

3.7 King #1, Core plug 12, depth 1424.38m

Thin section description

The sample is an interbedded very fine grained quartzarenite and coarse siltstone. Contacts between beds are disrupted and there are suggestions of bioturbation. The siltstone is micaceous and contains stringers of opaque material and patches of micrite. Grains in the siltstone range in diameter from 0.02mm (medium silt) to 0.10mm (very fine sand) and are commonly subangular with moderate to low sphericity. The quartzarenite is mineralogically mature, moderately sorted, grains range in diameter from 0.03mm (coarse silt) to 0.3mm (medium sand) and are typically subangular with low to moderate sphericity. Texturally both the quartzarenite and siltstone are grain supported. Contacts between grains in the quartzarenite are at points and rarely tangents, and in the siltstone grain contacts are dominantly tangential and concavo-convex.

Porosity is well preserved in the quartzarenite (Fig. 8). Enlarged intergranular pores, grain size pores and honeycomb pores all suggest that there has been dissolution in these beds. Intergranular pores are dominant which indicates that permeability could be moderate. In the siltstone, porosity has a patchy distribution and is dominated by secondary dissolution pores. Pore size is related to grain size in the different beds.

Framework grains of quartz, feldspar, lithics, mica, glaucony, tourmaline, opaques and zircon are apparent. Matrix concentrates in the siltstone and is composed of anhedral brown clay and opaque stringers. Micrite is the dominant authigenic mineral. In addition there is minor to trace amounts of kaolin, pyrite and iron oxide.

Visual Estimate of Composition		%
Framework grains	Quartz	52
	Feldspar	tr
	Lithics	tr
	Mica	5
	Glaucony	tr
	Accessory minerals	tr
Matrix	Clay	5
	Opaque material	6
Authigenic minerals and cements	Carbonate	4
	Pyrite	1
	Kaolin	tr
	Iron oxide	1
Porosity	Intergranular	20
	Dissolution	5