

Tectonic Evolution and Structural Setting of the Early Cretaceous Rifts, South Egypt

Said M. Said¹ and Shawky M. Sakran¹

¹Geology, Cairo University, Cairo , Egypt.

ABSTRACT

South Egypt witnessed five distinctive tectonic events. These events include Pan-African event (Late Proterozoic), E-W Paleozoic basement swell, early Cretaceous rifting, Late Cretaceous –early Tertiary E-W Dextral transpression and Active N-S sinistral shearing. The late Proterozoic event was responsible for the development of the continental lithosphere which hosted the Early Cretaceous rifts. Location, geometry and linkage of these rifts are strongly controlled by inherited Late Proterozoic and Paleozoic structures. These rifts are superimposed the older suture between the Arabian Nubian shield and Sahara metacraton, or reactivation of the inherited Najid fault system. The Early Cretaceous rifting led to the development of a NW to WNW oriented rift basins (e.g. Komombo basin). In Komombo basin, three fault trends (NW to WNW, N-S and E-W) have been mapped and show variable amount of the dip and strike slip component, based on their trend relative to the main extension direction. The rift boundary fault is divided into two main segments, subdividing Komombo basin into two structural sub basins with the same dip polarity. The E-W shear zones of the Nubian fault system act as the transfer zones between the two sub basins. Late Cretaceous –early Tertiary E-W Dextral transpression was associated to the reactivation of the early Cretaceous rift parallel faults and inversion of the rift cross faults.