Quantifying Connectivity Between Deepwater Slope Channel Sandstones and Stratigraphically Adjacent Thin-Bedded Strata: Implications for Hydrocarbon Production and Timing of Depositional Events in Deepwater Strata

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Deep-water channel fill and associated thin-bedded strata have been observed in various outcrops, and a spectrum of possibilities have been proposed as to their connectivity, from fully connected and deposited contemporaneously, to unconnected and deposited at different stages of sea level cyclicity. Surprisingly, little quantitative work has been done to characterize their connectivity with this objective in mind. According to some studies, there are classic examples of continuities and discontinuities between these depositional facies. Some of these examples can be found domestically (Texas, Arkansas, Wyoming and California) while others are found in international locations (Ainsa Basin, Spain and New Zealand). Several of these exposures have been selected to allow one to document the connectivity of these deepwater facies. Fieldwork for the project, which constitutes a M.S. Thesis under the direction of Dr. Roger Slatt, will consist of outcrop description to evaluate and quantify the facies' interfaces and identification of common attributes associated with the spectrum of connectivity. This type of study cannot be conducted in the subsurface owing to the lack of ability to drill through or seismically image at sufficiently high resolution a significant length or width of a channel margin. If there are significant variations in connectivity across channel margin boundaries, and these cannot be seen in the subsurface, then a second issue is to determine if there are criteria for predicting the degree of connectivity from conventional subsurface data. The results will help serve as a statistical parameter to account for in reservoir modeling programs for the petroleum industry and allow geoscientists to more accurately assess the production potential from these reservoir facies. Also, this research will contribute to resolving issues related to the timing of deposition of channel-fill and adjacent thin-beds in deepwater settings.