

## APPENDIX 4

### LAWRENCE-1

#### CORE DESCRIPTION

<u>Interval</u>	<u>Core Description</u>
0.0m - 2.0m	Dark yellow orange 90% clay, 10% occasional quartz grains, generally M-C. Occasional gypsum crystals and laterite pebbles. Occasional light bluish grey lumps of soft claystone.
2.0m - 4.0m	Dark yellow orange - light brown 80% clay, 20% sand. Otherwise as above.
4.0m - 6.0m	Pale brown - Grey-orange-pink 80% clay, 20% sandstone pebbles. Clay more Fe-rich brown-pink with occasional rounded quartz grains. Sandstone pebbles. Angular fragments generally 0.5cm. Very fine to fine quartz grains well sorted abundant mica. Abundant ferruginous and siliceous cement.
6.0m - 8.0m	Pale Brown - pale red 100% claystone fragments. Lenticular angular fragments of claystone.
8.0m - 10.0m	As above.
10.15m - 12.8m	10.15m (7" casing point, 103mm cored hole below). <u>Claystone</u> light green-grey to light brown-grey. Massive to blocky sub-conchoidal fracture when fresh break. Crumbles very quickly along horizontal partings. Occasional pyrolusite dendrites on bedding planes. Gypsum crystals or layers occur occasionally.
12.8m - 67.45m	<u>Medium grey - medium dark grey claystone</u> . Blocky to massive, no visible bedding. Sub-conchoidal fracture. Sub-horizontal - horizontal partings. Very fine siltstone at coarsest. Bulk of rock is claystone. Micaceous flakes generally larger than other particles. Occasional dark brown - black irregular flecks of organic matter generally less than 1mm, not common, less than 1% of rock. Talcose when scratched, quite soft. Major variations over bulk of unit are colour variations - becomes both darker grey and greener in colour in areas, otherwise extremely uniform. <u>Interpretation</u> - typical Lower Velkerri.

## Interval

## Core Description

12.8m - 67.45m  
(cont.)

From 25m, irregularly bounded zones of richer organic matter claystone exhibit first indications of some sort of bedding/lamination. As one goes lower through unit, beds/laminae become more defined, sharper bounded and claystone obviously consists of beds of varying thickness and colour. Beds generally from a few mm to 2 to 10cm. Slight colour variation, generally darker thin beds interrupt massive medium grey-medium dark grey and light green-grey claystone. Occasional thin - 2mm organic rich layers. Can see evidence of soft sediment deformation - slumping, minor faults, dewatering, etc. Fractures and faults approximately 30° dip occur occasionally. Carbonate infills fractures, occasional pyrite. Bedded nature more developed towards base. Claystone within beds blocky to massive and structureless. Occasional steep to sub vertical fractures. Occasional thin carbonate veins 30-45° dip. Occasional thin lenticular laminated and lenticular organic matter - almost organic mats. Soft sediment deformation common - mostly slumps and low angle faults. Occasional chimney-like water escape structures.

As go deeper content of discrete organic matter, lenticular laminations and flecks increases - 5-10%. Below approximately 30m (gradual change and quite subtle), light green-grey colour dominant. Down to 50m, only occasional (approximately 20%) 5-10cm beds of medium grained claystone, with commonly associated organic laminae down to 56m.

From 56m - 65.72m, homogeneous light green grey claystone with no organic layers or matter. Blocky to crumbly. No visible sedimentary structures, sub-conchoidal to conchoidal fractures. Basal 2m organic layers increase in abundance and there is a gradational contact into the unit below which is a darker grey colour with abundant organic matter and bedded character.

67.45m - 67.50m

Calcareous bed with light grey-green claystone band interval. Crystal-like habit, similar to vuggy carbonate lenses seen in Velkerri before. No visible bitumens or trace of hydrocarbons. Cream - off-white calcite or siderite.

67.50m - 87.75m

Medium dark grey - dark green - green blue claystone. Different coloured claystone interbedded/interlaminated with homogeneous and chaotic claystone - the latter with randomly oriented organic matter flecks. Beds range in thickness from less than 1cm to 5-10cm. Top of unit gradational with above.

IntervalCore Description

- 67.50m - 87.75m  
(cont.) Claystone dominant in green-grey colours. Below 69.0m dominated by darker greys and "debris flow" claystone with organic matter flecks. Soft sediment deformation abundant with slumped and contorted bedding, often shown by laminae of organic matter within claystone intervals.
- Middle of unit characterized by only occasional laminated/bedded layers and is dominated by thick massive beds of chaotic "debris flow"-like claystone with randomly oriented angular organic matter lenticules. Beds often over 1cm.
- Base unit again interlaminated and interbedded but is highly contorted and slumped. Alternate highly slumped and contorted laminated claystone intervals with "augen" structure, interbedded with massive "debris flow" units. Angular contact at base highly contorted. Tight folds with carbonates and sulphides at centres. Dismembered very fine sandstone pods in claystone - obviously highly deformed with large lateral displacements.
- 87.75m - 95.55m Black shale and green-blue to blue claystone. Organic rich, generally massive, occasionally interlaminated/bedded with dark green claystone. Large pyrite nodules -> 10cm diagnostic of this unit. Upper contact gradational with interbedded light grey claystone over 30cm. Lower contact with sandstone is sharp. Unit very similar to "Source unit" of Middle Velkerri.
- 95.55m - 95.9m Light grey to very light grey sandstone. Very fine to fine, interlaminated with very thin darker organic horizons less than 1mm thick. Planar bedded/laminated contacts, pyrite nodule at base. No visible porosity. White matrix - may be claystone. Basal 10cm forms scoured basal contact with unit below. Coarser grains and organic-rich debris. Scour dips at approximately 60-70°. Very steep erosional (?) contact.
- 95.9m - 114.7m Interbedded black shale. Similar to shale unit above. Medium dark grey - dark grey siltstone and light grey siltstone to very fine sandstone. Siltstone generally massive to laminate, organic rich, sharp contacts with lighter (sandstone/siltstone). Occasional base-bed loading structures. Mica. Some soft sediment deformation.

Interval

Core Description

- 95.9m - 114.7m  
(cont.) Siltstone (mudstone) 80-90%, with beds up to 1m thick. Sandstone/siltstone 10-20%, thin beds approximately 1-2cm, becoming thicker and more common towards base of unit, up to 5cm. Gradational contact with unit below where sandstone dominates. Occasional low angle crossbeds in sandstone, also climbing ripples.
- 114.7m - 126.65m Sandstone and Siltstone. Interbedded light grey - very light grey very fine sandstone and siltstone and medium dark grey - medium grey siltstone and occasional claystone. Light sandstone - siltstone dominates approximately 50-60% of unit. Generally planar bedded, 1-2cm beds to 15cm. Base bed contacts often flame structured into siltstone below.
- Abundant soft sediment deformation with light siltstone and dark organic siltstone intermixing. Occasional flame structures almost reach ball and pillow stage. Organic rich siltstone often interlaminated thin beds generally 1-2cm, occasionally up to 5-10cm. Top unit characterised by homogenous "debris flow" siltstone with organic flakes. Towards base unit, commonly have graded beds 1-5cm with light siltstone at base. Occasional sandstone grading up to darker siltstone - not claystone.
- Basal contact, 20cm of slumped and contorted light brown-grey fine sandstone - siltstone, weathering surface(?). Large augen-type structures.
- 126.65m - 152.3m Light olive grey to light grey siltstone/claystone with characteristic dark grey speckles sub mm in size. Essentially massive with interbedding of light grey and dark grey in thin planar beds, generally 1cm to 2cm. Very unusual 'spotty'/stippled texture. Spotted texture in very fine siltstone or claystone matrix. Traces of pyrite and rare organic matter but dominated by very small mica flakes. Speckles or spots of dark grey, too small to see composition.
- Interpreted contact metamorphic. Effect of dolerite intrusion but may be diagenetic affect. Needs slide work. If metamorphic would classify as a Hornfels.
- Towards base unit, speckled character diminishes as unit grades down into a light olive grey claystone.
- Last 2-4m over base is highly fractured by vertical to sub-vertical fractures which are calcite-filled.

IntervalCore Description

- 152.3m - 153.9m Light olive grey to light green-grey claystone. May be thinly bedded with thin very light grey beds approximately 2-5mm. Becomes coarser towards base with M-C quartz grains in claystone matrix. Generally massive with no well defined bedding.
- 153.9m - 155.25m M-C quartz sandstone interbedded with light olive grey to light greenish grey claystone. Generally irregularly banded and occasionally thinly bedded. Claystone intraclasts within sandstone beds, particularly towards base. Occasional minor bitumen staining. Abundant euhedral pyrite along fractures towards base. Beds of sandstone approximately 20cm. Sharp contact with unit below.
- 155.25m - 165.55m Altered margin of dolerite intrusion. White spotted dark intrusive igneous rock. White ovoid areas of soft white mineral (?). More likely isolated xenoliths of country rock. Occasional calcite, rare bitumen staining. Generally dark green-grey matrix, few crystals, mostly has clayey - 'weathered' appearance.
- Compositionally resembles granite with quartz grains, mica and crystalline shapes of white clayey material. Occasional ferromagnetic minerals give the rock its dark matrix colour. Towards the base, large vertical-sub vertical calcite-filled veins occur with dark green chloritic mineral having large fibrous elongate crystals.
- 165.55m - 250.00m Crystalline dolerite intrusion. High magnetic susceptibility diagnostic. Dark green-grey coarsely textured crystals of several mm diameter. Elongate crystals of biotite mica-with deep golden yellow colour on surface. Pink and cream-green plagioclase. Abundant ferromagnetic minerals. Grain size increase to a depth of 178m where it reaches a maximum; colour and textural variations throughout. Constant in large proportion of pink plagioclase. At max grain size, gabbroic rather than doleritic. Large pink (red-brown) plagioclase. Largest at 170 - 180m.
- From 180m to 250m, grainsize decreases from very coarse-coarse, down to medium grained at 250m. Constituents of rock constant.
- Matrix 50-60%  
Feldspars red-brown 20-25% to 30-35%  
                  green-grey 10%  
Ferromag minerals (mostly magnetic) 10-20%  
Mica 5 - 10%  
Trace Pyrite - 2%

IntervalCore Description

250.0m - 259.0m

Dolerite

As for previous description, but fine grained.

Matrix - dark green grey - black 50-60%

Plagioclase 25%

Hornblende/Augite 10%

Magnetite 10%

Mica 5%

Pyrite - traces

Similar colour to grabbroic section, minor composition variation. Becoming finer grained toward margin of intrusion, i.e., cooled more rapidly. Large calcite veins with >1cm calcite crystals as you approach edge of intrusion.

259.0m - 261.5m

Chilled margin dolerite/altered contact.

259 - 260m (approx). Very fine grained dolerite.

Gradational transition below this to altered dolerite contact with country rock. Very light grey to light grey, medium grained rock. Lath-like crystals arranged loosely in dominantly very light grey matrix, laths to 2mm long. Laths protrude into clay-like matrix which may contain quartz.

Plagioclase cream-white coloured. Abundant pyrite & mica? Pyrite infilling intercrystal spaces.

Matrix 60%

Plag 15-20%

Quartz 5% - 10%

Mica 10%

Pyrite 5%

261.5m - 281.35m

Quartz sandstone. Light grey to very light grey, 100% quartz grains, i.e., quartz cemented quartz arenite. No visible porosity. Abundant quartz overgrowths.

Generally fine to medium grained, generally moderately well sorted, although occasional poorly sorted, subangular to subrounded.

No visible porosity to max 5% porosity.

269m - Occasional light green grey claystone intraclasts, very soft, occasionally in layers. Easily weathered (washed?) out to form vughs.

Sandstone generally very uniform, no trace of bitumen or hydrocarbon staining. Sulphides abundant throughout. Minor galena, mostly pyrite in spherical bodies up to 1cm (replacing claystone intraclasts?) and in small 1mm specks throughout sandstone.

IntervalCore Description

261.5m - 281.35m  
(cont.)

Fractures

Abundant sub vertical 75° - 80° fractures, sulphide (pyrite) disseminated on surface - mostly galena. Fractures approximately 50cm apart. Closer towards base. Generally closed <1mm, though towards base to 1mm open.

Ankerite, minor sulphide and anhydrite (?) along fracture, 1-2mm thick horizontal stylolites approximately 30mm apart. Micaceous matter along surface. Stylolites - pitted surface. Medium grained in colour. Occasional small dark patches, graphitic? - mostly covered in grey micaceous material. Occasional medium grained clay bands in sandstone to 1cm thick; puggy very soft and greasy.

Towards base, most fractures filled with yellow - brown "Ankerite". Veins approximately every 10cm, with 60° dip and some sub-horizontal fractures open to 2mm. 10cm above base claystone intraclasts (rare) are replaced by scallop (acicular edged) ankerite/siderite crystals up to 2-3mm.

281m - 286.4m

Vuggy siderite/ankerite, massive and crystalline - scalloped shaped crystals with blisters of galena on surface. Crystals probably line cavity. Very porous sandstone immediately below. Up to 15% visible porosity. No fluorescence or oil staining.

Below 40-50cm, massive ankerite. 2½m of unconsolidated sand grains - either from very porous sandstone or produced by swabbing and breakdown of porous sandstone.

286.4m - 289.25m

Quartz sandstone, as for above cavity and porous sandstone. Low to no visible porosity, fractures less abundant. Shale (claystone) intraclasts. Sharp transition to unit below. Stylolites common and sulphide replacing shale intraclasts.

289.25m - 289.70m

Light green to grey claystone - siltstone.

Intraclasts seen in sandstone higher up, look to be same lithology i.e., erosional diachronous unconformity. Talcoose, slippery surfaces on bedding surfaces.

289.70m - 291.80m

Interbedded Sandstone and Siltstone. Weathered interbedded yellow grey to light olive grey very fine to fine sandstone and medium light grained siltstone. Medium light grained siltstone, dominantly (70%) spotted as for siltstone above dolerite contact.

IntervalCore Description

289.70m - 291.80m (cont.) Beds have  $\frac{1}{2}$  to 2cm sharp upper and lower contacts with soft sediment deformation.

Very fine to fine sandstone occasionally spotted, unusual soft sediment deformation effects characteristic.

Beds generally less than 1cm.

Ankerite zone in Bessie Creek sandstone approximately 283m. Sedimentary structure samples and photos:

291.5 - 291.6	324.2 - 324.4
293.9 - 294.0	324.8 - 325.0
295.8 - 296.05	325.8 - 326.0
296.8 - 297.0	328.6 - 328.7
308.6 - 308.7	336.7 - 336.8
309.4 - 309.5	343.5 - 343.6
310.5 - 310.6	343.2 - 343.3
311.7 - 311.8	344.1 - 344.2
312.9 - 313.0	345.5 - 345.6
314.5 - 314.6	
318.05 - 318.2	
323.2 - 323.3	

291.80m - 296.5m Lithologies as for above - colours different, not weathered.

Medium dark grey siltstone light olive grey, very fine to fine sandstone. Speckled appearance strongly developed at top, becoming less obvious towards base. Strange soft sediment deformation features throughout - slumps and lystric faults and what looks like overriding blocks of sediment, compared with thrust slices - probably due to gravity sliding and occasionally contorted bedding. Also some ball and pillow and flame structures at base sandstone. Boudinaged type division of thin sandstone beds.

Samples: 298.8m-298.9m, 294.6m-294.7m.

296.5m - 307.26m As for above, without speckled nature.  
Interpretation: - due to contact metamorphic affect of dolerite. Interbedded and interlaminated grey black siltstone and light grey, very fine to fine sandstone.

Siltstone, generally massively bedded and occasionally finely interlaminated, with sandstone often cut into and channelled by sandstone scours. Occasionally contorted bedding and imbricated slice intraclasts in thin zones in siltstone or as clasts in sandstone.



IntervalCore Description

296.5m - 307.26m  
(cont.)

Sandstone - low angle cross-bedded often scoured bases, flame structures, occasionally upward fining. Soft sediment deformation - contorted bedding and slumping. Sandstone beds gradually thin towards base, down to <1cm and only 10-15% of unit.

307.26m - 358.4m

Interbedded Siltstones/claystones and sandstones. Massively bedded dark grey to grey black siltstone - claystone and occasionally interlaminated/interbedded with light grey, very fine to fine sandstone. Abundant large pyrite nodules in black siltstone - beds to 30cm and massive. Organic matter visible as large flakes. Soft sediment deformation, contorted and slumped from 326m. Siltstone also medium grained occasional large sub-rounded intraclasts light siltstone in dark siltstone.

Very fine to fine sandstone - laminae and thin beds to  $\frac{1}{2}$ cm. Base bed structures - flame structures and low angle cross-bedding. Strange gravity slide imbricate slices - as seen in unit above, approximately 5%.

From 326m, sandstone more common to 20% regularly interlaminated with light siltstone. Unit characterized by abundance of pyrite nodules and layers. Extremely finely interlaminated at base down to 340.4m.

From 340.4m, sandstone <5%, having thin layers less than 1 cm. Thin diffuse-edged pyrite nodules common. Finely interlaminated light grey siltstone and dark grey to black siltstone. Unusual scour features in siltstone.

Massive dark grey siltstone. Bulk of unit finely interlaminated to cross-bedded siltstone.

Basal 10m, dark grey to grey black, massive to interlaminated siltstone/claystone. Bedding more planar towards base. Dips increase to 5 - 10°. Sedimentary structures as above.

358.4m - 388.2m

Light grey to green grey siltstone to claystone. Interlaminated/bedded with minor dark grey organic rich siltstone to claystone and light grey, fine grained sandstone. Occasional carbonate lenses/stringers and unusual bedding features.

## Interval

## Core Description

358.4m - 388.2m  
(cont.)

Siltstone to claystone, generally thick, massive beds to 5-10cm having many laminations. Interlaminated with dark grey organic rich siltstone to claystone. Occasional 1mm to 5mm light grey fine sandstone lenses. Occasional continuous bedding/lamination, with carbonate cement common.

Truncated bedding in sandstone and siltstone common - scours/cross-bedding. Large scale truncations most common.

2-3cm carbonate lenses common - unusual inverted dish-like internal bedding features. Occasional graded bedding in fine sandstone - grading up through light green - grey siltstone to green-grey siltstone to claystone. Unusual pyrite stringers and thin beds common.

As get deeper, unit becomes coarser with less siltstone to claystone laminations and more medium dark grey to medium grey siltstone with bedding.

388.2m

Gradational boundary from above. Below boundary, 40cm green to grey siltstone with regularly interbedded thin light grey siltstone. Fine to medium beds/lenses 1/2cm thick, getting finer towards the base of the unit.

382.2m - 447.90m

Green-grey to dark green grey siltstone. Medium grey to dark grey siltstone and light grey to very light grey, fine to medium sandstone. From irregularly interbedded with siltstone dominant (i.e., >90%), to regularly interbedded over short intervals. Lithology - sandstone 40%, siltstone 60%.

Laminae/beds generally planar, only occasional soft sediment deformation, quite common truncated bedding and graded bedding.

Green-grey to dark green grey siltstone dominant throughout unit, especially at very top and lower 2/3rds of unit. Generally massively bedded/laminated beds, 1cm to 10cm. Occasional organic layers and mica.

Medium grey to dark grey siltstone as occasional thin intervals 50cm to 1m. Same bedding and other characteristics as green siltstone. Organic rich mudstone.

Interval

Core Description

382.2m - 447.90m  
(cont.)

Two siltstones often grade into each other and are intimately associated. Below top 10m, siltstone commonly interbedded with sandstone.

Sandstone with occasional light grey to very light grey calcite matrix. Sandstone shows water escape structures, quite often x-bedded.

Sandstone content increases steadily towards base with glauconite common in basal 5-10m. Unit has regularly - irregularly bedded/interlaminated nature to base where it passes gradationally into the unit below.

Glauconite common as lags in scours and cross bedded sandstones and also disseminated throughout. Fine to medium cross-bedded sandstone towards base.

Sandstones form 30% of lithology at base but are only thinly bedded/interbedded, maximum 1cm, generally few mm thick within siltstone.

Occasional base bed flame structures. Boudin-type deformed thin sands common.

Scours and contorted bedding common throughout and characterize unit. Rare soft sediment deformation zone with intraclasts and green siltstone rip-ups.

Glauconite and large mica flakes common on bedding surfaces - "face breaks".

Thin sandstone often forms locus for scours/slumping and other soft sediment deformation.

447.90m - 455.15m

Interbedded dark grey micaceous siltstone. Medium dark grey coarse siltstone and coarse to medium light grey glauconitic siltstone, glauconite is bluish - green.

Siltstone occurs commonly as upward fining sequences with irregularly scoured bases, glauconite pebble-bearing sands and passes upward quickly into coarse siltstone and then thick beds of massive dark grey to medium dark grey siltstone (90% of unit). Thin fining upward sequences at top and base of unit. Middle dominated by massive siltstone.

Scoured bases resemble channel bases with coarse lags and glauconite. Rapid upward fining transition to thin (2cm) coarse siltstone and then up to thick massive siltstone. Bases often show base bed structures i.e., flame structures etc.

IntervalCore Description

455.15m - 455.85m Siltstone and Glauconite Sandstone. Sharp boundary to unit below. Regularly thinly interbedded medium dark grey micaceous siltstone and light grey to medium light grey glauconitic cross-bedded sandstone.

Rapid transitions between each. No graded bedding except on small scale within sandstone. Bi-directional cross-bedding in sandstone with only minor glauconite in unit above.

- N.B. no coarse glauconite.

Sandstone beds <1mm - 1cm - 5-6cm  
Siltstone beds <1cm

455.85m - 476.4m Siltstone and Sandstone. Irregular interbedded medium dark grey siltstone and medium light grey medium to fine occasionally coarse grained sandstone. Top of unit quickly passes into dominantly massive siltstone with occasional thin sandstone stringers - beds <½cm with internal graded bedding. Upward fining.

Basal flame structures etc. Only occasional cross-bedding - more lens-like, range of grain sizes - becomes very coarse in part toward base.

Siltstone, generally fine to 470m, becomes coarse to very coarse siltstone and then passes downward into a very poorly sorted, medium dark grey sandy siltstone. Uniform medium dark grey, fine to medium sandy siltstone, becoming coarser toward base. Very coarse lag with rip-ups, 5m at 471.8m.

Basal 5m generally differs from rest of unit. Basal 2m identical to the regularly thinly interbedded sandstone/siltstone above. Above this and passing rapidly down into it is a 1m section of medium dark grey, very poorly sorted, very coarse to coarse sandy siltstone. Large sand grains in siltstone matrix.

Occasional light brown to grey areas, approximately 10-15cm in massive siltstone - areas of subsurface oxidation?

Gradationally passes into unit below.

Sandstone at base again lens - like. Irregular, not planar. No cross bedding present.

Samples taken at 428.1 to 428.3m, approximately 440m and 471.8 to 471.9m.

Interval

Core Description

ABNER SANDSTONE

476.4m - 512.70m

Munyi Sandstone Member

Sandstones and Siltstones. Interbedded light grey to very light grey, fine to very coarse quartz sandstone, medium dark grey siltstone and occasional orange-brown, Fe-stained sandstone intervals. Minor green - grey siltstone beds and rip-up clast sandstone.

481.2m - Variably interbedded sandstone and siltstone, generally thin. Wormlike water escape structures, sandstone dykes, mud cracks (?) and teepees (?). Sandstones coarse to very coarse and generally massive. Siltstone where medium, is dark grey, massively structured in thin beds to 2-3 cm. Green grey siltstone with minor siderite spheres - "nodules" (?).

Occasional scoured bed bases, cross-bedded, occasional rip-up clasts of shale.

Sandstone coarse to very coarse, poorly sorted and highly silicified.

482.40 - Sandstone and siltstone as above but with large sideritic spheres (2mm) - depositional (?). Siderite concentrations in siltstone are generally green grey but occasional medium dark grey.

482.40m - 494.20m

Thinly Interbedded sequence of light grey sandstone and medium dark grey siltstone as described in top unit. Sandstone coarse to very coarse, generally moderately well sorted, occasionally poorly sorted. Highly silicified, generally non-planar base-bed contacts where very thinly interbedded with lens-like siltstone beds. Upper 3m unit, siltstone dominant. Lower part of unit, sandstone dominant.

Abundant "mud cracks", worm-like structures, and intraclasts.

Gradational change to unit below. Green-grey and light olive grey siltstone dominant towards base. Abundant shale rip-ups (with siderite nodules) generally 1-2cm across to 5-6cm.

494.20m - 499.24m

Siltstone dominant with occasional green - grey, in orange brown, mottled, thin, interbedded siltstone. Abundant rip ups of this siltstone in the sandstone.

Sandstone and siltstone, light grey and medium dark grey when not mottled by Fe-staining effects.

<u>Interval</u>	<u>Core Description</u>
494.20m - 499.24m (cont.)	<p>Approximately 1m heavily Fe-stained conglomerate at centre of unit. Pebbles, generally shale rip-up clasts up to 2cm long.</p> <p>Green-grey siltstone, mica (sericite) abundant on some partings.</p> <p>Some cross-beds and water invasion front staining in sandstone - that or high angle cross-bedding, difficult to distinguish.</p>
499.24m - 512.7m	<p><u>Basal sandy unit of Munyi light grey to very light grey fine sandstone.</u> Occasionally green to grey rip up clast beds. 5-10m thick at top. Some contorted bedding and soft sediment deformation.</p>
502.0m - 504.0m	<p><u>Occasional thin green-grey and orange-brown mottled siltstone beds.</u> Occasional very coarse to coarse quartz sandstone beds - 10-20cm thick.</p> <p>Gradational change to unit below. Sandstone becoming finer. Last coarse to very coarse quartz sandstone at 510.5m.</p> <p>Below this, 510.5 - 511.5m.</p> <p>Medium dark grey siltstone, dominantly thinly interbedded with light grey fine sandstone rip-ups, contorted bedding, sandstone dykes, etc.</p> <p>Clean sandstone below this to contact with sandstone below.</p> <p>10cm dark grey organic-rich(?) siltstone to claystone at top.</p>
	<p><u>ABNER SANDSTONE</u></p>
512.7m - 530.5m	<p><u>Hodgson sandstone member.</u></p> <p>Massive to moderately thickly bedded, light grey to very light grey. Series upward fining units, 10-20cm co-sets. Coarse to very coarse bases - medium to fine grained dominantly throughout, cross-bedded, low angle planar sets.</p> <p>5-6m generally massive sandstone (silicification obscures bedding and cross-bedding).</p> <p>5-10cm dark grey to grey-black siltstone to claystone, very organic rich at top of each sandstone sequence.</p>

Interval

Core Description

512.7m - 530.5m  
(cont.)

Abundant stylolites and shale rip-ups localized at top.

Fractures become more common towards base. Basal 2m, fractures open - 2mm vertical, average 1 to 5cm. in length.

Discrete bitumen blebs in spaces now totally silicified - not enough to colour sandstone. Stylolites.

Interpretation - bar deposit sandstone - upward fining - with thin, bar top organic deposits - thicker in modern day environment because of proliferation of organic matter.  
Here - thin 5-10m massive.

E.O.H.