

# **Palynology, Biostratigraphy and Palynofacies Associations of Late Triassic assemblages from the Mungaroo Formation in the Greater Gorgon Area, Northern Carnarvon Basin, Australia**

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## **ABSTRACT**

The Northern Carnarvon Basin, the southernmost basin of the West Australian Superbasin, hosts numerous oil and gas fields including those in the Greater Gorgon Area (GGA) – the focus of this research. The Gorgon field produces gas from the Mungaroo Formation, a large Late Triassic fluviodeltaic system. Recent drilling by Chevron in the GGA included cutting several long continuous conventional cores in the Mungaroo Fm; these cores are now open-file and provide a unique opportunity to refine the palynology and biostratigraphy of key zones in the Late Triassic and also to correlate palynological assemblages with the litho- and depo-facies of the host rock.

The key objectives of this project are to characterize Norian-Carnian palynological assemblages from NW Australia, to revise the biozonation of this interval based on improved taxonomy, and to investigate correlations between palynological assemblages and the litho- and depo-facies of their host rock. No palynological data has ever been published from Gorgon, despite it being the key field in Australia's largest resource development.

Seven wells in the GGA have been selected based on their stratigraphic coverage, availability and presence of long cores in the interval of interest. Core samples are preferred to cuttings for paleoenvironmental work because they represent a more constrained depositional setting, shorter interval of time and are less subject to contamination. However, any biozonation scheme developed will need to be workable with cuttings samples.

The primary methods used will be high resolution palynology and palynofacies analysis, largely carried out on precisely targeted new slides. Although all petroleum wells offshore Australia receive some palynological examination, high resolution examination is generally not carried out and detailed assemblage variations are not examined. The project will also develop an integrated palynofacies methodology for characterizing the range of paleoenvironments found in large fluvio-deltaic systems with occasional marine incursions. Palynofacies analysis requires the characterization of all organic particles in the slide, not just recognizable palynomorphs. This sort of methodology has not been used in Australia before.

The project will generate new data on Late Triassic Australian palynofloral assemblages, increase the number of described species and characterize their taxonomic/biological affinities. Recent improvements in sample processing techniques will enhance species identification

and taxonomic interpretation. As more drilling will be needed over Gorgon's life to maintain production and bring offset fields online, this project will have ongoing value. Its findings will be applicable not only to NW Australia but also elsewhere in Gondwana.

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