

3.4 King #1, Core plug 8, depth 1404.40m

Thin section description

The sample is a carbonate cemented, moderately well sorted, mineralogically mature siltstone. Low angle cross beds are clearly apparent and enhanced where pyritised faecal pellets concentrate in selected laminae. Faecal pellets (Fig. 5) are oval in shape, up to 0.8mm in length and composed of brown clay and opaque material that has been partially replaced by carbonate and pyrite. Framework grains vary in diameter from 0.02mm (medium silt) to 0.07mm (very fine sand) and there are a high percentage of grains at the very fine sand - silt boundary. Typically grains are angular with low sphericity and appear to float in the carbonate cement. Rare examples of point and tangential grain contacts indicate that the sample is grain supported and there has been minimal compaction.

Porosity has a very patchy distribution and is typically secondary in nature. Minor dissolution of labile grains and possibly carbonate cement have resulted in enlarged pores and probably redeveloped intergranular pores. The abundance of carbonate cement and lack of interconnection between secondary pores will result in low permeability.

Framework grains of quartz, feldspar, pellets, mica, glaucony, sphene and zircon are evident. Minor anhedral reddish brown clay and rare opaque stringers indicate the presence of matrix. Anhedral dusty carbonate spar is the dominant authigenic mineral. In addition there are rare pyrite cubes and framboids, and kaolin booklets.

Visual Estimate of Composition		%
Framework grains	Quartz	51
	Feldspar	tr
	Mica	tr
	Glaucony	tr
	Pellets	2
	Accessory minerals	tr
Matrix	Clay	2
	Opaque material	tr
Authigenic minerals and cements	Carbonate	33
	Pyrite	5
	Kaolin	tr
Porosity	Intergranular	tr
	Dissolution	6