

Minimum Target Thickness For Horizontal Wells: A Case Study from the Gulf of Mexico

by Barry Gidman, Chevron USA, Lafayette, LA; Lane RB Hammons and Martin D. Paulk, Baker Hughes INTEQ, Broussard, LA

A noticeable aspect of successful horizontal drilling applications is to keep the drill bit confined to the target window, which may be a relatively easy task if the target zone is a homogeneous sand body 100 feet or more thick. But what happens if the target reservoir is only a few feet thick? How much is not enough?

The purpose of this presentation is to illustrate that under certain geological conditions and with current horizontal drilling technology, clastic reservoirs with a thickness of less than ten

feet can be developed in both the offshore Gulf of Mexico and other basins. The risk associated with geosteering these small targets can be significantly reduced by using proper planning, measurement while drilling, predictive models, pilot holes for control points, and stratigraphic information, and practical experience.

The chosen reservoir, a bi-lobed Pleistocene sandstone, represented one of the most difficult scenarios to geosteer and model, owing to the absence of thick beds with sharp bound-

aries and the lack of differing resistivities among the multi-layered thin beds. Critical to the project's success would be the decision processes associated with 1) pilot hole well planning, 2) well data interpretation, 3) MWD predictive modeling, and 4) horizontal well design and stratigraphic placement. By comparing actual pilot-hole well data to pre-drill predictive MWD models, a more accurate horizontal well predictive model was produced which aided in geosteering the horizontal well while drilling.

Biographical Sketches

Barry Gidman is a Senior Geologist with Chevron USA in Lafayette, Louisiana. He is currently in a development geology assignment in the Offshore Gulf of Mexico. Barry has been involved with Gulf Coast geology for over seventeen years and was previously employed with Mobil, Natomas, Coastal, and Tenneco. He graduated from Colorado School of Mines in 1977 with a BS degree in Geological Engineering and has done graduate work in Business Administration at LSU.

Martin D. Paulk is currently an Evaluation Technologies Staff Engineer for Baker-Hughes INTEQ. His responsibilities include pre-well predictive modeling, log analysis, and technical support for MWD operations. Paulk started with Teleco-Oilfield Services

(now part of Baker Hughes INTEQ) in 1989 as a field engineer, progressing to a senior logging supervisor for the triple combo logging service, and then to his current staff position. Paulk holds a BS in petroleum engineering from the University of Texas.

Lane RB Hammons is the Evalua-

tions Technology Operations Manager for Baker-Hughes INTEQ in Lafayette, Louisiana. Previously, he worked at Placid Oil Company as an exploration geologist, a log analyst, and Geological Operations Manager. Hammons holds a BS degree in geology from the University of Alabama.



Barry Gidman



Martin D. Paulk



Lane RB Hammons