ing in synclines that were actively growing during deposition.

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Nature of Non-Recoverable Porosity Changes in Experimentally Deformed Indiana Limestone and Yule Marble

Cores of limestone and marble with porosities from 0.5% to 15% were experimentally deformed dry, at room temperature under confining pressures from 3.5 to 27.6 MPa. Deformations were documented by changes in porosity, permeability, and mercury-injection pressure measurements. Pore and fracture geometries and interrelations were preserved by epoxy impregnation. In Indiana limestone at axial loads to 95% of mean failure strength, no significant changes in porosity could be detected, although there was a significant increase in twinned grains around pores, and a slight increase in mercury-injection pressures. At loads to 90% of failure (1.2% axial strain of which 0.4% is non-recoverable), a slight change in recovery efficiency was produced. The significance of this change is uncertain. If real, it is probably the result of microcracking observed at grain boundaries. After failure, a direct relation seems to exist between bulk axial strain and porosity. The porosity increase seems to be entirely disseminated, as no major fracture was formed, though shear zones 1 to 2-mm wide characterized by twinning and grain rotation were noted. Failure was accompanied by widespread grain and pore-size reduction. Yule marble stressed at axial loads to 99% of mean failure strength showed no measurable change in porosity. Failure was accompanied by increase in porosity which showed a correlation to bulk axial strain. This increase in porosity is in the form of both major fractures and a general increase in intergranular pore widths from less than 1 μ (undeformed) to between 1 and 10 μ (deformed).

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Reevaluation of Depositional Environments of Salt Wash Member of Morrison Formation, Uravan Mineral Belt, Southwest Colorado

The Uravan mineral belt of southwestern Colorado has proved to be a significant source of uranium and vanadium. Since 1948, 63 million lb of U_3O_8 and 332 million lb of vanadium have been produced. About 90% of the ore has come from the upper sandstone ledge of the Salt Wash Sandstone Member of the Morrison Formation.

It has long been recognized that the Salt Wash was the product of fluvial sedimentation. More recently most authors have concluded that the Salt Wash was deposited as a braided stream system and some have proposed that the system was part of a large alluvial fan complex because of the arcuate pattern of the belt. However, results of a detailed sedimentologic analysis of this sequence in the Slick Rock district suggests that the entire Salt Wash including the uraniferous upper ledge was deposited in a fine-grained meander belt system.

Evidence for this interpretation is based on the high percentage (up to 54%) of fine-grained bioturbated and/or rooted flood-plain sediments; associated coarsening-upward crevasse splay or overbank splay deposits; and the abundance of fining-upward point bar sequences. The fine to medium-grained sandstones of the point bar deposits crop out as a series of discontinuous ledges numbering between 3 and 6 throughout the district. Each ledge consists of a number of abbreviated and complete point bar sequences ranging in thickness from a few feet to over 25 ft. These point bar deposits grade laterally and vertically into levee, abandoned channel, and crevasse splay assemblages and are interbedded with thick sequences of overbank mudstones, siltstones, and thin sandstones.

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Post-Middle Cretaceous Seismic Stratigraphy of Abyssal Southwestern Gulf of Mexico Basin

The post-middle Cretaceous sedimentary section in the abyssal Gulf of Mexico (7 to 8 km thick) is divided into seven major depositional sequences. The sequence boundaries represent widespread unconformities which are best observed along the base of the Campeche Bank. These depositional sequences provide a framework for reconstructing the geologic history of the area.

The oldest sequence (middle Cretaceous-early Tertiary) displays strong to weak, discontinuous reflections, interpreted to represent fine-grained pelagites and hemipelagites. The overlying three sequences (early Tertiary–Middle Miocene) are characterized by strong, high-amplitude, continuous to distcontinuous reflections, and probably consist (predominantly) of sandy turbidites, as evidenced from cores recovered from the bottom of Deep Sea Drilling Project hole 90. Seismic facies analysis of these three sequences shows large convex-upward depositional buildups and numerous relict channels, suggesting deposition in large submarine fan complexes. The three youngest sequences consist of fine-grained turbidites and pelagites and display such features as prograding foreset beds deposited in the distal parts of submarine fans, and large-scale, dune-like features with wavelengths of 2 to 4 km. Westward thickening of most of the sequences indicates the source of the detrital sediments was to the west in eastern Mexico.

The southwestern Gulf of Mexico possesses excellent potential for hydrocarbon entrapment, especially in buried stratigraphic features such as the fan channel systems, and also in structural traps along the Mexican Ridges foldbelt.

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Multiple Barrier-Island and Deltaic Progradational Sequences in Upper Cretaceous Coal-Bearing Strata, Northern Kaiparowits Plateau, Utah

The Kaiparowits coalfield, Utah, contains reserves of 20 billion tons of coal which are confined to three major coal zones within the John Henry Member of the Straight Cliffs Formation (Upper Cretaceous). Mapping and subsurface work in the northern part of the coal-