

### 3.3 King #1, Core plug 6, depth 1400.05m

#### Thin section description

The sample is a laminated muddy siltstone. Lenses of cleaner siltstone are separated by muddy laminae which suggest the presence of starved ripples. Grains range in diameter from 0.003mm (very fine silt) to 0.012mm (medium silt) and are typically subangular with low sphericity. Texturally the siltstone is grain supported and contacts between grains are at tangents. The crenulated nature of organic matter in the muddy laminae indicates that there has been minor mechanical compaction.

Porosity is restricted to lenses of cleaner silt where there are primary intergranular pores and enlarged pores (Fig. 4). The latter are dominant and suggest that there has been dissolution of cement from these zones. Permeability is probably low due to the limited interconnection between lenses of cleaner silt. Fractures in the muddy laminae that parallel bedding could have artificially enhanced permeability.

Framework grains of quartz, feldspar, mica, sphene and zircon are evident. Matrix is comprised of anhedral brown clays and minor organic matter that is aligned in stringers. Authigenic minerals and cements are dominated by patches of micritic and sparry carbonate. In addition there are pyrite cubes and framboids, and traces of iron oxide and kaolin.

Visual Estimate of Composition		%
Framework grains	Quartz	33
	Feldspar	tr
	Mica	10
	Accessory minerals	tr
Matrix	Clay	25
	Opaque material	5
Authigenic minerals and cements	Carbonate	6
	Pyrite	tr
	Kaolin	tr
	Iron oxide	tr
Porosity	Intergranular	8
	Dissolution	10
	Fractures	2