

Basic Palynology Report

Introduction

Twenty-one cuttings samples have been analysed from the Megascolides-2 well drilled by Karoon Gas Pty Ltd in permit PEP162. The well is located on the Narracan Block in the westernmost onshore Gippsland Basin. The objective of the study was to provide an age subdivision of the succession penetrated using palynology.

Materials and Methods: Selected washed and dried cuttings bags were initially supplied by Ross Tolliday and from these ~20 gram sample splits were taken and forwarded by the author to Core Laboratories Australia Pty Ltd in Perth for processing on 5th February 2007. Because the well had been drilled using the KCl-PHPA-Polymer drilling mud additive, which has previously caused difficulties with the laboratory processing (resulting in low concentrations of palynomorphs on the slides), all samples were given an initial soaking in a detergent/solvent. As an extra precaution unoxidised kerogen slides were only prepared on eight of the samples. For the remainder of the samples the oxidation and alkali steps were performed before the density separation of the organic residue using zinc bromide solution. In general, this alternative processing procedure produced better results. The prepared palynological slides were received on 20th February 2007, and the initial results of the microscope analysis were provided in three Provisional Reports issued between 21st February and 14th March.

Results: Basic sample data comprising the lithologies and weights of samples processed are provided. Basic assemblage data comprising the visual organic residues yields, palynomorph concentrations on the slides and palynomorph preservation, and the number of species of spore-pollen and microplankton recorded from individual samples are provided. The palynological slides prepared and examined are listed.

Overall, an average of 16 grams of the cuttings were processed to give mostly high organic yields containing moderate to high concentrations of palynomorphs. Preservation of the palynomorphs is fair to good at the top of the succession, but subsequently declines with depth and becomes extremely poor below 2000m.

Description of Range Chart: The palynomorphs identified in the samples are documented on the accompanying StrataBugs™ range chart (in Interpretative Report) which displays the recorded palynomorph species in the samples proportional to their depth in the well and in terms of their relative abundance (as a percentage). The palynomorphs recorded are split between different categories. The terrestrial spore-pollen are divided between spores and gymnosperm pollen, which are plotted in separate panels as percentages of just the spore-pollen count. The next panel labelled Total MP displays (at an exaggerated scale), the total sum of non-marine microplankton recorded as a

percentage of the total spore-pollen and microplankton count. Individual microplankton species are then plotted in the panel labelled MP, with abundances expressed as a percentage relative to the sum of the spore-pollen and microplankton count. The next panel labelled Orts is for all the remaining palynomorph categories in the assemblages, and these are expressed as a percentage of the sum of the total Spore-Pollen plus all Other palynomorphs counted. The final panel provides TAI values based on the colour of the spore-pollen. Within the panels the species are plotted in order of their youngest occurrences or alternatively in alphabetical order.

The following codes or abbreviations apply to the individual species occurrences and abundances on the range chart:

Numbers	=	Abundances expressed as percentage
+	=	Species outside of count
C	=	Caved species
R	=	Reworked species
?	=	Questionable identification of species.

Author citations for most of the recorded spore-pollen species can be sourced from the papers by Backhouse (1988), Dettmann (1963, 1986) and Helby *et al.* (1987), while the author citations for the microplankton species can be sourced from the index of miscellaneous organic-walled microplankton prepared by Fensome *et al.* (1990). Manuscript species names and combinations are indicated by “sp. nov.” or “comb. nov.” on the range chart.

Please note the geological and stratigraphic discussion of the results is contained in Volume 2: Interpretative Geological Report.