PASMINCO LTD - ROSEBERY

DIAMOND DRILL RECORD

OBJECTIVE : To explore for mineralisation below J lens

RESULT :

DEPTH :1506.5

HOLE SIZE:HQ 0-282.3.
NQ 282.3-1506.5

COMMENCED:11/9/90

COMPLETED:29/10/90

Depth	Direction	Dip	Depth	Direction	Dip
PTO					

COLLAR DIP : 86 HOLE No. : 114R

DIRECTION : 047 RMG LOCATION : Mount Black south

NORTHING : -297.1 RMG LOGGED BY : G. Iliff, G. Jenkins

EASTING : 1377.6 RMG COLLAR RL : 3582.8 RMG

FROM	TO	DESCRIPTION	ALT	CD	ROCK TYPE	MINERALISATION
0.0	1098.0	MT BLACK VOLCANICS Very dark grey to dark brown andesitic, dacitic and rhyodacitic lavas and volcaniclastics				
		0.0 to 38.6 Dark brown fine grained feldspar phyric andesitic lava; feldspars 1mm to 2mm fine <0.1mm chlorite filled micro fractures with a weak chlorite filled anastomasing foliation; bleached by weathering along some joint surfaces; minor traces fine grained galena associated with pink to white carbonate veins, zones of light green alteration up to 10cm from mineralised carbonate veins.	weath chl carb	C	And lava	Very fine grained traces of galena at the margins of manganese carbonate veins
		38.6 to 226.6 Dark grey feldspar phyric lava with a minor volcaniclastic component; dark grey aphanitic lava with phenocrysts <1mm to 2mm of white plagioclase; diffuse minor areas show a volcaniclastic component consisting of abundant poorly sorted feldspar clasts and occasional andesite clasts to 1cm + poorly sorted in fine grained open andesitic matrix ; micro fractures infilled by silicified chlorite and occasionally white carbonate. Possible hyaloclastite textures in places, e.g. 72.6. At 70m, Carbonate veins at 42,62,24,30,70 degrees to core axis. At 73.9m is contact between underlying clast-poor material and overlying clast-rich (20%) material which grades up over about 3m into material with 5-10% clasts, similar to that below the contact. Occasional layers to 1m thick of massive relatively unveined and unfractured lava contrast with the bulk of the material, which contains veinlets of silicified chlorite giving a broken up appearance to the lavas. It is this veining which gives apparent hyaloclastite textures; it is probable that these are not true hyaloclastites, but that the veining is a later feature. At 80m, carbonate veining at 43,72 degrees to CA. At 82m, carbonate veining at 32,61,68,37 degrees to CA. At 86m, carbonate veining at 20 degrees to CA. At 88.9m, carbonate veining up to 30mm wide with accompanying fracturing of host; possibly a fault, but same lithology above and below. At 95m, carbonate	carb vns chl vns qz+ carb +/- chl vns sil sil	B C C B	And lava & clast	Very fresh unaltered , unweathered rock 1 only pyrite crystal observed at start of interval. Pyrite in veinlets with chlorite around 70.

HOLE#R114R

SAMPLE NO.	FROM	TO	Length	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	$
			Factor	0.52	1.00	0.01	0.03	1.00		
83834 1114	1116		2.0	0.1	0.1	0.01	1	0.1	9.14	0.4
838351116.0	1118		2.0	0.1	0.1	0.01	1	0.1	8.3	0.4
838361118.0	1120		2.0	0.1	0.1	0.01	1	0.1	6.6	0.4
838371120.0	1121		1.0	0.1	0.1	0.01	1	0.1	7.3	0.4
1121.0	1133.9									0.0
838381133.9	1134.5		0.6	0.1	0.1	0.01	1	0.1	3.1	0.4
1134.5	1140									0.0
838391140.0	1142		2.0	0.1	0.1	0.01	1	0.1	3.4	0.4
838401142.0	1144		2.0	0.1	0.1	0.01	1	0.1	4.4	0.4
838411144.0	1146		2.0	0.1	0.1	0.01	1	0.1	3.5	0.4
838421146.0	1148		2.0	0.1	0.1	0.01	1	0.1	4.0	0.4
838431148.0	1150		2.0	0.1	0.1	0.01	1	0.1	4.2	0.4
838441150.0	1152		2.0	0.1	0.1	0.01	1	0.1	4.1	0.4
838451152.0	1154		2.0	0.1	0.1	0.01	1	0.1	4.1	0.4
838461154.0	1156		2.0	0.1	0.1	0.03	1	0.1	5.9	0.4
838471156.0	1158		2.0	0.1	0.1	0.02	1	0.1	8.0	0.4
838481158.0	1160		2.0	0.1	0.1	0.01	1	0.1	4.4	0.4
1160.0	1182									0.0
838491182.0	1184		2.0	0.1	0.1	0.01	1	0.1	2.9	0.4
838501184.0	1186		2.0	0.1	0.1	0.01	1	0.1	3.0	0.4
838511186.0	1188		2.0	0.1	0.1	0.01	1	0.1	2.0	0.4
838521188.0	1190		2.0	0.1	0.1	0.01	1	0.1	4.7	0.4
838531190.0	1192		2.0	0.1	0.1	0.01	1	0.1	2.5	0.4
838541192.0	1193		1.0	0.1	0.1	0.01	1	0.1	3.7	0.4
838551193.0	1194		1.0	0.1	0.1	0.53	1	0.1	6.0	0.0
838561194.0	1195		1.0	0.1	0.1	0.01	1	0.1	15.4	0.4
838571195.0	1196		1.0	0.1	0.1	0.01	1	0.1	9.2	0.4
838581196.0	1198		2.0	0.1	0.1	0.01	1	0.1	3.8	0.4
1198.0	1323									0.0
838591323.0	1325		2.0	0.1	0.1	0.01	1	0.1	3.0	0.4
838601325.0	1327		2.0	0.1	0.1	0.01	1	0.1	2.1	0.4
838611327.0	1329		2.0	0.1	0.1	0.01	1	0.1	1.9	0.4
1329.0	1389									0.0
838621389.0	1390		1.0	0.1	0.1	0.01	1	0.1	4.7	0.4

To <S=Shear>	RQD%
38.6	90
80.0	95
82.0	80
121.0	95
127.0	85
134.5	95
136.5	85
140.0	95
142.0	80
156.0	95
158.0	70
179.0	90
181.0	60
183.0	90
187.0	85
191.5	90
199.0	60
216.0	90
223.0	60
234.9	90
236.9	20
488.7	95
490.7	85
518.0	95
520.0	55
789.0	95
791.0	85
922.0	95
924.0	50
934.0	95
936.0	65
959.0	95
961.0	70
1004.2	95
1006.2	55
1056.0	95
1058.0	70
1072.0	95
1077.0	30
1089.0	90
1091.0	50
1096.0	90
1100.0	75
1103.0	90
1105.0	80

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NQ 282.3-1506.5

COMMENCED:11/9/90

COMPLETED:29/10/90

COLLAR DIP : 86

DIRECTION : 047 RMG

NORTHING : -297.1 RMG

EASTING : 1377.6 RMG

HOLE No. : R114R

LOCATION : Mount Black south

LOGGED BY : G. Iliff, G. Jenkins

COLLAR RL : 3582.8 RMG

Depth	Direction	Dip

Depth	Dip	Azimuth
0.00	-86.00	47.00
30.00	-86.00	49.00
60.00	-86.00	47.00
90.00	-86.00	48.00
120.00	-86.00	53.00
150.00	-86.00	58.00
201.00	-85.70	57.00
252.00	-86.00	60.00
303.00	-85.70	53.00
351.00	-85.50	52.00
399.50	-85.20	46.00
453.50	-84.20	42.00
500.70	-82.80	45.00
549.00	-82.50	46.00
603.00	-81.60	43.00
615.00	-81.50	43.00
627.00	-81.20	?.00
636.00	-81.20	41.00
642.00	-81.40	39.00
645.00	-81.20	39.00
654.00	-81.10	37.00
663.00	-81.60	31.50
669.50	-81.40	29.50
675.50	-81.40	30.00
685.00	-81.40	26.00
690.50	-81.20	22.50
702.50	-80.90	22.00
714.50	-80.90	17.50
723.00	-80.60	13.00
732.00	-80.20	10.00
759.50	-79.00	353.00
783.50	-78.20	351.50
813.00	-77.80	348.00
843.50	-77.20	347.00
873.00	-76.30	342.50
903.50	-74.50	332.50
933.50	-73.00	328.00
963.50	-71.70	323.00
992.00	-70.10	313.00
1026.50	-66.00	309.50
1056.50	-63.00	304.50
1086.50	-61.60	303.40
1116.50	-61.00	302.40
1146.50	-60.30	304.20
1176.00	-59.70	306.30
1206.50	-58.70	299.80
1242.50	-57.40	298.40
1278.00	-55.60	295.20
1308.00	-54.90	294.50
1338.00	-54.30	294.40
1368.50	-53.80	293.80
1398.00	-52.60	292.50
1428.00	-51.00	290.00
1458.00	-50.20	290.00
1506.50	-49.40	290.60

FROM	TO	DESCRIPTION	ALT	CD	ROCK TYPE	MINERALISATION	.ength	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	$	To <S=Shear>	RQD%
		veining at 75,58,50,25 degrees to CA. At 106m, carbonate veining at 86,58,41,25,50 degrees to CA. At 110m, a 30mm thick carbonate vein at 50 degrees to CA . 117m, carbonate veining at 26,14,53,77 degrees to CA. At 150m, carbonate veining at 61,42,71,28,12 degrees to CA. At													1109.0	90
		135.7m, a 50mm thick vein of carbonate + quartz + chlorite, with chlorite as the final fill. Strong alteration up to 30cm from this vein. Most of the carbonate veins observed in this unit contain a small amount of quartz as the final fill. From 157.0 to 159.5, strong silicification, and a 10mm thick chlorite vein at 159.5, 52 degrees to CA . Broken core 159.5-159.6; possibly a fault. 159.6-161.4 more alteration in the form of ?silicification which makes the rock very dark grey. 161.8-162.3 light coloured alteration and quartz + carbonate veinlets, beyond this the rock is relatively unaltered. 165.2 a 50mm wide quartz + carbonate + chlorite vein, 73 degrees to CA , with alteration extending 40cm either side, lighter colour above, darker below. 169.0-173.0 more intense quartz + carbonate veining. 180.2-180.5 vein of quartz + carbonate, angle to CA indeterminate due to irregular contacts, with lighter alteration 50cm either side. 196.7-199.0 light coloured alteration and broken core. 213.2 a 10cm quartz + carbonate vein, indeterminate angle, with surrounding veinlets and fractures and alteration up to 50cm above. Alteration includes angular 1-3mm carbonate spots. 216.5 a 3cm quartz + carbonate + chlorite vein, 78 degrees to CA, with spotty carbonate alteration and bleaching 30cm either side. At 200m, carbonate veining at 22,32,35,70 degrees to CA. 217.0-222.0 bleaching, carbonate spots, quartz + carbonate veining, broken core.	qz+ carb +/- chl vns sil	B C											1111.0	65
															1119.0	90
															1124.0	80
															1148.0	90
															1152.0	20
															1164.0	90
															1168.0	75
															1191.0	90
															1194.0	80
															1197.0	90
															1200.0	65
															1235.0	90
															1237.0	60
															1265.0	90
															1270.0	50
															1297.0	90
															1303.0	75
															1339.0	90
															1346.0	40
															1362.0	90
															1367.0	45
															1380.0	90
															1382.0	80
															1387.0	90
															1391.0	80
															1396.0	90
															1398.5	60
															1422.0	90
															1425.0	65
															1437.0	90
															1447.0	45
															1450.0	90
															1468.0	50
															1474.0	90
															1479.0	70
															1493.0	90
															1495.0	70
															1506.5	90
		226.6-1000.9 Dark grey rhyodacitic lava with quartz phenocrysts and lithic fragments up to 3mm grainsize, silicified, altered B. 229.1 a 10cm quartz + carbonate vein, 66 degrees to CA, with bleaching 1m either side. 233.7 a 10mm chlorite vein, 74 degrees to CA, with silicification 10cm either side. 237.0 a 30mm quartz + carbonate	qz+ carb +/- chl vns sil tourm	B B C														

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NORTHING : -297.1 RMG

EASTING : 1377.6 RMG

HOLE No. : R114R

LOCATION : Mount Black south

LOGGED BY : G. Iliff, G. Jenkins

COLLAR RL : 3582.8 RMG

FROM	TO	DESCRIPTION	ALT	CD	ROCK TYPE	MINERALISATION	SAMPLE NO.	FROM	TO	Length	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	$	To <S=Shear>	RQD%
		vein. 238.7 60mm quartz + carbonate vein, 60 degrees to CA. 240.4 5mm tourmaline vein, 65 degrees to CA. 260.8 30mm quartz vein in a 40cm bleached zone. 271.4-271.55 quartz + carbonate with lava breccia. 271.7 ?unit contact? 35 degrees to CA. 273.1-273.6 45mm band of carbonate alteration with veins to 2mm at 20 degrees to CA. 289.9 40mm quartz + carbonate vein 75 degrees to CA in 40cm bleached zone. 317.6-317.8 quartz + carbonate vein 75 degrees to CA in 1.2m bleached zone with carbonate fragments around the vein; carbonate alteration. 318.4 50mm quartz + carbonate vein 70 degrees to CA. 326.2 60mm quartz + carbonate vein 70-90 degrees to CA, slight brecciation on upper side of vein, and 50cm bleached zone. 328.3 60mm quartz + carbonate vein 70 degrees to CA. 335.5 120mm quartz + carbonate + chlorite vein 60 degrees to CA. 347.9-348.15 quartz + carbonate vein in 1.5m bleached zone. 408.2-447 zone of hydraulic fracture. 453.4-455.5 spherulitic quartz to 7mm, ?unit top? 20-30 degrees to CA. 454.9-455.5 brecciated, chloritised. 456-458.6 "cleaved" 0-15 degrees to CA, seen as fine dark banding. 469.5-469.8 tourmaline vein <20mm and fine breccia. 470-478.7 light-medium grey. 477-477.2 buff, bleached zone with 20mm & 50mm quartz + carbonate veins 65-70 degrees to CA. 478.3-478.6 buff bleached zone with quartz + carbonate veins. 480.6-480.7 chlorite (<25mm) and quartz + carbonate vein. 495.9 80mm quartz + carbonate + tourmaline + chlorite vein 60 degrees to CA. 507.3 50mm quartz + carbonate vein 60 degrees to CA. 507.7-507.85 quartz + carbonate vein 55 degrees to CA. 514.3-514.45 quartz + carbonate vein 50 degrees to core axis. 517.2-517.6 network of fine tourmaline veining. 518.7-518.8 quartz + carbonate + chlorite vein 50-60 degrees to CA. 523.6-524.5 longitudinal irregular fracture with <1mm chlorite fill. 535-535.15 quartz + carbonate vein with lava fragments. 542-542.1 quartz + carbonate vein. 547.8-547.9 quartz + carbonate vein 50-70 degrees to CA. 555-555.2 quartz + carbonate vein with chlorite <40mm on upper side. 556.8-557 quartz + carbonate vein with lava	vns carb	8-C																

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		fragments 50 degrees to CA. 561.3-561.45 quartz + carbonate vein 45 degrees to CA. 564.1-564.2 quartz + carbonate vein 55 degrees to CA. 567.2 <20mm tourmaline + brecciated quartz vein 65 degrees to CA. 568.3-568.4 quartz + carbonate vein. 579.6-600 zone of quartz-lithic fragments																	
		to 5mm grainsize. 584.1 unit contact 70-80 degrees to CA. 607-607.7 fragmentary (?lithic) zone. 615.5-619.8 grey fine grained granular textured lava. 619.8-621 brecciated zone. 628.8-629.3 quartz + carbonate vein and brecciated lava, 20-25 degrees to CA. 653.2-653.9 fragmental brecciated zone. 655.5-661.1 NAVIDRILLED. 675.5-685.0 NAVIDRILLED. 702.5-709.5 NAVIDRILLED. 737-737.2 sheared, reconstituted with quartz 25 degrees to CA. 746.4-747.7 subparallel to core chlorite + 1mm pug shear. 763.5-771 light grey silicified zone with quartz + tourmaline vein 766-766.4, 767.2-767.5, 770.7-770.85. 772-773.7 light grey silicified																	
		zone with quartz + tourmaline veining. 783.7-783.9 quartz + tourmaline vein. 796-797.5 cleaved with chlorite parallel to cleavage, 35 degrees to CA. From 816.8, pronounced foliation visible as up to 30% lenses and elongate grains of carbonate 2-5mm in size. 820.2-820.4 intense carbonate alteration appears as fine grained bleached zone, foliation 44 degrees to CA. 821.7 10mm quartz + carbonate + chlorite vein 44 degrees to CA, chlorite + pyrite vein 1mm subparallel to CA. 820.4-825.8 aphanitic lava with weak pervasive carbonate alteration and up to 1% 1-2mm carbonate grains. From 825.8 strong carbonate alteration as bleaching, lenses and elongate spots of carbonate oriented parallel to foliation. 826.0 foliation 28 degrees to CA. 831.4-836.1 fine grained appearance, moderate pervasive very fine grained carbonate alteration, few spots or lenses. 834.0 15mm quartz + carbonate + ?sericite vein 20 degrees to CA. From 836.1 strong spotty/lenticular carbonate alteration. 840.0 foliation 35 degrees to CA. 846.0 foliation 33 degrees to CA, 1-2mm quartz veins 15 degrees to CA. 864.2-864.5 strongly bleached/carbonate altered zone with sharp top,	carb carb carb	8 C 8															

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COLLAR RL : 3582.8 RMG

FROM	TO	DESCRIPTION	ALT	CD	ROCK TYPE	MINERALISATION	SAMPLE NO.	FROM	TO	Length	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	$	To <S=Shear>	RQD%
		intensity decreasing downward, with 5mm carbonate vein 14 degrees to CA. 863.0 foliation 37 degrees to CA. 864.0-872.7 1-10mm quartz + carbonate + (chlorite) veins, some irregular, some planar. 870.7 veins at 72,42,33 degrees to CA. 874.9 1mm quartz + pyrite vein 22 degrees to CA. 875.0 foliation 30 degrees to CA, secondary planar feature 15 degrees to CA. 880.9 quartz + carbonate vein 2-10mm 12 degrees to CA, quartz + chlorite vein 3mm 36 degrees to CA. 881.2 quartz + carbonate vein, finely banded, 10mm, 25 degrees to CA. 881.2-881.8 network of <1mm quartz + carbonate veins. From 885.7, carbonate spots reappear, with a few 10-20cm bands of lighter coloured pervasive carbonate alteration. 892.1 5-20mm vein of sphalerite + pyrite + chalcopyrite + galena with quartz + sericite, parallel to foliation, 25 degrees to CA. 892.15 10mm near parallel to this is vein of tourmaline + carbonate + quartz + (chlorite). 892.8-896.5 irregular 1-5mm quartz + carbonate veinlets, with pervasive carbonate alteration in surrounding material, plus carbonate streaks parallel to foliation. From 898, carbonate alteration increases, with abundant <1mm white carbonate spots in addition to pervasive carbonate alteration. 902.0-903.8 bleached (pervasively carbonate altered) zone; 903.8-904.1 irregular 1-10mm carbonate + quartz veins. From 904.1, back to pervasively altered and <1mm carbonate spot altered dark grey rhyodacite lavas. 908.6-908.8 diffuse chlorite alteration. 909.6 foliation 28 degrees to CA, 1-5mm carbonate + quartz veins 10 degrees to CA. 916.3-916.6 deformation of earlier quartz + carbonate veins by foliation visible. 914-925 1-5mm planar veins and irregular veinlets of quartz + carbonate, with some broken ground. 930.8 foliation 32 degrees to CA. 933.5-934.7 bleaching, pervasive carbonate alteration. 934.5-937.3 irregular carbonate + quartz veins, with some broken ground. 936-941 sporadic bleaching. 939.7 minor fault- 8mm quartz + sericite + chlorite vein, 18 degrees to CA, with slickensides. 941.4 1mm carbonate veins 78 degrees to CA, somewhat streaked out 2-10mm	chl	B		892.1 5-20mm vein of sphalerite + pyrite + chalcopyrite + galena.												

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		carbonate + (quartz) veins 52 degrees to CA, foliation 31 degrees to CA. Carbonate concentrated in microfractures parallel to foliation, some <1mm discontinuous chlorite veinlets also parallel to foliation. From ~948, "pervasive" carbonate decreases and is clearly visible as being restricted to microfractures parallel to foliation. 948.1-961.9 phenocrysts of quartz, angular to rounded, angular grains elongate parallel to foliation. Phenocrysts up to 10% of rock. A few 2-3mm long lenses of sericite + chlorite, parallel to foliation. 950.2 8mm vein of quartz + carbonate, with a little amethystine quartz, 37 degrees to CA. From 953 to 958.5, bleaching/pervasive carbonate alteration increases. 958.5-960.1 1-20mm veins, some with irregular boundaries, of carbonate + quartz 6-42 degrees to CA, in zone of moderate to strong chlorite + (pyrite) alteration; possible fault. 961.9 quartz + carbonate + (chlorite) vein 26 degrees to CA; quartz phenocrysts terminate here; probable fault, well developed foliation below it, 37 degrees to CA. 961.9-997.4 aphyric partly silicified lava, well developed foliation, pervasive carbonate alteration parallel to foliation as well as 1-2mm carbonate spots in places. 965.2 5mm carbonate + quartz + pyrite vein 20 degrees to CA. 966.0-966.1 zone of moderate chlorite alteration. 967.2-967.4 1-5mm carbonate + quartz + chlorite vein almost isoclinally folded, fold axes parallel to foliation 37 degrees to CA. From 969, carbonate veins and veinlets tightly folded and streaked out parallel to foliation. 978.7-979.6 1-5mm quartz + carbonate + sericite vein approximately parallel to CA. 977.3 foliation 35 degrees to CA. 983.0-992.5 zone with quartz + carbonate + sericite veining 1-5mm with bleached zones extending up to 10cm from veins. Bleaching is in fact sericitisation and minor carbonate alteration of surrounding rock, with sericite streaked out parallel to foliation at alteration margins. 989.8 foliation 28 degrees to CA. 997.4-997.9 layer of quartz-feldspar phyric epiclastic, clasts 1-5mm rounded to elongate	ser+ chl chl+ (py) chl qtz+ carb+ ser	C B B B																

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RESULT :

DEPTH :1506.5

HOLE SIZE:HQ 0-282.3,
NQ 282.3-1506.5

COMMENCED:11/9/90

COMPLETED:29/10/90

Depth	Direction	Dip	Depth	Direction	Dip

COLLAR DIP : 86 HOLE No. : R114R

DIRECTION : 047 RMG LOCATION : Mount Black south

NORTHING : -297.1 RMG LOGGED BY : G. Iliff, G. Jenkins

EASTING : 1377.6 RMG COLLAR RL : 3582.8 RMG

FROM	TO	DESCRIPTION	ALT	CD	ROCK TYPE	MINERALISATION	SAMPLE NO.	FROM	TO	Length	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	$	To <S=Shear>	RQD%
		parallel to foliation 30% of rock. Also some streaked out pieces up to 30mm of aphanitic silicified lava. Lower contact 30 degrees, foliation 38 degrees to CA. 999.9-1000.4 possible spherulites.																	
		1000.9-1030.0 Epiclastic with minor lavas, rounded quartz + minor angular feldspar grains to 2mm up to 20% of total. Bulk of material consists of <0.5mm grains grading down to fine silt sized; very poorly sorted. 1000.9-1004.8 bleached due to extensive sericitisation of matrix; irregular 1-5mm carbonate-quartz veinlets. Foliation poorly developed. Patchy pervasive carbonate alteration. 1010.5-1010.9 quartz + carbonate + chlorite + sericite vein with minor pyrite, irregular boundaries. 1012.5-1015.7 bleaching due to sericitisation associated with irregular 1-20mm veins and veinlets of quartz + carbonate. Veins subparallel, 19,27,62 degrees to CA. Foliation at	qz+ carb +/- chl +/- ser +/- py vns chl	B-C C														
		1013.5 58 degrees to CA. 1020.6 abrupt change from 30% clasts to <10% clasts in a much finer matrix. Contact at 54 degrees to CA. Clast content then increases over ~0.5m to up to 20%, with some clasts up to 3mm, angular to rounded. ~1021.5 lithic clasts consisting of silicified aphanitic lava appear, up to 20mm size, elongate parallel to foliation. 1022.3 graded bed gives uphole facing (caution necessary due to effects of foliation). 1022.7 quartz vein 15mm 34 degrees to CA with silicification 20cm either side. Minor displacement (~5cm) almost parallel to this. Later chlorite + pyrite vein 5mm and quartz + sericite vein 2mm subparallel to CA. 1022.7-1023.4 sand sized (~0.2-0.5mm) with subrounded quartz clasts 1-5mm. 1023.5-1023.8 minor lava flows to 10mm thick, silicified aphyric aphanitic light grey lava, layers arranged (?rearranged) parallel to foliation 44 degrees to CA. 1023.8-1024.5 interval of <0.5mm material with few clasts near top increasing to 10% clasts to 2mm at base. 1024.6-1024.8 silicified lava, somewhat fractured, intercalated with sediment. From 1025, alternating 5-20cm layers of coarse (to 4mm) and fine (<0.2mm)															

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		material, with irregular contacts. 1025.0-1025.1, 1025.3-1025.5 moderate chlorite alteration. 1025.3 8mm carbonate vein parallel to foliation and layering 37 degrees to CA. 1025.6 15mm quartz + carbonate vein 47 degrees to CA. 1025.6-1028.5 bleaching due to sericite + silica alteration.																	
		From 1025.6, irregular quartz + carbonate veins to 20mm. 1028.7 50mm quartz + carbonate + (chlorite) vein 31 degrees to CA.	chl	8															
		1030.0-1098.0 Dark grey lava, occasional bands with up to 10% phenocrysts with maximum grainsize 3mm. From 1032, some veins contain brown as well as white carbonate. 1040 carbonate veins 30,56,60 degrees to CA. 1046.9-1047.0 chloritisation. 1051.5 40mm wide zone of chlorite-pyrite alteration parallel to foliation 32 degrees to CA, postdating irregular carbonate + quartz vein. From ~1050, pyrite occurs in many of the carbonate + quartz veins and veinlets, frequently	ser+ sil chl carb +/- qz +/- py vns py+	C C B C															
		with chlorite. It is a later feature,usually visible as emenating from 1mm veinlets of pyrite with chlorite alteration parallel to foliation. 1058.0-1058.5 quartz + carbonate veining, brecciation, pyrite + chlorite + (unidentified mineral with fibrous radiating habit) veining. 1060.1 30mm zone of pyrite + chlorite parallel to foliation 32 degrees to CA; pyrite very fine grained, zone could almost be called massive pyrite. 1064.7-1065.0 minor bleaching about quartz + carbonate, brown carbonate, pyrite + chlorite, quartz + sericite veining. 1066.2 foliation 38 degrees, brown carbonate vein 10, quartz + carbonate vein with later pyrite 40, deformed quartz + carbonate veins ~55 degrees to CA. 1068.5 15cm early chlorite vein 72 degrees to CA. 1071.8 40mm zone of brecciation and irregular quartz + carbonate veining. 1073.7-1074.1 network of veinlets <0.5mm of brown carbonate. 1077.2-1077.7 en echelon tension gashes to 10mm wide filled with quartz + carbonate, 35-50 degrees to CA, associated with minor faults at 16 degrees to CA. 1077.2 8mm vein of quartz + sericite parallel to these minor faults. 1086.3 20mm quartz + (sericite) vein 20 degrees to CA,	py+ chl	C															

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LOCATION : Mount Black south

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COLLAR RL : 3582.8 RMG

FROM	TO	DESCRIPTION	ALT	CD	ROCK TYPE	MINERALISATION	SAMPLE NO.	FROM	TO	Length	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	$	To <S:Shear>	RQD%
		containing remnant brecciated pieces of surrounding material. 20cm of very fine grained pyrite + chlorite alteration below this vein. 1089.5-1090.5 strong pyrite + chlorite alteration, more intense 1089.8-1090.0, quartz + (carbonate) + (sericite) veins 1090.0-1090.2, 1090.3-1090.4, incorporating brecciated pieces of surrounding material. 1090.5-1098.0 sporadic moderate chlorite + pyrite alteration.																	
1098.0	1123.5	HANGINGWALL EPICLASTICS Epiclastic textures barely visible through strong to intense silicification. Clasts to 3mm 10% in very fine matrix. Brecciation and reconstitution of silicified material in places. 1109.0 foliation 38 degrees to CA. 1114.3-1118.3 strong pervasive pyrite + chlorite alteration with carbonate + sericite veining 1117.6-1117.8. 1mm vein of pyrite with trace of pyrrhotite at 1117.6. 1117.8-1118.3 band of massive pyritic black shale. 1118.9-1120.4 alternating 1-50mm layers of fine grained epiclastics and pyritic black shale, amount of black shale decreasing upwards, layering 55 degrees to CA.	sil py+ chl carb+ ser vns	A B C														
1123.5	1125.8	BLACK SLATES Pyritic black shale, massive, poor fissility. 1125.4 3mm pyrite + (pyrrhotite) + sericite + chlorite vein 23 degrees to CA.	py+ (po)+ ser+ chl vn	C														
1125.8	1348.0	HOST ROCKS Epiclastics and fine sediments, quite siliceous throughout, variably altered, with banding visible in many places. 1125.8-1189.4 Very fine grained sediments and epiclastics with original textures obscured by silicification. 1127-1139 foliation poorly developed, silicification strong, with patchy chlorite-pyrite alteration. From 1139, rock has generally fine grainsize (<0.2mm) with occasional intervals with clasts up to 10% below 2mm size.	sil chl +/- ser +/-mt +/-py po+qz	B B C														

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FROM	TO	DESCRIPTION	ALT	CD	ROCK TYPE	MINERALISATION	SAMPLE NO.	FROM	TO	Length	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	$	To <S=Shear>	RQD%
		Bleaching associated with silicification. 1133.8-1134.0 late quartz vein. 1134.0-1134.2 folded pyrite + (chalcopyrite) + chlorite + quartz veins 10mm. 1137.5-1137.8 quartz vein. 1137.8-1138.1 chlorite veining. 1145.2-1145.3 quartz + tourmaline vein 34 degrees to CA. From 1145, irregular discontinuous wispy veinlets <1mm wide of magnetite + chlorite + sericite with occasional traces of pyrite and tourmaline. Veins of pyrite + chlorite wider than 1mm are generally the result of concentrations along zones of minor shear parallel to foliation, or replacement of parts of pre-existing veins of quartz. 1150-1153 minor bleaching, broken ground. 1157.1-1157.5 sericite + chlorite + magnetite alteration parallel to foliation 44 degrees to CA, magnetite very fine grained. 1166.3 50mm pyrite + chlorite vein with fine grained magnetite, 40 degrees to CA. 1164.2, 1164.6 20cm zones of strong magnetite + tourmaline + chlorite alteration. 1171.1 irregular 10mm band of chlorite + magnetite alteration. 1177.0-1177.4, 1177.8-1178.2 quartz + tourmaline and quartz + chlorite + pyrite veining; quartz has brecciated appearance. Fault is indicated. From 1179, well developed foliation due to strong chlorite and sericite alteration, also patchy silicification. Sericitisation 1179-1200. 1182.1-1182.5 5-10mm slightly deformed magnetite + chlorite + pyrite vein 0-15 degrees to CA. 1184.0 foliation 50 degrees to CA, cut by 10mm pyrrhotite + (pyrite) + quartz vein 22 degrees to CA, also minor irregular lenticular 20X5mm patches of pyrrhotite-quartz. 1186.5 foliation 50 degrees to CA. 1189.0-1189.4 chlorite alteration with very fine grained pyrite. 1189.4-1194.1 Massive fine grained sandstone with minor silt/shale intercalations, moderately sericitised. 1192.7-1194.1 chalcopyrite + pyrrhotite + (sphalerite) + chlorite + quartz veining and alteration subparallel to foliation. 1194.1-1195.5 Pyritic black shale. Poor fissility.	vns qz+tm vns mt+ chl	C B		Pyrite + minor chalcopyrite in 10mm folded veins with chlorite + quartz Pyrrhotite + chalcopyrite + traces sphalerite with chlorite + quartz in bands and veinlets approximately parallel to foliation										

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COLLAR RL : 3582.8 RMG

FROM	TO	DESCRIPTION	ALT	CD	ROCK TYPE	MINERALISATION	SAMPLE NO.	FROM	TO	Length	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	$	To RQD% <S=Shear>
		1195.5-1199.9 Massive fine grained sandstone with minor silt/shale intercalations.	ser	C														
		1199.9-1293.8 Epiclastics consisting of up to 20% clasts to 3mm grainsize set in very fine grained generally altered matrix. Clasts generally subrounded, consist of quartz, feldspar and lithics, some feldspar carbonate altered. Many of the feldspars are euhedral. Patchy silicification usually in bands parallel to foliation. Varying degrees of other alteration. 1210.0 foliation 45 degrees to CA. From 1221, series of 10-30cm fining upward layers, abundant 1-2mm clasts at base, fine silty material only at top. 1223.0-1223.1 fine grained pyrite appears sedimentary; concentrated along laminae. 1236-1247 bleaching and silicification. 1250 foliation 52 degrees to CA. 1257.4-1261.3, 1264.8-1284.5, 1286.5-1294.8 bleaching and silicification. 1256-1266 well developed foliation 60 degrees to CA.	sil	B		Pyrite, fine grained, appears to have been sedimented; finer bands are concentrated along sedimentary laminae										
		1293.8-1348.0 Fine grained sandstone to siltstone/shale, laminated in places, occasional 30cm layers with clasts `1mm. Fining upward sequences 20-30cm thick still present, grainsize from fine sand to shale size. 1296.8 layering 75 degrees to CA. 1294.5-1301 moderately intense pyrrhotite + quartz + sericite irregular veins and veinlets, plus occasional pyrite + quartz veins. 1305.7 load casting implies uphole facing. 1323.9-1324.0 pyrrhotite + (pyrite) + chlorite + quartz + (tourmaline) veining. From about 1320, darker bands at angle to sedimentary layering are due to fine grained tourmaline alteration. 1341.0-1341.1 pyrrhotite + (pyrite) + tourmaline + quartz + chlorite alteration. 1341-1347 broken ground, irregular patchy quartz + (sericite) alteration with bleaching.	po+qz +ser vns py+qz vns po+qz +(py) +chl +tm vns tm	B C C C												
1348.0	1506.5	FOOTWALL PYROCLASTICS																
		Clasts up to 30% to 5mm size, most 1-2mm, set in very fine grained matrix. Clasts are mainly angular feldspar, but subrounded silicified	sil tm tm	B-C C C														

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		?lithics also present. Individual layers 5-50cm thick vary from clast-rich to uniformly fine grained. Variable silicification, quite strong in places, with minor sericite coating secondary quartz grains giving a faint yellowish appearance to the silicified material. Sporadic quartz veining. Occasional augen-like textures due to anastomosing very fine veinlets of sericite, passing around quartz grains. Anastomosing veinlets of fine grained tourmaline in places, sometimes coalescing to form 5-20cm zones of intense tourmaline alteration, usually with pyrrhotite. 1373-1378 quartz augen schist. 1389.8-1389.9 dark brown sphalerite, 1-2mm grainsize, ~1%, grains elongate parallel to layering. Minor pyrite also present. Not possible to state that this was originally banded sulphide, as it has been recrystallised and the host rock altered. Below is 10cm of anastomosing tourmaline veinlets with chlorite and sericite, then 5cm of yellowish silicification with sericite and traces of sphalerite, then the layer containing sphalerite, capped by 5cm of anastomosing tourmaline veinlets, less concentrated than those below. From about 1395, abundant angular feldspar clasts and augen. In places, evenly distributed 1-2mm lenticular chlorite patches may represent altered shards. 1408.2-1408.4 pyrrhotite-tourmaline-quartz veining. 1409.9-1421.1 feldspar phyric layer, 1-3mm feldspar crystals 5%. 1421.1-1437.0 massive very fine grained material with only occasional feldspar crystals. 1437.0-1446.4 increasing sericite-chlorite-quartz alteration. 1437.0-1446.4 coarser material, silicified shards to 20mm. 1146.4-1447.0 quartz-tourmaline veining. 1447.0-1451.5 anastomosing veinlets of tourmaline. 1447.0-1453.7 medium to coarse grained with occasional shards. Foliation shown by tourmaline veinlets, at 1449.0 70 degrees to CA. 1453.7-1455.0 coarse, clasts to 20mm including flattened shards and possible pumice, very little fine matrix. 1455.0-1461.0 feldspar phyric, a few lithic fragments to 3mm, possible shards in places, fine grained matrix >90%.	vns po+tm +qz vns ser+ chl+ qz	C C		Dark brown sphalerite ~1% with minor pyrite in 10cm band parallel to foliation. Grainsize 1mm. Not conclusively sedimentary banded sphalerite; recrystallisation has occurred.											

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		1461.0-1475.0 predominantly coarse material, shards and ?pumice to 20mm, fining downwards from about 1468. 1463.7-1467.7 silicification, sericitisation, bleaching of coarser material. Well developed foliation from 1468. 1475.0-1506.5 1-2mm feldspar clasts to 5% in very fine matrix, also 1-2mm lenticular chlorite patches parallel to foliation. Sporadic silica-sericite alteration.																	
		EOH																	