



PASMINCO ROSEBERY

A.C.N. 004 074 962

Hole No: 013B Location: Brown's Tunnel 5370N Objective: Test alternate northern extent of lens 1. Result: No significant mineralisation. May have drilled down a shallow fault, esp to 20.6m - mainly sand!		Depth Direct Dip 0.0 270.0 -37.0 30.0 267.0 -36.8 60.0 267.0 -37.6 100.0 267.0 -38.2	Depth Direct Dip Depth Direct Dip Depth Direct Dip Depth Direct Dip	Depth Direct Dip Depth Direct Dip Depth Direct Dip Depth Direct Dip
Planned Direction: 270° Drilling Commenced: 5/10/98 Planned Dip: -37° Drilling Completed: 11/10/98 Planned Depth: 100.0 m Actual Depth: 100.0 m Planned Northing: 5367 m N Surveyed Northing: 5366.19 m N Planned Easting: 4997 m E Surveyed Easting: 4995.52 m E Planned Collar R.L.: 490 m RL Surveyed Collar R.L.: 488.49 m RL		Date Logged: 16-Oct-1998 Logged By: Michael Whitbread Hole Size: HQ Hole Category: other Grouted:		
Date Log Verified: 26-Nov-1998 Verified By: Michael Whitbread		Summary Log: 0-2m NC; -7.5m FW; -20.6m F; -39.7m FW, -41.6m F; -84.7m Ho; -93m F; -100m HW EOH.		

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 \$	
0.0	2.0	NC				NO CORE				2.0	NC	97188	89.1	90.1	1.0	0.1	0.1	0.01	1	0.1	0.2	3	
0.0	2.0	NC			a	No core				30.1	4	97189	90.1	90.4	0.3	0.1	0.1	0.01	1	0.1	0.7	3	
2.0	7.5	FW				FOOTWALL SEQUENCE				33.1	73	97190	90.4	90.7	0.3	0.1	0.1	0.02	1	0.1	1.1	3	
2.0	7.5	CH	si		a	Tan coloured, oxidised, highly silicified, cherts and ?pumice breccias. Some elements look like host, however some of the more brecciated portions look like dacitic pumice breccia i.e. FW Unit generally broken (most pieces under 10 and 5cm). Consists of alternating cherty and porphyritic lava and pumice breccia. Cherty fragments dominate, but some are obviously the result of alteration of pumice breccia. Breccia fragments often appear to be porphyritic after ?feldspar, and may be up to 2-3cm long. Small zone of greenish rock 2.4-2.6 which looks porphyritic, but the crystals are quite concentrated - perhaps volcanoclastic? No obvious fabric to the breccias, where fragments may be blocky, or flammé like. Competency and recovery decrease with depth - 3.5-5.1m has 70cm core loss, while 6.1-7.5 has 1.2m loss. Fragments also more silicic near end of unit.			35.3	9	97191	90.7	91.6	0.9	0.1	0.1	0.01	1	0.1	1.4	3		
		PU	si							36.0	85	97192	91.6	92.2	0.6	0.2	0.5	0.04	5	0.1	1.9	10	
		SA	si							41.7	15	97194	92.2	93.0	0.8	0.1	0.1	0.01	1	0.1	1.5	3	
		VR								44.2	84	97195	93.0	94.0	1.0	0.1	0.1	0.01	1	0.1	0.2	3	
										49.2	10					Total Length:		4.9					
										50.7	80												
										56.7	21												
										70.4	91												
										71.1	14												
										85.1	90												
									91.0	16		97193	Inserted @ 92.2m		2.0	5.5	0.17	45	0.4	8.3	Y		
									91.8	100													
									92.3	0													
									95.4	90													
									96.0	0													
									98.4	91													
7.5	20.6	F				FAULT				100.0	31												
7.5	9.0	NC			a	No core.																	

Reference Values for: LBM-07 21/08/98
 2.0 6.3 0.17 51 0.4 9.4
 Variances Allowed: 20% 20% 30% 20% 20% 20%

TMU Parameters
Date of Parameters: 21/07/98 **Aust-US Exch. Rate:** 0.7000
Pb Metal Price (US\$/t): \$525 **Pb Recovery (%):** 68.40%
Zn Metal Price (US\$/t): \$1,200 **Zn Recovery (%):** 75.50%
Cu Metal Price (US\$/t): \$1,750 **Cu Recovery (%):** 45.40%
Ag Metal Price (US\$/oz): \$8 **Ag Recovery (%):** 70.00%
Au Metal Price (US\$/oz): \$300 **Au Recovery (%):** 63.70%

Hole No: 013B

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 \$
9.0	13.1		RK		a	Loose quartz and lithic sand, medium to coarse grained. Fault may include from 6.1m due to broken nature of that part of previous unit. Difficult to ascertain how much core has been lost. Triple tubing seems to have recovered 75% of core/sand.																
13.1	13.5		CH PU SA VR	si	a	Extremely oxidised, and quite broken, silicified pumice breccia - white with some goethitic stains and small patches of green. Small patches of chlorite bearing fragments/?pseudo-flamme are noted. Fragments no greater than 2cm.																
13.5	15.9		RK		a	More sand.																
15.9	16.7		CH PU SA VR	cy	a	As in 13.1-13.5 - more goethitic content (yellow staining) and far less silica alteration.																
16.7	18.0		RK		a	More sand. Is more fine grained now.																
18.0	19.7		CH PU SA VR	cy	a	As in 15.9-16.7m. Quite broken, possibly only 80% recovery.																
19.7	20.6		RK		a	More sand. Still nice looking beach sand (for Tasmania!)																
20.6	28.2	FW	FOOTWALL SEQUENCE																			
20.6	26.3		PU SA	cl si cy	a	Oxidised, yellowish hued, and generally quite broken (some fragments up to 5 and 10cm), partially silicified pumice breccia. Seems to consist of pumice mixed with lithics. Fragments are usually angular, with some silicic clasts being elongate; the softer intervals may have complex boundaries due to wispy interfingering. Silicified clast intervals sit within/alternating with softer (sometimes greenish) chlorite altered zones (pseudo-flamme?). The unit is poorly sorted, with fragments varying from mm to 5cm. Small fragments, mainly found within chlorite richer zones, might actually be altered feldspar phenocrysts; in less oxidised parts the concentration of these looks too dense to be lava - volcanoclastic maybe? Goethite stains common on broken surfaces. Core quite porous - easily soaking up water sprayed on it.																
26.3	28.2		PU RY SA SL	ql si cy	a	As before, but black silty/shale clasts are common, and some large (5-10cm) clasts of rhyolite/rhyodacite noted. Therefore, unit termed a rhyolitic pumice breccia. Competency improving, though still poor, with many fragments above 5cm. Fabric vague as banding of clasts warps around larger fragments.	26.3	BD	75°													
28.2	35.9	FW	FOOTWALL SEQUENCE																			

Hole No: 013B

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 \$		
28.2	35.9	SA			a	Light yellow-green-brown coloured, oxidised, sericite and silica altered rock - I believe that this unit may in fact be a flow banded lava (rhyolite?), as it looks similar to volcanic rocks further down the hole. Grains comprising unit look to be sand sized, however the overall look is almost schistose with occasional bands and small elongate "augen" of silica within a ?sericite altered groundmass - in some instances this appears to contain pseudo-fiamme. Unit has a fabric defined by the sericite wisps, and alignment of silica bands. Surface of rock looks pitted - after what I don't know? After 34.5m, unit contains rare cherty fragments and elongate rafts (are these merely unoxidised remnants?). Pitting becomes more larger in size and more rounded - some are still partially filled with porous looking structures of clay and silica. Unit possibly a pumice bearing tuff? Core of variable but generally moderate competency except 33-34.4m which is broken. Yellow hue drops off in last metre or so of unit.	29.4	BD	60°															
		VR		se	si		35.3	BD	62°															
35.9	39.7	FW				FOOTWALL SEQUENCE																		
35.9	39.7	VR		cc	a	Possibly a less oxidised version of last unit. Greeny-grey and light greeny brown coloured rock. Looks like pits of previous unit were chlorite or carbonate rounded spots (1-2mm generally, in size). Silica content seems much higher in this unit - silica-sericite(-chlorite)-schist. Carbonate distribution erratic, with some as small spots (similar to the chlorite spotting), while it may also appear in wispy aggregates. Vague fabric present as in previous unit ('schistose' banding). Unit most likely a pumice bearing tuff. Core of moderate competency - some oxidation along fractures.	36.2	BD	65°															
				qs			39.3	BD	65°															
39.7	41.6	F				FAULT																		
39.7	41.6	VR		cl	a	Broken zone of rock as in previous unit. Rare pieces above 5cm. Most fragments 1-3cm in size.																		
				qs																				
41.6	44.1	HO				HOST SEQUENCE																		
41.6	44.1	SA			b	Partially oxidised, brown and medium grey, fine to medium grained sandstone (possibly a phenocryst poor rhyolite lava when compared with units further down the hole. Unit boundary with previous unit is quite altered (silica and ?chlorite-sericite) and cavitous. Also have a 10cm band of finely laminated sericite alteration 10cm from base of unit. Remainder of unit fairly uniform. Thin (1-3mm) quartz veins are common, and are quite cavitous, usually lined with small quartz crystals - In rare instances these veins contain peacock coloured tiny fragments of sulphide. These veins are often accompanied by increased silicification of the wall rock. Veins generally have consistent orientations (mirrored by occasional sericite wisps), although these occasionally sit conjugate to thin brown ?sericite veinlets 1-2mm wide. Core competent - minor 10cm broken zones (possibly due to zealous drillers) e.g. 41.9-42m, 43.6-43.8m, which can have increased sericite alteration associated with them.	43.5	VN	52°															
		SS		se			43.9	VN	25°															
				si			43.9	VN	52°															

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44.1 46.0 HO HOST SEQUENCE																						
44.1	46.0		SL	cs	b	Generally fairly broken interval of occasionally silicified, partially chlorite altered black shale, with minor intervals of greeny sandstone and medium grey siltstone. Sometimes have small rafts of shale with the 'sandstone'. Thin wisps of sericite alteration are present, and uncommonly have sericite-chlorite alteration. Minor quartz veining present (1-5mm) which may be uncommonly accompanied by sphalerite and pyrite. Possibly cleavage/fabric in this unit - marked by sericite wisps and veinlets, breaks in core, and by alternations between altered and unaltered shale. Competency very poor.	44.5	CV														
			SS	sc			45.5	CV		55°												
46.0 47.6 HO HOST SEQUENCE																						
46.0	47.6				a	Heavily sericite altered, greenish-yellow rock. Contains occasional pods and intervals of silicified, and carbonate spotted rock - possibly rhyolitic lava. One instance (7cm) of poorly sorted slate clasts (up to 3cm and rounded) within an altered matrix. Strong fabric - marked by sericite alteration. Unit most likely a lava containing occasional lithic clasts. Boundaries either side are sharp. Competency poor.	46.3	CV														
			RK	se						65°												
47.6 49.4 HO HOST SEQUENCE																						
47.6	49.4		SL	cs	a	Moderate to poorly competent slate unit similar to 44.1-46m. Some banding which may be bedding - looks to be sub-parallel to the alteration fabric.	48.6	BD														
49.4 49.7 HO HOST SEQUENCE																						
49.4	49.7				a	Pinky coloured silicified and lesser sericite altered rock - looks like an altered Pinnacles Rhyolite. Core competent.																
			RK	se																		
49.7 50.2 HO HOST SEQUENCE																						
49.7	50.2		SL	cs	b	Return to slate. Quite broken before 49.9m - core competent thereafter. Bands of greenish chlorite +/- sericite alteration (mm-2cm thick) present. Bedding noted, but wavers in orientation around the general trend of the alteration bands. Sharp contact with units either side.	50.0	BD														
50.2 50.5 HO HOST SEQUENCE																						
50.2	50.5		LV		a	As in 49.4-49.7m. Grades into next unit as ?chlorite content of strong sericite alteration increases. Core competent.																
			RK	sc																		
50.5 59.8 HO HOST SEQUENCE																						

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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 \$	
50.5	56.9	BR	RD	cs	b	Pale green hued, minor to moderately chlorite (far lesser sericite) altered, silicified, fine grained, occasionally banded, occasionally brecciated, quartz phenocryst poor ?rhyodacite/rock. Some evidence for rhyolitic nature by rare quartz phenocrysts. Numerous spots (0.5-1mm, now chlorite) are present - possibly after feldspar? Bands are 1-5mm thick in general. Matrix to brecciated fragments is milky white quartz/silica. Unit contains common thin quartz +/- chlorite veinlets, and chlorite blebs - many of which appear to have become cavitous. Most veining runs either 90 or near 0 to CA. Core of variable competence - poor to 54.2 - of moderate competency thereafter.	53.2	BD	45°														
56.9	58.0	RY	cc	b	Slightly carbonate altered, silica rich, rock/rhyolite? Unit has brown hue, and subtle to non-existent banding. Looks to be more silica rich when compared with units either side. Has a cellular texture, with cells separated by very thin intervals of chlorite (obvious in first 10cm of unit - questionable later), but is also heavily speckled by very fine grained yellow-white specks (possibly carbonate?). Colour may be due to slight oxidation of carbonate? Grades into next unit. Core competent.																		
58.0	59.8	RD	SA	ql	b	Thinly banded version of 50.5-56.9m - bands are alternating silica, and greenish chlorite ncher intervals. Bands 1-5mm wide, semi-continuous, although minor boudinaging of silica bands is apparent. Oxidation present as yellow and brown goethite on some fractures and the occasional thin quartz vein. Unit becomes increasingly lighter yellow in colour - and more oxidised - towards the end of the unit. Core competent.	58.4	BD	44°														
59.8	60.8	HO	HOST SEQUENCE																				
59.8	60.8	RD	RK	SA	cy	a	Light-yellow-brown, moderately oxidised version of previous unit. Core of moderate to good competency.																
60.8	61.6	HO	HOST SEQUENCE																				
60.8	61.6	PU	RD	SA	si	b	Moderately oxidised - pale lime green coloured, pumice breccia (see next unit). Oxidation decreases towards end of	61.1	CV	70°													
61.6	65.0	HO	HOST SEQUENCE																				
61.6	65.0	PU	RD	VC	ql	b	Light green-grey, speckled with dark green-black fragments, ?rhyodacitic 'pumice breccia'/volcanoclastic/mass flow. The unit consists of dark, chlorite+/-silica altered angular or irregular fragments (1mm-3cm in diameter), set in a fine grained silica matrix (sometimes pink, sometimes lime-green). In both the matrix and 'pumice', are common white lath-like phenocrysts, most likely after feldspar. Rarer quartz crystals, (also <2mm in size) are noted. Unit variably matrix and clast supported. Matrix becomes pinker and unit becomes more silica rich after about 63m. Difficult to pick a consistent fabric. Core competent.																

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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 \$	
65.0	66.8	HO				HOST SEQUENCE																	
65.0	66.8		BR	se	b	Partly banded and partly brecciated, grey to light green-grey, quartz phenocryst poor rhyolite/ryholitic breccia. Looks to be incipiently brecciated across banding in the first 40cm of unit. Difficult to know if banded intervals are merely 'bomb' size clasts. Some rotation of these 'clasts' is evident by the internal banding orientations. Occasional instances of dark chlorite 'pumice' like those in preceding units noted. Occasional patches of sericite +/- chlorite alteration present (in zones 1-10cm wide). These more altered zones are usually coincident with dark chlorite pumice richer areas. Core of moderate to good competency.																	
			RY																				
			VC																				
66.8	72.5	HO				HOST SEQUENCE																	
66.8	72.5		RY	cs	b	Light pale green-grey, fine grained, sparsely quartz phync, rhyolite. Unit is faintly banded. Brecciated rhyolite 'clasts' of previous unit very similar in appearance to this unit. Weak chlorite-sericite alteration bands noted throughout as dark green, or pale green-yellow discoloured bands (1-10cm in width). These 'alteration' bands seem to sit sub-parallel to the 'flow' banding found throughout. Light green-yellow interval from 69.7-70.2m (larger alteration band?), contains a 'stock-worky' thin quartz-chlorite(dark) vein (1-5mm). Minor quartz +/- chlorite veinlets present throughout unit. Veinlets mainly run close to CA, or orthogonal to it. Occasionally have small intervals of carbonate or chlorite spotting - possibly after phenocrysts. Unit competent. Phenocryst poor intervals might be mistaken for silicified sandstone. Core orient at 67.4m.	67.2	BD	64°														
								69.0	BD	60°													
72.5	74.5	HO				HOST SEQUENCE																	
72.5	74.5		RY	ql	a	Perhaps a slightly oxidised version of previous unit. Unit light beige in colour, and has common chlorite-quartz +/- pyrite veinlets (1-5mm in width), running in varying orientations - mainly close to CA or conjugate to banding. Some quartz dominated veinlets run close to CA, and are quite cavitous. Core of moderate to poor competency, due to breaks along the veins close to CA. Small broken zone at 72.9-73m.	73.2	VN	5°														
				se				73.9	VN	43°													
			SA					73.9	BD	43°													
74.5	79.1	HO				HOST SEQUENCE																	

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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 \$	
74.5	79.1		BR PE RY	sc se	a	Unit begins as a peperite of the rhyolitic material similar to that in last unit, with a rounded cherty clast bearing, strongly foliated, sericite-chlorite altered siltstone and sandstone. Sediment units sporadically contain intervals of rhyolite, or rhyolitic pumice breccia, which may be incipiently brecciated, and may have complex boundaries. These intervals become less common after 77m. It is possible that these intervals may merely be clasts within the sediments. Cherty clasts (occur in clusters, sporadically distributed) vary from 2mm-5cm across, and in some places look to be disrupted intervals of chert (intense cleavage development may have caused this). Sediment has small intervals of more intense, green, sericite-chlorite alteration. Some of these look pseudo-flamme like. Some evidence of bedding parallel to cleavage. Core competent, despite breaking fairly easily along cleavage	78.4 78.5	CV BD	60° 60°														
79.1 84.7 HO HOST SEQUENCE																							
79.1	84.7		BR PU RD VC	se	b	Light beige coloured ?rhyo-dacitic breccia. Unit consists of mm to cm sized, irregular, brown-yellow, altered ?feldspar phynic, pseudo-flamme contained within a light grey, fine grained, semi-translucent silicic matrix. A minority of fragments are quite angular and silicic. Phenocrysts look to be clay and/or carbonate altered feldspar laths (1-2mm in size), which are fairly evenly distributed throughout both the matrix and 'pumice'. Pumice tend to be far softer than matrix - interpreted as due to sericite alteration. Some faint banding of pumice breccia evident throughout, by clast elongations and sub-parallel orientation. Little evidence for quartz phenocrysts. Core competent. Core orient at 79.5m.	84.5	BD	58°														
84.7 93.0 F FAULT																							
84.7	90.1		BR PU RD	ql se	a	Pretty much a broken and more ?sericite altered version of previous unit. Unit occasionally crossed by dark green chlorite-quartz veins (1-5mm in width). Some appear to be cavitous after chlorite. Core of bad competency with occasional sticks of core up to 20cm amongst pieces 1-2cm in size. 20cm core loss between 85.5-88.2m.	88.7	BD	47°														
90.1	90.4		BR CH	sc	b	Cherty unit, slightly brecciated, in a sericite-chlorite altered matrix. Core pitted, but of moderate competency.																	
90.4	90.7		CH ST	si	b	Extremely broken zone of dark grey siltstone and cherty fragments.																	
90.7	91.6		BR CH ST	sc	b	Moderately competent unit of siltstone and chert. First 20cm of unit quite soft ?sericite+/-chlorite+minor pyrite altered. There appears to be small (5mm) fragments within this first interval. Competency drops of in last 10cm of unit.																	
91.6	92.2		BR CH QZ	sc	a	Quartz+/-chlorite veined interval- with occasional galena, sphalerite, pyrite and chalcopyrite as accessories. Host is a greenish sericite-chlorite+/-pyrite altered cherty breccia. Quartz veining crosses cherty clasts as well. Quartz veining fairly massive to 91.8m. Difficult to pick an orientation for the veining, looks to be 60 degrees or so. Core fairly broken.	92.1	VN	60°														

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92.2	93.0		BR CH	sc	a	Greeny-grey cherty breccia with fairly intense sericite-chlorite+/-pyrite alteration of the matrix. Pyrite masses tend to favour sites adjacent to the cherty clasts. In intervals that are matrix supported, a strong fabric is evident. Cherty clasts are poorly sorted (3mm-7cm). Core of poor to moderate competency.	92.8	CV	65°													
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93.0	100.0	HW	HANGINGWALL																			
93.0	100.0		BR PU RD VC	sc	si	Unit similar to 79.1-84.7m - pseudo-flamme/pumicey looking things in a silicic matrix. The clasts are greener than previously (more chlorite altered?), though some pinky silicic fragments are present. These silicic fragments dominate the clast fraction after 97.2m (and are quartz phytic to boot - rhyolite). Unit could be a pumice bearing brecciated lava, or a mass flow volcanoclastic. Clast sizes are extremely variable, and the unit varies between matrix and clast supported. Core orient at 94.5m. Unit of moderate competency. EOH 100m.																

013B