

and transgressive sand bodies in the Lafourche delta complex.

PEREIRA, CHRISTOPHER P. G., Memorial University, St. John's, Newfoundland, Canada

Marine Geology Off Southeast Baffin Island—Results from a 1981 and 1982 Survey

The Centre for Cold Ocean Resources Engineering undertook to analyze cores collected by Canterra Energy Ltd. The seabed sampling program was conducted off southeast Baffin Island during October 1981, and in the summer of 1982. The samples were collected on exploration leases in water depths down to 450 m (1,500 ft) using both a piston and a gravity corer. Core recovery was variable, and core ranged from 15 to 100 cm (6 to 39 in.). Additional samples and data also collected included surface sediment grabs, bottom photographs, sidescan, bathymetry, HUNTEC DTS, and airgun geophysical data.

Two mosaics were compiled from the sidescan data, one at about 350 m (1,150 ft) and the other at about 275 m (900 ft). Both areas show evidence of numerous linear and curvilinear iceberg scours, which are of subdued relief in the deeper site. The deepest iceberg scour is about 4.2 m (14 ft) at the 275 m (900 ft) site. Sidescan sonar records from the 1982 survey indicate that scours are to be found down to depths of 500 m (1,650 ft). Iceberg scours from the 350 m (1,150 ft) site and deeper are considered to be relict.

The cores were visually examined, X-rayed, and logged. The sediments were relatively stiff sandy, silty clays associated with pebbles and granules randomly distributed along the length of the core; these pebbles are probably iceberg debris and their provenance is being determined. Some of the cores have a 10 to 15 cm (4 to 6 in.) thick band of fine sand, generally about 15 cm (6 in.) below the top of the core. Sediments on either side are very fine silty clays. Micropaleontological analysis using foraminifera from the cores reveal three biostratigraphical zones. From the bottom upwards they record a progressive change from deep to shallower to deep-water conditions, the latter reflecting the modern environment.

Full results of the core analysis, sediment distribution, geotechnical properties and sea level changes, and a comparison with earlier studies are presented in the paper.

PEREZ-GUZMAN, ANA MARIA, Rice Univ., Houston, TX, and Univ. Nac. Aut. de Mexico, Mexico City, Mexico

Stratigraphic and Environmental Interpretation of Miocene Radiolarian Assemblages of Maria Madre and Maria Cleofas Islands and Baja California, Mexico

Miocene radiolarian assemblages were collected from Maria Madre and Maria Cleofas islands and five localities along Baja California (Tortugas, Bahia de Asuncion, El Cien, Cabo San Lucas-La Paz, and San Felipe). Most of these sequences are composed of diatomaceous and/or diatomaceous shales or very fine sands.

Stratigraphic correlation with previous work on the Monterey Formation, Experimental Mohole, and DSDP Legs 5, 7, 18, 32, and 66 indicate that the radiolarian zones *Diartus petterssoni*, *Didymocyrtis antepenultima*, *Didymocyrtis penultima*, and *Stichocorys peregrina* are present in these newly worked sections.

The oldest dates obtained were from the Tortugas Formation (middle Miocene); the youngest was uppermost Miocene from the section at San Felipe.

Paleoenvironmental interpretations were based on quantita-

tive analyses on warm, cold, deep, and intermediate water forms, as well as abundances of diatoms and silicoflagellates. The Tortugas Formation (middle to upper Miocene) represents a slope biofacies characterized by relatively high percentages of cold and intermediate water forms, and the absence of deep-water radiolarians. Diatomaceous layers increase upsection and show an increase in radiolarian abundance and diversity (especially of cold water forms and silicoflagellates). These conditions reflect an enhancement of upwelling areas and low oxygen depositional facies.

Previous radiolarian and diatom studies in Maria Madre and Bahia de Asuncion as well as Maria Cleofas, indicate that these environments of deposition are analogous to the Monterey Formation. Radiolarian faunas from these three sections are correlated to the *Didymocyrtis antepenultima* Zone and reflect an intensification of upwelling, perhaps as a result of the buildup of the Antarctic ice cap.

The "El Cien" section and the section collected between La Paz and Cabo San Lucas are representative of the *Didymocyrtis penultima* Zone. The "El Cien" sequence is underlain by pillow basalts that may represent the contact between the East Pacific Rise and North America. Radiolarian faunas in both sections represent a mixture of warm and cold water forms with considerable dilution by terrigenous sediments.

San Felipe, the only section located on the gulf side, contains a unique radiolarian/fauna. This unique fauna may have been the result of "basin isolation" during the opening of the Gulf of California.

PERKINS, R. D., Duke Univ., Durham, NC

Stratigraphic and Diagenetic Controls on Porosity Distribution Within a Cretaceous Carbonate Bank: West Stuart City Trend, Texas

Cores from four wells from the West Stuart City trend in LaSalle and Webb Counties, Texas, were analyzed to define depositional and diagenetic facies and to determine factors controlling porosity distribution. In all, 1,187 ft (362 m) of core and 220 thin sections were examined in detail, supplemented by SEM analyses of fractured surfaces and plastic casts of microporosity. Attempts to correlate cores purely on the basis of lithology were unsuccessful owing to the high degree of vertical lithologic variability and the rapidity of lithofacies changes over a relatively short distance (approximately 8,000 ft, 2,400 m). However, when lithofacies were integrated with biofacies (based on gross faunal aspect) and related to submarine hardground surfaces, meaningful correlations were possible.

The depositional model envisioned for these deposits is that of a broad, discontinuous, shallow bank constructed of coarse skeletal debris (largely caprinid grainstones) with more restricted lagoonal sediments in its lee (miliolid, requienid wackestones, and mudstones). The buttress zone of this bank was periodically subjected to extensive wave action, evidenced by sheets of skeletal grainstones intertonguing with muddy lagoonal facies.

Important diagenetic effects noted include extensive submarine cementation, neomorphism of aragonitic components with virtually no development of moldic porosity, and extensive pressure solution. Cumulative measurements of stylolites with amplitudes greater than 2 cm (0.8 in.), combined with microscopic observations of small-scale stylolites indicate a loss of stratigraphic section of as much as 20%.

A comparison of lithofacies and biofacies logs with permeability and porosity logs compiled from perm-plug data revealed that zones with permeabilities greater than 0.1 md and porosities of at least 6% were associated with rudistid grainstones cemented by