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ISLAND COPPER MINE

ASSESSMENT REPORT

DIAMOND DRILLING

EAST-94 GROUP OF CLAIMS

NTS: 92L/11W

J.A. Fleming, P.Geo.

}

February 10, 1994

GEOLOGICAL BRANCH ASSESSMENT REPORT

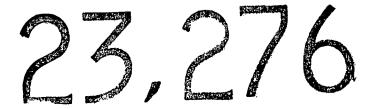


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1. INTRODUCTION

Between the 11th and 24th of August, 1993, three NQ size diamond drill holes (Table 1) totalling 648.3 meters (2127 feet) were drilled immediately to the east of Rupert Inlet (Figure 1). The program was designed to test for ≥ 0.20 % Cu grade porphyry copper type mineralization in three target areas: 1) the Far East Anomaly, 2) the M-1 anomaly and 3) the Rupert Stock areas. The holes were all follow-up to holes previously drilled in each area. The Far East geophysical anomaly area was previously tested by one drill hole (R-16) that had encountered rhyodacite porphyry and moderately to strongly altered Bonanza volcanics. A hole drilled in the M-1 anomaly area (R-18) had encountered hydrothermally altered volcanic rocks indicative of a nearby porphyry source. The Rupert Stock area had been previously drilled with porphyry copper mineralization in Bonanza volcanics encountered in several holes.

2. LOCATION AND ACCESS

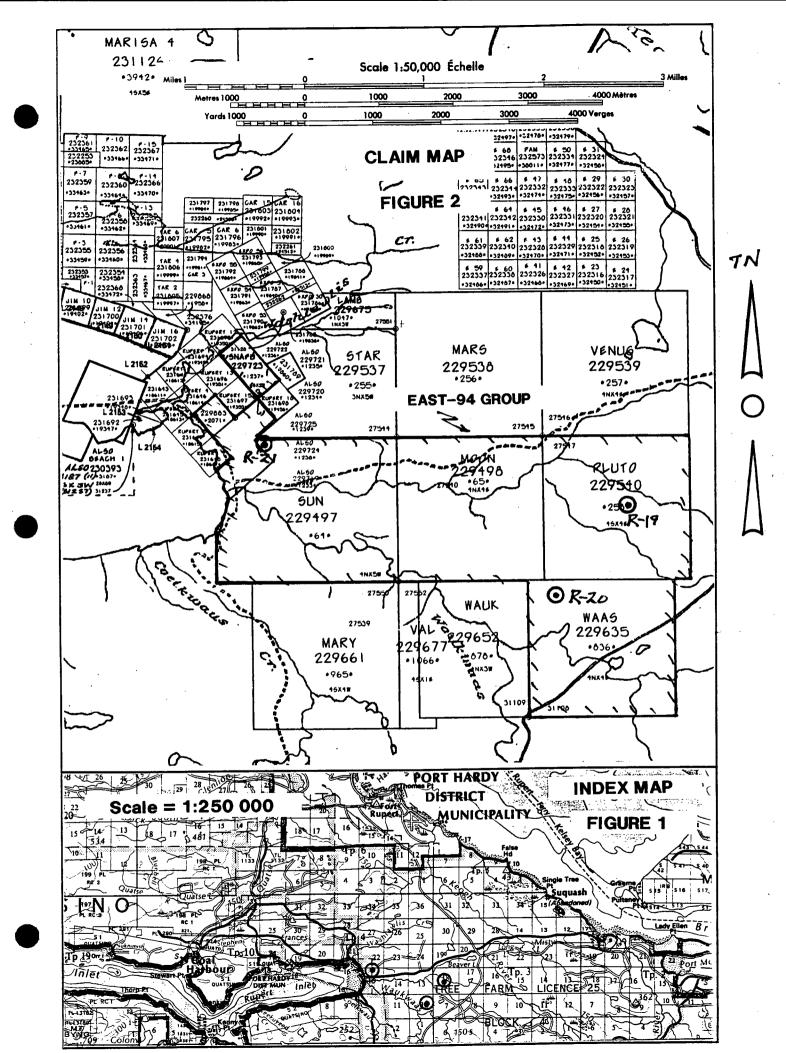
The exploration area (Figure 1) is located east of Rupert Inlet in the Nanaimo Mining Division. It falls on NETS map sheet 92L/11w with co-ordinates 50° 35° and 127° 23°.

The claims (Figure 2) can be reached by following the Rupert Mainline logging road from the Island Highway - Port Alice road junction onto the Beaver Mainline, or from the Port Alice road or by the Coal Harbour and mine roads and M&B main to the end of Rupert Inlet. Holes R-19 and R-21 were drilled from logging roads. Hole R-20 can be reached by following a cat trail west from the south end of Beaver Main.

3. PHYSIOGRAPHY

The area is in the Nahwitti lowlands of the Coastal Trough physiographic subdivision that divides the Insular Mountains of Vancouver Island from the Coast Mountains on the mainland. The area is characterized by rounded, gently-rolling hills with a maximum relief of about 150 meters. The target area extends from the east end of Rupert Inlet to the east end of the claims near the Island Highway - Port Alice road junction. The area south of Rupert Main is generally flat lying while north of the mainline the topography rises with the Washlawlis Hill being the most prominent topographic feature. A Loran C transmitter tower is located east of Washlawlis Hill and is visible for a considerable distance.





4. **EXPLORATION HISTORY**

The Island Copper porphyry copper-molybdenum-gold deposit to the west of the area was discovered in 1967 and exploitation of the deposit by open-pit mining has taken place since 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 east of Rupert Inlet has been conducted intermittently by BHP Minerals (Utah Mines Ltd. prior to takeover by BHP) from July 1974 and included geological mapping, line cutting, soil geochemical surveys, ground magnetometer and I.P. geophysical surveys, and a total of 18 drill holes. Results of much of this work has been documented in various assessment reports. A number of magnetic anomalies coupled with chargeability anomalies were identified or confirmed in the property surveys. Three areas with chargeability and/or magnetic anomalies were previously drill tested and were the subject of this follow-up drilling program (Figure 3). The Far East anomaly consists of a linear magnetic anomaly with a central, subparallel chargeability anomaly. The M-1 magnetic anomaly is a circular to oval-shaped magnetic anomaly without an associated chargeabilty anomaly. The Rupert Stock area contains overlapping, east-west trending magnetic and chargeability anomalies.

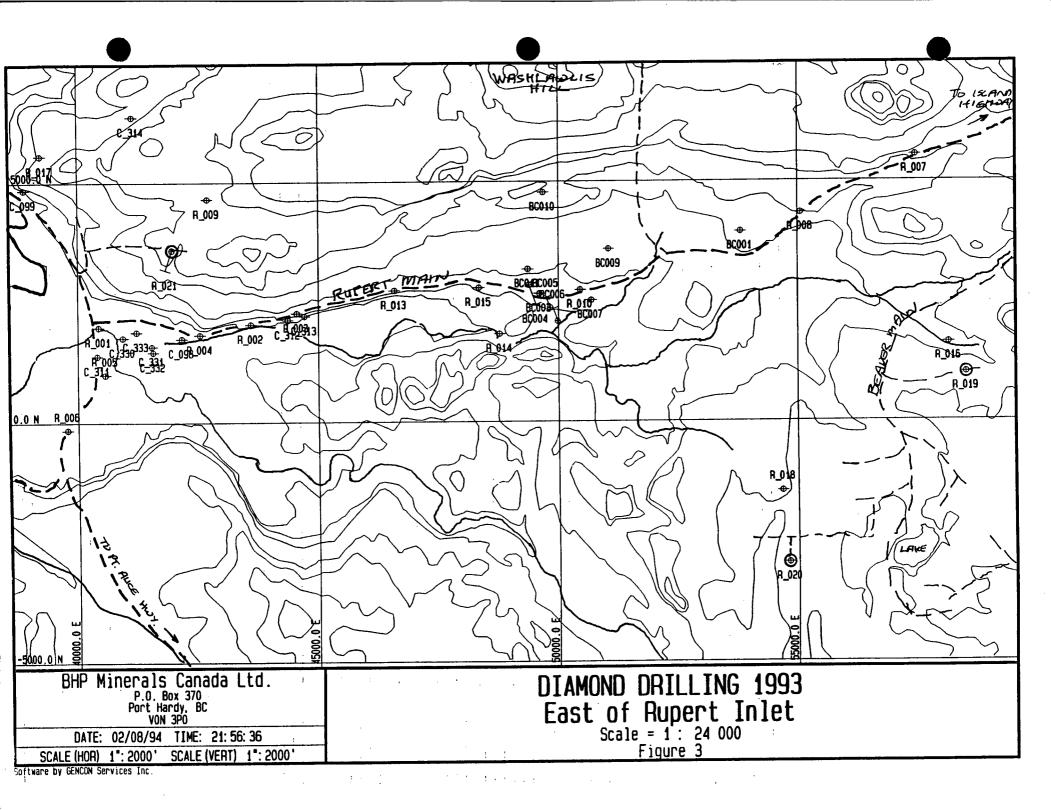
5. GENERAL GEOLOGY

The area is bounded by the Rupert Stock on the west and on the south by the postulated north-northwest striking Holberg (Dawson) Fault. From south to north the area is underlain by the southward dipping, progressively older sequence of Lower Jurassic Bonanza Group andesitic and basaltic tuffs and flows, and the Upper Triassic Vancouver Group sequence of Parson Bay Formation clastic sediments, Quatsino Formation limestones and the thick package of Karmutsen Formation pillow basalts, breccias, tuffs and flows. These rocks are intruded by Early to Middle Jurassic granitoids of the Island Plutonic Suite of which the Rupert Stock granodiorite porphyry at the northeast end Rupert Inlet, and the quartz feldspar porphyry dykes and the granitic rocks encountered east of Rupert Inlet are members. The geology of the region has recently been mapped and described by Nixon et al. (1993). All the holes in this program were drilled in the Bonanza volcanic rocks.

6. **OBJECTIVES**

Far East Anomaly Area

Hole R-16 drilled in the magnetic anomaly in 1984 (assessment



report #85-53-14234) confirmed that the quartz feldspar porphyry dyke system encountered in drill holes to the west closer Rupert Inlet, and which was predicted by the magnetic and chargeability survey results, did in fact extend through to the east end of the mineral property. Although the volcanic wallrocks encountered in the hole were not mineralized, they were moderately to strongly quartz and magnetite altered. This suggested that the hole may have intersected the core of the system and that the biotite altered (and mineralized) volcanic rocks lay further to the south to the footwall of a northward dipping porphyry intrusive. In addition, if the intrusive were a late (unmineralized) phase as occurs in the Island Copper deposit (Perello et al, 1989), there could be an associated mineralized phase adjacent to R-16 or at depth. Testing this model was the objective of hole R-19.

M-1 Anomaly Area

The M-1 magnetic anomaly which was first detected by the Federal / Provincial regional aeromagnetic survey of 1962-63 and later confirmed by ground magnetic surveying was tested by hole R-18 in 1987 (assessment report # 87-340-15884). Thick overburden was anticipated and was realized when the hole penetrated some 146 metres (488 feet) before intersecting weakly to moderately magnetite altered ash and lapilli tuffs, with patchy brown hydrothermal biotite developed towards the bottom of the hole. Although there was no significant copper mineralization, the above alterations and the network of zeolite veins made the rock appear very similar to the altered tuffs in the hanging wall and footwall of the Island Copper porphyry dyke system. Again, a model of a northward-dipping dyke with a mineralized zone to the south of R-18 was considered worth testing. A vertical electrical sounding survey using a Wenner array conducted over the site area prior to drilling substantiated the earlier interpretation of resistivity data that the thick overburden cover was thinning to the south. On this basis it was decided to test the anomaly with a second hole.

Rupert Stock Area

The objective of the hole was to penetrate the Rupert granodiorite porphyry stock to determine if there were any significant copper mineralization within the stock and adjacent volcanic wallrocks. Some copper mineralization in altered Bonanza volcanic rocks had been encountered in earlier holes drilled south of the Rupert Main and quartz feldspar porphyry dyke rock was located both in outcrop and in drill core. The overlapping magnetic and chargeability anomalies located south of the road were well tested, but there was no drill hole in the anomalies north of the road west of hole R-13 (Figure 3)

7. WORK PERFORMED

The drill program was designed and supervised by the author, J. A. Fleming, P.Geo., Chief Geologist, and A.T. Reeves, P.Geo., staff geologist at the Island Copper Mine. The core was logged by Andrew MacIntosh, B.Sc., independent contract geologist, under the direction of the author. The diamond drillers maintained a written log of the type of cuttings returned to surface while triconing through overburden and these logs are included with the geological logs and other records. 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.

Three NQ size holes totalling 648.3 metres were drilled in the anomaly areas with hole R-19 in the Far East Anomaly area, hole R-20 in the M-1 Anomaly area and hole R-21 in the Rupert Stock area (Figures 1 - 4).

The core was measured for 1) magnetic susceptibility using an EDA K-2 susceptibility meter, 2) rock quality designator (RQD) and 3) recovery. The core was split and sampled on 3.05 meter (10 foot) sample lengths every 12.2 meters (40 feet). The samples were assayed for copper, molybdenum, gold, silver, lead and zinc at the Island Copper assay laboratory. A summary of laboratory methods is included in Appendix I and assay results are included in Appendix II.

The drilling results have been plotted on 1:2 400 and 1:4 800 scale cross-sections (Figures 5 - 7).

TABLE 1

Diamond Drilling -- August 11 - 24, 1993

HOLE	CO-ORDS1	$ELEV^2$	AZIM	DIP	LENGTH ³	CLAIM	START	FINISH
 D 010		1000			204 9		08/11	08/15
R_019	E 58500	1220	0	-90	204.8	PLUTO	08/11	08/15
	N 1000				(672.0)		•	
R 020	E 54800	1210	0	-90	214.6	WAAS	08/15	08/19
-	N -2590				(704.0)			
R 021	E 41950	1220	198	-55	228.9	SUN	08/19	08/24
	N 3600				(751.0)			

Total: 3 holes and 648.3 meters (2127.0) feet

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

8. DRILLING RESULTS

Hole R-19 (Far East Anomaly Area)

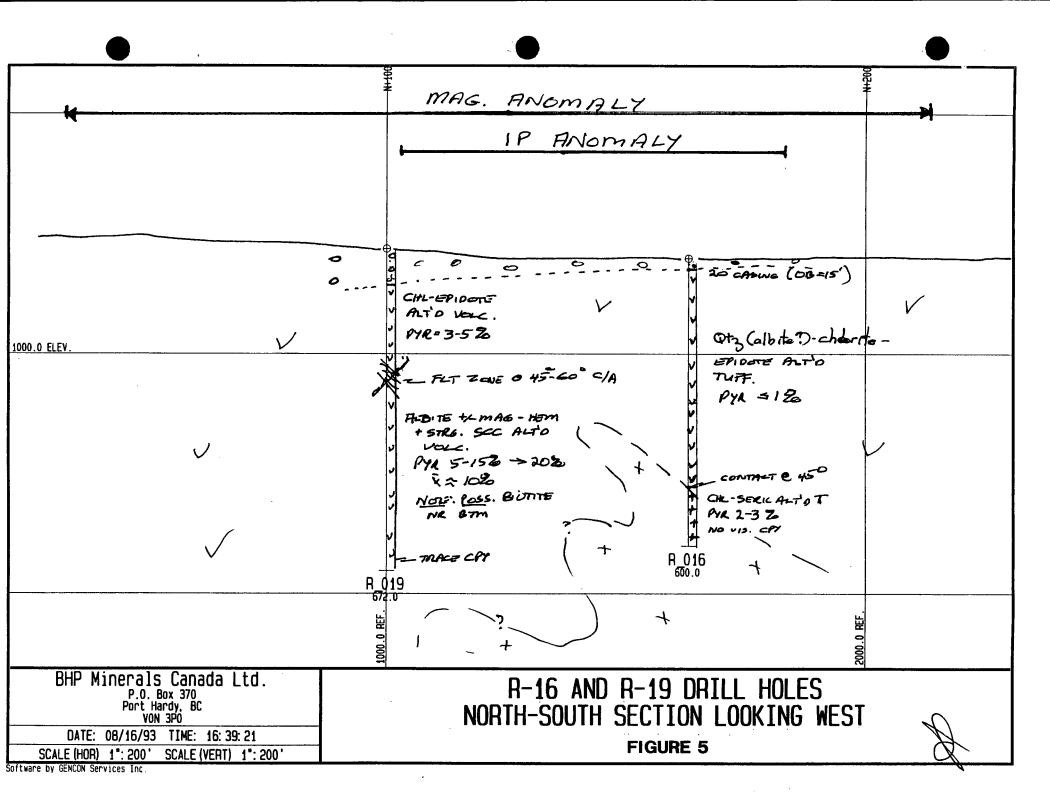
The hole penetrated 24.4 metres (80 feet) of overburden compared to only 4.6 metres (feet) in hole R-16 to the north (Figure 5). From bedrock to about 80 metres (260 feet) the hole intersected propylitically altered andesitic / basaltic lapilli tuffs. Epidote alteration is very strong with up to 20 per cent epidote through the section. Moderate magnetite alteration occurs to about 55 metres (180 feet). Chlorite-sericite (SCC) alteration is moderate to strong, particularly along fractures and shears. The pyrite content is low at 1 to 3 per cent except where amounts to 10 per cent occur with sericite. Quartz-carbonate veins are scattered throughout the section. The core is cut by an increasing number of shears and faults with pyritic sericite-clay gouge with depth in the hole. No copper mineralization was noted. From about 80 to 98 metres (260 - 320 feet), sericite-pyrite alterations are strong occurring with multiple shears and breccia seams and as alteration of albite. From about 98 metres to the end of the hole the rock is propylitically altered ash tuff (andesite / basalt flow?) with less epidote alteration and increased albite alteration and weak to moderate magnetite alteration. Quartz-carbonate ± pyrite veins are common to locally abundant. The rock is also very pyritic with up to 5 to ≥ 10 per cent pyrite throughout.

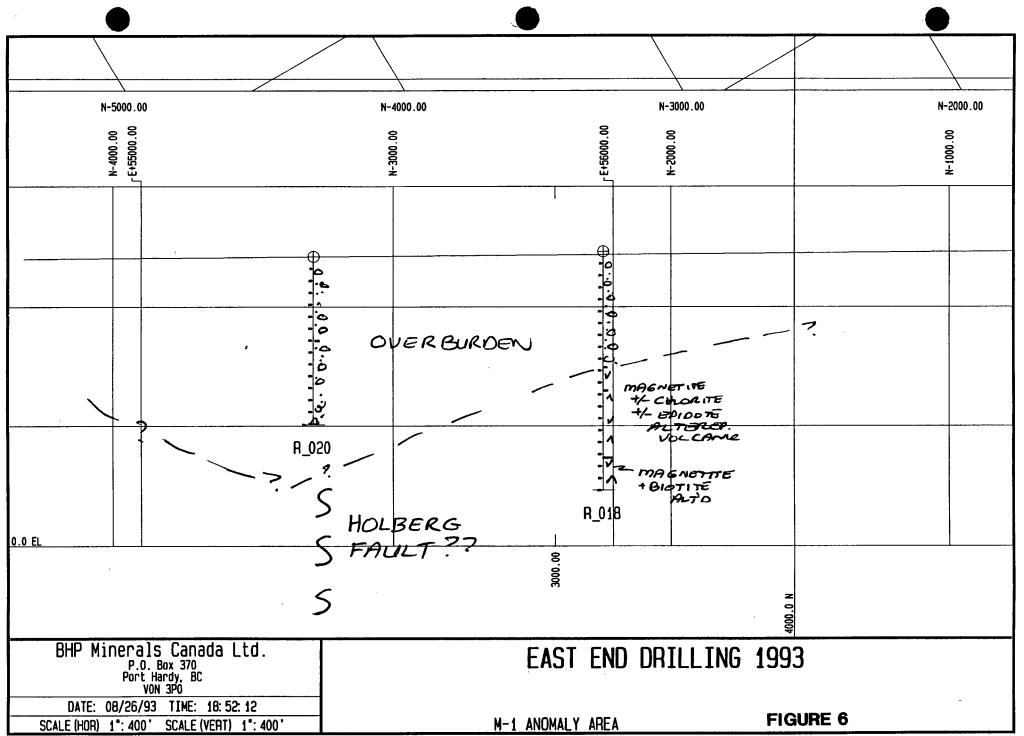
R-20 (M-1 Anomaly Area)

The hole was drilled to 214.6 metres (704 feet) in overburden (Figure 6). Bedrock was not reached and the hole was abandoned.

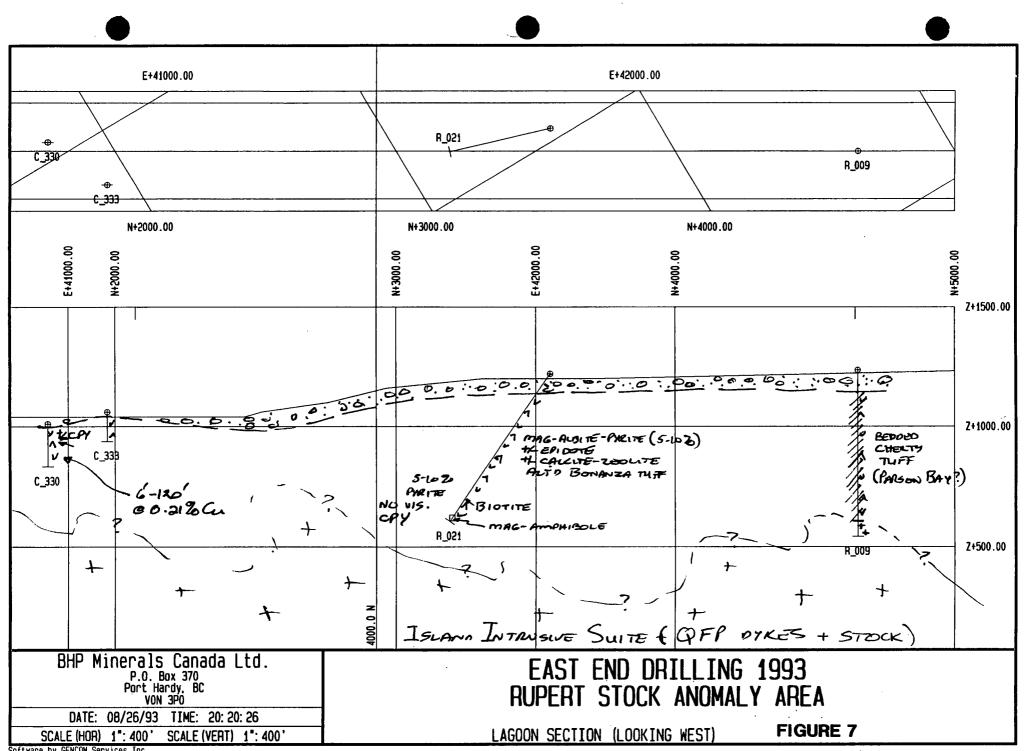
R-21 (Rupert Stock Area)

The hole penetrated 30.1 metres (feet) of overburden followed by altered Bonanza tuffs through to the end of the hole (Figure 7). No intrusive rock was encountered in the hole. From bedrock to about 170 metres (560 feet) the rock is a chlorite-epidote-magnetite-albite-sericite (SCC) \pm hematite altered lapilli - ash tuff with scattered quartz-pyrite veins. Pyrite content is moderate to high (to 10%) to about 75 metres (250 feet) and low to the end of the section. From 170 (560 feet) to the end of the hole the rock is a pyritic (generally 5 - 10 per cent pyrite) chlorite - albite \pm magnetite \pm biotite \pm amphibole \pm sericite altered lapilli - ash tuff. Amphibole was noted mainly near the bottom of the hole.





Software by GENCON Services Inc.



Software by GENCON Services Inc.

9. INTERPRETATION OF RESULTS:

Hole R-19 (Far East Anomaly Area)

The hole was drilled through the outer margins of a porphyryrelated hydrothermal alteration system (Figure 5). The increase of magnetite and the quartz veins towards the bottom of the hole indicates that the hole was approaching the transition zone between the propylitic and potassic zones. The proximity of the hole to R-16, however, which intersected quartz-feldspar porphyry indicates that there is little room for a mineralized potassic zone to exist. Also, the high pyrite content of the system suggests that it is a "failed" porphyry system with little potential for a significant deposit of copper mineralization. A case could be made, however, for potential mineralization in the area west of R-16. The area is bounded by the BC series of holes (Figure 3) which contain minor amounts of copper mineralization and it is on the dyke trend. The area to the north is close to the Parson Bay contact and there appears to be limited space within the Bonanza for a sizeable deposit,

Hole R-20 (M-1 Anomaly Area)

The hole appears to have been drilled in the Holberg (Dawson) Fault till valley. This adds evidence to the location of the fault. The geophysical surveys did not predict the extreme overburden thickness in the drilled area. A series of low-level magnetic anomalies to the west of the M-1 anomaly were considered, prior to drilling R-20, to be reasonable targets for testing. The projection of the fault valley till deposits through this area indicates that thick overburden likely covers those areas and eliminates them as reasonable targets for porphyrystyle mineralization. The overburden-thickness data was provided to the Geological Survey Branch, Environmental Geology, Surficial Geology group along with the overburden thicknesses of all the other Island Copper exploration drill holes for use in surficialgeology research.

R-21 (Rupert Stock Area)

The hole started in propylitically altered Bonanza tuffs and passed through weakly biotite altered volcanics and ended in amphibole altered rock. This sequence of alterations based on the Island Copper alteration model indicates that the hole approached the porphyry dyke system that extends eastward from Rupert Stock. The lack of copper mineralization in the biotite altered rocks indicates that the system is low in copper and the area is not favourable for a significant deposit. Although the objective of testing the granodiorite porphyry Rupert Stock was not met, the hole greatly reduced the potential for a large deposit in the area. A small deposit(s) could exist, however.



10. RECOMMENDATIONS

Far East Anomaly

No further drilling is recommended. The absence of copper mineralization in the volcanics coupled with the weak geochemical signature for the area despite the relatively thin overburden indicates that there is probably little potential for a significant porphyry copper deposit in the area.

M-1 Anomaly

The overburden is too thick to consider further drilling in this area or to the east towards Rupert Inlet. The model of a porphyry dyke system causing the anomaly is still considered valid.

Rupert Stock Area

No further drilling is recommended. The porphyry system is not strongly mineralized in the area and the untested area is considered too restricted in size to contain a large porphyry deposit.

11. REFERENCES

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

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

12. STATEMENT OF QUALIFICATIONS

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



- 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.

13. COST STATEMENT

Contractor's Costs:

Olympic Drilling & Consulting Ltd.

Hole #	Lengths	Drilling* Cost	
R-19	204.8 m	\$12,775.00	
R-20	214.6 m	14,316.00	
R-21	228.9 m	11,424.00	
Total	<u>684.3</u> m	\$38,515.00	\$ 38,515.00

Port Hardy Bull (drill site access trail construction)

Hoe:	27 hrs. @ \$110/hr.	\$ 2,970.00	
Lowbed:	5 hrs. @ 90/hr.	450.00	
Faller:	1 day @ 450/day	450.00	
		\$ 3,870.00	\$ 3,870.00

H.A. Davis Transport Ltd. (move drill rig and equipment)

Highboy: Lowbed:			\$65/hr \$85/hr		
20.02001	•	Ŭ	,	\$815.00	\$ 815.00

BHP Minerals Canada Ltd.

Core Logging:	
1 geologist x 7 days x \$200 / day	\$ 1,400.00
Core Shack Labour	
1 labourer @ \$140 / day x 7 days	980.00
Supervision:	
1 supervisor x 13 days x 50% x \$200 / day	1,300.00
Overhead:	
20% (max) of Supervision & Labour	700.00
Assays:	
33 samples x \$30 / sample	990.00
Vehicle:	
1 truck @ \$41 / day x 13 days	533.00
Core Storage:	
378.9 metres @ \$1.48 / metre	560.00
	500.00
Report Preparation:	500.00

TOTAL:

\$50,163.00

Total Drilling = 648.3 meters (2,127 feet) Unit Cost = \$76.12 per meter (\$23.20 per foot)

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APPENDIX 1

Laboratory Proccdures

Island Copper Mine Drill Core Assaying Procedures

Sample Preparation:

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

Base Metals;

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

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

2) Samples are digested with 10 ml Nitric acid, 10 ml Hydrochloric acid and 7 ml Perchloric acid on a bare (300 °C) hotplate until they cease to evolve 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 Spectometry (A.A.S.).

Precious Metals;

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

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

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

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

-

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

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

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

APPENDIX 2

Drill Hole Data

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320) weak to moderate propylitic alteration Similar to 80-244 but less SCC + ep and more albite. + py. 155mm albite envelopes. tre?) minor py + ep. 280° dip. minor sericite in fractures 1-5%. Imm Py stringers. 5 mm albite envelopes	290 - 672

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			CT _ RACT STAR ED BY	OR TED	A	igus	tu	5/93 [°Ix	3	CON	/IPL	.ETE	ED		 			_			IN(CC	CLI DOI		'ION JAT	1 ES .	·	 IS												
Footage	Core Recovery	Oxide Duartz	Sericite	Clay/Pyrop Biotite	- <u> </u>	Chlorite	-	1	T	Amphibole	A L B	S c c	-	Suf Veins	 	_		_	ST.	Ì	Sample No.	& Interval		BAS rock	SIC (types.	GEC metal	LOC = 100 DLOC lization olumn	Y: structur	res			DES	CRII	LOG PTIC SKET		S		ROCI	
											19月1日、「「「「「「「「「「「「「「」」」」「「「「」」」「「「」」」「「「」」」「「」」」「「」」」「「」」」」										- 3.80 - 3.40 - 4.00 - 4.00		in a second	solution and the solution of t	origination of the state of the	- 1 cm - 2 cm	a veinter in terminister in	inite 2 te floo mitent 102 py mitent 102 py 2000 200	ill nak ill	**************************************	altn	L		asin L	arko E.			290- 672	

	DDH-FR19	DRILL LUG	Page of0
CONTRAC	RTED August 15 COMPLET	T.D. 672' INCLINATION ED COORDINATES SURVEY REFERENCES	COLLAR ELEVATION BEARING
Footage Core Recovery Oxide Quartz Sericite	Clay/Pyrob Blictha Blictha K-spar CarbiZeto CarbiZeto Garnet Pyroxene D ⊃ S	STR. VISUAL EST. STR. VISUAL EST. Structure Structur	
430		10 10 10 10 10 10 10 10 10 10	Py voins Py Dips 45°-60° Py Dips 45°-60° Pp Dips 45°-60° Pp Todip T

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	CO	ITRAC	CTOR	Ang			_ COI	APLET	TED					- - -	•		LINA	672' TION NATES REFERENCES	COLLA BEARIN	NG	
Footage	Core Recovery Oxide	Ouartz Sericite	Clay/Pyrop Biothe	LTV Chlorite	EBAIdote Carb Zeo	T		A S L C B C		Sult veins Frac Inten	-	VISI ⁸ 3		EST	-	Sample No.		LOG SCALE <u>1°=100'</u> BASIC GEOLOGY: rock types, metallization, structure alterations, one column system	5	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
			?		12:301201014111							5 10 10 5 10 10 5 10 10 10 10				- 500 - - 510 - - 3 20 - - 540 -		moderale mag. over 19 Possible bio fife. moderale covicife. Strong albile bleaching 10-15% diss. py ~ 30% pyover rocm moderally magneter 6% 1-2mm py stringer	202) 10-2 2 Un prin py un prin py un re- nge rs.	er»	-240-672

DOH-BR19	DINEE LOG	age of
PROJECT Island Copper CONTRACTOR DATE STARTED August 16/93 COMPL LOGGED BY _ Andrew Meanlesh	T.D. <u>672'</u> INCLINATION ETED COORDINATES SURVEY REFERENCES	COLLAR ELEVATION BEARING
Footage Core Recovery Aude Cale Cale Footage Cale Fordote Calify Cale Cale Footage Cale Fordote Cale Cale Footage Cale Cale Footage Cale Footage Cale Cale Cale Cale Cale Cale Cale Cal	STR. VISUAL EST. S supervised by the set of	LITHOLOGIC ROCK DESCRIPTIONS. UNIT
	5 5 5 5 5 5 5 5 5 5 5 5 5 5	P? allel to vein over 10m. the over soom is py switch pres. prorpy P? realcife vicile. rs ein vein alli le amphiboles(!) is dra rs. py. vein ein vein alli le the moderalcly magnetic over rocalcife rs. lo dra the moderalcly real over rs. lo dra the moderalcly real over rocalcife rs. lo dra the moderalcly rocalcife rs. lo dra the moderalcly rocalcife rocalcife rs. lo dra the moderalcly rocalcife rs. lo dr. the moderalcly rocalcife rs. lo dr. the moderalcly rocalcife rocalcife rocalcife rocalcife rs. lo dr. the moderalcly rocalcife rocalcife rs. lo dr. the moderalcly rocalcife roca

				لـ .ر	DD.	<u>H - E</u>		210	1_							1		18 Kan Kan	-	D.C						rage <u>10</u>	of <u>60</u>	
	C D	ATE	RA ST		R _	d Co Aus Indi	ust	- 16/	(93 • K	CO 64		TED		fug	tem	- 16		3	•		INAT	ION IATES REFERE				LAR ELEVATION		
Footage	Core Recovery	Oxide	Quartz	Sericite Clay/Pyrop	Blotte	K-spar Chlorite	П	Carb ^{, Zeo}		Amphibole	AS LC BC		Sulf. Veins	Frac. Inten			T	ST.		Sample No. & Interval		SCALE BASIC rock types, alterations	<u>/″≃/c</u> GEOLC metallization	OGY: on, structures		LITHOLOGIC DESCRIPTIONS NOTES & SKETCH		ROCK UNIT
-640- -650- -670-			-								「「「「「「「「」」」」」「「「「」」」」」「「「」」」」」」「「「」」」」」」			tracetrace		10 10 10				6720	1-2 Jon A Land In 12 Martin	5-50 	calcife is provide the strongent restrong	inor calcit inor calcit inor calcit inor calcit inor calcit is scc. it it is calcit calcite mo soricit iss. spec cite strong cite vein w I cm i soricite ein	e e e e e e e e e e e e e e e e e e e	nee gericite ille 658.5	itudive clfored eencuid ic. itot as the has ipy-	

BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
R_019	58500.0	1000.0	1220.0

DOWN-HOLE SURVEY INFORMATION:

		FROM	4 TO	AZIM	UTH	DIP			
FROM	TO	CU	MO	FE	AU	AG	PB	ZN	TAG
80.0	90.0	0.01	<0.001	5.8	<0.01	0.10	0.003	0.009	18181
120.0	130.0	<0.01	<0.001	5.5	<0.01	0.20	0.004	0.010	18182
160.0	170.0	<0.01	<0.001	6.1	<0.01	0.10	0.003	0.010	18183
200.0	210.0	<0.01	<0.001	8.3	0.01	0.20	0.005	0.009	18184
240.0	250.0	<0.01	<0.001	7.4	0.01	0.20	0.004	0.007	18185
280.0	290.0	<0.01	<0.001	8.5	0.01	0.40	0.004	0.008	18186
320.0	330.0	<0.01	<0.001	4.8	0.01	0.10	0.004	0.008	18187
360.0	370.0	<0.01	<0.001	7.4	<0.01	0.20	0.004	0.004	18188
400.0	410.0	<0.01	<0.001	10.3	0.01	0.10	0.004	0.002	18189
440.0	450.0	0.04	0.002	9.0	0.01	0.20	0.004	0.002	18190
480.0	490.0	0.03	<0.001	9.0	0.01	0.10	0.007	0.002	18191
520.0	530.0	0.02	<0.001		0.11				18192
560.0	570.0	0.01	<0.001						18193
600.0	610.0	0.03	<0.001	6.0	0.01	0.20	0.003	0.002	18194
640.0	650.0	0.02	0.002	6.0	0.01	0.30	0.003	0.016	18195

HOLE NO.: R19 PAGE___OF__ ROCK QUALITY DESIGNATION DATE: <u>AUG. 14 / 93</u> LOGGED BY: N.J.L.

						TOTAL CUM.		
	FOOTAGE FROM	(FT) TO		ERVAL CUMULATIVE	RECOVERY	PIECES → 4"	RQD	FRACTURE
	80	41			62	10		1.112.10111
	87	97			123	33		
	97	107			118	25-29	· · ·	
	107	117			124	38		
	(17	127			123	64		· · ·
- <u></u>	127	137			121	29		
	137	147			114	28		
	147	157			124	15		
	157	167			125	66		
	167	170.5			43	26		
	120.5	161			127	67		`
	181	148.5			92	48	<u>_</u> ^_	
	188.5	197			104	47		
	197	207			119	30		· · · ·
<u></u>	207	215.5			94	20		
	215.5	223.5			95	36		
	223.5	233.5			122	48		
<u> </u>	233.5	244		· · · · · · · · · · · · · · · · · · ·	123	31		
	244	254			122	26		/
	254	262	·		93	22		
	250	172			//8	28		
	272	282			120	35		
- <u></u>	282	292		·	118			
	292	297			60	<u>22</u> 37		
	297	307			/19	90		
	307	317			123	64		· · · · · · · · · · · · · · · · · · ·
- <u></u>	317	327			121	47		<u> </u>
	327	337			123	44		· · ·
	337	347		<u> </u>	123	43		
<u> </u>	347	357			117	27		<u> </u>
	357	367		+	124	28		
	367	377		+	127	67		ļ
	JOT	117	<u>i</u>	-l		07		

ROCK QUALITY DESIGNATION

PAGE 2 OF 2

HOLE NO .: 12 19

DATE: AUG. 14 /93 LOGGED BY: M.J.L.

	FOOTAGE			ERVAL	RECOVI		CUM. PIECES	RQD	FRACTURE
	FROM	<u></u> うもえ	INCHES	CUMULATIVE	INCHES	9/ /0	$\frac{2}{3}4"$	_%	INTENSITY
	377 387				124		62 52		
		397	···		[2]				
	397	407			120		71		
	407	417			120		92 73		
	417	427			120				· · · · · · · · · · · · · · · · · · ·
	427	437			119		66		
	437	447	<u></u>	·	120		82		
	447	457			119		521	·	
	457	467			123		n		
	467	477			121		70		
	477	483.5			75		346		
	483.5	493.5			120		<u>67</u>		
	493.5	503			114		46		
	503	507		<u> </u>	49		22	¦ 	
<u>-</u>	507	510.5			42				· · · ·
	510.5	519			100		9 2 2	<u>+</u>	
	519	327			86			ļ	
	527	537	· · · · · · · · · · · · · · · · · · ·		121		52		
	537	543			65		13		
	543	550.5			90	ļ	37		
	550.5	562.5			118		55		
··	560.5	570.5			114	 			
	570.5	582.5	ļ	· ·	114	Ļ	53		
•	5555	3.14			72	1	35 60		
	5.5-1	544			MA		60		
	574	602			85		32		
	602	:07			64		36		
	327	7			123		43		
	G17	620			35		17		
	GRAN	GDA							
						1			

ROCK QUALITY DESIGNATION

PAGE 3 OF 3

HOLE NO .: Q-19

2

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1

L

DATE:

LOGGED BY:

				TOTAL CUM.					
. 1	FOOTAGE	(FT) I	INT	ERVAL	RECOV	ERY	PIECES	RQD	FRACTURE
	FROM	<u>T0</u>	INCHES	CUMULATIVE	INCHES	<u>%</u>	<u>≥ 4"</u>	%	INTENSITY
	620	627			87.25		252		· · · ·
	627	637			112		21		
	637	647			100	·	27 A		<u> </u>
	649	654			22		~Ia		
	G54	664			116		58		/
	664	672		-	91		76		
					1	L			
·									
				A CONT					
					· · ·	L			
	620-	-637				ļ			
	630	640-							- 99-
	640-	652							
	650	660-							· 6/7
	660-	670							<u> </u>
									1
							1		
							1		
								-	
			1			1			
		†	<u>↓</u>	1		-+	······································	·	+
	·	1	·					L	·

MAGNETIC SUSCEPTIBILITY

LE NO. <u>R 19</u>

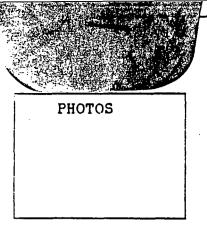
DATE _____ AUG.14 /93____

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
80-90						:23
90-100					<u></u>	. 20
100-110						
110-120						125
120-130						.62
130-140						.52
140-150						,59
150-160				20		. 50
160-170	1 1					.52
170-180		· · · · · · · · · · · · · · · · · · ·		1		,29
180-190		<u> </u>				
190-200						,17
200-210			1			.0%
210-220	1		1			.09
220-230			1			105
230-240	1		1			.04
240-250						.03
250-260						.05
260-270	1 1					.02
270-280						.03
280-290	1 1					,02
290-300	1 1					102
300-3/0						16
310-320	1					107
320-330						.01
337-340						.39
<u>330-340</u> 340-350						. 346
350-360						.36
360-370						.15
370-380						.16
380-390						.03
390-400						,03
						.02

1/2



HOLE NUMBER: R-19

EASTING: _____

NORTHING:

ELEVATION:

estin. 58500

1000

1220

DEPTH	INCLINATION	PLUNGE	BEARING (mag)	AZIMUTH	CALC. BY:	CHECKED BY
collar		- 90		<i>¥</i>		
672'	1/2	-89.5	W 270+22	292	AR	
1						
<u></u>						

Ann 12/2 Fill +100M to - \$6 Bouldinste 16-26 ~ il 26-36 11 36-46 approximate 67 11 46-5B C 1A. 6-60 CLA OFGY DARKCL 647-70 BOULDERS SAME Sec.24 29**4** •• 1

DRILLERS LOG OF OVERBURDEN IN HOLE R-19

HOLE NO. R20 PROJECT SLAND COPPER CONTRACTOR OLYMPIC D DATE STARTED COMPLE LOGGED BY H FLEMING ALTERATION BIONING OUNT STARTED COMPLE LOGGED BY ALTERATION ALTERATION	RILLING INCLINATION = 20° TED COORDINATES _ 54 SURVEY REFERENCES _ SURVEY REFERENCES _ STR. VISUAL EST. LO Image: Street st	BEARING NA BOO E -2950 N G G LITHOLOGIC ROCK DESCRIPTIONS. UNIT
		<u>O-704</u> OVERBURDEN - NO CORE

BHP MINERALS CANADA - Island Copper Mine

	HOLE-	ID		EAST	NORTH	4	ELEV			
	R_02	0	5	4800.0	-2950	.0	1210.0			
		DOWN-H	OLE S	URVEY	INFORMAT	[0 N :				
		FROM 0.0		TO 04.0	AZIMUTH 0.0		DIP 90.0			
FROM	TO	CU	MO		FE	AU	AG	PB	ZN	TAC

DATE: 07/02/94

K-20 286-296-CIAY To 20 = CLAY: AND SAND 156-166= HARD RAN 296-306 Clay 20 to-30 = CLAY + BOLDERS 166-1963 CLAY+SAND 306-316 176-186- STIKY BLUE CARY 316-326 SANGIAY + Baulder ZOTA 36-HARD CLAY 6To-50-HARD CLAY 86 = 188 = 326-336 HARDDAN 50- 56= 11 188-196 = BOLD FERS 336-342 Bou IdERS 56 - 66 = Clay + Rocks 191-206 3. BOZ DERS MAY 346-356 Boulder 6-76 = 11 E-f 206-216 = 111-1 732-361 Douldans 76 = 86 = Clay 7 Rocks 216-226 61-366 86-96 = Blue Ciay + Rocks 221-236 166-376 KALDERSY 236=246: 96-106 CIAY + Rocks 106-116 246 -256 mos 11-11-116-126 CIAY + Rocks 256-266 CLAY + BOLDERS 406 BLAY 126736 Kock, 241-276 35 406-416-CLAY 136-146 Boulder 276-286. 416-426 - CLAY 146-156 Roulders et 426-436 - 111 436-441- CLAY Clay 441 - 446 586-596 HARDDAN 446-456 CLAY+SAND 596-606 HARDPAN R-20 456-471 Claytsand 606-616 Mockstelay CIAY 616-626 11 471-483 483-492 CIAY 626-636 O.B. Stiky CLA 492-504 CLAY+Rocks 636-646 TIARD DAN 504-514 ClAJA Rocks 646-656 0-704 +? 656-666 CLAY <u>514-524</u> 524-526 CLAY (dol-676 EST. LOCATION 526-536 CIAY+ TOCKS 69-686 54800E -2950N 12. 536-546 Clay & Rocks 686-696 546-256 CIAU 696-704 DOLDERSteh 55-566 CLAY+ NOCKS 566-576 CLAY & Rocks 576-386 HARP AN-

•	HOL	ΕN	0	DDH	t-R	21		-					,			DR	ILL	. L(DG						Page	1	_ of/	<u> </u>
	CON	TR/	ACTO	DR 🔔	d Cop Ol Angus	ymp	ic 2/9	3 C	OMI	PLET	FED	_4	ngu	stz	5/4	 13.			000	INAT RDII	761 FION NATES _ REFEREI		_ 1	BEA	LAR ELEVAT ARING 3600 N		220	
	Core Recovery Oxide	Quartz	Sericite Clav/Pvmb	Blotte	K-spar Chlorite	EBIdote Cath Zeo		Pyroxene	Amphibole T D T	SUU		Sulf. Veins Fract Inten	1.			AL E	1	H H H	Sample No. & Interval		SCALE BASIC (rock types, r alterations, c	<u>1 = 10</u> GEOLO metallizatic	GY:			IOLOGIC RIPTION & SKETC	IS.	ROCK UNIT
130 150		「「「「「「「「」」」」」「「「」」」」」」」」」」」」」」」」」」」」」				AND				1.7. · · · · · · · · · · · · · · · · · ·					3 to 5 3 to 5 2 to 3 2 to 3 5 to 10				120	1 W/ > M/ 2 24	irregu irregu vein. 1 vein. 1 vein. 1 irregu vein. 1 vein.	NRDEN NRDEN Nor zeoli I lor zeoli I lor zeoli I lor zeoli Prey silii prey silii prey silii prey silii prey silii calcite m strong zeolite 200 cm prey silii 200 cm 200 cm 20	ile py vn. isfied breca ericite py rverticle g sericite. + calfie scc. in (10% py ite ven g scc. + do. tring ers. zco vn. 75% py limm string vein 5% e oite alfn. with chor	e) 	Medium to da apilli-ash tuff light grey wi calcite with is common 5-20% pr lapilli throw minor litholi over entire l	natite st opylitiz ogic var ungth angth	aining ed via friens	100-751

単語

	но		10.	D	DH	- <u>R</u>	21	 								DF	RIL	.0	G				Page of//	
	CO	NTR	AC	TOP	ξ	d Co Ange deer		/43	CO	MPL	ETE	D	Auc	jua	2	.5			INCLI COOF	NAT RDIN	757 FION NATES REFERENCE	BE	ARING	
Footage	Core		1	Clay/Pyrop			TERA	 	Arrenticole		S u >		ſR.	Ŷ	/ISL	JAL Se J	ESI	HEM	Sample No. & Interval			LOG <u>- /0</u> DLOGY: Ilization, structures	LITHOLOGIC DESCRIPTIONS NOTES & SKETCHES	ROCK UNIT
150 190 190 190 190 190 190 190 190 190 19			and the second			このでは、「「「「「「」」」、「「」」、「」」、「」、「」、「」、「」、「」、「」、「」					X E A L			trace manual to the second sec			ふたいに、ここと、ここと、ここと、ここと、ここと、ここと、ここと、ここと、「ここと、「		160	2 × × × × × × × × × × × × × × × × × × ×	Bedding - 1cm 50% p - 2mm whl - 2mm whl - 2mm whl - 2cm lik - 5mm dobn - modorateal Strong ep, alth offlap 1-27. dol. - 5mm pal. - 5mm pal. - 5mm pal. - 5mm pal. - 5mm dolt - 5mm pal. - 5mm dolt - 5mm pal. - 5mm dolt - 5mm pal. - 5mm dolt - 5mm dolt - 5mm pal. - 5mm dolt - 5mm dolt - 5mm pal. - 5mm dolt	esher with 20% ec/dol. 2 verns ecpy in py pite vern 10% py stringer py. to use (70° dip) 2 45° le zeolites ale vn 92 carb vern ce 172' nile toalcites bite bleaching chl, py pilli stringers. ol. stringer mag vn. 92 vn ngep cal verns.	10-20% Selectively	100-757

	DDH-R21	DRILL LOG	Page of/
CONTRAC DATE STA	Island Copper TOR RTED August 22/93 COMPLET BY Andrew Mintoch	T.D. <u>75/</u> INCLINATION <u>55</u> ED <u>August 25</u> COORDINATES <u></u> SURVEY REFERENCES	COLLAR ELEVATION BEARING
Footage Footage Core Recovery Ouartz Ouartz Sericite	Clay/Pymop Bubtle Bubtle Bubtle K-sper K-sper Carb Zeo Carb Zeo Amphbole Amphbole	······································	OG (2 LITHOLOGIC ROCK DGY: DESCRIPTIONS. UNIT ion, structures NOTES & SKETCHES
-210 -220 -220 -220 -240 -240 -250		$\frac{3}{10}$ $\frac{7}{10}$ $\frac{7}{10}$ $\frac{3}{10}$ $\frac{3}{10}$ $\frac{7}{10}$ $\frac{7}{10}$ $\frac{3}{10}$ $\frac{3}{10}$ $\frac{7}{10}$	Muggy Med-dark grey green 100-757 100

	CON DATI	TRA E SŤ/	IS CTOF ARTE BY	D 4		st2	3/9	13 0	OM	PLE	TEC	b _4	ug	us	f 2	5		· •. · · ·	ii C	00	INA1 RDII	751 TION <u>53</u> NATES REFERENCES		DLLAR ELEVATION	
Core	Recovery Oxide	Quartz	e e					N. e	Arrithode T d T d T	S C C		Sulf. Veins	ي	ŝ	VISU	1	EST		H	Sample No. A Interval		LOG SCALE <u>1 =10</u> BASIC GEOLOGY: rock types, metallization, struc alterations, one column system		LITHOLOGIC DESCRIPTIONS NOTES & SKETCHES	ROC
- 190		この認識がないのではななながった。 アイ・アイ・アイ・アイ・アイ・アイ・アイ・アイ・アイ・アイ・アー・ディー・ディー たいまでは かみかい しょうかいがく		1997年1月1日日の1月1日日の1月1日日の1月1日日日日日日日日日日日日日日日日日日	「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」				「「「「「「「「」」」」「「「」」」」」」「「「」」」」」」」「「」」」」」」		いる 二日本 一日本 一日本 一日本 一日本 一日本 一日本 一日本 一日本 一日本 一		A CARLES AND A C	trace trace			いたが、気がない、ない、酸酸素ななが、ない、ことのない、ことのないで、 いたい、ない、ない、ない、ない、ない、ない、ない、ない、ない、ない、ない、ない、ない			0	<u>v 1. 7. 8</u>	5cm ddomite ve strong sericite 60cm intense dol, cl 12. 1-2mm epr 23 dolomite stringer	needl ne	Py mag. res blocking	100-75

Page ________ of ____/____ **DRILL LOG** HOLENO. DDH-R21 T.D. 751 PROJECT ____Island Copper COLLAR ELEVATION _____ BEARING _____ CONTRACTOR DATE STARTED Ang 22/93 COMPLETED August 25 COORDINATES '_ SURVEY REFERENCES . STR. LOG VISUAL EST. **ALTERATION** Sample No. & Interval SCALE _1"-10" LITHOLOGIC ROCK Est. Cu. Mo **CuFaS₂** Footage Sulf. Veins Frac. Inten Nos. **BASIC GEOLOGY:** UNIT DESCRIPTIONS. Chlorite Carb/Ze FeS, Cu FeS, Quartz Sericite Clay/Py C Core Recov Biotite K-spai rock types, metallization, structures **NOTES & SKETCHES** alterations, one column system Dark grey lapilli fuff. moderate albite. 100-751 30%. dol. stringers No. + 92, ep moderate. chlorite. some as 330-334 State State C strong contonute alteration * an sbrong sericiteover (veins) from 354-378 240 340 ŧ 2 - some as 330-334 ٢ * ٩ - minor cpy with 1-2mm magnetite stringers - maderale albite bleaching С e <u>چ</u> 5mm - 5cm ge, ep. vens h • : - zocmqz, op, dol, o 2. py 350-350 trace cpy en soom moderate albite -B En Icm calcite vein G × 21. = 1cm do lomife veins • 360. 360 er son gz, ep vein Ξ. ٠ K asicm dol veins. er 1cm dol with som 92+ep. 2 Er 20cm 93, dd, ep with zom central dol. brockia vein 370 370 1-2% 5 km dol verns 5% propaltered lapilli tn 2 V 380 380-7. 384.5 t 2 trace cpy in prop-allered volc block ra Ì. to + * er 45 cm albite Flooding 10% qZ veins & 2 cm c C 3 5%. PY

HOLE NO	2 <u>D + - R 2_ </u> and Copper	DRILL LOG	Page of
CONTRACTOR		T.D757 INCLINATION _55° D August 26 COORDINATES SURVEY REFERENCES	_ COLLAR ELEVATION _ BEARING
Footage Footage Recovery Outde Clay/Pymp Duantz	ALTERATION Kr.spar Controrte Epidote Amphibote Carter Zeo Carter Z	STR. VISUAL EST. USUAL EST. VISUAL EST. SCALE SCALE SCALE SCALE BASIC GEOLOG rock types, metallization alterations, one column	LITHOLOGIC ROCK GY: DESCRIPTIONS UNIT n. structures NOTES & SKETCHES UNIT
-420		$\frac{t}{c} = 3$ $\frac{t}{c} = 3$ $\frac{t}{c} = 400$ $\frac{t}{c} = 10\% \text{ prover 40 cm}$ $\frac{t}{c} = 25 \text{ cm} \frac{t}{201.40} \text{ prover 40 cm}$ $\frac{t}{c} = 10\% \text{ dolowing 1} \text{ prover 40 cm}$ $\frac{t}{c} = 10\% \text{ for model 1} \text{ prover 40 cm}$ $\frac{t}{c} = 10\% \text{ for model 1} \text{ prover 40 cm}$ $\frac{t}{c} = 10\% \text{ for model 1} \text{ prover 40 cm}$ $\frac{t}{c} = 10\% \text{ for model 1} \text{ prover 40 cm}$ $\frac{t}{c} = 10\% \text{ for model 1} \text{ prover 400 cm}$ $\frac{t}{c} = 10\% \text{ for model 1} \text{ prover 100 cm}$ $\frac{t}{c} = 10\% \text{ prover 400 cm}$ $\frac{t}{c} = 10\% \text{ prover 40 cm}$	2 py a Lapilli ash fult (med.grey) 1 zeolite 1 zeolite 1 zeolite 1 zeonin 2 zeovein 2 zeovein 2 zeovein 3 -5 - zum verins 5 -5 - zum ve

1	., 1			OLE							_									DI	RIL	.L	LC	G			Page7 of/	
		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	C	ROJE ONT ATE DGG	RAC	TO	R _		 	24 M ²	193 -]	CO	MPL	ET	ED		Au	gus	1-2	6				INCL COO	INA RDI		LAR ELEVATION	
			Core Recovery	Oxide	Sericite	Clay/Pyrop	Blotte	T		Т	e	Arrphibole	A L B	5 C C		Sulf Veins	<u> </u>	Est. Cu. Mo	_	_	ES o		H e M	Sample No. & Interval		LOG SCALE <u>10</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS NOTES & SKETCHES	ROCK UNIT
				この「学校は特別がかった」とした。 かい たい しょう			したい、「「「「「「「「「「」」」」、「「」」、「」、「」、「」、「」、「」、「」、「	「「「「「「」」「「」」「「「」」」「「」」」「「」」」「「」」」」	イルドへは100mmによって、「「「「「」」、「」」、「「」」、「」、「」、「」、「」、「」、「」、「」、「				「「「「「「「」」」」」「「」」」」」「「」」」」」」「「」」」」」」」」」	このでは「「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」					2		いたい 一般になる ないない アイ・シート		から うう うち		1- 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	475.5 trace cpy icm gr eppy - moderate albite bleaching	ritized lapilli	

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					sland	I Co	ppe		· ·		•				•								751										
	CC DA		RAC STA		R ED	Aue	us t	- 24	r/93	C	OMF	LET	TED	A	Hucu	st	25	' م	•				10n <u></u>		BE	ARIN	G			L			
	LC	GG	ED	BY	D	ndre) w_	McI	ato	ish	`				<u> </u>								REFERENC										
		-				AL	TER				- <u> </u> _	1.		ST	R.		/ISU		ST.		No. Bel		SCALE 1	, LOG				TUO					<u> </u>
Footage	Core Recovery	Oxide	Quartz. Sericite	Clay/Pyrop	Biotite	K-spar Chlorite	Epidote	Carb'Zeo.	Garnet	Pyroxene	A L B	200		Sult. Veins	Frac. Inten	Est. Cu. Mc	S.	Cit Fes.	No. No.		Sample No.		BASIC GE rock types, me alterations, one	EOLOGY stallization, st	r: tructures			SCRI	LOGI PTIOI SKET(NS.		RO UN	
50	4 () () 9 - 9 - 4		1.	· · · · ·	744 115 117	34 141				مور به مدر از مر		1. S.	n de tre Na tre	ः (च (हि) 	90, 13 1 3.	4.5 ⊶,(,		بني موا بر م	har in Li inn		and the second		1	· * *	an an taon an taon Iomraichean		•	· ·,					
500 520 		「読みだけをは、読みが確認になった。」 かいていた しょうしょう しょうしょう しょうせい しょうせい しょうてい しゅうけい しょうしょう しょうしょう しょうしょう しょうしょう しょうしょう	1. 《大学》:"我们是我们是我的一个人,我们不能是一个人,我们们就是我们的,我们就是我们就能能是我们就能能能是我们就能能能能。" "我们不能是我们的,我们不能让你的,我们们就不是我们的,我们们就不是					ノート・レキーノー・シージャルを通信がく自動	1.111で武蔵ながらは深邃でいた。1.111日日の東京の東京の東京の東京であった。1.11日日の東京の東京の東京の東京の東京の東京の東京の東京の東京の東京の東京の東京の東京の	2. 気的時間には考慮的に、小説のなどをして、「「「「」」」、「」」、「」」、「」、「」、「」、「」、「」、「」、「」、「」		1 1	「「「「「「「」」」「「」」」「「」」」「「」」」」「「」」」」「「」」」」」「「」」」」			1. 統決的が通じた時間が低いできたが、通知していました。	243 142 2 3				532 - 532 - 540 -	X~ 2~ + + + + + + +	804 mod 804 mod albeit 50m 10-202 50m 10-202 50m 10-202 50m 10-202 50m 10-202 50m 10-202 50m 10-202 50m 10-202 10-2	arb strin posting arb strin posting arbitic prove lop prove lop prove lop prove lop arode to brown do ith quan arbite quan arbite quan arbite quan arbite quan arbite quan arbite quan arbite quan arbite py with arbite py with arbite	estringers bonitised the the stringers b stringers b stringers b stringers b stringers		mo	bera l bite	e b la	> strone ach in	5	100 - 74	
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			1.11		2DH• sianc		pper		-								DR		. L(T.D.			Page of/_	
	D.	ATE	TRAC STA	ARTI	ED .	<u>Augu</u> Lare	st: ew-N	25 1°J	tos	NON	IPLE	TEC	Ъ_Д	lug	us	- 26		•			INAT RDIN		EARING	
Footage	Core Recovery	Oxide	Quartz	Clay/Pyrop	Biotite		ERA		1	Amphibole	ASCC		Sulf. Veins	Frac. Inten	Ŷ	VISU sel se se	П	ST.		Sample No. & Interval		LOG SCALE <u>12 10</u> BASIC GEOLOGY: rock types, metallization, structures alterations, one column system	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
570																5				- 630 - 530	V ~ //x +	Some as 560-570 & 560-570 1-2 cm q2, dol. 1-2 cm albite+92 noderate get Sorticite will cm cabite + piukdol. 20 cm infonse albite.		100-757
																3 6 5				610	$\mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} \mathbf{A} $	1 cm strong allerite with 107. py some as 591 riem dolomite. with orange 200. moderate SC some as 602 r 2 cm 907. py 357. py + ch lorite veins Fich moch albite block	becreasing albite increasing carbzes.	
620	-						ちゃんどう								trace	3		-		-620	V * 4 + C < 7 ×	chbrite zo'r py 27 gz, curb/zeaveins		

	нс	DLE	NO.	L	DH	-R2	-	<u></u>							D	RI		.0	G				Page _1() of/	
	CC DA		RAC STA	TO RTE	R	Augu	sta	5/9 1° J	3 CC	OMPL	ETE	d _4	lugu	st 2	5				coc	LINA ORD	-75 (DLLAR ELEVATION	
	Core Recovery	Oxide	Sericite	Clay/Pyrop	Biotite	Chlorite	Epidote Carb Zeo	1	Pyroxene	A L B	SCC	Sult Veins	Est. Cu. Mo		SUAL se	Τ	Som	HEM	Sample No. & Interval		LOG SCALE <u>1 ()</u> BASIC GEOLOGY: rock types, metallization, str alterations, one column syst	ructures	LITHOLOGIC DESCRIPTIONS. NOTES & SKETCHES	ROCK UNIT
650					いた。 1917年1月1日 - A A A A A A A A A A A A A A A A A A	「「「「「「「「」」」「「「」」」」」」」」」」」」」」」」」」」」」」	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				「大部門がない」で、たいで、中には原語があって、「そう」では、「そう」で、「ない」がいいです。 ひょうない サイン・バー・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・		trave trave		5 60 1065 5				640 — 650 — 670 —		640-642, 15-207, py st 3-57, py moderate a possible biotite c-2cm orange/whit c-2cm orange/whit is i. dol/zeostringe strong scc. 10% py strong scc. 10% py c-10mintense serie t-20m 50% py 5% cpy someas 656 20m 20% py 5% cpy someas 656 20m 20% py 5% cpy someas 656 20m 20% py 5% dol/20 50m 80% py someas 656 20m 20% py 20% py	ocm 35 35 35 37 35 37 37 37 4 3 37 5 37 5 5 5 5 5 5 5 5 5 5 5 5 5	Increasing carb/zeo v 1 2-2% 1-2 mm 22/do/200 veins	100-757

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	c t		ECT RACT(STAR1 ED BY	or Fed		AUS	+2	5/93 e_1	- CC	OMF	LETE		_	•			• • • • •	- - * - *	CO	CLIN OR	 ATION DINATES Y REFERENCES		ARING	
							RAT						TR.	Îŝ	VISU		EST.		1			*	LITHOLOGIC	ROCK
	Footage	O kide	Sericite	Blotte	K-spar	Epidote	Carb [,] Zec	Gernet	Pyroxen	LB	c c	Sulf. Veins	Frac. Inten	Est. Cu.	C L C L C L C L C L C L C L C L C L C L	Ci Fas	Fe.O.	1	Sample No.	5	BASIC GEOLOG rock types, metallization, alterations, one column s	structures	DESCRIPTIONS. NOTES & SKETCHES	UNIT
2011年1月1日には1月1日に	640 100 100 100 100 100 100 100 1	- 「「「「「「「「「「「「「「「」」」」」」」」」」」」」」」」」」」」」」					1212			1、11日本の時間には「「「「「「「「」」」」「「」」」」」」」」」」」」」」」」」」」」」」」	a start and a start of the star				3 10 5 3 10 5						V See description Zo cun 30% epide 5% Py 10% Zeo/dd xy 10% Zeo/Dio 20% Zeo/D	at 688 ste or 200 propysolochil 200 vain ortely te floobing ars. pile + pooder corb 200 corb 200	ate conicite 5% carb/200 10%) } I'm shrongalbite/sec/carb 200 10%	00-75] - - - - - - - - - - - - - - - - - - -

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BHP MINERALS CANADA - Island Copper Mine

HOLE-ID	EAST	NORTH	ELEV
R_021	41950.0	3600.0	1220.0

DOWN-HOLE SURVEY INFORMATION:

FROM	ΤO	AZIMUTH	DIP
0.0	751.0	198.0	-55.0

= ROM	ΤO	CU	MO	FE	AU	AG	РВ	ZN	TAG
100.0	105.0	0.03	<0.001	. 5.7	0.01	0.40	0.003	0.010	18278
130.0	140.0	0.03	<0.001	10.3	0.01	0.20	0.002	0.011	18534
170.0	180.0	0.04	<0.001	8.1	<0.01	0.10	0.004	0.013	18535
210.0	220.0	0.04	0.001	7.6	<0.01	0.20	0.005	0.011	18536
250. 0	260.0	0.03	<0.001	7.5	0.01	0.20	0.005	0.016	18537
280.0	290.0	<0.01	<0.001		<0.01	0.10			18280
290.0	300.0	0.02	0.001		<0.01	0.10			18280
330.0	340.0	0.03	<0.001	7.3	<0.01	0.20	0.004	0.016	18538
370.0	380.0	0.03	<0.001	8.5	<0.01	0.10	0.005	0.014	1853 9
410.0	420.0	0.03	<0.001	8.1	<0.01	0.10	0.005	0.014	18540
450.0	460.0	0.02	<0.001	8.6	<0.01	0.10	0.003	0.015	18541
4()0	500.0	0.02	<0.001	8.4	<0.01	0.20	0.004	0.009	18542
530.0	540.0	0.02	<0.001	6.9	<0.01	<0.01	0.004	0.006	18543
570.0	580.0	0.03	0.001	6.9	<0.01	<0.01	0.003	0.005	18544
510.0	620.0	0.04	<0.001	11.6	0.01	0.10	0.004	0.005	18545
5 50.0	660.0	0.04	<0.001	10.4	-<0.01	0.20	0.003	0.006	18546
590.0	700.0	0.04	<0.001	9.1	<0.01	0.10	0.003	0.006	18547
730.0	740.0	0.04	<0.001	8.8	<0.01	0.30	0.003	0.026	18548

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() DATE: 24/09/93

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HOLE NO.: R21

ROCK QUALITY DESIGNATION

PAGE OF 3

DATE: August 23/93

LOGGED BY: 5. Oakley.

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					TOTAL CUM.		
 F00TAGE FR0M	(FT) T0	ERVAL CUMULATIVE	RECOVE		PIECES ≥ 4"	RQD %	FRACTURE
101	106		46		ø	~~~	
106	117		109		28		- <u> </u>
117	127		119	· .	8		
127	137		120		22		
137	146		106		11		
146	148		24		12		
148	156		84		15		
156	166		120		27		
166	176		121		35		
176	186		122		28		
186	/91		62		9		
191	195		48		5		
 195	197.5		30		5		
 197.5	202		54		6		
 202	206		49		20		•
 206	213		84		30		
 213	219		73		20		
 219	222		29		4		· · · · · · · · · · · · · · · · · · ·
 222	226		49		10		
 226	232		73		16		
 232	236		50		10		
 236	240		50		28		
 240	250	• ·	122		35		
 250	257		84		16		
 257	266		103		28		
 266	276		110		11		
 276	286		122		21		
 286	296		123		27		
 296	303		82		15		······
 303	311		116		60		
 311	313		23		7		
313	323	1	IA		27	·!	
			A	t	· ·	·	

ROCK QUALITY DESIGNATION

PAGE 2 OF 3

HOLE NO .: R-21

DATE: AUG. 26 (93

LOGGED BY: N. LINDIDLA

-							TOTAL CUM.		
	OOTAGE			ERVAL	RECOV		PIECES		FRACTURE
	ROM かみろ	TO 726	INCHES	CUMULATIVE	INCHES	<u>%</u>	≥ 4"	%	INTENSITY
	35	<u>335</u> 345			145		49		
	45	353			104		39		
	53				116		9		
the second s	63	363			125		39		
	73	373 363			121		73		· · · · · · · · · · · · · · · · · · ·
	83	395			142		60		
	95	406	· · ·		128	 	33		
	06	413			91	<u> </u>	13		
	113	423			105		19		
	23	433.5			125	<u> </u>	42		· · · ·
	3.5	436			32	}	4		
	36	446			122		57		
	46	456			127		42	<u> </u>	
4	56	466		· · ·	126		22	1	· · ·
. 4	66	476	1		123	1	53	· ·	
	76	486	1		127		42		
	186	496			137	1	49		
4	96	306			125		23		
5	06	\$16			129		33		
5	516	526			93		42		
	526	534			123		55		
and the second	534	544	<u> </u>	· ·	124		43		
	44	446			30		6		
	46	556			123		2-3		
	56	565			114	<u> </u>	44	<u> </u>	
	65	575	<u> </u>	ļ	129		49		
·	75	585		ļ	130		14 8	·	
	85	590		<u> </u>	47		4	ļ	·
	590	596	ļ		84	ļ	42	ļ	<u> </u>
	96	603	ļ	 	30		14		· · · · · · · · · · · · · · · · · · ·
6	503	612	1	l	123	<u> </u>	36	L	<u> </u>

ROCK QUALITY DESIGNATION

PAGE 3_OF 3

HOLE NO .: 1-21

DATE: AUG. 26/93 LOGGED BY: N.LINDIULA

						TOTAL CUM.		
FOOTAGE FROM	(FT) T0		ERVAL CUMULATIVE	RECOVI		PIECES ≥ 4"	RQD	FRACTURE
 612	622			130		43		
 622	632			106		42		
 632	636		<u> </u>	57	·	22		
636	646			121		65		
646	656			122		41		
 655	666		······································	124		53		
666	676			123		84		
676	686			120		44		
686	696			118		40	·	
696	706			121		.75		
 706	716			124		63		
 716	726			119		73		
 726	736			130		38		
 736	746		<u> </u>	129		48		
 746	751			\$6		1		
 <u> </u>								
 				·				
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MAGNETIC SUSCEPTIBILITY

LE NO. R-21

DATE ______ 4v6.24/93

NOL

13 748

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4 '	+6'	+8'	INTERVAL AVERAGE
100-110						.71
110-120						,05
120-130						.87
130-140						3.6
140-150						2.2
150-160						6.7
160-170						2.8
170-180						2.7
180-190						2-5
190-200						2,8
200-210						4.9
210-220						15
220-230						1.0
230-240						1.2
240-250					· .	.31
250-260						2.7
260-270						4.3
270-280						1.3
280-290						2.7
290-300						4.3 -
300-310						7.0
310-320					·	3.2
320-330						5.6
330-340						1.2
340-350						.68
350-360						1.2
360-370						.27
370-380						2.4
380-390						2.4
390-400						+ 38
400-410						1.1
410-420						. 60

MAGNETIC SUSCEPTIBILITY

LE NO. <u>R-21</u>

DATE _____ Aug 24 /93

200

43

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4'	+6'	+8'	INTERVAL AVERAGE
420-430						.44
430-440						,10
440-450						.44
450-460		<u> </u>				.66
460-470						19
470-480		4			<u> </u>	1.9
48, 7-490		<u> </u>				.86
490-500					<u> </u>	2.2
500-510						2.4
510-520		<u></u>				·7461.5
520-530					· · · ·	.5
530-540				· · · · ·	<u></u>	3.0
540-550					· · · · · · · · · · · · · · · · · · ·	1.3
550-560					·····	.6
560-570		<u> </u>				.03
		· · · · · · · · · · · · · · · · · · ·				.03
<u>570-580</u>						.04
580-590						106
590-600						.17
600-610						,45_
610-620						1.0
620-630					<u> </u>	
<u>630-640</u> 640-650						,05
	·				<u> </u>	.24
650-660						.11
660-670					<u></u>	128
670-680						
(80-690						.44
690-700	 					.67 .27 .51
700-710		·				
710-720						. 43
720-730						-72
-						

MAGNETIC SUSCEPTIBILITY

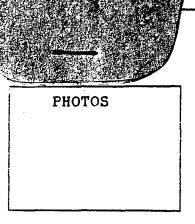
LE NO. R-21

DATE AUG. 24/93

INTERVAL:

VALUE:

FOOTAGE	STARTING POINT VALUE	+2'	+4 '	+6'	+8'	INTERVAL AVERAGE
730-740						• 30
740750	,					1.2
790-756						
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<u></u>			1			1
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	i					



HOLE NUMBER: <u>R-02</u>

EASTING:_____ estim 41950

1220

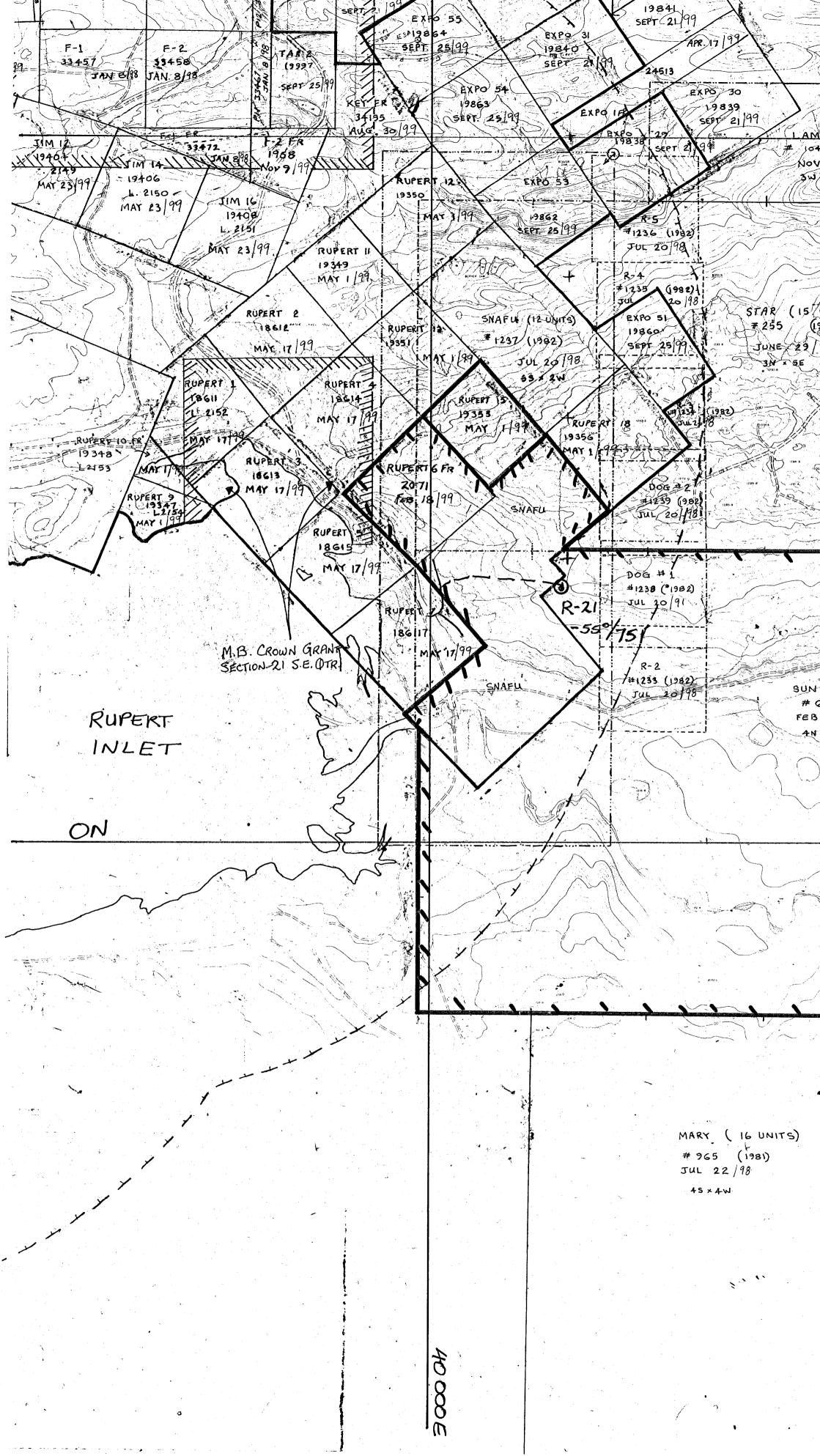
ELEVATION:

DEPTH	INCLINATION	PLUNGE	BEARING	(mag)	AZIMUTH	CALC.	BY:	CHECKED	BY
collar		-55			198				
350	-37 1/2	- 521/2	Swoi	181	203				
750	- 40	-5ú	SWOB	188	200				
							·=		

R-21 D.B, 6-98

0-14 Clay & Ricks 1/ 14-24 U 24-34 11 Ï 34-44 Ro HARP PAN 44-54 54-64 HARPPONER 67-74 74-84 84-94 94-98 98-100 BEDIS ¢

Frez 20/93



		JUNE 4-199 JUNE 4 199	JUNE 4 19 J (1970)	UNE 4]99 (1973)	JUNE 4/99 (1970)	JUNE 4/19.
		E-59 32486 32487		E-42 82+69	E- 23 32 450	E-24 32 451
MB (3 UNITS)		JUNIE 4 199 JONE 4 199	キャット・マインマン・ディーション	NE 4 199-	JUNE 4 99 (970)	zuwe 4/99 (1970)
047 (1981) DV: 23/91 W X (N						
	Cost Trino (1.4 c)		LORAN C			
UNITS)	WASHCA	MAR9 (16 UN #256 (1978) JUNE 29 99	(27)			NUS (16 UN
(978) [99		AN AFE				50NE 29 99 <u>AN 646</u>
		EAST 94 GROU				
. RUPERT MAIL	VLINE :					
N (20 UNITS) G4 (976) B 12/98		MOON (16 UNIT # 65 (1976)	3)			258 (16 0)
N * 5W		FEB 12/99-				JUNE 29 99 49. × 46 B60
			R-11	3 O CLEA TRA	1200	
				U	NEW TRAIL	(LAKE / 3
	VAL #1066			R-20 -90°/70		(16 UNITS)
	(1982) JAN 14/98 45 × 1E	# 878 (1981) MAY 20 / 99 AN × 3W			#836 MAR 24 4N × 4E	in the second
				GEOI ASSI	LOGICAL SSMENT	
		3				76
•		S N I		Example 1		
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