

**AAPG Annual Meeting  
March 10-13, 2002  
Houston, Texas**

Rob Gawthorpe<sup>1</sup>, Chris Jackson<sup>1</sup>, Mike Young<sup>1</sup>, Jim Stewart<sup>2</sup>, Dave Pivnik<sup>2</sup>, Ian Sharp<sup>3</sup> (1) University of Manchester, Manchester, United Kingdom (2) BP (Gulf of Suez Exploration Company), Cairo, Egypt (3) Norsk Hydro, Bergen, Norway

## **Compartmentalisation and Evolution of Tilted Fault Blocks as Expressed by the Lower Miocene Abu Zenima and Nukhul Formations Suez Rift, Egypt**

Although tilted fault blocks are common traps within rift basins more subtle and complex structural and stratigraphic traps can be developed during fault zone evolution by the growth, interaction and linkage of fault segments. The early syn-rift Abu Zenima and Nukhul Formations (Lower Miocene) of the Suez Rift can be used to determine the early rift structure. Outcrop studies in the Hammam Faraun fault block (central dip province) indicate that initial fault activity was distributed across the fault block on short (1-4 km long), low displacement (<1 km) segments. These initial segments either linked to form longer fault zones, or became inactive during the first 6-8 Myr of rifting. Displacement progressively localised onto >25 km long border fault zones that bound the present-day major tilted fault block. Many of the early intra-block fault zones became inactive. In the N. October and East Tanka areas in the Gulf of Suez, the Abu Zenima and Nukhul Formations form hydrocarbon accumulations that are compartmentalized, commonly lack hydrodynamic continuity, and which have different oil/water contacts and hydrocarbon types. Reservoir distribution and compartmentalization is interpreted to reflect deposition in early fault-controlled depocentres that formed prior to the development of the main faults controlling the October and East Tanka fields. Thus understanding the growth, linkage and death of fault segments and reconstruction of the early rift structure has important implications for subtle trap and reservoir distribution in rift basins.