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## **Structural Characterization of the Trairí Carbonate Reservoir in the Xaréu Oil Field (Ceará Basin, Northeast Brazil)**

The Xaréu fractured reservoir consists of thin carbonate or marly horizons (Trairi Member) interlayered with black shales at the top of the rift section (Paracuru Formation) in the Brazilian equatorial margin. The spatial distribution of the main fracture populations is subject to evaluation, in order to increase oil productivity of this mature oil field.

The field is characterized by a major rollover structure related to a system of moderately to gently dipping NW-trending extensional listric faults. The Trairi beds are also affected by subordinate antithetic faults and local N-trending structures interpreted as transfer faults.

Through core data analysis, at least two generations of structures were recognized: (1) D1 structures, characterized by oblique-extensional, low-angle hydroplastic shear zones, and late brittle steep to shallow-dipping faults with associated carbonate-filled subvertical extension joints. These structures are related to the diagenesis and burial history of the Paracuru Formation (Upper Aptian); (2) D2 structures are essentially brittle extensional to oblique faults displaying recrystallized clay and quartz fibers, suggesting an increase in temperature.

D1 structures are consistent with a dextral transtensional environment during the opening of the Equatorial Atlantic Ocean in the Aptian. D2 structures are tentatively ascribed to an event with general surface extension, coeval with alkaline igneous activity in mid to Paleogen-Neogen transition times. Final migration and emplacement of oil reserves are associated with this late event, which helped the development of a fractured reservoir beneath a thick sealing section.