Samedan Gains Quality, Time-Efficient Interpretation

Case study: Evaluation of Gulf of Mexico seabeds uses seismic attributes and 3D visualization

Challenge
Samedan Oil Corporation (Samedan) wanted to assess prospect potential in the Gulf of Mexico between 2,000 and 2,900 ft. An investigation of seabed conditions was required to properly position exploration platforms, pipelines, and other seafloor equipment.

Solution
Samedan used the autotracking capabilities of the ASAP* module in GeoFrame* Charisma* software to locate the seabed reflector. Within minutes a single seed point tracked the entire 3D volume of the reflector. The interpreted surface was then converted to the depth domain using the InDepth* velocity modeling and time-to-depth application. Finally, using GeoViz* geovisualization and interpretation software, the attribute overlay was combined into one image in a 3D workspace.

Results
GeoViz software provided Samedan with quality, time-efficient interpretation of seabeds by applying new surface-based seismic attributes.

Investigation of seabed conditions for potential prospect
The movement of frontier exploration to greater depths in the Gulf of Mexico is directed by the continuous evolution of offshore technology. This technology allows for cost-effective platform selection and production installations in deeper water, including flowlines, sleds, pipelines, satellite developments, and subsea trees at various depths.

Samedan wanted to assess the potential of a prospect at water depths in the Gulf of Mexico between 610 and 884 m [2,000 and 2,900 ft]. Prospect economics at these depths are strongly dependent on the options available for drilling platforms and production installations. Information on seabed topography is useful in identifying the appropriate installations for determining prospect economics. An investigation of seabed conditions would also be required to properly position exploration platforms, pipelines, and other seafloor equipment.

Seismic attribute generation reveals intricate patterns
Samedan used the seismic autotracking capabilities of the ASAP Automatic Seismic Area Picker module in GeoFrame geophysics Charisma seismic interpretation software to locate the seabed reflector. Within a matter of minutes, a single seed point quickly tracked the entire 3D volume of the reflector by its continuity and strength. The interpreted surface was then converted to the depth domain using the InDepth velocity modeling and time-to-depth application. The completed surface, both in depth and two-way time, was used as input for seismic attribute generation. Samedan observed that the new surface-based seismic attribute curvature revealed the intricate patterns within the seabed reflector. Finally, with GeoViz geovisualization and interpretation software, the attribute overlay was available in a 3D workspace by combining the surface elevation with the attribute data into one image.

Regional inspection of the seabed environment reveals optimal locations for platform placement and facility design, and allows a global risk assessment for any proposed location. The combination of GeoViz visualization and new surface-based seismic attributes greatly enhances this process. This image unmistakably shows a submarine canyon in the west and the surface expression of a buried salt dome in the east.
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3D visualization maximizes value of seismic data

3D visualization enabled interpreters to maximize the value of seismic data. GeoViz software was instrumental in providing Samedan with quality, time-efficient interpretation of the seabeds by applying new surface-based seismic attributes.

The GeoViz application provided quick assessment of proposed areas for production installation and assisted in identifying optimal locations for platform placement and facility design, thus reducing risk and uncertainty.

For more information contact your local SIS office or e-mail sisinfo@slb.com.