

# MORGAN PALAEO ASSOCIATES

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**RE:** CASTERTON FORMATION STUDY

## 1. NEW SAMPLES

Ballangeich-1 : 1225-30m cutts : heavy caving includes numerous markers from the Aptian Eumeralla equivalent *hughesi* Zone and the Crayfish Group *wonthaggiensis* plus minor marine Tertiary : no secure age assignment is possible : environments are presumed non-marine with abundant cuticle, and the dinoflagellates presumed caved from the Tertiary (*Spiniferites ramosus*).

I hold no other data from this well. Please send the Well Completion Palynology Report.

Bus Swamp-1 : 1803.0m (swc) : lower *australiensis-watheroensis* Zones : early Neocomian-?late Jurassic : non-marine, strong lacustrine influence : marginally mature : usually lower Pretty Hill Sandstone and Casterton Formation : assemblage confirms 1787.6m (swc) detailed in my original report : contains high algal lcosphere content - suggest good oil source characteristics.

I do not know what palynology made it into the WCR. I have only my own reports. Do I need any others?

Greenslopes-1 : 2547-50m (cutts) : lower *australiensis-watheroensis* Zones (no *D. speciosus*, *C. hughesi* or *F. wonthaggiensis* seen) : early Neocomian-?late Jurassic : non-marine, slight lacustrine influence : consistent with Casteron Formation elsewhere, but at variance with WCR data chart. Perhaps there was mud contamination of original swcs (2505m swc has *C. hughesi*, *D. speciosus*, 2536.0m swc has *D. speciosus*, 2556.0m swc has *C. hughesi*, 2562.0m has *D. speciosus*, *F. wonthaggiensis* (the latter considered caved in the original ECI report).

I recommend new examination or reprocessing of the basal swcs to see if mud contamination or misidentification is likely. If *D. speciosus* at 2536m and 2562m and *C. hughesi* at 2562m are false, then 2536-2562m would be lower *australiense-watheroensis* Zones, consistent with elsewhere.

Hawkesdale-1 : 1710-13m (5610-20ft) cutts : 80% Triassic with 20% mixed Cretaceous caving, mostly from Aptian Eumeralla equivalent *hughesi* Zone : no older zone is possible : my report quotes Dettmann (1970) data presumably from WCR where

ft) CORE : her data does not list *D. speciosus* or *C. hughesi* from the good assemblage at 1715m or the poor assemblage at 1717m, so I would assign these to lower *australiensis* Zone (*C. australiensis* is recorded from 1715m, so *watherooensis* Zone is not possible at this location if *C. australiensis* is in place).

Resampling of the core might produce better new data if required. I cannot locate my 1992 report. Can you please send a copy?

Woolsthorpe-1 : 1865-68m (6120-30 ft) cutts : heavy caving includes *Eumeralla* equivalent *hughesi* Zone and Crayfish Group *wonthaggiensis* to *australiensis* Zone markers : no precise age assignment is possible : non-marine : marginally mature.

Dettmann (WCR) data from 1856m (6090 ft) is inconclusive (lean). At 1899m (6230 ft) swc she lists *C. hughesi* and *D. speciosus* indicating the lower *wonthaggiensis* Zone (if in place). At 1945m (6380 ft), a fair assemblage contains no younger markers and appears to be lower *australiensis-watherooensis* Zones, with no upper *australiensis* Zone visible. My new cuttings work (1988 for Minora) was inconclusive due to caving. I cannot locate my 1992 report.

## 2. REVIEW EXISTING DATA

Casterton-1 : I do not know what data is in the Casterton-1 WCR. I presume data subsequently compiled into Evans (1966). I have my core data from Morgan (1986) and Morgan (1988) showing oldest *D. speciosus* at 1819m (5968 ft) CORE, oldest *C. hughesi* at 2063m (6769 ft) and a lower *australiensis-R. watherooensis* Zones interval at 2211m (7253 ft) CORE-2425m (7957 ft) CORE.

At 2250-54m (7385-95 ft) CORE a lean black and carbonised assemblage is not conclusively assigned to any zone, but is constrained by samples above and below.

At 2359-62m (7739-49 ft) CORE good *R. watherooensis* indicates the lower *australiensis-watherooensis* Zones.

At 2422-25m (7947-57 ft) CORE good *C. equalis* indicates the lower *australiensis-watherooensis* Zones although *R. watherooensis* itself was not seen.

McEachern-1 : I have Morgan (1990) data, presumably submitted in the WCR. Data from the Casterton Formation interval is entirely cuttings based, but appears to be reliable as the cuttings appear uncontaminated.

2354m (cutts) contains oldest *C. hughesi* without *D. speciosus* indicating the upper *australiensis* Zone. However, *C. hughesi* could be caved slightly and a lower *australiensis-watherooensis* assignment cannot be excluded. It also contains *C. australiensis* which may also be caved.

2364m (cutts) lacks the key markers and is assigned to lower *australiensis-watherooensis* Zone on the markers beneath.

2374m (cutts) contains *R. watheroensis* and so is assigned to the lower *australiensis-watheroensis* Zones interval.

2384m (cutts) contains *C. equalis* and so is assigned to the lower *australiensis-watheroensis* Zones interval.

### 3. CONCLUSIONS

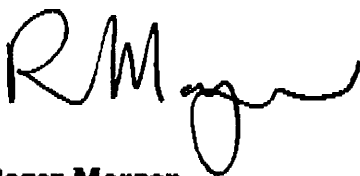
Overall, the Casterton Formation usually contains the lower *australiensis-watheroensis* Zones where high quality data is available. In McEachern-1, it may also contain upper *australiensis* Zone at the top, but since the data is cuttings based, it is inconclusive. In Woolsthorpe-1, it appears to contain lower *wonthaggiensis* Zone at the top (1899m = 6230 ft) but the data is old and swc contamination is possible. In Greenslopes-1, lower *wonthaggiensis* Zone is suggested by the WCR data, but lower *australiensis-watheroensis* Zones interval is suggested by the new cuttings. Swc mud contamination may be responsible, and reprocessing or re-examination is recommended. Ballangeich-1 cannot be assessed as I do not have the existing data, and the new cuttings are inconclusive.

Clearly, Greenslopes is the most anomalous well.

### 4. RECOMMENDATIONS

- 4.1 Please send Ballangeich-1 WCR data and my 1992 report.
- 4.2 Reprocess/re-examine Greenslopes-1 swcs.
- 4.3 Resample Hawkesdale-1 CORE
- 4.4 Resample Casteron-1 CORE at 3422-25m (7947-57 ft) if required.

Regards,



**Roger Morgan**  
25th Novemer 1996  
Ref: Fax.casteron

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CORE #22