

A LOWER CRETACEOUS SHELF MARGIN IN NORTHERN MEXICO AND SOUTH TEXAS

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ABSTRACT

In seven outcrop sections in the Monterrey-Salttillo area of Mexico the Lower Cretaceous Cupido limestone and the underlying Taraises shale and black lime mudstone, the total section being about 500 to 800 m. thick, have been studied petrographically. These units apparently represent facies of carbonate bank and basinal environments. Isopach maps should include both formations if used for paleotectonic interpretation. The formations record a marine transgression followed by eastward progradation of the carbonate bank out from a positive element, possibly the Coahuila Peninsula. The fully expanded late Cupido bank is overlain by the transgressive La Pena black shale and limestone of Late Aptian age. The bank, as developed around Saltillo, consists almost wholly of cyclic grainstone and tidal flat sediments showing progressive upward shoaling. To the east around Monterrey a bank edge appears, marked by more than 100 m. of rudists and corals; this facies migrates eastward and rises in the section as the bank expands. The off-bank facies (Taraises Formation) is thick and well developed, contains lithoclastic conglomerates in black micritic matrix, and also has tumbled remains of corals and rudists. An eastern edgeline of the bank occurs at Saddle Mountain, Monterrey and the Sierra Minas Viejas 50 km northeast of the city. Still farther east and south of Monterrey in the Sierra Picachos, studied by Bishop (1970), and in the southern Sierra de la Silla basinal micritic limestone occurs through the total Lower Cretaceous section.

The extension of this trend northeast into Texas is as yet difficult to follow. From outcrop studies around Monterrey-Salttillo and north at Sierra de la Gavia it is possible to predict that the bank margin has a gentle slope over some tens of kilometers. The northern extension of the Tamaulipecas Arch may have had some control on its trend. Initial porosity and brecciation, vuggy and cavernous secondary voids, and dolomitization in the bank edge are encouraging signs for subsurface reservoir development.

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