nannofossils, and radiolarians) as old as Cretaceous, mixed planktonic and shallow benthic forams, a few shallow-shelf limestone clasts, and preservation of carbonate materials deposited approximately 1 km below the Miocene calcite compensation depth.

The Great Abaco Member at Site 391 is 500 m thick. Intermittent coring, recovering 21% of the interval, indicates the following sequence, from top to bottom: (1) structureless white calcareous silt (57 m) with reworked fossils, including Eocene ones; (2) intraclastic marly chalk (123 m) with gray mud clasts of variable abundance and size, up to 2 cm long, attributed to debris-flow deposition; (3) dark, structureless radiolarian mudstone (28 m); probably background hemipelagic sediment, but contains a few reworked fossils; (4) intraclastic chalk (171 m) with a few intervals of dark mudstone and of shallow-water limestone lithoclasts showing lamination, scoured surfaces, and vague grading; debris-flow deposits; (5) heterogeneous interval (124 m) of intraclastic chalk and dark mudstone with several graded beds of claystone intraclasts which show partial Bouma sequences, suggesting turbidity-current, as well as debris-flow and contour-current deposition.

The variety in types of clasts and in age and depth of reworked fossils, as well as the sheer volume of the unit, indicate several source areas including the continental rise and slope (hemipelagic clasts), the Blake Plateau (pelagic carbonate material) and the Great Bahama Banks (shallow-water limestones and benthic fossils).

Seismic profiling shows that the Great Abaco Member is about 500 m thick throughout the Blake-Bahama basin, an area of about 50,000 sq km, but pinches out abruptly at the basin margins, probably against hemipelagic muds. Several internal reflectors and a profound regional unconformity at the base (horizon A^u, Late Cretaceous to Miocene hiatus) provide good seismic mappability of the Great Abaco Member and several subunits. The internal acoustic character is a series of smooth, closely spaced reflectors, consistent with intermittent gravity-flow deposition, but local current sculpture is indicated by channels and long-wavelength bedforms.

ERDMAN, J. G., J. S. SHVEIMA, and M. D. BRONDOS, Phillips Petroleum Co., Bartlesville, Okla.

Petroleum Potential of Scotian Shelf—Case Study

Application of modern concepts of petroleum genesis, migration, and accumulation permits an evaluation of the petroleum potential for the Scotian Shelf area of the Atlantic outer continental shelf. Conclusions are that shows of gas and oil are to be expected, but commercial scale production is unlikely in the area studied. The paucity of accumulated petroleum derives from two primary factors: (1) unfavorable conditions of deposition resulting in a low conversion of organic matter; and (2) losses, probably to the surface, of a large proportion of the petroleum generated. A third factor of secondary importance is low concentrations of source material in some formations. The results of this study can be used to evaluate other parts of the basin where conditions may be more favorable for the formation of economic accumulations of petroleum.

ERIKSSON, KENNETH A., Univ. Texas, Richardson, Tex.

Dolomitization Models from Early Precambrian Sequence in South Africa

A 1,500-m-thick chemical sedimentary unit within the approximately 2,300-m.y.-old Transvaal Supergroup contains more than 75% dolomite. A paleogeographic reconstruction for this stratigraphic interval has delineated a passive southeastern basin margin which was a low-relief, stromatolitic tidal flat; this is distinguished from an active northwestern basin margin along which banded iron formations precipitated in lagoons behind clastic-textured carbonate barriers. Large stromatolitic mounds occupied the intervening shallow, subtidal environment.

Two generations of dolomitization are recognizable in the tidal-flat facies; these are considered to reflect schizohaline conditions. Palisade pseudomorphs, probably after gypsum, indicate hypersalinity which is considered to have resulted in the penecontemporaneous development of micritic dolomites. Later, coarse-grained, limpid dolomites with associated secondary cherts are interpreted as a response to a freshwater, low-pH meteoric overprint. The barrier facies comprises limestones and replacement dolomites which contain up to 10% FeO and 4% MnO in the carbonate lattice. The degree of dolomitization decreases away from the banded iron formations, suggesting the lagoon as a potential source of a refluxing magnesium-iron-manganese brine. The widespread occurrence of both iron and manganese in their divalent states lends support to previous contentions of a reducing atmosphere during the early Precambrian. The stromatolitic mounds, which have an average stratigraphic thickness of 200 m and a basinal extent of hundreds of kilometers, consist of uniformly pure and fine-grained dolomites which are characteristically devoid of chert. These dolomites may be primary or, conversely, could have formed through reaction with the ambient waters of an intracratonic epeiric sea which had high concentrations of magnesium and sodium.

ERRICO, G., G. GROPPI, S. SAVELLI, and G. C. VAGHI, AGIP Attivita Minerarie, Milan, Italy

Malossa Field, Deep Discovery in Po Valley, Italy

The discovery of the Malossa gas and condensate field 15 mi (24 km) east of Milan is one of the more recent results of the exploration activities carried out by AGIP in the Po Valley since the 1950s.

The structure was recognized by a seismic reflection survey. Since 1967-68, with the introduction of digital techniques in geophysical prospecting, the reflection seismic method has allowed better information at a greater depth with a vast improvement in quality of the reflecting horizons. The Malossa field structure is a faulted, southward-overthrust block. The top of the hydrocarbon-bearing formation is at about 5,400 m. Hydrocarbons are present in the Dolomia Principale Formation of Noric (Mesozoic) age. Even though the formation has low porosity values it is the main reservoir.

The caprocks are a marly limestone of Cretaceous