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## **Paleo-Congo River Fan in Northern Gabon**

During the Upper Cretaceous, the interior Congo Basin may have drained through Northern Gabon near Libreville until the South Atlantic rift shoulder was eroded enough to allow the current Congo River in Angola to capture the drainage system in the Tertiary. The model for rift shoulder topographic control of drainage systems is demonstrated in Egypt where the Nile River flows to the Mediterranean Sea instead of across the Miocene rift shoulder to the Red Sea.

The key evidence for the Congo stream capture hypothesis include: 1) A major rift offset, large estuary, relic drainage system and 'potential abandoned channels' (Karner + Driscoll, 1999). 2) Thick Upper Cretaceous with thin Tertiary sediments in Northern Gabon and thin Upper Cretaceous with very thick Tertiary sediments in Congo/Angola. 3) Seismic data in Northern Gabon defines an abrupt change in sedimentation pattern, from reflective sandstones to opaque shale, at the end of the Cretaceous.

The implications for hydrocarbon system in Northern Gabon are significant. Upper Cretaceous Congo drainage basin sediment loading drives salt structures including mini-basins and toe-of-slope thrusts. Excellent quality turbidite sheet sandstones are developed in three depositional settings: 1) mini-basins, 2) ponding behind toe-of-slope thrust structures and 3) basin floor fans. The organic rich Upper Cretaceous and Lower Albian source rocks are pushed into the oil window by the increase in sediment loading. In addition to intra-formational seals, a thick regional shale is developed when the Congo River abandons the area in the Tertiary.