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## Taking the Scenic Route and Avoiding the Interstates: Understanding and Predicting the Distribution and Type of Slope Reservoirs

Two fundamental first-order controls (delta position and slope terrain) can be used to better explain and predict both the type and distribution of slope reservoir systems (leveed vs. confined vs. sheet). Delta position (on-axis vs. off-axis) controls the dominance of Mass Transport Complex vs. Turbidites that are delivered to the slope. Slope terrains, which are herein termed Simple, Chute, Ponged and By-pass, are controlled by the gradient and rugosity of the slope, as well as the size of the slope channels (gullies vs. canyons). These terrains determine

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the architectures of dominant turbidite reservoir types deposited on the slope. Simple Slope Terrains have little or no structural controls. Slope channels are free to move laterally across slopes of higher relief as Leveed Channel Complexes. Chute Terrains form as a result of two-dimensional confinement between salt and shale structures. The structural movement in these areas leads to more moderate relief slopes and the development of confined channel complexes in structural lows. Ponged Terrains form in response to three-dimensional confinement between salt and shale structures. The structural movement in these areas leads to localized low-relief areas and the development from time to time of sheet complexes in the ponded lows. By-pass Terrains form when a large canyon develops across the slope. These canyons form efficient by-pass systems that move turbidites from the shelf margin to basin floor, drastically reducing the reservoir potential of the slope. Clearly when all is said and done, slope reservoir nirvana can best be attained by taking the scenic route and avoiding the interstates. ■

### Biographical Sketch

DR. ART DONOVAN received his PhD from the Colorado School of Mines in 1984. From 1984 to 2000, he worked for Exxon Production Research Company where he had the opportunity to work numerous basins around the world and hone his skills in the fields of clastic facies, stratigraphy and seismic stratigraphy. Since December 2000, Art has been in charge of stratigraphy and sedimentology for bp. He is also a member of bp's technical assurance team for global exploration and a Senior Technical Advisor for the corporation. The author of many papers and abstracts on sequence stratigraphy, Art's primary interest is basin-scale stratigraphic analysis, especially explaining and predicting the distribution of clastic reservoirs.



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