

Exploration Potential in the Ghadames Basin of Southern Tunisia

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Hydrocarbon exploration in Tunisia is on a smaller scale than in neighbouring Algeria and Libya, where production and ongoing exploration provides both countries with substantial wealth. In southern Tunisia, OMV as both operator and partner is exploring for plays that are very similar to those seen in these adjacent countries, but here prospects are generally smaller although geologic success is high. As such, there is a much needed requirement for extensive 3D seismic acquisition, essential in identifying these smaller structures for drilling. Dealing with the statics issue plays a key role in providing a reliable depth conversion for the mapping. Therefore, understanding the variation in the geology at shallow levels is important to determine the corrections that need to be made to the data. Currently stratigraphic traps appear too subtle to be confidently targeted. However, production data and the geologic models relating to the main reservoir targets suggest that there is also a stratigraphic upside which needs to be included with the potential for stratigraphic pinch-outs, lateral loss of porosity and unconformity traps.

With reference to plays, siliciclastic reservoirs of fluvial and marine origin are observed at the Ordovician, Silurian, Devonian and Triassic levels - the Silurian and Triassic currently being the most productive. Source rocks (Algal Type II) are found at both the lower Silurian and Devonian levels, with the former both gas and oil mature in the southern part of the country whilst the Devonian is only mature in the southern area and into Algeria. Further north these source rocks become progressively shallower and subcrop the Hercynian unconformity towards the Telemzane Arch, which defines the northern limits of the Ghadames Basin. Seals are provided by the Jurassic salt for the Triassic target and intraformational seals are observed within the deeper Silurian and Devonian objectives. The Ordovician is presently poorly understood and is regarded to be an unconventional play with enormous potential, even though structures are also well defined on seismic at that level. Although current drilling is aimed at the main productive Silurian Acacus sands, most wells will terminate within the Ordovician in order to assess the future potential of this play.