Influence of Mobile Salt on the Distribution and Preservation of Fulmar Reservoir Sands in the UK Central North Sea

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Abstract

Tectono-stratigraphic evolution models of the UK Central North Sea indicate that the Permian Zechstein evaporites were mobilized into a network of salt walls separated by intervening minibasins or ‘pods’ in the Triassic. This was followed by a phase of pod grounding, salt dissolution and salt valley formation, with the topography of salt valleys interpreted to have influenced the deposition of Upper Jurassic transgressive shoreface reservoir sands of the Fulmar Formation (Clark et al., 1998, Clark, 1999, Hodgson, 1992).

Analysis of the geometry and connectivity of the salt structures, and of the geometry of detailed mapping of sedimentary packages within the minibasins enables a model of salt evolution to be developed. Thickness variations between intra-pod layers clearly show the development of depocentres through time in response to growth and collapse of salt structures. This study shows that salt kinematics commenced in the northern part of the study area and evolved progressively southward. Late fall of salt bodies led to the formation of valleys above the salt walls. This topography created accommodation space for subsequent deposition of Fulmar sands; a key reservoir in this region. Analysis of this evolving salt system therefore sheds light on the trap type distribution and Fulmar sands deposition and preservation.