LEFROY JOINT VENTURE

Diamond Drill Core Log

Hole No. : L3

Date Started	:	23rd February 1999	**Drilled by**	:	Diamond Drilling (Tas.)
Date Completed	:	17th March 1999	**Logged by**	:	J.G.Purvis

Collar

Northing	:	5 448 129.85
Easting	:	499 811.98
R.L.	:	2172.47
Dip	:	-57.75
Bearing	:	350 (AMG)

Hole Details

Final Depth	:	232m
Hole Length	:	232m
Core Size	:	HQ3

Purpose To test original target of hole L1, on the Volunteer Reef between 7 & 8 levels in the old Volunteer Mine.

Summary Results Hole passed through planned target point. Volunteer Reef Fault intersected 189.6 - 201.15m, but no quartz reef present.

From	To	Length	Description	Au	Ag	Cu	Pb	Zn	As
182.95	183.55	0.6	Mineralized fault: shale pug, 2% py-aspy & qtz-aspy veins to 10cm	2.02	<1	23	19	80	5400
194.65	195.6	0.95	Best result in Volunteer Reef Fault: puggy cataclasite, rare qtz veins	0.30	<1	33	31	130	915

Comments All casing withdrawn. 3m HQ rod with steel cap left in top of hole.

LEFROY JOINT VENTURE

Diamond Drill Core Log - Down Hole Survey Data

Hole Number **L3**

Depth	Dip	Brg (A.M.G.)	From	To	Length	Sin.Dip	Vertical Difference	R.L.	Cos.Dip	Horizontal Difference	Cos.Brg	Diff. N	Northing	Sin.Brg	Diff. E	Easting
Collar																
0	-57.7	350	0	7.5	7.5	-0.85	-6.34	-6.34	0.53	4.01	0.98	3.95	3.95	-0.17	-0.70	-0.70
15	-58.0	350	7.5	22.5	15	-0.85	-12.72	-19.06	0.53	7.95	0.98	7.83	11.77	-0.17	-1.38	-2.08
30	-58.0	349	22.5	38.25	15.75	-0.85	-13.36	-32.42	0.53	8.35	0.98	8.19	19.97	-0.19	-1.59	-3.67
46.5	-59.7	350.5	38.25	58.25	20	-0.86	-17.27	-49.68	0.50	10.09	0.99	9.95	29.92	-0.17	-1.67	-5.33
70	-59.7	350	58.25	80.4	22.15	-0.86	-19.12	-68.81	0.50	11.18	0.98	11.01	40.93	-0.17	-1.94	-7.27
90.8	-60.0	348	80.4	98.85	18.45	-0.87	-15.98	-84.79	0.50	9.23	0.98	9.02	49.95	-0.21	-1.92	-9.19
106.9	-60.3	352.5	98.85	113.5	14.65	-0.87	-12.73	-97.51	0.50	7.26	0.99	7.20	57.15	-0.13	-0.95	-10.14
120.1	-60.5	351	113.5	129.8	16.3	-0.87	-14.19	-111.70	0.49	8.03	0.99	7.93	65.07	-0.16	-1.26	-11.40
139.5	-62.5	354	129.8	152.8	23	-0.89	-20.40	-132.10	0.46	10.62	0.99	10.56	75.63	-0.10	-1.11	-12.51
166.1	-65.3	355.5	152.8	175.3	22.5	-0.91	-20.44	-152.54	0.42	9.40	1.00	9.37	85.01	-0.08	-0.74	-13.24
184.5	-68.3	356.5	175.3	199.8	24.45	-0.93	-22.72	-175.26	0.37	9.04	1.00	9.02	94.03	-0.06	-0.55	-13.80
215	-69.0	356	199.8	223.5	23.75	-0.93	-22.17	-197.43	0.36	8.51	1.00	8.49	102.52	-0.07	-0.59	-14.39
232	-69.3	356.5	223.5	116	-107.5	-0.94	100.56	-96.87	0.35	-38.00	1.00	-37.93	64.59	-0.06	2.32	-12.07

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From	To	Description	Unit	Code	From	To	Int	Rec	Rec (%)	Assays (ppm) From	To	Int	Au	Au ®	Cu	Pb	Zn	Ag	As
0.0	5.5	TRICONED - NO CORE.	OPN	nil	0.0	5.5	5.5	0.00	0										
					5.5	8.5	3.0	1.4	47										
5.5	17.0	SILTSTONE, SANDSTONE & greasy BLACK SHALE.	SSH	slt	8.5	11.5	3.0	1.0	33										
		Qtz-mica siltst/sst, grey and sericitic. Oxidized to 8m.			11.5	14.5	3.0	2.0	67										
		Broken by common high-angle faults, strongest 8.2-8.5m			14.5	18.5	4.0	1.5	38										
		11.2-11.5m, 14.3-15m & 16.5-17m (latter with 10cm of			18.5	20.0	1.5	0.35	23										
		puggy cataclasite). Sericite alteration strongest in faults			20.0	22.5	2.5	0.95	38										
		Rare veining: vein qtz frags in faults at 15m & 17m. So			22.5	23.1	0.6	0.4	67										
		(/CA): 55 at 6m, 65 at 14m, 80 at 16.7m. S1 cleavage //			23.1	24	0.9	0.65	72										
		So at 8.6m & 25/CA (same sense as So) at 13.8m. Down			24.0	25.5	1.5	1.5	100										
		hole facing in siltst at 11m. Minor dissem & fracture py.			25.5	27.0	1.5	1.35	90										
					27.0	28.4	1.4	1.4	100										
17.0	46.3	BLACK SHALE. Graphitic, pyritic & cleaved. Minor thin	SSH	bsh	28.4	33.0	4.6	4.4	96										
		sericitic siltst beds. Generally fractured & broken. So			33.0	34.8	1.8	1.8	100										
		(/CA): 55 to 34m, 30 at 38.5m, 45 at 43.3m. Strong S1			34.8	37.0	2.2	2.1	95										
		cleavage //So & weak spaced S2 cleavage (25 at 39m,			37.0	39.7	2.7	2.6	96										
		in opposite sense to S1). *Orientation at 37m: So 35/CA*			39.7	42.6	2.9	2.9	100										
		(dips 25 to 017 AMG),S1 50/CA (dips 9 to 350 AMG).			42.6	43.8	1.2	0.9	75										
		Uphole-fining grading at 36m & 38m. Small-scale folding			43.8	45.0	1.2	1.1	92										
		& warping of So, increasing below 30m & strongest			45.0	46.5	1.5	0.5	33										
		around major fault on basal contact at 44.5-46.3m. Rare			46.5	48.0	1.5	1.35	90										
		qtz veining: zone of qtz net-veining at 18.5-19m & 1.5cm			48.0	49.8	1.8	0.5	28										
		qtz-py vein at 31.5m. 2-3% dissem py, often in qtz-py			49.8	51.0	1.2	0.9	75										
		segregations as tiny 'spots' or poddy vein-like stringers			51.0	52.5	1.5	1.2	80										
		along So/S1 -latter contain several slugs of massive py			52.5	54.0	1.5	0.85	57										
		(largest: 6cm x 1.5cm at 30.2m).			54.0	55.5	1.5	0.55	37										
					55.5	57.0	1.5	1.05	70										
46.3	93.0	FAULTED SILTSTONE, SANDSTONE & SHALE: (D2	DFT	flt	57.0	58.5	1.5	0.7	47										
		THRUST ZONE?) Strongly cleaved grey sericitic qtz-			58.5	59.7	1.2	1.0	83										
		mica siltst-sst & grey-black greasy shale, with extensive			59.7	60.7	1.0	0.6	60										
		cleavage-// intervals of strong crushing & shattering.			60.7	61.7	1.0	0.85	85										

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From	To	Description	Unit	Code	From	To	Int	Rec	Rec (%)	Assays (ppm) From	To	Int	Au	Au ®	Cu	Pb	Zn	Ag	As
		Strongest crush zones at 48-54m & 87.6-93m, also			61.7	63.0	1.3	0.4	31										
		61.6-65m & 67.7-69.4m, with many others <1m. Crush			63.0	64.2	1.2	1.1	92										
		zones at 80-80.7m & 87.6-93m disrupt S1 cleavage &			64.2	64.9	0.7	0.6	86										
		are D2 structures (the others may be).Common slicken-			64.9	66.0	1.1	1.05	95										
		sides on foliation planes & augen texture in places. All			66.0	67.8	1.8	0.9	50										
		rocks greasy & softened by sericite-chlorite alteration			67.8	68.9	1.1	1.4	127										
		(strongest in faulted zones). Angles (/CA): at 54m So/			68.9	69.4	0.5	0.45	90										
		S1 60 (weak S2 25 in opp sense); at 67.7m So/S1 50			69.4	70.6	1.2	0.95	79										
		(S2 35 opp sense); at 78m S1 40; at 82.2m S1 55 (S2			70.6	71.7	1.1	1.0	91										
		30 opp sense). Uphole-fining grading at 72.1m.			71.7	72.6	0.9	0.85	94										
		Orientation: at 66m So/S1 35, dips 86 to 318 AMG.			72.6	73.6	1.0	1.0	100										
		Occasional veins & veinlets of qtz (+ cb-chlorite), most			73.6	74.9	1.3	0.7	54										
		assoc with crush zones & broken up. At 58.6-59m: qtz-			74.9	75.9	1.0	0.9	90										
		ankerite veinlet swarm 20/LCA in opp sense to So. 80-			75.9	77.4	1.5	1.5	100										
		82m: several qtz veins to 7cm thick. 86.3-86.6m: 30cm			77.4	79.0	1.6	1.4	88										
		qtz-chlorite vein //S1. 89-89.2m: 3 high-angle qtz-chlor>			79.0	79.6	0.6	0.65	108										
		cb veins to 10cm. Trace to 1% dissem py, best in shale.			79.6	81.0	1.4	1.4	100										
		Basal contact 90/LCA - lower margin of basal fault.			81.0	82.5	1.5	1.5	100										
					82.5	84.0	1.5	1.5	100										
93.0	146.9	SILTY SANDSTONE with SHALE bands. Strongly cleaved	SSH	sst	84.0	85.3	1.3	1.1	85										
		grey fine qtz-mica sericitic sst with common bands of grey-			85.3	86.9	1.6	1.45	91										
		black greasy highly chloritic or graphitic shale.			86.9	87.7	0.8	0.7	88										
		139-146m: sst slightly calcareous with flecked texture -			87.7	89.2	1.5	1.35	90										
		bioturbation? Ground conditions much better than in unit			89.2	90.8	1.6	1.5	94										
		above with only mild breaking & no crushing. Chlorite-			90.8	92.3	1.5	1.35	90										
		sericite alteration, with greasy white clay on foliation in			92.3	93.8	1.5	1.5	100										
		places, but alteration & cleavage weaker than in unit above.			93.8	95.3	1.5	1.5	100										
		Angles (/CA): At 104.5m So/S1 55, S2 25 in opp sense;			95.3	96.8	1.5	1.4	93										
		At 111m So 60, S1 50, S2 25 (opp sense); At 126m So/S1			96.8	98.4	1.6	1.5	94										
		60, S2 20 (same sense); At 140m S1 55.			98.4	99.9	1.5	1.5	100										
		Orientations: At 94m So 50 (dips 10 to 298 AMG), S1 42			99.9	101.4	1.5	1.45	97										
		(dips 18 to 268 AMG); At 135m So/S1 63 (dips 48 to 140			101.4	103.0	1.6	1.55	97										
		AMG), S2 25 (dips 87 to 240 AMG).			103.0	104.5	1.5	1.5	100										

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		Uphole-fining grading: 95m, 101.6m, 111-112m & 132m.			104.5	105.7	1.2	1.05	88										
		Common qtz-chlor or qtz-cb (rare ankerite) veins, former			105.7	106.9	1.2	1.2	100										
		//So/S1 & hosted by deformed shales, latter orthogonal			106.9	108.0	1.1	1.05	95										
		to S1. Veins most numerous 115-139m, to 25cm wide			108.0	109.4	1.4	1.4	100										
		at 133.6m. 105.4-106m: qtz-cb vein 30/CA with 40%			109.4	110.9	1.5	1.5	100										
		rock frags. Minor dissem py, locally 1-2% in shales			110.9	112.4	1.5	1.5	100										
		(eg: 116-121m, in deformed qtz-veined graphitic shale).			112.4	113.9	1.5	1.5	100										
					113.9	115.5	1.6	1.55	97										
146.9	189.6	SILTY SANDSTONE, SHALE BANDS & OCCASIONAL	SSH	sst	115.5	117.0	1.5	1.45	97										
		FAULTS. Sericitic qtz-mica-feld-lithic sst with bands of			117.0	118.5	1.5	1.5	100										
		greasy grey-black chloritic shale. Less shale at depth as			118.5	120.0	1.5	1.45	97										
		grainsize increases. Uphole-fining grading at 170m &			120.0	121.1	1.1	1.05	95										
		177m. Sericite-chlorite alteration stronger than above,			121.1	122.6	1.5	1.45	97										
		with white clay on fractures. Cleavage stronger, with augen			122.6	124.1	1.5	1.45	97										
		texture in places & strong S2. Angles (/CA): At 151m S1			124.1	125.6	1.5	1.45	97										
		55; at 158m So/S1 55, S2 50 (same sense); At 166m So/			125.6	126.5	0.9	0.85	94										
		S1 50, S2 30 (similar sense); At 174m & 186m S1 70.			126.5	128.0	1.5	1.45	97										
		Orientation at 162m: So/S1 59 (dips 58 to 157 AMG).			128.0	129.0	1.0	1.15	115										
		Broken at intervals by thin faults, crush seams & fracts //			129.0	130.5	1.5	1.55	103										
		CA. Faults typically high-angle, either cut or deform S1 (ie:			130.5	132.0	1.5	1.4	93										
		are D2), with zones to 0.5m of puggy cataclasite or			132.0	133.5	1.5	1.45	97										
		shattering flanked by intervals to 2m with occasional			133.5	135.0	1.5	1.5	100										
		crush seams & qtz-chlor veins. Strongest faults: 146.85-			135.0	136.5	1.5	1.4	93										
		147.35m (35/CA); 155.2-156.1m(55/CA, x-cuts So/S1 at			136.5	138.0	1.5	1.45	97										
		top contact of 20cm qtz vein 75/CA); 172.7m (20cm pug).			138.0	139.5	1.5	1.55	103										
		MINERALIZED FAULT 65-80/CA at 182.95-183.5m: 0.4m			139.5	141.0	1.5	1.5	100	182.95	183.55	0.6	2.00	2.05	23	19	80	<1	5400
		shale pug (2% py-aspy & broken qtz-ank veinlets), with			141.0	142.5	1.5	1.4	93										
		10cm qtz-aspy vein-bx at top & 4cm qtz-aspy vein at base.			142.5	144.0	1.5	1.45	97										
		Common qtz-chlor-cb (minor ankerite) veining to 20cm			144.0	145.5	1.5	1.55	103										
		thick, largest sub-// S1 & assoc with faults: 15cm qtz vein			145.5	147.0	1.5	1.45	97										
		at 167.2m; qtz-chlor-ank vein 20/CA at 168-168.3m; ank			147.0	148.5	1.5	1.45	97										
		veinlets 5/CA 176-176.3m; qtz-ank veinlets 183.6-184.2m.			148.5	150.0	1.5	1.5	100										
		Minor dissem pyrite, rare in qtz veins. 1-2% py in shales			150.0	151.5	1.5	1.5	100										

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		158-159m & 186.6-187.6m. Abrupt basal contact along			151.5	153.0	1.5	1.45	97										
		S1, 60/CA. Sst graphitic in basal 3m.			153.0	154.5	1.5	1.55	103										
					154.5	155.9	1.4	1.2	86										
189.6	201.15	VOLUNTEER REEF FAULT.	DRF	flt	155.9	157.5	1.6	1.4	88										
		Major D2 zone of crushing & shattering in very strongly			157.5	158.7	1.2	1.05	88	189.6	191.15	1.55	<0.01		29	17	61	<1	13
		cleaved & sericite>chlorite altered grey sandstone with			158.7	160.2	1.5	1.5	100	191.15	192.45	1.3	<0.01		14	16	58	<1	5
		minor black shale. Minor qtz veins & disseminated py.			160.2	161.7	1.5	1.55	103	192.45	193.4	0.95	<0.01	<0.01	54	26	191	<1	5
		Much of zone is puggy cataclasite with disorientated			161.7	163.2	1.5	1.5	100	193.4	194.65	1.25	<0.01		11	18	39	<1	<1
		cleaved frags. Abrupt contacts along warped So/S1:			163.2	164.6	1.4	1.4	100	194.65	195.6	0.95	0.3	0.3	33	31	130	<1	915
		upper 60/CA, lower 85/CA with graphitic slickensides.			164.6	165.9	1.3	1.3	100	195.6	196.6	1.0	<0.01		33	22	262	<1	8
		Details: 189.6-191.15m:			165.9	167.2	1.3	1.35	104	196.6	197.6	1.0	<0.01		12	21	52	<1	<1
		20cm fault at top with vein qtz frags & minor py, then 10cm			167.2	168.0	0.8	0.6	75	197.6	198.6	1.0	<0.01	<0.01	15	21	53	<1	<1
		qtz-chlor vein 35/CA with 50cm core lost at lower margin			168.0	169.5	1.5	1.5	100	198.6	199.6	1.0	<0.01		12	15	52	<1	2
		(prob pug). Rest badly broken sst with crush seams &			169.5	171.0	1.5	1.45	97	199.6	200.6	1.0	<0.01	<0.01	50	24	100	<1	34
		10cm qtz-chlor vein (60/CA, minor py) at 190.9m.			171.0	172.5	1.5	1.5	100	200.6	201.15	0.55	0.04	0.04	26	22	109	<1	49
		191.15-192.45m:			172.5	174.0	1.5	1.25	83	201.15	202	0.85	0.05	0.05	14	11	57	<1	14
		Weakly fract sst with minor graphitic content & trace py.			174.0	174.6	0.6	0.6	100										
		192.45-193.4m:			174.6	176.1	1.5	1.4	93										
		Altered & graphitic crush zone. Numerous broken qtz-			176.1	177.6	1.5	1.6	107										
		chlor veins to 5cm. 1% py in crushed rock, trace in qtz.			177.6	179.1	1.5	1.4	93										
		193.4-194.65m:			179.1	180.0	0.9	0.95	106										
		Strongly altered fract sst, cleaved 50/CA, trace py.			180.0	181.2	1.2	1.2	100										
		Much greasy white clay on fracts.			181.2	182.7	1.5	1.55	103										
		194.65-200.6m:			182.7	183.4	0.7	0.55	79										
		Intensely crushed zone: puggy cataclasite. Small intervals			183.4	184.5	1.1	1.1	100										
		of highly shattered regularly-cleaved sst. Some crushed			184.5	186.0	1.5	1.5	100										
		graphitic shale above 196.3m & below 199.6m otherwise			186.0	186.3	0.3	0.3	100										
		highly sericitic>>chloritic. Shearing 40-60/CA. So/S1 70/			186.3	187.5	1.2	1.1	92										
		CA at 196.2m, S1 85/CA at 198.8m. Rare broken qtz-ank			187.5	189.0	1.5	1.5	100										
		veins to 3cm. Minor py, to 1% in graphitic sections.			189.0	190.5	1.5	1.0	67										
		200.6-201.15m:			190.5	191.2	0.7	0.75	107										
		Fractured sericitic sst, minor py.			191.2	192.0	0.8	0.8	100										
		10cm crush zone at base.			192.0	193.2	1.2	1.15	96										

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201.15	232.0	Grey fine SILTY SANDSTONE, SILTSTONE & bands of	SSH	slt	193.2	194.4	1.2	1.2	100										
		GREY-BLACK SHALE. Qtz-mica sst to 209.5m & below			194.4	195.0	0.6	0.55	92										
		229.7m, elsewhere dominantly siltst & shale. Sst at			195.0	196.2	1.2	1.25	104	210	211	1.0	<0.01	<0.01	46	13	190	<1	36
		208-209.5m has markings suggestive of bioturbation.			196.2	197.5	1.3	1.15	88										
		Some shales graphitic & pyritic, others greenish &			197.5	198.7	1.2	1.0	83	215.6	216.4	0.9	<0.01	<0.01	18	14	50	<1	75
		strongly chloritic. Moderate chlor-sericite alteration as			198.7	199.9	1.2	1.2	100										
		above Volunteer Reef Fault, with chlor locally strong in			199.9	201.1	1.2	0.9	75	226.5	227.7	1.2	<0.01		30	23	94	<1	<1
		shales, esp those with qtz veins. Weak carbonatization			201.1	202.4	1.3	1.15	88										
		of sst. Ground conditions good - some breaking along			202.4	203.5	1.1	1.15	105										
		foliation esp in finer-grained rocks. Moderate to strong			203.5	205.0	1.5	1.6	107										
		S1 cleavage //So, increasing in strength towards base -			205.0	206.5	1.5	1.45	97										
		some augen texture below 229.5m. S2 cleavage in the			206.5	208.0	1.5	1.5	100										
		opp sense is stronger than before (poss due to increase			208.0	209.5	1.5	1.5	100										
		in finer-grained rocks). Angles (/CA): at 204m S1 73; at			209.5	211.0	1.5	1.45	97										
		210m So/S1 65; at 219m & 226m So/S1 70, S2 15 (in opp			211.0	212.5	1.5	1.5	100										
		sense to S1). *Orientation: At 215.5m, So 56 (dips 51 to*			212.5	214.0	1.5	1.45	97										
		159 AMG), S1 63 (dips 57 to 190 AMG). Occasional qtz			214.0	215.5	1.5	1.5	100										
		veins (with minor cb-chlor, trace ankerite & py), usually			215.5	217.0	1.5	1.45	97										
		either orthogonal to So/S1 or sub-//CA. Largest veins:			217.0	218.5	1.5	1.55	103										
		215.65-216.4m (strong irreg poddy qtz-cb-chlor vein with			218.5	220.0	1.5	1.5	100										
		minor py, 5-10/CA & to +7cm wide); 220.3-220.55m			220.0	221.5	1.5	1.45	97										
		(25cm qtz-chlor-cb vein, trace py, 60/CA, //S1); 226.5-			221.5	223.0	1.5	1.55	103										
		227.7m (2cm qtz-ank vein //CA).			223.0	224.5	1.5	1.5	100										
		Trace to minor dissem py, except: 209.5-212.6m 1-2% py			224.5	226.0	1.5	1.5	100										
		dissem in shales; 217.7-218.5m 2-3% bedded dissem			226.0	227.5	1.5	1.5	100										
		py in graphitic shale 223-226m 1% py in siltst.			227.5	229.0	1.5	1.5	100										
		Aspy on fract with ankerite veinlets at 201.3m. Minor aspy			229.0	230.5	1.5	1.5	100										
		in 1cm qtz-ank vein 50/CA (opp sense to S1) at 210.5m.			230.5	232.0	1.5	1.5	100										
		END OF HOLE																	
					Laboratory: Analabs, Cooee.							Method:	F650	F650	A102	A102	A102	A102	H102

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