



**PETRO TECH PTY. LTD.**

**CUTTINGS DESCRIPTIONS**

**WELL NAME:** Alberton 1

**DATE:** 12-2-08

**GEOLOGIST:** Ingrid Campbell

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Interval (m)	%	Description
0-5	60	SAND: light brown- reddish- brown, coarse to pebble, dominantly very coarse, subangular to subrounded, poorly sorted, no visible cement, trace orange brown argillaceous matrix, clear to opaque quartz grains often with orange iron oxide staining, unconsolidated, very good inferred porosity, no oil fluorescence.
	40	CLAY: light grey, very soft, dispersive, silty.
5-10	70	CLAY, as for 0-5m.
	30	SAND: light brown, as for 0-5m.
10-15	70	SAND: clear to opaque quartz grains, as for 5-10m.
	30	CLAY: light brown to cream, slightly silty, very soft, dispersive, moderately sticky.
15-20	100	CLAY: light brown to light grey, soft, dispersive, sticky, rare shell fragments
20-25	100	CLAY: light brown to medium grey, as for 15-20m.
25-30	90	SAND: off-white to light grey, coarse to very coarse, dominantly coarse, angular to sub-rounded, poorly sorted, no visible cement, clear to opaque quartz grains, unconsolidated, good to very good inferred porosity, no oil fluorescence.
	10	CHARCOAL FRAGMENTS: dark brown-med .brown , fine - coarse carbonaceous charcoal detritus, earthy lustre, soft, splintery, loose, dispersive, no visible matrix, unconsolidated . No porosity, no oil fluorescence.
30-35	60	SAND: medium-dark brown, coarse to very coarse, as for 25-30m
	40	CLAY: dark brown, soft, dispersive, slightly fissile
35-40	95	CLAY: dark brown, ligenous,,slightly silty,firm
	5	SAND: as for 30-35m
40-45	80	SAND: reddish-brown to clear, coarse to very coarse , dominantly coarse, dominantly sub-rounded, mod. sorted, unconsolidated, good inferred porosity, no oil fluorescence..
	15	COAL: dark brown, carbonaceous, earthy lustre, firm to mainly soft.
	5	CLAY: dark brown,as for 35-40m.
45-50	80	SAND: as for 40-45m.
	20	COAL as for 40-45m
50-55	60	SAND: as for 45-50m
	40	COAL : as for 45-50m

Interval (m)	%	Description	PAGE: 2
55-60	70	COAL as for 50-55m	
	30	SAND: as for 50-55m	
60-65	90	COAL: as for 55-60m	
	5	SAND: clear to white quartz grains, otherwise same as for 55-60m	
	5	CLAY: grey-brown, ligneous, soft, dispersive, slightly silty	
65-70	90	COAL: as for 60-65m	
	10	SAND: as for 60-65m	
70-75	90	COAL: as for 65-70m	
	10	SAND: as for 65-70m	
75-80	95	COAL: as for 70-75m	
	5	SAND; as for 70-75m	
80-85	100	CLAY: light brown-cream, sticky, massive, non-dispersive.	
85-90	60	COAL:dark brown , otherwise as for 75-80m.	
	30	CLAY: dark brown, very fine ligneous fragments throughout, moderately dispersive.	
	10	SAND: white-clear, medium to fine, sub-angular to sub-rounded, poorly sorted, no visible cement, clear to opaque quartz grains, unconsolidated, good to very good inferred porosity, no oil fluorescence.	
90-95	90	COAL: as for 85-90m	
	10	SAND: white-light brown, coarse to very coarse, minor to gravel,sub-angular to sub-rounded, poorly sorted, no visible cement, clear to opaque quartz grains, some iron staining, unconsolidated, good to very good inferred porosity, no oil fluorescence.	
95-100	100	COAL: as for 90-95m	
100-105	100	COAL: as for 90-95m	
105-110	100	SAND: cream-off-white, medium to coarse, dominantly medium, sub-angular to sub-rounded, well sorted, no visible cement, clear to opaque quartz grains, unconsolidated, excellent good inferred porosity, no oil fluorescence.	
Core 1	109-112.5	CUT 3.7 m: RECOVERED 3.57 m : 97% recovery. See full core description report. 100% SAND: black,ligneous, fine to medium, occasionally coarse , sub-angular to sub-rounded, moderately-wellsorted sorted, clear to opaque quartz grains, unconsolidated, very good inferred porosity, no oil fluorescence. Moderate orange-yellow cut, petrol.odour, slippery feel.	
Core 2	112.7 - 113.7	CUT 1 m: RECOVERED 1m: 100% recovery. See full core desription report. SAND, black, ligneous in top 10 cm of core, as for Core 1: 99% of core is COAL, dark brown, as for 100-105m.	

Interval (m)	%	Description	PAGE: 3
Core 3	113.7 - 118.2	CUT 4.5m: RECOVERED 4.5m: 100% recovery. See full core description report. 100% COAL, dark brown as for Core 2.	
Core 4	118.2 - 122.7	CUT 4.5m: RECOVERED 2.7 m: 60% recovery. See full core description report. 118.2-118.8m. COAL dark brown as for Core 3 118.8-122.7m SAND, black as above in Core 2	
Core 5	122.7 - 127.2	CUT 4.5m: RECOVERED 1.1m :24.4% recovery See full core description report. 122.7-127.2m 100% SAND, black, as above in Core 4, mixed with extremely fine white spotted, dispersive clay matrix	
127-130	98%	SAND, white-cream, medium to coarse, mostly medium grained, sub angular to sub rounded, clear to frosted quartz grains,, some iron staining, loose, moderately sorted. Excellent visual porosity, no fluorescence, no cut, no odour.	
	2%	COALY FRAGMENTS, dark brown, dispersed,coaly material, loose.	
130-145	100%	SAND, white-cream, as for 127-130 metres.	
145-150	98	SAND, white-cream, as for 130-145 metres.	
	2	CLAY, buff-cream, soft, slightly ligneous, dispersive.	
	2	COALY FRAGMENTS: dark brown, dispersed coaly material, loose.	
Core #6	148.5 - 153.0 m	CUT 4.5m: RECOVERED 1.3m:24.4% recovery. See full core description report. 151.9-152.45m . SAND: light brown-cream,mainly fine grained, quartz grains in a light brown-cream clayey matrix .Very good visual porosity, no fluorescence, milky white-bluish cut leaves yellow residue. 152.45-153m. COAL: dark brown, dispersed pyritic nodules, strong H 2 S odour. Conchoidal fracture.Vertical joints present. Iridescent rings mostly along fractures. No fluor, strong bluish- white cut, leaves yellow residue.	
Core #7	153.0 - 156.0 m	CUT 3m: RECOVERED 2.2m: 73.3% recovery. See full core description report. 153-153.4m. COAL : as for Core #6 153.4- 153.6m. SAND: black, ligneous, med-fine grained, well sorted, oily feel. H 2 S odour Iridescent rings in patches on core. Non Fluor. Excellent porosity. Bluish-white cut,leaves a yellow residue.	
Core #8	156.0 - 159.0 m	Cut 3m: Recovered 3.0m: 100% recovery. See full core description report. COAL , as for Core #7	
Core #9	159.0 - 162.0 m	Cut 3m: Recovered 3.0m: 100% recovery. See full core description report. COAL , as for Core #8	

Interval (m)	%	Description	PAGE: 4
Core #10 162.0 - 165.0 m	162.0 - 165.0 m	Cut 3m: Recovered 3.0m: 100% recovery. See full core description report. COAL , as for Core #9	
Core #11 165.0 - 166m	165.0 - 166m	Cut 1m: Recovered 0.5m: 50% recovery. See full core description report. COAL , as for Core #10	
Core # 12 166.0 - 170.5 m	166.0 - 170.5 m	Cut 4.5m; Recovered 4.3m; 95.6% recovery. See full core description report. COAL , as for Core #10 and sandy coal.	
Core # 13 170.5 - 175.0 m	170.5 - 175.0 m	Cut 4.5m; Recovered 3.95m; 87.8% recovery. See full core description report. COAL, as for Core # 12	
Core #14 175.0 - 179.5 m	175.0 - 179.5 m	Cut 4.5m; Recovered 4.35m; 96.7% recovery. See full core description report. COAL with minor sand and clayey stringers along fractures;	
Core # 15 179.5 - 184.0 m	179.5 - 184.0 m	Cut 4.5m; Recovered 3.55m; 66.6% recovery. See full core description report. COAL with minor CLAY, BLACK SAND, oily film around quartz grains;exc por; bluish cut,yellow residue.	
Core #16 184.0 - 188.5 m	184.0 - 188.5 m	Cut 4.5m; Recovered 1.1m; 24.0% recovery. See full core description report. GRAVEL, black, pebbly, sub angular to sub rounded, mod.well sorted,v.fine silty matrix, unconsol, ligneous;oily feel.Exc.porosity. No Fluor. Strong bluish cut leaves yellow residue. Grading to thin interbeds of brown CLAY, BLACK GRAVEL and CLAYEY COAL	
188-190	90%  5% 5%	GRAVEL:white to cream, coarse to pebbly, predominantly pebbly quartz grains, clear, frosted, sub angular to subrounded, moderately sorted. Individual grains often coated with black oily film in surface pits;the coated grains give weak bluish cut;leave pale yellow residue. Excellent porosity; no fluorescence.  COAL: dark brown,fine carbonaceous fragments throughout.No fluorescence; very pale bluish cut: very pale yellow residue.  CLAY: light brown,carbonaceous, dispersive.	
190-195	90%  5% 5%	COAL: dark brown ,as above  SAND: cream, fine to medium grained,clear-frosted grains,occasional iron-staining,unconsolidated,well sorted. Some individual quartz grains coated in black film in pitted surface. Exc. porosity. No Fluor. No Cut.  CLAY: Light brown as for interval above..	
195-200	95%	SAND: cream,fine to medium grained, mostly medium,sub angular to sub rounded, unconsolidated,	
	5%	COAL: brown as for interval above.	
200-205	50%  50%	GRAVEL: white-cream,very coarse to pebbly, predominantly pebbly quartz grains, clear, frosted, sub angular to subrounded, moderately sorted, no visible matrix. Individual grains often coated with black oily film in surface pits;the coated grains give slow weak bluish cut;leave pale yellow residue. Excellent porosity; no fluorescence.  COAL: dark brown,as for interval above.	

Interval (m)	%	Description	PAGE: 5
205-210	70% 15% 5%	GRAVEL: as for interval above with occasional mica flakes, red lithic fragments. COAL: dark brown as for interval above. CLAY: light brown-fawn, fine carbonaceous fragments , soft,dispersive.	
210-215	60% 20% 10%	GRAVEL: as for interval above;Excellent porosity; no fluor; no cut SAND: white-clear,medium to fine grained,mostly medium, occ.carbonaceous fragments, well sorted ;some quartz grains have black film on pitted surface . Exc.porosity; no fluor; no cut. CLAY: Dark brown,ligneous,soft,dispersive.	
215-220	50% 15% 5%	GRAVEL: as for interval above SAND: as for interval above COAL: dark brown, as above.	
220-225	80% 18% 2%	GRAVEL: as for interval above. SAND:as for interval above with occasional micaceous flakes. COAL: as for interval above	
225-230	70% 25% 5%	GRAVEL: as for interval above SAND: as for interval above COAL: as for interval above	
230-235	100%	GRAVEL: White,very coarse to pebbly, mostly pebbly,becoming coarser, sub angular to sub rounded, predominantly frosted quartz grains,very well sorted,unconsolidated; no matrix. Rare quartz grains with black oily film. Excellent porosity.No fluor.No cut.	
235-240	100%	GRAVEL: as for interval above	
Core # 17	242 - 246.3 m	Cut; 4.3m;Recovered 3.9m: 89.3% recovery See detailed core description report. CLAY, COALY CLAY AND CLAYEY GRAVEL.	
Core #18	246.3 - 251.0 m	Cut 4.7m; Recovered 4.7m; 100% recovery See detailed core decription report. COALY CLAY: dull brown- grey,carbonaceous, grading to CLAY,dark brown.	
Core #19	251.0 - 255.6 m	Cut 4.6m; Recovered 4.6m; 100% recovery. See detailed core description report. 251.0-252.51m. COALY CLAY: dark brown, firm with carbonaceous bands throughout; grading to dark-light brown clay. 252.51-254.0m. ?VOLCANICS; weathered ,light bluish-grey and brown clay with large irregular mud and clay clasts throughout. 254.0-255.5m. SANDSTONE, light blue- grey-white, clear quartz grains, fine to very fine, well sorted, supported in a fine cream clay matrix, soft , dispersive, water soluble.	
Core #20	255.6 - 260.1 m	Cut 4.5m; Recovered 4.5m; 100% recovery. See detailed core description report. 255.6-258.5m. Weathered SANDSTONE, lt bl-lt gy,very fine grained ,sub angular to subrounded, well sorted in a fine bluish clay matrix. No por.No Fluor.No cut. 258.5-260.1m .CLAY, lt blue-lt gy, massive ;hard bands of iron fracture fill fractures.	

Interval (m)	%	Description	PAGE: 6
Core #21	260.1 - 264.6 m	Cut 4.5m; recovered 4.5m; 100% recovery. See detailed core description report. 260.1-264.6m. CLAY as above, mottled blue-green to occ. yellow, numerous hard bands of iron fracture fill.	
265-270	50%  45%  5%	CLAY: bluish-green, min. pyritic nodules, non-dispersive, mod.hard. QUARTZ SAND: clear, medium to coarse, loose, sub-angular to rounded COAL FRAG's: dark brown, cavings.	
270-276	70%  20%  5%  5%	CLAY: bluish-green, as above QUARTZ SAND as above Limestone fragments, white, calcareous, bryozoal, iron-stained. Cement cavings.	
276-279	100%	CLAY: bluish-green, as above: with fine black with elongated phenocrysts, quartz grains, v.fine grained, clear, angular; matrix mod. hard-soft, non-dispersive	
279-282	50%  50%	CLAY: bluish-green as above. CLAY: med.brown-orange, very soft, dispersive.	
282-285	70%  30%	CLAY: med.brown-orange as above. CLAY: bluish-green as above.	
285-288	95%   5%	SST: medium blue-grey, med. to fine grained, sub-angular to sub-rounded, poorly sorted qtz with common cream-white feldspars, rare black, white mica flakes, rare carbonate fill. No matrix visible. No matrix visible. Poor- mod. visual porosity. No fluor; no cut. CLAY: med.brown-orange as above.	
288-303	100%	SST, as above, medium to fine-grained; rare to common orange lithics, rare calcite frag's. Poor visual porosity. No fluor; no cut.	
303-306	90%  10%	SST as above. CLAY: Bluish-grey, non-dispersive, soft.	
306-309	100%	SST: medium-lt. grey, very fine grained quartz, sub-angular, mod. sorted, common feldspar, rare black coaly frag's, orange lithics. Poor visual porosity. No fluor; no cut.	
309-312	70%  30%	SST as above. CLAY: light brown-orange, very soft, loose, dispersive.	
312-327	100%	SST as above, medium to fine grained with rare orange lithics throughout. No fluor; no cut.	
327-330	90%  10%	SST as above. CLAY: medium grey, soft, dispersive.	
330-336	100%	SST as above, becoming medium grained.	
336-348	100%	SST as above, med- fine grained; abundant calcite fragments throughout; common pink-orange lithics. Moderate visual porosity. No fluor; no cut.	
348-351	95%   5%	SST: medium-light grey, dominantly feldspathic grains, cream-white, mod. hard, sub-angular, fine to medium grained, with grey quartz grains, chlorite frag's, trace orange lithics; occasional micromica, calcite flakes. No visible cement. Moderate visual porosity. No fluor; no cut. CLAY: reddish brown, firm, non-dispersive	
351-366	100%	SST: as above, changing from medium grained to fine grained at base	

Interval (m)	%	Description	PAGE: 7
366-369	90 % 10%	SST as above, med. to dark grey, fine grained. MUDSTONE, dark grey, soft, clayey, massive, no laminae, interspersed with very fine carbonaceous flecks.	
369-378	100%	SST as above, fine grained, abundant calcite. At 378m, trace black carbonaceous flecks which gave no fluor: bright bluish-white cut.	
378-387	100%	SST as above, mostly fine to very fine grained.	
387-402	100%	SST as above, alternating thin interbeds of fine and very fine grained beds.	
402-408	100%	SST as above, med.grained; common calcite, trace red-orange lithics, rare micromica, trace pyrite.	
408-411	100%	SST as above, med- fine grained; abundant calcite fragments throughout . Moderate visual porosity. No fluor; no cut.	
411-423	100%	SST as above, fine grained, abundant calcite, trace orange lithics, occ.black carbonaceous flecks.	
423-433	100%	Conglomerate: medium grey, lithology as above, bimodal grain size; coarse –very coarse grains of felspar, quartz, sub-angular together with very fine grained grains, as above; poorly sorted with occ. calcite. No visible matrix. Good inferred porosity; no fluor; no cut.	
433-455	100%	SST as for 402-408 m; alternating interbeds grading from med. grained to fine grained .	
455-471	100%	SST as above, medium grained with trace to common calcite present with tr.black coaly fragments, micromica and chlorite grains towards base of interval.	
471-480	100%	SST as above, fine grained, abundant calcite fragments, tr. orange-red lithics, greenish chlorite grains	
480-483	95% 5%	SST as above. No Fluor: no cut Calcite fragments, white-clear, flat to sub-rounded, soft, occasionally showing platy cleavage on larger fragments: probably fracture fill. No contact surface with surrounding rock is visible due to extremely fine sample size.	
483-486	90% 10%	SST as above, dark grey, tr.fine black coaly flecks. Calcite fragments as above. Background gas: 2 units	
486-489	85% 10% 5%	SST as above. Calcite fragments as above. MUDSTONE : dark grey, very finely laminated, non-fissile, moderately hard. Background gas :2 units	
489-492	90% 10%	SST as above. Calcite fragments as above. Background gas :2 units	
492-495	95% 5%	SST as above. Calcite fragments as above. Background gas:2 units	
495-501	90% 5%	SST as above, silt to very fine grained, extremely well sorted, trace fine black coaly flecks. Coal frag's have no fluorescence, but show strong bluish-white cut. Calcite fragments as above. Background gas:2 units	

Interval (m)	%	Description	PAGE: 8
Core # 22	502 - 502.075 m	<p>CUT: 0.075m: REC: 0.075m: 100% RECOVERY</p> <p>See full core description report.</p> <p>SILTY SANDSTONE, medium grey, hard, massive, no bedding or fractures visible: well cemented, dominantly silica cement: rare calcareous reaction. Groundmass includes clear, grey quartz, common white feldspar and other clay fragments, grains silt to fine grained, subangular to subrounded, well sorted, minor red and orange lithics, common clear mica, common black platy lustrous biotite, rare pyrite, rare calcite fragments.</p> <p>Poor visual porosity: low permeability. No fluorescence ; no cut.</p>	
504-516	100%	SILTY SANDSTONE, medium grey, silt to fine grained, sub angular to sub rounded, well sorted ,as above in core.	
516-525	100%	SILTY SANDSTONE, grey, as above, mostly silt to very fine grained, grading to fine grained.	
525-531	100%	SANDSTONE, medium grey, fine to medium grained, cream feldspar, grey-clear quartz ,sub angular, moderately sorted, rare chlorite, rare red carbonate frag's (? siderite), common black carbonaceous frag's. Moderate visual porosity. No Fluorescence ; no cut.	
531-534	90% 10%	<p>SILTY SANDSTONE, as above, grey, silt to fine grained as for 516-525m, rare yellow lithics, common calcite frag's.</p> <p>SILTSTONE, lt-med. grey, soft, finely laminated, dark grey-black banding with fine carbonaceous flecks throughout.</p>	
534-549	100%	SILTY SANDSTONE as above, grading from silt-fine grained at top to medium grained at base of interval, abundant calcite frag's, rare chlorite, rare red lithics, occ. black carbonaceous flecks. No Fluorescence: no cut.	
549-558	100%	SILTY SANDSTONE as above, silt-fine grained , common calcite frag's , common black carbonaceous flecks. No Fluorescence: no cut.	
556-558	100%	CARBONACEOUS SILTSTONE, dark greyish brown, soft, silty matrix with fine grains of cream feldspar, rare lithics, fine black carbonaceous material, common calcite.	
558-561	50% 50%	<p>CARBONACEOUS SILTSTONE ,as above.</p> <p>SILTY SANDSTONE as above, silt to fine grained.</p>	
561-582	100%	Mixed beds of carbonaceous sandstone and silty sandstone as above; decreasing siltstone towards base of interval.	
582-597	100%	SILTY SANDSTONE, as above, silt to fine grained at top grading to medium grained at base of interval; trace black carbonaceous flecks, common calcite frag's.	
597-600	100%	SANDSTONE, as above, grey, becoming less silty, fine grained, sub angular to sub rounded, well sorted, silica cement visible on occ.small chip fragments: groundmass dominantly of grey quartz, minor feldspar, trace light brown lithics, trace micromica,	
600-606	70% 30%	<p>SILTY SANDSTONE as above, fine grained, well sorted, trace, orange-brown lithics, common calcite frag's. Poor vis.porosity. No fluorescence; no cut.</p> <p>CARBONACEOUS SILTSTONE, as above at 582-597m.</p>	
606-609	90% 10%	<p>CARBONACEOUS SILTSTONE a/a</p> <p>SILTY SANDSTONE a/a a silt-med. grained, occ. orange lithics, occ. black coaly flecks common calcite, rare chlorite.</p>	
609-612	100%	SILTY SANDSTONE a/a silt –med grained.	
612-612	95% 5%	<p>SILTY SANDSTONE a/a</p> <p>CARBONACEOUS SILTSTONE a/a</p>	
612-621	60% 40%	<p>SILTY SANDSTONE a/a silt-med grained ; common large coaly frag's (~2%): No fluor;with strong bluish cut; common calcite frag's.</p> <p>CARBONACEOUS SILTSTONE a/a</p>	



Interval (m)	%	Description	PAGE: 9
621-630	50% 50%	SILTY SANDSTONE a/a silt to fine grained, rare black coal flecks, rare chlorite, abundant calcite frag's CARBONACEOUS SILTSTONE a/a	
630-633	90% 10%	SILTY SANDSTONE a/a CARBONACEOUS SILTSTONE a/a	
633-636	70% 30%	SILTY SANDSTONE a/a CARBONACEOUS SILTSTONE a/a	
636-642	100%	SILTY SANDSTONE a/a	
642-645	90% 10%	SILTY SANDSTONE a/a silt to fine-med grained, common orange-red lithics.occ.ccoaly flecks, abundant calcite frag's. CARBONACEOUS SILTSTONE a/a	
645-648	60% 40%	SILTY SANDSTONE a/a silt to med. grained, common coaly frag's (~ 2%), abundant calcite (~5%) CARBONACEOUS SILTSTONE a/a	
648-651	80% 20%	SILTY SANDSTONE a/a abundant coaly and calcite frag's. CARBONACEOUS SILTSTONE a/a	
651-654	90% 10%	CARBONACEOUS SILTSTONE, light grey , soft, minor laminated material, dominantly massive, v.fine silt to v.fine grained particles, fine carbonaceous particles . Abundant fine calcite throughout (~10%). SILTY SANDSTONE a/a.	
654-657	60% 40%	CARBONACEOUS SILTSTONE, light grey , soft, minor laminated material, dominantly massive, v. fine silt to v.fine grained particles, fine carbonaceous particles . SILTY SANDSTONE a/a abundant calcite.	
657-660	60% 40%	SILTSTONE, dk.greyish-brown and grey, moderately hard, finely laminated with dark grey-black banding: fine carbonaceous flecks , occ. calcite particles. SILTY SANDSTONE a/a silt to med .grained, abundant calcite (~10%)	
660-663	90% 10%	SILTSTONE, dk.gy-brown and grey, moderately hard, finely laminated with dark grey-black banding: fine carbonaceous flecks , occ. calcite frag's. SILTY SANDSTONE a/a silt to v. fine grained, common dark red lithics, occ. coaly flakes.	
663-666	100%	SILTY SANDSTONE a/a silt to v. fine grained, common dark red lithics, occ. coaly flakes, common calcite frag's.	
666-669	95% 5%	SILTY SANDSTONE a/a silt to v. fine grained, common orange-pale orange lithics, occ. chlorite grains, common black carbonaceous flecks, moderate calcite particles. SILTSTONE, dk.gy-brown and grey, moderately hard, finely laminated with dark grey-black banding: fine carbonaceous flecks, occ. calcite frag's.	
669-675	100%	SILTY SANDSTONE a/a silt to v. fine grained, common orange-pale orange lithics, occ. chlorite grains, common black carbonaceous flecks, common calcite particles.	
675-678	60% 40%	SILTY SANDSTONE a/a silt to v. fine grained, common orange-pale orange lithics, occ. chlorite grains, common black carbonaceous flecks, abundant fine calcite (~15%) . CARBONACEOUS SILTSTONE, light grey , soft, minor laminated material, dominantly massive, v. fine silt to v.fine grained particles, fine carbonaceous particles .	
678-684	90% 10%	SILTY SANDSTONE a/a silt to v. fine grained, common orange-pale orange lithics, occ. chlorite grains, common black carbonaceous flecks, common fine calcite . CARBONACEOUS SILTSTONE, light grey , soft, minor laminated material, dominantly massive, v. fine silt to v.fine grained particles, fine carbonaceous particles .	

Interval (m)	%	Description	PAGE: 10
684-687	80%	CARBONACEOUS SILTSTONE, light grey, soft, minor laminated material, dominantly massive, v. fine silt to v.fine grained particles, fine carbonaceous particles .	
	20%	SILTY SANDSTONE a/a silt to v. fine grained, common orange-pale orange lithics, occ. chlorite grains, common black carbonaceous flecks, abundant fine calcite (~15%).	
687-690	90%	CARBONACEOUS SILTSTONE, a/a	
	10%	SILTY SANDSTONE, a/a, common carbonaceous grains. very abundant calcite (~15-20%). No fluorescence, no cut: probably fracture fill.	
690-693	50%	CARBONACEOUS SILTSTONE, a/a.	
	50%	SILTY SANDSTONE, a/a common calcite fragments (~5-10%). No fluorescence, no cut.	
693-696	40%	CARBONACEOUS SILTSTONE, a/a	
	60%	SILTY SANDSTONE, a/a, silt very-fine grained, occasional black carbonaceous flecks, rare red and pale pink lithics, rare to common small calcite particles (~5%).	
696-702	80%	SILTY SANDSTONE, a/a, silts fine-grained, abundant fine calcite, common black carbonaceous flecks, no fluorescence, no cut.	
	20%	CARBONACEOUS SILTSTONE, a/a	
702-705	60%	CARBONACEOUS SILTSTONE, a/a	
	40%	SILTY SANDSTONE, a/a, silt very-fine grained, common calcite fragments, rare black carbonaceous fragments, no fluorescence, no cut.	
705-711	70%	SILTY SANDSTONE, a/a, common orange to red lithics, rare chlorite, common pink and white calcite fragments, common black carbonaceous fragments.	
	30%	CARBONACEOUS SILTSTONE, a/a, fine laminations	
711-714	80%	SILTY SANDSTONE, a/a, silt very-fine grained, common black carbonaceous fragments, moderate calcite (~5%).	
	20%	CARBONACEOUS SILTSTONE, a/a, light grey to light brown, finely laminated	
714-717	95%	SILTY SANDSTONE, a/a, moderately fine-grained, occasional calcite fragments, rare chlorite and red lithics, no fluorescence, no cut.	
	5%	CARBONACEOUS SILTSTONE, a/a, rare small carbonaceous fragments	
717-720	80%	SILTY SANDSTONE, a/a	
	20%	CARBONACEOUS SILTSTONE, a/a, occasional orange to brown lithics, occasional brown calcite particles, possible matrix and fracture material, common coaly fragments (~5-10%)	
720-729	90%	SILTY SANDSTONE, a/a, silt very-fine grained, common small coaly fragments, occasional calcareous fragments.	
	10%	CARBONACEOUS SILTSTONE, a/a	
729-732	80%	SILTY SANDSTONE, a/a, silt very-fine grained, common calcite fragments, common black coaly fragments, no fluorescence, no cut.	
	20%	CARBONACEOUS SILTSTONE, a/a	
732-735	90%	SILTY SANDSTONE, a/a	
	10%	CARBONACEOUS SILTSTONE, a/a	
735-738	60%	SILTY SANDSTONE, a/a, abundant calcite (~10%)	
	40%	CARBONACEOUS SILTSTONE, a/a	
738-741	50%	SILTY SANDSTONE, a/a, abundant black coaly flecks	
	50%	CARBONACEOUS SILTSTONE, a/a	
741-744	80%	CARBONACEOUS SILTSTONE, a/a	
	20%	SILTY SANDSTONE, a/a, very abundant calcite fragments, common large fragments of coaly material (~10%)	

Interval (m)	%	Description	PAGE: 11
744-747	60% 35% 5%	SILTY SANDSTONE, a/a, abundant calcite fragments (~15%), common fragments of coaly material. CARBONACEOUS SILTSTONE, a/a COALY FRAGMENTS, a/a	
747-750	95% 5%	SILTY SANDSTONE, a/a, common coaly fragments, common white feldspar, rare chlorite. CARBONACEOUS SILTSTONE, a/a	
750-756	80% 20%	SILTY SANDSTONE, a/a, silt very-fine grained, abundant calcite, abundant large coaly fragments. CARBONACEOUS SILTSTONE, a/a	
756-759	70% 30%	SILTY SANDSTONE, a/a CARBONACEOUS SILTSTONE, a/a	
759-765	60% 40%	SILTY SANDSTONE, a/a CARBONACEOUS SILTSTONE, a/a	
765-768	80% 20%	CARBONACEOUS SILTSTONE, a/a, common large coaly fragments (2%), common small calcite fragments, coaly fragments gave no fluorescence-bluish cut. SILTY SANDSTONE, a/a, common coaly fragments, very calcareous.	
768-771	50% 50%	SILTY SANDSTONE, a/a CARBONACEOUS SILTSTONE, a/a	
771-774	60% 40%	CARBONACEOUS SILTSTONE, a/a SILTY SANDSTONE, a/a, abundant blue fine calcite fragments and minor coaly fragments.	
774-777	80% 20%	CARBONACEOUS SILTSTONE, a/a SILTY SANDSTONE, a/a	
777-780	90% 10%	CARBONACEOUS SILTSTONE, a/a, MUDSTONE? SILTY SANDSTONE, a/a, occasional black coaly fragments (~1%), occasional calcite fragments.	
780-783	95% 5%	SILTY SANDSTONE, a/a, common calcite fragments. CARBONACEOUS SILTSTONE, a/a	
783-789	90% 10%	SILTY SANDSTONE, a/a, very-fine grained, common red brown lithics, common fine calcite. CARBONACEOUS SILTSTONE, a/a	
789-795	100%	SANDSTONE, a/a, medium to light grey, hard, carbonaceous in parts, mostly very-fine grained, rare aggregate of sandstone shows fine- to very-fine quartz grains and feldspar, subrounded to angular, moderately well-sorted: minor pink lithics, black carbonaceous fragments, rare chlorite fragments, silica cement, aggregate non-calcareous. Nil to trace visual porosity. No fluorescence, no cut.	
795-798	90% 10%	SANDSTONE, a/a CARBONACEOUS SILTSTONE, a/a	
798-801	90% 5% 5%	SANDSTONE, a/a CALCITE FRAGMENTS, very-fine grains, white occ. pink. CARBONACEOUS SILTSTONE, a/a	

Interval (m)	%	Description	PAGE: 12
801-804	95% 5%	SANDSTONE, a/a very carbonaceous. CALCITE FRAGMENTS, a/a	
804-807	90% 10%	SANDSTONE, a/a CARBONACEOUS MUDSTONE, dark brown, moderately hard, laminated, carbonaceous, common calcite fragments.	
807-813	98% 2%	SANDSTONE, a/a CALCITE FRAGMENTS a/a	