

Hydra-Stroke Bumper Sub Enables Continued Drilling Operations Despite Rough Sea Conditions

Sub helps mitigate drillstring oscillation issues in 6- to 10-ft seas, Gulf of Mexico

CHALLENGE

Continue drilling operations in ultradeepwater well during 6- to 10-ft sea conditions without using a heave compensator.

SOLUTION

Use Hydra-Stroke* bumper sub to isolate the drillstring assemblies from effects of wave motion on the drillship.

RESULT

Successfully drilled the remaining three sections using seven BHAs with Hydra-Stroke sub configurations.



Continue drilling operations in rough sea conditions

While drilling an ultradeepwater vertical exploratory well in the Gulf of Mexico, an operator experienced atypical winter weather and high sea conditions of 6–10 ft. The depth of the water at the well location was 5,183 ft [1,580 m], and the total depth of the well was 33,750 ft [10,287 m]. The crown-mounted heave compensator on the drillship was turned off because of load limitations. The operator sought a solution to successfully drill the next three sections in the same sea conditions without using a heave compensator.

Use Hydra-Stroke sub to mitigate effects of wave motion

Schlumberger drilling engineers recommended using the Hydra-Stroke sub in the BHAs. The Hydra-Stroke sub is a key drillstring component for deepwater drilling operations where drillstring oscillation can be a problem. The sub provides 6 ft of reliable telescopic movement without placing any limitations on drillstring torque capacity, tensile strength, or hydraulic capability. The sub can isolate drillstring assemblies from the effects of wave motion on floating and semisubmersible drilling rigs. It is also fully balanced to the annulus and the mud pumps, eliminating the pump-open effect caused by internal pressure.

Schlumberger engineers used the Runner* drillstring analysis program to ensure that the proper buoyant weight was isolated below the Hydra-Stroke sub to allow the tool to stroke open and closed as the rig heaved.

Successfully drilled the sections, met objectives

The operator successfully drilled the three remaining sections— $12\frac{1}{4}$ in \times $14\frac{1}{2}$ in, $10\frac{5}{8}$ in \times $12\frac{1}{4}$ in, and $8\frac{1}{2}$ in \times $9\frac{7}{8}$ in—with seven BHAs using both single and tandem Hydra-Stroke sub configurations, which provided up to 12 ft of total motion compensation. The 8-in Hydra-Stroke sub was run in the $12\frac{1}{4}$ -in \times $14\frac{1}{2}$ -in and $10\frac{5}{8}$ -in \times $12\frac{1}{4}$ -in BHAs; the $6\frac{1}{2}$ -in Hydra-Stroke sub was run in the $8\frac{1}{2}$ -in \times $9\frac{7}{8}$ -in BHA. Using the Hydra-Stroke sub, the operator was able to meet its drilling objectives in the ultradeepwater vertical exploratory well in the Gulf of Mexico.



Hydra-Stroke sub.

slb.com/HydraStroke

Drilling