high/low or shallow/deep. Special facies types include stromatoporoid and evaporite, both supratidal and deep. Facies and fabrics vary considerably throughout the sequence, both interformationally and intraformationally. Mudstones, wackestones, and packstones are most common although grainstones and boundstones also occur. Within textural constraints, each fabric contains their respective amounts of skeletal and nonskeletal allochems. Because of frequent and sharp facies changes, it is important to discriminate among different facies that superficially have similar fabrics. Examples are deep/shallow evaporites, or supratidal/subtidal oolites and pisolites. Peloidal wackestones/grainstones, skeletal wackestones/packstones, and mottled mudstones are the prevalent fabric types. Significant sedimentary structures include burrows, flat pebble interclasts, desiccation cracks, bird's-eye structures, and collapse breccias.

Porosity types common to all, except for the Ashern and Bakken, are intercrystal, interparticle, moldic, vuggy, and breccia. Significant porosity in the Ashern and Bakken formations is from fractures.

BUSH, DAVID M., Pennzoil Exploration and Production Co., Houston, TX, and PAUL R. HALL, JR., Nortex Gas and Oil Co., Houston, TX

Computer-Assisted Prospect Generation in a Frontier Basin

Limited time and personnel resources often justify the utility and integration of computer techniques into exploration efforts in frontier basins. A large percentage of the exploration staffs of geologists and geophysicists have little comprehensive computer training. In addition, computer programmers and analysts have only limited experience using exploration data. To improve communication, it is often necessary to coordinate and "cross-educate" the two staffs. This enables computer applications to be used as an important tool by exploration personnel.

Computer techniques were used by Pennzoil in the exploration and evaluation of the Santa Barbara channel basin in offshore southern California. Regional computer mapping including computer contouring located certain prospective areas permitting early concentration on the areas of interest. This effort resulted into the acquisition of Lease OCS P-0315 in Sale 48, June 1979.

BUTLER, KIM R., and STEVEN SCHAMEL, Univ. South Carolina, Columbia, SC

Structural Development of Upper Magdalena Valley, Colombia

The Neiva and Girardot basins of the upper Magdalena Valley are en echelon late Cenozoic structural depressions between the Central and Eastern Cordillera of the Colombian Andes. The basins contain three depositional sequences up to 9,000 m thick resting on Paleozoic crystalline basement: (1) a Triassic-Jurassic nonmarine clastic and minor carbonate sequence, (2) a middle Cretaceous to Paleogene marine to nonmarine clastic and minor carbonate sequence, and (3) a thick Neogene nonmarine molasse sequence.

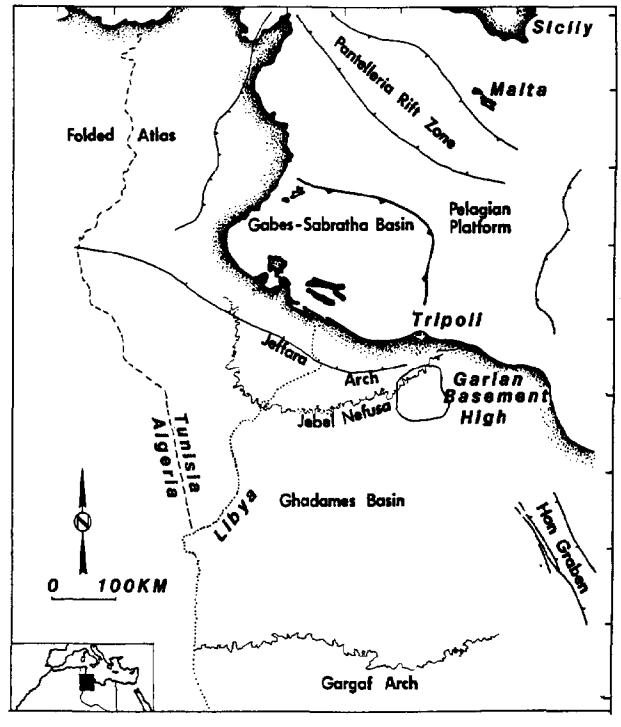
The Andean orogeny in the upper Magdalena Valley occurred in two phases: (1) late Oligocene–early Miocene (Neiva basin), and (2) late Miocene–Pliocene (Neiva and Girardot basins). The first phase was dominated by basement-cored domes and basement-driven thrusts displaced toward the east from the Central Cordillera, while the second phase was dominated by basement-driven thrusting toward the west from the Eastern Cordillera. The basement-rooted thrusts splay upward within the Cretaceous and Paleogene strata and form complex shallow to moderate-dipping thrust sheets or terminate within the sedimentary cover to form a series of tight folds. From middle Miocene to late Pliocene, a thick molasse sequence accumulated on the earlier structures in both basins. During the younger phase of deformation, the molasse was deformed by continued movement on basement-rooted faults.

The basement-driven structures in the upper Magdalena Valley are probably the result of transpressional movements along the eastern margin of the Andean volcanic arc in the Central Cordillera.

CABLE, D. GREGORY, Conoco Inc., Oklahoma City, OK

Lower Cretaceous Braided Stream–Fan Delta Deposition, Northwest Libya: A Future Petroleum Exploration Target, Offshore Gabes-Sabratha Basin

The southern margin of the present Gabes-Sabratha basin roughly parallels the coastline of northwest Libya and southeast Tunisia and is contiguous to the northern margin of a Lower Cretaceous subaerial delta platform. The Lower Cretaceous Chicla and Cabao formations, exposed along the Jebel Nefusa escarpment and in the subsurface of the onshore Ghadames basin in Libya, represent a thin (0 to 200 m), laterally extensive, fluvio-deltaic sequence. A detailed study of 15 measured outcrop sections indicates each formation is a transgressive fluvio-deltaic package. A complete package can be subdivided into three major sedimentary facies from base to top: (1) braided fluvial delta plain (facies 1) or braided fan delta plain (facies 1a), (2) delta front–prodelta slope (facies 2), and (3) prodelta shelf (facies 3).



The Chicla and Cabao fluvio-deltaic packages were derived from two sediment source areas: (1) a large, undetermined area far to the south, and (2) a smaller, proximal area, 50 to 100 km inland of the Libyan coast.