

Real-Time Rig-Based Monitoring While Drilling the Riserless Section

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The prediction and evaluation of marine geohazards is an integral component of the integrity of the surface and shallow casing sections of a well. Expensive wells drilled in the deepwater or in frontier areas require close attention to an array of topics including economic, regulatory, environmental, engineering, and geologic (marine geohazards) considerations. Numerous wells in the deepwater environment have been compromised as a result of encountering marine geohazards such as shallow gas, shallow water flow, etc. Therefore, close monitoring of the well during spud, jetting, and drilling of the riserless casing sections is crucial for the successful installation of the structural casing strings of the well. The objective of this presentation is to describe and discuss the economic benefit of a geologist onboard the rig to monitor potential geohazards while drilling the riserless section of the well.

An onboard geologist can provide quality control for positioning, real-time feedback for regulatory questions with respect to geohazards issues, review of pre-spud bottom surveys (if required), and interim and final shallow water flow checks while drilling the riserless section. Additional parameters such as the Rate of Penetration, Equivalency Circulation Density, and Logging While Drilling data are closely evaluated for indications of potential geohazards.

Predictions made prior to drilling can be modified based on real-time data and conditions and adjustments can be made to the well plan. Geohazards encountered while drilling can be recorded and documented for post-well analysis and future drilling predictions.

Real-time monitoring by a qualified geologist during the riserless drilling affords a quick response to any potential geohazards. The immediate response and direct discussions with the company man, drilling team, and shore based team members can help to mitigate hazards and reduce rig downtime. Adjustments to the well plan can result in significant reductions in the cost of drilling of the riserless section and/or preservation of the well.