

5 yrs  
Confidential

TK

DIAMOND DRILLING 4/92  
&  
DOWN HOLE PULSE EM SURVEY  
APPLE - 88 GROUP  
NANAIMO, B.C.  
UTAH MINES LTD. JULY 1987

16152

VICTORIA

87-411-16152  
4/88



Province of  
British Columbia

Ministry of  
Energy, Mines and  
Petroleum Resources

ASSESSMENT REPORT  
TITLE PAGE AND SUMMARY

TYPE OF REPORT/SURVEY(S)	TOTAL COST
DRILLING ; GEOPHYSICAL	\$27,477.69

AUTHOR(S) J.A. Fleming ..... SIGNATURE(S) *J.A. Fleming*  
 .. G.A. Clarke .....

DATE STATEMENT OF EXPLORATION AND DEVELOPMENT FILED April 21, 1987 ..... YEAR OF WORK 1986

PROPERTY NAME(S) .....  
 .. BAY 56 .....

COMMODITIES PRESENT .. Cu, Mo .....

B.C. MINERAL INVENTORY NUMBER(S), IF KNOWN .. 92L-135 .....

MINING DIVISION NANAIMO ..... NTS 92 L/12E .....

LATITUDE .. 50° 37' 42" ..... 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 56, 57, 59; MIMAS (12 units), JUNO (15 units), APPLE 2 (18 units),  
 ... APPLE 3 (9 units), APPLE 4 (18 units), APPLE 5 (20 units), BAR, BAR FR.  
 ... COIR 4 .....

OWNER(S)  
 (1) UTAH MINES LTD. .... (2) GORDON MILBOURNE .....

MAILING ADDRESS  
 BOX 370 ..... c/o LADNER DOWNS .....  
 PORT HARDY, B.C. V0N 2P0 ..... 2100 - 700 WEST GEORGIA STREET .....

OPERATOR(S) (that is, Company paying for the work)  
 (1) UTAH MINES LTD. .... (2) VANCOUVER, B.C. ....

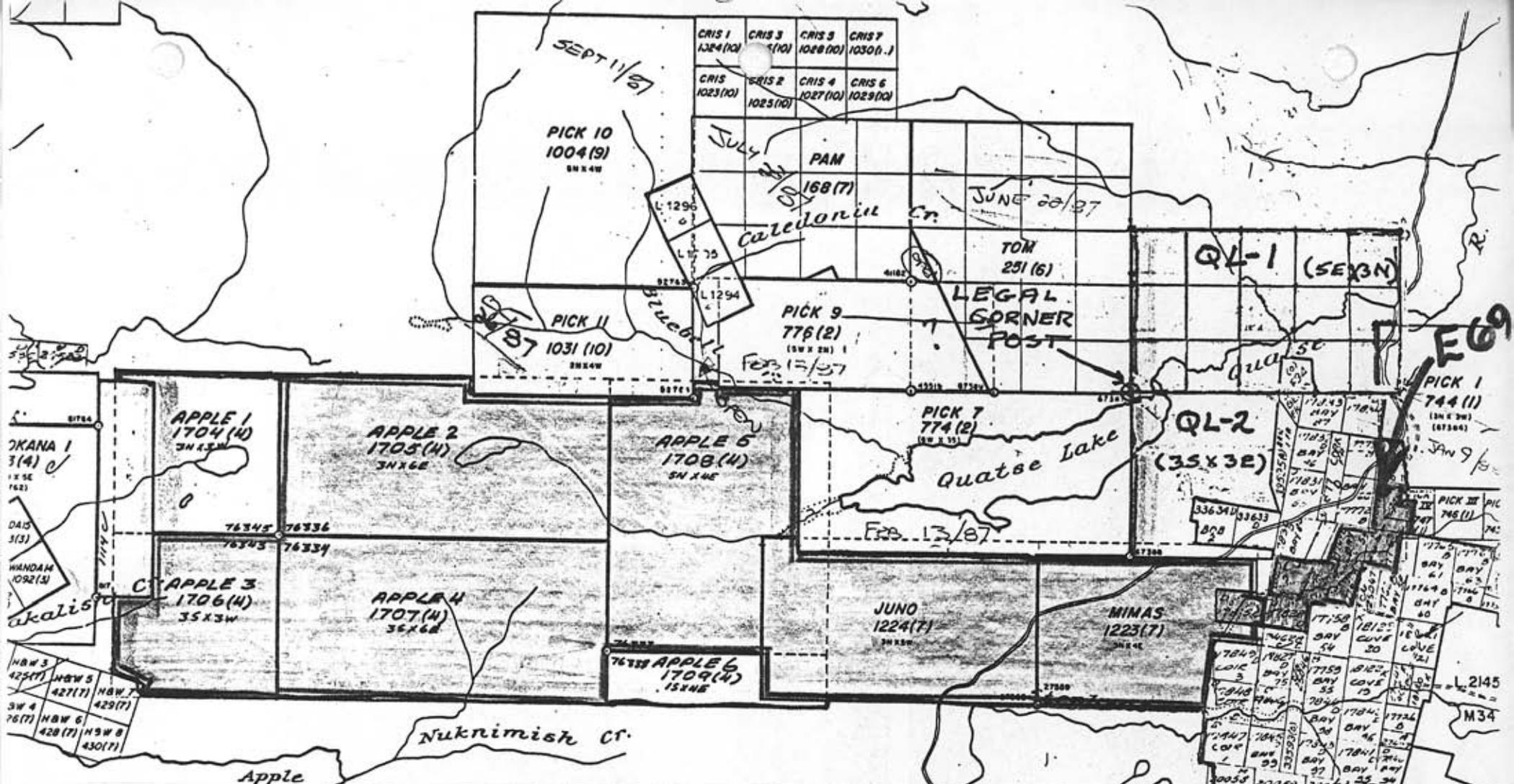
MAILING ADDRESS  
 BOX 370 .....  
 PORT HARDY, B.C. V0N 2P0 .....

SUMMARY GEOLOGY (lithology, age, structure, alteration, mineralization, size, and attitude):  
 The area is underlain by the Upper Triassic and Lower Jurassic volcanic and sedimentary succession of the Vancouver and Bonanza Groups with Cretaceous sedimentary cover. Mid-Jurassic granodioritic stocks (Quatse Stock), and quartz-feldspar porphyry dykes cut the gently southwestward dipping succession. Copper and zinc mineralization was encountered in garnet +/- pyroxene skarn in the Quatsino Formation.

REFERENCES TO PREVIOUS WORK .....

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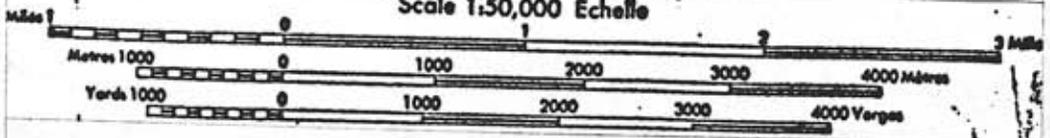
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# APPLE 88 GROUP NTS 92 L/12E

Map 1

Scale 1:50,000 Échelle



## 1.0 INTRODUCTION

Between 4th of December and 10th of December 1986, a diamond drill hole 273 meters (895 feet) in length was drilled on the Bar FR claim, part of the Apple-88 Group of claims. A down hole pulse EM survey was conducted on December 11th and 12th. This forms part of the mineral exploration program in the area in 1986.

## 2.0 PROPERTY DESCRIPTION

The Apple-88 Group consists of 100 claim/units contiguous to the west boundary of the Island Copper mineral leases.

## 3.0 LOCATION AND ACCESS

The claim group is located in the Nanaimo Mining Division with co-ordinates 50 degrees 37 1/2' N and 127 degrees 32' W. It is located on the NTS map sheet 92L/12E and borders on the west boundary of the Utah Mines Ltd. mineral leases, some 8 km south of Port Hardy (Map 1). Access is provided part way by paved highway from Port Hardy and the remainder by logging roads suitable for two wheel drive vehicles.

## 4.0 PHYSIOGRAPHY

The area is characterized by low to moderate rolling hills with a maximum relief of 210 meters. The Stephen's Creek cuts across the east end and drains into Coal Harbour while Nukinimish Creek drains from Quatse Lake through the central part of the group and into Apple Bay.

## 5.0 PREVIOUS WORK

Recent work by Utah has included mapping, VLF/Mag, I.P. and geochem surveys, and diamond drilling east and northeast of the Mimas and Juno claims, and mapping and a road mag-VLF survey over the remainder of the group.

## 6.0 OBJECTIVES

This hole was drilled to determine whether skarn alteration and copper zinc mineralization intersected previously in holes E-65 and E-66 increased down dip towards the projected porphyry intrusion to the south. The downhole pulse EM (DHPem) survey was conducted in hole E-69 in order to investigate the geometry and continuity of sulphides and copper mineralization encountered in the hole. This formed part of the ongoing program of exploration on claims contiguous to the Island Copper mineral leases.





## 7.0 WORK\_PERFORMED (cont'd)

Two basic survey methods are used. In areas where a group of holes are being surveyed one large loop is laid out and all holes surveyed from the same loop. Information as to location of a conductive body is derived by the change in response from hole to hole. In the case of an isolated drillhole usually 5 transmit loops are laid out on surface and the hole is surveyed from all 5 loops. Information as to shape and location is determined by the change in response from the 5 loops. In this type of survey the loop size is usually one third to one half the depth of the hole."

## 8.0 RESULTS

### 8.1 Geology

The hole was drilled to a depth of 273 meters (895 ft). It started in Parson Bay tuffs at the subcrop at 6.1 meters (20 feet), hit skarn at the top of the Quatsino at 178 meters (585 ft), marble at 198 meters (649 ft), the bottom skarn layer at 219 meters (718 ft) and Karmutsen porphyritic basalt at 242 meters (795 ft).

The upper and lower mineralized skarn horizons in the Quatsino total 42.7 meters (140 ft) or 67% of the Formation. A banded garnet magnetite skarn horizon 3.5 meters (11.5 ft) thick, that is interpreted as part of the Parson Bay, occurs at 157.4 meters (516.5 ft). It contains chalcopyrite with grade to 0.61% Cu over 3 meters. The upper Quatsino skarn from 178 - 197.8 meters (649 ft) is a massive pyritic, garnet-magnetite-copper skarn with chalcopyrite sphalerite grading from 2.45% Cu over 3 meters near the top to 0.31% Cu over 3 meters near the bottom of the skarn and some spot highs of silver to 19.5 ppm Ag over 3 meters. Pyrite content averages about 10% with local concentrations to above 20% pyrite. The lower skarn horizon from 218.9 meters (718 ft) to 242 meters (794 ft) is a zoned, non-magnetic, garnet-copper skarn cut by quartz veins. It has lower average copper mineralization than the top skarn but a

## 8.0 RESULTS (cont'd)

### 8.1 Geology (cont'd)

higher individual assay of 2.93% over 3 meters at the upper contact of a tuff band in the skarn. Molybdenite occurs variably throughout the skarns to a maximum grade of 0.48% Mo over 3 meters.

The hole was stopped 30 meters into a mafic porphyry with a patchy brown (biotite?) alteration. It contains chalcopyrite and molybdenite with grades in the 0.2 - 0.3% Cu and 0.010 - 0.050% Mo ranges.

### 8.2 EM Survey

The target horizon was the skarn/marble/limestone unit encountered from 585 - 794 ft. (178 -242 m). Geophysical anomalies were found associated with the upper skarn unit in this section as well as near the top of the hole. These anomalies are designated A and B respectively.

#### ANOMALY "A"

This is a moderate amplitude feature and exhibits essentially a 2-channel response (Channels 1 and 2) with very slight response on channels 3 and 4. This is indicative of a weak conductor (a few mhos to a couple of 10's of mhos) and is consistent with the observed pyrite in the hole. The shape of the anomaly is indicative of an in-hole response i.e. the hole intersected the body, likely near its perimeter. The rapid fluctuations in the channel 1 and 2 response curves do not match any simple model curves. The anomaly is interpreted to be caused by small stringer sulphides locally reaching 20% pyrite encountered in the hole. These sulphides are not expected to coalesce into a large massive sulphide body off-hole. Note that the lower skarn unit fails to provide a significant EM anomaly, despite elevated copper grades. The presumably reflects a lower total sulphide content than in anomaly "A" at the upper skarn contact.

#### ANOMALY "B"

This anomaly is somewhat enigmatic being represented by a negative response on the late channels (4 through 8) while the early time channels are relatively unaffected. The anomaly centres on a garnet skarn zone which may represent a more resistive unit than the surrounding sediments and tuffs. The resistivity contrast however does not present a

## 8.0 RESULTS (cont'd)

### 8.2 EM\_Survey (cont'd)

#### ANOMALY "B" (cont'd)

satisfactory explanation for the data. The feature is more likely to be a response to the probable long wavelength (late time) anomaly generated by the 13.8 kV power line adjacent to the loop and some effect due to the topography within the loop (10 degree dip to the southwest). Another potential spurious anomaly source may be saturation of the electronics in the instrument due to the proximity to the transmitter loop. It is known that the maximum voltage that registers is 1200 mV (above 1200, the primary pulse readings are meaningless). However, internal measurements of Channel 1 - 8 data are still valid but may cease to be so at some voltage level. As mentioned above, time and equipment constraints prevented resolution of this anomaly. Whatever the actual cause, this anomaly is not considered to represent an economic target, and further attention is not warranted.

## 9.0 CONCLUSIONS

1. Ore grade copper intersections in skarn exist in the Quatsino Formation in this area.
2. The incomplete alteration of the skarn to the red-brown variety of andradite suggests potential economic copper mineralization in the area.
3. The DHPem survey indicates that the sulphides encountered in the hole are not part of a larger off-hole sulphide body.

10.0 COST STATEMENT

DIAMOND DRILLING

CONTRACTOR COSTS

Diamond Drilling Contractor:

Overburden:	20 ft @ \$19.50	\$	390.00	
Rock:	875 ft @ \$19.50		17,062.50	
Field Costs:	2.5 hrs		188.00	
Cost Reduction			<u>-(120.57)</u>	
TOTAL CONTRACTOR COSTS				\$17,519.93

UTAH COSTS

Core Shack Labour:		\$	1,517.87*	
Supervision & Core Logging:			630.00	
Company Overhead @ 25% of Supervision & Labour (\$4,240 including 60% of ICM assay costs):			1,060.00	
Core Storage: 875 feet			451.50	
Truck Rental:			148.94*	
Computer Rental:			145.00*	
Assays: 88 samples x \$30/sample			2,640.00	
Supplies:			194.45*	
Report Preparation:			<u>510.00</u>	
TOTAL UTAH COSTS				\$ 7,297.76

TOTAL DIAMOND DRILLING COSTS \$24,817.69  
 UNIT COST: \$90.91/METER

PULSE EM SURVEY

Lay out/pick up wire:				
2 man days @ \$110/day		\$	220.00	
Survey/plot data:				
2 man days @ \$160/day			320.00	
Reporting: 1 man day @ \$160/day			160.00	
Equipment Rental: 3 days @ \$600/day			1,800.00	
Truck Rental: 2 days @ \$20/day			40.00	
Company Overhead @ 20% for Supervision and Labour			<u>120.00</u>	
TOTAL PULSE EM SURVEY				\$ <u>2,660.00</u>
TOTAL COSTS				\$27,477.69

OVERALL UNIT COST: \$100.65/METER

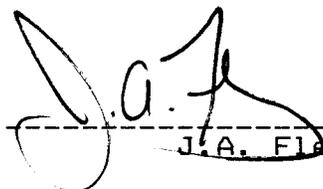
\*Prorated at 8.7% of Total 1986 Drilling Program Costs (based on 1986 footage).

## STATEMENT OF QUALIFICATIONS

We submit that we are qualified to prepare and present this report for assessment credit. Our qualifications are as follows:

J.A. FLEMING - CHIEF GEOLOGIST  
ISLAND COPPER MINE, UTAH MINES LIMITED, PORT HARDY, B.C.

1. B.Sc. (Major Geology) 1971 from McGill University.
2. Employed as a geologist continuously since June, 1968, and presently Chief Geologist, Island Copper Mine, Utah Mines Limited.
3. Fellow of the Geological Association of Canada since 1974.

  
-----  
J.A. Fleming

G.A. CLARKE - GEOLOGIST  
ISLAND COPPER MINE, UTAH MINES LIMITED, PORT HARDY, B.C.

Completed B.Sc. (Honours), (Geophysics) at University of Manitoba, in 1976. Employed by Hudson Bay Oil & Gas, and Saskatchewan Dept. of Mineral Resources during the 1975 and 1976 summer field sessions as geophysical assistant, ; from September 1975 to February 1977, Inco Limited, as a geologist in Thompson, Manitoba, ; from February 1977 to May 1979, Lloyd Geophysics, as a geophysicist, ; from October 1979 to present, Utah Mines Limited as a geologist/geophysicist, presently under supervision of J.A. Fleming.

  
-----  
G.A. Clarke

dated July 15, 1987.

DRILLHOLE/TRAVERSE :HEADER

PROJECT IDEN : ISLAND  
COLLAR NORTHING:  
TOTAL LENGTH : 0.00

START DATE : 86/ 2/ 7  
COLLAR EASTING :  
CORE/HOLE SIZE :

COMPLETION DATE : 85/ 5/27  
COLLAR ELEVATION:  
MACHINE TYPE :

GEOLOGGED BY : GAC + JAF  
GRID AZIMUTH:  
CONTRACTOR : TONTO

K E Y	F A Y G	- INTERVAL - (UNITS = FT) FROM - TO	CORE RECOV- ERY (FT.1)	% M I X T Y P E	TYPI- FYING 1 2 Q M 1	QAL MIN M A T 1 2 Q M 1	TEX- MIN T X 1 2 F F C P	GRAIN CHARACS % M # T K	FRAC- TURE # T K	STRUCTUR-1 ALTERATION MINS ORE-TYPE MINS													
										T ID	STK	DIP	A	A	A	A	A	MIN	A	A	MIN	H	H
										1	AZM	RT	QZ	BI	CY	CB	MG	XX	PY	CP	GL	YY	SUMMARY

SUMMARY REMARKS

ROCK CODES U24-27	% SCALE	ALTERATION AND ORE MINERALS	FACIES U77-79
OVER OVERBURDEN	? POSS	QZ QUARTZ	0 FRESH
STKP STICKUP	/ PROB	CY CLAY	1 CHL-EPI
CASN CASING-NO CORE	0 0.0%	DJ DUMORTIERITE	2 CHL-MAG
MISN CORE MISSING	- 0.01%	KF K-FELDSPAR	3 BIO-CHL
FAUL FAULT GOUGE	- 0.03%	BI BIOTITE	4 MAG-QTZ
SAND SAND (TECTONIC)	( 0.1%	BX BRECCIA FRAG	5 PYROPHYLLITE
ISGD ISL GRANODIORITE	* 0.3%	PP PYROPHYLLITE	6 SERICITE
INBX INTRUSIVE BRECCIA	) 1.0%	CL CHLORITE	7 SER-CHL
BVAL ANDESITE ?	+ 2.5%	CB CARBONATE	8 K-SPAR
QTZV QUARTZ VEIN	= 5.0%	EP EPIOTE	9 SILICIC
BVAG BON. AGGLOMERATE	1 10%	MG MAGNETITE	
PPFX FELDSPAR PORPH	2 20%	HE HEMATITE	MINERAL ZONE
BVAT ANDESITE TUFF	3 30%	FL FLUORITE	L 77-79
BVAE ANDESITE FLOW	4 40%	PY PYRITE	0 NEGLIGIBLE
BVAB BRECCIA	5 50%	PR PYROTITE	<0.5%
ISDR ISLAND DIORITE	6 60%	CP CHALCOPYRITE	1 PY
BVAN ANDESITE UNDIFF	7 70%	MO MOLYBENITE	2 PY>CP
KMBA KARMTSEN BASALT	8 80%	EN ENARGITE	3 PY>CP, MO
PPQF QUARTZ FELDS POR	9 90%	CV COVELITE	4 PY+MO CP
KMLS KARMTSEN LST.	X 100%	CC CHALCOCITE	5 PY+CP+CC+BO
BRXX BRECCIA ZONE		FX FELDSPAR	+CV+/-MO
CLAY CLAY ZONE		VF VOLC FRAG	6 PY+BO+CC+CV
ISQD ISL QTZ DIORITE		G1 GILSONITE	+/-MO
CONG CONGLOMERATE		AK ANKERITE	7
MATR MATRIX DESCR.		X1 GRN SER ?	8 MO
PBLS PARSON BAY LST.		X2 SAUSSERITE ?	
PBSD PB. SEDIMENTS		X3 WH ZEOLITE ?	
PBTF P.B. TUFFS		X4 GYPSUM ?	
PBVS P.B. SEDS/TUFFS		X5 BRN CHL ?	
PPAN ANDESITE PORPH.		X6 BRN BIO ?	
PPHB HORNELENDE/AUGITE PORP.			
QALS QUATSINO LST.			
SKAR SKARN			
ARGL ARGILLITE			
TFXL CRYSTAL TUFF			

DRILLHOLE/TRVERSE : HEADER (CONTINUED)

SUMMARY REMARKS

TUFF UNDIFFERENTIATED TUFF  
TFLP LAPILLI TUFF  
AN/L ANDESITE SILL  
PPXX PORPHYRY, GENERAL  
% MIX IS AMOUNT OF NEST  
IN PGI, G SCALE,%

I SCALE

KEY FLAGS (2-4)	X EXTREME	3 WEAK
	9 V STR-EX	2 V WK-WK
K10X TOP OF OXIDE ZONE	8 STR-V STR	1 VERY WEAK
K80X BOTTOM OF OXIDE	7 STRONG	0 NONE
	6 MOD-STR	" RETURN TO BLANK
	5 MODERATE	
	4 WK-MOD	

H-SCALE HOW OF ALTERATION MINERALS

Y MASSIVE	1 MINOR MICROVNS+ SCTD.XT
0 PERVASIVE	0 BARREN
8 DISS, PATCHES=VNS,SEL,ENV	D DISSEMINATIONS
7 DISS, PATCHES=VNS,SEL,ENV	V VEINS
6 DISS, PATCHES=VNS,SEL,ENV	E ENVELOPES
5 VNS +/OR ABUNDANT ENV	S SELVAGES
4 VNS+ / OR OCCASIONAL ENV	P PERVASIVE
3 VNS = SPOTS+PATCHES	Q PATCHES
2 MICROVEINS + VEINS	C COATINGS
	K STOCKWORK
	U COATING VUGS
	" RETURN TO BLANK

STRUCTURE IDS	STRUCTURE THICKNESS	COLOR	
	T-SCALE	LIGHTNESS	HUE
VQ VEIN QUARTZ	0 < 1 MM	L28	L29
VP VEIN PYRITE	1 1-3 MM	9 PALEST	W WHITE
VY VEIN PYROPH	2 3-6 MM	8 PALE	A GREY
VC VEIN CLAY	3 6-10 MM	7 LIGHT	U BROWN
VA VEIN QTZ PY	4 1-3 CM	6 MED-LIGHT	T TAN
VM VEIN QTZ MO	5 3-6 CM	5 MEDIUM	G GREEN
F/ FAULT	6 6-12 CM	4 MED-DARK	R RED
C/ CONTACT	7 12-30 CM	3 DARK	O ORANGE
SH SHEAR	8 30-60 CM	2 VERY DARK	N BLACK
SW STOCKWORK	9 60-100 CM	1 DARKEST	B BLUE
BN BANDING	X >1 M	\$ ISH	P PURPLE
VH CPY VN		M MOTTLED	L LIME
VL CALC VN			\$ ISH
BD BEDDING			
VB VEIN CARB			
BR BRECCIATED			
V/ VEIN			
<< MICROVN'D			
VF MAG VN			
VZ VEOLITE VN			

U,L 49-50      U,L 48      TYPIFYING MINERALS      FRACTURE I.D.

## DRILLHOLE/TRVERSE : HEADER (CONTINUED)

## SUMMARY REMARKS

TEXTURES	IM1128-29 QM1132-33	F-SCALE
TX1(U35-36)	IM2030-31 QM2132-33	U-75-PYRITE
TX2(L35-36)	TM3L28-29	U-46-QUARTZ
PP PORPHYRITIC	QZ QUARTZ	L-46-DRY FRAC
P/ VAGUE PORPH	QX QTZ PHENOS	FRACTURE COUNT
EQ EQUIGRANULAR	QF QTZ FRAGS	(U,L 44,46)
FR FRAGMENTAL	FX FELDSPAR	F-SCALE
CT CATACLASTIC	BI BIOTITE	1<1/FT
VG VUGGY	HB HORNBLENDE	2 1/FT
BR BRECCIATED	PX PYROXENE	3 2-3/FT
B/ VAGUE BRECCIA	MG MAGNETITE	4 4-6/FT
KR CRACKLED	RF ROCK FRAGMENT	5 7-10/FT
SH SHEARED	VF VOLC FRAGMENT	6 11-18/FT
GG GOUGED	IF INTRUS FRAG	7 19-25/FT
BD BEDDED	VG OPEN SPACE	8 25-50/FT
CM CHILLED MARGIN	PF PY FRAG	9 >50/FT
BN BANDED	GG FLT GOUGE	X EXTREME
SN STOCKWORK	GA GARNET	
	MX MAFIC PHENOS	
	AK ANKERITE	
	BR BRECCIA	
	EP EPIDOTE	
	MD MUDSTONE	
REMARK HEADERS		
RALT REMARK, ALTERATION		
RCOL REMARK, COLOUR		
RCON REMARK, CONTACT		
RFRC REMARK, FRACTURE		
RCMP REMARK, COMPOSITION		
RLTH REMARK, LITHOLOGY		
RCOR REMARK, CHANGE OF CORE SIZE		
RMIN REMARK, MINERAL (NON-SULPHIDE)		
RMNZ REMARK, MINERALIZATION		
RSAM REMARK, SAMPLE		
RSTR REMARK, STRUCTURE		
RTXT REMARK, TEXTURE		
RVEN REMARK, VEIN		
BXRD REMARK, X-RAY DIFFRACTION		
RSUM REMARK, SUMMARY		
RPHO REMARK, PHOTO		
STHN REMARK, THIN SECTION		

UTAH MINES LTD.,  
ISLAND COPPER MINE

1 FOOT = 0.3048 metres

DRILLHOLE/TRVERSE : E-069

PROJECT IDEN : ISLAND      START DATE : 87/ 2/11      COMPLETION DATE :      GEOLOGGED BY : JAF +  
 COLLAR NORTHING: 18166.00      COLLAR EASTING : 16228.00      COLLAR ELEVATION: 1348.00      GRID AZIMUTH : 0.00  
 TOTAL LENGTH : 895.00      CORE/HOLE SIZE : NQ

SURVEY FLAG	SURVEY POINT LOCATION	FORESIGHT	AZIMUTH (DEGREES)	VERTICAL ANGLE (DEGREES)	NORTHING	EASTING
000	0.0			-90.00		
001	450.0		3.00	-89.50		
002	850.0		125.00	-89.50		

R HED      NORTHWEST ZONE SKARN HOLE DRILLED TO TEST SKARN PROJECTION FROM  
 R HED      E-65 AND E-66

F - INTERVAL - K L (UNITS = FT)	CORE RECOVERY (FT.1)	% M ROCK TYPE	TYPY- QAL TEX- FYING MIN TURES	GRAIN FRAC- CHARACS TURE	STRUCTUR-1 ALTERATION MINS	ORE-TYPE MINS	SUMMARY
Y G FROM - TO	X TYPE	1 2 QM1 1 2 F F C P # TK	TM TM MAT TX TX F C % M	T ID STK DIP A A A A A MIN A A A MIN	1 AZM RT QZ BI CY CB MG XX PY CP GL YY		
K F	ROCK	FOR EN RT	TM QM2 TX TX S R S D DIP F	T ID STK DIP KF MU CL EP HE HA PR MO SL HA	1 AZM RT	H H H H H H H H	
E L	QUAL	MEM V Q LC- 3	3 4 0 N H / SHL I	2 AZM RT		H H H H H H H H	
Y G	DESIG	ABE COL	R D P C	STRUCTUR-2		A A A A A A A A	

P	0.0	20.0	CASN.		P			
P	20.0	48.0	PBTF	FR 6 B I	P	P3	V2 ZE	
L				<< 5 5 5 C 2		P4 82	V2	
R LTH	20.0	48.0	GRN-GRY, QTZ-PYR-EPI-CHL ALT'D ASH TUFF. CLASTS GEN < 1/2MM					
R LTH	20.0	48.0	DIA AND TIGHT PACKED WITH RD AND PRISMATIC CLASTS AND X'ALS IN					
R LTH	20.0	48.0	LT, SILIC MTX.					
R LTH	20.0	48.0	PYR IS 4-6% (+) WITH VNS = DISS. EPI-PYR BANDS CUT BY PYR					
R LTH	20.0	48.0	VNLTS AND CALC VNS.					
R LTH	20.0	48.0	WT SERIC ALT'N PROB IN LT COLOURED MTX.					
P	48.0	54.0	PPHB MX	PP J 2 L	P 2 VZ	40	V1 ZE 7+	
L				0 3			P3 E2 V1	
R LTH	48.0	54.0	MED GRN, CHL ALT'D HBL PORP WITH 5-10% HBL/PYROX PHENO TO 1CM					
R LTH	48.0	54.0	IN FN GRN'D MAFIC MTX. PYR OCC TO 3-4% BOTH VNS WITH THIN HEM					
R LTH	48.0	54.0	ENV AND DISSEM. FEW WT ZEO-CARB VNS <5MM AT 40 DEG C/A.					
P	54.0	90.0	SKAR CA) BD		P 2 BD	75	V1 ZE 7=	
L			PB RU		2 BD	80	63 V3 8)	
R LTH	54.0	90.0	A THIN BDD REDDISH-ORANGE-BROWN ANDRADITE SKARN. BEDS ARE					G A
R LTH	54.0	90.0	DEFINED BY COL VARIATIONS/BANDING IN SK. SET OF PYR VNS WITH					P 8
R LTH	54.0	90.0	GRY, PYRITIC ENVS TO 4MM/SIDE OCC AT LOW ANG C/A.					
R LTH	54.0	90.0	THESE ARE CUT BY PYR-EPI-ZEO VNS AND LATE ZEO VNS. BANDS OF					
R LTH	54.0	90.0	SILIC ALT'D RK WITHIN REDDISH SK ARE DISPLACED DUE TO					
R LTH	54.0	90.0	FRACT/SLIPS.					
R LTH	54.0	90.0	THE SILIC BANDS MAY BE DUE TO ORIG BANDING. A 1FT THK MASSIVE					
R LTH	54.0	90.0	PYR-SP BANDED MTL OCC AT UPPER CONT. THIS IS CUT BY CARB VN					
R LTH	54.0	90.0	WITH SK, SP FRAGS. GRN PYROX (?) MIXED WITH GARN IN GRN SK -					
R LTH	54.0	90.0	NOT CLEAR WHICH MIN REPLACED.					











Island Copper Mine  
ISLAND

DRILLHOLE/TRVERSE : E-069 (CONTINUED)

F - INTERVAL -		CORE RECOVERY (FT.)	% M ROCK TYPE	TYPI- BAL	TEX- TURES	GRAIN CHARACS	FRAC- TURE	STRUCTUR-1 ALTERATION MINS										SUMMARY													
L (UNITS = FT)								H H H H H ANY H H H ANY																							
E A	Y G FROM - TO	ERY	X	1	2	Q	M	1	2	F	C	P	#	T	ID	STK	DIP	A	A	A	A	A	MIN	A	A	A	MIN				
-----		-----		-----		-----		-----		-----		-----		-----		-----		-----		-----		-----		-----		-----					
K F	E L	Y G	ROCK	FOR	EN	RT	TM	Q	M	TX	TX	S	R	S	D	DIP	F	T	ID	STK	DIP	KF	MS	CL	EP	HE	HA	PR	MO	SL	HA
		DESIG	MEM	V	Q	LC	3	3	4	O	N	H	/	S	M	L	I	2	AZM	RT											
				AGE	COL				R		D		P		C		STRUCTUR-2				A		A		A		A				
L		PB		RG														P3		V2		/		L5							
R ALT	516.5	518.0	RED-BRN GARNET ALT'D RK AND BXX WITH SK FRAGS - STRS MAGN																												
R ALT	516.5	518.0	520-525' & CPY.																												
P	525.0	585.0	PBTf RF VF FR VV P 3 VB 20 V4 ZE 71 7* GA 6 1 1 4																												
L			PB AS << P2 P2 64 64 / ? V 2 2 1																												
R LTH	525.0	585.0	A MED GREY-GRN, CHL-SERIC-EPI-ORANGE (ZED) ALT'D ASH +/- SMALL																												
R LTH	525.0	585.0	LAP AND TUFF.																												
R LTH	525.0	585.0	PYR 3-5%, DISS = VNLTs. IRREG CORRODED LITHIC/X'AL CLASTS COMP																												
R LTH	525.0	585.0	+70% RK.																												
R LTH	525.0	585.0	BRY, SILIC CLASTS IN LT CHL +/- SERIC FG MTX. GAR ALT'N SPOTTY																												
R LTH	525.0	585.0	MOD-HIGH VN DENSITY WITH VNS CALC-PYR & BRT ORANGE INV (ZED?)																												
R LTH	525.0	585.0	VNS +.5MM GEN AT 0-20 DEG C/A. CALC-ZED & OR ENV. CUT PYR-EPI																												
R LTH	525.0	585.0	VNS.																												
R LTH	525.0	585.0	X'AL CALC & BLK GILS VNS 1-2CM THK AT 10-30 DEG C/A AT FREQ																												
R LTH	525.0	585.0	1/FT.																												
R LTH	525.0	585.0	FEW GRV GYP VNS WITH CALC SELV. SOME CPY DN FRACT. SOME OR																												
R LTH	525.0	585.0	GARNET(?) ALT'N TO BTM OF SECT. EPI ALT'N IS STRG FROM APT 560																												
R LTH	525.0	585.0	FT. STR CHL SHRS & WAXY COATING 577-580. SOME GARN OCC IN WT																												
R LTH	525.0	585.0	CARB VNS TOWARDS CONT.																												
P	585.0	649.0	SKAR GA CA+ MX J 9 N P V1 61 ? GA K X																												
L			QL OR C 1 73 D) P9 2 )																												
R LTH	585.0	649.0	MASSIVE GARNET (GRN/RED) SKARN WITH EST 2-5% (+/-) GRIS CALC IN																												
R LTH	585.0	649.0	MTX.																												
R LTH	585.0	649.0	MINOR CALC VNLTs. PYR OCCS AS SPOTS/CLOTS TO 2MM - MAINLY FINE																												
R LTH	585.0	649.0	DISSEM.																												
R LTH	585.0	649.0	BLK (SOFT WITH BLK STRK) SPH(?) OCC DISS 1-2%. CPY SPTS DISS &																												
R LTH	585.0	649.0	VNS TO 2% CU. GARN SIZE VARY <2MM TO >1CM. MAG IS SPOTTY TO																												
R LTH	585.0	649.0	612 FT AND STRG TO 645. GARNET-PYR ALT'NS CUT MAGN (PGST MAS																												
R LTH	585.0	649.0	ALT'N).																												
R LTH	585.0	649.0	CPY OCC IN VNS & PATCHY IN MAG. RED - HEM ALT'N OF MAG IN STRG																												
R LTH	585.0	649.0	MAG ZONE - VNS AND DISSEM.																												
R LTH	585.0	649.0	SPHAL OCC DISS THRU SECTION, BUT +1% FROM APT 640.																												
R LTH	585.0	649.0	PYR LOC MASSIVE TO +20% PYR, +/- CPY +/- MAGN. PYR STRS FROM																												
R LTH	585.0	649.0	APT 595 FT.																												
R LTH	585.0	649.0	IN PYRITIC SECTIONS (EG: 595-612), CALC OCC AT SPTS IN MTX TO																												
R LTH	585.0	649.0	5%.																												
R LTH	585.0	649.0	RK BKN/PULV 625-643.																												
R LTH	612.0	649.0	MUCH OF SKARN REP BY MASSIVE PYR. MAGN COMP +/- 40% OF RK																												
R LTH	612.0	649.0	612-649.																												
X	612.0	649.0	X SKAR GA CA+ MX J 9 N D V1 P7 72 ? GA K Y																												
L			QL OR C 1 72 D) P5 2 )																												
P	649.0	718.0	MARB. K X L P 80 60 7) 61 M 9																												

DRILLHOLE/TRVERSE : E-069 (CONTINUED)

F - INTERVAL -		CORE RECOVERY (FT.)	% M ROCK TYPE	TYPI- QAL	TEX- TURES	GRAIN CHARACS	FRAC- TURE	STRUCTUR-1 ALTERATION MINS										ORE-TYPE MINS					
L (UNITS = FT)								H H H H H H H H H H H H H H H H										A A A A A A A A A A A A A A A A					
Y 6 F R D M - T D		ROCK QUAL DESIG	FOR EN V Q AGE	RT LC- 3 COL	TH QM2	TX TX 1 2	S R S O	DIP F SML I R D P C	T ID	STK	DIP	KF	MU	CL	EP	HE	HA	PR	MC	SL	HA	SUMMARY	
Y 6																							STRUCTUR-2
L																							
R CON	649.0	649.0	3-4CM STR EPI & SP ALT'N AT CONT WITH MARBLE.																				
R LTH	649.0	718.0	WT AND GRV, WKLY BANDED MED-COARSE BR'D MARB. ABT 20% IS																				
R LTH	649.0	718.0	GRY-BLK CARBONACEOLS AS PATCHES, BANDS TO 4CM. BOUND BTW WT &																				
R LTH	649.0	718.0	GRY-BLK MARB GEN IRREG. MOD DENSITY (5-10/FT) OF THIN BLK-GRY																				
R LTH	649.0	718.0	SMS GEN <1-2MM WITH CHL(?) AND PYR. SCATT NARROW YELLOW-BROWN																				
R LTH	649.0	718.0	GARNET SKARN BANDS AT: 680.7-682'; 685.5-686'; 696.5-700.5';																				
R LTH	649.0	718.0	709.5-712.0', PLUS FEW THIN BANDS (<6") SCATT'D THRU SECT.																				
R LTH	649.0	718.0	GARNET POSS CG - DIFFICULT TO SIZE - GEN 1-2MM EUHEDRA.																				
R LTH	649.0	718.0	NOTE: REDDISH, HEM(?) VNLTs & DISS IN SKAR.																				
N	680.7	682.0	X SKAR	CA1	J 9 N	N	1 VP				V1			7)	GA	K X							
L			QL	YU		C						61			P9	1 )							
N	685.5	686.0	X SKAR	CA2	J 9 N	N					V1			7+	GA	K X							
L			QL	YU		C						61			P9	1 +							
N	696.5	700.5	X SKAR	CA2	J 9 N	N					V1			7)	GA	K X							
L			QL	6Y		C									P9	1 )							
N	709.5	712.0	X SKAR	CA2	J 9 N	N					V1			7+	GA	K X							
L			QL	UY		C									P9	1 +							
P	718.0	794.0		SKAR	CA2 MX	J 9 N	P				V2				7+ D)	GA	K X						
L			QL			C	1					61			P9	2 +							
R LTH	718.0	794.0	BTM SKARN HORIZ COMP >90% YELLOW-BRN TO REDDISH-BRN GARNETS.																				
R LTH	718.0	794.0	GRV QTZ VNS TO 2CM WITH CLOTS PYR TO 4MM. SCATT THRU WT CALC																				
R LTH	718.0	794.0	VNS. PYR RUNS 1-5%. ABT 10-15% SK IS REMN CALC. SK IS ZONED																				
R LTH	718.0	794.0	AS FOLLOWS: 722-722 - REDDISH-BRN SK WITH GRN EPI(?) PROX(?) ON																				
R LTH	718.0	794.0	VNLTs, DISS PYR & CPY PYR 1-3%, WK LIMEY, 722-745 - INTERM'D																				
R LTH	718.0	794.0	YELLOW GRN, REDDISH GARNs, WITH SOME GRN EPI(?) PYROX(?) ALTNS.																				
R LTH	718.0	794.0	PYR DISS & CPY. RK MOD 4MM WITH +10% PATCHES MARB(REMN).																				
R LTH	718.0	794.0	QTZ & PYR VNS TO 1-2CM COMP 1-2%. NOTE: STRG BLK CARB IMPREG SK																				
R LTH	718.0	794.0	722-723 FT; 745-764 MOD-STRG REDDISH BRN SK WITH INCR RED COL																				
R LTH	718.0	794.0	FROM 745.																				
R LTH	718.0	794.0	CPY STRG WITH TO 2-3CM THK & MASS PYR TO +15% PYR-MOD LIMEY.																				
N	718.0	722.0	X SKAR	CA1 MX	J 9 N	D					V0				D+ D)	GA	P X K X						
L			QL	RU		C	1					62			P9	? 2 *							
N	722.0	745.0	X SKAR	CA2 MX VV	J 9 N	D					V3				7) D)	GA	K X						
L			QL			C	1					62			P9	P X 2 +							
N	745.0	764.0	X LOP	CA1 MX	J 9 N	D	3 VH	1	30	V1		V1		81 6+	GA	6 A K X							
L			QL	BR		C	1					61			P9	P 9 2 1							
R LTH	763.0	765.0	A MASS, FINE ASH, GRV CHL-SERIC(?) ALT'D TUFF. PYR DISS 2-3%																				
N	763.0	765.0	X TUFF		FR MX	H 8 J	N								B+ /								
L			QL	5A		6 6 6 C									P3 1								
R LTH	765.0	794.0	HIGHLY VN'D/MICRO VN'D AND HEALED WITH PYR, CALC, QTZ.																				
R LTH	765.0	794.0	REDDISH GARNET SKARN PATCHES SEPAR BY QTZ-PYR-CARB																				
R LTH	765.0	794.0	PYR DISS & VNLTs AT 5-10% WITH SOME CPY.																				

Island Copper Mine  
ISLAND

DRILLHOLE/TRAVERSE : E-069 (CONTINUED)

F K L E A Y B	INTERVAL - (UNITS = FT)		CORE RECOV- ERY (FT.1)	%	TYPI- M ROCK TYPE	DAL FYING 1 2 QM1	TEX- MIN 1 2 F F C P	GRAIN CHARACS % M	FRAC- TURE	STRUCTUR-1 ID STK DIP	ALTERATION MINS								SUMMARY					
	ORE-TYPE MINS										MIN													
Y B	F R D M	T D	ROCK QUAL DESIG	FOR MEM AGE	EN V AGE	RT Q COL	TM LC- 3	TX 3 4	S D N H / SML I	DIP I	T 2	ID	STK	DIP	KF	MU	CL	EP	HE	HA	PR	MO	SL	HA
R LTH	765.0	794.0																						
R LTH	765.0	794.0																						
R LTH	765.0	794.0																						
R LTH	765.0	794.0																						
R LTH	765.0	794.0																						
R LTH	765.0	794.0																						
N	765.0	794.0																						
L																								
P	794.0	895.0																						
L																								
R LTH	794.0	895.0																						
R LTH	794.0	895.0																						
R LTH	794.0	895.0																						
R LTH	794.0	895.0																						
R LTH	794.0	895.0																						
R LTH	794.0	895.0																						
R LTH	794.0	895.0																						

SUMMARY REMARKS

20 - 48  
PBTf - MOD CHL, EPI AND WK SERIC ALT'D ASH & X'AL TUFF

48 - 54  
PPHb - CHL ALT'D HORNBLLENDE PORPHYRY. RED HEM (?) ENVS ON PYR VNLTs.

54 - 90  
SKAR - RED-BRN ANDRADITE, PYROX(?) SKARN. THIN BDD WITH SILIC AND GARN BANDS. EPI ALT'N AFTER GARNET. WEAKLY LIMEY.

242 - 258  
PP/B - MASSIVE INTER - BASIC VOLC WITH CHL ALT PHENOS COMP 5 - 1 IN FG MTX. RED HEM ENVS ON PYR VNLTs.

258 - 398  
PBSD - BLEACHED, GRy, QTZ, SERIC, EPI, CHL, PYR, SP ALT'D THIN BDD FG SEDS. BDB RANGES 50 - 85 DEG C/A. MAIN VNS PYR, CALC, ZEO, EPI. SOME BXX VNS. POSS SOME GARN ALTN.

398 - 421  
PPHb - DK FRESH, HBL PORP WITH 5-10% HBL AND 10-20% FELD

5d1d1

Island Copper Mine  
ISLAND

DRILLHOLE/TRVERSE : E-069 (CONTINUED)

## SUMMARY REMARKS

PHENOS. PERV GREASY BRN ALTN. VEINED AND MICROV'D WITH PYR,  
QTZ, CALC, ZEO, BLS.

421 - 445

PBSD - BLEACHED, SILIC'D SEDS WITH INCR PYR, CALC, ZEO VEINING  
FROM ABOVE PBSD UNIT. SCATT QTZ-MOLY VNS. CHL OCC AS ENV ON  
PYR VNLTS.

445 - 462

PPHB - STRG BLEACHED HBL (FELD ?) PORPH WITH SERIC ENV ON  
QTZ-MOLY VNS AND WIDE BRN ENV ON QTZ AND CALC/ZEO VNLTS.

462 - 505

PBSD - SKARNY, REDDISH, THIN BDD SED WITH EPI AND GARNET ALT'S  
FROM 469 FT. MAFIC DYKE (1 FT THK) AT 466 FT.

505 - 516.5

PPFX - FELD PORP WITH 10-15% GRY FELD PHENOS TO 4MM (X'AL  
TUFF?). FLT WITH 1.5 FT. GOUGE AT 515 FT. SOME SF AND GARNET

516.5 - 525

SKAR - RED-GRN, BANDED, GARNET SKARN WITH STRG MAGN AND VIS CPY  
FROM 520 FT.

525 - 585

PBTF - CHL, SERIC, EPI, ZEO ALTD ASH/LAP ANDES TUFF. MINOR GARN  
(?). MOD-HIGH VN DENSITY WITH CALC, PYR, EPI AND ZEO(BRT ORG)

585 - 649

SKAR - MASSIVE, YL-BRN, YL-RED AND RED-BRN ANDRADITE GARNET,  
MAGNETITE SKARN WITH DISSEM AND VNS OF CPY. BLK DISSEM MINERAL  
NOT SPHAL AS LOGGED (LOW ZINC ASSAYS); POSS CHALCOHITE. MAS COMP  
ABT 40% OF RK AT 612-649 WITH MASSIVE PYR(+20%)

649 - 718

MARB - GRY, WT, WKLY BANDED, MASSIVE, MG-C6 CALCITIC MARBLE.  
INCL FIVE THIN (6" TO 4") BANDS OF YELLOWISH GARNET SKARN.  
PYR-CHL VNLTS MOD ABD.

718 - 794

SKAR - YL-BRN AND RED-BRN GARNET SKARN, NON-MAGN, WITH RED-BRN  
SK 718-722, YL-BRN AND RED SK 722-745 AND STRG RED-BRN SK  
745-795 WITH 2 FT THK TUFF LAYER AT 763 FT. SK MOD LIMEY (+10%  
REMN CARB IN MTX). CPY DISS AND VNS TO 1CM. PYR RUNS 1-5%, LOC

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Solid

UTAH MINES LIMITED - ISLAND COPPER MINE  
DIAMOND DRILL HOLE ASSAYS

HOLE=E-069 : 15226E 1P166N 1349EL.

FROM	TO	CU PCT	MO PCT	FE PCT	AI PPM	AG PPM	PR PCT	ZN PCT	TAG
20.0	30.0	0.26	0.009	8.5	0.010	0.650	0.002	1.570	4638
30.0	40.0	0.22	0.011	5.9	0.010	1.010	0.003	0.067	4639
40.0	50.0	0.15	0.008	7.9	0.010	1.170	.	.	4399
50.0	60.0	0.11	0.007	8.2	0.010	1.100	.	.	4512
60.0	70.0	0.19	0.007	8.9	0.010	1.970	.	.	4513
70.0	80.0	0.09	0.008	7.1	-0.010	1.130	.	.	4514
80.0	90.0	0.19	0.007	6.8	-0.010	1.440	0.005	0.047	4121
90.0	100.0	0.10	0.008	7.4	0.010	0.870	.	.	4515
100.0	110.0	0.09	0.008	7.9	0.010	0.680	.	.	4516
110.0	120.0	0.13	0.008	6.4	0.010	1.100	.	.	4517
120.0	130.0	0.11	0.009	6.9	0.020	0.270	.	.	4400
130.0	140.0	0.11	0.008	9.6	0.010	1.020	.	.	4518
140.0	150.0	0.13	0.007	10.8	0.010	1.390	.	.	4519
150.0	160.0	0.10	0.009	5.4	0.020	0.830	0.002	0.073	4640
160.0	170.0	0.13	0.006	6.9	-0.010	1.060	0.005	0.050	4122
170.0	180.0	0.11	0.008	5.9	0.010	0.850	0.003	0.072	4641
180.0	190.0	0.11	0.009	5.0	0.010	0.600	0.002	0.070	4642
190.0	200.0	0.09	0.009	4.4	0.010	0.560	0.002	0.066	4643
200.0	210.0	0.11	0.010	4.9	0.010	1.050	.	.	4254
210.0	220.0	0.10	0.010	5.7	0.010	0.780	0.004	0.071	4644
220.0	230.0	0.11	0.011	3.5	0.010	0.690	0.002	0.042	4645
230.0	240.0	0.10	0.010	3.7	0.010	0.690	0.002	0.015	4646
240.0	250.0	0.10	0.009	5.5	-0.010	0.340	0.003	0.013	4123
250.0	260.0	0.15	0.010	6.3	0.010	0.770	0.002	0.009	4647
260.0	270.0	0.23	0.008	4.6	0.020	1.600	0.003	0.026	4648
270.0	280.0	0.13	0.012	3.5	0.030	0.920	0.002	0.019	4649
280.0	290.0	0.14	0.009	5.6	0.010	1.070	.	.	4255
290.0	300.0	0.13	0.011	4.4	0.020	0.440	0.002	0.006	4650
300.0	310.0	0.13	0.010	4.6	0.030	0.700	0.002	0.004	4651
310.0	320.0	0.17	0.009	5.7	0.020	0.580	0.002	0.006	4652
320.0	330.0	0.13	0.009	5.7	0.010	1.100	0.004	0.029	4124
330.0	340.0	0.16	0.008	7.4	0.020	0.450	0.003	0.069	4653
340.0	350.0	0.11	0.013	5.5	0.020	0.350	0.003	0.010	4654
350.0	360.0	0.11	0.012	4.7	0.020	1.110	0.002	0.006	4655
360.0	370.0	0.09	0.011	6.0	0.010	0.550	.	.	4256
370.0	380.0	0.15	0.011	6.6	0.020	0.920	0.002	0.069	4656
380.0	390.0	0.15	0.010	4.3	0.010	0.570	0.003	0.018	4657
390.0	400.0	0.19	0.022	6.5	0.020	0.400	0.003	0.007	4658
400.0	410.0	0.15	0.021	7.5	-0.010	0.690	0.004	0.007	4125
410.0	420.0	0.15	0.012	7.5	0.070	0.560	0.003	0.007	4659
420.0	430.0	0.21	0.018	5.6	0.010	0.700	0.003	0.035	4660
430.0	440.0	0.15	0.012	5.4	0.010	0.780	0.003	0.007	4661
440.0	450.0	0.17	0.010	6.1	0.010	0.320	.	.	4257
450.0	460.0	0.12	0.009	6.5	0.020	0.450	0.003	0.005	4662
460.0	470.0	0.10	0.010	5.6	0.010	0.440	0.002	0.005	4663
470.0	480.0	0.14	0.008	6.5	0.010	0.930	0.003	0.013	4670
480.0	490.0	0.09	0.008	7.1	-0.010	0.700	0.004	0.024	4126
490.0	500.0	0.09	0.007	5.9	0.000	0.000	0.002	0.011	4660
500.0	510.0	0.08	0.008	6.1	0.000	0.000	0.002	0.022	4661
510.0	520.0	0.35	0.014	5.1	0.010	2.240	0.002	0.021	4662

GEOLOGICAL BRANCH

16125

UTAH MINES LIMITED - ISLAND COPPER MINE  
DIAMOND DRILL HOLE ASSAYS

----- HOLE=E-069 : 15276E 13166N 1349EL. -----

FROM	TO	CU PCT	MO PCT	FE PCT	AU PPM	AG PPM	PB PCT	ZN PCT	TAG
520.0	530.0	0.61	0.017	6.0	0.010	2.110	.	.	4258
530.0	540.0	0.57	0.048	5.8	0.010	1.920	0.002	0.021	4663
540.0	550.0	0.44	0.042	10.2	0.010	2.150	0.003	0.014	4664
550.0	560.0	0.64	0.030	4.4	0.010	2.150	0.002	0.015	4665
560.0	570.0	0.31	0.014	6.9	0.010	2.310	0.004	0.022	4127
570.0	580.0	0.14	0.026	5.4	-0.010	0.970	0.003	0.000	.
570.0	580.0	0.14	0.026	5.4	-0.010	0.970	0.003	0.017	4505
580.0	590.0	1.49	0.026	10.8	0.020	7.750	0.001	0.026	4071
590.0	600.0	2.45	0.011	11.6	0.010	19.500	0.001	0.030	4072
600.0	610.0	0.90	0.007	12.9	0.010	8.250	0.001	0.017	4073
610.0	620.0	0.60	0.006	21.1	0.020	6.250	0.001	0.080	4074
620.0	630.0	0.52	0.008	18.7	0.010	6.250	0.001	0.087	4075
630.0	640.0	0.41	0.007	25.1	0.060	4.500	0.001	0.066	4076
640.0	650.0	0.31	0.006	18.3	0.040	4.000	0.001	0.095	4077
650.0	660.0	0.07	0.008	1.0	-0.010	0.680	0.006	0.065	4506
660.0	670.0	0.06	0.008	1.0	0.010	0.620	0.007	0.046	4507
670.0	680.0	0.07	0.009	1.0	0.010	0.870	0.007	0.076	4508
680.0	690.0	0.07	0.008	1.5	-0.010	0.970	0.006	0.112	4509
690.0	700.0	0.27	0.011	3.4	0.010	6.000	0.001	0.090	4078
700.0	710.0	0.11	0.009	1.3	-0.010	2.420	0.006	0.430	4510
710.0	718.0	0.15	0.008	1.6	0.010	3.560	0.006	0.234	4511
718.0	730.0	0.64	0.010	9.8	0.020	15.000	0.001	0.072	4079
730.0	740.0	0.51	0.014	8.6	0.020	8.500	0.002	0.060	4080
740.0	750.0	0.41	0.009	11.2	0.020	4.900	0.003	0.050	4081
750.0	760.0	2.93	0.009	3.6	0.010	13.750	0.006	0.037	4087
760.0	770.0	0.71	0.014	11.0	0.010	4.700	0.003	0.046	4082
770.0	780.0	0.39	0.024	8.6	0.010	3.100	0.003	0.036	4083
780.0	790.0	0.40	0.045	7.5	0.010	2.200	0.003	0.030	4084
790.0	800.0	0.24	0.047	9.4	0.010	2.500	0.233	0.079	4085
800.0	810.0	0.27	0.021	6.1	0.010	1.800	0.032	0.034	4086
810.0	820.0	0.18	0.020	5.4	0.010	1.150	0.003	0.036	4671
820.0	830.0	0.19	0.013	6.1	0.020	1.410	0.006	0.025	4672
830.0	840.0	0.13	0.010	5.9	0.010	0.600	0.002	0.009	4673
840.0	850.0	0.15	0.012	6.6	0.030	0.700	0.003	0.070	4674
850.0	860.0	0.16	0.012	4.9	0.020	0.720	0.002	0.009	4675
860.0	870.0	0.14	0.013	6.2	0.020	0.630	0.002	0.005	4676
870.0	880.0	0.10	0.013	5.3	0.010	0.470	0.001	0.024	4677
880.0	890.0	0.21	0.011	5.2	0.010	1.120	0.003	0.010	4123
890.0	895.0	0.18	0.010	5.6	0.010	0.560	0.003	0.009	4678

APPRAISMENT REPORT  
MCM

TOP TRS

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE #: E 69

DATE: Dec 8/86 LOGGED BY: HE

FOOTAGES (FT)		INTERVAL		CORE REC. # (IN)	% REC.	CUMUL. LENGTH OF PIECES (INCHES)	R. Q. D.		# OF FRACT'S	FRACT. INT.
FROM	TO	INCHES	CUM. INCHES				7 1/4"	4"		
CASING										
20	22	24	24	4	17	0	0			
22	26	48	72	41	85	4	8			
26	31	60	132	36	60	0	0			
31	34	36	168	28	78	4	11			
34	37	36	204	36	100	9	25			
37	46	108	312	97	90	295	27			
46	51	60	372	41	68	11	18			
51	56	60	432	65	108	26	43			
56	66	120	552	120	100	52.5	44			
66	76	120	672	114	95	9	8			
76	80	48	720	36	75	4	83			
80	86	72	792	75	104	255	35			
86	96	120	912	118	98	725	60			
96	106	120	1032	118	98	58	48			
106	115	108	1140	104	87	44	41			
115	124.5	114	1254	120	105	19	17			
124.5	134.5	120	1374	118	98	44.5	41			
134.5	144.5	120	1494	120	100	54	45			
144.5	154.5	120	1614	120	100	245	20			
154.5	155	6	1620	6	100	0	0			
155	165	120	1740	120	100	48	40			
165	175	120	1860	120	100	43	36			
175	178	36	1896	36	100	4	11			
178	186	96	1992	79	82	34	35			
186	196	120	2112	122	102	66.5	55			
196	206	120	2232	117.5	98	82.5	69			
206	216	120	2352	120	100	67.5	56			
216	226	120	2472	114	95	78.5	65			
226	236	120	2592	115	96	100	83			
236	246	120	2712	117	99.5	105.5	88			
246	256	120	2832	116	97	41	34			
256	266	120	2952	114	95	63	53			
266	276	120	3072	117	99.5	53	44			
276	286	120	3192	120	100	68.5	57			
286	296	120	3312	112	93	27	23			

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE #: E-69

DATE: Dec 8/86 LOGGED BY: MB

FOOTAGES (FT)		INTERVAL		CORE REC. (IN)	% REC.	CUMUL. LENGTH OF PIECES (INCHES)	R. Q. D.		# of FRACT.	FRAC. INCHES
FROM	TO	INCHES	CUM. INCHES				7 1/4"	4"		
296	306	120	3,432	120	100	54.5		45		
306	316	120	3,552	116	97	63		53		
316	321	60	3,612	60	100	20		33		
321	331	120	3,732	122	102	44.5		37		
331	341.5	126	3,858	116	97	35		28		
341.5	351	114	3,972	120	100	50		44		
351	361	120	4,092	120	100	70		58		
361	371	120	4,212	116	97	65		54		
371	381	120	4,332	112	93	73		61		
381	391	120	4,452	118	98	54		45		
391	396	60	4,512	58	97	38		63		
396	406	120	4,632	117	97.5	100		83		
406	416	120	4,752	120	100	103		86		
416	426	120	4,872	126	105	72		60		
426	436	120	4,992	120	100	96		80		
436	446	120	5,112	114	95	107		89		
446	451	60	5,172	68	113	35		58		
451	462	132	5,304	125	95	97		73		
462	468	72	5,376	58	80	21		29		
468	473	60	5,436	58	97	13		22		
473	478	60	5,496	44	73	0		0		
478	481	36	5,532	28	78	6		17		
481	485	48	5,580	45	94	11		23		
485	486	12	5,592	7	58	0		0		
486	493	84	5,676	44	52	8		9.5		
493	500	84	5,760	81	96	10 1/2		12.5		
500	504	48	5,808	52	108	4		8		
504	514	120	5,928	123	102.5	68		57		
514	518	48	5,976	44	92	15		31		
518	526	96	6,072	92	96	47		49		
526	536	120	6,192	120	100	22		18		
536	546	120	6,312	120	100	51		42.5		
546	556	120	6,432	120	100	79		66		
556	566	120	6,552	118	98	71		59		

# ROCK QUALITY DESIGNATION (R.Q.D.)

HOLE # : E-69

DATE : Dec 10/86 LOGGED BY : HE

FOOTAGES (FT)		INTERVAL		CORE	%	CUMUL. LENGTH OF PIECES (INCHES)		R. Q. D.		# OF	F.R.C.
FROM	TO	INCHES	CUM. INCHES	REC. 2(1/2)	REC. 1		74"	4"		FRACT'S	INT'S
566	576	120	6672	120	100		40.5				
576	586	120	6792	120	100		32				
586	596	120	6912	110	92		54				
596	606	120	7032	114	95		70				
606	612	72	7104	72	100		13.5				
612	616	48	7152	42	87.5		26				
616	626	120	7272	110	92		60				
626	635	108	7380	102	94		32				
635	641	72	7452	70	97		10				
641	651	120	7572	120	100		77				
651	661	120	7692	120	100		59				
661	672	132	7824	120	91		46.5				
672	682	120	7944	118	98		89				
682	692	120	8064	118	98		98				
692	702	120	8184	119	99		95.5				
702	712	120	8304	118	98		91				
712	722	120	8424	120	100		81				
722	732	120	8544	120	100		102.5				
732	742	120	8664	120	100		61.5				
742	750.5	102	8766	86	84		24				
750.5	760.5	120	8886	120	100		58.5				
760.5	766	66	8952	70	106		44.5				
766	770	12	8964	12	100		5				
770	776	108	9072	30	28		0				
776	782.5	78	9150	81	104		21				
782.5	784	18	9168	10	56		0				
784	790	72	9240	70	97		21				
790	796.5	78	9318	78	100		38				
796.5	806	114	9432	105	92		48				
806	813	84	9516	81	96		37				
813	816	36	9552	22	61		0				
816	826	120	9672	120	100		43				
826	836	120	9792	116	97		38				
836	838 1/2	30	9822	40	133		5				
838 1/2	845 1/2	84	9906	75	89		24				



MAGNETIC SUSCEPTIBILITY

HOLE: E-69

INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE (CGS UNITS)
0 - 10	-	-	-	-	
10 - 20	.10	.00	.00	.00	.02
20 - 30	.00	.00	.00	.00	.018
30 - 40	.00	.00	.00	.00	0
40 - 50	.03	.03	.02	.01	.022
50 - 60	.00	.00	.00	.00	0
60 - 70	.00	.00	.00	.00	.006
70 - 80	.00	.00	.09	.00	0
80 - 90	.00	.05	.02	.00	.014
90 - 100	.00	.03	.03	.00	.012
100 - 110	.04	.03	.01	.00	.018
110 - 120	.02	.02	.00	.00	.008
120 - 130	.00	.06	.20	.00	.052
130 - 140	.00	.00	.00	.00	.018
140 - 150	.00	.00	.06	.01	.014
150 - 160	.01	.0	.01	.01	.022
160 - 170	.01	.0	.03	.0	.008
170 - 180	.0	.03	.03	.05	.022
180 - 190	.0	.0	.0	.0	.006
190 - 200	.0	.0	.0	.0	.0
200 - 210	.0	.0	.01	.0	.002
210 - 220	.0	.0	.0	.0	.022
220 - 230	.0	.0	.0	.02	.004
230 - 240	.0	.0	.0	.0	.0
240 - 250	.04	.01	.0	.02	.036
250 - 260	.0	.0	.0	.0	.006
260 - 270	.0	.0	.0	.0	0
270 - 280	.0	.0	.0	.0	0
280 - 290	.0	.03	.0	.0	.006
290 - 300	.0	.0	.0	.0	0
300 - 310	.0	.0	.0	.0	0
310 - 320	.0	.0	.0	.0	0
320 - 330	.0	.19	.09	.0	.056
330 - 340	.0	.0	.0	.04	.008
340 - 350	.0	.0	.0	.0	.006
350 - 360	.0	.0	.0	.0	0
360 - 370	.0	.0	.0	.0	.0

521.01

## MAGNETIC SUSCEPTIBILITY

HOLE: E-69

INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE (CGS UNITS)
380-0	.0	.01	.0	.0	.002
390-0	.0	.0	.0	.0	Ø
400-0	.02	.10	.23	.05	.080
410-37	.08	.39	.41	.0	.25
420-18	.12	.01	.0	.0	.062
430-0	.03	.02	.02	.0	.004
440-0	.0	.0	.0	.0	Ø
450-0	.0	.01	.01	.0	.004
460-0	.06	.0	.0	.0	.012
470-0	.0	.0	.0	.0	Ø
480-02	.01	.01	.0	.0	.008
490-0	.01	.03	.03	.02	.018
500-03	.02	.02	.0	.0	.014
510-0	.02	.06	.06	5.0	.038
520-2.5	4.8	.70	.13	.0	1.626
530-0.6	.07	.19	.29	.79	.27
540-0.5	32-0	.01	.18	.02	12.8
550-0.4	.02	.01	.0	.0	.019
560-0.1	.0	.01	.0	.01	.006
570-0.07	.01	.00	.00	.00	.016
580-0.1	.00	.01	.11	.00	.026
590-0.21	.00	20. (60 at 594 1/2)	.21	1.5	4.38
600-16.	.21	.27	7.1	6.4	5.996
610-2.9	26.0	56.	HH, HH <sup>(over 99)</sup>	32.	43.38
620-6.0	14.0	23.	55.	HH, HH <sup>(over 99)</sup>	39.6
630-51.	32.	17.	16.	23.	27.8
640-12	13.	54.	13.	.87	18.57
650-0.3	.00	.06	.00	.00	.018
660-100	.00	.03	.00	.00	.006
670-100	.00	.00	.00	.00	Ø
680-1.27	.05	.00	.04	.00	.072
690-100	.00	.03	.02	.00	.010
700-100	.00	.00	.00	.00	Ø
710-100	.00	.00	.00	.04	.008
720-1.2	.02	.05	.01	.00	.04
730-100	.04	.03	.05	.04	.032
740-100	.06	.04	.00	.07	.034

MAGNETIC SUSCEPTIBILITY

HOLE: E-69

INTERVAL START	+ 2'	+ 4'	+ 6'	+ 8'	INTERVAL AVERAGE (CGS UNITS)
750 .12	.16	.12	.13	.08	.122
760 4.8	.02	.26	.00	.03	1.022
770 .03	-	-	.13	.00	.032
780 .00	.00	.00	.02	.02	.008
790 .08	.18	.10	.04	.03	.266
800 .02	.02	.02	.23	.02	.058
810 .07	.01	.03	.0	.01	.024
820 .01	.06	.07	.08	.03	.05
830 .07	.10	.04	.07	.11	.134
840 .01	.04	.10	.18	.03	.072
850 .12	-.02	-.02	-.01	.03	.04
860 .27	.87	.96	.24	.75	.618
870 .35	.61	.36	.05	.06	.286
880 .35	.08	.06	.09	.10	.136
890 1.0	.02	.04 <sup>Eq. 895</sup>			.3
900					
910					
920					
930					
940					
950					
960					
970					
980					
990					
1000					
1010					
1020					
1030					
1040					
1050					
1060					
1070					
1080					
1090					
1100					

50101

## DOWNHOLE PULSE EM SURVEY

11

UTAH MINES LIMITED

ISLAND COPPER MINE

15:11 WEDNESDAY, JULY 15, 1987

----- HOLE=E69 -----

DIST (FEET)	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	PP	GAIN
33	198.5	118.2	68.1	47.1	29.6	15.6	6.4	-24.2	1092	200
49	184.9	104.9	48.9	32.0	18.0	6.2	-15.1	-44.5	1092	200
66	171.3	93.8	40.0	16.5	3.2	-8.0	-33.8	-77.9	1093	200
82	165.8	89.7	39.2	17.3	6.5	-16.5	-37.9	-83.3	1094	200
98	164.3	91.2	37.9	16.2	10.6	-5.5	-23.2	-56.2	1094	200
115	169.0	86.7	43.3	33.6	12.9	9.3	-4.5	-25.7	1095	200
131	167.4	89.3	44.2	28.9	13.1	9.6	-0.2	-16.2	1095	200
148	168.9	89.7	42.3	34.0	17.0	12.0	9.8	-0.3	1095	200
164	161.6	82.8	38.8	28.2	11.1	12.2	3.8	-8.0	1095	200
180	157.8	82.0	36.6	21.0	14.2	15.5	5.3	-5.6	1096	200
197	155.9	77.1	35.2	21.9	13.6	8.1	7.8	-6.7	1096	200
213	161.4	79.9	39.3	23.6	13.4	9.9	9.0	3.3	1096	200
230	162.6	77.2	32.3	17.4	8.0	6.9	4.9	9.4	1096	200
246	163.9	75.3	30.0	14.5	6.4	14.2	9.9	12.6	1097	200
262	165.9	77.4	30.9	17.7	12.8	16.1	7.8	-5.8	1097	200
279	161.5	72.1	31.8	13.8	12.0	10.2	7.1	0.3	1097	200
295	161.7	70.5	28.7	13.0	8.4	7.5	4.6	1.9	1097	200
312	157.3	68.7	27.5	9.7	8.4	1.3	-5.5	-0.6	1097	200
328	162.6	70.0	27.0	13.2	9.1	8.6	9.7	2.3	1096	200
344	161.1	68.1	24.7	13.6	5.9	9.3	14.8	11.6	1094	200
361	160.8	65.9	22.6	13.3	5.5	6.4	-3.9	-11.1	1093	200
377	162.7	68.7	22.0	10.9	3.7	4.3	9.5	1.3	1092	200
394	162.3	64.9	19.9	9.9	5.4	5.2	8.6	8.6	1090	200
410	150.1	61.3	19.8	5.4	1.1	-6.3	-3.5	-4.1	1083	200
427	176.9	67.7	18.9	7.2	1.9	3.5	-0.1	-2.0	1172	200
430	176.9	67.9	20.5	8.2	6.3	2.1	0.0	-6.0	1172	200
443	177.0	67.6	19.9	8.4	7.4	7.5	6.6	0.6	1172	200
459	179.4	68.3	18.2	5.7	1.0	4.2	0.0	4.7	1172	200
476	180.3	68.5	18.1	8.0	1.7	2.2	7.1	4.3	1173	200
492	180.4	67.8	18.8	6.1	3.9	2.3	1.4	-9.4	1172	200
509	184.8	69.1	18.3	8.1	5.2	6.8	-2.3	-5.0	1173	200
525	179.9	67.8	18.2	7.5	6.3	6.3	-0.5	-8.5	1173	200
541	189.5	68.5	19.4	8.1	5.9	4.8	0.9	-8.3	1173	200
558	192.6	69.2	18.0	4.1	3.5	6.1	4.7	1.7	1171	200
574	217.1	77.0	19.3	4.6	1.2	4.9	4.2	0.8	1173	200
591	194.8	67.0	17.0	4.0	-1.3	-2.2	-3.1	1.2	1106	200
607	141.5	40.7	10.0	2.5	0.4	-1.1	-0.7	-1.3	881	200
607	139.1	41.6	11.0	4.1	1.3	1.3	0.8	-5.1	858	200
615	272.3	78.1	17.8	4.6	1.6	1.5	4.7	3.1	1087	200
623	181.6	53.1	10.4	1.5	-0.5	0.5	-1.6	0.0	842	200
632	200.7	64.7	16.8	5.1	3.2	3.5	4.1	0.2	949	200
640	149.3	49.4	10.0	1.6	-0.7	1.0	1.2	1.6	918	200
648	221.8	74.7	17.2	4.3	1.9	0.2	-5.0	-8.0	1123	200
656	219.7	73.7	17.3	5.7	1.8	0.9	1.7	-0.8	1109	200
664	215.2	73.3	16.3	4.9	2.0	0.0	-1.8	-3.3	1085	200
673	212.5	71.8	16.7	4.5	0.5	-0.4	2.3	2.2	1051	200
681	206.7	70.0	16.6	4.3	1.7	0.5	4.7	4.4	1025	200
689	207.1	70.1	17.0	3.0	-0.6	0.8	1.3	3.6	1017	200
697	202.7	68.2	15.4	3.3	-0.9	-0.1	2.2	4.2	974	200
705	205.2	69.8	16.1	3.8	2.9	4.9	4.2	-0.4	957	200
722	205.8	69.3	16.6	6.0	3.4	2.4	-0.6	-6.3	912	200

DOWNHOLE PULSE EM SURVEY

12

UTAH MINES LIMITED  
ISLAND COPPER MINE

15:11 WEDNESDAY, JULY 15, 1987

HOLE=E69

DIST (FEET)	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	PP	GAIN
738	206.0	69.0	15.8	3.8	2.1	2.1	2.7	-0.2	959	200
755	207.6	68.9	16.0	3.3	0.9	0.1	-2.9	-3.3	791	200
771	199.4	67.5	15.6	4.5	1.5	2.1	1.3	0.8	749	200
787	200.7	68.9	15.7	3.7	0.8	0.5	-1.0	-0.2	721	200
804	191.2	66.2	16.1	4.9	1.6	2.2	3.4	1.0	676	200
820	189.6	66.1	16.0	3.9	1.7	3.6	3.1	-1.8	654	200
837	174.5	63.5	15.5	4.6	2.7	3.4	5.2	4.4	626	200
853	181.0	64.4	15.7	4.1	0.0	1.8	2.0	1.9	587	200
869	180.4	64.1	15.8	4.6	2.3	3.3	3.7	-0.4	553	200
886	176.2	63.1	16.2	4.8	2.5	3.7	1.9	-1.7	529	200

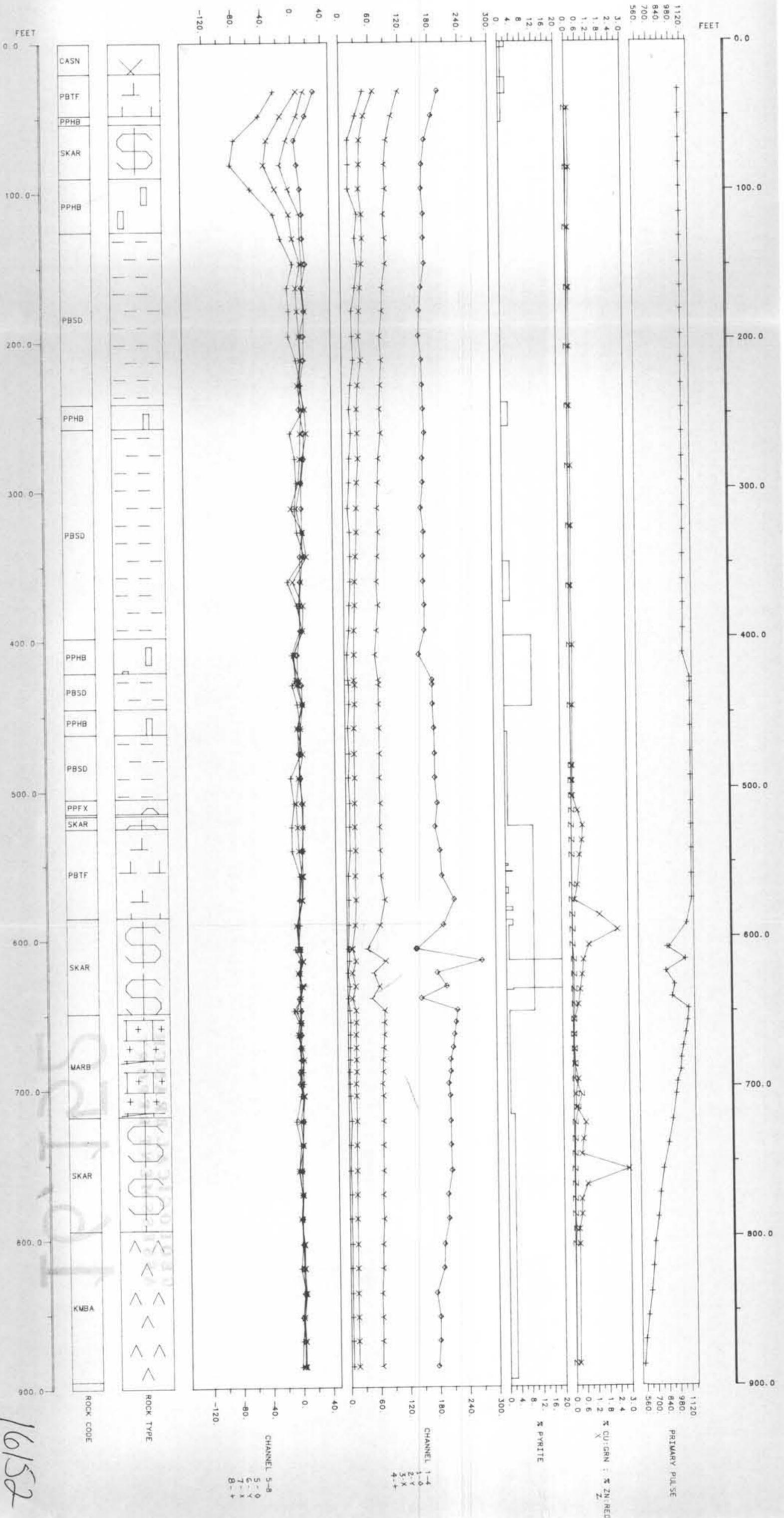
UTAH MINES LIMITED  
ISLAND COPPER MINE

1

Utah Mines Ltd., Island Copper Mine  
 PROPERTY EXPLORATION AND  
 E-069 PULSE EM SURVEY  
 PROJECT ID : ILC

HOLE / TRAVERSE ID : E-069  
 CORE HOLE SIZE : NQ  
 DATE STARTED : 87/ 2/11  
 DATE COMPLETED :  
 GEOLOGGED BY : JAF  
 PLOT DATE : 87/JUL/14  
 PROJECT LEADER : J. FLEMING  
 LOCATION : PORT HARDY, B.

COLLAR AZIMUTH :  
 COLLAR DIP : -90.00  
 COLLAR ELEVATION : 1348.00  
 COLLAR NORTHING : 18166.00  
 COLLAR EASTING : 16228.00  
 COLLAR OFFSET :  
 COLLAR STATION :  
 TOTAL LENGTH : 895.0



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UTAH MINES - PORT HARDY  
CLAIM BOUNDARY

SCALE: 1"=1000'	CONTROL BY: 1980 SITE SURVEY
CONTOUR INTERVAL: 20 feet	DATUM: LOCAL
DATE OF PHOTOGRAPHY: 1986	MAP REF: 92 L II, 12
Nadir Mapping Corporation Project No.	SHEET 3 of 3

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

16,152

