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AN INTEGRATED ANALYSIS OF TAR SAND OCCURRENCES IN THE PARANÁ BASIN, BRAZIL

DE ARAÚJO Carlos César[1], YAMAMOTO Jorge Kazuo[1], ROSTIROLLA Sidnei Pires[2]
1 - University of São Paulo
2 - Federal University of Paraná

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Tar sandstones occurring in the eastern border of the Paraná Basin, state of Sao Paulo (SP), were studied in order to develop a genetic model. These occurrences have been studied since the 19th century, however a model has not yet been proposed for their genesis. This work presents a genetic model based on an integrated spatial analysis of a database composed of morphostructural, digital elevation model (DEM), field work, geochronologic dating, airborne and land magnetometrics, remote sensing and gravimetric data.As a result it was concluded that the best model relates oil generation to the intrusion of Cretaceous sills of the Serra Geral Formation into the Permian black shales of the Irati Formation; migration along faults and dyke walls and accumulation in Triassic sandstones of the Pirambóia Formation. Interdune and fluvial facies of the Piramboia Formation acted as horizontal traps, whereas the basic dykes acted as vertical traps. The basic dykes and sills associated with these occurrences were dated using the 40Ar/39Ar method, which gave an age of 134 ± 2 Ma. Denudation processes beginning in the Late Cretaceous have exposed the tar sandstones.Stratigraphic and structural elements were fundamental to the genesis of tar sandstones. The structural elements related to the Post-Paleozoic Reactivation were mainly responsible for hydrocarbon generation, migration and accumulation.

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