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Geology Paper 6**USING CORE AND LOG DATA TO LINK DEPOSITIONAL ENVIRONMENT
WITH OIL SYSTEM IN SILICICLASTIC RESERVOIRS: CASE STUDY FROM
MUGLAD BASIN, SUDAN**

YASIR MOHAMED ABDALLA GHORASHI AND SAIF EL ISLAM SULIMAN

Greater Nile Petroleum Operating Company (GNPOC), Khartoum, Sudan

Muglad basin is the major part of Sudan rift system, which in turn, is a main component of West and Central Africa Rift-related System (WCARS). Sedimentary sequences of Muglad rift basin consist of non-marine sequences of lacustrine and fluvial/alluvial facies of early Cretaceous to late Tertiary age directly rested upon the Precambrian basement. Muglad basin had passed through three sedimentary cycles. First sedimentary cycle began from early Cretaceous and its termination is marked, stratigraphically, by basin wide deposition of the thick sandstone of the Bentiu Formation. Second sedimentary cycle, occurred in late Cretaceous and seen in the widespread deposition of lacustrine and flood plain claystones and siltstones. The third sedimentary cycle was associated with the deposition of the Oligocene-Eocene Nayil Formation. These tectono-stratigraphic phases made a geological petroleum conditions, including source rocks, reservoir rocks and seal rocks in the basin. Bentiu and Aradeiba reservoirs, charged by Abu Gabra formation sourced oil, represent more than 80% of oil bearing zones of the Cretaceous oil system in the Muglad basin. Analysis of log and core data from 20 wells revealed that Bentiu formation sand zones represent a meandering and braided stream deposits with possible lacustrine environment. Aradeiba formation has mainly developed as lacustrine shaly deposits, providing efficient seal for underlying Bentiu formation and Aradeiba sands reservoirs.