

MENA Oil & Gas Reduces Geological Uncertainty Offshore North Sinai Concession, Egypt

Geobody extraction and seismic attribute analysis reduce facies uncertainty using Petrel Seismic Volume Rendering and Extraction

MENA Oil & Gas (MOG Energy) identifies sand and shale trends from seismic data to improve facies mapping.

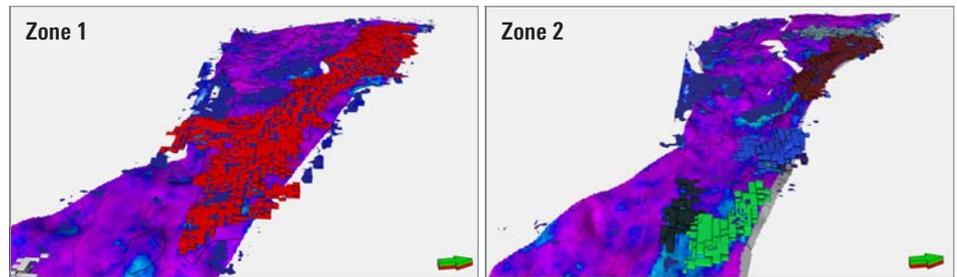
MOG Energy's challenges

All discoveries to date in the offshore North Sinai concession are within the stacked sandstones of Pliocene–Pleistocene plays. The reservoirs consist of two main facies—sands and shales. The main uncertainty is related to the distribution of these facies in gas reservoirs, which has a great impact on the prospect maturation and field development. Whereas sands are mostly characterized by negative seismic amplitude, shales are characterized by positive amplitude. MOG Energy needed a way to better map these two main facies by creating a probability map for each facies based on amplitude changes.

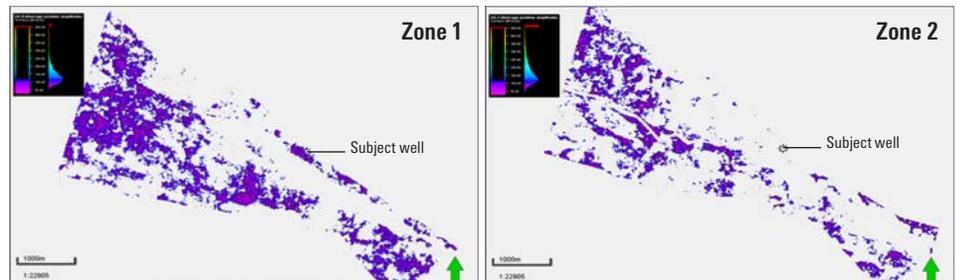
What Schlumberger recommended

Petrel® Seismic Volume Rendering and Extraction enables quick and interactive blending of multiple seismic volumes to detect anomalies, delineate structural and stratigraphic features, isolate areas and objects of interest, and instantly extract 3D geobodies.

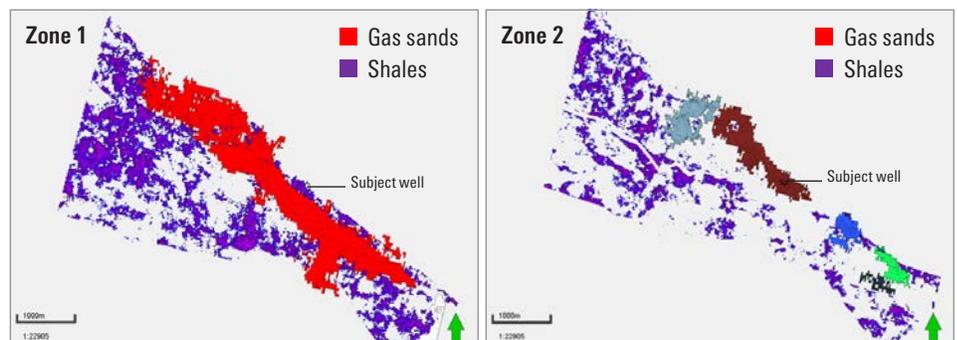
To reduce geologic uncertainty, MOG Energy used Petrel Seismic Volume Rendering and Extraction to implement a three-step approach executed for two specific reservoir zones. First, the high negative amplitudes corresponding to sands were extracted from seismic data as a 3D geobody between the top and base of the reservoir. Second, the shales trend was extracted using an average positive amplitude attribute map. Lastly, the extracted geobody was combined with the shales trend map to create a sand-shale probability map to better identify facies distribution.



High negative amplitude of gas sands extracted as seismic geobodies.



Shales trend maps.

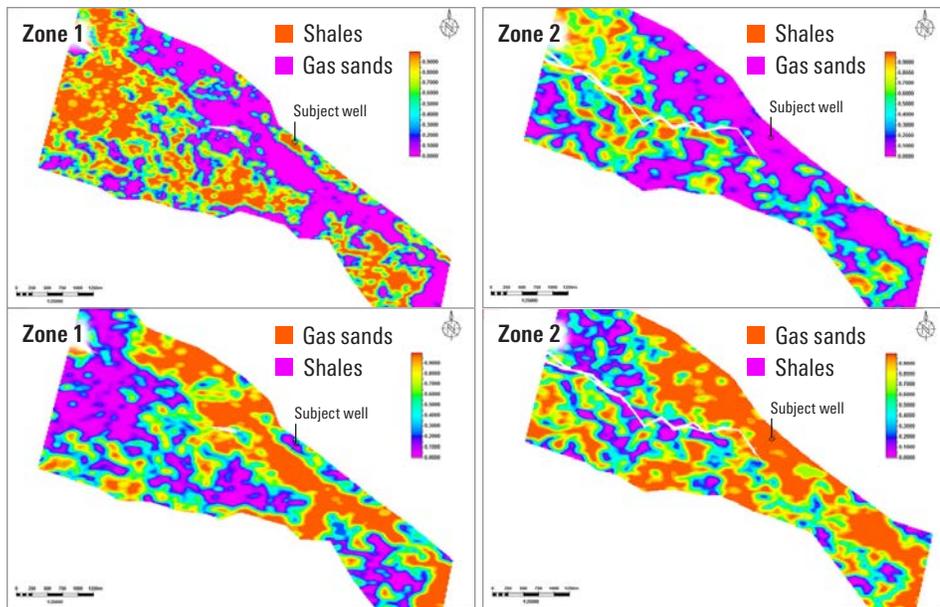


Gas sands geobody extractions and shales trend combined maps.

“Petrel Seismic Volume Rendering and Extraction has astonished us by defining seismic features to reduce uncertainties. This capability has a massive impact on our business.”

Mohamed Mustafa Hassan
Senior Development Geophysicist
MENA Oil & Gas

Case study: MOG Energy reduces facies uncertainty in gas sands reservoir



Shales and gas sands probability maps.

What MOG Energy achieved

The technology enabled MOG Energy to better identify sands and shales trends using seismic data. The resulting probability maps were consistent with drilling results, thereby proving to be an effective tool in reducing geological uncertainty.

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