



CLEVELAND TIN N.L.

CATEGORY

E

HOLE No. : 580

GENERAL DATA

Objective :

Area of Operation : CLEVELAND MINE, TASMANIA Location : L SECTION, WEST OF DEEP CR.

Collar R.L. : 460.0 Co-ordinates : 15261.0 N, 11148.9 E.

Bearing of Hole : -62° Angle of Hole : 319° Final Depth : 1606'0"

Drilling Commenced :

Completed :

Logged by : G Boyle.

DRILLING DATA

Drilled by : LONGYEAR Non Coring :

Drilling Rig : " 46 Coring :

Driller(s) : P LEFTERUK, D KOSKI

Core Recovery :

HOLE SURVEYS

TROPARI	ACID	ACID	ACID
-64° at 321° 500'	50' -62°	600' -62°	1100 -64°
-61° at 320½° 650'	200' -62°	700' -61°	1200 -62°
-63° at 319° 900'	300' -63°	800' -59°	1300 -62½°
	400' -62°	900' -59½°	1400 -58½°
	500' -63½°	1000' -62½°	1500 -57°

HOLE No. :

HOLE No. : 580

SAMPLE DATA

SHEET No. :

FOOTAGE : From 369'0" To 1589'0"

LENS	SAMPLE No.	LITHOLOGY	Σ	INTERVAL (ft)		Length (L)	Assays (A)			Product (A x L)		
				From	To		% Snt	% Sns	% Cu	P. Snt	P. Sns	P. Cu
	90592	PYRITIC DOLOMITE		1120'47"	113'54"	1'07"						
				369'0"	372'6"	3'6"	0.01		0.02			
	90593	DOLOMITE		115'82"	116'8"	0'98"						
				380'0"	383'3"	3'3"	0.02		0.02			
	90594	CHALCOPIRITE, PYRITIC PYRITE, CARBONATE, CHLONITE.		436'17"	436'70"	0'53"						
				1431'0"	1432'9"	1'9"	0.21		0.26			
	90595	PYRITIC, CHALCOPIRITE, MINOR PYRITE, QUARTZ, CHLONITE, TOURMALINE.		439'19"	439'83"	0'64"						
				1440'11"	1440'0"	2'11"	0.10		0.28			
	90596	PYRITIC, CHALCOPIRITE, MINOR PYRITE, QUARTZ, CHLONITE, QUARTZ, CASSITERITE		440'13"	441'21"	1'07"						
				1444'0"	1447'7"	3'7"	0.60		0.60			
	90597	"		441'21"	442'19"	0'98"						
				1447'7"	1450'8"	3'1"	0.51		0.84			
	90598	"		442'19"	443'20"	1'01"						
				1450'8"	1454'1"	3'5"	0.79		1.22			
	90599	"		443'20"	444'35"	1'15"						
				1454'1"	1457'10"	3'9"	0.20		1.32			
			Σ	439'19"	444'35"	5'16"	0.43		0.85			
	90600	SAND & CHALCOPIRITE, PYRITIC, QUARTZ, CHLONITE, TOURMALINE		456'34"	456'95"	0'61"						
				1497'2"	1499'2"	2'0"	0.09		0.17			
	90601	CHALCOPIRITE, PYRITIC, QUARTZ, CHLONITE		464'26"	464'64"	0'38"						
				1523'2"	1524'5"	1'3"	0.17		0.38			
	90602	"		468'93"	469'16"	0'23"						
				1538'6"	1539'3"	9"	0.10		0.02			
	90603	PYRITE, CHLONITE, QUARTZ		483'69"	484'33"	0'64"						
				1586'11"	1589'0"	2'11"	0.07		0.59			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 1

From 0 To 101'0"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				Angle to Core Axis	% Snt	% Sns
0	24'0"	4'10"	0	24'0"	24'0"		SHALE	MASSIVE FINE GREY SHALE, OFTEN MUCH			
24'0"	26'0"	1'8"		24'0"				BROKEN AND IRON STAINED. MINOR DARK			
26'0"	31'0"	2'7"						GREY SHALE AND CHAOTICALLY INTERMINGLE			
31'0"	38'0"	2'0"						GREY SANDSTONE. CHAOTIC ZONE APPEARS			
38'0"	44'0"	2'4"						TO BE FROM 0 TO 18'.			
44'0"	50'0"	1'9"	24'0"	24'9"	9"		CHERT	FINE, MASSIVE, ORANGE-BROWN CHERT.			
50'0"	54'0"	2'9"	24'9"	27'9"	3'0"		SHALE	MASSIVE, FINE BLACK SHALE, MINOR			
54'0"	62'0"	7'7"						ORANGE-BROWN CHERT.			
62'0"	66'0"	2'10"	27'9"	30'0"	2'3"		CHERT	MASSIVE, FINE, MID GREY CHERT. MAY			
66'0"	74'0"	3'3"						BE SILICIFIED SHALE.			
74'0"	76'0"	1'6"	30'0"	100'3"	69'9"		SHALE	MASSIVE, FINE, MID GREY SHALE WITH			
76'0"	80'0"	2'3"						MINOR DARK GREY SHALE. SOME GREENISH			
80'0"	86'0"	3'0"						TINGING. MINOR, IRREGULAR, BEDDING, SOME			
86'0"	90'0"	1'5"						CHAOTIC ZONES, OFTEN HEAVILY STAINED			
90'0"	100'0"	2'4"						BY IRON OXIDES. SILICIFIED, ^{OFTEN} NEARLY CHERTY,			
100'0"	104'0"	3'7"						EXPOSED MID GREY SHALES 73'9" TO 84'.			
104'0"	107'0"	1'7"						42' TO 100'3": BLACK SHALE. FINE,			
107'0"	110'0"	2'0"						BEDDED PARALLEL TO CORE.			
110'0"	112'0"	1'0"	100'3"	100'0"	9"		LIMONITE	SOFT, FRIABLE HEAVILY WEATHERED LIMONITE-			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 2

From 101'0" To 209'0"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
112'0"	116'0"	1'8"						MANGANESE DIOXIDE MATERIAL. MAY BE SEVERELY			
116'0"	118'0"	1'5"		31.70				WEATHERED LOOSE			
118'0"	121'0"	1'11"	101'0"	104'0"	3'0"		SHALE	FINE, MASSIVE, DARK GREY TO MID GREY			
121'0"	122'0"	9"		32.00				SHALE, OFTEN HEAVILY FOLIATED.			
122'0"	123'0"	11"	104'0"	105'0"	1'0"		CHERT	MASSIVE, FINE, GREY CHERT.			
123'0"	125'6"	2'6"	105'0"	147'9"	42'9"		SHALE	MASSIVE, FINE, PALE TO PURPLISH MID GREY			
125'6"	127'6"	2'0"		45.03				SHALE, SLIGHTLY PYLITIC, OFTEN FOLIATED,			
127'6"	129'0"	6"						VARIABLE DEGREES OF SILICIFICATION, OFTEN			
129'0"	130'0"	10"		46.02				TO CHERT			
130'0"	131'0"	5"	147'9"	151'0"	3'3"		CHERT	MASSIVE, BRECCIATED APPEARING, RED, BLACK			
131'0"	134'0"	1'11"						AND SLIGHTLY GREEN, PYLITIC CHERT OR			
134'0"	139'0"	11"		47.93				QUARTZ VEIN BRECCIA.			
139'0"	140'0"	11"	151'0"	157'3"	6'3"		SHALE	MASSIVE, FOLIATED, PALE GREY-GREEN TO			
140'0"	144'0"	9"		48.62				DARK GREY, SHALE.			
144'0"	145'0"	10"	157'3"	159'6"	2'3"		CHERT	MASSIVE, FINE, PALE GREEN-GREEN CHERT.			
145'0"	151'0"	2'2"	159'6"	209'0"	49'6"		SHALE	MASSIVE, FINE, MID TO DARK GREY AND			
151'0"	154'0"	1'11"		63.70			+ MINOR CHERT	PALE GREY-GREEN SHALE AND MINOR			
154'0"	157'0"	1'9"						CHERT OF LIKE APPEARANCE, THE TWO			
157'0"	160'0"	2'2"						ARE CLOSELY INTERMINGLED AND DIFFICULT			

N.W.P.S. COCKINGTON PRINT

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 3

From 209'0" To 358'0"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
160'0"	162'0"	2'0"						TO SEPERATE EXCEPT BY HARDNESS.			
162'0"	164'0"	7"				40°		MINOR BEDDING TRACES. SOME CHAOTIC			
164'0"	170'0"	5'0"	63.70	64.29				ZONES			
170'0"	177'0"	9"	209'0"	210'9"	1'9"		DOLOMITE	FINE, SOFT, GRANULAR, WHITE SPECKLED, PALE			
177'0"	180'0"	2'9"		109.12				GRAY, IMPURE DOLOMITE.			
180'0"	183'0"	1'4"	210'9"	358'0"	147'3"		SHALE	FINE, MASSIVE, SOMETIMES CHAOTIC,			
183'0"	187'0"	1'6"						MID TO DARK GRAY-BLACK, AND PALE TO ^{DARK}			
187'0"	190'0"	11"						GRAY GREEN SHALE, SOME FOLIATION			
190'0"	192'0"	9"						OFTEN SILICIFIED TO CHERT IN SMALL			
192'0"	193'0"	11"						PATCHES. ABUNDANT EVIDENCE OF SLUMPING			
193'0"	199'0"	3'6"						AT 260' THE COLOUR ASSEMBLAGE			
199'0"	201'0"	1'7"						CHANGES TO DARK PURPLE-BROWN AND			
201'0"	204'0"	1'8"						DARK GREEN-GRAY SHALES, INTERMINGLE			
204'0"	207'0"	2'4"						AND INTERBEDDED. SLUMPING STILL			
207'0"	211'0"	4'0"						EVIDENT. SOME PYLITIC SECTIONS			
211'0"	221'0"	9'10"						306'6" TO 325'0" FINE, MASSIVE TO			
221'0"	222'6"	1'6"						IRREGULARLY BEDDED PALE TO MID GREEN			
222'6"	230'0"	7'6"						SHALE, SOME SECTIONS SILICIFIED TO			
230'0"	234'0"	4'0"						CHERT 325'0" TO 358'0" PALE TO DARK			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 4

From 358'0" To 438'10"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
234'0"	238'0"	4'0"						GREY, FINE, MASSIVE SHALES, MINOR			
238'0"	239'6"	1'6"						FINE, CRYSTALLINE, PALE GREY, IMPURE			
239'6"	243'0"	2'10"						RECRYSTALLIZED DOLOMITES, BOTH			
243'0"	245'0"	1'11"						INTERBEDDED AND INTERMINGLED WITH			
245'0"	254'0"	10'0"						THE PALE GREY-GREEN SHALE AND			
254'0"	258'0"	3'10"						CHERT.			
258'0"	259'6"	1'6"						ALL THIS SEQUENCE SHOWS ABUNDANT			
259'6"	262'0"	3'0"						SIGNS OF SLUMPING.			
262'0"	266'0"	4'0"	358'0"	361'0"	3'0"		DOLOMITE	PALE TO MID GREY, FINE, CRYSTALLINE,			
266'0"	268'0"	2'0"						IMPURE, RECRYSTALLIZED DOLOMITE WITH			
268'0"	271'0"	3'0"						VERY MINOR, VERY FINE PIRITE, MINOR			
271'0"	277'0"	6'0"						INTERMINGLED, DARK GREY FOLIATED			
277'0"	285'0"	8'0"						SHALE.			
285'0"	289'0"	4'0"	361'0"	369'0"	8'0"		SHALE	PALE TO DARK GREEN-GREY, MASSIVE, FOLIATED			
289'0"	299'0"	10'0"						SHALE AND MINOR DARK GREY SHALE.			
299'0"	305'0"	6'0"						SOME PIRITIC SECTIONS, MINOR BEDDING,			
305'0"	311'0"	4'8"						VERY, IRREGULAR IN DIRECTION,			
311'0"	321'0"	5'11"	369'0"	438'10"	69'10"		DOLOMITE	FINE, MID TO DARK GREY, CRYSTALLINE, MASSIVE,			
321'0"	324'0"	3'0"						PIRITIC, IMPURE DOLOMITE WITH MINOR			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 5

From 438'10" To 468'0"

LIFTS			DRILL INTERVAL		Length	BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To		Angle to Core Axis			% Snt	% Sns	% Cu
324'0"	333'0"	9'10"						DARK GREY SHALE. SHALE IRREGULARLY			
333'0"	343'0"	10'0"						INTERMINLED WITH PYRITE			
343'0"	350'0"	7'0"						IS FINE GRAINED, DISSEMINATED TO MASSES			
350'0"	351'0"	1'0"						UP TO 1 CM. NUMEROUS CARBONATE VEINS			
351'0"	361'0"	10'0"						PYRITE LESS COMMON AFTER 401', PYRITE			
361'0"	363'0"	2'0"						CUBES PREDOMINATE AFTER 401', $\frac{3}{4}$ " VEIN			
363'0"	371'0"	8'0"						AT 418'9", ANGLE TO CORE 70°.			
371'0"	381'0"	10'0"						VEIN IS SPHALERITE, CHALCOPYRITE, PYRROPHITE			
381'0"	391'0"	10'0"		135.20				IN CARBONATE GANGUE.			
391'0"	401'0"	10'0"	438'10"	443'7"	4'9"	65°	SHALE	FINE, BEDDED, PALE GREEN-GREY SHALE			
401'0"	411'0"	10'0"						NUMEROUS FINE GRAINS AND 'SHREDS' OF			
411'0"	422'0"	9'9"						? MARCASITE AND MINOR PYRITE AS LARGE			
422'0"	432'0"	10'10"		142.65				FINE GRAINED MASSES.			
432'0"	442'0"	9'9"	443'7"	468'0"	24'5"	65° TO 45°	CHERT	FINE, BEDDED, PALE GREEN-GREY CHERT			
442'0"	452'0"	10'0"						CHANGING TO FINE, DARK PURPLE BROWN			
452'0"	457'0"	5'0"						CHERT WITH FINE INTERBEDS OF PALE			
457'0"	462'0"	4'9"						GREY GREEN CHERT GRADING TO DARK			
462'0"	468'0"	6'0"						PURPLISH GREY CHERT WITH INTERBEDS OF			
468'0"	472'0"	4'0"						PALE GREY-GREEN CHERT AT 259',			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 6

From 468'0" To 634'6"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
472'0"	480'0"	8'9"						LIGNITE GRADES IMPERCEPTIBLY TO SHALE OF IDENTICAL APPEARANCE IN A TWO FOOT ZONE TO 468'.			
480'0"	490'0"	9'3"									
490'0"	500'0"	9'7"									
500'0"	510'0"	9'11"	468'0"	564'6"	96'6"	45°	SHALE	DARK TO MUD PURPLE TO RED-BROWN SHALE WITH MINOR FINE INTER BEDS OF PALE GREY-GREEN SHALE. MINOR SILICIFICATION NEAR 468'. RICH RED BROWN COLOUR PREDOMINATES AFTER 470'. 498' - 501'8" SECTION OF GREY -GREEN, PURPLISH TINGED SHALES IN THE RED BROWN & MINOR GREY-GREEN SHALE SEQUENCE. 1" VEIN AT 25° AT 500'. CHALCOPRITE, PYRITE, QUARTZ APPEARS TO BE SHEAR ZONE. NUMEROUS FINE CARBONATE VEINS, CHLORITIC MATERIAL ON SHEARS. FROM 544' TO 564'6" THE SHALE COLOUR VARIES WIDELY, DARK GREY, MIX TO DARK GREEN, PINK-BROWN, SOMETIMES GREEN TINGED, AND PURPLE BROWN SHALES.			
510'0"	520'0"	10'0"									
520'0"	526'0"	6'0"									
526'0"	534'0"	8'0"									
534'0"	544'0"	10'0"									
544'0"	554'0"	10'0"									
554'0"	557'0"	2'7"									
557'0"	567'0"	10'0"									
567'0"	577'0"	10'0"									
577'0"	586'0"	9'0"									
586'0"	593'0"	6'0"									
593'0"	594'0"	1'0"									
594'0"	604'0"	10'0"									
604'0"	614'0"	10'0"									
614'0"	624'0"	10'0"									
624'0"	634'0"	10'0"									

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 7

From 564'6" To 586'0"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
634'0"	644'0"	10'0"	564'6"	566'4"	1'10"		GREYWACKE	GREY-GREEN GREYWACKE OR SLUMP BRECCIA. GRAINS OF			
644'0"	654'0"	10'0"		172.62				SHALE OF ALL COLOURS REPRESENTED IN THE			
654'0"	664'0"	10'0"						PREVIOUS 20 FEET AND GRAINS OF QUARTZ. GRAIN			
664'0"	674'0"	10'0"						SIZE UP TO 1MM. MATERIAL SHOWS GOOD			
674'0"	684'0"	10'0"						ALIGNMENT OF GRAINS. NUMEROUS LARGE			
684'0"	694'0"	10'0"						SHARDS OF PURPLE-BROWN SHALE AND			
694'0"	704'0"	10'0"		172.82				SEVERAL LARGE, BARREN QUARTZ VEINS.			
704'0"	714'0"	10'0"	566'4"	567'0"	8"		SHALE	FINE, MASSIVE, PURPLE-BROWN SHALE.			
714'0"	724'0"	10'0"	567'0"	567'7"	7"		GREYWACKE	GREYWACKE AS ABOVE.			
724'0"	734'0"	10'0"	567'7"	568'11"	1'4"		SHALE	FINE, MASSIVE, PURPLE-BROWN SHALE.			
734'0"	744'0"	10'0"	568'11"	572'2"	3'3"		GREYWACKE	GREYWACKE AS ABOVE BUT PURPLE-BROWN			
744'0"	754'0"	10'0"						SHALE PREDOMINATES GIVING STRONG,			
754'0"	764'0"	10'0"						DARK PURPLE-GREEN COLOURATION.			
764'0"	774'0"	10'0"						NUMBER OF QUARTZ VEINS AND MASSES,			
774'0"	784'0"	10'0"						ONE 1/4" VEIN CONTAINS CHALCOPYRITE.			
784'0"	794'0"	10'0"						NEAR 577' THE GREYWACKE IS ALMOST			
794'0"	804'0"	9'10"		178.61				PURE PURPLE BROWN SHALE.			
804'0"	814'0"	10'0"	572'2"	586'0"	45° 20' 50°		SHALE	FINE, BEDDED, PURPLE-BROWN TO RED-BROWN			
814'0"	824'0"	10'0"						AND GREEN TO GREY GREEN SHALES,			

GEOLOGICAL LOG

 HOLE No. 580

 SHEET No. 8

 From 586'0" To 655'9"

LIFTS			DRILL INTERVAL		Length	BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To		Angle to Core Axis			% Snt	% Sns	% Cu
824'0"	834'0"	9'10"						PROBABLY GRADING INTO TUFFS, BEDDING			
834'0"	844'0"	10'0"						SOMETIMES IRREGULAR ABUNDANT EVIDENCE			
844'0"	854'0"	10'0"						OF SLUMPING AND SHEARING. NUMEROUS			
854'0"	864'0"	9'11"						QUARTZ VEINS -			
864'0"	874'0"	10'0"	586'0"	634'8"	48'8"		BASIC VOLCANICS	FINE, MASSIVE, DARK GREEN, BASIC VOLCANICS			
874'0"	884'0"	10'0"						SOME CRYSTALLINE COMPONENTS. NUMEROUS			
884'0"	894'0"	10'0"						CARBONATE VEINS. MINOR PALE GREEN CHERT.			
894'0"	904'0"	10'0"						ABUNDANT CHLORITE VEINS AND THE			
904'0"	914'0"	9'10"						VOLCANICS ARE OFTEN HEAVILY CHLORITIC.			
914'0"	924'0"	10'0"						WEATHERING ZONE 618'6" TO 620'0", HEAVILY			
924'0"	934'0"	9'10"	634'8"	655'9"	21'1"		BASIC TUFF	<u>KNOWLEDGE</u> AFTER 834'8" THE			
934'0"	944'0"	9'10"						VOLCANICS ARE A PALER, MID GREEN,			
944'0"	954'0"	10'0"						PHYLLIC, WITH ^{ROUNDED} GRAINS UP TO 2mm IN			
954'0"	964'0"	9'11"						SIZE OF PALE GREEN AND PALE PINK-BROWN			
964'0"	974'0"	9'10"						ROCK. THIS APPEARS TO BE A TUFF,			
974'0"	984'0"	10'0"						THE BUFF COLOURED ROCK TO BE CHERT			
984'0"	994'0"	10'0"						FRAGMENTS OR SILICIFIED SHALE. SEVERAL			
994'0"	1004'0"	9'9"						ZONES IN THE TUFF CONSIST OF ROUNDED			
1004'0"	1014'0"	10'0"						CHERT-SHALE GRAINS IN A PALE GREEN MATRIX			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 9

From 655' 9" To 779' 6"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				Angle to Core Axis	% Snt	% Sns
1014'0"	1024'0"	10'0"						THE ROCK FRAGMENTS BEING UP TO			
1024'0"	1034'0"	10'0"						3 mm LONG AND WELL ALIGNED. SEVERAL			
1034'0"	1044'0"	10'0"						MINOR PALE GRAY-GREEN SHALE BANDS.			
1044'0"	1054'0"	10'0"	655'9"	656'6"	9"		BASIC TUFF SHALE	MASSIVE, FINE, PALE GRAY-GREEN			
1054'0"	1064'0"	10'0"						SHALE BASIC TUFF.			
1064'0"	1074'0"	10'0"	656'6"	1116'0" (459'6")			BASIC VOLCANICS	MID TO FINE, MASSIVE, DARK GREEN, QUARTZ AND CHLORITE VEINED BASIC VOLCANICS.			
1074'0"	1084'0"	10'0"						MINOR SPHALERITE IN QUARTZ VEINS AROUND			
1084'0"	1094'0"	9'8"						657'6", MINOR PYRITE AND PIRROPHITE			
1094'0"	1104'0"	10'0"						DISSEMINATED IN PORTIONS OF THE			
1104'0"	1114'0"	10'0"						VOLCANICS. SOME ROUND CLOTS OF CHLORITE			
1114'0"	1124'0"	10'0"						PRESENT IN SOME ZONES. QUARTZ,			
1124'0"	1134'0"	10'0"						ARSENOPYRITE, SPHALERITE VEIN AT 672'6".			
1134'0"	1144'0"	10'0"						SEVERAL IRREGULAR VEINS OF FINE, HARD			
1144'0"	1154'0"	9'9"						EPIDOTE YELLOW-GREEN MATERIAL IN THE 670'-680'			
1154'0"	1164'0"	10'0"						REGION. BETWEEN 691'6" AND 718'6"			
1164'0"	1174'0"	10'0"						THERE ARE NUMEROUS LARGE DARK GREEN			
1174'0"	1182'6"	8'6"						MASSSES OF CHLORITE. PYRITE, SPHALERITE			
1182'6"	1193'0"	10'6"						QUARTZ VEINS AROUND 742' TOTALING 2" THICK			
1193'0"	1203'0"	10'0"									

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 10

From 779'6" To 897'9"

LIFTS			DRILL INTERVAL		Length	BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To		Angle to Core Axis			% Snt	% Sns	% Cu
1203'0"	1212'0"	9'0"						FINE, DARK GREEN, PYRRHOTIC BASIC VOLCANIC			
1212'0"	1222'0"	10'0"						FROM 779'6" TO ^{799'} PYRRHOTIC IS FINE,			
1222'0"	1232'0"	9'11"						DISSEMINATED. UP TO 1%. THIS ALTERNATES			
1232'0"	1241'0"	8'3"						WITH THE FINE, MID TO DARK GREEN,			
1241'0"	1251'0"	10'0"						WHITE SPECKLED, MASSIVE BASIC VOLCANIC			
1251'0"	1261'0"	10'0"						WITH SOME CRYSTALLINE COMPONENTS AND			
1261'0"	1271'0"	10'0"						ABUNDANT CHLORITE AND CARBONATE VEINS.			
1271'0"	1281'0"	10'0"						AND MINOR FINE, DISSEMINATED PYRITE			
1281'0"	1291'0"	10'0"						OR PYRRHOTITE. MINOR GREY-GREEN BASIC			
1291'0"	1301'0"	9'9"						VOLCANIC, APPARENTLY KADLINIZGA OR			
1301'0"	1311'0"	10'0"						WEATHERED SECTIONS OF THE SPECKLED			
1311'0"	1321'0"	10'0"						VOLCANICS. PYRRHOTITE, SPHALERITE, CHALCOPYRITE			
1321'0"	1331'0"	10'0"						QUARTZ VEIN AT 812'9", 1" WIDE. MINOR			
1331'0"	1341'0"	10'0"						VEINS OF HARD YELLOW-GREEN MATERIAL (? EPIDOTE)			
1341'0"	1351'0"	10'0"						854'4", 1" VEIN OF SPHALERITE, PYRRHOTITE,			
1351'0"	1360'0"	8'9"						CHALCOPYRITE, QUARTZ, SPHALERITE,			
1360'0"	1366'0"	5'9"						COPPER VEINS AT 871'3"			
1366'0"	1376'0"	10'0"						(1") AND 881'0" (2"), ALSO 886'2" (1/2")			
1376'0"	1386'0"	10'0"						897'9" (1") THERE ARE ALSO A NUMBER			

GEOLOGICAL LOG

HOLE No. 580

SHEET No. 11

From 897'6" To 1174'9"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length	Angle to Core Axis			% Snt	% Sns	% Cu
1386'0"	1389'0"	3'0"									
1389'0"	1390'0"	9"									
1390'0"	1400'0"	10'0"									
1400'0"	1403'0"	3'0"									
1403'0"	1411'0"	7'8"									
1411'0"	1412'0"	1'10"									
1412'0"	1415'0"	2'11"									
1415'0"	1422'0"	6'6"									
1422'0"	1428'0"	6'0"									
1428'0"	1429'0"	8"									
1429'0"	1434'0"	5'0"									
1434'0"	1436'0"	2'0"									
1436'0"	1436'6"	3"		343.66							
1436'6"	1441'0"	4'2"	1116'0"	1127'6"	11'6"	45°	BASIC TUFF				
1441'0"	1451'0"	10'0"									
1451'0"	1460'0"	8'11"									
1460'0"	1462'5"	2'5"									
1462'5"	1471'0"	8'7"		358.06							
1471'0"	1473'0"	2'11"	1127'6"	1174'9"	47'3"		BASIC VOLCANIC				

N.W.P.S. COCKINGTON PRINT

OF FINE VEINS OF SIMILAR COMPOSITION.

MINOR PALE TO MID GREEN, - GREY-GREEN

TUFF AT 929', DIP 50° TO CORE. PALE GREEN

QUARTZ VEINED, BRECCIATED ZONE FROM

939'6" TO 944'.9 79'9", 1/2" VEIN OF

QUARTZ, ARSENOPIRITE, CHALCOPRITE,

NUMEROUS MINOR ^{FINE} QUARTZ-SULPHIDES

VEINS THROUGHOUT BASICS. 989'7" - 989'7"

PALE GREY-GREEN, FINE MASSIVE? TUFF

OFTEN QUITE RICH IN PYRITE AS FINE

GRAINED MASSES UP TO 1cm ACROSS.

QUARTZ-SPHALERITE, PYRRHOTITE VEINS AT

1109'8" (1") AND 1111'4" (1").

MASSIVE, FINE, BEDDED, PALE GREEN-GREY

TUFF, 1119', 2" VEIN OF QUARTZ, SPHALERITE,

PYRRHOTITE, CHALCOPRITE. OTHER THIN

VEINS THROUGH THE TUFF OF SIMILAR

COMPOSITION.

MASSIVE, FINE, MID TO DARK GREEN,

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 12

From 1174'9" To 1207'10"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
1473'0"	1479'0"	6'0"						WHITE SPECKLED, PARTIALLY CRYSTALLINE			
1479'0"	1485'0"	5'4"						IN COMPOSITION, VARIABLE, FINE, PYRITE			
1485'0"	1495'0"	10'0"						MASS CONTENT, BASIC VOLCANIC.			
1495'0"	1505'6"	10'0"						QUARTZ, SPHALERITE, PYRROPHOTITE, CHALCOPYRITE			
1505'6"	1510'0"	4'5"						VEINS AT 1188' (1") AND 1181'6" (1 1/2")			
1510'0"	1514'0"	4'0"						NUMEROUS CHLORITE VEINS. BLEACHED			
1514'0"	1524'0"	10'0"		368.15				ZONE 1172'8" TO 1174'9"			
1524'0"	1534'0"	9'11"	1174'9"	1207'10"	331"	40°	BASIC TUFF	FINE, BEDDED, DARK GREEN TUFF			
1534'0"	1544'0"	10'0"						WITH MINOR PALER BEDS AND SOME			
1544'0"	1554'0"	9'9"						COARSER, WHITE SPECKLED BEDS.			
1554'0"	1564'0"	10'0"						1179'4" TO 1187'10" PINK-GREEN			
1564'0"	1574'0"	10'0"						LITHIC BEDDED TUFF WITH ABUNDANT LARGE FRAGMENTS			
1574'0"	1584'0"	10'0"						OF BASIC VOLCANICS UP TO 1" DIAMETER,			
1584'0"	1592'0"	7'6"						AVERAGING 1/8". AFTER 1187'10", FINE,			
1592'0"	1600'0"	8'0"						BEDDED, DARK GREEN TUFF WITH MINOR			
1600'0"	1606'	5'10"						PALER BEDS AND SOME COARSER, WHITE			
	END							SPECKLED BEDS, 1202'9" TO 1205'10"			
								PINK-GREEN LITHIC TUFF WITH FRAGMENTS			
								OF BASIC VOLCANICS UP TO 1/2", AVERAGE 1/8"			

78"

N.W.P.S. COCKINGTON PRINT

HOLE No. 380

GEOLOGICAL LOG

SHEET No. 14

From 1272'0" To 1354'0"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
			1272'0"	1284'0"	12'0"		BASIC VOLCANICS	MASSIVE, FINE, DARK GREEN, CHALCITE VEINED BASIC VOLCANICS. MINOR FINE GRAINED PLATE MASSES. BLEACHED ZONES AT BOTH TOP AND BOTTOM. CHALCOPHATE PYROXENITE VEIN OF IRREGULAR SIZE UP TO 1" AT 1276'.			
				391.36							
				359.97							
			1284'0"	1312'3"	28'3"	55°	BASIC TUFF	FINE, BEDDED, BASIC TUFF AND BASIC LITHIC TUFF INTERBEDDED. MATRIX CONSISTS OF DARK BROWN TO GREEN-BROWN AND DARK GREEN COLOURED TUFF. LITHIC FRAGMENTS UP TO 1/2", AVERAGE 1/8". QUARTZ, CHALCOPHATE, SPHALELITE VEINS AT 1304'9" (1") AND 1311'8" (4"). NO LITHIC TUFFS AFTER 1294'.			
				412.70							
			1312'3"	1354'0"	41'9"		BASIC VOLCANIC	FINE, MASSIVE, DARK GREEN BASIC VOLCANIC SOME COMPONENTS OF WHICH OR CRYSTALLINE FEW CHALCITE ZONES. GREY-GREEN, VERY PATCHY BLEACH OR KAOLINIZATION ZONE 1312'3" TO 1319'6". THIN CHALCOPHATE, QUARTZ VEINS AT 1319'9" (1/2") AND			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 15

From 1354'0" To 1431'0"

LIFTS			DRILL INTERVAL		Length	BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To		Angle to Core Axis			% Snt	% Sns	% Cu
								1324'2" ($\frac{1}{16}$ ") . 1322'3" TO 1325' BROWN			
								GREEN ZONE OF VOLCANICS. SOME EXTERNAL			
								PALE SPECKLING OF VOLCANICS. ZONE OF			
								CHLORITE OR AMPHIBOLE UP TO 2mm GRAINS. IN			
				417.12				BASIC VOLCANICS FROM 1334'10" TO 1338'2".			
			1354'0"	1368'6"	14'6"	50°	BASIC TUFF	FINE, BEDED DARK REDDISH BROWN AND MID			
				421.77				GREEN GRAY TUFF MINOR QUARTZ VEINING			
			1368'6"	1383'9"	15'3"		BASIC VOLCANIC	FINE, MASSIVE, DARK GREEN, BASIC VOLCANIC			
								WITH SOME CRYSTALLINE COMPONENTS. SLIGHT			
								PALE SPECKLING, MINOR, PATCHY, KAOLINIZATION			
								OR BLEACHING. AFTER 1372'6" CHLORITE			
								BIOTINGS UP TO 4mm IN SIZE ARE PRESENT			
								AND THERE ARE ZONES OF DARK BROWN			
								BASIC VOLCANIC, APPARENTLY WITHOUT CHLORITE			
								BIOTINGS. NUMEROUS FINE CHALCOPYRITE			
				436.17				VEINS, ESPECIALLY IN THE LAST FOOT.			
			1383'9"	1431'0"	47'3"	60°	BASIC TUFF ?	FINE, BEDED, DARK BROWN AND GRAY-GREEN			
								BASIC TUFF. GRADING INTO ^{LAKE-} TINED MIDNEY			
								INSECTIONS			
								TUFF - SOME WHITE SPECKLING. PYRITE			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 16

From 1431'0" To 1443'0"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
								CHALCOPYRITE, PYRRHOTITE VEINS AND DISSEMINATIONS			
								AFTER 1406' TO 1408', DARK REDDISH			
								BROWN COLORATION IS PREDOMINANT AFTER			
								1415'. SOMETIMES FINELY BEDDED OTHER			
								SECTIONS MASSIVE, SOME MINOR WHITE			
								SPECIMEN IN PATCHES MAY BE A SHALE			
								OR A TUFF. SEVERAL FINE STATE VEINS IN			
								LAST 3'.			
				436.70							
			1431'0"	1432'9"	1'9"		LODE	MEDIUM TO FINE GRAINED CHALCOPYRITE, PYRRHOTITE,			
								PYRITE IN MEDIUM TO FINE GRAINED			
								FINELY Banded, PALE TO DARK BROWN,			
								CARBONATE, CHALCITE LODE. SULPHIDES			
								OCCUR AS SEMI-VEIN - SEMI-DISSEMINATED.			
								MAY BE MINERALIZED, RECRYSTALLIZED			
								IMPURE DOLOMITE.			
				439.19							
			1432'9"	1440'11"	8'2"		SHALE	FINE, MASSIVE, ^{RARE} RED-BROWN SHALE WITH MINOR			
								GREEN-GREEN SHALE.			
				439.32							
			1440'11"	1443'0"	2'1"		LODE	PYRRHOTITE, CHALCOPYRITE, MINOR PYRITE			
								QUARTZ, CHALCITE, TOURMALINE. RARE, DISSEMINATED			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 17

From 1443'0" To 1499'0"

LIFTS			DRILL INTERVAL			BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length				% Snt	% Sns	% Cu
								TO VEIN, FINE TO MEDIUM GRAINED SULPHIDES			
								IN PATCHY, QUARTZ RICH, CHERT-LIKE			
				446.13				LODE.			
			1443'0"	1444'0"	1'0"		SHALE	FINE, MASSIVE, DARK RED BROWN SHALE			
				444.32				WITH MINOR GREY-GREEN SHALE.			
			1444'0"	1457'5"	13'5"		LODE	PYRRHOTITE, CHALCOPYRITE, MINOR PYRITE,			
								CHLORITE, QUARTZ, POSSIBLE USIBLE			
								CASSITERITE, SULPHIDES FINE TO COARSE			
								GRAINED, DISSEMINATED, VEINS AND			
				452.25				PATCHES. CORE BROKEN IRREGULAR VEINS.			
			1457'5"	1483'5"	16'0"		SHALE	MASSIVE, FINE, DARK RED BROWN SHALE,			
								SOME GREEN AND GREY TINGED SECTIONS.			
				455.12				SOME WHITE SPOTTED SECTIONS.			
			1483'5"	1493'2"	9'5"		SANDSTONE	CHAOTIC ZONE OF MASSIVE, MEDIUM			
								GRAINED, MID GREY-GREEN, WHITE			
								SPECKLED SANDSTONE WITH MINOR GREY-			
				456.34				GREEN AND RED BROWN SHALE.			
			1493'2"	1497'2"	4'0"		SHALE	FINE, MASSIVE, DARK RED-BROWN SHALE.			
			1497'2"	1499'2"	2'0"		SHALE LODE	MASSIVE, FINE, GREY GREEN SHALE WITH			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 18

From 1499'2" To 1600'0"

LIFTS			DRILL INTERVAL		Length	BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To		Angle to Core Axis			% Snt	% Sns	% Cu
								CHALCOPIRITE, PYRROPHITE, QUARTZ & CHLORITE			
				1087				AND TOURMALINE LOOSE, FINE, DISSEMINATED			
								TO PATCHY SULPHIDE. LOOSE AND			
								SHALE ARE ERRATICALLY AND IRREGULARLY			
			456.95	460.45				INTERMINGLED.			
			1499'2"	1510'8"	11'6"		SHALE	FINE, MASSIVE, DARK RED BROWN SHALE.			
			1510'8"	1589'0"	78'4"		SANDSTONE	MASSIVE, MEDIUM GRAINED, WHITE SPECKLED,			
				484.32				MID GREY-GREEN TO DARK BROWN-GREY			
								SANDSTONE. QUARTZ, CHLORITE, CHALCOPIRITE			
							N.B. VEINS ->	PYRROPHITE VEINS 1524' (4") 1539' (.6")			
								A NUMBER OF CHLORITE, QUARTZ, CARBONATE			
								VEINS, SOMETIMES WITH MINOR SPHALERITE OR			
								PYRITE, THROUGH SANDSTONE UP TO 6" WIDE.			
								MINOR DARK GREY SHALE. 1586"11" TO			
								1589'0" CHLORITE, QUARTZ, PYRITE VEIN, 60"			
								ANGLE TO CORE. COARSE CHLORITE WITH			
								BANDS OF FINE STAFF.			
			1589'0"	1600'0"	11'0"		SHALE	MASSIVE, FINE DARK GREY-BROWN SHALE WITH			
				787.70				MINOR MID TO PALE GREY CHERT, MINOR CHALCOPIRITE,			

