anomalies occur over fields which are contained in stratigraphic traps.

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Structural and Stratigraphic Framework of Lower Mesozoic and Upper Paleozoic Strata, Northeast Texas

The lower Mesozoic and upper Paleozoic were investigated in a 19,430 sq km area centered about Ellis County, Texas, in an effort to define the pre-Cretaceous surface, determine the westward extent of Jurassic rocks, analyze thickness and lithic nature of the lowermost Cretaceous, delineate the extent of faulting, and evaluate the economic potential of the section studied.

The pre-Cretaceous surface dips east-southeast and consists of Paleozoic rock in the updip third of the study area and Jurassic rock in the downdip two-thirds. Regional dip increases southeastward into the East Texas basin, but is interrupted by Balcones and Mexia-Talco faults. According to seismic data, many of these normal faults extend into the Paleozoic section. They are Jurassic and younger in age and formed along preexisting lines of weakness in response to the structural development of the East Texas basin. Jurassic rock extends updip beyond the Mexia-Talco system in an onlap fashion, each carbonate formation becoming more clastic as it nears its own pinch-out. The overlying Hosston Formation was deposited in a fluvial to nearshore environment, in the study area, on the basis of reported lithologies and isopach form. The interval studied has economic potential as geothermal, ground-water, and hydrocarbon sources. Possible hydrocarbon traps include fractured Arkansas Novaculite, updip pinch-out of and porous facies within the Upper Jurassic formations, and traps against the downdip sides of faults in the Hosston Formation and underlying Jurassic formations.

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Depositional and Diagenetic Facies, Smackover Formation, Chunchula Field, Alabama

The Chunchula field lies on the northeastern edge of the South Mississippi platform and produces from dolomitic carbonates of the Smackover Formation. The Smackover section overlies the subaerial to marine Norphlet Sandstone and itself represents a general transgressive-regressive sequence of shallow-marine to supratidal facies similar to those found on the Great Bahama Bank today.

The Chunchula carbonate section is composed of at least three major units. The basal interval is the lowermost Smackover section and is composed of medium to coarsely crystalline dolomite and its upper boundary seems to be marked by a significant disconformity. The second unit is interpreted as upper Smackover and is composed of medium to coarse-grained dolomite in the central and western parts of the field, but becomes predominantly limestone along the northern and eastern edges of the field. The uppermost part of the carbonate section is a finely crystalline dolomite that represents part of a sabkha sequence and probably belongs to the overlying Buckner evaporite section.

Porosity development is restricted to the dolomitic units and seems to be preferentially associated with paleotopographic highs. The best reservoir intervals are composed of intercrystalline dolomite and pelmoldic porosity and have their maximum development in the southeastern part of the field.

Carbon and oxygen isotopes and strontium ion concentration data suggest that fresh or brackish fluids have played some role in the development of porosity in the Smackover carbonates.

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Depositional Environments and Porosity Evolution, El Abra Limestone (Cretaceous), Mexico

Reservoir quality in the middle Cretaceous Golden Lane oil field, Mexico, was enhanced by freshwater dissolution during subaerial exposure in the Late Cretaceous and early Tertiary. Study of the outcropping equivalent El Abra Limestone in the type area demonstrates the presence of repeated emergence and submergence and the formation of subaerial discontinuity surfaces.

Physical correlation has been established between El Abra quarry sections. This dovetails with a corresponding correlation of discontinuity surfaces to provide a series of reliable horizons on which to construct a shelf-edge model.

Near back-reef rocks are characterized by thin (3 m) shoaling-up sequences usually capped by thick (to 10 m) supratidal and island sequences. Storm washover deposits with strong calcrete overprint are interbedded with penecontemporaneously dolomitized supratidal rocks. Freshwater dissolution during emergence produced voluminous moldic and vuggy porosity, subsequently reduced by interlayered marine internal sediment and a radiaxial fibrous cement mosaic. Platform-interior rocks are characterized by thick subtidal deposits and 3 to 5 m shoaling-upward sequences attributable to tidal flat progradation in the lee of shelf-edge islands or the migration of tidal channels. Paleosols and karstic surfaces are present at the tops of several cycles. Moldic and vuggy porosity developed during subaerial exposure was reduced by vadose and marine internal sediment. Radiaxial fibrous cement mosaics are not present.

Porosity development in the El Abra type area is a result of synsedimentary emergence. Porosity was of local extent and largely occluded by processes active during succeeding sedimentary episodes. Post-El Abra freshwater leaching appears to have been minor. Contrasts in reservoir development between the Golden Lane and the comparatively tight El Abra type area may reflect differences in later exposure.

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Sedimentary-Exhalative Pb-Zn Deposition, Grum Deposit, Anvil Range, Yukon, Canada

The Grum deposit is one of eight stratiform shale-hosted massive zinc-lead-barite mineral deposits located in the Anvil Range, Yukon. Host sediments were deposited in a Lower Cambrian extensional basin within a trailing margin miogeoclinal wedge. During the Mesozoic, the ore deposits and their host sediments underwent lower greenschist grade metamorphism and complex deformation related to intrusion of the Cretaceous anvil batholith.

The Grum deposit consists of two sulfide horizons which were isoclinally folded into a first phase fold closure that was subsequently refolded into recumbent S-shaped second phase folds plunging to the northwest. The southeastern section of the deposit is disrupted by both steep and low angle faults.

Sulfide deposits occur at a stratigraphic transition between non-