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3D Visualization of a Long-lived Structure - Tiguentourine and La Reculee Culminations, Southern Algeria

Sonatrach and BP have recently initiated an exploitation program for the gas-condensate, Cambro-Ordovician reservoirs of the Tiguentourine and La Reculee (TLR) fields in the Illizi basin of southern Algeria. In these efforts, 3D visualization serves to provide three fundamental functions: 1) a vehicle for communicating within multidisciplinary teams; 2) an operations tool to assist in drilling and completions; and 3) an interpretive aid providing both heuristic models and an environment for testing new data sets and concepts. In this presentation and a companion presentation (Taylor et al.), we explore these functions, emphasizing the interpretive applications.

The TLR culminations are long-lived fault-related structures. They form a co-linear structural complex 40km long and 8km wide, and owe their expression to the Fadnoun fault, a major crustal lineament bounding the culminations on the east. The Fadnoun likely originated in the Late Proterozoic Pan-African orogeny. Since that time, it has been reactivated - in both a strike-slip and dip-slip sense - in at least four major structuring events. As determined from the TLR surface and subsurface data, the timings of these events are: Ordovician, Late Silurian, Late Carboniferous and Tertiary. Each of these episodes has influenced the TLR culminations. Visualization of the TLR complex at the close of each of these events provides insights into the nature of the structural deformation and the distribution of potential reservoir facies. Exploiting these facies requires drilling through overlying depleted Devonian and Carboniferous reservoirs, which creates potential shallow drilling hazards. The visualization tool assists in the identification and communication of such hazards to enable safe well planning.