and Devonian support the concept of two intrabasin platforms: one in southwestern Michigan (Allegan) and the other in southeastern Michigan (St. Clair). A generalized depocenter lies directly northwest of Saginaw Bay. There were important deviations from this depocenter, particularly during the Ordovician and Middle Devonian.

The major northwest-trending folds in the central part of the Michigan basin were generated during Late Mississippian or Early Pennsylvanian time, and are probably the result of the regeneration of dominantly vertical movements along basement faults.

Major petroleum production in Michigan is from (1) Ordovician dolomitized fault zones; (2) Silurian pinnacle reefs; and (3) Devonian anticlinal traps with marked variations in porosity.

Future possibilities lie primarily with the discovery of additional dolomitized fault zones in Ordovician carbonate rocks or in Devonian stratigraphic traps. Cambrian production is a possibility, but there is inadequate control to define its potential.

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Accretional Shoreline Processes at Tidal Inlets Along South Carolina Coast

The greatest shoreline changes of barrier islands along the South Carolina coast occur in the vicinity of tidal inlets. Depositional processes at these inlets can be categorized as those associated with (1) migrating inlets, (2) stable inlets, and (3) inlets whose main ebb channels breach new positions through their ebb-tidal deltas.

At migrating inlets, curved beach ridges are added to the updrift island while the downdrift island erodes. These processes occur most commonly at shallow inlets whose main ebb channels do not scour into the marine or lagoonal muds underlying the barrier-island sands. Shoreline breachings during storms are also important at inlets with histories of rapid migrations.

Stable inlets have deeper main ebb channels which are entrenched in resistant clays. Morphologic changes associated with these inlets are predominantly the result of wave processes. The coalescing of wave-built swash bars in the outer part of the ebb-tidal delta and the subsequent landward migration of these bar complexes can cause inlets to have either a downdrift or updrift offset, or a straight configuration.

The well-developed ebb-tidal deltas of the South Carolina inlets normally have a single main ebb channel and two or more marginal flood channels. The dominant northeast wave approach causes southerly longshore transport of sand along most of the South Carolina coast and a preferential addition of sediment to the north side of the ebb-tidal delta, which results in a southerly migration of the outer part of the main ebb channel. Because the southerly course is longer and less efficient than a straight course through the ebb-tidal delta, the main channel eventually breaches a new position through a northern marginal flood channel. The accumulation of sand which flanked the old channel is transported landward and accretes to the downdrift beach.

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Giant Field Discoveries, 1967-77—An Overview

In this symposium a giant oil field is defined as one containing 100 million bbl or more of oil. Exceptions are those oil fields in the Middle East, North Africa, and eastern USSR where 500 million bbl, or more, are considered giants. Giant gas fields contain 1 Tcf, or more, except in the Middle East, North Africa, and eastern USSR where 3 Tcf, or more, are required.

During the 11-year period since the last AAPG symposium on giant fields (held in Oklahoma City in 1968), approximately 280 giant oil and gas fields have been found. These fields contain an estimated recoverable reserve of roughly 120 billion bbl of oil and 900 Tcf of gas. These fields account for about 60% of world oil and gas discovered during the period.

The 280 giant fields are distributed as follows: United States and Canada, 40; Latin America, 40: Europe, including western USSR, 55; Africa, 40 (8 north Africa; 32 other Africa); Far East, including China, 40; Eastern Russia, 30; and Middle East, 35.

With respect to numbers of giant fields being found, no decline in rate of discovery can be observed. Outside the United States and Canada, the discovery rate is increasing. However, the average size of giant discoveries is in marked decline, as is the discovery rate in barrels and cubic feet per year in total.

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Pictured Cliffs Sandstone—Upper Cretaceous Distributary-Channel, Delta-Front, and Beach-Bar Deposits, Southwestern San Juan Basin, New Mexico

The Upper Cretaceous Pictured Cliffs Sandstone in the Bisti-Burnham area in southwestern San Juan basin, New Mexico, contains distributary-channel, delta-front, and beach-bar deposits. The distributary-channel deposit is a basally erosional, festooned, convoluted, and rippled sandstone. The delta-front deposits include distributary-mouth-bar sandstone, distal-bar sandstone, siltstone, shale, and intervening contorted sandstone. The distributary-mouth-bar sandstone is subparallel laminated, rippled, and festooned. The distal-bar sandstone is subparallel laminated and rippled. The intermediate contorted sandstone contains fold and ball-and-pillow structures. The distributary-channel and delta-front sandstones are very fine to fine grained, quartz poor (39%), and sparsely burrowed by *Ophiomorpha*.

The beach-bar deposits include shoreface-beach sandstone, siltstone, and shale, and tidal-channel and washover sandstones. Lower-shoreface deposits include parallel-laminated, rippled sandstone and bioturbated shale and siltstone. Middle-shoreface sandstone consists of a subparallel-laminated, rippled, and locally burrowed lower part, and a planar-cross-bedded and commonly burrowed upper part. Upper-shoreface–beach deposits consist of planar-cross-bedded, sparsely burrowed sandstone and lenticular, festooned, rippled, burrowed sandstone grading upward into subparallel-laminated, festooned, burrowed sandstone. The shoreface-beach deposits are dissected by bidirectional-