Association Round Table

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Seismic Stratigraphy of Western Colombian Basin, Caribbean Sea

Multichannel seismic reflection profiles disclose the regional stratigraphy of the western Colombian basin. The basement complex is the seismic unit below the deepest, continuous reflection horizon that can be traced throughout the basin. The basement complex reflection signature on the flanks of the Mono Rise and adjacent areas is smooth, continuous, and characterized by local occurrences of internal reflectors, and is equivalent to the Late Cretaceous Horizon B in the Venezuelan basin. In the central basin, the reflection signature is rough with abundant diffractions typical of normal oceanic crust.

The sediment overlying the basement complex is subdivided into five mapping units. Unit CB5, which directly overlies the basement complex, is thickest on the Mono Rise and thins down the flanks of the basin. This unit is equivalent to the Upper Cretaceous to Middle Eocene pelagic unit bounded by seismic horizons A* and B* in the Venezuelan basin. Unit CB4, characterized by pervasive, small offset faulting, is restricted to the crest of the Mono Rise. Units CB3 and CB2 contain subparallel, variable amplitude, continuous reflectors that fill the regional basement complex relief. They are Middle Tertiary terrigenous distal turbidites and hemipelagic deposits. Unit CB1 thicken toward southern Central America and shows complicated reflection patterns typical of a deep-sea fan complex. A jump correlation to Deep Sea Drilling Project Site 154 is used to assign a Late Miocene to Quaternary age to unit CB1. Development of unit CB1 was concurrent with the uplift of and magmatic activity in southern Central America.

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Sedimentologic and Stratigraphic Framework of Some Modern Crevasse Splay Sands

A series of cores taken along strike and dip transects through the Baptist Collette crevasse splay, modern Mississippi River delta, have been analyzed to determine the sedimentologic nature and potential reservoir quality of modern crevasse splay sands. Internal geometry, lateral and vertical continuity, and sedimentary characteristics were determined to construct a model of crevasse splay depositional systems applicable to hydrocarbon exploration.

The stratigraphic framework is more complex than previously recognized. This complexity is demonstrated by the presence of several fine-grained (61-125a) sand bodies (1-2 m, 3-6 ft thick), reflecting deposition in more complex environments. Subaerial levee sands, which thicken toward the proximal end of the splay, contain 50-80% fine-grained (88a) sand, 10% interlaminated muds, and 5-25% cobbles. Distributary mouth-bar and point-bar deposits (2-6 m, 6-20 ft, MSL) are 50-60% fine-grained sand, 40-50% interlaminated mud, and <5% cobbles. The splay sands are laterally continuous along dip, clean (5% silt and clay), well sorted, fine-grained and more homogenous, with few permeability barriers (i.e., mud layers and laminae). Conversely, the shallower bar and levee deposits have poorer reservoir quality, being less clean, less continuous laterally along dip, and with more permeability barriers.

It is felt that this study will complement the limited knowledge of modern crevasse splay systems as well as provide insights into the exploration or enhanced recovery of hydrocarbons in ancient equivalents, such as the Admarc 65° Sandstone of Kansas.

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Experimental Hydrothermal Dedolomitization

Hydrothermal replacement of dolomite by calcite has been examined through experimental reactions carried out in teflon-lined stainless steel bombs, at temperatures ranging from 50° to 200° C (122° to 392°F), at