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Alan F Chambers¹, Maria Baena Garrido¹, Rafael Ferrando Torres¹, Israel Polonio Martin¹, Maria Rodrigo Viñuela¹, Eduardo Figari Negri¹ (1) Repsol-YPF Exploracion SA, 28046 Madrid, Spain

Structural Controls on the Hydrocarbon Prospectivity of Blocks 351c&352c, Reggane Basin, Algeria

Six gasfields have been discovered in the Reggane Basin (western Algeria) since exploration began in the 1950s. The primary targets are the Lower Devonian (Siegian-Gedinnian) and Ordovician sandstone reservoirs which have tested dry gas at rates of up to 450,000m³GPD. The Lower Carboniferous (Visean) represents a secondary target. The Upper Devonian and Silurian source rocks are interpreted to have reached maturity during Carboniferous burial at the same time as the main structural traps were formed, implying that the traps have remained intact some 300 million years.

The regional structural framework was established using a vintage 2D seismic dataset and the model was refined by 3D seismic and field geology programmes during 2003. The Reggane Basin is considered as an eroded remnant of a more regionally extensive Palaeozoic basin that included the Sbaa and Ahnet Basins. The current basin geometry, that of an asymmetric wedge that deepens towards the strongly-faulted northern and eastern flanks, is a result of Hercynian compression. The principal structural elements are oriented NW-SE, NNW-SSE and WNW-ESE. The intersection of these trends is key to the definition of the main structural culminations. The structural style is dominated by moderately- to steeply-dipping, basement-involved thrusts, the largest of which have kilometric scale displacements. Our current interpretation is that the NNW-trending faults are frontal thrusts while the NW-trending faults suffered sinistral transpression.

Although conditioned by earlier Palaeozoic events, the main traps are of Hercynian age and Alpine compressional effects are apparently minor.