

THE EUMERALLA FORMATION:
SEDIMENTATION, AND POTENTIAL RESERVOIR DEVELOPMENT,
OTWAY BASIN, SOUTH AUSTRALIA

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ABSTRACT

The Eumeralla Formation is a sequence of non-marine shales, silty sandstones and minor volcanogenic sandstones, deposited in the rift setting of the Otway Basin. The Eumeralla Formation had been regarded as a regional seal until gas flows were reported in the Eumeralla Formation from the Katnook wells. The main aim of this thesis is to develop a depositional model to predict the occurrences of reservoir sands and the diagenetic controls on reservoir development.

Subdivision of the Eumeralla Formation was carried out using wireline log character and palynology. Facies for the subdivisions were interpreted from sedimentological analysis of core.

A meandering fluvial environment with associated backswamp sub-environments were overlain by sediments deposited in a floodplain setting. Subsidence resulted in deepening water levels and the formation of an extensive shallow lacustrine environment. A eustatic rise in sea level and rapid subsidence formed a series of relatively deep water lakes which were subjected to marine influence at the close of deposition of the Eumeralla Formation.

The best reservoir sands develop in the fluvial and deep water lake environments. Diagenetic studies indicate that these sands develop best over structural highs where compaction is minimal.

Intraformational seals are abundant, resulting in migration problems.

The sands in the Eumeralla Formation are 'hot', and consequently have a bland GR log signature. The SP log combined with the caliper log are the best tools for defining sand bodies in the Eumeralla Formation.

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