GEOCHEMICAL EFFECTS OF SECONDARY MIGRATION OF PETROLEUM IN THE RECÔNCAVO BASIN, BRAZIL

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The effects of petroleum secondary migration and reservoir filling were investigated in the widespread Lower Cretaceous fluvial sandstones of the Água Grande Fm. along the Mata-Catu fault trend, Recôncavo Basin, Brazil. The approach involved application of conventional biomarker and carbazole distribution parameters on residual oil fractions obtained by sequential extraction. Given a single source rock unit, maturity of expelled oils will decrease along migration routes, because areas close to the pod of active generation will receive increasingly more mature oils during source rock burial. Geochromatography selectively removes compounds from migrating oils, providing evidence for migration routes and distances. Regional distribution of maturity and migration related parameters indicate that migration took place preferentially parallel to the Mata-Catu Fault, which act as a barrier, focussing oils into reservoirs along the fault. No indication of migration across the fault was detected. In the SE part of the study area (Central Compartment), maturity parameters based on hopanes and migration parameters based on carbazoles indicate mixing of oils coming from both the deepest areas of the Miranga Low and from updip NE to SW trending graben structures perpendicular to the fault. In the NW part of the study area (Southern Compartment), increasing migration distance towards NNW, with only minor fractionation was suggested by both maturity and migration parameters, in agreement with generation and migration from the Camaçari Low.