add energy

SIMULATIONS WHILE DRILLING, SWD

The industry has increased its focus on the capability to efficiently control a worst-case blowout after the Deepwater Horizon incident in 2010. Operating companies, drilling contractors and regulatory bodies are taking the necessary steps to ensure robust well designs and further limit the impact of an incident.

A relief well kill is the last control option of a blowout when all other control efforts have failed or are found inapplicable for the situation. Dynamic kill simulation studies will identify requirements prior to spud and verify that a kill operation can be performed using available equipment and technology.

Quite a few blowout studies in the past have shown that more than one relief well would be required for worst-case open hole blowout situations. An operation involving several relief wells introduces additional challenges and risks compared to a single relief well operation. Limited experience exists on dynamic kill using two or more relief wells, whilst a single relief well kill operation has proven to be a safe and reliable control method.

Therefore, new regulations have been implemented focusing on the ability to control a blowout through a single relief well kill operation. New regulations are often a natural consequence of a tragic incident, but these regulations can also have unintended effects. The properties driving the kill requirements are often uncertain and therefore can introduce additional cost, unnecessary contingency and even additional risk to a drilling operation.

Simulation While Drilling (SWD) is a service offered by add energy to reduce the cost and risk associated with drilling operations. A dedicated computer program forecasts the kill requirements real-time during drilling and supports the operations and decision making with valuable information.

As the formations are drilled, the computer program updates the blowout potential and kill requirements real-time based on data from the MWD. Hence, SWD ensures well integrity and single relief well contingency.

Typically, on wildcat wells and appraisal wells with uncertain reservoir properties, SWD can be the tool that ensures a safe and efficient drilling operation without jeopardizing the worst-case kill contingency. SWD has been used on several wells and already demonstrated its value to the industry by ensuring successful well integrity management at a much lower cost for the operators.

The potential benefits of SWD:

- Add Energy provides the operators with the support and data allowing for drilling of the entire reservoir zone, and reaching the planned TD without setting a contingency casing.
- Significant cost reduction potential as drilling time and number of casing runs can be reduced compared to traditional well design that is often based on conservative input parameters.