ally controlled regional elements to restricted lagoons on the landward side of offshore barrier complexes, and (3) playa lakes.

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BRAIDED RIVERS AND RELATED TERRIGENOUS DEPOSITIONAL SYSTEMS—USEFUL BUT ENIGMATIC EXPLORATION MODELS

Closely related Holocene and Pleistocene braided-fluvial, eolian dune-sand flat, and playa-lake depositional systems in the eastern Texas Panhandle represent a useful but complex model for hydrocarbon exploration in ancient continental sediments. The modern South Canadian fluvial system and the Pleistocene Borger fluvial system are braided river deposits which are distinguishable from other sand bodies by multilateral sand-body geometry (high width/thickness ratio), low channel sinuosity, few sedimentary structure types, poor lateral and downstream continuity of individual depositional sequences, punctuations of these sequences by thin clay drapes, and a high sand/mud ratio. The main sand body of the South Canadian system averages two mi in width and 125 ft in thickness and cuts into the coarse-grained and sometimes conglomeratic sand of the Borger system. Fine to medium wind-polished sand of the Lake Marvin eolian-dune system and the older vegetated Nix Ranch eolian-sand system is deposited in thin plane-bedded sheets and strongly cross-stratified parabolic and longitudinal dunes. These eolian units are derived from, and often continuous with, South Canadian fluvial deposits of different ages. The strongly vegetated and older Pampa eolian-sand system is related similarly to the Borger fluvial system. In addition, the surface of the Pampa system is pockmarked by small pre-Nix Ranch playa-lake deposits consisting of organically rich and finely laminated beds of clay and sandy silt.

Hydrocarbon discoveries in fluvial and eolian sands illustrate the economic value of this depositional model. Among the many examples of production from fluvial sands are the Lower Cretaceous "J" sand bodies in Nebraska, lower Paleozoic Granite Wash in Alberta, and the Berea sand in Ohio. The Permian Queen sandstone in New Mexico produces from probable eolian deposits.

Limited subsurface information leads to difficulty in recognizing separate depositional systems in sands of similar size and texture. For this reason the explorationist must be careful in application of depositional models. Realization of possible variation in sand-body geometry in a particular type of depositional system is essential.

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CAMBRIAN AND LOWER ORDOVICIAN STRATIGRAPHY IN BIGHORN MOUNTAINS AND ASSOCIATED UPLIFTS IN WYOMING AND MONTANA

New information concerning Cambrian and Lower Ordovician stratigraphy in Wyoming and Montana is derived from 26 measured sections in uplifts along a 430-mi trend from the Rawlins uplift on the south, through the Ferris Mountains, Rattlesnake Hills, Bighorn Mountains, Prior Mountains, Big Snowy Mountains, and Little Rocky Mountains on the north.

Seas transgressed east-southeastward up a paleoslope of low regional relief but with several hundred feet of local relief. The sedimentary record consists of a series of lithotope belts each extending generally parallel with the shoreline. From the shore seaward the order is as follows: (1) sandstone, generally clean, medium- to coarse-grained, crossbedded and burrowed, deposited in beach, intertidal, and shallow subtidal zones; (2) sandstone, generally clean, fine-grained, crossbedded, laminated and burrowed, deposited in the shallow subtidal zone; (3) sandstone, the same as (2) except a glauconitic greensand and may be interbedded with siltstone and shale; (4) siltstone, may be interbedded with fine-grained sandstone and shale; (5a) shale, usually burrowed, with micrite beds and nodules, seaward from (4) in deeper water; (5b) shale and intraclast limestone conglomerates indicate shallower water and offshore intertidal zone environments; (6) laminated limestones, intraclast limestone conglomerates, and crinozoan calcarenites suggest an offshore shallow subtidal and intertidal environment.

The faunal record begins with the *Bathyuriscus-Elrathina* Zone of medial Cambrian age and ends with the *Bellefontia* Zone of Early Ordovician age. Trilobites and brachiopods dominate the faunas but conodonts assume major importance in latest Cambrian and Early Ordovician time. Both faunal-zone boundaries and key beds are isochronous surfaces that form planes of correlation within lithotopes and across facies boundaries between lithotopes.

The *Bathyuriscus-Elrathina* Zone and "lower" *Bolaspidella* Zone are of lithotopes (1) through (5). The "upper" *Bolaspidella* Zone reflects an abrupt east-southeastward shift in depositional environments and only lithotopes (3) through (5) are present. The *Cedaria* Zone is largely (4) and the *Crepicephalus* and *Aphelaspis* Zones are (5b). Seas withdrew after initial *Aphelaspis* Zone deposition and returned at about the beginning of the *Elvinia* Zone. *Elvinia, Taenicephalus, Idahoia,* and early *Saukiella* Zones are (5b) with the shale dominant at the base and limestone increasing upward. Late *Saukiella, Mississquoia,* and *Bellefontia* Zones are of lithotope (6).

An unconformity variably truncates the section and younger strata lie on rocks ranging in age from *Bellefontia* Zone limestones in the Big Snowy Mountains to *Bolaspidella* Zone greensands in the Rawlins uplift.

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DELTAIC SEDIMENTATION, SOUTH PLATTE FORMATION (LOWER CRETACEOUS), MORRISON AREA, JEFFERSON COUNTY, COLORADO

Previous workers have delineated deltaic sedimentation from a western source within the South Platte Formation. Outcrop studies in the Morrison-Deer Creek area provide a model for sedimentation within the region of maximum channel development of the South Platte Formation. The total thickness of the South Platte Formation is 170 to 245 ft.

The sequence at the base of the South Platte represents marginal marine deposits and alternate fresh to marine interdistributary bays.

Ten to 20-ft sandstones, approximately 300 ft wide are active or partly active fills of minor distributary channels, or crevasse-splay channels associated with delta-plain sedimentation of a major delta lobe. Major multiple distributary channels formed as the delta