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Reservoir Characterization of Four Key Deepwater Depositional Facies

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ABSTRACT

Exploration within the past ten years has resulted in the discovery of several very significant oil accumulations in deep water turbidite reservoirs such as those in the Lower Tertiary clastic formations of the Gulf of Mexico, and in the Cretaceous abrupt margin fans of the Jubilee Ghana turbidite complex, the turbidite fan systems offshore Senegal and Mauritania, and most recently, the Lisa and Payara channelized systems offshore Guyana. This talk presents a classification of deepwater deposits like these into four distinct depositional sequences; three are reservoirs, and one is not: (1) The Upper Fan proximal channel canyon system characterized by amalgamated channels without associated levees, (2) the more confined Middle Fan amalgamated and layered channel and levee complexes, (3) the further downdip, distal Outer Fan basin floor lobes and sheet systems where most of the major commercial discoveries have been found, and (4) the laterally-adjacent non-reservoir Mass Transport Deposit (MTD) traction complexes consisting of slides, slumps, and debris flows, often encased in pelagic, condensed sections. Examples of these four sequences will be presented from the Gulf of Mexico Lower Tertiary, from the Ghana Jubilee turbidite discoveries, and other global analogs.

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