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**Complex Production Behavior in a Topographically Controlled Turbidite Reservoir: Gannet A Field, United Kingdom Central North Sea**

Gannet A (GA) comprises a 140 ft thick gas cap and a thin oil rim (51 ft) with c.220 MMbbl STOIP. GA is a low-relief antiformal closure with a Middle Eocene Upper Tay Sand (UTS) reservoir. The Eocene basin floor was significantly modified by Zechstein salt movement; the resultant topography has influenced deposition and reservoir distribution & quality by deflecting flows, diverting flows around obstacles (domes) and decelerating flows against positive slopes. These complex interactions of gravity flows and topography have resulted in dramatic changes in N:G and thickness with a strong proximal (north-west) to distal (south-east) trends and a stratigraphic pinch-out to the west against the Gannet B/C domes. GA is developed by 11 horizontal producers (each 3000-4000 ft in length). Individual wells show a variety of performance characteristics that can be related to position within the UTS fairway.

A dedicated 4D survey was acquired 2000 in order to evaluate infill/sidetrack opportunities and has highlighted differences in the areas where early water breakthrough has taken place. Synthetic modelling indicates that discriminating between movement of just the OWC and movement of both the OWC and the GOC is possible. Analysis indicates large-scale movement of oil into the gas cap – an observation that was subsequently corroborated by a targeted program of well interventions and testing. This, in turn, has led to increased confidence in the interpretation of the 4D signal and facilitated a significant de-risking of potential targets for infill drilling.