

84-1318-13346

REPORT ON DIAMOND DRILLING SUBMITTED ^{10/85}
FOR ASSESSMENT WORK ON
SUNSET GROUP OF MINERAL CLAIMS
Lat. 50° 37' N. Long. 127° 31' W.
NANAIMO, M.D.

UTAH MINES LTD.
PORT HARDY, B.C.

J.A. Fleming,
G.L. Holland

October, 1984.

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

13,346

REPORT ON DIAMOND DRILLING SUBMITTED FOR
ASSESSMENT WORK ON THE SUNSET GROUP OF
MINERAL CLAIMS

Hole Locations	Latitude	50° 37'N
	Longitude	127° 31'W
Mining Division	-	Nanaimo
N.T.S. Location	-	Map 92 ^L /12E 1:50000
Detailed Locations	-	About 4 km north of Rupert Inlet and 800 meters south of the Coal Harbour Road - Mine Road Junction.
Owners	-	Utah Mines Ltd. Gordon Milbourne
Operator	-	Utah Mines Ltd.
Authors	-	J.A. Fleming and G.L. Holland
Date Submitted	-	October 19, 1984.

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 <u>MAPS:</u>	
(1) Index Map, Sheet 92 ^L / 12E and 11W	
(2) Claim Map, Showing Drill Hole Locations	(Back Pocket)
 <u>APPENDICES:</u>	
Copy of Drill Hole Logs	(Back Pocket)

OBJECTIVE:

The holes E-60 and E-61 were drilled on mineral claims Cove 18 (18121) and Bay 58 (17762) respectively. The holes are 2.7 km northwest of the Island Copper pit. They were drilled to test for possible copper and molybdenum mineralization associated with a magnetic anomaly near the Island Copper deposit.

WORK PERFORMED:

1. Two holes were diamond drilled to NQ size between July 19th and August 6th, 1984. Total depth, 336.8 meters.
2. Located on the Cove 18 and Bay 58 mineral claims they are situated about 4 km meters north of Rupert Inlet and 0.8 km south of the Coal Harbour - Mine Road junction.
3. Particulars of the holes are:

<u>Hole</u>	<u>Inclination and Azimuth</u>	<u>Length</u>	<u>Ground Elev.</u>	<u>Collar Co-ordinates</u>
E-60	-60°/340°	185.3	117.9	13627.1N and 17058.9E
E-61	-90°/	152.4	70.0	14374.9N and 16330.4E

The survey co-ordinate positions of the holes are based on that in use at the mine. Ground elevation is meters above sea level.

4. Drill core logs are attached to the report. All core logging was done by G.L. Holland, B.Sc., University of British Columbia, who is on Utah Exploration staff. All core is stored at the mine site.
5. An itemized Cost Statement is included in the report.
6. An Index Map (1:50000 NTS) and a detailed Claim Map, form part of the report and show the drill hole locations and the position of the Sunset Group of claims.

STATEMENT OF COSTS
FOR THE
SUNSET GROUP OF CLAIMS

CONTRACTORS' CHARGESA. Diamond Drilling Contractor:Overburden -

163 feet @ \$16.75	\$ 2,730.25		
145 feet @ \$17.50	<u>2,537.50</u>	=	\$ 5,267.75

Rock -

692 feet @ \$16.75	11,591.00		
105 feet @ \$17.50	<u>1,837.50</u>	=	13,428.50

Field Costs:

Moving, setting up, water lines, set casing, etc.			
16.75 hours @ \$60/hour	1,005.00		
16.75 hours @ \$50/hour	<u>837.50</u>	=	1,842.50

Extra Charges -

Mobilization Cost @ 20% of total charge for contract		=	480.00
Casings and shoes		=	906.13
Core boxes - 45 @ \$3.68/box		=	165.60
Supplies, freight		=	1,262.63
Water truck drivers		=	607.79

B. Other Contractors:

1) D-6 Cat and Operator -			
Move and prepare site - 21½ hours @ \$60.00		=	1,290.00
Standby Rate - 5 days @ \$120.00/day		=	600.00
2) Lowbed and highboy trailers, tractor and operator -			
Move D-6 Cat and drill from sites -			
11½ hours @ \$65.00/hour		=	747.50
3) Water truck and operator -			
Supply water to hole #-60		=	572.52

UTAH COSTS:

1.	Core House Labour	=	\$ 950.00
2.	Geological Supervision and core logging	=	2,400.00
3.	Company Overhead @ 25% of Labour + Supervision	=	850.00
4.	Core Storage 1105 feet @ \$0.50	=	550.00
5.	Preparation of Report	=	400.00
6.	Survey of Holes	=	200.00
7.	Sample of Preparation and Assays 45 @ \$10.00	=	<u>450.00</u>
		Total:	= <u>\$32,970.92</u>

Total Footage Drilled - 1105 feet (336.8 m)

Cost Per Foot Drilled \$29.84 (\$97.89/m)

RESULTS

Hole E-60

The hole intersected moderate to dark, patchy green-grey, brownish and light grey, moderately chlorite, biotite, magnetite and sericite altered, moderately to strongly fractured andesitic tuff. Clasts are up to 4mm in diameter and generally partially obscured by alterations. Main fracture fillings are pyrite and pink stained calcite and zeolite with lesser quartz veins. Pyrite veinlets average 1mm to 2mm thick with thin alteration envelopes. The pyrite content ranges from 1 to 5 percent with the higher concentrations in the upper half of the hole.

Moderate to strong brown biotite alteration occurs as envelopes on fractures from about 152m (500') to the end of the hole. Minor chalcopyrite and molybdenite occur associated with quartz-pyrite veins in this section. Quartz, chlorite and magnetite alterations are also stronger.

A fault zone was encountered from 136m to 153m (445' - 500') with numerous gouge zones and highly fractured zones well healed with quartz, pyrite and calcite. Strong chlorite with lesser sericite and biotite alterations accompany the fault. Sections of the fault contain up to 10 percent pyrite with the average content being 1 to 2 percent pyrite.

Hole E-61

Mixed, moderately chlorite, sericite, biotite altered, highly fractured andesite and porphyritic intrusive occur from 32m to 42m (105' - 138'). Textures are largely obscured by alterations and fracturing. The main fracture fillings are quartz, zeolite and pyrite. The pyrite content varies from 2 to 5 percent. Minor chalcopyrite and molybdenite occur with pyrite and quartz veins, respectively. Chlorite-sericite altered intrusive occurs from 42m to 47m (138' - 154') with strong quartz veining and associated chalcopyrite and molybdenite mineralization. From 47m to 142.6m (154' - 468') the rock is pale green to dark brown, biotite, chlorite and silica altered, moderately to locally strongly fractured, quartz, calcite zeolite and pyrite healed, andesite. The andesite is cut by scattered, narrow (up to 1½m thick) porphyry dykes. The most chalcopyrite occurs associated with the stronger secondary biotite alteration to a depth of 73m (240'). Below this depth the copper grades are generally less than 0.15 percent copper.

A well healed fault breccia zone at 60° to the core axis occurs from 142.6m to 149.4m (468' - 490') breccia with quartz fragments in a sulphide rich, gougry andesitic matrix. Below the fault the andesite is weakly altered compared to that above the fault.

CONCLUSIONS

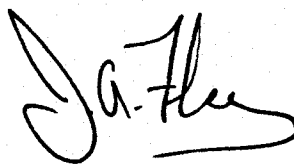
There is sufficient magnetite in the core to explain the ground magnetic anomaly in the area. The magnetite alteration is associated with the potassic and phyllic hydrothermal alterations of the andesite accompanying porphyry intrusions in the area.

The holes however did not intersect economic copper and molybdenum grades.

STATEMENT OF QUALIFICATIONS

I submit that I am qualified to prepare and present this report for assessment credit. My qualifications are as follows:

- 1) I have a B.Sc., (Majors Geology) 1971 from McGill University.
- 2) I have been employed as a geologist continuously since June, 1968, and am presently Chief Geologist, Island Copper Mine, Utah Mines Ltd.
- 3) I have been a Fellow of the Geological Association of Canada since 1974.



J.A. Fleming, B.Sc.,
Chief Geologist.

Island Copper Mine,
Utah Mines Ltd.

FREE FARM LICENCE 6

OUTLINE OF AREA COVERED BY CLAIM MAP

FREE FARM LICENCE 39, BK 4

GOAL HARBOUR RD.

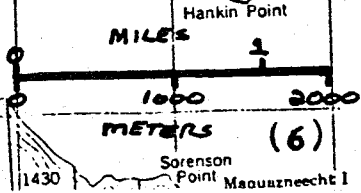
PORT HARDY DISTRICT MUNICIPALITY 15

PORT HARDY DISTRICT MUNICIPALITY

INDEX MAP

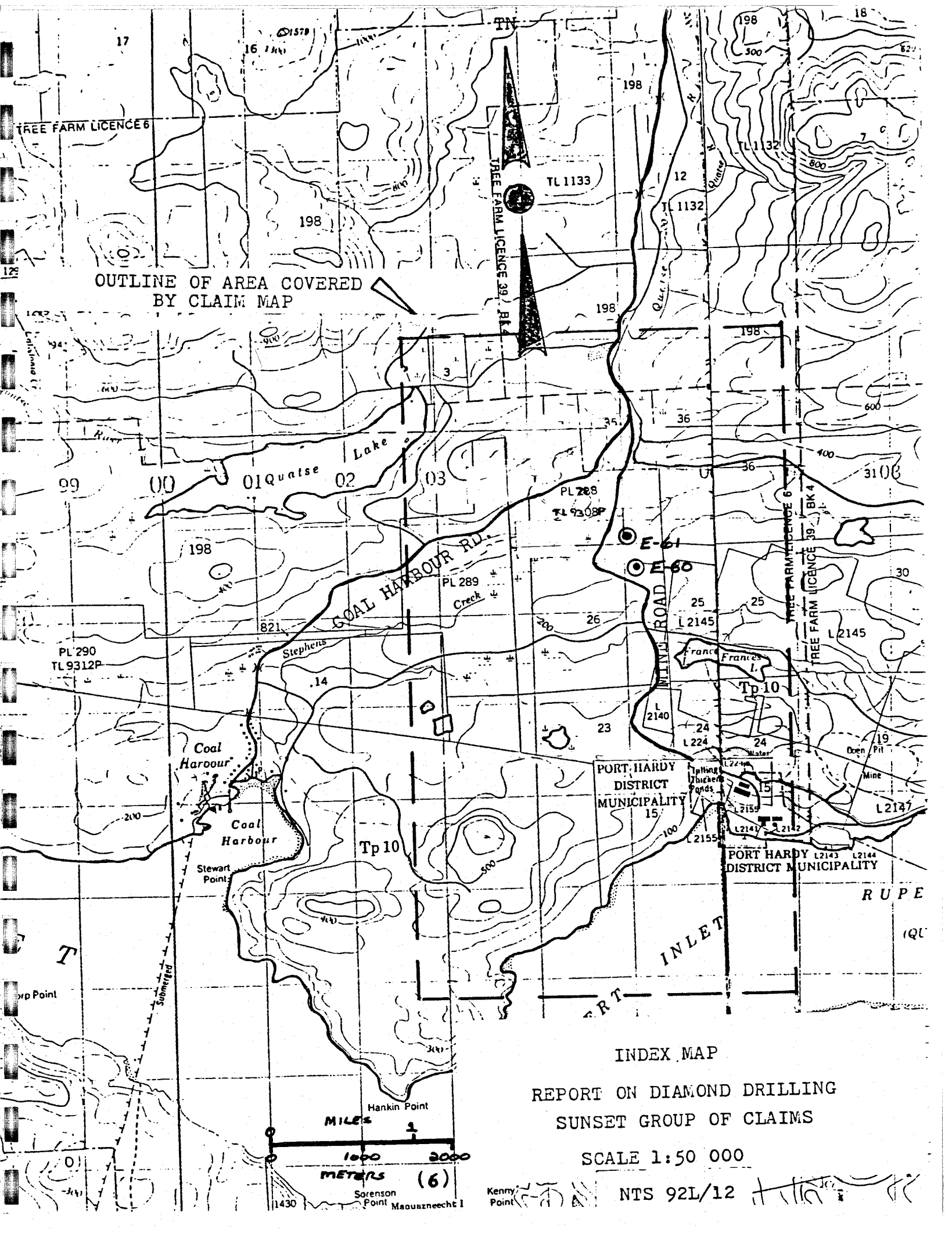
REPORT ON DIAMOND DRILLING
SUNSET GROUP OF CLAIMS

SCALE 1:50 000



Kenny Point

NTS 92L/12



SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE TRIG INTERVAL No	% REC'Y SAMP. INT.	ESTI-MATED % Cu	
	silica	sericite	chlorite													
240							242 End of Tricconing									
240-250							<p>242.0 - 429.0 Andesite Tuff</p> <ul style="list-style-type: none"> - moderately altered w pervasive chlorite & sericite and fracture envelopes of silica, up to 6mm in width. - clasts are up to 4mm in size and most often fuzzy but present. - most of the fractures are healed w py or pink stained cal-zeolite vnits. Surface fracturing is strong to a depth of 311 feet. - sulphides (pyrite) are 2-3% disseminated and 1% fracture controlled. Fracture pyrite are 1-2mm in width, and contain the silica rich envelopes. Minor cpy on the frts w py. - Rock is non to moderately magnetic w the mag. contained along H/L frts, or as replacements w chl. in what was probably original mafic clasts. - Vnng is mainly pyrite and cal-zeolite with minor qtz vnits. 					050	242	40.10		
250-260							<p>3cm qtz vnit</p> <p>2cm cal-zeol unit</p> <p>1cm qtz unit.</p>									
260-270							<p>1cm qtz vnit</p> <p>1cm qtz vnit</p>									
270-280							<p>qtz-cal-zeol healed shear</p> <p>275-276 - strong qtz-cal-zeolite healed shear zone.</p>									
280-290							<p>2cm gouge zone</p> <p>shear @ 45° to C.A. w 6cm qtz unit below</p> <p>2cm qtz unit w MoS₂</p> <p>4cm qtz unit w MoS₂</p> <p>1cm py-qtz unit</p>									
290-300							<p>2cm qtz-carb-zeol unit</p>									

* Pink stain present around most frts.

3-4%

NQ wireline

HOLE NO. **F-60**

PROJECT: **I.C.**

PAGE NO: **3** OF **8**

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE TR'S INTERVAL No	% REC'Y. SAMP INT.	ESTI-MATED % Cu	
	silica	sericite	chlorite	sec. bio												
300							<u>Andesite Tuff cont.</u>									
310	moderate	weak			strong		<p>30cm qtz unit w MoS₂ * mod silicious zone continues to 317 feet. Minor MoS₂ in the qtz vn'ts</p> <p>1.6cm qtz-carb vn't @ 305' - py vn'ts get larger. 1-10mm in thickness</p> <p>1cm qtz unit 1-2% frt pyrite below 305'</p> <p>2cm qtz vn't w MoS₂ 2-3% diss py</p>					056	310	20.10		
320							<p>py vn't silicified * Silicious + sericite envelopes present as above 281</p> <p>@ 318 feet - 0.8cm py vn't w 1cm silica envelopes.</p>						057	320	20.10	
330	weak (envelopes)	weak	moderate		moderate to strong		<p>4' fault brxx - healed.</p> <p>2cm shear healed w qtz-cal vning</p> <p>2.5cm qtz vn't * Qtz-cal vn'ts contain zeolites</p> <p>5cm shear @ 55° to CA - healed @ qtz-carb</p> <p>Pyrite - (sp) - (MoS₂)</p> <p>Vein Paragenesis Y - Qtz-cal-zeolite } good cross-cutting - Qtz vn w minor MoS₂ } evidence present Oldest - Pyrite</p>	3-5%					058	330	20.10	
340																
350	weak	weak					<p>343-358 - strong qtz sp w sec bio alt'n present. strong H/L mag vning, is associated</p> <p>5tr qtz s/w</p> <p>5cm qtz vn't</p>							059	340	20.10
360							<p>3cm qtz vn't w py.</p> <p>str qtz s/w.</p>	5%						060	350	20.10
														061	356	20.10
														076		

N.Q wireline

HOLE NO. E-60

CASING COLLAR ELEV.:

COORDINATES:

INCLINATION:

GROUND ELEV.:

N. E.

BEARING:

PROJECT: I.C.

DATE STARTED:

DATE FINISHED:

TOTAL DEPTH:

PAGE NO: 4 OF 8

REF. TO CLAIM CORNER:

SCALE:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL No.	% RECY. SAMP. INT	ESTI-MATED % Cu
	silica	sericite	chlorite	sec bio											
360							Andesite Tuff cont								
	weak envelopes				mod to str	<p>→ 2cm qtz-carb unit</p> <p>→ 15cm shear @ 25% c.a.</p> <p>→ 3cm qtz unit</p> <p>→ 2cm cal-zeol. unit</p> <p>→ 2cm qtz unit cuts & offsets 1cm py unit.</p> <p>→ 3cm qtz unit w py-(c)py</p> <p>→ 3cm qtz unit w MoS₂</p> <p>→ 4cm qtz-carb unit.</p> <p>→ 4cm qtz-carb unit.</p> <p>→ 2cm py-gtz unit.</p> <p>→ 1cm qtz unit.</p> <p>→ 3cm qtz unit.</p> <p>→ 13cm qtz unit.</p> <p>→ 5cm qtz unit</p>	<p>363-15cm shear zone healed w py and qtz-carb.</p> <p>368-371 - mod sec. bio present.</p> <p>363-393 - Mod magnetite as replacement w chl of mafic clasts. Minor H/L units</p> <p>* Silicious envelopes up to 5mm present on py units.</p> <p>383 - friting has gradually gotten stronger, is strongly healed. w qtz and py.</p> <p>393 - Increase in silicif and decrease in chl. alt'n. Weakly devel. qtz s/w replaces the smaller qtz-car-zeol units.</p> <p>* Sulphide content has decreased. <1% diss, 1-2% frits</p>	5							
370															
380									2-3%						
390															
400															
410															
420									1-2%						

NQ wireline

HOLE NO. **E-60**

PROJECT: **I.C.**

PAGE NO: **5** OF **8**

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL No.	% REC'Y SAMP. INT.	ESTI-MATED % Cu
	silica	sericite	chlorite	sec. bio										
420	mod	weak	str			<u>Andesite Tuff cont</u>						068		40.10
430						429-445 - Very strongly fractured zone w alot of brecciation and intense qtz and qtz-cal. healing. Edge of fault zone						069	430	40.10
440						445-501 FAULT ZONE w numerous gouge zones, qtz veining and straly fractured sections w no gouge. Healing is strong		3-4%				070	440	40.10
450						The gouged and brecciated sections contain up to 8-10% pyrite. - rest of zone is fit. controlled pyrite. - 1-4%						071	450	40.10
460						* Alt'n is strong - chlorite ± sec. bio ± sericite. Epid w some veinlets. - qtz s/w weakly devel. - no silicification.						072	460	40.10
470						* Minor MoS ₂ ; cpy in the qtz-cal & qtz healed zones.		5-10%				073	470	40.10
480								3-4%						



Strongly sheared zone w mod cementing & healing

2cm qtz-cal unit.
5cm gouge zone
Fault Brxx

qtz & Qtz-cal healed shear

15cm py unit.

N.A. wireline

HOLE NO. **F-60**

PROJECT: **I.C.**

PAGE NO: **6** OF **8**

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N.

E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL NO	% REC'Y SAMP. INT.	ESTI-MATED % Cu
	silica	sericite	chlorite	sec bio											
480							<u>Andesite Tuff (Fault zone) cont.</u>								
490						<p>2cm qtz-py unit.</p> <p>Fault zone w mod qtz-cal healing</p> <p>12cm qtz un w py-MoS₂</p> <p>2x2cm qtz units</p>			3-4%			074	490	<0.10	
500						<p>sheared zone w qtz-cal healing</p> <p>501 - End of Fault zone</p> <p>Tuff takes on a darker green, silicious tone.</p> <p>Altn strong silica-chlorite, lighter green envelopes are present around frts till 513'. Frts healed w qtz. Veining is generally >1cm in size, small veins have disappeared. Veining is mostly qtz w minor qtz-cal-zeolite vns.</p>						500	075		<0.10
510						<p>3cm qtz unit.</p> <p>1cm gouge zone</p> <p>513 - Altn gets stronger - dk green to dk brn color.</p> <p>Skarning - envelopes of dk brn sec bio on frts. Pervasive sec-bio-silica-chl. alt'n -strongly magnetic -mainly frts. -seeing more opy w the pyrite. & more MoS₂ on frts.</p>			2-3%			510	077		<0.10
520						<p>2cm qtz unit.</p> <p>Skarning - envelopes of dk brn sec bio on frts. Pervasive sec-bio-silica-chl. alt'n -strongly magnetic -mainly frts. -seeing more opy w the pyrite. & more MoS₂ on frts.</p>						520	078		<0.10
530						<p>2cm qtz-carb unit</p> <p>-gets skarnier w depth.</p>						530	079		<0.10
540						<p>1cm py unit</p> <p>3cm qtz unit</p> <p>1cm py unit</p> <p>2cm qtz unit</p>						540	080		<0.10

N.G. wire line

HOLE NO. E-60

PROJECT: I.C.

PAGE NO: 7 OF 8

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARINGS:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL NO.	% RECY. SAMP. INT.	ESTI-MATED % Cu
	silica	sericite	chlorite	sec. bio												
540	strong	weak	moderate	strong			SKARN - ANDESITE TUFF cont									
							0.5cm cpy vn.	strong biotite skarning present						081	550	0.15
550							2cm qtz-ool vn w epid.									
							4cm qtz vn.	* Mod. qtz s/w developed.						082		0.25
560							2cm qtz-py vn w cpy.	* skarn envelopes (sec. bio) strongly developed on pts : vns							560	
							4cm qtz vn w py vns.							083	570	0.10
570							25cm zone of qtz ? qtz-carb	* Sulphides are frt or alt'n controlled.		1-3%						
								575 - slight decrease in sec bio skarning.						084	580	0.10
580								skarning getting weaker.								
								- minor porphyritic texture present in the tuffs						085	590	20.10
590							3x15cm qtz vns w minor MoS ₂									
							4cm qtz vn w py.							086		20.10
600							20cm qtz vn.									

NQ wireline

HOLE NO. E-60

PROJECT: I.C

PAGE NO: 8 OF 8

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL No	% REC'Y SAMP. INT.	ESTI-MATED %
	Silica	Sericite	chlorite	sec b'g												
60	str.		wk	mod	mod	Py-spy	<p>DESCRIPTIVE GEOLOGY</p> <p><u>Skarn cont</u> as before w minor porphyritic sections</p>		1%					600		
610							<p>605' End of Hole.</p> <p>The risk of losing the rods and casing forced the hole to be shut down.</p>							087		10.10

HOLE NO. E-61

CASING COLLAR ELEV.:

COORDINATES: 14,374.9' N. 16,330.4' E.

INCLINATION: -90°

GROUND ELEV.: 1229.1'

BEARING:

PROJECT: Island Copper

DATE STARTED: August 4, 1984

DATE FINISHED: August 6, 1984

TOTAL DEPTH: 500'

PAGE NO: 1 OF 9

REF. TO CLAIM CORNER:

SCALE: 1" = 10'

LOGGED BY: G.L. Holland

SECTION	ALTERATION			FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE		SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED
0								RQD - 53.4%	95.0%							
							DESCRIPTIVE GEOLOGY									
10							0-102 Overburden.									
20							Casing removed from hole Plastic pipe put in for geophysical purposes.									
30																
40																
60																

**GEOLOGICAL BRANCH
ASSESSMENT REPORT**

13,346

HOLE NO. **F-61**

PROJECT: **I.C.**

PAGE NO: **2** OF **9**

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

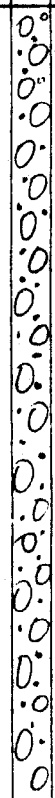
INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY: **G.L. Holland**

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED % Cu
	silica	sericite	chlorite	sec. bio.												
60																
70								Overburden cont. - well cemented, no caving								
80																
90																
100																
105								102-105 Casing in bedrock.								
110	weak	moderate	moderate	weak	strong	py-cpy		105' 105'-138' Contact Zone of Andesite & Intrusive (QFP?) - equal split of andesite and intrusive. Alt'n in both is very strong, obscuring the textures. Minor quartz "eyes" are visible in the intrusive but alteration prevents positive ID. of rock type. Contact relationships are not defined. The possibility of this section being all intrusive w/ variations in the alt'n is not unrealistic. - fracturing is strong, mostly healed w/ qtz-zeolite & qtz vns, strong pyrite-chl on the fnts. Qtz s/b moderate to strong. Siliceous envelopes devel on py-cpy fnts - Qtz-zeolite vns cut the qtz vng and py-cpy filled fnts. Py-cpy vns cut qtz stw - Alt'n is pervasive. Intrusive - phyllic to upper argillic -> ser+chl. Volcanic TP - weak potassic -> chl+sec bio. In the volcanics - phenos -> chl+py. Fnts have chl+epidote.		1-2%		NQ wireline	110	0.10		
120																0.15



brn, possible CN

105' 105'-138' Contact Zone of Andesite & Intrusive (QFP?)

HOLE NO. **F-61**

PROJECT: **Island Copper**

PAGE NO: **3** OF **9**

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED % Cu
	silica	sericite	chlorite	sec. bio											
120							<u>Contact Zone cont</u>								
130	weak	moderate	moderate	weak	py-cpy-MoS ₂	<ul style="list-style-type: none"> 1.5cm qtz vn w traces MoS₂ - minor gilsonite w the qtz vns. - weak hematitic staining. 4 to 1 py:cpy ratio. * Strong chl on fractures * Core broken up * Weak qtz s/w 		3-4%						0.45	
140	moderate	weak to mod			py-cpy-MoS ₂	<ul style="list-style-type: none"> 2cm qtz vn 138' 2cm qtz-zeol vn 138-154 - <u>ALTERED INTRUSIVE (QFP?)</u> - strong alth, strong fring - healed w qtz; qtz-dark vns - alth - pervasive sericite-chlorite w chl present on fnts as well. - Qtz vning or s/w is strong and usually contains cpy ± MoS₂. - mafic phenos → chl + py + cpy; fsp phenos + sericite. - up to 2% diss. sulph & 2% fnt sulph. 3:1 py:cpy ratio. * Qtz-zeol vns have hematitic staining - pink to orange. 		4%						0.30	
150	moderate	weak			py-cpy-MoS ₂	<ul style="list-style-type: none"> 4cm qtz vn w py-cpy-MoS₂ 2cm qtz vn w MoS₂ 1cm qtz-zeol vn cuts 1cm qtz vn. 154' irregular CN 154 - <u>ALTERED ANDESITE</u> - color varies from pale green to dark brown. - alth strong potassic. - sec bio + silica + chlorite - chlorite presence is in inverse proportion to sec bio content - fring moderate - well healed w silica; py-qtz-epid. - qtz s/w strong 4-8mm in width. - silicious envelopes present around some fnts. - the stronger the sec bio the better the cpy:py ratio and the higher the sulph. content. 165-166 - Intrusive dyke @ 30° to C.A. - healed shear @ top - MoS₂ confined to qtz s/w. * Epidote on fnts w sulphides. * Cpy & sulph. content increases w sec bio increase * Qtz-zeol vns die out away from the intrusive. 		2-5%					0.40		
160	moderate	weak			py-cpy-MoS ₂	<ul style="list-style-type: none"> 2cm qtz vn w MoS₂ shear CN Intrusive dyke 165-166 - Intrusive dyke @ 30° to C.A. - healed shear @ top - MoS₂ confined to qtz s/w. * Epidote on fnts w sulphides. * Cpy & sulph. content increases w sec bio increase * Qtz-zeol vns die out away from the intrusive. 		2-5%						0.30	
170	moderate	weak			py-cpy-MoS ₂	<ul style="list-style-type: none"> 3cm qtz vn Intrusive dyke 179-182 - Intrusive dyke @ 40° to C.A. - Qtz bounded. 								0.25	
180														0.45	

NQ wireline

MOLE NO. E-61

PROJECT: I.C.

PAGE NO: 4 of 9

CASING COLLAR ELEV.:

GROUND ELEV.:

DATE STARTED:

REF. TO CLAIM CORNER:

COORDINATES:

N. E.

DATE FINISHED:

SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED % Cu.	
	silica	sericite	chlorite	sec. bio												
180							<p>invasive dyke @ 40° 3cm qtz vn. & minor healed shear below</p> <p><u>ALTERED ANDESITE cont.</u></p> <p>- strong pervasive alt'n.</p>								0.20	
190							<p>1.5cm qtz-zcal vn.</p> <p>Weak qtz s/w away from invasive dyke</p>									0.20
200							<p>Invasive dyke - irregular cn.</p> <p>1cm gouge w 10cm brx above</p> <p>* Chlorite and epidote confined to fractures - epidote w the sulphides</p>									0.25
210							<p>2cm qtz vn w py-cpy.</p> <p>* Fractures strongly healed w silica, silicious envelopes present on most frts.</p> <p>207-229 - Sec. bio is patchy - weak to strong</p> <p>209.5-212 - Invasive dyke @ 35° to c.A.</p>									0.25
220							<p>10cm shear-brx cn</p> <p>Invasive dyke @ 35°</p> <p>2cm qtz vn</p> <p>8cm qtz vn w MoS₂ & cpy</p> <p>* MoS₂ confined to qtz s/w.</p>									0.15
230							<p>3cm qtz vn</p> <p>2cm qtz-zcal vn.</p> <p>irregular cn</p> <p>4cm qtz vn</p> <p>229-235 - QFP Dyke</p>									0.20
240							<p>irregular cn</p> <p>235-252 strong sec bio alt'n.</p>									0.20

3-5%

NQ wireline

240

HOLE NO. E-61

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CASING COLLAR ELEV.:

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SCALE:

INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT	ESTI-MATED % Cu
	silica	sericite	chlorite	sec. bio											
240							<u>ALTERED ANDESITE cont</u>								
						→ 2cm qtz vn w MoS ₂	* Minor chl & epid along frts * Fracturing decreasing. sec bio starting to decrease								0.20
250						→ 2cm qtz vn	252-304 - Moderate sec. bio - often patchy. - relic fsp phenos → ser. present - minor chl alt'n of the matrix								0.15
						→ 3cm qtz vn w MoS ₂	* Silicious envelopes present on most frts.								
260						→ 3cm qtz vn w py.	* Qtz s/w modly developed - frts in the qtz contain chl-epid.								0.15
						→ 4cm qtz vn w MoS ₂	* Diss py-cpy present in the strong sec-bio alt'd rock but not in the weakly bio alt'd zones. - 2% frt py-cpy.								0.15
270						→ 5cm qtz vn w MoS ₂									0.15
						→ 15cm qtz vn w MoS ₂									0.15
280															
290							292 - 20cm intrusive dyke								0.15
						→ 4cm qtz vn									
300															

2-4%

NQ wireline

HOLE NO. E-61

PROJECT: I.C.

PAGE NO: 6 OF 9

CASING COLLAR ELEV.:

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DATE FINISHED:

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INCLINATION:

BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP INT.	ESTI-MATED % Cu
	silica	sericite	chlorite	sec bio											
300							<u>ALTERED ANDESITE cont</u>								
310		wk		mod		<p>3cm shear healed w qtz.</p> <p>* Sec bio alth getting weaker, chl alth stronger. - patches of str. sec. bio still present - sulphide content increases in proportion to sec bio alth - getting weakly magnetic.</p>								0.15	
320						<p>5cm qtz vn w py/MoS₂</p> <p>* Silicious rich envelopes w chl + epid strongly devel. around frts - up to 1cm in width, normal - 5-6mm</p>									0.15
330						<p>1cm qtz vn w py</p> <p>10cm shear zone</p> <p>* Frts strongly healed w qtz; py</p>									0.15
340						<p>3cm qtz vn w MoS₂</p> <p>4cm qtz vn</p> <p>3cm shear zone. @ 45% C.A.</p>									0.15
350						<p>40cm shear zone @ 35% C.A. - Qtz healed</p> <p>Fracturing increase around the shear @ 352' - strong sec. bio below shear.</p>									0.10
360						<p>5cm qtz-py vn.</p>									0.20

2-4%

NQ wireline

HOLE NO. E-61

PROJECT: I.C.

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CASING COLLAR ELEV.:

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BEARING:

TOTAL DEPTH:

LOGGED BY:

SECTION	ALTERATION				FRACTURING	MINERAL	GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y SAMP. INT.	ESTI-MATED % Cu
	silica	sericite	chlorite	sec bio												
360								10cm qtz vn w MoS ₂								
								<u>ALTERED ANDESITE cont.</u>								
								* sec bio altn decrease away from shear @ 352'. Qtz s/w decreases as well. - intensity of altn decreases								0.15
370								3cm qtz vn w epid								370
								* Frts strongly healed w qtz and pyrite. Silicious envelopes strongly developed on the pyrite filled and barren frts.								0.15
								1cm py vn								
380								372-382 - Zone of str qtz s/w								
								* Chlorite present w the py.								
								* MoS ₂ assoc w most qtz vns								
								* Qtz-carb vn cuts py-qtz vn.								
390								1cm py-chl vn.								
								395- starting to get more qtz-carb vning and less qtz vning								
								3cm qtz-carb vn.								
400								15cm shear healed w qtz & qtz-carb.								
								15cm shear zone w qtz-carb								
410								30cm shear zone								
								4cm qtz-py vn								
								str qtz-carb vning								
420																0.10

Altn moderately developed.

2-4%

3%

NQ wireline

HOLE NO. E-61

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CASING COLLAR ELEV.:

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SECTION	ALTERATION				FRACTURING	MINERAL GEOLOGY	COMMENTS:	AVE CORE REC'Y / HOLE	% SULPHIDES	DRILLING INTERVAL	% CORE RECOVERED	CORE SIZE	SAMPLE INTERVAL	% REC'Y. SAMP INT.	ESTI-MATED % Cu
	silica	sericite	chlorite	sec. bio											
420							<p>→ str qtz-carb.</p> <p><u>ALTERED ANDESITE cont.</u></p> <p>* py veins increasing in content and size</p> <p>Qtz s/w decreasing - Qtz-carb uns increasing</p>								0.15
430	weak		moderate	weak		<p>→ str qtz-carb w py vns.</p> <p>→ 10cm shear zone.</p> <p>→ qtz-carb un cuts qtz un.</p>									0.15
440		*	*	*	moderate	<p>→ 10cm qtz-carb un w py.</p> <p>443 - Sharp increase in sec bio towards fault zone @ 468'. Qtz s/w increases w the sec bio. and qtz-carb uns decrease - silicious envelopes present.</p>		3%							0.20
450	moderate	weak	mod-str.		moderate	<p>→ 2cm qtz un</p> <p>strong py veining present</p>									0.15
460	*	*	*	*		<p>→ 20cm gouge zone</p> <p>→ 10cm shear w qtz-carb</p> <p>468 - Start of Fault zone - well healed w qtz frags in a sulphide rich, gougy andesitic matrix.</p>									0.15
470	v weak	moderate		intense	str	<p>Fault zone w brxx.</p> <p>Fault @ 60° to C.A</p>		5-7%							0.10
480															

NQ wireline

HOPT: E-61

ASSAY TAG.	FOOTAGE	MAG.	R.Q.P	%Ca	%Mn	%Pb	%Zn	%Fe	%Cu	%S	ppm Au	ppm Ag						
192	105-110	1.77	36.7	.14	.007	.001	.01	5.3	1.79	1.14								
191	110-120	1.20	9.2	.14	.008	.001	.01	5.1	1.83	1.38								
190	120-130	.86	16.9	.19	.008	.002	.01	5.1	1.97	1.87								
189	130-140	2.10	37.8	.30	.008	.002	.01	6.0	1.26	2.56								
188	140-150	.74	80.0	.28	.016	.011	.01	5.0	1.47	2.15								
187	150-160	.76	60.2	.26	.009	.002	.01	5.4	1.64	2.01								
186	160-170	1.18	24.3	.21	.013	.002	.01	5.4	1.65	1.69								
185	170-180	.98	49.1	.18	.008	.002	.01	5.8	1.61	1.81								
184	180-190	.56	47.5	.15	.010	.002	.01	5.4	1.93	1.98								
183	190-200	.44	40.6	.18	.008	.002	.01	5.5	1.40	1.99								
182	200-210	.50	52.9	.20	.026	.002	.01	5.3	1.40	1.88								
181	210-220	.04	51.3	.27	.010	.002	.01	5.1	1.24	2.54								
180	220-230	.30	45.6	.34	.021	.002	.01	5.4	1.64	2.26								
179	230-240	.08	56.2	.28	.016	.002	.01	6.1	1.39	3.15								
178	240-250	.72	49.0	.16	.011	.004	.03	6.6	1.68	2.59								
177	255-260	.86	38.3	.15	.009	.002	.01	6.7	1.52	2.48								
176	260-270	1.48	42.0	.15	.008	.003	.01	6.4	1.62	2.29								
175	270-280	.54	54.6	.16	.007	.002	.01	6.5	1.64	3.08								
174	280-290	.80	70.3	.18	.026	.001	.01	7.2	1.38	3.95								
173	290-300	1.02	66.1	.12	.007	.001	.01	6.7	1.52	2.07								
172	300-310	.62	74.0	.16	.009	.001	.01	6.7	1.40	2.68								
171	310-320	.96	77.3	.13	.010	.001	.01	6.3	1.63	2.44								
170	320-330	1.22	68.2	.10	.008	.001	.01	6.2	1.66	2.20								
169	330-340	.86	48.8	.15	.013	.001	.01	6.2	1.48	2.50								
168	340-350	.56	58.8	.17	.010	.001	.01	5.9	1.61	2.20								
167	350-360	.46	75.9	.11	.006	.001	.01	5.9	1.81	2.49								
166	360-370	.22	70.6	.15	.012	.001	.01	6.0	1.37	2.94								
165	370-380	.10	75.6	.11	.004	.002	.01	6.3	1.36	4.15								
164	380-390	.48	62.8	.09	.003	.001	.01	6.6	1.48	3.73								

ROD = % OF CORE IN LENGTHS $\geq 4''$

MAG = SUSCEPTIBILITY IN 10^{-3} CGS UNITS

13,346
SUNSET
GROUP



Utah Mines Ltd.
ISLAND COPPER MINE
Port Hardy, B.C.

Drawn by JF	SUNSET GROUP	Date 19/10/84
Traced by		Scale 1"=1000'
Approved by	RUPERT INLET	Revision
Bench Elev.		Drg. No.