HOLE NO. . FTD1 | PLUTONIC OPERATIONS LIMITED | Page: 1

SECTION : 2580.00 EAST | GOWRIE PARK | 974037

DIAMOND DRILL RECORD

Northing : 4964.00
Easting : 2580.00
Grid : FIRE TOWER
Direction : GRID S
Inclination : -45.0
Elevation : 10004.00
Azimuth : 180.0
Mag Azimuth : 161.5 164.5 165.5 166.5; OM=12.5T OR 18.5G
Length (m) : 145.00
Precol. (m) : 2.8
BOCO : 1.0 m
TFR : 6.0 m
Water Table : N/A

Drill Type :LY38
Core Size :HQ 2.8 NQ
Contractor :LONGYEAR

Dip Tests Method: EASTMAN

Depth	Az	Dip
49.0	183.0	-44.7
100.0	184.0	-44.4
145.0	185.0	-44.1

Property : FIRE TOWER
State : Tasmania
GMR : GOG 4440
E.L. No. : GOWRIE PARK
Project No. : 706
Date Started : 13/11/1992
Date Completed: 15/11/1992
Logged by : G. MacDONALD
Relogged by :
Date Logged : 16/11/1992
Interpreted : G. MacDONALD

Initialled

From (m)	To (m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppm)
.00	2.80	PRECOLLAR					
2.80	12.15	PELITE Pale grey to grey, finely bedded siltstones with beds from 1 to 20mm thick. Bedding is at 50 to 60 degrees to the core axis throughout. Individual beds show grading indicating an uphole, ie northerly facing. The beds contains occasional minor soft sediment micro fractures sub-parallel to the core axis. The lower contact with the underlying rock is gradational. The rock contains numerous fine brittle style fractures. These are generally sub-parallel to sub-perpendicular to banding. Fractures are moderately manganese stained and generally with narrow Fe oxide selvedges. Fractures are consistently spread throughout the core with the more strongly fractured and veined patches from 2.80 to 3.00, 5.35 to 5.45, 6.00 to 6.15 and 8.40 to 8.50 m. Generally the fractures are oxidised but from 6.00 to 6.15 m the rock contains a fine vein, 1 to 2 mm wide and attenuated with occasional fresh pyrite in patches, oxidising. The vein is at 40 degrees to the core axis.	S00001 S00002 S00003 S00004 S00005 S00006 S00007 S00008 S00009 S00010	2.80 4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 12.00	4.00 5.00 6.00 7.00 8.00 9.00 10.00 11.00 12.00 13.00	1.20 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	<.01 <.01 <.01 <.01 <.01 <.01 <.01 <.01 <.01 <.01
12.15	16.50	PSAMMITE FINE GRAINED, QUARTZ FELDSPAR RICH SANDSTONE / SILTSTONE. Tan massive to weakly bedded fine grained sandstone to siltstone. Bedding, where visible, is at 50 degrees to the core axis at 13.00 and 60 degrees to the core axis at 15.90 From 12.80 to 13.00 there are occasional irregular clasts of grey siltstone. The lower contact with the underlying coarser quartz feldspar rich rock is sharp, unsheared and irregular. The rock contains slightly less oxidised brittle style fractures than the overlying siltstone. These fractures are spread evenly throughout the core and are irregularly oriented though sub - parallel to the core axis and 40 to 50 degrees to the core axis are common orientations. Manganese staining of fractures is not common though more diffuse manganese staining of the rock is. From 14.85 to 16.20 there is only 70% recovery, apparently coinciding with the rock immediately preceding	S00011 S00012 S00013 S00014	13.00 14.00 14.85 16.20	14.00 14.85 16.20 17.00	1.00 .85 1.35 .80	<.01 <.01 <.01 <.01

From (m)	To (m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppm)
		16.20m where the rock is brecciated adjacent to a gossanous quartz vein at 45 degrees to the core axis. The most strongly veined patch is from approximately 15.80 to 16.50.					
16.50	17.10	PSAMMITE COARSE GRAINED, IMMATURE, QUARTZ FELDPSAR RICH SANDSTONE. This rock has some gross similarities to an intrusive based on the apparently euhedral nature of the fsp, albeit strongly weathered, however the rocks immediately adjacent to the contact show no quenching or associated silicification and the irregular nature of the upper contact can be explained by scouring. A similar unit is intersected in GP-90-2 and probably GP-90-5 where it lies near the top of the upper volcaniclastic, near to the contact with the hanging wall sediments. The rock is a mottled pale grey and orange due to the 1mm quartz and weathered feldspar respectively. The rock is massive and is cross-cut by two quartz carbonate haematite veins at 70 degrees to the core axis and also by some more diffuse manganese stained, discontinuous, irregularly oriented veins, possibly after pyrite. The lower contact is in broken core but is apparently parallel to the bedding in the underlying siltstones at 35 degrees to the core axis. The lower contact is almost certainly conformable.	S00015	17.00	19.40	2.40	<.01
17.10	23.70	PELITE GREY INTERBEDDED SILTSTONES. Grey siltstone, similar to but not a repetition of the siltstone from 2.80 to 12.15. The rock consists of fine beds of pale grey and dark grey siltstones 1 to 5mm thick and at 40 degrees to the core axis to 21.20. Below 21.20 the rock is dark grey throughout but with moderate bedding at 40 degrees to the core axis. From 22.05 to 22.15 there is a ductile shear zone at 50 degrees to the core axis with elongated fragments of siltstone in a slightly paler siltstone matrix. From 17.10 to 21.20 soft sediment micro-fractures are visible sub-perpendicular to the bedding. From 17.70 to 17.90 the rock is strongly oxidised. The rock contains fine irregularly oriented haematitic fractures and broader gossanous quartz carbonate haematite (after pyrite) veins /patches. The latter are from 19.00 to 19.40, 20.80 to 21.00 and 23.20 to 23.25. Fresh pyrite is visible in a number of places; as very minor attenuated veinlets in broken core from 19.00 to 19.40 ; as very minor disseminations and fine attenuated veinlets from 19.40 to 20.80 ; approximately 0.5% in clots and attenuated veinlets associated with quartz carbonate haematite veining from 20.80 to 21.00 ; approximately 0.5% from 21.00 to 21.60 as fine grained disseminations and irregularly oriented attenuated veinlets ; 1% from 21.60 to 21.80 as fine veinlets and veins to 2mm thick generally parallel to bedding at 45 degrees to the core axis ; 0.5% from 21.80 to 22.80 as disseminations and fine attenuated veins ; 1% from 22.80 to 23.00 in oxidised veins parallel to moderate foliation at 35 degrees to the core axis and 0.5% from 23.00 to	S00016 S00017 S00018 S00019	19.40 21.00 22.00 23.00	21.00 22.00 23.00 24.00	1.60 1.00 1.00 1.00	<.01 <.01 <.01 .04

From (m)	To (m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppm)
		23.60 in disseminations and fine attenuated veinlets. From 23.60 to 23.70 are occasional oxidised veins after pyrite. The lower contact with the underlying volcaniclastic unit is marked by 10cm of moderate quartz sericite ferruginous carbonate pyrite alteration with strong manganese staining.					
23.70	49.20	VOLCANICLASTIC					
		Beige green, massive to moderately foliated, weak to moderately quartz, sericite and carbonate altered rock consisting of quartz and sericitized feldspar phenocrysts and apple green flattened pumiceous clasts and other occasional lithics, predominantly dark grey siltstones in a fine grained matrix. It it is this rock which hosts the bulk of the mineralization in the short holes GP-90-1 to 17. From 23.70 to 26.10 the rock contains only minor oxidised patches, from 26.10 to 33.25 the rock is moderately oxidised throughout and from 33.25 to 39.90 the rock contains negligible oxidised patches. The rock is foliated at 35 degrees to the core axis. The rock contains a 20mm thick quartz haematite vein (tensional) at 40 degrees to the core axis at 24.30, a 5 to 15mm thick pyrite vein weakly oxidised at 25 degrees to the core axis at 24.40, 1mm thick pyrite vein at 30 degrees to the core axis at 24.80, 0.5% pyrite in fine veins and associated clots at low angles to the core axis from 25.40 to 25.60, 0.5% pyrite and minor chalcopyrite in fine irregularly oriented veins and cross-cutting quartz haematite (after pyrite) veins at 50 degrees to the core axis from 25.60 to 25.80 and negligible sulphides from 25.80 to 26.10.	S00020	24.00	25.00	1.00	.02
			S00021	25.00	26.00	1.00	.04
			S00022	26.00	27.00	1.00	.60
			S00023	27.00	28.00	1.00	<.01
			S00024	28.00	29.00	1.00	.05
			S00025	29.00	30.00	1.00	.10
			S00026	30.00	31.00	1.00	.04
			S00027	31.00	32.00	1.00	.11
			S00028	32.00	33.00	1.00	.11
			S00029	33.00	34.00	1.00	.03
			S00030	34.00	35.00	1.00	.01
			S00031	35.00	36.00	1.00	.01
			S00032	36.00	37.30	1.30	.01
			S00033	37.30	39.00	1.70	.02
			S00034	39.00	39.90	.90	<.01
			S00035	39.90	41.00	1.10	.01
			S00036	41.00	42.00	1.00	.13
			S00037	42.00	43.00	1.00	.13
			S00038	43.00	44.00	1.00	.12
			S00039	44.00	45.00	1.00	<.01
			S00040	45.00	46.00	1.00	.01
			S00041	46.00	47.00	1.00	.01
			S00042	47.00	48.00	1.00	.05
			S00043	48.00	49.20	1.20	2.08
	26.10	33.25 As above. The rock is moderately oxidised and haematitic throughout but still with discernible pumice and siltstone fragments and quartz sericitized feldspar phenocrysts. The rock contains only very minor pyrite. Oxidised patches are associated with fine haematite veins at low angles to the core axis.					
	33.25	39.90 As above. The rock is foliated at 50 to 55 degrees to the core axis with the foliation defined by flattened pumiceous clasts. The rock is moderately carbonate veined from 35.00 to 35.10 with 0.5% associated pyrite. Elsewhere the rock contains negligible sulphides. The carbonate veining/alteration is weak throughout this volcaniclastic unit. The rock contains very occasional oxidised patches predominantly from 39.50 to 39.70. The rock also contains occasional very dark grey irregular siltstone clasts to 20mm as above.					
	39.90	49.20 As above. The rock is foliated at 50 to 55 degrees to the core axis and contains irregular angular lithic fragments of beige green tuffaceous siltstone as well as quartz and sericitized feldspar phenocrysts. The rock is weak to moderately carbonate altered throughout, weakly silicified throughout and weak to moderately sericitized throughout except from 44.00 to 45.50 where the rock is					

From (m)	To (m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppm)
		weakly chloritic. The rock contains 0.5% pyrite throughout as disseminations and associated with very occasional carbonate veins predominantly at 30 to 40 degrees to the core axis.					
49.20	85.80	VOLCANICLASTIC					
		VOLCANICLASTIC, SERICITISED.	S00487	49.20	50.00	.80	1.17
		Beige green quartz rich volcaniclastic silica sericite and carbonate altered. The rock contains sericitized feldspar and lithics predominantly in the top part of the hole.	S00488	50.00	51.00	1.00	3.30
			S00489	51.00	52.00	1.00	1.62
			S00490	52.00	53.00	1.00	.23
		49.20 52.00 As above with oxidised pyrite veins parallel to the core axis from 50.00 to 52.00 with approximately 2% pyrite.	S00491	53.00	54.00	1.00	4.14
			S00492	54.00	55.00	1.00	2.86
			S00493	55.00	56.00	1.00	2.73
		52.00 52.90 Black massive siltstone with 5% pyrite in veins cross-cutting generally at 45 degrees to the core axis and in fine grained disseminations. Possibly some arsenopyrite.	S00494	56.00	57.00	1.00	.63
			S00495	57.00	58.00	1.00	.40
			S00496	58.00	59.00	1.00	.99
			S00497	59.00	60.00	1.00	1.40
		52.90 55.10 Volcaniclastic as above but sulphidic with 60% pyrite in a large clot associated with silicification from 54.90 to 55.00. Also 5% pyrite from 53.30 to 55.10 in irregular broad veins associated with carbonate and silica alteration.	S00498	60.00	61.00	1.00	1.53
			S00499	61.00	62.00	1.00	.34
			S00500	62.00	63.00	1.00	.03
			S00501	63.00	64.00	1.00	.10
			S00502	64.00	65.00	1.00	.07
			S00503	65.00	66.00	1.00	.03
		55.10 61.90 Volcaniclastic as above with increasing amount of large black siltstone clasts/rafts downhole. The rock contains approximately 1% pyrite throughout, generally in occasional veins and clots and often associated with the siltstones.	S00504	66.00	67.00	1.00	.01
			S00505	67.00	68.00	1.00	.01
			S00506	68.00	69.00	1.00	.03
			S00507	69.00	70.00	1.00	<.01
			S00508	70.00	71.00	1.00	.02
			S00509	71.00	72.00	1.00	.01
		61.90 81.00 Volcaniclastic as above with approximately 0.5% pyrite generally in irregular cross-cutting veins and fractures predominantly from 69.80 to 69.90, 73.90 to 74.00 and 75.60 to 77.30.	S00510	72.00	73.00	1.00	.03
			S00511	73.00	74.00	1.00	.01
			S00512	74.00	75.00	1.00	.03
			S00513	75.00	76.00	1.00	.01
			S00514	76.00	77.00	1.00	.03
		81.00 85.80 Volcaniclastic as above but with approximately 2% pyrite throughout increasing to 4% throughout downhole. Pyrite is in veins generally cross-cutting at 45 degrees to the core axis and associated with carbonate and silica alteration. The lower contact is gradational with the underlying beige green siltstone.	S00515	77.00	78.00	1.00	.06
			S00516	78.00	79.00	1.00	.05
			S00517	79.00	80.00	1.00	.04
			S00518	80.00	81.00	1.00	.03
			S00519	81.00	82.00	1.00	.04
			S00520	82.00	83.00	1.00	.03
			S00521	83.00	84.00	1.00	.02
			S00522	84.00	85.00	1.00	.03
			S00523	85.00	86.00	1.00	.31
85.80	88.00	PELITE					
		FINE GRAINED SILTSTONE, SERICITIC.	S00524	86.00	87.00	1.00	.12
		Fine grained, siliceous, beige green, massive, sericitized siltstone. As above the rock is very sulphidic with 5% pyrite and minor chalcopyrite throughout including 15% pyrite from 87.60 to 88.00. Sulphides occur as fine fracture fill veinlets irregularly oriented. From 87.90 to 88.00 the rock is a black siltstone.	S00525	87.00	88.00	1.00	.05
88.00	96.20	VOLCANICLASTIC					
		VOLCANICLASTIC, SERICITISED.	S00526	88.00	89.00	1.00	.04
		Beige green / brown, quartz volcaniclastic with	S00527	89.00	90.00	1.00	.01

From (m)	To (m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppm)
		sericitized feldspars and sericitic patches. The rock contains 2% pyrite throughout in fractures associated with carbonate and silica alteration. The lower contact gradational.	S00528	90.00	91.00	1.00	.01
			S00529	91.00	92.00	1.00	.03
			S00530	92.00	93.00	1.00	.01
			S00531	93.00	94.00	1.00	.02
			S00532	94.00	95.00	1.00	.01
			S00533	95.00	96.00	1.00	.01
			S00534	96.00	97.00	1.00	.03
96.20	98.30	PELITE					
		FINE GRAINED SILTSTONE, SERICITIC.	S00535	97.00	98.00	1.00	<.01
		Fine grained siliceous beige green, massive, sericitic siltstone as for 85.80 to 88.00. Rock contains 1% pyrite throughout in irregular fractures generally associated with silicification. The lower contact is gradational.	S00536	98.00	99.00	1.00	.01
98.30	102.00	VOLCANICLASTIC					
		VOLCANICLASTIC, SERICITISED.	S00537	99.00	100.00	1.00	.03
		Beige green quartz lithic volcaniclastic. Rock is silica sericite and carbonate altered and sulphidic with 2% to 4% pyrite throughout in irregular fractures associated with silica and carbonate alteration. The lower contact is sharp	S00538	100.00	101.00	1.00	.01
			S00539	101.00	102.00	1.00	.02
102.00	106.60	PELITE					
		BLACK SILTSTONE.	S00540	102.00	103.00	1.00	.01
		Black sulphidic siltstone. Fine grained rock with irregularly cross-cutting carbonate sulphide veins and more diffuse patches of carbonate and sulphides. Sulphides are predominantly pyrite and a very fine grained brown sulphide, probably sphalerite, in clots and very minor chalcopyrite. The rock is most sulphidic from 105.00 to 105.15, 105.70 to 106.10 and 106.20 to 106.60. The rock is banded / bedded with variable angles to the core axis. The lower contact is sharp and and sheared at 35 degrees to the core axis. The rock contains 2% sulphides throughout.	S00541	103.00	104.00	1.00	<.01
			S00542	104.00	105.00	1.00	.02
			S00543	105.00	106.00	1.00	<.01
			S00544	106.00	107.00	1.00	.01
106.60	109.60	VOLCANICLASTIC					
		Beige to olive green, sericitic moderately silicified and carbonate altered, massive, volcaniclastic consisting of occasional lithics in a fine grained matrix. Lithics include fine grained siliceous clasts and clasts of black siltstone. The rock contains 0.2 to 0.4% sulphides throughout, predominantly pyrite but possibly some arsenopyrite in fine grained irregularly oriented attenuated veinlets and associated with carbonate alteration. Occasional sericitic shears are at 35 degrees to the core axis.	S00545	107.00	108.00	1.00	.01
			S00546	108.00	109.00	1.00	.01
			S00547	109.00	110.00	1.00	.01
109.60	110.10	PELITE					
		BLACK SILTSTONE.	S00548	110.00	111.00	1.00	<.01
		Strongly carbonate altered (in veins and snow-flake textured) black siltstone with 0.2% pyrite associated with the carbonate alteration. Upper contact gradational and interbedded, lower contact at 35 degrees to the core axis in broken core.					
110.10	111.25	VOLCANICLASTIC / PELITE					
		Very fine grained siliceous, massive beige green rock	S00549	111.00	112.00	1.00	.01

From (m)	To (m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppm)
		somewhat like the felsic lava. The lower contact is possibly moderately sheared. From 110.20 to 110.30 is an interbedded patch of black siltstone. From 110.30 to 111.00 the rock contains 1% pyrite in disseminated clots to 3mm and in occasional cross-cutting pyrite carbonate veins at 50 degrees to the core axis. From 111.00 to 111.25 the rock contains 2% pyrite in attenuated veinlets sub - parallel to and sub - perpendicular to the core axis. The rock is probably a siltstone derved from vitric tuffs.					
111.25	116.40	PELITE BLACK SILTSTONE. The rock is weak to moderately carbonate altered throughout as diffuse alteration and in cross-cutting fine veins. The rock is bedded at 15 to 60 degrees to the core axis. With no obvious trends, ie at 111.50 bedding is at 15 degrees to the core axis at 42.50 at 20 degrees to the core axis, at 115.40 at 60 degrees to the core axis and 116.40 at 40 degrees to the core axis. The rock contains approximately 0.2% pyrite throughout as fine grained disseminations and in clots associated with carbonate altered. The lower contact is sharp and at 45 degrees to the core axis.	S00550 S00551 S00552 S00553 S00554	112.00 113.00 114.00 115.00 116.00	113.00 114.00 115.00 116.00 117.00	1.00 1.00 1.00 1.00 1.00	.02 <.01 .01 <.01 .01
116.40	118.20	PELITE Fine grained, massive, beige to lemon green with diffuse orange patches. Moderately to strongly (increasingly downhole) silicified and sericitized, moderately carbonate altered vitric tuff. The rock has a coarsely mottled appearance due to variable alteration. The rock also contains occasional patches of black siltstone. The rock contains 0.5% pyrite throughout generally associated with silicification. Best zones are from 118.40 to 119.40 and 121.50 to 123.73. Sulphides are also associated with cross-cutting carbonate veins at 35 degrees to the core axis and sericite veins at 35 degrees to the core axis.	S00555 S00556	117.00 118.00	118.00 119.00	1.00 1.00	<.01 .02
118.20	130.30	VOLCANICLASTIC VOLCANICLASTIC, SERICITISED. Beige green volcaniclastic with quartz, sericitized feldspars and occasional lithics. The rock contains sulphides throughout but decreasing somewhat downhole. The rock is silica sericite and carbonate altered throughout. 118.20 122.00 Volcaniclastic as above but beige brown with 1% pyrite throughout associated with silicification, rock contains 4% pyrite from 119.00 to 119.30. 122.00 126.50 Volcaniclastic with large clasts of black siltstone. Rock contains 2% throughout associated with silicification in both the siltstones and volcaniclastic. 126.50 130.30 Volcaniclastic as above with 2% pyrite throughout in irregular veins and fractures generally associated with silicification.	S00557 S00558 S00559 S00560 S00561 S00562 S00563 S00564 S00565 S00566 S00567 S00568	119.00 120.00 121.00 122.00 123.00 124.00 125.00 126.00 127.00 128.00 129.00 130.00	120.00 121.00 122.00 123.00 124.00 125.00 126.00 127.00 128.00 129.00 130.00 131.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	<.01 <.01 <.01 <.01 <.01 <.01 <.01 <.01 <.01 <.01 <.01 <.01
130.30	134.20	PELITE					

From (m)	To (m)	Description	Sample No.	From (m)	To (m)	Width (m)	Au (ppm)
		SILTSTONE, BRECCIATED. Mottled beige green and dark grey siltstone. Rock looks to be strongly soft sediment deformed but it may be an alteration effect. Rock contains approximately 1% pyrite throughout associated with silicification. Silicified sericitized and carbonate altered throughout. The lower contact is gradational with the underlying more massive volcaniclastic sediment.	S00569	131.00	132.00	1.00	<.01
			S00570	132.00	133.00	1.00	<.01
			S00571	133.00	134.00	1.00	<.01
			S00572	134.00	135.00	1.00	<.01
134.20	145.00	PSAMMITE / VOLCANICLASTIC VOLCANICLASTIC SANDSTONE, SERICITIC. Fine grained beige green sandstone, massive, silica sericite and carbonate altered with 1% to 2% pyrite throughout decreasing to 0.5% downhole below 139.00. Pyrite is associated with silicification. The rock contains fine grained sericite patches after feldspars. Rock is essentially the same as the 'host rocks' intersected in FTD's 1,2,3 and 4 as well as the GP-90 short holes but is somewhat finer grained and sandier though moderately silicified as is normal for host rocks. Frequency and amount of pyrite decreases downhole.	S00573	135.00	136.00	1.00	<.01
			S00574	136.00	137.00	1.00	.02
			S00575	137.00	138.00	1.00	<.01
			S00576	138.00	139.00	1.00	<.01
			S00577	139.00	140.00	1.00	<.01
			S00578	140.00	141.00	1.00	<.01
			S00579	141.00	142.00	1.00	<.01
			S00580	142.00	143.00	1.00	<.01
			S00581	143.00	144.00	1.00	<.01
			S00582	144.00	145.00	1.00	.03
		145.00 End Of Hole.					