

# **Can Mass Transport Complexes Form Viable Hydrocarbon Reservoirs: Examples from the Silverwood Group, Southeast Queensland, Australia**

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As new plays are sought in deep marine environments to maximise exploration targets, the question arises whether Mass Transport Complexes (MTC) can form a viable reservoir capable of producing hydrocarbons. In this regard, the absence of suitably well described analogues from which to draw comparisons and predict reservoir quality, greatly increases exploration risk in successions containing MTC's.

The Silverwood Group of southeast Queensland, Australia, contains several examples of MTC which differ greatly in scale, texture and composition both within and between each example. These differences reflect the nature of the substrate at the site of initiation and their mechanism(s) of formation. In general, MTC's from the Silverwood Group can be broadly arranged into three main textural styles: i) grain supported blocks/rafts in a pebble to boulder matrix, ii) matrix supported blocks/rafts in a very fine to coarse grained sandstone with occasional pebble-boulder clasts, and iii) matrix supported blocks/rafts in massive mudstone, whereby the long axes of the blocks/rafts are aligned sub-parallel to bed base.

Internally, each MTC may consist of one or more discrete events, some of which may be genetically related to each other as a process continuum (the deposit encountered is dependent on the relative distance from source). The first textural style is interpreted as rock-fall deposits, in this case associated with large-scale failure of the shelf-edge. The latter two textural styles are cohesive debris flow deposits, the first of which is the most common (ii), and can form a viable hydrocarbon reservoir where clay contents are low.