

Mungo Field UK North Sea 22/20, 23/16a: stratigraphy, salt diapirs and reservoir development (or ‘The Riddle of the Sands’)

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Abstract: Mungo is an oil and gas field located within the Eastern Trough of the UK central North Sea. It comprises a salt diapir flank structure reservoired within Paleocene turbidite sandstones. Biostratigraphical data from early wells indicated extreme geological complexity; reworking, caving and injection were all invoked. Using the principle that the dinocyst genus *Apectodinium* did not migrate into the North Sea until Unit S1a of the Forties Sandstone Member, interpretation centred on the last downhole occurrence (LDO) of this genus. Once established, this ‘golden spike’ became the key to interpreting well stratigraphy. The complexity thereby imposed fitted notional models of a ‘Forties mélange’ reservoir, with older sediments slumped off the growing diapir during the time of Forties deposition. Inter-well correlation was rendered doubtful and the role of biostratigraphy downgraded. Continued development drilling induced a further attempt to unravel this complexity. Emphasis was changed, downplaying the *Apectodinium* driven model, seeking instead any evidence of an *in situ* stratigraphy. Re-examination of biostratigraphical and core material, combined with heavy mineral analysis, has recognized a full ‘normal’ Paleocene succession in which five layers can be correlated. The prime reservoir is now assigned to the Maureen Formation, albeit with significant volumes of the Forties Sandstone Member structurally emplaced, presumably by injection, entraining fossiliferous Forties muds. Possible mechanisms for injection are discussed.