bank deposits. Sediments near the channel terminus have upward-coarsening sequences (i.e. channel-mouth depositional lobes) and contain 47 to 65% sand.

Most of the sparse microfauna in both sands and muds are benthic species characteristic of inner and middle neritic origin. Traces of biogenic methane and other hydrocarbons were found in the underlying lobes but not in the youngest lobe. All sediments are underconsolidated, resulting from the extremely high accumulation rates of 6-12 m/1,000 yr (20-40 ft/1,000 yr).

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Lithologic Characteristics of Mississippi Fan

Deep Sea Drilling Project Leg 96 drilled eight sites on the youngest fan lobe of the Mississippi fan; well logs were run at six sites to complement core recovery. Four sites were drilled on the middle fan across the meandering channel: in a swale, on a point bar, in the channel thalweg, and in overbank deposits. The swale section consists of mud deposited mainly as fine-grained turbidites. The youngest fan lobe extends to 384 m (1,260 ft) subbottom at the overbank site and consists mainly of muds with clayey and silty zones. The gamma log indicates that most of the lithologic zones coarsen upward. Both channel sites have gravel overlain by pebbly muds, which corresponds to a zone of high-amplitude reflectors. The basal coarse unit is approximately 135 m (443 ft) thick. The channel fill shows a fining-upward sequence from gravel to interbedded sands and silts to sandy muds, and is capped by a 50-m (164-ft) thick homogeneous mud section. The sand section on the point bar side of the channel bend is 30 m (98 ft) thicker than on the thalweg site.

Four sites were drilled on the lower fan lobe, two adjacent to the channel and two near the channel terminus. Well logs indicate 47% net sand for the youngest lobe and 65% for the underlying lobe. The channel generally switches position, building an alternating section of channel fill and overbank deposits.

The channel-mouth depositional lobes coarsen upward, and individual sand layers range in thickness from 0.2 to 10 m (0.7 to 33 ft). They are deposited by turbidity currents.

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What is COMFAN?

COMFAN (Committee on Deep-Sea Fans) is an informal, international group of scientists that was hosted by Gulf Research & Development Co. in September 1982 to analyze the findings of deep-sea fan research accomplished during previous years. The group also reviewed the future plans for DSDP drilling on the Mississippi fan (Leg 96) and provided recommendations.

It was realized that tectonic setting and sea level variations have major influences on volumes of sediment supply, type of sediment, rates of accumulation, nature of fan growth, facies distribution, and stratigraphic sequences.

Deep-sea fans can be divided into three categories. Elongate fans develop in response to medium to high sediment input dominated by mud and fine sand. These fans have a major river as their primary source (e.g., Mississippi, Bengal, Indus, Amazon, and Rhone fans). Radial fans result from a lower sediment input with higher sand/clay ratios (e.g., La Jolla, Navy, San Lucas, Redondo fans). Slope aprons are a third category that, although not submarine fans, are closely related turbidite systems. Most fans are hybrids rather than true end members.

Three major conclusions were generated: (1) comparing modern fans with ancient turbidite systems is almost impossible because of scale differences and different study techniques; (2) slope failure may be a more direct source of fan deposits rather than deltaic systems; and (3) major fan accumulations most likely occur during the end of a sea level lowering or during the initial period of sea level rise, and sedimentation rates may be very high.

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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 rise. 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 thickens 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 Baptiste 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 (61-125μ) sand bodies (1-2 m, 3-6 ft thick), reflecting deposition in 3 distinct environments. Subaerial levee sands, which thicken toward the proximal end of the splay, contain 50-80% fine-grained (88μ) sand, 10% interlaminated muds, and 5-25% rooting. Distributary mouth-bar and point-bar deposits (-2 m, -6 ft, MSL) are 50-60% fine-grained sand (88μ), 40-50% interlaminated mud, with $<5\%$ cross-bedding and gradational base. The deeper (-6 m, -20 ft, MSL) channel sands are 80-95% fine-grained (88μ) sand, with 20-75% crossbedding, 10% interlaminated mud and erosional base. These correlatable sands are encased in thick, organic-rich, bioturbated, bay and abandoned-channel muds forming an impermeable seal.

Channel sands have the greatest reservoir potential, being more 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 Admire 650′ 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