



PAMINCO EXPLORATION DIAMOND DRILL CORE RECORD

HC No. SR 2

754093

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LOCATION	EL 24/91	OBJECTIVE	LOCATION/SURVEY DATA (AMG)								
PROJECT	STERLING RIVER	TO TEST THE FARRELL SLATES/MURCHISON VOLCANICS CONTACT FOR MASSIVE SULPHIDES, 500m NORTH OF STRONG HYDROTHERMAL ALTERATION ZONE IN HOLE STP 105.	Grid	AMG	RL Collar m 188.4						
PROSPECT	STERLING VALLEY		Northing m	5 373707.0	Bearing Collar 090.5°						
DESIGNED BY	J.G. PURVIS		Easting m	384425.4	Dip Collar -70°						
LOGGED BY	N. MCGUNNIGLE		DH Survey Type	EASTMAN CAMERA	Length Hole m 367.6						
RELOGGED		RESULT	Depth m	Bearing	Dip						
COMMENCED	3.4.95	NO MINERALIZATION ON FARRELL/MURCHISON CONTACT. ONLY PATCHY HYDROTHERMAL ALTERATION IN MURCHISON VOLCANICS BELOW THE CONTACT. ZONES OF SULPHIDE VEINING IN FARRELL SLATES, UP TO 2m @ 3.5% Pb+Zn.	63	096°	-67.5°						
COMPLETED	2.5.95		90	099.5°	-61.75°						
DRILLED BY	K. HOW		120	099°	-59.4°						
DRILL RIG	LONGYEAR 38		150	097.5°	-54.75°						
			180	098°	-54.25°						
SIGNIFICANT INTERSECTIONS			210	097°	-53°						
From m	To m	Interval m	Pb (%)	Zn (%)	Ag (g/t)	As (%)	Sr (%)	Comments	240	098.5°	-52.25°
11.5	13.5	2	2.2	1.2	100			Sulphide veinlets in sandstone	270	100°	-51.4°
17.7	19.6	1.9	1.0	1.0	39			" " " "	300	101.75°	-50°
84.0	88.25	4.25		0.33		0.36	0.22	Veined & brecciated black shale	330	099.25°	-47.75°
197.6	200.5	2.9					0.41	Qtz-sulphide veins	360	100°	-45.25°
SIGNIFICANT CORE LOSS			POOR GROUND CONDITION ZONES								
From m	To m	% Lost	From m	To m	Condition						
7.1	10.0	59	78	88	Moderately broken						
61.9	64.0	43	119	123	Fractured and broken						
121.1	122.6	47	175.5	178.5	Fractured and broken						
HOLE SIZE		HOLE CONDITIONS AFTER COMPLETION									
Size	Depth m	Collar	STEEL CAP ON HQ STEELPIPE								
HQ	18	Steel Casing	3m HQ								
NQ	367.6	PVC Casing	40mm ID PVC PLACED TO BOTTOM								
		Ground Water									
		Wedge									
		Drill Pad	REHABILITATED - TOPSOIL + BOTTOM GRASS REPLACED								

PASMINCO EXPLORATION DIAMOND DRILL LOG

754094

m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG		LITHOLOGY	MINERALISATION
			0 1 2 3 4 5 6 7 8 9 10 max 100mm	max 100mm		
0	ox(2) Poor recovery	Mod fractured + broken at intervals throughout f: 55			FARRELL SLATES	2-3% gn-sp-py > aspy in veinlets (some dissem py)
2	ser (1) ↑ Trace chl			silt/sst	SILTSTONE - SANDSTONE	2-3% py > gn-sp Dissem & veinlets
4	Common irreg carb ± qtz veins + veinlets ax < 10mm (rarely with sulphides)	Mod foliation (gen bedding //) B 48° C 25°		shale	Lesser interbedded grey-black shale.	1-2% py, dissem. Minor veinlets sp-gn
6				Fract	Grey, fine-med gr. Varies from massive sst beds up to 1m, to finely bedded siltstone/sst.	Minor to 1% py, mostly dissem. V minor sp-gn-aspy-py veinlets
8				sst	sst: qtz-feldspathic ± mica. Generally calcareous + slightly carbonaceous.	1-2% py, dissem. Minor sp-gn veinlets
10				black shale beds		3-5% py-sp-gn ± cp in qtz veinlets to 8mm.
12				sst/silt silphide veinlets (py-sp-gn)		1% py, dissem
14	latching co(2) Predom in sst	kinks		py	siltst: Sericitic/vitric + carbonaceous shale: carbonaceous.	
16				py		
18		f kinks N 48-90° veinlets		py		2-3% py-sp-gn in veinlets ± qtz
20		B: 52° kink/eca		shale laminar		Minor to 1% py > sp, dissem.
22		kink 65° kink // LCA				Minor sp-gn-py veinlets.
24						Minor dissem py
26	chl (1-2) ser (1)					
28						
30						
32		B: 49° (Dips 64° to 270° f: 55 (11 B))				
34						
36						
38						
40						
42		Fract				1-2% py > sp-gn. Trace cp. Dissem veinlets
44		B: 40°				5mm py-carb veins Minor py-sp in veinlets + dissem py.
46						
48						
50		kink // LCA Fract				

PASMINCO EXPLORATION DIAMOND DRILL LOG

754095

m	VEINING and ALTERATION (1 = weak, 4 = Intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG D.O.S. mud D.S. N 32 max min	LITHOLOGY	MINERALISATION
50	minor graphite on foliation planes minor chl. (1-2)	B: 30°	v.f. 1st & shale lam.		minor py & sp in veinlets & diss py. Patchy sp. in CO.
52		small f: 50° fol			
54		fract. & broken	v.f. 5st	5mm dismembered lime green mafic (?) dyke, 25° (fol) epi-fuc alt ^a	
56		Kink // LA	sh / 1st		
58	qtz-chl veinlets & veins				
60	CO (2-3)		qtz-py vein sh. lam		60-25 irregular minor qtz-py vein assay 5-50mm
62		Kink // LA	v.f. 1st/sh lam		
64		B: 55° (dips 62° to 290° AMG)	v.f. 2st/sh lam		1-2% diss & veinlet py & sp
66			silt/shale		
68		contact (B) 60°	silt/shale	67.9m	
70	CO (2-3) in patches esp. siltstone beds	moderate fol. B: 60° small fold		BLACK SHALE minor thin siltstone beds esp. in top 5m Carbonaceous shale with minor graphite on fol. planes	2-3% py; minor sp diss. & in CO-qtz veinlets & stringers along fol. inc with depth
72					
74	common irregular carb > qtz veinlets in fol	strong 6// fol inc. with depth small folds			
76					
78		mod. broken C: 60°			
80					2-3% py & sp diss & in veinlets
82		contact gradoblench		82.4m	
84	Abundant chl-sulph net-veinlets CO (1) in patches	partly brecciated & chl-sulph net veining post dates fol. & qtz-chl veining in shales C: 65°	py veins py-sp veinlets	DEFORMED & MINERALISED ZONE IN BLACK SHALE (B4) very strongly foliated & incipiently brecciated minor graphite on fol. planes 88-05-88-25 annealed cataclastic	3-5% py; min sp diss. & in CO veinlets & stringers 3-5% py-sp-po diss. & veinlets minor assay-cp 5-10% py-sp-wsp-cp-po (vein-veinlets) 20-25% py & sp - cp-po
86	patchy sil (2)	contact gradoblench			
88					
90	chl-qtz veins & veinlets CO (1) in veins & patches	fol 25° 91.6m (dips 78° to 292° AMG) C: 35°	v.f. 5st shale	BLACK SHALE , minor deformation, + minor thin siltst beds 92.6m incig fol. away from def. zone	3-4% py & sp diss & in veinlets
92	CO (2-3) in veinlets & patches esp. in silst. beds		3st	INTERCALATED SILTSTONE-SHALE beds of dark-med grey shale & siltst finer beds strongly fol. minor graphite on fol. planes (shale) some v.f. bedding between 2st/shale	1% py: diss + veinlets + minor po-wsp-cp min ^a in thin stringers along fol planes 3-5% py-sp-po-cp in veinlets, fol, diss 2-3% py-po-sp-cp diss + in CO veinlets & thin stringers fol
94					
96					
98		C: 50°			
100					

PASMINCO EXPLORATION DIAMOND DRILL LOG

754097

m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE b = bedding c = cleavage f = fault i = fault Angles to LCA	GRAPHIC LOG 0.5 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	LITHOLOGY	MINERALISATION
150-152					
152-154					
154-156	155.5 qtz 50mm 156.1 qtz 50mm	C: 45-50°			153.5 py-po-sp in qtz-cc vein
156-158	157.5 qtz 40mm 157.65 qtz 40mm				
160-162					
162-164	qtz-chl vein with sulphides	strongly foliated			162.1 py-cp-po aspy in 163.4 qtz-chl vein
164-166				163.8 increasing grainsize - clasts of carb. shale/siltst 7 common + clasts of CO, sh ² feldspar	
166-168					
168-170		C: 35°			
170-172		Kink: 85°			
172-174					
174-176	CO (2-3) esp in shale lam	C: 50° at contact		175.55 177.9 rip-up clasts of shale < 50mm, intercalated with	174.4 1-2% py-cp + minor aspy - sp + minor aspy - sp + minor aspy - sp
176-178	CO (1-2) in lam's ser (1) on fol. plane 60mm qtz vein weak chl (1) along some fol. planes	C: 45-50° Fault - broken mod. broken	py-po (qtz)	SHALE moderately foliated black shale with intercalated siltst. (increasing up hole). + lam. of coarser grained volcanoclastic 179.5 beds.	1-2% py-cp aspy-cp clus. & in stringers parallel to fol. minor sp.
178-180		C: 3.5° at contact contact "feathered"			
180-182	ser (1) along fol. planes (& in pumice) minor (1) chl			HIGHLY CLEAVED PUMICEOUS VOLCANICLASTIC MASS FLOW -contains stretched ser. pumice av. 10-15 mm (< 30mm), which contain abraded qtz + feld xstals. -ser. along fol. planes. -clasts include rip-up shale (515 x 100mm), CO, qtz, siltst. -appears ungraded.	1-2% py clus + v. minor aspy-sp
182-184	CO (1-2) in lam. & replacement of feldspar.	34° (dips 84° & 34° to 254 AMG)			
184-186		kink 5° kink 1			
186-188					
188-190	CO-gtz in veinlets	C: 45° Fault + broken Kink 1		BLACK SHALE	2-3% py-cp clus & in veinlets & net veinlets (qtz-co-chl) (7 ab in veinlets)
190-192	CO-gtz net veinlets chl (1-2) in veinlets (11 fa)	mod. foliated		Finely bedded black shale with net veining. Graphite on foliation planes	v. dil sp & aspy (minor)
192-194					
194-196					
196-198	qtz (4) with 2° CO-chl (1) in veinlets net veinlets & qtz veins common	veinlets, some netted (exposed reds & host) 2.8°	py-cp (qtz-co)	QUARTZ VEIN - with network of veinlets interbedded with CO-chl - & siltst. some interbedded fol. siltst. (shale & volc. unlit)	2-4% py-clus + dil in veinlets 1-2% py-cp > sp - qtz-clusters + minor aspy-clusters
198-200				SILTSTONE SHALE	3-6% py-cp - po in veins/veinlets 7 dil. minor sp


PASMINCO EXPLORATION DIAMOND DRILL LOG

754095

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			0.05 mm	0.5 mm	2 mm	32 mm	max mm		
200	- qtz vein						py-po (qtz)	uphole firing intercalated sand-siltstone shale to very finely bedded black shale.	200-0 5-8% py-cp-po 200-5 cp-po
202	2° chl (1) CO (1) 200-2 infill in veinlets	C: 50-55° fold (sw) + fold (sw) Kink 65°						- moderately deformed, fol. 50-65° LCA and small folds common in sediments, perpendicular (L) to LCA	+ minor dspy + minor sp.
204									
206	2058 70mm qtz vein						py-po (qtz)		
208	qtz + minor chl in cemented ss.						208-0 209-0	QUARTZ VEIN PTO.	15-20% py-cp-po dspy in qtz vein
210	CO (1-2) esp. in sst/shale beds + replacement CO in crystals (?)	small kinks assoc. with qtz veinlets perp. 25° (5-10mm) C: 39° (dips 88° to 298° ANG)					(qtz) py-po-sp (8mm)	SANDSTONE with lesser interbedded siltstone & shale.	2-3% py-cp-po in qtz (CO) veinlets & veins + dspy
212	minor chl (1) in patches & along some veins							- medium-coarse grained qtz-feld. sst (ser-glass matrix) with fine beds of siltst/shale	minor-1% py; dspy & "chrs" along fol. planes + in fine stringers // fol. in shale beds.
214	- qtz veins & veinlets (with 2° CO)	sm. kinks 30° LCA increasing deformation folds ± LCA 217-4					bands of siltst/sh	- mod-strong foliation with stretched clasts (1-2mm) & slightly graphitic on foliation planes - increasing deformation downhole (esp. in finer sects).	v. minor po-cp-dspy. -sp
216		sm. kinks 50-60° LCA sm. fault ± LCA					ssst	- abraded qtz (crystals) constitute 20-25%	
218							shale		
220									
222		C: 50° LCA							221: py-cp-po-sp dspy
224		small kink ± LCA					siltst/sh (qtz) - py-po (qtz) - po-py-dspy		minor min ("") along kinks
226									
228	270-0 228-2 CO (2°) clasts (1-2) 15mm qtz vein	small kinks and deformation ± LCA					siltst/sh	sericitic alteration clearly in coarser grained sst (1-2)	228-3 1% py + po 229-2 (in sh/siltst)
230									
232									minor dspy in CO veinlets
234		C: 50° Kink I sm. kink 80-90°							
236		increasingly common deformation with small kinks, folds and faults, commonly ± 10° LCA							
238		sm. k. ± folds ± LCA kink 80-90°							
240	(approx) CO increasing (2-3) in bedding & fol. ser (2-3)	F: (fract + kink) sm f: 40° sm. fault ± LCA KINKS: 35-50°						239-8 } sericitic coarse grained volcaniclastics with minor interbedded fine siltst. 240-4 } 240-8 } - abraded qtz gr. abundant 241-3 } graphitic & puggy	
242									
244		Kink II: 30-50°							
246		Kink: 30°							
248		Kink: 40-50°							
250		Kinks I ± 20° Kink II strongly foliated Kink I C: 40-50°						246-0 Farrel Fault zone - very finely bedded & foliated med-cr. grained sst with siltst. sst contains abundant qtz (25%); ser.	248-4 1-3% po-py-cp-diss + dspy in veinlets (11 151)

PASMINCO EXPLORATION DIAMOND DRILL LOG

134099

m	VEINING and ALTERATION (1 = weak, 4 = Intense)	STRUCTURE b = bedding c = cleavage f = fault Angle to LCA	GRAPHIC LOG		LITHOLOGY	MINERALISATION
			DRILL RECORD	DRILL RECORD		
250.5					250.5 Volcaniclastic sst & deformed zone - interbedded	
252		C: 50° contact			252.4 VOLC. sst with siltst.	
254	ser (2) anastomosing parallel foliation planes chl (1-2) along cleavage planes minor chl (s1)	cleavage:  C: 50-65°		py-sp	MURCHISON VOLCANICS -cleaved and foliated, light grey volcanics. Anastomosing cleavage has mineralisation (chls) along planes.	1-3% py-po-cp diss + diss in veinlets // fol 256.4 py-sp veinlets
256					-stretched qtz (± feld) crystals // fol.	1-3% po-py-cp diss + diss in veinlets (// fol)
258	CO (2) in veinlets // fol				259.6	
260	CO (1-2) in veinlets & veins				ALTERED FELSIC VOLCANIC	
262	chl (2-3) in patches				Undetermined, uniform & massive felsic volcanic.	
264	chl (1-2) v. + patches	C: 45°-50° kink: 60°			-moderate foliation decreased downhole	
266	ser (1)	fractures: 50°, 55°			-light grey colour varies with alteration type, from dark green - bleached cream	1% py-po-cp diss & diss in veinlets
268	CO (minor-1) in veinlets & micro-veinlets				-chl-ser-sil alteration is common along anastomosing cleavage planes	1-3% py-po-cp
270					-qtz crystals common; some fractured and sub-anhedrot	
272		271.6 58° (dips 76° to 256° AM)			-sil alteration mod-strong in blotchy patches which are stretched with cleavage (some contain qtz crystals ± 2° feature)	
274						2741
276	qtz veins 274.85 common 5-70 mm (+ chl-10) 276.7	C: 60-70°		qtz-chl veins		1-3% po-py-cp ± sil diss in veinlets qtz-ch veins with py-poz
278						
280						
282						
284						
286						
288						
290	15 mm min vein (+ chl) chl stretches in patches (2-4 mm)			py-po-cp (15mm)	- 289.6 pcho.	289.0 py-po-cp vein 289.0
292	292.0 qtz veins with 2° CO+					1-2% py-po-sp -gal in patches in veinlets (// fol) 2-3% py-asp -sp-po-cp-gal
294	293.85 chl + min 294.25 qtz vein: 30mm 294.5 294.9 qtz veins: 5-15mm					1-2% py-po-dip-cp minor-1% py-po ± cp
296		C: 50-65°				
298						
299.5	299.5 (See p. 8)				299.5 increased bleaching	

PASMINCO EXPLORATION DIAMOND DRILL LOG

HOLE No. SR2

m	VEINING and ALTERATION (1 = weak, 4 = Intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG					LITHOLOGY	MINERALISATION
			0.06 mud	0.5	2	8	32 max mm		
300	ser (2) esp. // fol								
302	CO (1-2) in veinlets + crystal replacement	301.6 (dips 78° to 257 AMG) C: 56°							
304	303.4 CO-chl veins (<10mm)	sm. f					qr-py - muchy, ~20mm	dis py (1%) qr-py veins (+cp)	
306	qtz + S ₂ min	C: 58-60° sm. kinks (⊥ LCA)					qr-py-cp		
308							308.5 - sil (2°) blotches, 309.2 (<15mm)	minor (<1%) sp in veinlets + diss	
310									
312									
314	313.4 (not defined at boundary)							decreased bleaching: darker grey-green colour	
316									
318								317.6 1-2% sp-cp-py in veinlets + 319.4 diss in v'lets	
320	CO vein, 10mm							transgressive increase in bleaching	
322	322.2 sil (1-2) 323.0	sm. kinks ⊥ to LCA						321.0 2-3% sp-gal-py-cp in veinlets (11%) + diss py	
324	chl assoc. with some veinlets								
326		C: 59-62°						325.2 325.4 2-3% sp-cp-py gal-po py veinlets + gal veinlets	
328	sil (1-2) in patches								
330									
332		331.6 (dips 68° to 267° AMG)							
334								1% py-sp-po in patches in veinlets & in thin veinlets // fol.	
336		C: 65°							
338								minor diss py	
340									
342								341 2-3% py-po-cp-sp diss + diss in veinlets // fol	
344								342.4 minor - 1% py-sp, diss + diss along fol. 344.9 po veinlets 345.3 py-cp-cp-sp veinlets (CO + chl)	
346		C: 55° 346.7 (10mm) f						min. assoc with fault movement - sp band on upper contact - py in veinlet & diss within the bleached, well defined fault zone	
348	weaker cleavage (less defined) below fault							348.5 (not defined boundary) 349 1% py (diss)	
350									

P. 10

Project: Sterling River

Logged by: NKM

Date: 1-6-95

PASMINCO EXPLORATION DIAMOND DRILL LOG

HOLE No. SR2

754101

m	VEINING and ALTERATION (1 = weak, 4 = intense)	STRUCTURE b = bedding c = cleavage f = fault Angles to LCA	GRAPHIC LOG					LITHOLOGY	MINERALISATION
			0.05 mm	0.1 mm	0.2 mm	0.5 mm	max mm		
350									
352								1% py (diss) mineral - diss + in micro-skinners // fol	
354									
356		C: 60°							
358								358.6 mineral sp veinlet	
360	CO (1-2) in veins Chl (1-2) " " sil (1-2) in patches	C: 60° (dips 72° 361.5 to 278° ANG)					359.8 361.6 Tuffaceous siltstone interflow zone (see below)	1-3% po-cp-dsp 7.5% in veins + diss in patches // fol	
362	Chl (2-3), pervasive & concentrated in whispy lenses // fol							mineral - 1% py-sp diss + diss along cleavage	
364	ser (1) in blebs (incl)								
366	CO (1) 2° + veinlets	C: 62°					367.6 EOH - mod foliated, unbroken		
368									
370									
372									
374									
376									
378									
380									

* Mid-dark grey siltized
tuffaceous zone
- chl-co banding along
cleavage (masks possible
visible bedding or grading)
- mid-light grey zones with
alteration to chl - darker
grey-green