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3D Seismic Imaging of the Acacus Play in OMV s Jenein Sud Concession in the Ghadames Basin of Southern Tunisia

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SUMMARY

Traditionally, seismic imaging of the Acacus sandstone reservoirs in the Ghadames basin southern Tunisia was viewed problematic. Nevertheless, the good quality of the 3D seismic data in OMV s Jenein Sud permit made some direct interpretation of the Silurian targets possible thanks to the use of Prestack Migration, Acoustic Impedance Inversion, 3D Visualization etc.

The Silurian Acacus play in Tunisian part of the Ghadames Basin has attracted considerable attention as a result of several recent discoveries by various operators including OMV.

Traditionally, seismic imaging of the Acacus sandstone reservoirs deposited in a regressive delta complex was viewed problematic. This is mainly due to thinly bedded reservoirs of usually less than 20 meters, deep reservoir target (depths around 4000 mMD) and noisy signal. Hence, especially for areas covered by 2D seismic the Acacus reservoir target was not visible as a seismic reflector. The structural interpretation can then only be based on the Ordovician reflector which is a very distinct, continuous and reliable seismic marker. The assumption used so far is that the Acacus layers are conformable to the underlying Top Ordovician reflector and the Acacus maps are derived from Ordovician surfaces with a local isopach value.

Nevertheless, the good quality and coverage of the 3D seismic data in OMV's Jenein Sud permit made some direct interpretation of the Silurian targets possible. The acoustic impedance contrast between the Acacus sandy layers and the shaly Tannezuft Formation was made visible as a high amplitude seismic marker even over sandy dune area.

This was achieved by the use of Prestack Migration with special emphasis on Residual Moveout Analysis, Demultiple Programs, Acoustic Impedance Inversion, 3D Visualization etc.

References

Garrick R.L., Woller K.L., Dablain M.A. & Caamano E., 2003, Integrating multiple data types in search for subtle Silurian Acacus structural traps, Southern Tunisia.
1st North Africa/Mediterranean Petroleum & Geoscience Conference & Exhibition, Tunis 6-9, Oct. 2003.