



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 : ~~6E~~ 319° Angle of Hole : ~~32E~~ -62° Final Depth : 1606'0" (489.5m)

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: 580

SHEET No: 1

DRILL HOLE DATA

DATE: 12/4/77

LOGGED: SRH

COLLAR LOCATION: SURFACE, WEST OF DEEP CREEK, Near L section

OBJECTIVE:

FINAL DEPTH: 489.5

CORE SIZE: NQ/BQ

BEARING: 319°

DIP: -62°

R.L.: 460.0

COLLAR CO-ORDINATES: 15267.0 N;

11148.9 E;

SURVEY DATA				INTERPOLATED DATA			CALCULATED POSITION										
INSTR. TYPE	DEPTH	DIP	AZI.	DEPTH	DIP	AZI	N	E	R.L.	Depth	DIST. FROM HALLS	SECT. L	DIST. PERP. TO H.R.P.	Co-ords Halls Int. point	DIST. FROM BATT.	SECT.	DIST. PERP. TO GRP
Eastman Camera	15.2	62.0	321.0	0	62.0	321.0	15270.12	11141.51	437.93	0	-3.17		401.86	15533.67N			
Topcon Camera	61.0	62.0		25.0						25	-1.39		390.26	10853.68E			
"	91.4	63.0		37.5	62.0	321.0	15279.24	11134.13	415.85	50	10.39		378.66				
"	121.9	62.0		50.0													
"	152.4	63.0	321.0	62.5	62.0	321.0	15288.36	11126.74	393.78	75	2.17		367.06				
"	182.9	62.0		75.0													
"	198.1	61.0	320.5	87.5	63.0	321.0	15297.18	11119.60	371.50	100	3.89		355.84				
"	213.4	61.0		100.0													
"	243.8	59.0		112.5	62.5	321.0	15306.16	11112.33	349.33	125	5.65		344.42				
"	274.3	63.0	319.0	125.0													
"	304.8	62.5		137.5	62.5	321.0	15315.73	11105.07	327.15	150	7.40		333.01	4845			
"	335.3	64.0		150.0													
"	365.8	62.0		162.5	62.5	321.0							9.15	327.61			
"	396.2	62.5		175.0			15324.10	11097.81	304.98								
"	426.7	58.5		187.5	61.5	320.5											
"	457.2	57.0		200.0			15333.30	11090.22	283.01				10.85	309.80			
"	489.5	57.0		212.5	61.0	319.5											
				225.0			15342.52	11082.35	261.14				12.38	297.78			
				237.5	59.0	319.0											
				250.0			15352.24	11073.90	239.71				73.89	284.99			

HOLE No. : 580

SHEET No. : 2

DRILL HOLE DATA

DATE: _____

LOGGED: SRH

COLLAR LOCATION:

SURFACE, Near L section

OBJECTIVE:

FINAL DEPTH:

CORE SIZE:

BEARING:

DIP:

R.L.:

COLLAR CO-ORDINATES:

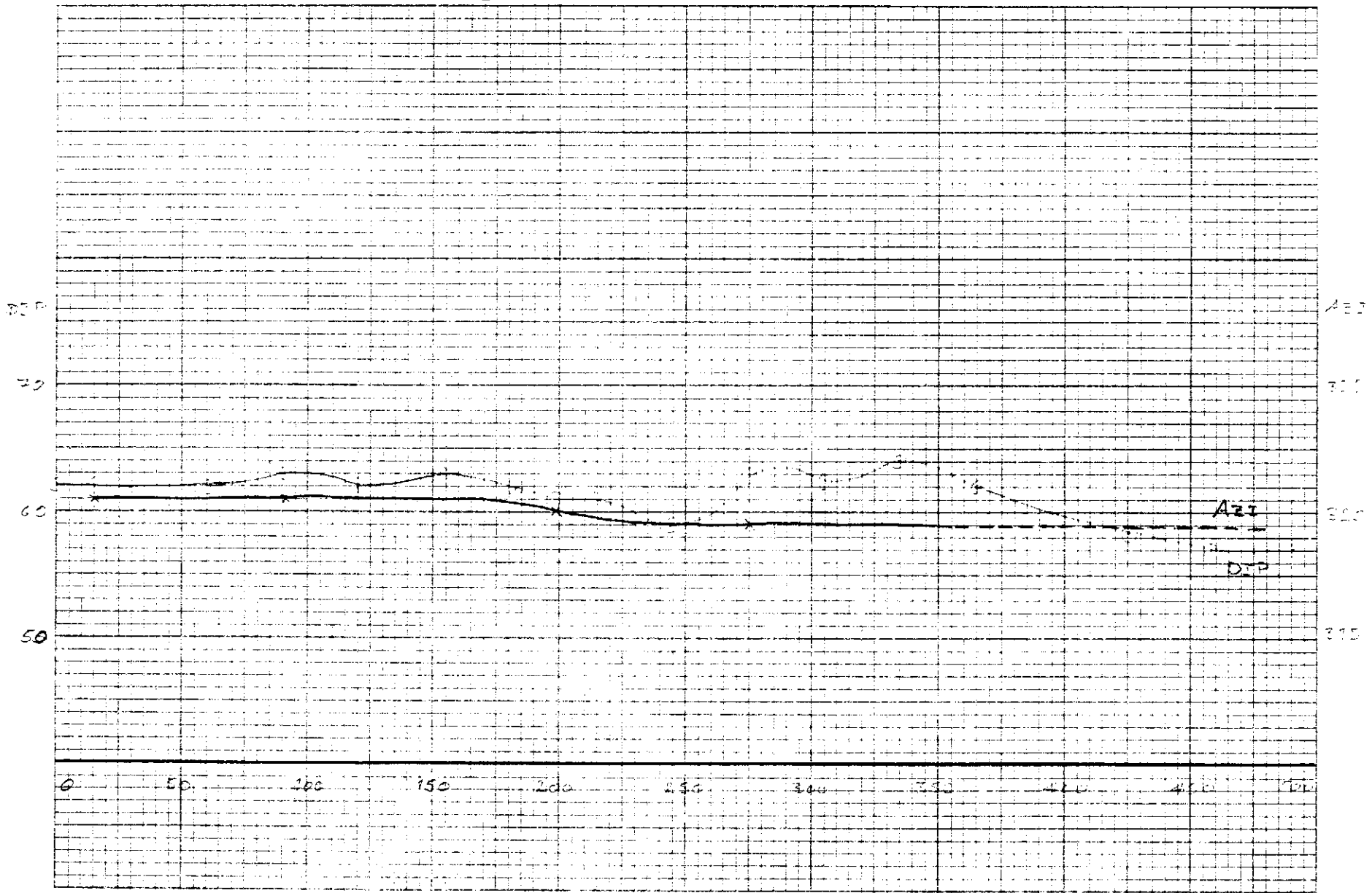
N;

E;

SURVEY DATA				INTERPOLATED DATA			CALCULATED POSITION										
INSTR. TYPE	DEPTH	DIP	AZI.	DEPTH	DIP	AZI	N	E	R.L.		DIST. FROM WALLS	SECT. L	DIST. PERP. TO H.P.P.		DIST. FROM BATT.	SECT.	DIST. PERP. TO R.R.P.
				282.5	60.0	319.0											
				275.0			15361.67	11065.70	218.06		15.35		272.58				
				287.5	63.5	319.0											
				300.0			15370.09	11058.38	195.69		16.66		261.50				
				312.5	62.5	319.0											
				325.0			15378.80	11050.81	173.22		18.07		250.04				
				337.5	64.0	319.0											
				350.0			15386.63	11044.00	150.75		19.22		239.73				
				362.5	62.5	319.0											
				375.0			15395.34	11036.43	128.57		20.58		228.27				
				387.5	60.5	319.0											
				400.0			15404.63	11028.35	106.81		22.02		216.04				
				412.5	59.0	319.0											
				425.0			15414.35	11019.91	85.38		23.53		203.26				
				437.5	58.0	319.0											
				450.0			15424.35	11011.21	64.18		25.08		190.09				
				462.5	57.0	319.0											
				475.0			15434.63	11002.28	43.22		26.68		176.57				
				487.5	57.0	319.0											
				500.0			15444.90	10993.35	22.25	E.O.H proj	28.27		163.06				

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CORNING CHAMPLAIN PAPER CO. CHRISTOPHER COLLETT



ABMINCO N.L. - Cleveland Mine

Hole No. C580

Sheet No. 1

DIAMOND DRILL HOLE DATA

PROGRAM DATA				SURVEY DATA				INTERPOLATED DATA		
				Instrument Type	Depth	Dip	Azimuth	Depth	Dip	Azimuth
1	Attitude	- CHS	(+) (-)	ACID	0	62	319	0	62	319
				"	152.4	62		12.5	62	
2	Hole No.	580		"	60.96	62		37.5	62	
				"	91.44	63		62.5	62	
3	Down Hole Interval	25		"	121.92	62		87.5	62.5	
				"	152.40	63.5		112.5	62.9	
4	Collar	15261.0	N	"	182.88	62		137.5	63	
				"	213.36	61		162.5	62.5	
5	Co-ords.	11148.9	E	"	243.84	59		187.5	61.8	
				"	274.32	59.5		212.5	60.8	
6	Collar R.L.	460.0		"	304.80	62.5		237.5	59.8	
				"	335.28	64		262.5	59.8	
7	Halls Sect. L	15533.67	N	"	365.76	62		287.5	61	
				"	396.24	62.5		312.5	62.7	
8	Intersect Point	10853.68	E	"	426.72	58.5		337.5	63.5	
				"	457.20	57		362.5	63	
9	Battery Sect.		N					387.5	61.8	
								412.5	60	
10	Intersect. Point		E					437.5	58	
								462.5	57	
11	Start Plot (Depth)	0	ϕ = Collar							

DOWN HOLE PLOT

Hole No: C580

Sheet No: /

DEPTH	PLAN			CROSS SECTION		LONG SECTION				Depth	PLAN			CROSS SECTION		LONG SECTION		
	N	E	RL	Dist. from H.R.P.	Dist. from B.R.P.	Dist. from Halls	Sect. L	Dist. from Batt.	Sect.		N	E	RL	Dist. from H.R.P.	Dist. from B.R.P.	Dist. from Halls	Sect.	Dist. from Batt.
0	15261.0	11148.90	460	401.86														
25	15269.86	11141.20	437.93	390.21														
50	15278.72	11133.50	415.86	378.55														
75	15287.57	11125.80	393.78	366.89														
100	15296.29	11118.23	371.60	355.43														
125	15304.91	11110.73	349.37	344.08														
150	15313.48	11103.28	327.09	332.81														
175	15322.19	11095.71	304.92	321.35														
200	15331.10	11087.96	282.89	309.61														
225	15340.31	11079.96	261.06	297.50														
250	15349.80	11071.71	239.46	285.01														
275	15359.29	11063.46	217.85	272.52														
300	15368.44	11055.51	195.98	260.49														
325	15377.09	11047.98	173.77	249.10														
350	15385.51	11040.66	151.39	238.02														
375	15394.08	11033.22	129.12	226.75														
400	15402.99	11025.47	107.09	215.02														
425	15412.43	11017.27	85.44	202.60														
450	15422.42	11008.58	64.23	189.45														
475	15432.70	10999.64	43.27	175.92														

HOLE No.: 580

SAMPLE DATA

SHEET No. :

FOOTAGE: From 365'0" To 1584'0"

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 LIMESTONE		1120'4"	113'54"	1'07"						
				369'0"	372'6"	3'6"	0.01	NOMR	0.02			
	90593	LIMESTONE		113'82"	116'81"	0'99"						
				380'0"	383'3"	3'3"	0.02		0.02			
	90594	CHALCOPIRITE, PYRITIC PYRITE, CARBONATE, CHLONITE.		436'17"	436'70"	0'53"						
				1431'0"	1432'5"	1'9"	0.21		0.26			
*	90595	PYRITIC, CHALCOPIRITE, PYRITE, QUARTZ, CHLONITE, TOMMALINE		439'19"	439'83"	0'64"						
				1440'11"	1440'0"	2'11"	0.10		0.28			
	90596	PYRITIC, CHALCOPIRITE, PYRITE, QUARTZ, CHLONITE, TOMMALINE		440'13"	441'21"	1'07"						
				1444'0"	1447'5"	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	SHALE & CHALCOPIRITE, PYRITIC, QUARTZ, CHLONITE, TOMMALINE		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	"		468'43"	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	% Cu
0	24'0"	4'10"	0	24'0"	24'0"		SHALE	MASSIVE FINE GRAY SHALE, OFTEN MUCH			
24'0"	26'0"	1'8"						BROKEN AND IRON STAINED. MINOR DARK			
26'0"	31'0"	2'7"						GRAY SHALE AND CHAOTICALLY INTERMIXED			
31'0"	38'0"	2'0"						GRAY 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 GRAY 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 GRAY SHALE WITH			
76'0"	80'0"	2'3"						MINOR DARK GRAY 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} A EARLY LIGHT,			
100'0"	104'0"	3'7"						EARLY MID GRAY SHALES 73'5" TO 84'			
104'0"	107'0"	1'7"						42' TO 100'3" : BLACK SHALE. FINE,			
107'0"	110'0"	2'0"						BEADED PARALLEL TO LOG.			
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"	2'5"		31.70				WEATHERED LODE			
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"		CHEST	MASSIVE, FINE, GREY CHEST.			
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 CHEST			
130'0"	131'0"	5"	147'9"	151'0"	3'3"		CHEST	MASSIVE, BRECCIATED APPEARING, RED, BLACK			
131'0"	134'0"	1'11"						AND SLIGHTLY GREEN, PYLITIC CHEST 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"		CHEST	MASSIVE, FINE, PALE GREY-GREEN CHEST.			
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 CHEST	PALE GREY-GREEN SHALE AND MINOR			
154'0"	157'0"	1'9"						CHEST OF LIKE APPEARANCE. THE TWO			
157'0"	160'0"	2'2"						ARE CLOSELY INTERMIXED AND DIFFICULT			

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 SEPARATE EXCEPT BY HARDNESS.			
162'0"	164'0"	7"				440°		MINOR BEDDING TRACES. SOME CHAOTIC ZONES			
164'0"	170'0"	5'0"	63.70	64.29							
170'0"	177'0"	9"	209'0"	210'9"	1'9"		LIMESTONE SOLICIFIED	FINE, SOFT, GRANULAR, WHITE SPECKLED, PALE			
177'0"	180'0"	2'9"		109.12				GREEN, IMPURE LIMESTONE "PEARS" VIGOROUSLY WITH ACID			
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 GREY-BLACK, AND PALE TO ^{DARK}			
187'0"	190'0"	11"						GREEN 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 COLUMN ASSEMBLAGE			
199'0"	201'0"	1'7"						CHANGES TO DARK PURPLE-BROWN AND			
201'0"	204'0"	1'8"						DARK GREEN-GRAY SHALES. INTERMIXED			
204'0"	207'0"	2'4"						AND INTERBEDDED. SLUMPING STILL			
207'0"	211'0"	4'0"						EVIDENT. SOME PYRITIC 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. 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"						INTERMINUTED WITH PYRITE. 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, CHALCOPRITE, PYRITE *			
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°	CHELT	FINE, BEDDED, PALE GREEN-GREY CHELT			
442'0"	452'0"	10'0"						CHANGING AT 259' TO FINE DARK PURPLE BROWN			
452'0"	457'0"	5'0"						CHELT WITH FINE INTERBEDS OF PALE			
457'0"	462'0"	4'9"						GREY GREEN CHELT GRADING TO DARK			
462'0"	468'0"	6'0"						PURPLISH GREY CHELT WITH INTERBEDS OF			
468'0"	472'0"	4'0"						PALE GREY-GREEN CHELT AT 259'.			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 6

From 468'0" To 564'6"

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"						LIGHT GRAYES IMPERCEPTIBLY TO SHALE			
480'0"	490'0"	9'3"						OF IDENTICAL APPEARANCE IN			
490'0"	500'0"	9'7"						A TWO FOOT ZONE TO 488'.			
500'0"	510'0"	9'11"	468'0"	564'6"	96'6"	45°	SHALE	DARK TO MID PURPLE TO RED-BROWN			
510'0"	520'0"	10'0"						SHALE WITH MINOR FINE INTERBEDS OF			
520'0"	526'0"	6'0"						PALE GRAY-GREEN SHALE. MINOR			
526'0"	534'0"	8'0"						SILICIFICATION NEAR 468'. RICH			
534'0"	544'0"	10'0"						RED BROWN COLOUR PREDOMINATES AFTER			
544'0"	554'0"	10'0"						470'. 498'-501'8" SECTION OF GRAY			
554'0"	557'0"	2'7"						-GREEN, PURPLISH TINGED SHALES IN THE			
557'0"	567'0"	10'0"						RED BROWN & MINOR GRAY-GREEN SHALE			
567'0"	577'0"	10'0"						SEQUENCE. 1" VEIN AT 28° AT 500'.			
577'0"	586'0"	9'0"						CHALCOPIRITE, PYRITE, QUARTZ. APPEARS			
586'0"	593'0"	6'0"						TO BE SHEAR ZONE. NUMEROUS FINE			
593'0"	594'0"	1'0"						CARBONATE VEINS CHLORITIC MATERIAL			
594'0"	604'0"	10'0"						ON SHEARS. FROM 594' TO 564'6"			
604'0"	614'0"	10'0"						THE SHALE COLOUR VARIES WIDELY, DARK GRAY			
614'0"	624'0"	10'0"						TO DARK GREEN, PINK-BROWN, SOMETIMES			
624'0"	634'0"	10'0"						GREEN TINGED, AND PURPLE BROWN SHALES.			

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
624'0"	644'0"	10'0"	564'6"	566'4"	1'10"		GREYWACKE	GREY-GREEN GREYWACKE OR SLUMP BRECCIA, GRAINS OF SHALE OF ALL COLORS REPRESENTED IN THE PREVIOUS 20 FEET AND GRAINS OF QUARTZ. GRAIN SIZE UP TO 1MM. MATERIAL SHOWS GOOD ALIGNMENT OF GRAINS. NUMEROUS LARGE SHARDS OF PURPLE-BROWN SHALE AND SEVERAL LARGE, BARREN QUARTZ VEINS. *			
644'0"	654'0"	10'0"									
654'0"	664'0"	10'0"									
664'0"	674'0"	10'0"									
674'0"	684'0"	10'0"									
684'0"	694'0"	10'0"									
694'0"	704'0"	10'0"									
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 SHALE PREDOMINATES GIVING STRONG, DARK PURPLE-GREEN COLOURATION. NUMBER OF QUARTZ VEINS AND MASSES, ONE 1/4" VEIN CONTAINS CHALCOPRITE.			
744'0"	754'0"	10'0"									
754'0"	764'0"	10'0"									
764'0"	774'0"	10'0"									
774'0"	784'0"	10'0"									
784'0"	794'0"	10'0"									
794'0"	804'0"	9'0"									
804'0"	814'0"	10'0"	572'2"	586'0"	45° TO 50°		SHALE	FINE, BEDDED, PURPLE-BROWN TO RED-BROWN AND GREEN TO GREY GREEN SHALES,			
814'0"	824'0"	10'0"									

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 8

From 586'0" To 655'9"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length	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 CHEST.			
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	KADUWIZED 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 CHEST			
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"						CHEST-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	% Cu
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"		340-16				SHALE BASIC TUFF.			
1064'0"	1074'0"	10'0"	656'6"	1116'0" (459'6"			BASIC VOLCANICS	MID TO WHOLE DARK GREEN FINE, MASSIVE, DARK GREEN, QUARTZ			
1074'0"	1084'0"	10'0"						AND CHLORITE VEINED BASIC VOLCANICS.			
1084'0"	1094'0"	9'8"						MINOR SPHALERITE IN QUARTZ VEINS AROUND			
1094'0"	1104'0"	10'0"						657'6", MINOR PYRITE AND PYRRHOTITE			
1104'0"	1114'0"	10'0"						DISSEMINATED IN PORTIONS OF THE			
1114'0"	1124'0"	10'0"						VOLCANICS. SOME ROUND CLOTS OF CALCITE			
1124'0"	1134'0"	10'0"						PRESENT IN SOME ZONES. QUARTZ,			
1134'0"	1144'0"	10'0"						ARSENOPYRITE, SPHALERITE VEIN AT 672'6".			
1144'0"	1154'0"	9'9"						SEVERAL IRREGULAR VEINS OF FINE, HARD			
1154'0"	1164'0"	10'0"						YELLOW-GREEN MATERIAL, IN THE 670'-680'			
1164'0"	1174'0"	10'0"						REGION. BETWEEN 691'6" AND 718'6"			
1174'0"	1182'6"	8'6"						THERE ARE NUMEROUS LARGE DARK GREEN			
1182'6"	1193'0"	10'6"						MASSSES OF CHLORITE, PYRITE, SPHALERITE			
1193'0"	1203'0"	10'0"						QUARTZ VEINS AROUND 742' TOTALING 2" THICK			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 10

From 779'6" To 897'9"

LIFTS			DRILL INTERVAL		Length	BEDDING Angle to Core Axis	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To					% Snt	% Sns	% Cu
1203'0"	1212'0"	9'0"						FINE, DARK GREEN, PYRROPHILIC BASIC VOLCANIC			
1212'0"	1222'0"	10'0"						FROM 779'6" TO ^{79'} PYRROPHILITE IS FINE,			
1222'0"	1232'0"	9'11"						DISSEMINATED. UP TO 1%. THIS ALTERNATES			
1232'0"	1241'0"	8'3"						WITH THE FINE, H.D 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"						ON PYRROPHILITE. MINOR GREY-GREEN BASIC			
1291'0"	1301'0"	9'9"						VOLCANIC, APPARENTLY KALINIZED OR			
1301'0"	1311'0"	10'0"						WEATHERED SECTIONS OF THE SPECKLED			
1311'0"	1321'0"	10'0"						VOLCANICS. PYRROPHILITE, 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, PYRROPHILITE,			
1351'0"	1360'0"	8'9"						CHALCOPYRITE. QUARTZ, SPHALERITE,			
1360'0"	1366'0"	5'9"						CHALCOPYRITE, PYRROPHILITE VEINS AT 811'3"			
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			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 11

From 887'6" To 1174'9"

LIFTS			DRILL INTERVAL		Length	BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To		Angle to Core Axis			% Snt	% Sns	% Cu
1386'0"	1389'0"	3'0"						OF FINE VEINS OF SIMILAR COMPOSITION.			
1389'0"	1390'0"	9"						MINOR PALE TO MID GREEN, -LREY-GREEN			
1390'0"	1400'0"	10'0"						TUFF AT 929', DIP 50° TO CORE. PALE GREEN			
1400'0"	1403'0"	3'0"						QUARTZ VEINED, BRECCIATED ZONE FROM			
1403'0"	1411'0"	7'8"						939'6" TO 944'9 7/8", 1/2" VEIN OF			
1411'0"	1412'0"	1'10"						QUARTZ, ARSENOPIRITE, CHALCOPIRITE.			
1412'0"	1415'0"	2'11"						NUMEROUS MINOR ^{FINE} QUARTZ-SULPHIDES			
1415'0"	1422'0"	6'6"						VEINS THROUGHOUT BASICS. 989'7" - 991'7"			
1422'0"	1428'0"	6'0"						PALE GREY-GREEN, FINE MASSIVE? TUFF.			
1428'0"	1429'0"	8"						OFTEN QUITE RICH IN PYRITE AS FINE			
1429'0"	1434'0"	5'0"						GRAINED MASSES UP TO 1CM ACROSS.			
1434'0"	1436'0"	2'0"						QUARTZ-SPHALENITE, PYRRHOTITE VEINS AT			
1436'0"	1436'6"	3"		343'66				1109'8" (1") AND 1111'4" (1")			
1436'6"	1441'0"	4'2"	116'0"	1127'6"	11'6"	45°	BASIC TUFF	MASSIVE, FINE, BEDDED, PALE GREEN-LREY			
1441'0"	1451'0"	10'0"						TUFF. 1119', 2" VEIN OF QUARTZ, SPHALENITE,			
1451'0"	1460'0"	8'11"						PYRRHOTITE, CHALCOPIRITE. OTHER THIN			
1460'0"	1462'5"	2'5"						VEINS THROUGH THE TUFF OF SIMILAR			
1462'5"	1471'0"	8'7"		353'06				COMPOSITION.			
1471'0"	1473'0"	2'11"	1127'6"	1174'9"	47'3"		BASIC VOLCANIC	MASSIVE, FINE, MID TO DARK GREEN,			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 12

From 1174'5" To 1207'10"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length	Angle to Core Axis			% Snt	% Sns	% Cu
1475'0"	1479'0"	6'0"									
1479'0"	1485'0"	5'4"									
1485'0"	1495'0"	10'0"									
1495'0"	1505'6"	10'0"									
1505'6"	1510'0"	4'5"									
1510'0"	1514'0"	4'0"									
1514'0"	1524'0"	10'0"		368'15							
1524'0"	1534'0"	9'11"	1174'9"	1207'10"	331"	40°	BASIC TUFF				
1534'0"	1544'0"	10'0"									
1544'0"	1554'0"	9'9"									
1554'0"	1564'0"	10'0"									
1564'0"	1574'0"	10'0"									
1574'0"	1584'0"	10'0"									
1584'0"	1592'0"	7'6"									
1592'0"	1600'0"	8'0"									
1600'0"	1606'	5'10"									
	END										

GEOLOGICAL LOG

 HOLE No. 580

 SHEET No. 13

 From 1207'10" To 1272'0"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length	Angle to Core Axis			% Snt	% Sns	% Cu
								1205'10" TO 1207'10" DARK GREEN, BEDDED, BASIC TUFF			
				372.62							
			1207'10"	1222'6"	14'8"		BASIC VOLCANICS	FINE, MASSIVE, DARK GREEN, EXTERNALLY WHITE SPECKLED BASIC VOLCANIC. SOME CRYSTALLINE COMPONENTS. ABUNDANT CHLORITE VEINS. ? EPIDOTE, AMPHIBOLE -			
				375.67				CHLORITE VEIN AT 1209', 1" WIDE.			
			1222'6"	1233'6"	11'6"		BASIC TUFF	FINE, BEDDED, DARK TO MID GREEN AND DARK GREEN-BROWN TUFF. LITHIC TUFF,			
				385.24				AS BEFORE, FROM 1228'9" TO 1230'6".			
			1233'6"	1263'11"	30'5"		BASIC VOLCANIC	FINE, MASSIVE, DARK GREEN, EXTERNALLY WHITE SPECKLED BASIC VOLCANIC. ABUNDANT FINE CHLORITE VEINS. MINOR FINE PYRITE. IN MASSES UP TO 1/8" IN SIZE. 1/2" VEIN OF CHALCOPYRITE & PYRROPHITE AT 1258'7"			
				387.71							
			1263'11"	1272'0"	8'1"		BASIC TUFF	FINE, BEDDED TO MASSIVE DARK TO MID GREEN AND DARK BROWN-GREEN BASIC TUFF. MINOR BLEACHED, CHLORITE VEINED			
								BASIC VOLCANICS. BEDDING IRREGULAR			

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GEOLOGICAL LOG

HOLE No. 580

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			
				41712				BASIC VOLCANICS FROM 1334'10" TO 1338'2".			
			1354'0"	1368'6"	14'6"	50°	BASIC TUFF	FINE, BEDDED DARK REDDISH BROWN AND MID GREEN-LAVY TUFF MINOR QUARTZ VEINING			
				42177				FINE, MASSIVE, DARK GREEN, BASIC VOLCANICS WITH SOME CRYSTALLINE COMPONENTS. SOME FINE SPECKLING, MINOR, PATCHY, KAOLINIZATION OR BLEACHING. AFTER 1372'6" CHLORITE BLOTCHES UP TO 4mm IN SIZE ARE PRESENT AND THERE ARE ZONES OF DARK BROWN BASIC VOLCANIC, APPARENTLY WITHOUT CHLORITE BLOTCHES. NUMEROUS FINE CHALCOPRITE VEINS, ESPECIALLY IN THE LAST FOOT			
			1383'9"	1431'0"	47'3"	60°	BASIC TUFF ?	FINE, BEDDED, DARK BROWN AND GREY-GREEN BASIC TUFF. GRADING INTO TINED MIDNEY INSERCTIONS TUFF - SOME WHITE SPECKLING. PYRITE			

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HOLE No. 580

GEOLOGICAL LOG

SHEET No. 16

From 1431'0" To 1443'0"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length	Angle to Core Axis			% 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			
								SPECULUM IN PATCHES. MAY BE A SHALE			
								OR A TUFF. SEVERAL FINE PYRITE 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			
								FINE BANNED, PALE TO DARK BROWN,			
								CARBONATE, CHLORITE LODE. SULPHIDES			
								OCCUR AS SEMI-VEIN - SEMI-DISSEMINATED.			
								MAY BE MINERALIZED, RECRYSTALLIZED			
								IMPURE OOLITE.			
				439.19							
			1432'9"	1440'11"	8'2"		SHALE	FINE, MASSIVE, ^{DARK} RED BROWN SHALE WITH MINOR			
				439.32				GREEN-GREEN SHALE.			
			1440'11"	1443'0"	2'1"		LODE	PYRRHOTITE, CHALCOPYRITE, MINOR PYRITE			
								QUARTZ, CHLORITE, TOURMALINE RARE, DISSEMINATED			

HOLE No. 580

GEOLOGICAL LOG

SHEET No. 17

From 1443'0" To 1499'8"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length	Angle to Core Axis			% Snt	% Sns	% Cu
								TO UGIF, FINE TO MEDIUM GRAINED SULPHIDES			
								IN PATCHY, QUARTZ RICH, UGERT-LIKE			
				440.13				LOOE			
			1443'0"	1444'0"	1'0"			SHALE	FINE MASSIVE, DARK RED BROWN SHALE		
				444.32					WITH MINOR GREY-GREEN SHALE.		
			1444'0"	1457'9"	13'9"			LOOE	PYRIMOTITE, CHALCOPYRITE, MINOR PYRITE,		
									CHLORITE, QUARTZ, POSSIBLE VISIBL		
									LASSITERITE, SULPHIDES FINE TO COARSE		
									GRAINED, DISSEMINATED, VEINS AND		
				452.29					PATCHES. SOME BROKEN IRREGULAR VEINS.		
			1457'9"	1483'9"	16'0"			SHALE	MASSIVE, FINE, DARK RED BROWN SHALE,		
									SOME GREEN AND GREY-TINLED SECTIONS.		
				455.12					SOME WHITE SPOTTED SECTIONS.		
			1483'9"	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 LOOE	MASSIVE, FINE, GREY GREEN SHALE WITH		

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HOLE No. 580

GEOLOGICAL LOG

SHEET No. 18

From 1459'2" To 1600'0"

LIFTS			DRILL INTERVAL			BEDDING	ROCK TYPE	DESCRIPTION	ASSAYS		
From	To	Recovery	From	To	Length	Angle to Core Axis			% Snt	% Sns	% Cu
								CHALCOPHYTE, PYRROPHITE, QUARTZ & CHLORITE AND TOURMALINE LOOSE. FINE, DISSEMINATED TO PATCHY SULPHIDE. LOOSE AND SHALE ARE ERRATICALLY AND IRREGULARLY INTERMINGLED.			
			456 95	460-45							
			1459'2"	1510'8"	11'6"		SHALE	FINE, MASSIVE, DARK RED BROWN SHALE			
			1510'8"	1589'0"	78'4"		SANDSTONE	MASSIVE, MEDIUM GRAINED, WHITE SPECKLED, MID LAY- GREEN TO DARK BROWN - GREY SANDSTONE. QUARTZ, CHLORITE, CHALCOPHYTE			
				484 32							
							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 PYRITE.			
			1589'0"	1600'0"	11'0"		SHALE	MASSIVE, FINE DARK GREY-BROWN SHALE WITH MINOR MID TO FINE LAY CHERT, MINOR CHALCOPHYTE,			
				987 70							

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