

LEFROY JOINT VENTURE

Diamond Drill Core Log

Hole No. : L4

Date Started : 24th March 1999

Drilled by : Diamond Drilling (Tas.)

Date Completed : 14th April 1999

Logged by : J.G.Purvis

Collar

Northing : 5 448 074.04
Easting : 499 753.43
R.L. : 2168.82
Dip : -55
Bearing : 344.7 AMG

Hole Details

Final Depth : 202.5m
Hole Length : 202.5m
Core Size : HQ3

Purpose

To test Volunteer Reef and West Volunteer Reef Branch down plunge below the gold shoot at 1915m RL.

Summary Results

L4 aborted at 202.5m (90m short of target) due to excessive swing to the east. Hole cemented and recommenced at 110m as L4A using a chrome barrel.

From	To	Length	Description	Au	Ag	Cu	Pb	Zn	As	S
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Comments

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From	To	Unit	Code	DESCRIPTION	ALTERATION	STRUCTURE	VEINING	MINERALIZATION
0	13.0	SSH	sst	SANDSTONE & SHALE. Grey qtz-mica-lithic sst & grey shale. Some soft-sediment disruption with shale rip-ups in sst & vice-versa.	Mildly oxidized to 5m, leached & friable to base Sericite alt makes rocks soft & greasy.	Badly broken. Strong S1 cleavage //So 35-40/CA	Qtz veinlets at all angles to 4.5m. Qtz veins to 5cm 8.5-11.5m.	Limonite stains above 5m & trace dissem py below 5m.
13.0	73.2	SSH	bsh	STRONGLY CLEAVED GRAPHITIC BLACK SHALE. Minor thin sericitic siltstone interbeds. Minor oxidation on fract's at 71-73m may indicate old working in this vicinity.	Greasy due to sericite alt.	Very strong S1 & S2 cleavages. S1// or sub-// So, 50-60/CA except S1//CA 44-45m due to F2 fold. S2 20-30/CA, usually opp sense to S1. S2 microfolds So 46-49m. <i>Orientations: At 48.6m So/S1 45/ CA (dips 12 to 327 AMG), S2 25/ CA (dips 88 to 200 AMG); At 63m So 50/CA (dips 61 to 145 AMG), S1 40/CA (dips 73 to 215 AMG).</i> Badly broken at intervals, mainly above 46m due to numerous thin high-angle crush seams assoc with zones of stronger cleavage, eg: 13-16m; 28.7-31m; 35-46.5m (centred on intensely cleaved zone 41-47m assoc with F2 fold, with the principal fault at 44.5m. Basal contact abrupt (So) 60/CA.	Strong qtz-py veinlets in 10cm crush zone at 24.1m, 55/CA //S1. Abund qtz(+py) veinlets 43-46m in S1 in F2 fold axis, these cut through & fragmented by the faults (crush seams). 58.6-60.7m: abund qtz veins to 5cm // S1. 57.1m: 10cm qtz-veined shear 60/CA (//S1).	1-5% py (av 2-3%), dissem (bedded in places) & in small spotty or vein-like qtz-py segregations //S1 (these dismembered by S2). Occasional massive py nodules to 3.5 x 1.5cm (at 52.1m). 28.7m: 4cm py vein //S1 66.6m: 2cm py vein //S1
73.2	81.1	SSH	sit	SILTSTONE, SANDSTONE & SHALE. Altered & cleaved grey qtz-mica fine sst & siltstone, with interbeds of grey-black shale. Rock breaks easily along cleavage.	All rocks soft & greasy due to sericite>chlorite alt.	Strongly cleaved (S1//So, 50-60/ CA), with augen texture in places. Downhole-facing current bedding at 80m. Abrupt basal contact 60/CA, //S1.		73.2-75m: 2-3% py, in tiny qtz-ser segregations 75-75.5m: 3-5% py, in qtz-py veinlets all angles Below 75.5m: Trace py.

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From	To	Unit	Code	DESCRIPTION	ALTERATION	STRUCTURE	VEINING	MINERALIZATION
81.1	102.1	DFT	flt	MAJOR D2 FAULT ZONE (THRUST?) Major crush zones in qtz-mica sst with bands of grey-black partly graphitic shale. Much of interval comprises crumbly puggy cataclasite, graphitic in places. This interspersed with fractured & shattered zones with deformed (often folded) S1 cleavage. Faulting centred at 82.25-93.7m & 97-101m	Strongly sericitized.	Crushing (& ground conditions) worst 82.25-83.5m, 84.8-86.7m, 88-93.7m, 97-99.2m, 100.3-101.3m. Crush zones // & x-cut S1. Crush seam at 100.3m //S2 (40/CA). Strong cleavage: where not deformed by crushing, S1 50-60 /CA & S2 65/CA (opp sense to S1) Orientation at 96m: S1 50/CA (dips 10 to 010 AMG).	Numerous partly-broken qtz>ank veins (to 20cm & high angle to CA) in & around lower faulted zone (35% qtz 98-99.5m) 101-101.9m: set of qtz-ank veins to 4cm, <40/CA (orthogonal to S1). Only minor veining in the upper faulted zone & this largely broken up.	Minor dissem py (rarely in qtz or qtz-ank veins), except: 1-2% dissem py in shales at 94-95.3m & 99.6-101m.
102.1	120.2	SSH	sst	SANDSTONE, minor SILTSTONE & SHALE Grey cleaved qtz-mica sst with thin bands of siltstone & greasy grey-black shale. Rock is softish & breaks easily (moderately broken).	Fairly strong sericite-chlorite alt, with greasy white clay on cleavage & the numerous fract.	Strongly cleaved (some augen texture). S1 50-65/CA (//So). Shales have strong S2 25-50/CA in opp sense to S1. Up-hole fining grading in sst 104-107m. Several crush seams. Strongest faults assoc with F1 fold axis at 114.5m, comprising crush bands 114.1-114.35m & 114.8-115.1m, both //S1 65/CA. Basal contact abrupt 20/CA (cuts S1, same sense).	Qtz>chl-ank veins to 5cm in crush zone at 114.1-114.35m. Elsewhere, occasional ank veinlets & qtz-ank veins to 2.5cm, usually x-cutting S1.	Trace to minor dissem py, rarely in qtz veins. 1-2% py 115.2-116.2m in black shale band.
120.2	126.9	DFT	flt	MAJOR D2 FAULT In med gr grey qtz-mica sst with bands of black graphitic shale. Strongly deformed & folded S1 cleavage in shattered sst to 122.3m, below this a large puggy crush	Fairly strongly sericitized Some white clay on fractures.	Crushing 50-80/CA, strongly deforms S1 & in places also x-cuts the S2 cleavage visible in shales. At 126.8m: S1 68/CA, S2 50/CA in opp sense.	Numerous irreg micro-veinlets of ank or qtz in sst, little in shale.	Minor dissem py.

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From	To	Unit	Code	DESCRIPTION	ALTERATION	STRUCTURE	VEINING	MINERALIZATION
				zone in sst & shale, with small uncrushed intervals.		Basal contact abrupt, 80/CA.		
126.9	202.5	SSH	sst	SANDSTONE with bands of SHALE. Predominantly grey cleaved qtz-mica (+feld) sst, ranging from fine silty sst to coarse gr massive qtzose sst. Occasional bands of strongly cleaved grey & black shale, lesser siltstone. Ground conditions much better than those higher in the hole: rock is harder, less altered, fractured or faulted.	Weak to moderate chlorite>sericite alt, with chlorite strong in shales & sericite strongest in uppermost 10m. Alt weakens with depth below 165m.	Sst commonly forms graded beds to 1.5m thick, all facing uphole. Occasional current bedding in finer sst. Well-developed S1 cleavage //So weakening with depth below 165m S2 cleavage well-developed in shales. Angles: S1/So 45-70/CA averaging 58-65/CA. S2 25-45/CA, averaging 35-45/CA, all in opp sense to S1/So. Orientations: At 150m So/S1 65/CA (dips 27 to 263 AMG), S2 30/CA (dips 28 to 023 AMG); At 180m So/S1 63/CA (dips 8 to 040 AMG) Small F1 fold at 181.3m. Small D2 fault 85/CA at 184.3m.	Mildly veined: qtz-chlor veins //S1 to 15cm, & qtz-ank veins to 10cm (at 171.7m) orthog to S1 Occasional small faults assoc with zones of veining (post-date & crush the veins). 129.3m: 10cm laminated qtz-cb-graphite vein //S1 154.6-156.4m: Common post-cleavage qtz-chlor veins in chloritic shales with warped So/S1 & minor crush zones. Similar zone 177.5-178.9m.	Trace to minor dissem py, except: 131-132m: 1% py 156-157.5m: 1-2% py 164-165m: 1% py 174.6-176m: 1-2% py, coarsely cubic in sst. Qtz veins usually non-py
				END OF HOLE				

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Diamond Drill Core Log - Assays & Recoveries

Hole L4

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RECOVERIES						SAMPLING				ASSAYS (ppm)												
From	To	Interval	Recov'd	Recov'd	RQD	From	To	Int	Type	Ti	Zr	V	Nb	Rb	Y	Ba	Sr	Cr	Sn	W	P	
			(%)	(%)	(%)																	
43.8	44.9	1.1	0.95	86		19.15	19.65	0.5	Pyritic black shale	3180	155	188	15	161	23	1010	67	108	4	<10	560	
44.9	45.8	0.9	0.75	83		34.3	35.0	0.7	Pyritic black shale	2300	115	124	10	130	19	895	86	69	5	<10	315	
45.8	47.1	1.3	1.2	92		47.65	48.15	0.5	Pyritic black shale	3500	141	178	14	165	20	1060	115	110	4	<10	535	
47.1	48.6	1.5	1.5	100		65.6	66.1	0.5	Pyritic black shale	2620	113	134	10	135	15	835	38	66	4	<10	315	
48.6	49.6	1.0	0.95	95		156.5	157.2	0.7	Pyritic black shale	3200	125	251	12	199	30	690	62	160	3	<10	745	
49.6	51.0	1.4	1.4	100		78.75	79.25	0.5	Silty sandstone	3010	216	61	13	100	23	480	62	51	6	<10	480	
51.0	52.5	1.5	1.5	100		108.7	109.2	0.5	Fine sst > siltstone	3440	218	67	14	110	29	460	52	61	6	<10	575	
52.5	54.0	1.5	1.45	97		135.75	136.25	0.5	Qtzose sandstone	2060	258	33	8	56	23	220	133	36	4	<10	470	
54.0	54.9	0.9	0.9	100		153.5	153.9	0.4	Fine qtz-feld sst	3150	212	63	12	90	30	355	53	57	4	<10	735	
54.9	56.4	1.5	1.55	103		169.5	170.4	0.9	Coarse qtzose sst	2750	368	40	10	45	26	170	48	49	5	<10	545	
56.4	57.9	1.5	1.5	100		189.0	189.7	0.7	Silty sandstone	2500	309	35	10	58	24	215	55	40	5	<10	440	
57.9	59.4	1.5	1.45	97		199.0	199.7	0.7	Fine qtzose sst	3060	232	46	12	104	28	400	122	57	10	<10	615	
59.4	60.8	1.4	0.25	18		149.9	150.3	0.4	Grey shale & siltstone	4520	151	123	18	217	30	845	59	95	7	<10	395	
60.8	61.4	0.6	0.6	100		Laboratory: Analabs, Perth. Method:				X401	X401	X401	X401	X401	X401	X401	X401	X401	X401	X401	X401	X401
61.4	63.0	1.6	1.55	97		From	To	Int	Type	Ni	Co	Be	Sc	Th	Ta	Hf	B					
63.0	64.5	1.5	1.5	100																		
64.5	66.0	1.5	1.5	100		19.15	19.65	0.5	Pyritic black shale	42	20	2	8	<10	<20	<20	195					
66.0	67.5	1.5	1.5	100		34.3	35.0	0.7	Pyritic black shale	31	16	<2	10	<10	<20	<20	68					
67.5	69.0	1.5	1.5	100		47.65	48.15	0.5	Pyritic black shale	49	20	<2	13	<10	<20	<20	80					
69.0	70.0	1.0	0.7	70		65.6	66.1	0.5	Pyritic black shale	45	18	<2	11	<10	<20	<20	60					
70.0	71.5	1.5	1.5	100		156.5	157.2	0.7	Pyritic black shale	69	24	2	14	11	<20	<20	52					
71.5	73.0	1.5	1.3	87		78.75	79.25	0.5	Silty sandstone	25	9	<2	9	12	<20	<20	68					
73.0	74.5	1.5	1.4	93		108.7	109.2	0.5	Fine sst > siltstone	27	10	2	11	16	<20	<20	72					
74.5	75.7	1.2	1.1	92		135.75	136.25	0.5	Qtzose sandstone	12	<5	<2	5	12	<20	<20	60					
75.7	77.2	1.5	1.4	93		153.5	153.9	0.4	Fine qtz-feld sst	30	9	<2	10	17	<20	<20	76					
77.2	78.5	1.3	1.05	81		169.5	170.4	0.9	Coarse qtzose sst	15	6	<2	6	24	<20	<20	70					
78.5	80.0	1.5	1.4	93		189.0	189.7	0.7	Silty sandstone	14	6	<2	6	20	<20	<20	68					
80.0	81.5	1.5	1.5	100		199.0	199.7	0.7	Fine qtzose sst	23	9	<2	9	17	<20	<20	68					
81.5	83.0	1.5	1.25	83		149.9	150.3	0.4	Grey shale & siltstone	41	25	3	19	16	<20	<20	38					
83.0	84.0	1.0	0.8	80		Laboratory: Analabs, Perth. Method:				I104	I104	I104	I104	I104	I104	I104	I151					

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RECOVERIES						SAMPLING			ASSAYS (ppm)																					
From	To	Interval	Recov'd	Recov'd (%)	RQD (%)	From	To	Int																						
84.0	85.5	1.5	1.5	100																										
85.5	86.9	1.4	0.75	54																										
86.9	88.4	1.5	1.3	87																										
88.4	89.9	1.5	0.85	57																										
89.9	91.1	1.2	1.0	83																										
91.1	92.6	1.5	0.85	57																										
92.6	93.9	1.3	1.1	85																										
93.9	95.1	1.2	1.2	100																										
95.1	96.0	0.9	0.9	100																										
96.0	97.1	1.1	0.7	64																										
97.1	98.3	1.2	1.0	83																										
98.3	99.2	0.9	0.95	106																										
99.2	100.7	1.5	1.5	100																										
100.7	102.0	1.3	1.1	85																										
102.0	103.4	1.4	1.4	100																										
103.4	104.9	1.5	1.5	100																										
104.9	106.4	1.5	1.45	97																										
106.4	107.2	0.8	0.75	94																										
107.2	108.7	1.5	1.5	100																										
108.7	110.2	1.5	1.45	97																										
110.2	111.0	0.8	0.55	69																										
111.0	112.5	1.5	1.55	103																										
112.5	113.9	1.4	1.3	93																										
113.9	115.2	1.3	1.1	85																										
115.2	116.7	1.5	1.45	97																										
116.7	118.2	1.5	1.55	103																										
118.2	119.6	1.4	1.05	75																										
119.6	121.1	1.5	1.5	100																										
121.1	122.6	1.5	1.5	100																										
122.6	124.1	1.5	1.45	97																										

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RECOVERIES					SAMPLING			ASSAYS (ppm)															
From	To	Interval	Recov'd	Recov'd RQD	From	To	Int																
			(%)	(%)																			
124.1	125.6	1.5	1.25	83																			
125.6	127.1	1.5	1.5	100																			
127.1	128.5	1.4	1.2	86																			
128.5	130.0	1.5	1.45	97																			
130.0	131.5	1.5	1.25	83																			
131.5	133.0	1.5	1.5	100																			
133.0	134.5	1.5	1.45	97																			
134.5	136.0	1.5	1.6	107																			
136.0	137.5	1.5	1.5	100																			
137.5	139.0	1.5	1.55	103																			
139.0	140.5	1.5	1.45	97																			
140.5	142.0	1.5	1.55	103																			
142.0	143.5	1.5	1.5	100																			
143.5	145.1	1.6	1.6	100																			
145.1	146.7	1.6	1.5	94																			
146.7	148.3	1.6	1.55	97																			
148.3	149.8	1.5	1.55	103																			
149.8	151.3	1.5	1.5	100																			
151.3	152.8	1.5	1.45	97																			
152.8	154.3	1.5	1.5	100																			
154.3	155.9	1.6	1.4	87																			
155.9	157.4	1.5	1.55	103																			
157.4	159.0	1.6	1.55	97																			
159.0	160.5	1.5	1.5	100																			
160.5	162.0	1.5	1.55	103																			
162.0	163.5	1.5	1.45	97																			
163.5	165.0	1.5	1.5	100																			
165.0	166.5	1.5	1.5	100																			
166.5	168.0	1.5	1.45	97																			
168.0	169.5	1.5	1.5	100																			

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RECOVERIES						SAMPLING			ASSAYS (ppm)																		
From	To	Interval	Recov'd	Recov'd	RQD	From	To	Int																			
			(%)	(%)	(%)																						
169.5	170.4	0.9	0.85	94																							
170.4	171.8	1.4	1.35	96																							
171.8	173.3	1.5	1.5	100																							
173.3	174.8	1.5	1.5	100																							
174.8	176.3	1.5	1.6	107																							
176.3	177.8	1.5	1.45	97																							
177.8	179.3	1.5	1.5	100																							
179.3	180.0	0.7	0.8	114																							
180.0	181.5	1.5	1.4	93																							
181.5	183.0	1.5	1.45	97																							
183.0	184.5	1.5	1.5	100																							
184.5	186.0	1.5	1.45	97																							
186.0	187.5	1.5	1.55	103																							
187.5	189.0	1.5	1.45	97																							
189.0	190.5	1.5	1.55	103																							
190.5	192.0	1.5	1.5	100																							
192.0	193.5	1.5	1.5	100																							
193.5	195.0	1.5	1.6	107																							
195.0	196.5	1.5	1.5	100																							
196.5	198.0	1.5	1.4	93																							
198.0	199.5	1.5	1.55	103																							
199.5	201.0	1.5	1.45	97																							
201.0	202.5	1.5	1.55	103																							
EOH																											

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