Examination of 16 shallow core borings from the Great Bahama Bank reveals that coral-coralline algal deposits of Pliocene-Pleistocene age line the margins of the bank. These reefal deposits extend up to 5 km bankward from both windward and leeward edges of the platform. Those along leeward margins are framestones and grew in relatively deep water. Those along the windward margins are a mixture of framestone and bafflestone formed in water of various depths probably including low intertidal. A similar assymetric distribution of depositional textures may be indicative of windward versus leeward margins on ancient platforms.

The margins of the bank evolved upward through the Pliocene-Pleistocene. This evolution may be divided into three stages. In stage I, the lowermost, discrete depositional units average 8 m in thickness and contain an abundance of species of corals now extinct, including *Stylophora affinis.* In stage III, depositional units average 3 m in thickness and corals such as *S. affinis* are rare or absent. Stage III is marked by accumulation of nonskeletal sands (beach and eolian dune deposits) along inner-bankward parts of the margins. The distribution of reefal sediments was reduced to a narrow belt similar to that of the present. The change from stage I to II is of uniform time, apparently coinciding with the initiation of major Northern Hemisphere glaciation at the beginning of the late Pliocene; that from stage II to III is more variable, occurring from the middle to late Pleistocene.

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Stratigraphy and Resource Assessment of Mississippian and Devonian Oil Shales of Northeastern Kentucky

Heightened interest in the organic carbon-rich shale of Mississippian and Devonian age as a source of oil has resulted in intensive leasing along the shale outcrop belt in Kentucky. Twelve cores of shale from Lewis and Fleming Counties were examined and analyzed in an effort to relate details of stratigraphy to the oil-rich horizons and to outline areas of minable potential resources.

Formations of interest are the Sunbury Shale (Lower Mississippian) and the Ohio Shale (Upper Devonian). The generalized stratigraphy (Lower Mississippian through Upper Devonian) is, in descending order: Borden Formation, Sunbury Shale, Berea Sandstone, Bedford Shale, and Ohio Shale. Useful key markers in the sequence are the Three Lick Bed and the *Foerstia* zone, which are both in the Ohio Shale. The Three Lick Bed divides the Ohio Shale into the Cleveland Member, above, and the Huron Member, below. The Ohio Shale is underlain by Silurian Bisher Limestone and Crab Orchard Formation.

Organic content is high in the Sunbury Shale and in the upper part of the Cleveland Member of the Ohio Shale. In cores, the total thickness of the Sunbury ranges from 12.0 to 18.4 ft (3.7 to 5.6 m). The combined thickness of Berea Sandstone and Bedford Shale ranges from 28 to 122 ft (8.5 to 37.2 m). The Cleveland shale ranges from 50 to 65 ft (15.2 to 19.8 m).

Assuming a stripping ratio of 2.5 to 1, more than 2.9×10^6 acre-ft (3.6×10^3 cu hm) of shale having a Fischer-assay oil yield greater than 11 gal/ST (38 l/MT) is minable by means of existing methods. A conservative estimate of the amount of the potential strippable shale-oil resource in these two counties is more than 2×10^9 bbl.

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Geopressured Geothermal Energy—Geological Setting and Constraints to Development Along Northwestern Gulf Coastal Plain

Wide-ranging estimates of the magnitude and economic viability of the geopressured geothermal resource along the Gulf Coast have resulted in the establishment of significant research efforts in Texas and Louisiana. The energy resource consists of the heat and pressure of water, and the dissolved methane. The amount of methane in solution is directly related to the temperature, pressure, and salinity. Major questions being addressed by this research relate to prediction of subsurface fluid salinity and reservoir deliverability (size of contiguous sandstone unit, permeability, rock compressibility).

Success of the geopressured geothermal resource development is dependent upon identifying large, geopressured sandstone reservoirs with high permeability (20 md or greater), high temperature (higher than 250°F or 121°C), and low salinity (lower than 60,000 ppm). Extensive studies in Texas and Louisiana show that areas with favorable combinations of all these parameters are difficult to find. Subsurface data indicate that thick sandstones of the main-sand depocenters are, in most areas, not geopressured. Geopressured reservoirs, for the most part, lie gulfward within growth-faulted, delta-front sequences consisting of thick shales and thinner sandstones. Most wells which penetrate this delta-front section show that fluid temperature and pressure increase, and salinity decreases, with depth; sandstone reservoir thickness and permeability decrease with depth. Therefore, the ideal geopressured geothermal reservoir is an exception and a compromise must be made.

Despite the limitations of locating an ideal reservoir, several short-term deep tests by industry have provided encouragement. More extensive long-term testing, now underway through the U.S. Department of Energy geopressured-geothermal Designed-Well Program, is providing answers to some of the questions.

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Alisitos Terrane, Baja California: Sedimentation Within Early Cretaceous Island Arc

The Alisitos terrane is a thick accumulation of mainly volcaniclastic sediments that were deposited in an island arc setting related to late Mesozoic subduction along the southwest margin of North America. A diverse suite of depositional facies can be related to various environments of a marine volcanic arc. The recognition of facies associations and thermal histories characteristic of specific paleoenvironments within the Alisitos terrane provides a model which to some extent is applicable to arc terranes in general. Important features of sedimentation in an arc setting include discrete point sediment sources, high sedimentation rates, and the maintenance of steep slopes, and abrupt lateral facies changes.

Development of shallow-water environments within the Alisitos terrane was related to major volcanic centers. Characteristic facies include coarse proximal volcaniclastic rocks, locally interspersed with rudist limestone bodies, and relatively abundant hypabyssal rocks and associated thermal alteration.

Sediment was dispersed into deep water by both epiclastic and pyroclastic processes. Epiclastic transport was dominantly by mass-flow processes, removing coarse volcanic sediment from the flanks of volcanic edifices to intra-arc and fore-arc basins. Sediments also reached these sites by pyroclastic processes. Criteria for distinguishing deposits of pyroclastic and epiclastic origin in these basins include recognition of Bouma