PASMINCO ROSEBERY

A.C.N. 004 074 962

Hole No: 008B **Location:** Brown's Tunnel 5370N

Objective: Test Lens 1 Extent

Result: Large mineralised zone, av. 3.2%Zn in 17m. Contains 130-132m 8.6%Zn, 0.25%Cu ($123TMU), and 124.3-127m 5.2%Zn, 0.34%Cu ($79TMU).

Planned Direction: 270°
Planned Dip: -55°
Planned Depth: 190.0 m
Planned Northing: 5370 m N
Planned Easting: 5038 m E
Planned Collar R.L.: 499 m RL

Drilling Commenced: 1/07/98
Drilling Completed: 7/07/98
Actual Depth: 197.5 m
Surveyed Northing: 5369.20 m N
Surveyed Easting: 5034.70 m E
Surveyed Collar R.L.: 499.30 m RL

Date Logged: 22-Jul-1998
Logged By: Michael Whitbread
Hole Size: HQ
Hole Category: other
Grouted:

Date Log Verified: 28-Aug-1998
Verified By: Michael Whitbread

Summary Log:

0-4m NC; -32.8m Ho?; -49.3m F; -63.9m FW; -66m F; -98m FW; -114.2m Ho; -130.6m HOTS; -130.9m HOSM; -138.6m HODS; -145m HOTS; -148.4m Hots; 151.1m F; -157.4m Ho; -167.4m PR; -172.7m Ho; -188.2m PR; -189.8m Hots; -190.1m HOMS; -196.5m Hots; -197.5m

Depth	Direct	Dip
0.0	270.0	-55.0
36.0	267.0	-56.0
60.0	268.0	-56.0
90.0	268.0	-56.0
120.0	269.0	-55.3
150.0	268.0	-54.0
180.0	268.0	-52.6
197.5	268.0	-52.6

Depth	Direct	Dip

Depth	Direct	Dip

Depth	Direct	Dip

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int.	Description	@ Depth	Feature	LCA Deg°
0.0	**4.0**	**NC**				**NO CORE**			
0.0	4.0		NC		a	No core.			
4.0	**32.8**	**HO**				**HOST SEQUENCE**			
4.0	6.5		RK	cy si	a	Weathered core. Consists of brown clays coating heavily silicified rock. Rock has pits after 1-10mm clasts and/or phenocrysts. Broken fragments. Zone with 2m core loss.			
6.5	10.5		BR CH SA	cy	a	Weathered unit. Friable material, consisting of heavily clay altered cherty breccia. Matrix, which is what has gone to clay, is dominant. Possible shear at 9.0m, containing clasts (1-2cm) of fine grained pyrite in a zone 3cm wide. Competency dreadful, with 3.2m of core loss. Difficult to say if this lies within a fault zone, or is broken due to weathering.	9.0	SR	52°
10.5	12.6		SH	si	a	Broken zone of black silcified shale/siltstone fragments. Competency bad, with 1.5m core loss to 12.5 metres.			
12.6	20.1		SA VC	cy si	a	Weathered core. Broken zone of variably clay and silica altered, patchily green-black mottled, small silica clast bearing volcanoclastic sandstone. Black zones contain white, mm size, phenocryst-like inclusions - possibly pumice or lava clasts. Unit also has occasional thin green-black streaks-bands (sit ~65 degrees to CA). Silcified zone before 15.5m. Unit most likely a more highly weathered version of next unit. Possibly within a fault zone. Potentially 3.4m core loss.	13.7	BD	65°

RQD To (m)	RQD %	Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
4.0	NC	81806	8.5	9.5	1.0	0.1	0.1	0.01	1	0.1	0.7	3
30.2	5	81807	32.8	33.8	1.0	0.1	0.1	0.01	1	0.1	1.1	3
31.5	69	81808	33.8	34.7	0.9	0.1	0.1	0.01	1	0.1	1.2	3
38.1	19	81809	34.7	35.7	1.0	0.1	0.1	0.01	1	0.1	1.2	3
38.4	100	81810	35.7	36.7	1.0	0.1	0.1	0.01	1	0.1	1.2	3
49.3	14	81811	36.7	37.7	1.0	0.1	0.1	0.01	1	0.1	1.2	3
51.5	68	81812	37.7	39.1	1.4	0.1	0.1	0.01	1	0.1	1.4	3
51.8	0	81813	39.1	40.0	0.9	0.1	0.1	0.01	1	0.1	1.0	3
64.0	91	81814	40.0	41.0	1.0	0.1	0.1	0.01	1	0.1	1.1	3
66.0	10	81815	41.0	42.0	1.0	0.1	0.1	0.01	1	0.1	1.1	3
76.8	87	81816	42.0	43.0	1.0	0.1	0.1	0.01	1	0.1	0.8	3
77.4	0	81817	43.0	44.0	1.0	0.1	0.1	0.01	1	0.1	0.4	3
102.7	90	81818	44.0	47.0	3.0	0.1	0.1	0.01	1	0.1	0.2	3
104.5	5	81819	47.0	48.3	1.3	0.1	0.1	0.01	1	0.1	0.2	3
108.0	85	81820	48.3	49.3	1.0	0.1	0.1	0.01	1	0.1	0.7	3
108.4	0	81821	49.3	50.2	0.9	0.1	0.1	0.01	1	0.1	1.3	3
148.0	93	81822	50.2	51.5	1.3	0.1	0.1	0.01	1	0.1	1.9	3
151.0	16	81823	51.5	51.7	0.2	0.1	0.1	0.10	1	0.1	0.9	4
174.0	94	81824	62.6	63.9	1.3	0.1	0.1	0.01	1	0.1	2.7	3
174.7	0	81825	63.9	65.0	1.1	0.1	0.1	0.01	1	0.1	0.5	3
197.5	95	81826	65.0	66.0	1.0	0.1	0.1	0.01	1	0.1	0.4	3
		81827	66.0	66.5	0.5	0.1	0.1	0.01	1	0.1	4.3	3

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int.	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %
20.1	21.8		PU VC	cl cy si	a	Weathered core. White with green pseudo-fiamme and green-black mottles, white clast bearing, variably clay and silica altered pumice breccia, volcanoclastic. Less weathered version of previous unit. Less broken too, with most pieces 5-10cm in length. Fiamme (dark chlorite altered) contain cream, or orange-brown altered-phenocrysts (?feldspar); these are sporadically distributed in the matrix too. Pseudo-fiamme up to 5cm in length, variably flattened, and occasional define a foliation(larger versions sit at a much higher angle to CA than smaller fiamme - rotation into a cleavage?). Thin green-black streaks may be an extremely flattened variety. White clasts (5mm-2cm in size) are angular to sub-rounded, and may be clay or silica altered. Core of poor to moderate competency. Possibly 30cm core loss.	21.2 21.7	BD BD	30° 37°		
21.8	28.9		DA PU VC	cy si	a	Moderately weathered core. Broken zone (fault zone?), of generally yellow-green, lesser creamy-white mottled with black, variably clay and lesser silica altered, altered-feldspar phyric, pumice bearing, volcanoclastics (possibly lavas). Zones of creamy white material are silicified, whereas the green zones are more fledspar phyric and clay altered. Unit probably a mix of dacite and rhyodacite (more silica rich) derived material. A number of thin quartz +/- chlorite veins are present, and run close to CA (some breaks are along these). Unit broken, especially to 24.4m (1.1m loss). 1.2m loss in the remainder of the unit.	25.0	VN	17°		
28.9	32.8		DA PU VC	cl si	b	Lightly weathered core. Medium grey, mottled with dark green pseudo-fiamme, spotted with altered-feldspar phenocrysts, dacitic pumiceous volcanoclastic/?lava. Pseudo-fiamme vaguely define a foliation ~ 70 degrees to CA. Altered feldspar phenocrysts occur throughout but are concentrated within the pumiceous clasts. Unit lightly to moderately silicified. Thin quartz and chlorite veinlets are common, and run close to CA. Unit of moderate competency, except for a small broken zone 29.9-31.2m (10cm core loss).	30.9 30.9 30.9	VN VN BD	10° 5° 70°		
32.8	**49.3**	**F**				**FAULT**					
32.8	34.7		DA PU VC	cl si	b	Fairly broken version of previous unit. Some sticks reach 10cm; most are fragments <5cm.					

Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
81828	113.0	114.2	1.2	0.1	0.1	0.01	1	0.1	1.4	3
81829	114.2	115.6	1.4	0.4	1.1	0.06	12	0.1	3.4	20
81830	115.6	116.0	0.4	0.8	1.1	0.22	31	0.2	6.3	28
81831	116.0	117.0	1.0	0.4	0.9	0.09	27	0.1	4.4	20
81832	117.0	118.0	1.0	0.3	0.4	0.08	34	0.1	4.3	15
81833	118.0	119.0	1.0	0.4	2.0	0.26	30	0.1	4.2	37
81834	119.0	120.0	1.0	0.3	1.5	0.45	35	0.1	5.7	33
81835	120.0	121.0	1.0	0.4	2.7	0.72	54	0.2	8.6	56
81836	121.0	122.0	1.0	0.3	2.3	0.44	35	0.1	4.0	43
81837	122.0	123.0	1.0	0.2	1.0	0.27	21	0.1	4.4	22
81838	123.0	124.3	1.3	0.2	1.5	0.15	14	0.1	2.9	25
81839	124.3	124.5	0.2	0.6	11.5	0.56	47	0.2	6.3	168
81840	124.5	125.0	0.5	0.6	2.3	0.11	14	0.1	3.1	37
81841	125.0	126.0	1.0	0.5	4.5	0.34	20	0.1	3.8	69
81842	126.0	127.0	1.0	0.2	6.2	0.42	23	0.1	4.5	91
81843	127.0	128.0	1.0	0.2	2.5	0.19	14	0.1	2.9	39
81844	128.0	129.0	1.0	0.1	2.0	0.06	5	0.1	2.6	29
81845	129.0	130.0	1.0	0.2	1.3	0.05	12	0.1	3.4	21
81846	130.0	130.6	0.6	0.1	3.6	0.12	13	0.1	2.4	52
81847	130.6	130.9	0.3	0.9	38.3	0.45	143	0.4	9.3	534
81848	130.9	131.9	1.0	0.1	2.3	0.23	16	0.1	2.8	37
81849	131.9	132.0	0.1	0.2	12.2	0.58	30	0.2	4.5	173
81850	132.0	132.6	0.6	0.1	0.8	0.04	9	0.1	2.9	14
81851	132.6	133.1	0.5	0.2	4.9	0.50	35	0.2	4.5	78
81852	133.1	134.0	0.9	0.1	2.2	0.19	18	0.1	3.0	35
81853	134.0	135.0	1.0	0.1	0.7	0.06	12	0.1	2.5	13
81854	135.0	136.0	1.0	0.2	1.0	0.05	14	0.1	2.2	18
81855	136.0	137.0	1.0	0.2	3.5	0.18	18	0.1	2.6	52
81856	137.0	138.0	1.0	0.3	2.0	0.08	6	0.1	2.1	30
81857	138.0	138.6	0.6	0.2	2.6	0.15	6	0.1	1.8	38
81858	138.6	139.6	1.0	0.2	1.0	0.08	5	0.1	1.5	17
81859	139.6	140.7	1.1	0.1	0.5	0.06	1	0.1	1.5	9
81860	140.7	141.7	1.0	0.3	2.5	0.08	4	0.1	2.5	36
81861	141.7	142.3	0.6	0.2	0.8	0.02	1	0.1	1.6	13
81862	142.3	143.3	1.0	0.2	0.9	0.01	3	0.1	2.5	14
81863	143.3	144.0	0.7	0.2	0.9	0.03	4	0.1	2.9	15
81864	144.0	145.0	1.0	0.2	1.5	0.04	4	0.1	3.8	22
81865	145.0	146.3	1.3	0.1	0.2	0.01	1	0.1	1.0	4
81866	146.3	147.3	1.0	0.1	0.1	0.01	1	0.1	1.4	3
81867	147.3	148.4	1.1	0.1	0.1	0.01	1	0.1	1.0	3
81868	148.4	149.0	0.6	0.1	0.3	0.01	1	0.1	1.9	6
81869	149.0	150.0	1.0	0.1	1.0	0.01	1	0.1	3.2	15
81870	150.0	151.1	1.1	0.1	0.6	0.01	1	0.1	2.4	9
81871	151.1	152.1	1.0	0.1	0.1	0.01	1	0.1	1.1	3
81872	152.1	153.1	1.0	0.1	0.1	0.01	1	0.1	1.5	3
81873	153.1	154.1	1.0	0.1	0.1	0.01	1	0.1	1.4	3
81874	154.1	155.4	1.3	0.1	0.1	0.01	1	0.1	1.5	3

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int.	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %
34.7	39.1		BR RK VC	si	b	Broken zone. Light grey or creamy white, mottled with angular black fragments, silicified volcanoclastic breccia. Angular black fragments vary from mm to 5cm in size, some look pumice like (more wispy and irregular form/boundaries, internal structure, phenocrysts etc). Many are rimmed by thin white haloes (?silica, quite hard), and thus the matrix in denser patches is often white. No obvious foliation in fragments though. White silicified clasts are subordinately present. White altered-phenocrysts occur, but are generally visible only within black zones. Towards end of unit, have gradual return of green pseudo-fiamme (but occur rarely throughout). As in 28.9-32.8m, have thin chlorite veins close to CA, less so quartz veinlets. Some patches (often associated with chlorite veins), are sericite-chlorite altered. Core pieces generally less than 5cm length. Occasional sticks over 10cm. Quartz fragments in last 30cm. Possibly unmarked core loss, at the least there is partial recovery of core.	38.2	VN	8°		
39.1	44.0		DA PU VC	sc	a	Return to 28.9-32.8m. Unit becoming increasingly washed out by sericite-chlorite alteration towards the end of unit (fault focus?). Quartz-chlorite veins common, close to CA, but not a uniform orientation; many breaks are along these (sericite-chlorite alteration is often most intense adjacent to these, and grades away with distance). Possible decrease in banding (pumice) angle with CA towards end of unit. Core of poor competency, with broken material intermixed with core over 10cm. Worst zone 40-41m.	40.3 41.2 42.3	VN BD BD	20° 65° 40°		
44.0	49.3		BR RY	sc si	a	Broken zone of greenish patchily sericite-chlorite altered, pinky rhyolitc fragments, with common small intervals of quartz vein fragments. A number of small clay zones present - ~46.6-46.8m, ~47.6-47.65m. Difficult to give accurate positions due to core loss - 0.8m to 46.8m, 0.90m loss to 46.8-48.30, further 0.2m loss to 49.3m. Quartz fragments common to ~47m. 'Rhyolitic' fragments commonly quartz veined (up to 3cm in width), sitting at a high angle to CA.					
49.3	**63.9**	**FW**				**FOOTWALL SEQUENCE**					
49.3	50.2		DA RY	sc	a	More competent version of last unit i.e. patcily sericite-chlorite altered rhyolitic rock. Intervals look to be dacite of earlier unit. Rhyolitic due to high silica content, rather than phenocrysts content. Possibly silicified dacite, or interbedded rhyolite and dacite? Unit cut by numerous quartz+/-carbonate(clay altered?)+/-chlorite veins. Carbonate has been washed out in places, leaving cavities in the veins. Veins may be up to 5cm in width, or mm in size.	49.6	QV	74°		

Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
81875	155.4	156.8	1.4	0.1	0.4	0.04	1	0.1	2.8	7
81876	156.8	157.4	0.6	0.2	0.4	0.01	1	0.1	3.6	7
81877	157.4	158.4	1.0	0.1	0.1	0.01	1	0.1	0.7	3
81879	188.2	189.5	1.3	0.1	0.2	0.01	1	0.1	2.3	4
81880	189.5	189.8	0.3	0.1	1.9	0.06	14	0.4	3.1	32
81881	189.8	190.1	0.3	0.1	9.6	0.98	64	0.4	22.4	151
81882	190.1	191.1	1.0	0.1	0.1	0.06	1	0.1	1.6	4
81883	191.1	191.8	0.7	0.1	0.2	0.02	1	0.1	2.3	4
81884	191.8	192.0	0.2	0.1	0.8	0.25	1	0.1	7.0	15
81885	192.0	193.0	1.0	0.1	0.1	0.01	1	0.1	1.8	3
81886	193.0	194.0	1.0	0.1	0.1	0.01	1	0.1	1.6	3
		Total Length:	75.0							
Standards										
Reference Values for:			HBM-02						17/07/98	
				3.4	12.5	0.46	150	1.3	22.7	
Variances Allowed:				20%	20%	30%	20%	20%	20%	
81878 Inserted @ 158.4m				3.6	14.1	0.47	164	1.2	22.4	Y
Weighted Averages										
	120.0	130.9	10.9	0.3	3.8	0.28	25	0.1	4.1	59
	120.0	133.1	13.1	0.3	3.7	0.28	24	0.1	4.0	57
	120.0	137.0	17.0	0.2	3.2	0.24	22	0.1	3.7	51
	124.3	127.0	2.7	0.4	5.2	0.34	22	0.1	4.1	79
	130.0	132.0	2.0	0.2	8.6	0.25	35	0.2	3.7	123
	130.0	133.1	3.1	0.2	6.5	0.25	30	0.1	3.7	94

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %	Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
50.2	62.6		BR PU RY	 sc si	b	Variably pink-red, or mottled pink and black, silica rich (most likely silicified), patchily dark chlorite altered, occasionally banded, rhyolitic-rhyo-dacitic breccia. Pinky-red intervals seem to be fairly coherent, can be phenocryst poor or rich, and may be lavas. Darker intevals (the more brecciated zones) contain darker material, usually phenocryst bearing, often as a matrix to angular pinky (rhyolitic) fragments, but occasionally present are chlorite altered pseudo-fiamme (pumice?). 1-3mm phenocrysts are common throughout, and appear to be quartz (due to hardness), though they look suspiciously like pseudomorphed-feldspars. Habit of most is rectilinear - feldspar lathlike); some sub-rounded, obviously quartz phenocrysts do exist. Quartz-carbonate and carbonate veins and veinlets very common, and occur in a number of orientations (dominant trends: thin veinlets 20-30 degrees to CA, with conjugates present as well; thicker ones (>1mm)~45 degress or greater, to CA, and rarer ones close to CA.). Rough zoning of pink versus dark zones - 50.2-51.7m Pink, -~58 dark, -~61m pink, -62.6 dark. Unit may be sericite-chlorite altered in and adjacent to broken zones e.g. 51.5-51.7m. Unit of good to moderate competency, with a small poor patch at 51.5-51.7m. Many breaks along vein orientations. Core orients at 51.5m, 59m.	56.5 58.6 58.7 60.8	BD VN VN VN	60° 25° 45° 7°													
62.6	63.9		RK	se	a	Yellowy-brown coloured, fairly destructive sericite+/-chlorite alteration of rock (most likely like previous unit). Alteration appears fairly massive, but in places dense sericite wisps are visible (~50-70 degrees to CA). Alteration most likely due to proximity to fault of next unit. Competency good - decreases towards end of unit. Quartz veins at 63m, contain blebs of black galena-sulphide mix+/-sphalerite.	63.0 63.0 63.6	VN VN VN	57° 11° 65°													
63.9	**66.0**	**F**				**FAULT**																
63.9	66.0		RK	sc	a	Broken zone of sericite-chlorite altered rock, most likely after rhyolitic breccias of surrounding units. Quartz vein (and fragments) are common.																
66.0	**98.0**	**FW**				**FOOTWALL SEQUENCE**																
66.0	66.5		BR RY	 se	a	As in 62.6-63.9m. Sericite altered rhyo-dacitic breccia. Yellow-brown sericite veinlets and wisps intense. No obvious preferred direction. Core competent.																
66.5	75.0		RY	si	b	Return to rhyolite-rhyodacite unit similar to those prior to the preceding fault. Alternating intervals of light creamy or pinky areas with more dominant dark-green to black zones. Fairly even distribution of phenocrysts with less obvious brecciation here. Both zones carry phenocrysts of quartz and silicified ?feldspar laths. Minor chlorite-sericite (green colour, fairly white streak) alteration is evident around occasional thin ?chlorite+/-quartz veins e.g. 67m. Carbonate-quartz veins and veinlets very common. Core of moderate to good competency.	67.0 71.3 72.5 72.5	VN VN VN VN	22° 37° 40° 25°													
75.0	77.2		RK	si	a	Black, fine grained, silicified version of previous unit. Contains brittle, faint, silica veins. Quartz-carbonate veins still abundant. Rare chlorite veins also about. Abrupt boundary with next unit. Core competent.	76.5 76.5	VN VN	25° 45°													

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %	Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
108.5	111.3		BR		a	As in last unit, but with more scattered alteration, with a more obvious fabric, and a lack of the orangey colouring. Clasts again have curvaceous ends, suggesting that the fabric is a transposition layering. Strange convolution of fabric around aggregates of clasts 108.6-109m, looks fold-like or deflection of fabric around the aggregates. Small clay bearing joint at 109.6m. Core of moderate competency.	109.1	CV	37°													
			ST	si			109.6	JT	40°													
			VC	sc			109.6	CV	51°													
							110.3	CV	45°													
111.3	**114.2**	**HO**				**HOST SEQUENCE**																
111.3	114.2		RK	si	a	Yellow-brown, silicified, moderately altered-?feldspar phyric, silica clast bearing volcanoclastic/rock. Has occasional green squashed pseudo-fiamme (which also carry the 'phenocrysts'). Silica clasts up to 5cm in size, but sporadic in occurrence. Possible a rhyolitic mass flow breccia. Carries common, but thin quartz-carbonate veinlets - usually running 20-25 degrees to CA. Also has common thin sericite wisps that mark a fabric ~55-60 degrees to CA. Core competent. Core orient at 113m. Orientated measurement at 113.6m - cleavage/fabric dips 76 degrees East, strike 200-020. Vein dips 68-70 degrees North at 120-110.	111.8	VN	16°													
			RY	si			113.5	CV	60°													
			VC				113.5	CV	55°													
							113.7	VN	26°													
114.2	**130.6**	**HOTS**				**HOST - TRACE SULPHIDES**																
114.2	115.6		ST	sc	b	Medium grey and green, silicified/cherty siltstone altered by bands of chlorite-sericite-pyrite alteration. Bands may contain wisps of sericite running about 50 degrees to core axis. Minor reddy-brown sphalerite - rimmed by sulphide mix/galena - blebs (1-3mm wide) and discontinuous wisps may be associated with the chlorite-sericite bands, but also occur as isolated veinlets +/-quartz-carbonate. Pyrite banding becomes more important towards end of unit. Unit is competent apart from contact with previous unit, in which there may be 30cm core loss (10cm broken zone visible now).	114.5	VN	50°													
				si			115.3	BD	47°													

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int.	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %	Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
115.6	130.6		ST	si	b	Medium grey unit of fairly massive, rarely obviously bedded, silicified siltstone with lesser fine grained sandstone. Unit cut be common bands of fine to medium grained pyrite which may be accompanied or dominated by medium brown coloured sphalerite blebs rimmed by balck sulphide-mix or galena. In some instance chalcopyrite wisps and blebs may accompany the sphalerite. The above sulphides may also be present as isolated wisps, veinlets and blebs, or as accessories in carbonate quartz veinlets. Sulphide bands are usually 1-2cm wide, with wisps and veins 2-5mm in width. 5-8cm band of sphalerite-pyrite-chalcopyrite at around 124.3-124.4m. Sulphide banding may be following initial bedding of unit, and obscures bedding as a result. Many thin sulphide and carbonate-quartz veinlets, and hairline cracks run accross banding/bedding (sort of conjugate) - might be critical direction of mineralisation, which is then ponding along bedding?. Core competent. Core orient at 118.9m. Orientated measurement at 118.9-119.1m; pyrite banding (not very planar) ~dip 87 degrees East, ~190-010 strike. Others 80 degrees West at ~210-030. Thin carbonate+/-sulphide veins (parallel), dip ~58 degrees North, ~080-260 strike. 119.3-119.5 - carbonate-quartz-sulphide vein - dip 66 degrees West, strike ~140-320. Vein (fabric?) dip 86 degrees North, strike 130-310. 119.1-199.3m - bendy pyrite-sphalerite band, dip ~68 degrees West, strike ~N-S (bottom anastomosing part of vein is subvertical). Carbonate veinlet dip 59 degrees North, strike ~100-280.	118.5 118.8 119.4 120.6 122.2 122.3 124.1 124.2 125.4 127.8	VN BD JT BD BD BE BD BE JT VN	15° 34° 35° 45° 20° 16° 29° 34° 57° 17°														
130.6	**130.9**	**HOSM**				**HOST - SEMI-MASSIVE SULPHIDES**																
130.6	130.9		SP		a	Small zone of banded semi-massive light brown sphalerite-with a dark sulphide, fine grained pyrite, lesser chalcopyrite and galena. Core competent.	130.8	BD	29°													
130.9	**138.6**	**HODS**				**HOST - DISSEMINATED SULPHIDES**																
130.9	138.6		ST	si	b	As in 115.6-130.6m - overall HODS to HOTS. Sphalerite increasingly red-brown in colour. Small HODS-HOSM veins 131.9-132m, 132.6-133.1m - Sampled separately. Core competent. Core orient 134m. Orientated measurements, cherty bedding -dip 28-30 degrees West, strike ~045-225. Pyrite (diagenetic) banding - dip 20 degrees West, strike ~045-225. 132.8m - Carbonate and sulphide veinlets dip ~42 degrees West ~125-305. 132.9m - sphalerite-pyrite veins etc dip 84 degrees South, strike ~110-290. 133.7m - Quartz-sphalerite-chalcopyrite vein, dip 50 degrees West, strike ~140-320.	133.8 133.8 135.0 136.0	BD VN VN BE	35° 30° 25° 36°														
138.6	**145.0**	**HOTS**				**HOST - TRACE SULPHIDES**																
138.6	140.7		ST	si	a	Light grey, silicified siltstone, crossed by intense, brittle quartz+/-carbonate+spotty red sphalerite (+/-chalcopyrite+/-pyrite) veining. Vague veining trend at ~30 degrees to CA. Core competent.	140.4	VN	30°													

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %	Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
140.7	145.0		SL ST	si qs sc	a	Dark grey to black, variably sericite-chlorite-pyrite altered, strongly banded/bedded shale, siltstone and minor sandstone. Sericite-chlorite alteration is present as occasional bands, but seems to follow/be confined by the surrounding sedimentary banding. Includes interval of material like last unit from 141.7-142.3m. Banding in unit looks to be sedimentary, some bands are pyrite rich (can be massive), or contain disseminated pyrite cubes (fine to medium grained). Banding close to CA near beginning of unit, but varies considerably - 143.6m evidence of folded nature of this unit of sediments. Bedding often disrupted by veining. Unit has abundant quartz-carbonate+/-sulphides as in last unit. Core of good to moderate competency, apparrently 10cm core loss between 141.8-143m.	141.5 143.3 143.6 143.7 143.8	BD VN BD BD VN	18° 60° 16° 85° 30°													
145.0	**148.4**	**HOTS**				**HOST - TRACE SULPHIDES**																
145.0	148.4		VC	sc si	a	Medium grey, and striped grey and yellow-green, unit of silicified volcanoclastic siltstone and sandstone containing sericite-chlorite wisps and pseudo-fiamme like features.The sericite-chlorite wisps and 'pseudo-fiamme' are usually <= 1cm in width. Difficult to say if these are purely an alteration product, or whether are altered squashed 'pumice' and reflect bedding (most likely as they are parallel to elongate silica clasts). 146.3-147.3m may be a separate very coarse volcanoclastic flow including occasional sub-angular 3-4cm silica rock clasts within it. Sediments are poorly sorted, containing numerous lithic clasts 1-10mm in size. Unit carries uncommon thin quartz-carbonate +/-sphalerite veinlets. Core of moderate competency, but parts fairly easily along the fabric.	145.7 146.1 147.0	BD BD BD	55° 40° 55°													
148.4	**151.1**	**F**				**FAULT**																
148.4	151.1		SL VC	 si si	a	Broken zone of shale and volcanoclastic from units either side. ~?5cm finely broken and clay rich zone at beginning of unit. Last 50cm of unit very broken. Fragments may be angular, or discs. Volcanoclastic from last unit finishes ~149m. Then have black shale, follwed by green volcanoclastic in last ~60cm of unit. Volcanoclastics tend to be mildly silicified, or more so than the shale. Shale banded by very thin coarser, light grey bands (may carry fine grained pyrite). Unit carries common ~5mm wide carbonate-quartz +/-sphalerite veinlets, some of which show folding - small cracks and carbonate-quartz wisps axial planar to the folded veins.	149.5 149.5 149.5 149.5 150.0	CV VN VN BD VN	30° 19° 10° 71° 4°													
151.1	**155.4**	**HO**				**HOST SEQUENCE**																

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int.	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %	Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
151.1	155.4		PU VC	sc si	b	Creamy coloured, silicified rock, spotted/measled with abundant dark green and light green pseudo-fiamme. After 152m, dificult to identify a fabric, pseudo-fiamme have complex, convoluted shapes and margins - possible fabric 45-60 degrees . Pseudo-fiamme are sericite-chlorite altered, and contain 1-2mm sized white flecks/altered lath-like or rounded phenocrysts (?feldspar), some of which might be quartz. Occasional barren quartz veinlets (1mm), usually against the vague banding. Core is competent.	151.6 153.3	BD VN	47° 45°													
155.4	**157.4**	**HO**				**HOST SEQUENCE**																
155.4	157.4		SL SS ST	si	b	Medium grey, in places black, graded, bedded unit of volcanoclastic, very coarse to shale sized sediments. Last 50cm of unit is shale, which is lightly silicified and patchily sericite-chlorite altered but contains spoardic 3-4cm silicified sandstone and siltstone clasts - some of which have internal banding, at odds with the apparrent bedding in this unit. Remainder of unit is medium grey in colour. Appears to fine up, up-hole. The basal sections of poorly sorted, very coarse, volcanoclastics contain various angular variably silicified siltstones/cherts up to 2-3cm in length. Coarser parts also contain disseminated pyrite cubes. Including shale, probably three distinct flows here. Core competent. Shale unit, may be the fine top from base of next unit (transitional boundary).	155.6 156.6	BE BE	45° 47°													
157.4	**167.4**	**PR**				**PINNACLES RHYOLITE**																
157.4	162.1		BR PU RY	sc si	b	Pale-creamy coloured, occasionally mixed with light grey, sometimes ?pepperitic or brecciated, other times massive and occasionally banded, quartz phyric rhyolite/rhyolite breccia. Massive interval from 158.8-161.6m, can be banded and also bear chlorite altered ?feldspar laths. 'Peppentic' intervals may in fact be pumice breccia volcanoclastic intervals. Vague fabric preserved by clasts in these intevals. Medium green, phenocryst bearing, chlorite altered clots/pseudo-fiamme also present throughout (mainly in the breccia interval). Clast size varies from 0.5cm to 5-10cm. Carbonate-quartz veinlets and wisps strong intensity throughout,often running against banding. Some sphalerite spotting and thin wisps at base	158.6 161.2 161.2	BD VN BD	38° 43° 40°													
162.1	167.4		PE RY VC	sc si	b	Similarly textured rock to before, but more green in colour, phenocrysts are comprised of feldspar laths and quartz and have intervals of siltstone and volcanoclastic sandstone. Looks more of a complexly mixed pepperite (rhyolite and siltstones and sandstones) in this unit. Pepperitic intervals contain two main types of clast - greenish chlorite-sericite altered and creamy-pink silicified clasts. More massive and banded intervals may have alternating bands of these types. Occasional carbonate-quartz veinlets present. Sediment intervals may be 10-20cm thick, two of these (first 20cm of unit, and 165.0-166.1) bear no rhyolite clasts, while the others do. Banding in massive areas is often near orthogonal to CA. Around 165m have a thin band of sediment running close to CA. Unit competent.	162.2 163.9	BE BD	39° 84°													

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int.	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %	Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
167.4	**172.7**	**HO**				**HOST SEQUENCE**																
167.4	172.7		PU ST VC	sc si si	a	Volcanoclastic pumice breccia of dark grey silicified siltstone (as fragments and occasionally as massive intervals), pinky rhyolite fragments in a matrix of light and dark green, feldspar +/- quartz phyric chlorite-sericite altered material. Some light green bands look to be squashed pseudo-fiamme (which define a fabric). Silicified clasts may be rounded or angular, and are poorly sorted (.5-5cm). Two intervals of siltstone/sandstone 20cm near base of unit, and 168.2-168.4m. Core competent, minor breaks near 170m. Core orient at 170m. Orientated measurement at 170m - pseudo-fiamme and joints dip 72 degrees East ~030-210.	167.4 170.3 172.2	CT BD BD	39° 41° 44°													
172.7	**188.2**	**PR**				**PINNACLES RHYOLITE**																
172.7	174.7		BR RY	sc si	b	Clast supported breccia of creamy coloured rhyolite, with chlorite-sericite altered, apparently phenocryst bearing fined grained material as matrix (pseudo-fiamme?). Competency is moderate to poor, especially in last 60cm of unit. Breaks along ~25 degrees to CA.	174.5	JT	24°													
174.7	179.9		RY	si	b	Fairly massive, occasionally incipiently brecciated quartz phyric, chlorite-altered-?feldspar phyric, rhyolite. Unit crossed by fairly strong carbonate-quartz+/-?sericite+/- rare pyrite, veins and veinlets (1-5mm generally), in two main orientations - near orthogonal to CA, and ~20 degrees to CA. Core competent.	176.6 178.0	VN VN	66° 18°													
179.9	188.2		BR RY	sc si	b	Darker green-grey coloured, generally more brecciated (amongst more massive intervals), rhyolite/rhyolite breccia. Becomes more altered-?feldspar phenocryst rich in the last 3m of the unit. Brecciated parts are generally clast supported, with the matrix a black or dark-green fine grained material; breccia may be a distinct band within more massive material. Uncommon patches of chlorite-sericite-pyrite alteration present e.g. 185m. Also have occasional chlorite-sericite altered bands (possibly along microfractures) e.g. 182.5m. Unit has an orangey-pinky hue in last 3m. 15cm carbonate-quartz vein at 183.1. Intensity of veining decreases towards the end of unit. Core competent except 184.8-185m and 183.1-183.2m. Possible 20cm discrepency between 180.3-182m. Core orients at 182m and 188m.	180.2 182.1 182.4	BD VN BD	55° 55° 40°													
188.2	**189.8**	**HOTS**				**HOST - TRACE SULPHIDES**																

From (m)	To (m)	Strat Code	Desc Code	Alt Code	Alt Int	Description	@ Depth	Feature	LCA Deg°	RQD To (m)	RQD %	Sample No	From (m)	To (m)	Length (m)	Pb %	Zn %	Cu %	Ag g/t	Au g/t	Fe %	TMU $
188.2	189.8		BR CH RK VC	 sc si	b	Volcanoclastic breccia? Medium to light grey fine grained matrix, containing abundant chlorite-sericite altered angular and elongate rock fragments. Fragments preserve a fabric (30-40 degrees to CA). Contact with previous unit sharp. Contact with next unit pretty sharp. Contains more cherty material in latter half of unit, and ends in a 20cm cherty, sort of brecciated, interval. This cherty interval contains some chlorite-sericite replacement, and some fine grained pyrite replacement (separate position form chlorite-sericite). Also within the cherty zone: within thin cracks in the cherty fragments of this zone have rare sphalerite+/-black sulphide mix-chalcopyrite etc; may also find the black sulphide rimming rare silica clasts. Unit contains uncommon, irregular carbonate+/-quartz veins and veinlets. Also have some white carbonate replacing/rimming occasional silica clasts. Unit competent. Orientated measurement at 188.5m, pseudo-fiamme-fabric, dip 83 degrees West, strike ~N-S.	188.2 188.7	CT BD	57° 38°													
189.8	**190.1**	**HOMS**				**HOST - MASSIVE SULPHIDES**																
189.8	190.1		CH PY RK	 cl	a	HOMS-HOSM of banded, fine to medium grained pyrite, with subordinate chalcopyrite, and rare sphalerite+/-sulphide mix. Also present in this band is a band black chlorite containing disseminated pyrite cubes, and the occasional cherty fragment with sphalerite sitting in any internal cracks. Fairly sharp contacts - might be a mini shear or something. Orientated measurements - 189.9m, sulphide banding dip 81 degrees West, strike ~N-S. 190m Joint, dips 82 degrees West, strike ~160-340.	190.0 190.1	BD CT	23° 21°													
190.1	**196.5**	**HOTS**				**HOST - TRACE SULPHIDES**																
190.1	196.5		BR CH RK VC	 sc si	b	Continuation of volcanoclastic breccia similar to 188.2-189.8m; with occasional cherty bands. Also has a HODS pyrite-chlorite-chalcopyrite rich interval 191.8-192m. Virtually no sulphide elsewhere. Distinctive carbonate rimming/replacement of chlorite-sericite altered clasts in the 80cm prior to the sulphide band. Have occasional wisps and veinlets of carbonate+/-chlorite+/-pyrite. In the last 2m unit becomes lighter in colour, and start to carry larger chlorite-sericite altered clasts (2-10cm) which carry altered-phenocrysts (possibly related to next unit). Core competent.	191.9 192.0 193.9 195.0	BD CT BD BD	10° 30° 35° 37°													
196.5	**197.5**	**PR**				**PINNACLES RHYOLITE**																
196.5	197.5		BR RY	 ql si	b	EOH 197.5m. Brecciated (in parts), and oddly banded rhyolite as in earlier unit. Breccia is clast supported, and matrix is a light grey silicified matrix. Bands (1-5mm in width) are alternations of dark chlorite-silica altered rhyolite, with pinky coloured rhyolite, and occur within individual clasts. Some smaller clasts are light greeny coloured sericite-chlorite altered, and some may be banded with darker green bands. However the bands don't seem to correlate across the clasts. In the larger inteval - clast bands run close to CA. Unit cut by occasional 0.5-1cm carbonate veins running ~ 90 degrees to CA. Core competent. Core orient at 197m.																