

Late Triassic Pre-Rift Stratigraphy of the Gorgon Gas Field: Establishing Appropriate Depositional Analogues as Constraints for Geologic Modeling

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Gorgon is a giant gas field owned by a joint venture operated by Chevron (50%), in partnership with Shell (25%) and ExxonMobil (25%). Gorgon will be a subsea development in 200-300m of water which, in conjunction with the neighbouring Jansz gas field, will feed a two train LNG facility 70km distant on Barrow Island.

Gorgon was discovered in 1980 with the Gorgon-1 well, which encountered a 500m gross gas column in Triassic sandstones. The reservoir comprises a thick stack of Triassic fluvial channel units varying from high net-to-gross intervals containing coalescing channel belts to lower net-to-gross intervals with more isolated channels. The reservoir has been penetrated by eight wells and over 500m of core has been recovered. A sequence stratigraphic model has been used to subdivide the reservoir into twelve zones within an overall transgressive sequence. Each zone is a division within a series of sequences comprised of a basal erosion surface overlain by amalgamated fluvial sheets followed by a heterolithic interval containing isolated fluvial sand and terminated by an erosion surface. Each sequence can be interpreted as a fluvial system's response to a base-level fall and erosion, followed by increasing then decreasing rates of base-level rise, eventually terminating in base-level fall and erosion surface. A high resolution base-level curve for the Gorgon field based on gamma-ray logs from the eight Gorgon delineation wells has been proposed and used to determine the appropriate depositional analogues employed during Gorgon field geologic modelling.