Upper Cretaceous Fault Trends in the Bahra Area, North Kuwait

Michael G. Kumpas, *Exploration Group, Kuwait Oil Company (K.S.C.), POBox 9758, Ahmadi, 61008, Kuwait, phone: +965 3989111 - 72309, fax: +965 3984397, mkumpas@kockw.com and Ahmad Jaber Al-Eidan, Exploration, Kuwait Oil Company, Senior Geologist,Exploration Department, Kuwait Oil Company, P.O. Box 9758, Ahmadi, 61008, Kuwait, Ahmadi, Kuwait.*

Located in the northern extension of the Burgan Arch, the Bahra area is recognised as a northwards plunging anticline. It was host to the first ever well to be drilled in the country.

Structural axis orientation in the Bahra area is north-south, whereas the predominant fault trend along the anticline is northwest - southeast. An intersecting zone of dislocations trending approximately east - west is present in the southern parts of the area. Dislocation is uncommonly severe for this trend, which often is visible only on horizontal data displays.

Faults of the northwest - southeast trend are typically of a dilatational nature, sub-vertical, laterally extensive and very straight. Fault throw is moderate, 20 - 40 ms. Age of the tectonic pulse is Cenomanian as indicated by the Mishrif as the shallowest dislocated formation.

East - west faulting has occurred in a structurally constrained zone where intense dislocation has obliterated traces of individual faults on seismic. The zone is interpreted as a Cenomanian age, faulted uplift, followed by subsequent pulses of uplift and collapse extending into the Maastrichtian. Notably deposition of the Mishrif - Tayarat Formation interval was severely disrupted along the zone. Renewed subsidence post-dates the Eocene Rus Formation, which was deposited during a period of tectonic quiescence.

Anomalous seismic velocities are noted in the east - west fault zone. The Maastrichtian - Campanian, Tayarat - Hartha Formation carbonate section appears to be the most severely affected, where an interval velocity increase over undisturbed areas has been noted.