westward, from about 400 to about 600 m. The deeper mass may be related to the Yucatan Current.

At 5 sites the meter was maintained for up to 9 hours a short distance off the sea floor to determine the sustaining nature of the currents. Records obtained at 3 locations are consistent in both velocity and direction with the short-term measurements.

These few scattered measurements would not seem to warrant broad conclusions regarding the movement and structure of the water masses over the upper continental slope. However, the data clearly document certain water movements in the spring of 1966. Most of these data are internally consistent, and the velocities are sufficient at times to transport fine to medium sand.

MOORE, G. T., and T. J. FULLAM, Chevron Oil Field Research, La Habra, Calif.

DEEP-WATER TURBIDITE CHANNELS AND THEIR POTENTIAL VALUE IN PETROLEUM LOCALIZATION

Recent geophysical surveys delineated the characteristics and distribution of turbidites on the proximal parts of deep-sea fans. Turbidite channels generally normal to depositional strike are concentrated near the apexes of deep-sea fans and may be potential reservoirs of petroleum. Migration of the major channels can dissect older turbidite sequences and in places create stratigraphic traps. Deformation such as slumping that is symmetrical to the fan can provide a structural mechanism for entrapment of migrating petroleum.

As the petroleum industry explores for hydrocarbons in turbidite sequences, it is paramount to understand the sedimentation and subsequent deformation associated with this depositional environment.

MURALI, R. S., Florida State Univ., Tallahassee, Fla.

WAVE-POWER GRADIENT—APPROACH TO HOLOCENE DEPOSITIONAL HISTORY

Wave-power gradient studies along the mainland in the St. Joseph Bay area (panhandle coast of Florida) indicate that the dominant wave approach direction, responsible for littoral drift toward the south-southeast, is from the west. Using this information, attempts have been made to arrive at a relative depositional sequence in this region consisting of: bay, shoal, spit with beach ridges, and mainland beach ridges.

On a smoothed coast without the beach ridges, but with the present bathymetric conditions, the wave-power gradient was determined. There was no noticeable drift component indicating deposition. Then, the bathymetry was made smooth by the removal of the offshore shoal, the longshore component of wave power was computed and plotted to get an idea of the littoral drift. As a third stage, successive beach ridges were deleted from the spit one after the other and the drift component was determined in each case. At a certain stage, after the removal of a specific number of ridges in the spit and making the bathymetry smooth, the longshore component showed a strong south-southeast drift, accounting for deposition, and in turn leading to the growth of the mainland beach ridges (which originally had been smoothed out).

This model produced one possible depositional history of this region: initially, the simultaneous growth of the mainland beach ridges after the closing of the channel east of Cape San Blas and the northern part of the spit and associated beach ridges extending northward from the cape. This growth is followed by the development of the remaining part of the spit and the formation of the shoal attached to it; and finally the termination of growth of the mainland beach ridges. The age of the beach ridges on the mainland is thought to be between 400 and 600 years.

O'NIELL, C. A., III, Shell Oil Co., New Orleans, La.

EVOLUTION OF BELLE ISLE SALT DOME, LOUISIANA

The Plio-Miocene subsurface geology of Belle Isle dome in coastal Louisiana was studied using electrical logs. The pattern of syndepositional folding, faulting, and sand distribution at this shallow-piercement salt structure reflects variations with time in the configuration of the paleotopographic mound and indicates contemporaneous intrusive movement and sedimentation. Intrusive growth proceeded from an elongate shale and salt mass (ridge stage) to a buried cylindrical salt plug (deep-plug stage) to a plug which maintained a near-surface position (shallow-plug stage).

Each growth stage has a particular style of folding and normal growth faulting that is related to the shape and burial history of the intrusive. The ridge stage is characterized by movement on tangential faults and intrusive-coincident peripheral faults. The highly convergent beds of the deep-plug stage record the main episode of radial faulting. Shallow-plug-stage sediments are rarely faulted, and have low-sedimentary convergence rates. During both plug stages the salt-sediment interface acted as a vertical circular fault.

The shallow-plug stage is associated with slowly deposited nonmarine sediments, whereas the deep-plug stage is associated with rapidly deposited deltaic sediments. It is postulated that deposition rates largely determined burial depth of plug and that changes in absolute rate of salt movement during plug stages were minor.

Because of the large topographic mound present during the ridge stage and deep-plug stage, sandstones grade to shale near the salt, thereby creating numerous stratigraphic traps.

OTTMAN, R. D., Exxon Co., Harvey, La., P. L. KEYES, Exxon Co., New Orleans, La., and M. A. ZIEGLER, Esso Production Research Co., Houston, Tex.

JAY FIELD—JURASSIC STRATIGRAPHIC TRAP

The first Jurassic oil discovery in Florida was made in June 1970, near Jay, 35 mi north of Pensacola. Current estimates indicate recoverable reserves in the Smackover Formation should exceed 300 million bbl of oil and 300 Bcf of gas. Production is on the south plunge of a large subsurface anticline with the updip trap formed by a facies change from porous dolomite to dense micritic limestone.

The Smackover consists of a lower transgressive interval of laminated algal-mat and mud-flat deposits and an upper regressive section of hardened pellet grainstones. Early dolomitization and freshwater leaching have created a complex, extensive, high-quality reservoir. Irregular distribution of facies presents difficult problems in development drilling, unitization, and planned pressure-maintenance programs.

Hydrogen sulfide content of the hydrogens requires expensive processing facilities and wellhead equipment. A typical completed well costs $650,000 with an additional $200,000 for flowline and inlet separation facilities. Add to this $550,000 for plant facilities to sweeten the oil for market, and each well investment approaches $1,400,000. Daily production from Jay field will approach 85,000 bbl from approximately 85 wells. This rapid development results from a coordinated development program with modular plant design.