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The Upper Ordovician Sequence in the Ghadamis Basin, Libya: Seismic Expressions and Depositional Model

Abdelgader Fathi Mohamed Krnaf
New Oil Generation s.r.o, Czech Republic

The Ghadamis basin is a large intracratonic sag basin which straddles the boundaries between Libya, Algeria and Tunisia. The Area of study is focused on two blocks adjacent to the Algerian side of the basin in Western Libya.

An Upper Ordovician glaciogenic sequence is present throughout the study area with coarser sediment in the south, which then gradually fine northwards. This facies behavior is interpreted from the well correlations of about nineteen wells carefully picked with Upper Ordovician sequence present in all of the nineteen wells and is found to be mainly attributed to the change in the glacially influenced depositional environments of the area.

Discrete Channelized features trending N-S to NNW-SSE were mapped on 2-D and 3-D seismic data. They are interpreted as glacial palaeovalleys in the south, which developed under an ice sheet in a glacio-continental environment, while in the northern part of the studied area, they are interpreted as proglacial channels deposited in front of an ice sheet in a glacio-marine environment. These interpretations are based on a comparison with surface outcrop features with similar scales from the Gargaf outcrops. Seismic characters of the upper Ordovician show dipping reflector geometries and cross cutting relationships with dim and bright amplitudes. The exploration challenge remains in knowing where the good quality sandstone reservoirs are as glaciogenic sedimentary processes are capable of producing good and bad sandstone reservoirs with varying reservoir porosity and permeability.

Multiple phases of sedimentary cut and fill within these channels and palaeovalleys are observed.

Biography:

Abdelgader Krnaf received his Bsc in Geology from Garyounis University, Libya in 2007. He worked for pioneer Service and Owner Companies such as Schlumberger, Baker Hughes, Total & BP. He also worked as Geoscience visiting lecturer at Benghazi University & University of Kurdistan, Hawler. He was awarded an Msc in Petroleum Geoscience at Royal Holloway, University of London in 2009. In 2015 was appointed by EAGE and AAPG to Chair sessions at Geoscience workshops and was a member of the third Conference on Iraq technical committee in UAE. Now is Director at NEW OIL GENERATION, Libya, Oman and Czech Republic.