crust, is still uncertain. The central gulf and interior basins subsided after this period of crustal thinning. It was in these basins that the Sigsbee and Louann Salt were deposited. Later, as the basin margins subsided farther, carbonate sediments onlapped and covered these margins, marking 5 km of subsidence by the Cretaceous. Since the Cretaceous, clastics have infilled the northwestern Gulf, causing an additional 3 km of subsidence of the gulf basin, while the central Florida and Yucatan platforms have stabilized above sea level.

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Reservoir Quality in Tertiary Sandstones along Texas Gulf Coast

Three data bases were developed for a regional survey of reservoir quality in Tertiary sandstones along the Texas Gulf Coast.

1. Core analyses from 252 wells (10,900 datum points) are the basis of plots which indicate that porosity and permeability do not simply decrease with depth but commonly increase at depth by development of secondary leached porosity.

2. Point count analyses of 535 thin sections from 169 wells for mineralogy, diagenetic features, and porosity types indicate, within formations, regional mineralogic trends that affect reservoir quality, especially at depth. The average Tertiary sandstone is a moderately sorted, very fine-grained quartzose lithic arkose. Each Tertiary formation shows a similar general diagenetic history; primary porosity is dominant in the shallow subsurface, and secondary leached porosity is dominant in the moderate and deep subsurface.

3. Plots of interval transit time versus depth for 87 acoustic logs indicate general compaction and consolidation histories of complete stratigraphic sections, and they are useful for comparing compaction and consolidation histories among different areas. Both the Wilcox and Frio trends exhibit a general pattern of more rapid compaction and greater degree of consolidation in the lower Texas Gulf Coast than in the upper Texas Gulf Coast.

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Porosity in Giant Gas Field, Ellenburger Formation, Puckett Field, Pecos County, Texas

The Lower Ordovician Puckett field has produced nearly 2.5 Tcf of gas from the Ellenburger Dolomite since the discovery of the field in 1952 by Phillips Petroleum Co. Production is from a depth interval of approximately 12,000 to 15,000 ft (3,600 to 4,500 m), and the estimated ultimate recovery is 3.3 Tcf.

The Ellenburger facies are interpreted to have been deposited in several major environmental settings—subtidal, intertidal-channel belt, and supratidal. Subtidal deposition is represented by burrowed, irregularly laminated mudstones and wackestones and by oolitic grainstones. In the intertidal-channel belt, intraclastic packstones and stromatolitic boundstones accumulated. Laminated mudstones and algal-laminated mudstones were deposited on the supratidal flats in which desiccation produced mud cracks and thin layers of flat-pebble conglomerates. During Ellenburger sedimentation there were many periods of subaerial exposure which resulted in formation of soil zones and karst terranes as deep as 20 ft (6 m). Solution collapse produced thick brecciated zones.

Maximum porosity in the reservoir is 12% and the greatest permeability is 117 md. Porosity originated dominantly from tectonic and karst fractures and karst vugs. The generally low porosity is locally enhanced by intercrystalline, moldic, and interparticle porosity. The greatest porosity and permeability is commonly in the facies of the supratidal and intertidal environments most affected by tectonic fractures and by soil and karst development.

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Error in X-Ray Diffraction Estimates of Dolomite in Carbonate Rocks—Causes and Cures

Three independent errors affect X-ray diffraction estimates of dolomite in pre-Cenozoic carbonate rocks. If calcite:dolomite main-peak [104] ratios are used, each 1% of excess calcium in the dolomite lattice causes a 2% overestimate of the amount of dolomite. Use of the second-intensity [113] ratios avoids the stoichimetry problem, but the [102] quartz peak (2.282A) interferes with the [113] calcite peak (2.282A). Where more than 20% quartz is present, the dolomite proportion in the sample may be seriously underestimated. The third source of error is due to difference between the crystallite size in the standards used to prepare the calibration curves and the crystallite size in the sample unknowns. These three errors can be avoided or corrected; however, point count of stained thin sections, a simple reliable technique, is preferable for analysis in most cemented carbonate rocks.

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Upper Devonian Turbidites of Central and Southern Appalachian Basin—A Prodeltaic Clastic Ramp?

The Brallier Formation (Upper Devonian) of the central Valley and Ridge province is a thick (600 to 900 m) regressive sequence of distal to proximal turbidites composed of interbedded siltstones, olive-gray mudstones and shales, and organic-rich black shales. This sequence is transitional westward to the thinner, distal, Devonian black shale facies. Regional and vertical patterns in sedimentologic features differ from those of most models for turbidite sedimentation.

The uniformity of turbidite bed thickness, implying a triggering mechanism of uniform intensity, and the absence of slump structures in the proximal facies suggest that turbidity currents were initiated by means other than localized mass movement. Storm surges or high river discharges are more likely mechanisms.

The Brallier depositional sequence differs significantly from existing submarine-canyon–fan models in