New and revised palynological data for the Otway Basin

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by

E. Monteil, A. Kelman and A.A. Krassay
Geoscience Australia
Chief Executive Officer: Dr Neil Williams
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New and revised palynological data for the Otway Basin

1. EXECUTIVE SUMMARY

As part of Geoscience Australia’s 2002-2004 work program, the Petroleum and Marine Division initiated a collaborative study of the Otway Basin (Figure 1) with Primary Industries and Resources SA (PIRSA) and the Department of Primary Industries (DPI), Victoria. The aim of the project was to enhance the petroleum prospectivity of the basin through an improved understanding of depositional systems, integrated petroleum systems analysis and enhanced access to basic datasets critical to the exploration industry. Major project work components included seismic- and well-interpretation to construct a new regional chronostratigraphic framework for the basin (Figure 2), geochemistry and geohistory modelling to document regional petroleum systems elements (Boreham et al., 2004), and biostratigraphy to refine age-control, biozonations and correlations within the basin (Krassay et al., 2004).

Biostratigraphic work for the Otway Basin Project involved a major program of new sampling, processing and palynological analysis combined with a thorough review of existing biostratigraphic reports and data. Collection, processing and preparation of new samples were conducted in-house by Geoscience Australia staff. New palynological analyses were carried out by Morgan Palaeo Associates on a commercial contract basis.

This Record (CD-ROM) contains consultants palynological reports (Microsoft Word) and digital data files as originally submitted (wmf and dex formats) and as updated and standardised (csv format) for over 200 new samples collected from 14 selected Otway Basin wells (Table 1). This Record also contains revised palynological data files (csv format) for 18 Otway Basin wells (Table 2). Revision and updating of palynological data from existing reports and new consultants reports involved initial quality-assurance and quality-control of the data followed by updating of synonyms and systematics to comply with a standardised taxonomy. Revised data files contained in this Record adhere to a standardised taxonomy in current use at Geoscience Australia. Revised data files are presented in a csv format (Excel spreadsheets).
New and revised palynological data for the Otway Basin

**Figure 1.** Location map showing Otway Basin wells for which new or revised palynological data is contained in this Record.
New and revised palynological data for the Otway Basin

Table 1. New palynological data reports or data only(*) contained in this Record listed by well name. *The UNO is a unique number given to well reports and related materials that are lodged with the Petroleum Data Repository, Geoscience Australia.

<table>
<thead>
<tr>
<th>Well Name And Year Drilled</th>
<th>Operator</th>
<th>UNO*</th>
<th>New Palynology Report</th>
</tr>
</thead>
</table>
| Conan-1 1995               | BHP Petroleum | W3950025 | Morgan, 2003a  
Morgan, 2004b* |
| Copa-1 1989                | Cultus Petroleum (Australia) | W5890055 | Morgan, 2003b |
| Crayfish-1A 1967           | Esso Standard Oil | W5670009 | Morgan, 2003c |
| Flaxmans-1 1961            | Frome Broken Hill Co P/L | W3610001 | Morgan, 2003d |
| Morum-1 1975               | Esso Exploration & Production Australia Ltd | W5750002 | Morgan, 2003e  
Morgan, 2003f |
| Neptune-1 1973             | Esso Exploration & Production Australia Ltd | W5730013 | Morgan, 2003g |
| Normanby-1 1986            | BP Petroleum Development Australia | W3860008 | Morgan, 2003h |
| Port Campbell-2 1960      | Frome Broken Hill Co P/L | W3600002 | Morgan, 2003i |
| Reedy Creek-1 1992         | Gas and Fuel Exploration NL | W5920005 | Morgan, 2003j  
Morgan, 2003k  
Morgan, 2003l |
| Saint Clair-1 1993         | Gas and Fuel Exploration NL | W5930003 | Morgan, 2004a |
| Triton-1 1982              | Esso Australia Ltd | W3820002 | Morgan, 2003m  
Morgan, 2004c* |
| Troas-1/ ST1 1992           | BHP Petroleum | W5920044 | Morgan, 2003n |
| Windermere-2 1989          | Minora Resources | W3890007 | Morgan, 2003o  
Morgan, 2003p |
| Wynn-1 1994                | SAGASCO Resources | W5940001 | Morgan, 2003q |

* No report produced, csv file only.
Table 2. Wells for which existing palynological data reports were reviewed and for which revised data tables (contained in this Record) were created. *The UNO is a unique number given to well reports and related materials that are lodged with the Petroleum Data Repository, Geoscience Australia.

<table>
<thead>
<tr>
<th>Well Name And Year Drilled</th>
<th>Operator</th>
<th>UNO*</th>
<th>Existing Palynology Report for which data were revised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Champion-1 1995</td>
<td>BHP Petroleum</td>
<td>W3950028</td>
<td>Morgan, 1995a</td>
</tr>
<tr>
<td>Conan-1 1995</td>
<td>BHP Petroleum</td>
<td>W3950025</td>
<td>Morgan, 1995b</td>
</tr>
<tr>
<td>Eric the Red-1 1993</td>
<td>BHP Petroleum</td>
<td>W3930002</td>
<td>Morgan &amp; Hooker, 1993a, Morgan, 1994a</td>
</tr>
<tr>
<td>Fergusons Hill-1 1964</td>
<td>Frome Broken Hill Co P/L</td>
<td>W3630007</td>
<td>Morgan, 1992a</td>
</tr>
<tr>
<td>Iona-1 1988</td>
<td>Beach Petroleum NL</td>
<td>W3880004</td>
<td>Morgan, 1988a</td>
</tr>
<tr>
<td>La Bella-1 1993</td>
<td>BHP Petroleum</td>
<td>W3930001</td>
<td>Morgan &amp; Hooker, 1993b</td>
</tr>
<tr>
<td>Loch Ard-1 1993</td>
<td>BHP Petroleum</td>
<td>W3930014</td>
<td>Morgan, 1994b</td>
</tr>
<tr>
<td>Minerva-1 1993</td>
<td>BHP Petroleum</td>
<td>W3930004</td>
<td>Morgan, 1993, Morgan, 1994c</td>
</tr>
<tr>
<td>Minerva-2A 1993</td>
<td>BHP Petroleum</td>
<td>W3930017</td>
<td>Morgan, 1994d</td>
</tr>
<tr>
<td>Mussel-1 1969</td>
<td>Esso Exploration &amp; Production Australia Ltd</td>
<td>W3690002</td>
<td>Morgan, 1992b</td>
</tr>
<tr>
<td>Normanby-1 1986</td>
<td>BP Petroleum Development Australia</td>
<td>W3860008</td>
<td>Morgan, 1985</td>
</tr>
<tr>
<td>North Eumeralla-1 1974</td>
<td>Shell Development (Aust) P/L</td>
<td>W3730004</td>
<td>Morgan, 1988b</td>
</tr>
<tr>
<td>Pecten-1A 1967</td>
<td>Shell Development (Aust) P/L</td>
<td>W3670001</td>
<td>Morgan, 1992c</td>
</tr>
<tr>
<td>Pretty Hill-1 1962</td>
<td>Frome Broken Hill Co P/L</td>
<td>W3620002</td>
<td>Morgan, 1988c</td>
</tr>
<tr>
<td>Triton-1 1982</td>
<td>Esso Australia Ltd</td>
<td>W3820002</td>
<td>Morgan, 1992d</td>
</tr>
</tbody>
</table>
New and revised palynological data for the Otway Basin

<table>
<thead>
<tr>
<th>Well Name</th>
<th>Operator</th>
<th>Palynological Data</th>
<th>Author/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windermere-2</td>
<td>Minora Resources</td>
<td>W3890007</td>
<td>Morgan, 1992e</td>
</tr>
<tr>
<td>Wynn-1</td>
<td>SAGASCO Resources</td>
<td>W5940001</td>
<td>Morgan, 1994e</td>
</tr>
</tbody>
</table>

2. INSTRUCTIONS FOR USE OF THIS PRODUCT

This Record (CD-ROM) contains a series of palynological reports and data files in the following formats and accessible through the file manager software on your computer:

- Summary in Adobe pdf format (free Adobe Acrobat Reader software included)
- New Palynological Data in csv, dex, wmf and MS Word format
- Revised Palynological Data from existing sample reports in csv format
- Appendix, which includes data, files in csv format for which no reports have been produced.

File naming convention for this Record: File prefixes include well name, author/date of associated report as contained in the reference list, number of counts if specified and type of palynomorph if specified. File names containing ‘revised’ refer to data that originate from revision of data tables included in pre-existing reports as referenced.

The new palynological reports and data (Microsoft Word, dex and wmf formats) supplied with this Record are reproductions of documents submitted to Geoscience Australia by Morgan Palaeo Associates over the period 2003/2004. The new palynological reports need to be accessed through Microsoft Word or equivalent programs that support Microsoft Word text files. The wmf files can be accessed through many Windows based programs, e.g. inserted as a picture into Microsoft Word, or directly opened with PaintShop Pro, Adobe Photoshop or CorelDraw. The dex format data files can be accessed by programs that support text files, but are best used with specialist biostratigraphic software such as STRATABUGSTM. Data files in csv format can be accessed by programs such as Microsoft Excel, or Quattro plus when number of columns exceeds 256.

For further information about this or any product in this series, please contact:

Eric Monteil
Geoscience Australia
(02) 6249-9304
eric.monteil@ga.gov.au
3. SAMPLE PROCESSING METHODS

Palynology preparation was performed as per Geoscience Australia’s draft Standard Operating Procedure. Samples were digested with HCl, HF and hot HCl. No flotation was performed to minimise any loss of palynomorphs. Warm nitric acid was used to oxidise all samples. Four slides were produced for each productive sample; a kerogen slide, a +5 micron sieved kerogen slide and two oxidised +5 micron slides.

4. DATA STANDARDISATION

For the purposes of this study it was necessary to transcribe original palynological data stored in existing PDF reports to an Excel spreadsheet format. This process was carried out at Geoscience Australia and then all transcribed files were then checked for errors. Taxonomy in these reports was then reviewed and updated to reflect contemporary usage and is contained in this Record as a series of revised data files in csv format. As part of this process a common taxonomic dictionary was developed for the Late Cretaceous to Tertiary Otway Basin section for spore, pollen and dinocyst taxa included in the existing reports.

Palynological data for new samples was received in digital formats (Microsoft Word format reports; dex format data files; wmf format range charts) in 2003/04 from the consultant palynologist (Roger Morgan). These data were reviewed, entered into STRATABUGSTM and then updated as per the taxonomic dictionary developed in this study. The final standardised data files contained in this Record were exported from STRATABUGSTM in a csv format and contain new, existing and updated palynological data.

5. PRODUCTS LIST

Please contact: Geoscience Australia, Sales Centre, GPO Box 378, Canberra ACT 2601, Australia

NEW PALYNOLOGY OF THE CASTERTON FORMATION, SAWPI T-1, OTWAY BASIN, AUSTRALIA
An Output of the Timescale and Otway Basin Projects
Geoscience Australia Record 2004/03
Authors: Sinclair, N. and Monteil, E.

AN AUDIT OF SELECTED OFFSHORE PETROLEUM EXPLORATION WELLS IN THE OTWAY BASIN, SOUTHEASTERN AUSTRALIA
An Output of the Otway Basin Project
Geoscience Australia Record 2003/21
6. ACKNOWLEDGEMENTS

Geoscience Australia acknowledges Primary Industries and Resources SA (PIRSA) and the Department of Primary Industries (DPI), Victoria for their support of the sampling program that formed the basis for this study.

The authors would like to thank Roger Morgan, Richard Brown and Christian Thun, as well as David Rowland’s group for technical contributions to this Record.

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7. REFERENCES

Publications and consultant reports

Geoscience Australia acknowledges Primary Industries and Resources SA (PIRSA) and the Department of Primary Industries (DPI), Victoria for their support of the sampling program that formed the basis for this study.


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Data only (Appendix)


Other relevant references


Harms, R.J and Bennell T.M., 1999. Victorian Petroleum Otway Biostratigraphic Reports. CD data package version V0.5c produced for the Department of Natural
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Resources and the Environment (DNRE), Minerals and Petroleum Victoria (MPV) and Petroleum Development Unit (PDU). State of Victoria.

