PALYNOLOGICAL REPORT ON

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PEDIRKA BASIN

FOR: Central Petroleum Ltd

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SUMMARY

Palynological analysis was undertaken on 20 core samples from 501.90m to 964.18m.

DEPTH (m)	PALYNOLOGY ZONE	AGE	Environment of Deposition
501.90	*C. australiensis*	Berriasian	Marine
503.53 - 510.88	*R. watherooensis*	Tithonian	Lacustrine
555.07 – 585.87	*D. ericianus* (L5b, PP4.2)	Late Permian	Lacustrine
622.80 - 622.83	*P. sinuosus* (U4a, PP3.2)	Early Permian	
672.10 - 672.13	*P. sinuosus* (L4, PP3.1)		
726.00 - 793.98	*S. fusus* (U3a, PP2.1)		
857.91 - 964.18	*P. pseudoreticulata* (L3a, PP2.1)		

RESULTS

Palynological analysis was undertaken on 20 core samples from 501.90m to 964.18m.

The samples were prepared using standard methods, including HF maceration, $ZnBr_2$ heavy liquid separation, 10 micron filtration and oxidation with Nitric Acid for 5 minutes. One oxidised/filtered palynological slide, a kerogen slide and filtered kerogen slide were prepared for each sample.

All the palynological slides were examined and the species observed recorded. The zonation follows Backhouse (1991) and Helby, Morgan & Partridge (2004).

Palynological Subdivision

DEPTH (m)	PALYNOLOGY ZONE	AGE	REMARKS
501.90	*C. australiensis* (PK1.2)	Berriasian	Very abundant yield, well preserved and diverse spore-pollen assemblage. Common *Cicatricosisporites australiensis* and an absence of younger species indicates a correlation to the zone. The FAD of the species in the literature is taken as Berriasian, however, unpublished data indicates a Kimmeridgian age is more probable. *D. complex* and *C. hughesi* suggests a correlation to the PK1.2 Zone of Price. A poorly preserved dinoflagellate assemblage did not yield any index species. The assemblage included *Cassiculosphaeridium* sp., *Cribroperidinium* sp., *Sentusidinium* sp. and *Barbatocysta* sp. Further samples from the interval would likely yield a more diverse assemblage of dinoflagellates and a more precise age.
503.53	*R. watherooensis* (PJ6)	Tithonian	Very abundant and well preserved assemblages of spores and pollen. Occurrences of the nominate species and absence of younger species indicates a correlation to the zone that is also called PJ6 (Price). *F. daylii* and *F. wonthagiensis* in the samples might be indicative of a correlation to the overlying zone, however, at this stage, the older zone is applied. The assemblages were characterised by very abundant conifer pollen and spores including *R. circolumenus*, *C. cooksoniae*, *M. florida* and *C. stylosus*.
510.88			

DEPTH (m)	PALYNOLOGY ZONE	AGE	REMARKS
555.07	*D. ericianus* (L5b, PP4.2)	Late Permian	Moderate to very rich assemblages and relatively diverse. The absence of *Dulhuntyspora* species and occurrences of *P. sinuousus* and *D. ericianus* indicate a correlation to the zone. Of note was an absence of *P. pseudoreticulata.*
564.79			
585.84 – 585.87			
622.80 - 622.83	Upper *P. sinuosus* (U4a, PP3.2)	Early Permian	A very rich and diverse assemblage. Occurrences of relatively common *P. sinuosus* and an absence of *D. ericianus* indicates a correlation to the upper part of the *P. sinuosus* zone. Specimens of *Interradiaspora robusta, Procoronaspora spinosa,* ?*Dictyotriletes aules* and a specimen of *Microbaculispora* transitional to *D. ericianus* are consistent with this assignment.
672.10 - 672.13	Lower *P. sinuosus* (L4, PP3.1)		A similar assemblage as above, however, *P. sinuosus* was not observed, except as a possible degraded specimen. But a specimen of *P. cicatricosus* was present and this suggests a correlation to the lower part of the *P. sinuosus* Zone.
726.00 - 726.03	*S. fusus* (U3a, PP2.1)		A rich and diverse assemblage with an apparent absence of *P. sinuosus* suggests a correlation to the zone.
733.33 - 733.34	*S. fusus* (U3a, PP2.1)		Rich and diverse assemblages with an increase in *Plicatipollenites* spp. and *Potoneisporites* spp.. An occurrence of *Cyclogranisporites* sp. A (Backhouse) and *Procoronaspora spinosa* suggests an age no older than the *S. fusus* Zone and *Jayantispora* sp. B (Backhouse) is restricted to the upper part of the zone. Specimens with similarities to *S. fusus* are common but specifically conformable specimens are very rare.
771.97 - 772.00			
787.70 - 787.72			
793.95 - 793.98			
857.91 - 857.92	*P. pseudoreticulata* (L3a, PP2.1)		Rich and moderately preserved spore pollen assemblages are present. Common occurrences of the nominate species and an absence of younger species is used to indicate a correlation to the zone. An apparent *S. fusus* at 892.49m and *Jayantisporites* sp. B at 865.59m suggests it may still correlate with the overlying zone down to that level, but further work is required on the zonation to confirm this. Other species of significance include a possible *Converrucosisporites* sp. A (aff. *C. naumovia*) and a new species of *Pseudoreticulatisporites. Vittatina scutata* and the fresh water acritarch *Mehlisphaeridium irregulare* are regarded as not older than this zone.
865.56 - 865.59			
873.30 - 873.31			
892.42 - 892.49			
948.01 - 948.02			
958.93 - 958.94			
964.15 -			

Environment Subdivision

DEPTH (m)	ENVIRONMENT OF DEPOSITION	REMARKS
501.90	Marine	Relatively common dinoflagellate species.
503.53 - 510.88	Lacustrine	Very rich spore-pollen assemblages but discernable algal cysts are lacking except for a few Botryococcus specimens. However, the nature of the kerogen suggests a lacustrine setting is probable. Analysis with a UV system would no doubt recover some additional acritarchs, but the high rate of deposition has meant that any in situ acritarchs are very diluted, relative to the transported component.
550.07 - 964.18	Lacustrine	Permian acritarchs are common in most of the samples, signifying a lacustrine setting for the entire sequence. Apart from leiospheres (including *Bazilea*), Tasmanites and Botryococcus, species of significance include *Cymatiosphaera gonwanensis* and *Cymatiosphaera* spp., *Peltacysta* spp., *Mehlisphaeridium regulare* and *M. irregulare*, *Tetraporina* sp., *Spongocystia* sp. and *Maculatisporites* spp.,

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