

Understanding Wilcox 1 and Wilcox 2 Reservoir Distribution at Jack Prospect (It's possible that you don't know Jack!)

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Chevron's 2004 Jack Prospect oil discovery encountered more than 350 feet of net pay oil sands in the Wilcox (Upper Paleocene) in approximately 7,000 feet of water in the Gulf of Mexico. Chevron cored the Wilcox 1 reservoir, which was interpreted to represent truly unconfined basin-floor turbiditic sheets. The following year Chevron drilled Jack #2 well approximately a mile from the #1 and cored both the Wilcox 1 and Wilcox 2 reservoirs. As in the Jack #1 well, the Wilcox 1 cores were interpreted as unconfined sheets, but the Wilcox 2 core was interpreted as confined channel deposits. We used commonly recognized criteria to interpret and differentiate between unconfined sheet elements and confined channel elements.

Sub-salt seismic data in the Jack area are generally poor and lack the resolution to effectively characterize the reservoirs. Consequently, we used core analysis, log correlation and depositional models to characterize the Wilcox 1 & 2 reservoirs. Both channel and sheet elements are part of a larger 3D body interpreted to be a distributary lobe. The distributary lobe

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depositional model is the result of previous outcrop research and subsurface analogs. Using the interpreted elements and previously derived aspect ratios (width to thickness ratios), we were able to provide dimensions and reservoir distributions for each element, as well as for the larger distributary lobes.

In 2006, the Jack #2 well was successfully tested and sustained a flow rate of more than 6,000 barrels of crude oil per day. ■

Biographical Sketch

R.T. (TOM) MOONEY received his BS in geology in 1977, and his MS in geology in 1979, both from Florida State University. In 1979 Mr. Mooney joined Exxon where he worked as a stratigrapher for 21 years in Exxon's research, exploration and production companies. He left Exxon in 2000 and established a small flight school. After several years as a flight instructor, he decided to return to the oil industry and joined ChevronTexaco in February 2004. Since joining Chevron, Mr. Mooney has worked as a stratigrapher in Chevron's Energy Technology Company (ETC) and is currently the team leader for ETC's Deepwater Stratigraphy Team.

