

Origin, Evolution and Petroleum Geology of the Great Cambro-Ordovician "Steer's Horns" Cratonic Basin of North Africa and Arabia.

BURKE, K.; KRAUS, J.U Dept. Geosciences, University of Houston, Houston, Tx 77204-5503 USA kburke@uh.edu: Mobil Exploration & new Ventures, Dallas, Tx 75262-0232 USA

Between 10 M and 20 M cubic km of quartz sand were deposited between 520 Ma and 440 Ma close to sea level in a steer's-horns basin that extended from Dakar in West Africa to Oman in Arabia and from Liberia to the coast of North Africa. This huge basin formed by thermal subsidence over many rifts that had been generated during an episode of tectonic escape which led to the collapse of a collisionally-thickened area of the newly assembled Gondwana continent. A volume of continental crust that had been 60 km thick over an area of 5 M sq km at 600 Ma thinned to 30 km over an area of 10 M sq.km by 530 Ma. The steer's horns basin formed by thermal subsidence over the rifts. Oil and gas production from sands in the basin is important in Algeria, Libya and Oman. Shales in the overlying Silurian in some places provide a source-rock and much production comes from fracture porosity. Most of the substantial world-wide Cambrian rise in sea level recognized by sequence stratigraphers can be attributed to the increase in the area of Gondwana by 5 M sq km that is required to account for the formation of the great steer's horns basin.