

TECTONIC TRANSPRESSION IN NORTHEASTERN MEXICO: ITS RELATION TO SEA FLOOR SPREADING IN THE GULF OF MEXICO

Jose F. Longoria¹

ABSTRACT

The visual analysis of the SIR-A (Shuttle Imaging Radar) images of the folded belt located between the cities of Saltillo, Coahuila and Galeana, Nuevo Leon in northeastern Mexico, revealed the existence of several geological features including: 1) a well-developed pattern of *en echelon* folds; 2) juxtaposition of tectonostratigraphic domains; 3) fold structures varying from fan-shaped asymmetric to recumbent doubly plunging anticlines; 4) anticlinal-synclinal trends displaying marked morphologic variations, associated with regional plunging, twisting, and tilting of the structures. These structures are interpreted as the result of transpressive forces related to a complex, anastomosed wrench-faulting system in the basement reactivated in the Late Jurassic during active sea floor spreading in the Gulf of Mexico.

The Saltillo-Galeana orogenic belt is interpreted as the early Tertiary culmination of an ancient Mesozoic (Jurassic and Cretaceous) transpressive deformation generated from an oblique-slip mobile zone in the Gulf of Mexico. This transpressive tectonic model yields an adequate paleogeographic scenario to integrate all previously postulated, apparently incompatible, deformational models for northeastern Mexico and reconciles the differences in fold vergences observed in the region.

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¹ Programs in Geosciences, University of Texas at Dallas, Box 830688,
Richardson, Texas 75083-0688