inter	Est Cu. Mc	CuFes					FeS	CuFes	FeO	Mgs			
960																										QV 0.4 230°			12.0-1049.0 BONANZA VOLCANICS	
970																										QV 1.2" 250° QV 1" 240° healed fault 250°; 5" band of wallrock + vein qtz frags in sooty py matrix.			Pale greenish grey to medium greyish brown; ask fault to 962'; mainly med. grained lapilli fault below 962'; Interval more bleached, lighter coloured than overlying interval; also interval contains more broken core with moderately broken core from log 1 ft down to bottom of hole at 1049'.	
980																										QV 0.35 240°				
990																										QV 1.75" 265° w. abnd mag; specks py, cpy preferential biotite + mag alt'n of larger clasts in lapilli tuff.				
1000																										QV 0.2" 250° w. mag, py, carb m bra 0.5" 255° cpy QV 0.9" 270° w. cpy, py sph, cpy. QV 1" 275° cut by discontinuous sph + cpy vlt 0.05" 240°				
1010																										QV 1.5" 270° w. cpy, py sph, cpy. QV 1" 275° cut by discontinuous sph + cpy vlt 0.05" 240°				
1020																										QV 1.0" 275° irregular, whopy mag vlt. qtz-py-sph-cpy vlt 0.15" 215°				
																										QV 0.5" 255° 55°; 3" wide band of qtz-py vlt 0.35" 240°				
																										QV 0.5" 245° pale grey QV 1.7" 245°				
																										QV 1.7" 245°				

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_165	21388.6	8908.8	1307.5

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	310.0	201.0	-65.5
310.0	560.0	201.0	-63.3
560.0	830.0	201.0	-62.5
830.0	1040.0	201.0	-63.0
1040.0	1048.0	201.0	-58.5

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
50.0	60.0	0.01	0.002	8.3	0.01	0.40	0.004	0.021	17536
90.0	100.0	0.01	0.001	6.8	<0.01	0.20	0.003	0.029	17537
130.0	140.0	0.01	0.001	11.9	0.01	0.30	0.003	0.012	17538
170.0	180.0	0.01	0.001	9.7	<0.01	0.40	0.002	0.014	17539
210.0	220.0	0.01	0.001	10.4	<0.01	0.40	0.004	0.028	17540
250.0	260.0	0.01	0.001	11.7	<0.01	0.20	0.003	0.017	17541
290.0	300.0	<0.00	0.002	6.7	0.01	1.20	0.006	0.207	17542
330.0	340.0	<0.00	0.001	5.4	<0.01	0.10	0.001	0.006	17543
370.0	380.0	0.01	0.001	7.3	<0.01	0.20	0.001	0.010	17544
410.0	420.0	0.02	0.001	7.4	<0.01	0.40	0.006	0.266	17545
450.0	460.0	0.03	0.001	5.6	<0.01	0.40	0.004	0.060	17546
480.0	490.0	0.07	0.001	8.9	0.01	0.80	0.006	0.031	17547
500.0	510.0	0.02	0.002	7.3	<0.01	0.20	0.004	0.014	17548
520.0	530.0	0.03	0.001	7.0	0.01	0.30	0.004	0.031	17549
540.0	550.0	0.06	0.003	7.0	0.01	0.50	0.006	0.049	17550
550.0	560.0	0.12	0.005	7.8	0.03	0.80	0.007	0.056	17807
560.0	570.0	0.20	0.005	8.4	<0.01	0.80	0.004	0.052	17551
570.0	580.0	0.07	0.003	4.5	<0.01	0.40	0.003	0.013	17808
580.0	590.0	0.10	0.005	5.6	0.03	0.60	0.005	0.094	17552
590.0	600.0	0.08	0.002	3.7	0.01	0.40	0.004	0.025	17809
600.0	610.0	0.10	0.004	4.6	0.01	0.50	0.005	0.033	17553
610.0	620.0	0.11	0.003	3.8	0.01	0.30	0.003	0.011	17810
620.0	630.0	0.40	0.004	10.4	0.06	0.90	0.005	0.022	17554
630.0	640.0	0.10	0.004	5.4	0.01	0.40	0.004	0.010	17811
640.0	650.0	0.16	0.007	3.4	0.02	1.00	0.003	0.018	17555
650.0	660.0	0.17	0.003	4.7	0.02	1.40	0.004	0.019	17812
660.0	670.0	0.14	0.004	7.2	0.04	0.80	0.003	0.020	17556
670.0	680.0	0.31	0.009	6.0	0.02	1.50	0.006	0.036	17557
680.0	690.0	0.19	0.004	5.1	0.04	0.80	0.003	0.016	17558
690.0	700.0	0.24	0.004	6.9	0.05	1.80	0.009	0.061	17559
700.0	710.0	0.33	0.003	4.6	0.07	1.70	0.004	0.037	17560
710.0	720.0	0.36	0.016	3.6	0.02	2.20	0.004	0.050	17561
720.0	730.0	0.37	0.012	10.1	0.03	2.10	0.005	0.050	17562
730.0	740.0	0.21	0.009	4.5	0.02	0.80	0.004	0.025	17563

DATE: 09/06/93

PAGE: 3

TIME: 08:22:02

BHP MINERALS CANADA - Island Copper Mine

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
740.0	750.0	0.14	0.002	5.2	0.03	1.80	0.003	0.038	17564
750.0	760.0	0.31	0.008	9.1	0.03	0.80	0.005	0.073	17565
760.0	770.0	0.37	0.003	6.8	0.03	1.70	0.003	0.026	17566
770.0	780.0	0.34	0.003	4.5	0.06	1.40	0.002	0.015	17567
780.0	790.0	0.32	0.003	4.6	0.09	0.70	0.002	0.016	17568
790.0	800.0	0.48	0.016	5.3	0.19	2.50	0.003	0.055	17569
800.0	810.0	0.46	0.004	4.9	0.18	1.80	0.005	0.046	17570
810.0	820.0	0.49	0.043	6.3	0.22	2.30	0.007	0.028	17571
820.0	830.0	0.30	0.010	4.0	0.14	1.00	0.002	0.088	17572
830.0	840.0	0.22	0.005	4.3	0.07	0.50	0.002	0.040	17573
840.0	850.0	0.13	0.004	4.3	0.05	0.40	0.002	0.016	17574
850.0	860.0	0.19	0.004	5.4	0.04	0.70	0.002	0.020	17575
860.0	870.0	0.21	0.003	4.3	0.10	0.50	0.002	0.009	17576
870.0	880.0	0.23	0.005	4.2	0.11	0.60	0.002	0.010	17577
890.0	900.0	0.24	0.009	3.8	0.09	1.00	0.002	0.027	17578
910.0	920.0	0.25	0.003	4.0	0.12	1.40	0.005	0.028	17579
920.0	930.0	0.12	0.004	3.0	0.03	0.40	0.003	0.011	17813
930.0	940.0	0.33	0.005	5.6	0.18	1.00	0.002	0.013	17580
940.0	950.0	0.21	0.003	5.4	0.05	0.60	0.002	0.015	17814
950.0	960.0	0.25	0.009	5.0	0.17	0.60	0.002	0.012	17581
960.0	970.0	0.11	0.005	4.8	0.04	0.30	0.005	0.012	17815
970.0	980.0	0.15	0.008	4.0	0.07	0.40	0.002	0.006	17582
980.0	990.0	0.07	0.005	4.1	0.02	0.40	0.005	0.027	17816
990.0	1000.0	0.07	0.004	3.4	0.03	0.30	0.002	0.011	17583
010.0	1020.0	0.17	0.004	4.3	0.07	0.50	0.002	0.008	17584
030.0	1040.0	0.08	0.004	2.8	0.05	0.30	0.002	0.007	17585

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/c

DATE SENT: Feb 22 1993

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-165	50	60	1	2	83	01	4	4	21	17536	1	50
	90	100	1	1	68	< 01	2	3	29	537	2	51
	130	140	1	1	119	01	2	3	12	538	3	52
	170	180	1	1	97	< 01	4	2	14	539	4	53
	210	220	1	1	104	< 01	4	4	28	540	5	54
	250	260	1	1	117	< 01	2	3	17	541	6	55
	290	300	0	2	67	01	12	6	207	542	7	56
	330	340	0	1	54	< 01	1	1	6	543	8	1
	370	380	1	1	73	< 01	2	1	10	544	9	2
	410	420	2	1	74	< 01	4	6	266	545	10	3
	450	460	3	1	56	< 01	4	4	60	546	11	4
	480	490	7	1	89	01	8	6	31	547	12	5
	500	510	2	2	73	< 01	2	4	14	548	13	6
	520	530	3	4	70	01	3	4	31	549	14	7
	540	550	6	3	70	01	5	6	49	550	15	8
	560	570	20	5	84	< 01	8	4	52	551	16	9
	580	590	10	5	56	03	6	5	94	552	17	10
	600	610	10	4	46	01	5	5	33	553	18	11

[Signature]

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/c

DATE SENT: Feb 23/93

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-165	620	630	40	4	104	06	9	5	22	17554	12
	640	650	16	7	34	02	10	3	18	555	13
	660	670	14	4	72	04	8	3	20	556	14
	670	680	131	9	60	02	15	6	36	557	15
	680	690	119	4	51	04	8	3	16	558	16
	690	700	24	4	69	05	18	9	61	559	17
	700	710	33	3	46	07	17	4	37	560	18
	710	720	36	16	36	02	22	4	50	561	19
	720	730	37	12	101	03	21	5	50	562	20
	730	740	51	9	45	02	08	4	25	563	21
	740	750	14	2	52	03	18	3	38	564	22
	750	760	131	8	91	03	8	5	73	565	23
	760	770	37	3	68	03	17	3	26	566	24
	770	780	34	3	45	06	14	2	15	567	25
	780	790	32	3	46	07	7	2	16	568	26
	790	800	48	16	53	19	25	3	55	569	27
	800	810	46	4	49	18	18	5	46	570	28
	810	820	49	43	63	22	23	7	28	571	29

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**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/C

DATE SENT: Feb 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-165	820	830	30	10	40	14	10	2	88	17572	30
	830	840	20	5	43	07	5	2	40	573	31
	840	850	13	4	43	05	4	2	16	574	32
	850	860	19	4	54	04	7	2	20	575	33
	860	870	21	3	43	10	5	2	9	576	34
	870	880	23	5	42	11	6	2	10	577	35
	890	900	24	9	38	09	10	2	27	578	36
	910	920	25	3	40	12	14	5	28	579	37
	930	940	33	5	56	18	10	2	13	580	38
	950	960	25	9	50	17	6	2	12	581	39
	970	980	15	8	40	07	4	2	6	582	40
	990	1000	7	4	34	03	3	2	11	583	41
	1010	1020	17	4	43	07	5	2	8	584	42
	1030	1040	8	4	28	05	3	2	7	585	43

RECOVERY AND RQD %

HOLE NO. E_165

LOGGED BY: S. OAKLEY

FEBRUARY 15, 1993

FOOTAGE		RECOVERY		PERCENTAGE		
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"	
12	17	60	16	100.00%	26.67%	
17	27	121	26	100.83%	21.67%	
27	37	116	19	96.67%	15.83%	
37	47	105	17	87.50%	14.17%	
47	57	109	16	90.83%	13.33%	
57	67	122	44	101.67%	36.67%	
67	77	116	25	96.67%	20.83%	
77	87	123	37	102.50%	30.83%	
87	97	122	27	101.67%	22.50%	
97	107	120	31	100.00%	25.83%	
107	116	110	17	101.85%	15.74%	
116	123.5	93	26	103.33%	28.89%	
123.5	133	110	41	96.49%	35.96%	
133	143	123	43	102.50%	35.83%	
143	149	72	38	100.00%	52.78%	
149	157	95	28	98.96%	29.17%	
157	167	118	30	98.33%	25.00%	
167	173	74	19	102.78%	26.39%	
173	183.5	123	63	97.62%	50.00%	
183.5	187	42	20	100.00%	47.62%	
187	194.5	92	62	102.22%	68.89%	
194.5	204	110	56	96.49%	49.12%	
204	207	40	33	111.11%	91.67%	
207	217	120	59	100.00%	49.17%	
217	227	121	67	100.83%	55.83%	
227	235	82	36	85.42%	37.50%	
235	245	120	66	100.00%	55.00%	
245	255.5	122	72	96.83%	57.14%	
255.5	266	124	96	98.41%	76.19%	
266	276	118	51	98.33%	42.50%	
276	286.5	124	80	98.41%	63.49%	
286.5	296.5	122	68	101.67%	56.67%	
296.5	307	123	37	97.62%	29.37%	
307	317	121	43	100.83%	35.83%	
317	327	120	76	100.00%	63.33%	
327	337	121	57	100.83%	47.50%	
337	347	118	26	98.33%	21.67%	
347	357	112	9	93.33%	7.50%	
357	367	110	23	91.67%	19.17%	
367	375	85	15	88.54%	15.63%	

RECOVERY AND RQD %

375	385	119	44	99.17%	36.67%
385	395	120	47	100.00%	39.17%
395	404.5	108	13	94.74%	11.40%
404.5	407	30	5	100.00%	16.67%
407	417	85	0	70.83%	0.00%
417	427	98	5	81.67%	4.17%
427	437	122	34	101.67%	28.33%
437	447	121	28	100.83%	23.33%
447	457	114	17	95.00%	14.17%
457	467	119	21	99.17%	17.50%
467	477	118	23	98.33%	19.17%
477	487	118	10	98.33%	8.33%
487	497	121	27	100.83%	22.50%
497	507	118	18	98.33%	15.00%
507	515	96	12	100.00%	12.50%
515	520	57	0	95.00%	0.00%
520	527	84	23	100.00%	27.38%
527	537	122	25	101.67%	20.83%
537	547	120	48	100.00%	40.00%
547	556	108	27	100.00%	25.00%
556	564	98	47	102.08%	48.96%
564	567	33	9	91.67%	25.00%
567	576.5	117	34	102.63%	29.82%
576.5	587	123	56	97.62%	44.44%
587	597	117	38	97.50%	31.67%
597	604	84	20	100.00%	23.81%
604	610	69	25	95.83%	34.72%
610	617	86	31	102.38%	36.90%
617	624	78	20	92.86%	23.81%
624	634	122	52	101.67%	43.33%
634	644.5	123	55	97.62%	43.65%
644.5	654.5	122	49	101.67%	40.83%
654.5	657	26	16	86.67%	53.33%
657	666.5	112	31	98.25%	27.19%
666.5	676.5	121	64	100.83%	53.33%
676.5	686.5	114	33	95.00%	27.50%
686.5	696.5	120	58	100.00%	48.33%
696.5	707	125	25	99.21%	19.84%
707	714	83	4	98.81%	4.76%
714	717	34	0	94.44%	0.00%
717	727	120	14	100.00%	11.67%
727	737	121	64	100.83%	53.33%
737	747	122	13	101.67%	10.83%
747	757	121	28	100.83%	23.33%
757	767	120	31	100.00%	25.83%

RECOVERY AND RQD %

767	777	122	71	101.67%	59.17%
777	787	119	16	99.17%	13.33%
787	797	116	21	96.67%	17.50%
797	807	122	29	101.67%	24.17%
807	817	123	42	102.50%	35.00%
817	827	118	31	98.33%	25.83%
827	837	117	26	97.50%	21.67%
837	846.5	115	14	100.88%	12.28%
846.5	857	126	16	100.00%	12.70%
857	867	121	37	100.83%	30.83%
867	877	120	24	100.00%	20.00%
877	887	121	28	100.83%	23.33%
887	897	120	22	100.00%	18.33%
897	907	122	31	101.67%	25.83%
907	917	122	36	101.67%	30.00%
917	927	120	23	100.00%	19.17%
927	937	120	5	100.00%	4.17%
937	947	118	17	98.33%	14.17%
947	957	119	4	99.17%	3.33%
957	967	119	16	99.17%	13.33%
967	977	122	19	101.67%	15.83%
977	983	70	4	97.22%	5.56%
983	993	118	20	98.33%	16.67%
993	996	34	0	94.44%	0.00%
996	1006	117	23	97.50%	19.17%
1006	1010	39	0	81.25%	0.00%
1010	1013	33	0	91.67%	0.00%
1013	1017	36	0	75.00%	0.00%
1017	1021.5	37	0	68.52%	0.00%
1021.5	1023.5	29	0	120.83%	0.00%
1023.5	1029	70	0	106.06%	0.00%
1029	1032	26	0	72.22%	0.00%
1032	1039	74	0	88.10%	0.00%
1039	1043.5	38	0	70.37%	0.00%
1043.5	1047	36	0	85.71%	0.00%
1047	1049	24	4	100.00%	16.67%

MAGNETIC SUSCEPTIBILITY

LE NO. E-165

DATE Feb 16/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
12-20						.02
20-30						.03
30-40						.04
40-50						.04
50-60						.03
60-70						.01
70-80						.02
80-90						.03
90-100						.03
100-110						.05
110-120						.02
120-130						.04
130-140						.03
140-150						.03
150-160						.05
160-170						.02
170-180						.04
180-190						.07
190-200						.05
200-210						.03
210-220						.10
220-230						.09
230-240						.04
240-250						.03
250-260						.08
260-270						.10
270-280						.03
280-290						.06
290-300						.05
300-310						.07
310-320						.02
320-330						.01
330-340						.01

MAGNETIC SUSCEPTIBILITY

LE NO. E-165

DATE Feb 16/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
340-350						1.3
350-360						2.2
360-370						.01
370-380						1.3
380-390						3.3
390-400						.10
400-410						.02
410-420						1.2
420-430						3.8
430-440						1.7
440-450						1.9
450-460						3.0
460-470						2.8
470-480						2.3
480-490						2.5
490-500						2.2
500-510						6.8
510-520						4.1
520-530						2.7
530-540						1.2
540-550						2.7
550-560						2.0
560-570						3.9
570-580						2.2
580-590						.13
590-600						.08
600-610						.02
610-620						.01
620-630						.01
630-640						.02
640-650						.02
650-660						.06
660-670						.76
670-680						

MAGNETIC SUSCEPTIBILITY

LE NO. E-165

DATE Feb 16/93

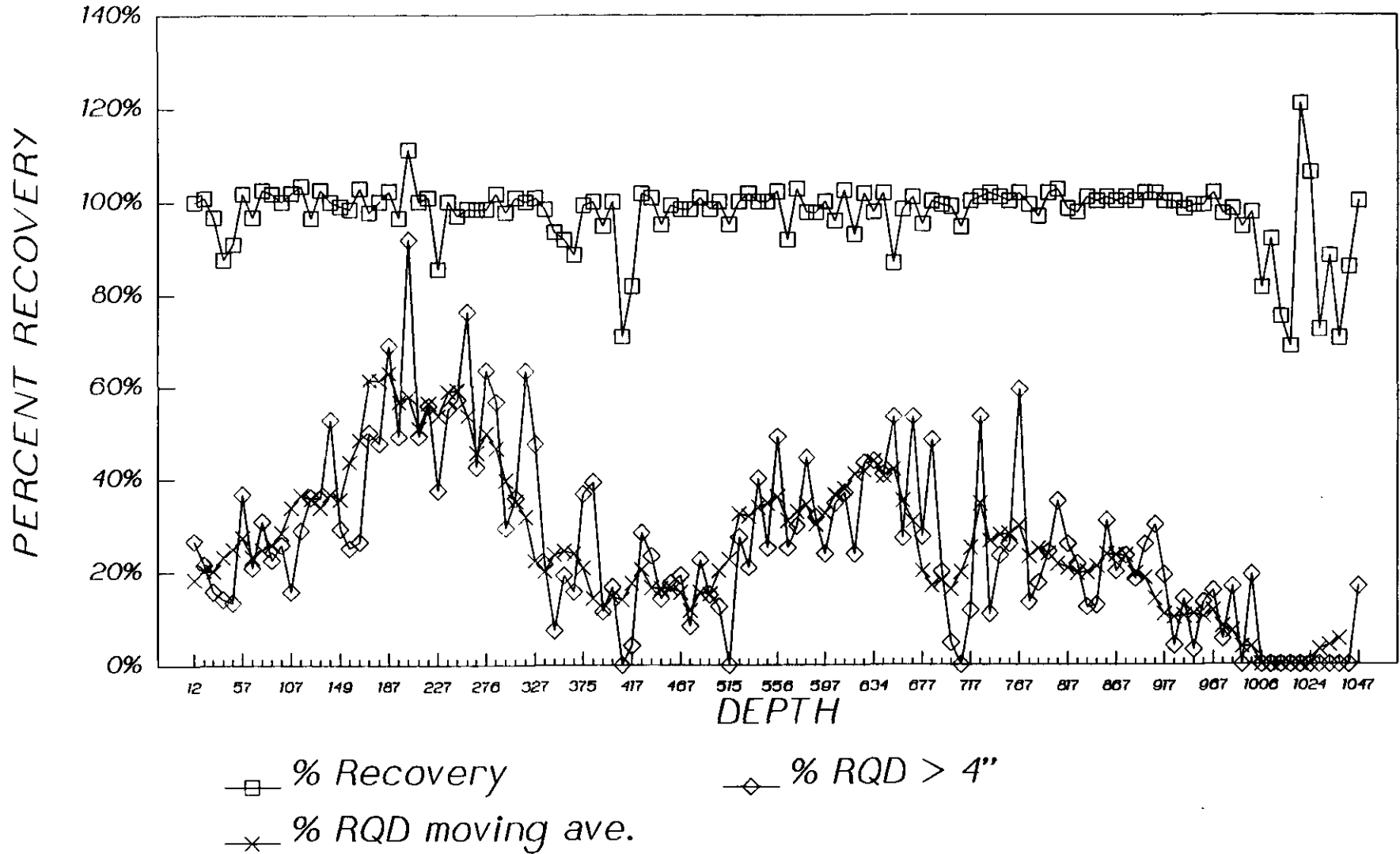
INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
680-690						.02
690-700						.33
700-710						.49
710-720						.54
720-730						1.1
730-740						.28
740-750						.96
750-760						1.8
760-770						.27
770-780						.29
780-790						1.6
790-800						1.0
800-810						.41
810-820						.76
820-830						.69
830-840						1.4
840-850						2.0
850-860						2.0
860-870						2.2
870-880						2.3
880-890						1.0
890-900						.75
900-910						1.3
910-920						2.8
920-930						1.1
930-940						2.0
940-950						3.6
950-960						3.0
960-970						2.2
970-980						3.4
980-990						1.6
990-1000						1.0
1000-1010						1.1

Recovery and RQD %

E_165



PROJECT Island Copper

CONTRACTOR Olympic Drilling & Consulting Ltd.

DATE STARTED Feb. 17, 1993 COMPLETED Feb. 20, 1993

LOGGED BY David Pawliuk

T.D. 887.0 FT

COLLAR ELEVATION 1297.835 grd

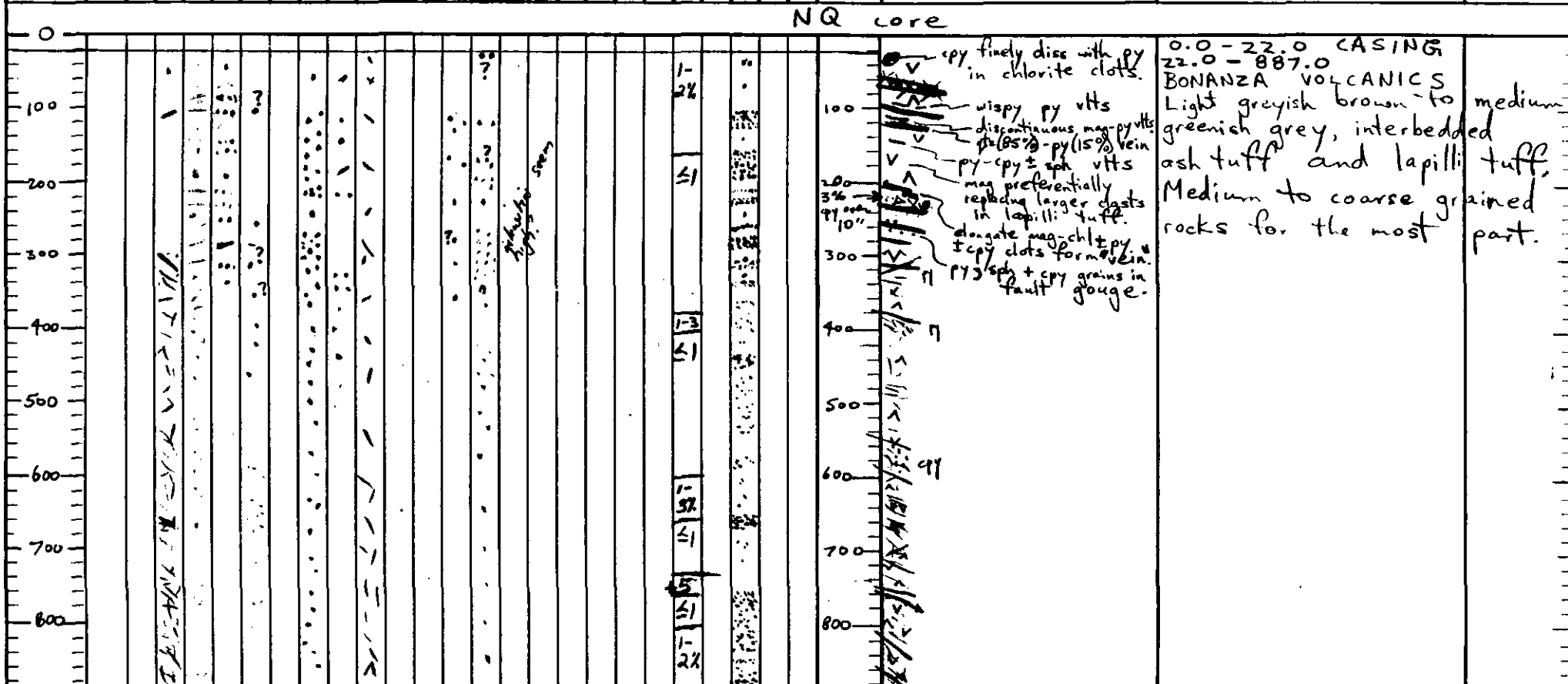
INCLINATION -60°

BEARING Z01 az.

COORDINATES 21257.886E // 8647.905 N

SURVEY REFERENCES _____

Footage	Core Recovery	ALTERATION											STR.			VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1" = 200'</u> BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT
		Chlorite	Epidoite	Carb-Zeo	Garnet	Pyroxene	Amphibole	Albite	Sulf Vens	Frac Inten	Est. Cu. Mo	CuFeS ₂	FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS ₂								



PROJECT Island Copper
 CONTRACTOR Olympic Drilling & Consulting
 DATE STARTED Feb. COMPLETED Feb. 20/93
 LOGGED BY David J. Pawliuk

T.D. 887.0' COLLAR ELEVATION 1297.8
 INCLINATION -65° BEARING 201° az
 COORDINATES 21257.9 E / 8647.9 N
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No. & Interval	LOG SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT							
	Core Recovery	Oxide	Quartz	Sericite	Chlorite	Biotite	K-spar	Chlorite	Epidote	Carb-Zeo	Garnet		Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inten					Est Cu Mo	CuFeS ₂	FeS ₂	CuFeS ₂	FeO	MgS	
0																									NQ core throughout			
10																											0.0 - 22.0 CASING 22.0 - 887.0 BONANZA VOLCANICS Light grey-brown to light greenish grey, medium grained ash tuff with larger clasts av. size 0.1" across. Green rock colour due to fine speckles of aqua sericite. Generally good core recovery throughout hole despite local finely broken, clay-rich intervals at faults. Core mod. bkn from 22.0 → 41.0' depth.	
20																												
30																												
40																											55.2-70.2 FAULT ZONE. Upper slip @ 50° to c.a.; lower @ 72° with finely to moderately broken core and clayey gouge throughout fault zone.	
50																												
60																												

copy finely diss with py in chl. dots.

pale yellow-green epidote spots

HOLE NO. E 166

DRILL LOG

Page 4 of 15

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 887.0'
 INCLINATION -60°
 COLLAR ELEVATION _____
 BEARING 201°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.		VISUAL EST.					Sample No & Interval	LOG SCALE <u>1":10'</u> BASIC GEOLOGY: rock types, metalization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT					
	Core Recovery	Oxide	Quartz	Sericite	Chlorite	Blashe	K-spar	Chlorite	Epodote	Carb. Zoo	Garnet	Pyroxene	Amphibole	Al ₂ O ₃	Sulf. Veins	Frac. Inten.	Est. Cu. No.	CuFeS ₂					FeS ₂	CuFeS ₂	Fe ₂ O ₃	MoS ₂	
180																									mag-py-cpy vlt 0.07" w 45°	220- BONANZA VOLCANICS	
190																									banded qtz-py-chl- mag-ep vlt 0.5" w 55° to c.a.	Medium to light greyish green to pale grey-brown interbanded medium grained ash tuff and lapilli tuff. Ash tuff to 188'	
200																									2 dk green chl rims mag clots ± py blebs.	231.5-236.2 FAULT ZONE	
210																									elongate mag-chl ± py ± cpy clots form vlt 0.07" wide 215° to c.a.		
220																									fault, 1" mod. → f. blk + clayey gouge on fracture 260°		
230																									probable fault; 3.5" off-white to pale greenish sericite + clay along fracture 265° to c.a. discontinuous py-cpy vlt 0.2" wide		
230																									fault; 1.5" mod. → f. blk + clayey gouge on slip 245°		
230																									fault zone with crushed, moderately to finely broken core and clayey sericite gouge.		
230																									fault, 0.35" f. blk on slip 250°		

PROJECT Island Copper

T.D. 887'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -60°

BEARING Z 01°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	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														
	Core Recovery	Oxide	Quartz	Sericite	Chlorite	Epidote	Calc. (prop)	Blotite	K-spar	Chlorite	Epidote	Carb Zeo							Garnet	Pyroxene	Amphibole	Albite	Sulf Veins	Frac Inter	Est Cu Mo	CuFeS	FeS	CuFeS	FeO	Moss		
270																													250-270	<p>mag both f. diss. in matrix + as clots moderately bkn core.</p> <p>fault; 0.1" gouge + f. bkn on slip @ 50°</p>	220 - BONANZA VOLCANICS Medium grey green to pale brown-grey, coarse grained lapilli tuff.	ROCK UNIT
275																													250-275	<p>fault; smear of clay on slip @ 55°</p> <p>fault; 0.5" gouge + f. bkn core @ 42°</p> <p>py + sph vt 0.03" @ 25°</p>		
260																														240-260	<p>fault slip 0.5" f. bkn @ 40°</p> <p>fault; 2-5" sericite gouge + f. bkn core @ 50°</p> <p>fault slip @ 65°</p> <p>py + cpy lense or vt 2.5" x 0.1"</p>	
270																														270-280	<p>py (60%) - sph (30%) - cpy (1%) within f. bkn; sericite-rich @ 50° to c.a.; sulphide fault gouge.</p> <p>fault; 0.7" f. bkn + clay along fracture @ 65°</p> <p>cpy (?) v. finely disseminated.</p>	
280																														280-290	<p>greasy biotite vt 0.03" @ 20° to c.a.</p> <p>fault; 1.5" f. bkn along fracture @ 60°</p> <p>chlorite-rich band 1.2" wide @ 60°</p>	
290																														290-300	<p>chlorite-rich band 0.5" wide @ 65° to c.a.</p> <p>cpy v. fine diss.</p>	

HOLE NO. E 166

DRILL LOG

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJR

T.D. 887'
 INCLINATION -60°
 COORDINATES _____
 COLLAR ELEVATION _____
 BEARING 201°
 SURVEY REFERENCES _____

Footage	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											
	Core Recovery	Oxide	Quartz	Sericite	Clay/Py	Blashe	K-spar	Chlorite	Epidote	Carb-Zeo		Garnet	Pyroxene	Amphibole	Albite	Butt Veins	Frac Inten					Est Cu. Mo	Cu/Fes	Fe/F	Cu/Fes	Fe ₂ O ₃	Mod.					
360																													qtz-py-sph-cpy vlt 0.3" @ 75° along slip		<p>22.0- BONANZA VOLCANICS Light greyish brown to medium greenish grey lapilli tuff. Rock harder, more silica-altered than above.</p> <p>Note: footage marker @ 377' (?) marked 387 by drillers. Markers changed throughout remainder of hole to correct presumed error. Hole depth revised to 887' from previous 897' @ E.O.H.</p>	
370																	.06		1													
380																		.2		2									cpy specks diss. fault, 0.6" mod. bkn @ 55° to c.a. fault; 0.5" f.bkn @ 45° QV 0.25" @ 20° fault; 0.4" f.bkn + gauge @ 20°			
390																													cpy + diss specks fault; 0.7" soft f.bkn fault; 1.2" f.bkn @ 35° py vlt 0.1" @ 20°			
400																													py 0.2 40° qtz-rid band 2" @ 70° QV 0.3" @ 65° py band 0.6" @ 30° fault; 1.5" f.bkn with py cubes to 0.1" along slip @ 40° QV 0.5" @ 65° QV 2.2" @ 70° py band 2.6" @ 65°			
410																		.05		2									fault; 3" mod. f.bkn core + ~10% py between slips @ 55° py vlt ~0.15" @ 20° QV 0.6" @ 60° QV 0.15" @ 60°			
420																													QV 0.8" @ 45° wisp y mag-py-cpy vlt ~0.04" @ 30° to c.a. cpy v. finely disseminated. QV 0.1" @ 50°			
430																		.03		5												

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 887''
 COLLAR ELEVATION _____
 INCLINATION -60°
 BEARING Z01°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION												STR.	VISUAL EST.	Sample No. & Interval	SCALE 1" = 10' BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT													
	Core Recovery	Oxide	Quartz	Sericite	Chl/Pyrop	Biotite	K-spar	Chlorite	Epidoite	Carb-Zeo	Garnet	Pyroxene							Amphibole	AlkX	Sulf Veins	Frac Inter	Est Cu Mo	CuFeS ₂	FeS ₂	Cu ₂ FeS ₄	Fe ₃ O ₄	Mos.			
920																												V	RV 0.7" @ 60° qtz-rich band 0.2" @ 75°	22.0 - BONAPAZA VOLCANIC S Medium greenish grey to pale greenish grey to pale grey-brown lapilli tuff with local medium grained ash tuff interbeds.	
930																													qtz-py-cpy vein ± sph (10.9%) @ 75° py ± cpy vltts to 0.1" wide. py band 0.6" @ 50°		
940																												V	← cpy fine diss specks qtz-rich band 1.8" wide @ 70° epidote mainly replacing some material within the larger clasts. carb vein 2" @ 40° with also @ 40°; both veins contain py + sph		
950																												V	RV 1.3" @ 70° 75° slip mphy vltts, fine qtz vltts too. greenish white to aqua sericite band ~ 1" wide @ 80° cut by fine py vltts		
960																												V	RV 0.25" @ 20° to RV 0.2" @ 15° RV 0.2" @ 60°		
970																												V	RV 0.6" @ 45° w. py, sph, moly, cpy(?) RV 0.9" @ 60° RV 2.8" @ 55° with py, moly? sooty py along fault PY (95%) - Cpy (5%) band 1.7" @ 60° RV 2.3" @ 65° w. cpy + moly specks along margins. RV 2.6" @ 65° w. finely disseminated moly band in vein.		
1000																															

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 887.0' COLLAR ELEVATION _____
 INCLINATION -60° BEARING 201°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	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					
	Core Recovery	Oxide	Quartz	Sericite	Pyrope	Biotite	K-spar	Chlorite	Epidote	Carb. Zoo	Garnet	Pyroxene		Amphibole	Albite	Sulf. Veins	Frac. Inten.	Est. Cu. Mo.	CuFeS ₂					FeS ₂	Cu ₂ FeS ₄	Fe ₂ O ₃	Molyb.	
480																									V	py (20%) - qtz (30%) - cpy (10%) band 1.5" @ 75°		
490																									V	QV 1" @ 80° w. py, cpy mag vlt's to 0.05" wide.		
490																									V	QV 0.7" @ 60°		
500																									V	watery grey, irreg. qtz vlt's to 0.1" wide randomly oriented v. fine diss moly over area 0.2" x 0.03"		
510																									V	QV 4.3" @ 70° w. py cpy, moly speckles.		
510																									V	QV w. mag 0.15" @ 60° wispy mag vlt's with albite(?) selvages. sph 0.3x0.2" along wide.		
520																									V	QV 0.25" @ 35° banded QV 0.25" @ 20° QV 0.4" @ 60° w. cpy + fine speckles		
530																									V	qtz - py carb vein 0.7" @ 55° v. fine cpy specks in banded carb (70%) wide at 80° to		
530																									V	QV 0.2" @ 75° irregular qtz vlt's to abund. sooty py bands over Fault; 10" moderately with sooty py + irreg py masses + blebs.		
540																									V	py (95%) - cpy (5%) vlt 0.1"		
550																									V	QV 0.25" @ 35° banded QV 0.25" @ 20° QV 0.4" @ 60° w. cpy + fine speckles		
550																									V	qtz - py carb vein 0.7" @ 55° v. fine cpy specks in banded carb (70%) wide at 80° to		
550																									V	QV 0.2" @ 75° irregular qtz vlt's to abund. sooty py bands over Fault; 10" moderately with sooty py + irreg py masses + blebs.		
550																									V	py (20%) - cpy (10%) vein 2.6" c.a.; cpy as blebs to 0.25" across		
550																									V	QV 0.3" @ 70° to c.a.		
550																									V	carb vein bxa band 1.2" wide @ 30° cuts 0.1" cpy vlt		

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJR

T.D. 887.0'
 INCLINATION -60°
 COORDINATES _____
 SURVEY REFERENCES _____
 COLLAR ELEVATION _____
 BEARING 201°

Footage	ALTERATION											STR.	VISUAL EST.						Sample No. & Interval	LOG SCALE 1" = 10' BASIC GEOLOGY: rock types, metalization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Chlorite	Blasche	K-spar	Chlorite	Epidote	Carb Zec	Gilfest		Pyroxene	Amphibole	16.1%	Sulf Vena	Frac Inter	Est. Cu. Mo					CuFeS ₂	PbS	CuFeS ₂	Fe ₂ O ₃	MgS	
660																										irreg py & cpy vlt subparallel c.a.	220- BONANZA VOLCANICS Light green-grey to medium brownish grey to pale watery grey; medium grained disk text. Fewer faults, more chlorite and more epidote than within overlying interval.	
670																	.07	2							qtz carb vein bxa 4" @ 40° QV 3" @ 2-50° QV 3" @ 60° w. sph. py - cpy specks QV 4.5" @ 48° w. py. QV 0.9" @ 70° QV 1.3" @ 30° QV 2.5" @ 70° QV 1" @ 45°			
680																	.15	.5							carb vein bxa band 3.5" wide along slip @ 50° cpy finely diss. around margins of irregular cpy masses to 0.3x0.1 fault; 0.3" clayey gouge			
690																	.08	.5							QV 0.5" @ 60° QV 0.6" @ 55° w. py, cpy specks qtz (70%) - mag (25%) QV 0.2" @ 75° QV 0.9" @ 70°; banded.	py (4%) - cpy (1%) vlt 0.2" wide subparallel c.a.		
700																	.2	.5							cpy diss along hairline fracture. qtz-rich band 2" wide @ 60°			
710																	.08	1							QV 0.5" @ 75° w. cpy + py f. diss specks. QV 3.5" @ 70° QV 2.5" @ 60° QV 1.1" @ 75° with py + cpy v. fine diss.			
																	.15	.5							crushed vein qtz within fault 1.5" wide @ 20° QV 1.2" @ 65° w. cpy, mag, cpy QV 1.4" @ 60° QV 1.5" @ 70° QV 2" @ 60° QV 0.4" @ 25° w. cpy + moly v. fine diss specks QV 0.5" @ 45°			

HOLE NO. F 166

DRILL LOG

Page 13 of 15

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 887.0' COLLAR ELEVATION _____
 INCLINATION -60° BEARING 201°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION											STR.	VISUAL EST.					Sample No & Interval	LOG SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT						
	Core Recovery	Oxide	Quartz	Sericite	Py	SiO₂	K-spar	Chlorite	Epidoite	Calc Zeo	Clay	Pyroxene	Amphibole	Albite	Sulf Vains	Frac Inter	Est Cu Mo					Chal.	FeS	Dolom.	FeO.	MgS.	
720																									QV 0.3" \approx 80° 2 mag vfts cpy diss QV 0.4" \approx 55° qtz (75%) - py (5%) on 1/2" along slip \approx 70°	22.0- BONANDA VOLCANICS Medium green-grey to light cream brown to medium grey medium grained ash tuff. More faulted and more clay mineral althn than in overlying interval.	
730																	.12		5						qtz mag vft 0.2" \approx 90° Fault; clayey slip \approx 50° QV 0.3" \approx 45° QV 1" \approx 40° w. py 40°	732.5 - 741.0 FAULT ZONE. \approx say 50° to c.a. Broken, crushed core throughout with sericite + clays lining irregular fracture of cs.	
740																	.06		1						QV 1" \approx 40° w. py QV 0.5" \approx 60° 35° \approx bottom of intensely fractured section.		
750																	.15		1						QV 10" \approx 60° QV 10" \approx 60° QV 0.5" \approx 60° QV w. py 0.8" \approx 40° along fault w. 0.1" gouge. py band 1" wide sub parallel c.a. contains occ. sph + cpy speckles. QV w. pyitic margins 3" wide \approx 30° to c.a.		
760																	.12		4						QV 0.2" \approx 45° w. py, cpy QV 0.3" \approx 35° w. py, cpy QV 10" \approx 60° QV 0.7" \approx 55° retro ep along qtz vft. 2 cpy 0.2" x 4" along margin of py band thin qtz bra band \approx 2" wide along slip \approx say 15° QV 1" \approx 45° w. QV 0.6" \approx 20° w. QV 0.25" \approx 55° w. mag banded QV 0.7" \approx 50° QV w. mag, py 0.9" 2 ~ 30° banded QV 2.3" wide \approx 30° QV 0.6" \approx 35°		
770																	.25		5								
780																	.08		1								

PROJECT Island Copper
 CONTRACTOR _____
 DATE STARTED _____ COMPLETED _____
 LOGGED BY DJP

T.D. 887.0' COLLAR ELEVATION _____
 INCLINATION -60° BEARING 201°
 COORDINATES _____
 SURVEY REFERENCES _____

Footage	ALTERATION										STR.	VISUAL EST.						Sample No. & Interval	LOG, SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types, metalization, structures, alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT			
	Core Recovery	Oxide	Quartz	Sericite	Chlorite	Episite	Carb-Zeo	Garnet	Pyroxene	Amphibole		Alk	Sulf Veins	Frac Inten	Est Cu Mo	CuFeS ₂	FeS					CuFeS ₂	PbO	MnO
760																				88	5	<p>QV 1" 260° w. py, cpy, carb veins along healed slip @ 25° band carb on l. l. @ 35°</p> <p>QV 0.7" 245° QV 0.8" 230° QV 0.4" 240° QV 1.1" 245° QV 0.6" 270°</p> <p>2 mag vfts.</p>	<p>22.0 - 887.0' BONANZA VOLCANICS Medium brown-grey to medium greenish grey except watery grey - pale brown with abund. orange zeolite vfts from ~ 821.5' → 832.0' depth where moderate clay mineral att'n has occurred. Medium grained ash tuff to 814'; fine to medium grained lapilli tuff from 814 to 887 (EON) with faint to locally distinct magnetite clots where mag has preferentially att'd the larger clasts within the rock unit.</p>	BONANZA VOLCANICS
770																			88	5	<p>QV 0.25" 220° w. mag. QV 0.6" 280° w. py</p> <p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
780																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
790																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
800																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
810																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
820																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
830																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
840																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
850																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
860																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
870																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
880																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
890																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
900																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
910																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
920																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
930																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
940																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
950																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
960																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
970																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
980																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			
990																			88	5	<p>qtz-mag un0.9" 230° QV mag 0.25" 225°</p> <p>moderately healed fault w. abund carb-zeol - qtz-sooty py across 35° 230° QV 0.2" 270° 35° 230° QV 0.35" 275° QV 0.35" 260°</p>			

HOLE NO. E 166

DRILL LOG

Page 15 of 15

PROJECT Island Copper

T.D. 887.0'

COLLAR ELEVATION _____

CONTRACTOR _____

INCLINATION -60°

BEARING 201°

DATE STARTED _____ COMPLETED _____

COORDINATES _____

LOGGED BY DJP

SURVEY REFERENCES _____

Footage	Core Recovery	Oxide	ALTERATION										STR.	VISUAL EST.					Sample No. & Interval	SCALE <u>1" = 10'</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS, NOTES & SKETCHES	ROCK UNIT																		
			Quartz	Sericite	Pyrite	Blende	K-spar	Chlorite	Epidote	Carb. Zoo	Garnet	Pyroxene		Amphibole	% ₁₀	Sulf. Veins	Frac. Inten	Est. Cu. Mo					CuFeS ₂	FeS	CuFeS ₂	PbO	MnO ₂													
870																									2.5													QV 0.3" @ 30° - cpy v. finely diss.	22.0-887.0' BONANZA VOLCANICS. Medium greenish grey to light greyish yellow-brown intermixed ash and lapilli tuffs.	
850																									1.5	1										QV 0.5" @ 35° QV 0.8" @ 30° w. mag. pt. cpy, mdy QV 0.15" @ 60° w. cpy speck, + mag selvages QV 0.3" @ 40° qtz-mag vtt 0.5" @ 45° QV 0.35" @ 50° QV 0.3" @ 40°				
860																									1.2	2										QV 0.2" @ 45° QV 0.7" @ ~ 20° to c.a.				
870																									0.7	2										QV 0.5" @ 60° along fault slip. fault; 0.7" crushed, f. bkn core with ~30% sandy py + cpy specks + occ. sph QV 0.6" @ 65° fault; 1" crushed, f. bkn with ~50% py, 10% sph, 2% cpy QV 2.3" @ 70° w. py, cpy; long fault slips. fault; 0.6" crushed with qtz along slip @ 35°.				
880																									0.7	5											QV 0.2" @ 15° with mag selvages. QV 0.2" @ 65° QV 0.3" @ 55° QV 3" @ 25° w. py, cpy + light grey sulphide(?) QV 1.1" @ 35° w. py, cpy, sph specks. QV 0.8" @ 15° w. mag selvages. fault; 1.5" crushed, f. bkn core along slip @ 55° to c.a.			
																																				QV 0.8" @ 75° with v. fine py, cpy diss. QV 0.25" @ 70°	887.0' END OF HOLE.			

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
E_166	21257.9	8647.9	1297.8

DOWN-HOLE SURVEY INFORMATION:

FROM	TO	AZIMUTH	DIP
0.0	220.0	201.0	-60.0
220.0	560.0	201.0	-56.0
560.0	820.0	201.0	-56.0
820.0	897.0	201.0	-55.0

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
30.0	40.0	0.02	<0.001	5.7	0.01	0.10	0.001	0.005	17586
70.0	80.0	0.01	<0.001	1.0	<0.01	0.10	0.001	0.013	17587
110.0	120.0	0.02	<0.001	7.2	<0.01	0.10	0.001	0.008	17588
150.0	160.0	0.03	<0.001	7.1	<0.01	0.20	0.001	0.005	17589
190.0	200.0	0.04	0.001	6.6	<0.01	0.10	0.001	0.004	17590
230.0	240.0	0.18	0.002	5.0	0.01	0.90	0.001	0.031	17591
250.0	260.0	0.03	0.002	2.9	0.01	0.50	0.005	0.050	17592
270.0	280.0	0.04	0.002	5.7	0.02	0.20	0.001	0.013	17593
290.0	300.0	0.02	0.001	7.6	<0.01	0.10	0.001	0.005	17594
310.0	320.0	0.03	0.001	4.8	<0.01	0.50	0.001	0.014	17595
330.0	340.0	0.02	<0.001	3.2	<0.01	0.30	0.001	0.034	17596
350.0	360.0	0.12	0.001	5.0	<0.01	1.00	0.001	0.024	17597
370.0	380.0	0.07	0.001	4.2	<0.01	0.50	0.001	0.015	17598
390.0	400.0	0.10	0.001	9.9	0.03	0.60	0.001	0.016	17599
410.0	420.0	0.07	0.001	5.5	<0.01	0.30	0.001	0.008	17600
430.0	440.0	0.11	0.001	8.6	0.02	0.60	0.002	0.026	17601
450.0	460.0	0.11	0.001	6.1	0.02	0.70	0.001	0.014	17602
470.0	480.0	0.10	0.001	3.0	0.01	0.80	0.001	0.010	17603
490.0	500.0	0.07	0.001	5.9	0.03	0.40	0.005	0.012	17604
510.0	520.0	0.07	0.001	6.8	0.06	0.70	0.008	0.045	17605
520.0	530.0	0.08	0.002	7.7	0.02	0.60	0.010	0.050	17798
530.0	540.0	0.13	0.001	6.6	0.04	0.80	0.004	0.130	17606
540.0	550.0	0.17	0.009	6.7	0.02	0.70	0.007	0.019	17799
550.0	560.0	0.27	0.004	4.7	0.06	0.60	0.001	0.011	17607
560.0	570.0	0.27	0.006	6.6	0.09	1.50	0.002	0.022	17608
570.0	580.0	0.26	0.008	6.2	0.05	1.50	0.003	0.014	17609
580.0	590.0	0.33	0.003	6.1	0.07	5.00	0.002	0.080	17610
590.0	600.0	0.27	0.003	2.4	0.06	1.30	0.009	0.023	17611
600.0	610.0	0.22	0.005	4.7	0.11	2.10	0.005	0.065	17612
610.0	620.0	0.23	0.005	3.5	0.07	2.00	0.002	0.080	17613
620.0	630.0	0.17	0.003	7.8	0.08	0.60	0.006	0.017	17800
630.0	640.0	0.32	0.004	7.0	0.09	7.00	0.002	0.032	17614
640.0	650.0	0.21	0.004	10.7	0.08	0.80	0.005	0.058	17801
650.0	660.0	0.17	0.001	5.1	0.11	1.10	0.004	0.020	17615
660.0	670.0	0.05	0.003	5.5	0.02	0.40	0.004	0.013	17802

DATE: 09/06/93

PAGE: 1

TIME: 09:27:26

BHP MINERALS CANADA - Island Copper Mine

FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
670.0	680.0	0.24	0.001	4.3	0.10	0.80	0.004	0.025	17616
680.0	690.0	0.15	0.004	4.0	0.06	0.10	0.008	0.016	17803
690.0	700.0	0.21	0.001	4.3	0.13	0.80	0.009	0.008	17617
700.0	710.0	0.11	0.003	7.0	0.06	1.10	0.016	0.040	17804
710.0	720.0	0.28	0.002	4.9	0.25	0.80	0.004	0.008	17618
720.0	730.0	0.15	0.002	4.9	0.05	0.30	0.003	0.012	17805
730.0	740.0	0.19	<0.001	5.4	0.04	1.00	0.003	0.016	17619
740.0	750.0	0.15	0.003	2.4	0.04	1.10	0.006	0.025	17806
750.0	760.0	0.13	0.001	10.2	0.06	1.00	0.013	0.006	17620
770.0	780.0	0.16	0.001	7.1	0.07	0.80	0.017	0.013	17621
790.0	800.0	0.15	0.001	7.0	0.05	0.80	0.002	0.008	17622
810.0	820.0	0.11	0.001	5.2	0.03	0.40	0.004	0.005	17623
830.0	840.0	0.11	0.001	6.9	0.03	0.90	0.005	0.026	17624
850.0	860.0	0.07	<0.001	7.2	0.03	1.10	0.006	0.270	17625
870.0	880.0	0.09	<0.001	5.7	0.03	0.80	0.002	0.025	17626

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: 1/c

DATE SENT: Feb 25/93

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-166	30	40	02	1000	57	01	1	001	005	17586	1 26
	70	80	01	0	70	01	1	1	013	587	2 27
	110	120	02	0	72	01	1	1	008	588	3 40
	150	160	03	0	71	01	2	1	005	589	4 41
	190	200	04	1	66	01	1	1	004	590	5 42
	230	240	18	2	50	01	9	1	031	591	6 43
	250	260	03	2	29	01	5	005	050	592	7 44
	270	280	04	2	57	02	2	1	013	593	8 45
	290	300	02	1	76	01	1	1	005	594	9 46
	310	320	03	1	48	01	15	1	014	595	10 47
	330	340	02	0	32	01	13	1	034	596	11 48
	350	360	12	1	50	01	10	1	024	597	12 49
	370	380	07	1	42	01	5	1	015	598	13 50
	390	400	10	1	99	03	6	1	016	599	14 51
	410	420	07	1	55	01	13	1	008	600	15 52
	430	440	11	1	86	02	6	2	026	601	16 53
	450	460	11	1	61	02	7	1	014	602	17 54
	470	480	10	1	30	01	8	1	010	603	18 55

AND: Feb 25/93 1

**ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM**

LAB SENT TO: IC

DATE SENT: Feb 25/93

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-166	490	500	07	001	59	03	4	005	012	17604	19 17
	510	520	07	1	68	06	7	008	045	605	20 18
	530	540	13	1	66	04	8	004	1130	606	21 19
	550	560	27	4	47	06	16	001	1011	607	22 20
	560	570	27	6	66	09	15	002	1022	608	23 21
	570	580	26	008	62	05	15	003	014	609	24 22
	580	590	33	003	61	07	50	002	080	610	25 23
	590	600	27	3	24	06	13	009	023	611	26 24
	600	610	22	5	47	11	21	005	1065	612	27 25
	610	620	23	5	35	07	20	002	1080	613	28 26
	630	640	32	4	70	09	70	002	1032	614	29 27
	650	660	17	1	51	11	11	004	020	615	30 28
	670	680	24	1	43	10	08	004	025	616	31 29
	690	700	21	1	43	13	08	009	008	617	32 30
	710	720	28	2	49	25	08	004	008	618	33 31
	730	740	19	0	54	04	10	003	1016	619	34 32
	750	760	13	1	102	06	10	013	1006	620	35 33
	770	780	16	1	71	07	08	017	013	621	36 34

ANDI FEB 25/93

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: ILC

DATE SENT: Feb 25/93

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-166	790	800	15	10.0	70	105	08	002	008	17622	37	35
	810	820	11	1	52	103	04	004	005	623	38	36
	830	840	11	1	69	103	09	005	026	624	39	37
	850	860	07	0	72	103	11	006	1270	625	40	38
	870	880	09	0	57	103	08	002	025	626	41	39

Andi Feb 25 N/S

ISLAND COPPER MINE
ASSAY REQUISITION AND REPORT FORM

LAB SENT TO: ICM

DATE SENT: APRIL 4/93

SENT BY/DEPT: SHU REDDY/ENGINEERING 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-166	520	530	08	100	277	02	16	0.10	0.50	17798	1
	540	550	17	9	67	02	7	7	19	17799	2
	620	630	17	3	78	08	16	6	19	17800	3
	640	650	21	4	107	08	18	5	58	17801	4
	660	670	05	5	55	02	14	4	13	17802	5
	680	690	15	4	40	06	11	8	16	17803	6
	700	710	11	3	70	06	11	16	40	17804	7
	720	730	15	2	49	05	13	3	12	17805	8
V	740	750	15	3	64	04	11	6	25	17806	9

JS

RECOVERY AND RQD %

HOLE: E_166

LOGGED BY: S. OAKLEY

DATE: FEB. 18, 1993

FOOTAGE		RECOVERY		PERCENTAGE		
FROM	TO	INCHES	PCS. > 4"	% RECOVERY	% RQD > 4"	
22	27	56	6	93.33%	10.00%	
27	35	95	9	98.96%	9.38%	
35	38	32	0	88.89%	0.00%	
38	41	34	6	94.44%	16.67%	
41	46	50	4	83.33%	6.67%	
46	56	124	36	103.33%	30.00%	
56	66.5	107	0	84.92%	0.00%	
66.5	77	122	5	96.83%	3.97%	
77	87	121	5	100.83%	4.17%	
87	96.5	95	10	83.33%	8.77%	
96.5	106.5	120	48	100.00%	40.00%	
106.5	117	123	65	97.62%	51.59%	
117	127	121	27	100.83%	22.50%	
127	137	121	76	100.83%	63.33%	
137	147	122	51	101.67%	42.50%	
147	157	121	38	100.83%	31.67%	
157	167	122	64	101.67%	53.33%	
167	177	120	28	100.00%	23.33%	
177	187	120	37	100.00%	30.83%	
187	197	121	35	100.83%	29.17%	
197	207	122	55	101.67%	45.83%	
207	217	120	38	100.00%	31.67%	
217	227	120	29	100.00%	24.17%	
227	237	110	0	91.67%	0.00%	
237	247	116	15	96.67%	12.50%	
247	257	119	18	99.17%	15.00%	
257	267	116	13	96.67%	10.83%	
267	277	110	5	91.67%	4.17%	
277	287	114	24	95.00%	20.00%	
287	297	122	23	101.67%	19.17%	
297	307	115	33	95.83%	27.50%	
307	317	119	20	99.17%	16.67%	
317	327	118	44	98.33%	36.67%	
327	337	119	43	99.17%	35.83%	
337	347	117	30	97.50%	25.00%	
347	357	120	57	100.00%	47.50%	
357	367	120	39	100.00%	32.50%	
367	377	121	55	100.83%	45.83%	
377	387	121	52	100.83%	43.33%	
387	397	119	79	99.17%	65.83%	

RECOVERY AND RQD %

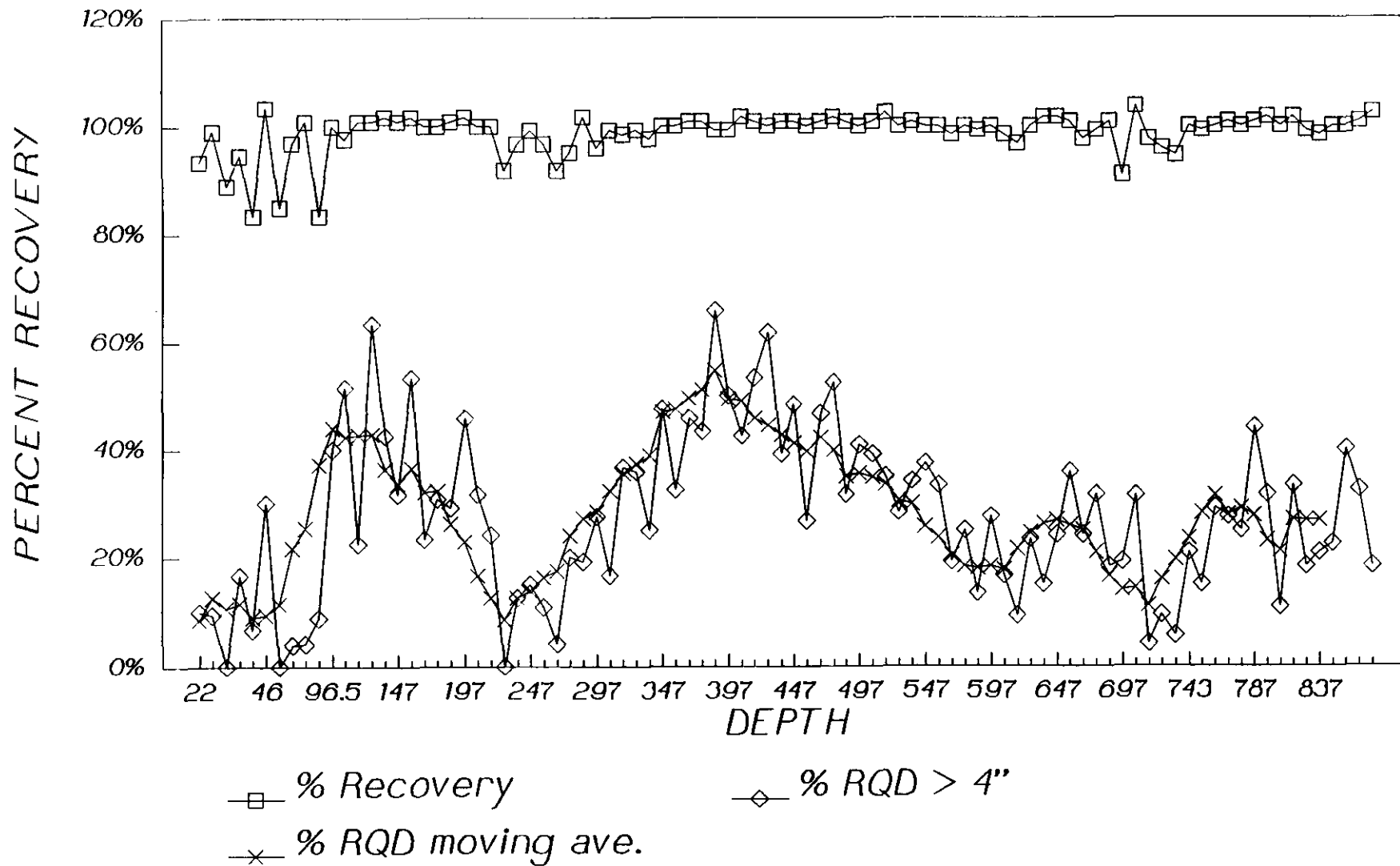
397	407	119	60	99.17%	50.00%
407	417	122	51	101.67%	42.50%
417	427	121	64	100.83%	53.33%
427	437	120	74	100.00%	61.67%
437	447	121	47	100.83%	39.17%
447	457	121	58	100.83%	48.33%
457	467	120	32	100.00%	26.67%
467	477	121	56	100.83%	46.67%
477	487	122	63	101.67%	52.50%
487	497	121	38	100.83%	31.67%
497	507	120	49	100.00%	40.83%
507	517	121	47	100.83%	39.17%
517	527	123	42	102.50%	35.00%
527	537	120	34	100.00%	28.33%
537	547	121	41	100.83%	34.17%
547	557	120	45	100.00%	37.50%
557	567	120	40	100.00%	33.33%
567	577	118	23	98.33%	19.17%
577	587	120	30	100.00%	25.00%
587	597	119	16	99.17%	13.33%
597	607	120	33	100.00%	27.50%
607	617	118	20	98.33%	16.67%
617	627	116	11	96.67%	9.17%
627	637	120	28	100.00%	23.33%
637	647	122	18	101.67%	15.00%
647	657	122	29	101.67%	24.17%
657	667	121	43	100.83%	35.83%
667	677	117	29	97.50%	24.17%
677	687	119	38	99.17%	31.67%
687	697	121	22	100.83%	18.33%
697	707	109	23	90.83%	19.17%
707	716	112	34	103.70%	31.48%
716	726	117	5	97.50%	4.17%
726	734	92	9	95.83%	9.38%
734	743	102	6	94.44%	5.56%
743	747	48	10	100.00%	20.83%
747	757	119	18	99.17%	15.00%
757	767	120	35	100.00%	29.17%
767	777	121	33	100.83%	27.50%
777	787	120	30	100.00%	25.00%
787	797	121	53	100.83%	44.17%
797	807	122	38	101.67%	31.67%
807	817	120	13	100.00%	10.83%
817	827	122	40	101.67%	33.33%
827	837	119	22	99.17%	18.33%

RECOVERY AND RQD %

837	847	118	25	98.33%	20.83%
847	857	120	27	100.00%	22.50%
857	867	120	48	100.00%	40.00%
867	877	121	39	100.83%	32.50%
877	887	123	22	102.50%	18.33%

Recovery and RQD%

E_166



MAGNETIC SUSCEPTIBILITY

LE NO. E-166

DATE Feb 24/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
22-30						.24
30-40						.12
40-50						.04
50-60						.32
60-70						.02
70-80						.02
80-90						.06
90-100						.02
100-110						.11
110-120						2.4
120-130						2.0
130-140						.07
140-150						.01
150-160						1.3
160-170						3.1
170-180						3.2
180-190						2.4
190-200						1.2
200-210						.63
210-220						3.1
220-230						.85
230-240						.04
240-250						.89
250-260						.40
260-270						1.2
270-280						6.3
280-290						3.0
290-300						3.6
300-310						6.4
310-320						1.5
320-330						.06
330-340						.04
340-350						.31

