

CEMENTICS Software Saves More Than 15 Hours Per Well in Operational Time During Plug Placement

Zonal isolation software designs primary cementing and cement plug placements in multiwell deepwater development project, Southeast Asia

CHALLENGE

Overcome challenges associated with planning and designing cement plug placements in three complex, remote deepwater wells with a narrow window between the pore pressure and fracture gradient and the potential for lost circulation.

SOLUTION

- Use CEMENTICS* zonal isolation software to design both primary cement jobs and cement plug placements.
- Ensure zonal isolation using WELLCLEAN III* pipe and annular mud displacement simulator to model mud removal and fluid displacement in the annulus and pipe.

RESULTS

- Simulated accurate pressures and designed mud removal to ensure zonal isolation on three deepwater wells.
- Successfully designed and planned accurate cement plug placements in both openhole and cased hole wells, allowing the operator to isolate the wells and commence subsequent drilling operations on time.
- Saved operator more than 15 hours of rig time in each well during plug placement while meeting regulatory requirements in remote environment.



Optimize design and minimize risk in a critical deepwater operation

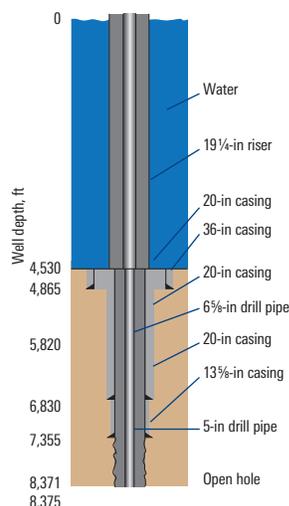
In Southeast Asia, an international operator faced technical challenges during a deepwater development campaign on a remote well, which included a narrow window between the pore pressure and fracture gradient, lost circulation, and challenging conditions. With a water depth of 4,500 ft [1,372 m] and a well depth of 8,500 ft [2,591 m], the well's complexity and remote location required optimized planning and design to successfully complete the well and meet planned objectives—all while minimizing the potential risks and improving operational efficiency.

Simulate realistic pressures during placement and ensure zonal isolation

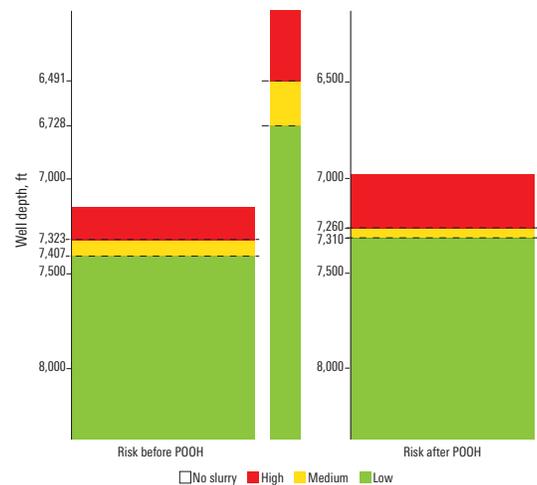
Schlumberger used the CEMENTICS software to design and evaluate all primary cement jobs, ensuring cement coverage and zonal isolation. The CEMENTICS software modeled changes in the drilling fluids' density and rheology as a function of pressure and temperature, providing a realistic prediction of hydraulic pressure during operations. This simulation predicted friction during placement, enabling successful cementing operations and minimizing the risk of losses. The WELLCLEAN III simulator modeled mud removal and fluid displacement in the annulus and pipe, ensuring isolation of the critical zones. The advanced cementing software enabled the operator to determine top of cement prior to cement bond logging, leading to more-informed drilling decisions, minimized risk, and reduced costs during drilling operations.

Enable successful plug placement in challenging environment

By using the integrated plug design module in the CEMENTICS software, the operator was able to simulate balanced plug placement, including possible contamination situations during placement and pulling out of hole (POOH). A simulation was created prior to plug placement in the deepwater wells prone to contamination because of their small volume and deep plug placement. As a result, the cement plugs were accurately placed at the desired depth, enabling the operator to isolate the well and commence subsequent drilling operations as planned. This improvement saved the operator more than 15 hours in operational time.



A diagram was created prior to cement plug placement in the deepwater well prone to contamination because of its small volume and deep plug placement.



CEMENTICS software was used to simulate cement plug contamination before and after POOH, allowing the operator to minimize risks and maximize successful cement plug placement.

*Mark of Schlumberger
Other company, product, and service names are the properties of their respective owners.
Copyright © 2016 Schlumberger. All rights reserved. 16-CE-124760