

Advancement and Economic Benefit of Geosteering and Well-Placement Technology

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Abstract

In today's complex reservoirs, we are challenged to drill and are constantly asked to maximize production from these reservoirs. However, drilling through these reservoirs is challenging, since geological models are often limited to the resolution of seismic data, and offset wells often have significant variations. Geosteering, which is the process of adjusting the borehole trajectory in real time to correct for unanticipated variations in geology and structure in order to avoid exiting the target zone, is a technique that is currently used on most horizontal and deviated wells for better well placement and for efficiently draining a reservoir.

This keynote will review all recent improvements in well placement and formation evaluation technologies that have helped in gaining access to bypassed reserves that were originally not thought to be practical targets. Examples will be presented that highlight the economic benefit of geosteering and well-placement technology. As an example, maximum reservoir contact in the sweet spot leads to increased production and early warning to approaching bed boundaries, and fault results in reduction of sidetracks. Furthermore, keeping the well trajectory at a certain fixed distance within the reservoir and away from oil-water contact optimizes production by producing less water. Finally, maximizing production by placing the wellbore entirely within the best reservoir zone boosts productivity, and wells that, at first, appeared difficult or uneconomic are now becoming possible.