Stopping a Well to Develop a Field -A Geostopping Case Study from the Andaman Sea

Mike Orr[1], Paolo Sudiro[1], Valentin Woehling[1], Amrith Kaur[1], Kesavan Ramasamy[1], Farith Farhan M. Pajri[2], Kamaruddin Salleh[2], Own Thwin[2], and Siti Aida Yaha[2]

[1]Baker Hughes
[2]Petronas Carigali Myanmar Limited.

ABSTRACT

Ongoing development of a producing field by conducting infill drilling to target zones or fault blocks that were bypassed by the original wells is often necessary in order to maintain production at a certain level once long term reservoirs become depleted. The use of existing facilities as a starting point for these wells is the most cost effective way to carry out these campaigns, but that can present drilling and geological challenges, as extended lateral sections may be required to access remote fault blocks and safely cross highly depleted zones, while the lack of previous wells in the new target areas gives rise to uncertainty over the exact depth of these layers. In such cases, stopping a hole section at a certain bed boundary may be crucial to the safe and efficient drilling of a well. Drilling into under- or over-pressured zones without casing off intervals above them and making changes to the drilling fluid often leads to well stability, or well control issues, resulting in, at best, days of remedial action, through to far more serious consequences. This becomes more challenging when seismic uncertainty can only place the boundary within a window of plus or minus tens of metres True Vertical Depth (TVD). Traditionally, well to well correlation and stopping to circulate at drilling breaks have been employed to try and identify the correct point in a timely manner, however, the use of real-time data from Logging While Drilling (LWD) tools in order to reduce this uncertainty and make a decision to stop within tight constraints is now an accepted, and in many cases, preferred method. This process is referred to as Geostopping. This article describes a scenario where, as part of an infill drilling campaign to further develop a gas field in the Andaman Sea, offshore Myanmar, a highly deviated well from an existing platform was required to target a certain fault block containing previously unexploited sand layers. The well plan called for an extended section to be drilled through an unstable shale that overlay a heavily depleted sand zone, with the target sands located below this. The mud weight necessary for efficient drilling of the shale was too high for the depleted sand, and it was feared total losses would ensue should it be penetrated too far. However, uncertainty on the surface seismic led to doubts regarding the dip and actual top of the sand.