SUBREGIONAL DEVELOPMENT OF RESERVOIR POROSITY AT A MAJOR PERMIAN UNCONFORMITY: SAN ANDRES FORMATION, WEST TEXAS

ABSTRACT

Most porosity development in carbonate reservoirs can be attributed in part or in toto to diagenetic processes that are typically induced by tectonic, structural, or sea-level changes. Although the San Andres is characterized by an upward-shallowing succession of shallow-subtidal carbonates, previous studies have demonstrated that the section is broken by a major unconformity that developed a regional hiatus of at least 100 m and a hiatus of 0.5 to 1 my. This study examines the porosity development and its relationship to current structure.

INTRODUCTION

Although the San Andres is characterized by an upward-shallowing succession of shallow-subtidal carbonates, previous studies have demonstrated that the section is broken by a major unconformity that developed a regional hiatus of at least 100 m and a hiatus of 0.5 to 1 my.

Both the evidence and the result of this sea-level fall event are clearly expressed in the Late Permian carbonates of the San Andres Formation. Although studies to some core sections, the hiatus is indicated by an abrupt shift from outer ramp carbonates to inner ramp carbonates made up of fusulinid wackestones and packstones. The San Andres is composed of two major unconformity events, possibly representing major falls in sea level, that are associated with porosity development.

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