the unconformity plane and the duration of subaerial exposure periods associated with meteoric flushing and karst development is of prime importance for petroleum exploration. The Late Jurassic–Early Cretaceous angular unconformity brings into juxtaposition a deep Paleozoic aquifer and an overlying Mesozoic aquifer. Problems of salinity, reserves estimate, and exploitation arise. Karstic phenomena that developed during the Late Cretaceous exposure time contribute to the excellent storage capacity of the Cenomanian-Turonian aquifer. (3) Alumina-rich lateritic soils, formed under subaerial tropic conditions at the Triassic-Jurassic boundary, are used by the ceramic industry.

FLORES, RICHARD L., Exxon Co., U.S.A., Houston, TX

Computer-Generated Graphic Displays of Commercial Production History and Reservoir Data

Many types of digital information are available commercially for use by the petroleum industry. Two particularly useful types of data are production history and reservoir information. Computer files of production history information typically contain monthly production figures and periodic test results where they are available. Computer files of reservoir information commonly include such data as producing formation, discovery date, average depth, net pay, porosity, permeability, lithology, trap type, fluid contacts, drive type, and chemical analyses of crude oil, gas, and formation-water samples.

It is often difficult to assimilate these large volumes of information by merely listing the data. Computer-generated production decline curves, P/Z gas plots, maps, bar graphs, and other such graphic displays allow one to analyze these data with less time and effort.

FLOWERS, BILLY S., Shell Offshore Inc., New Orleans, LA

Corsair Trend—Exploring for Deep Geopressured Gas, Middle Miocene, Offshore Texas

(No abstract)

FLY, STERLING H., III, Cities Service Oil & Gas Corp., Midland, TX

Siliciclastic-Carbonate Interactions in Laborcita Formation, Sacramento Mountains, New Mexico

Outcrop exposures of the Laborcita Formation (Wolfcampian) reveal an active depositional environment with abrupt lateral and vertical changes between fan-deltaic and carbonate sediments. The siliciclastic source area was to the east, in the Pedernal uplift. Fan-delta lobe shifting was important in producing the cyclic nature of deposition.

Away from the area affected by the fan-deltas, deposits are increasingly calcareous. Shales are the predominant lithology in the Laborcita Formation, due to the abundance of carbonate-inhibiting terrigenous matter, especially in restricted areas. A few digitate stromatolites and *Archeolithophyllum* sp. mounds indicate subaerial exposure. Toward the edge of the narrow shelf, large phylloid-algal buildups (20 m or 65 ft thick) occur. An exposure in Coyote Canyon, near the northern end of the Laborcita exposure, shows an onlapping sequence of several mounds. This mound zone was terminated when muds and fine to medium-grained terrigenous sands migrated in and inhibited growth of the carbonate-producing organisms. The terrigenous sediments were in turn overlain by grainstones exhibiting long, low-angle (15°) cross-bedding, which dips landward (southeast). Individual grainstone beds are thin (0.5-1.5 m or 1.6-5 ft), extend along strike laterally for about 2.5 mi (4 km), and are composed largely of bioclastic carbonate grains (not ooliti-cally coated) with 5% quartz grains. Direction of migration was southwest to northeast.

Gradual emergence is recorded by the Laborcita Formation. With continual progradation of terrigenous deposits, interrupted by marine incursions resulting in deposition of shallow-water carbonated deposits, the transitional Laborcita Formation was ultimately overlain by the terrigenous Abo Formation.

FOLK, ROBERT L., Univ. Texas at Austin, and PAMELA A. TIEZZI, Exxon, New Orleans, LA

Diagenesis and Dolomitization in Triassic (Rhaetian) "Portoro" Limestone, Portovenere, Liguria, Italy

The Portoro Limestone is jet black with white veinlets and gold stylolites, and is much used as ornamental stone. Vague, pale-gray nodules represent precocious lithification at shallow depths below the sediment surface, probably the result of bacterial colonies consuming organic matter and mobilizing carbonate. Gnocchi (now turned upside down) are partly filled with geopetal, fine dolomite sediment; original tops are filled with sparry calcite and baroque dolomite. These probably represent dissolved evaporite nodules. Despite the black color, the rock contains very little organic matter. The rock is made of 10-20 μm metamicrite as the result of thermal metamorphism; crystals are so clear that the minute amount of organic matter is readily visible. There are many generations of dolomite; most abundant is postmetamorphic, post-fracturing dolomite that contains inclusions of metamicrite and has ragged crystal form. Earlier dolomite behaved as a mechanical sediment, accumulating as geopetal filling within cavities, on top of clasts, and within tectonic fractures.

FORSTHOFF, G. M., Gulf Oil Exploration and Production Co., Casper, WY, and T. L. HOLCOMBE, National Geophysical Data Center, Boulder, CO

Controls of Bioclastic Turbidite Deposition in Eastern Muertos Trough–Northeast Caribbean Sea

A study of seismic-reflection profiles and sediment cores establishes regional bathymetric and source area control over the composition, transport, and distribution of turbidites in the eastern Muertos Trough. Bioclastic (carbonate) turbidites dominate the eastern portion of the trough. Analyses of carbonate content and sand-sized components suggest that the bioclastic turbidites (characterized by planktonic foraminifera, pteropods, and sponge spicules) are reworked pelagic oozes originally deposited on the outer-shelf and upper-slope areas south of St. Croix and eastern Puerto Rico. The presence of several intrashelf and upper-slope basins prohibits shallow-water carbonate sediments from entering the Muertos Trough.

Volcanic rock fragments derived from Puerto Rico are transported to the trough via the Guayanilla Canyon system. Mixing of the volcanic fragments with outer-shelf and upper-slope lutites results in mixed bioclastic-terrigenous turbidites south of central and western Puerto Rico. The paucity of shallow-water carbonate sediments in the trough suggests that the submarine canyons are effective conduits for the "rapid" transport of volcaniclastic sands across the shelf and thereby prevent extensive mixing with inner- and middle-shelf carbonate sediments.

Sediment transport within the trough is primarily axial in an east-west direction. Outer trench-wall fault scarps, south of Guayanilla Canyon, limit the southerly progradation of the trench-wedge facies and deflect incoming gravity flows in a down-axis (westward) direction. Where no faults exist, the trench wedge progrades southward and interfingers with the pelagic sediments of the northern Venezuelan basin.

FURST, MARIAN J., Schlumberger Well Services, Dallas, TX

Quantitative Sedimentologic Application for Dipmeter Data

Traditionally, interpretation of dipmeter computations has required considerable expertise. Although dip angles and directions were computed precisely, relationships between successive correlations were left to qualitative visual inspection.

Now, with new software, 4- or 8-button data can be output in a form that allows routine quantitative analysis. This new program computes curves that provide measures of the thickness between dip correlations, planarity of correlations, parallelism of successive bedding planes, and grain-size trends from resistivity curve shapes.

Uses for this information are varied. To the extent that dipmeter correlations reflect bedding planes, the thickness between correlations can be used to study vertical changes in bed thickness. Combining grain-size trends with bedding characteristics and thickness, one obtains a sedimentologic description of the formation that can be displayed with easy-to-understand graphics. An appropriate depth scale allows a macroscopic view of several hundred to several thousand feet of log data or a microscopic examination of a short interval in great detail.

The dipmeter data can also be incorporated into computerized analysis of other wireline log data. Laminated formations can be identified, and the direction and dip of the laminations can be indicated on a lithofacies