

### 3.5 King #1, Core plug 9A, depth 1405.90m

#### Thin section description

The sample is a very poorly sorted, muddy siltstone. A burrow-like feature that is 3mm in width cross-cuts the section and is filled with cleaner better sorted silt. Average grain size is medium silt but grains have a bimodal distribution (Fig. 6). The silt fraction ranges in diameter from 0.01mm (medium silt) to 0.07mm (very fine sand) and the sand fraction varies from 0.3mm (medium sand) to 2.0mm (very coarse sand). Typically the silt is angular with low to moderate sphericity and the sand is subangular to subrounded with low sphericity. Texturally the sample is grain supported with tangential and concavo-convex contacts dominant.

Porosity is concentrated in the burrow-like feature where slightly enlarged intergranular pores are apparent. Interconnections between these pores have a patchy distribution and therefore permeability is likely to be poor. Elsewhere there is evidence of feldspar dissolution to produce honeycomb porosity.

Framework grains of quartz, K-feldspar, mica, glaucony, opaques, epidote, tourmaline and zircon are evident. Very coarse sand is composed of quartz and K-feldspar. Anhedral reddish brown clays and associated opaque material represent the detrital matrix. Authigenic minerals of pyrite cubes and framboids, blotches of micrite and iron oxide, and kaolin are apparent. Irregular patches of iron oxide have either a yellowish colour typical of goethite or a red-brown colour probably indicating hematite.

Visual Estimate of Composition		%
Framework grains	Quartz	66
	Feldspar	tr
	Mica	3
	Glaucony	tr
	Accessory minerals	1
Matrix	Clay	15
	Opaque material	4
Authigenic minerals and cements	Carbonate	3
	Pyrite	2
	Kaolin	tr
	Iron oxide	2
Porosity	Intergranular	3
	Dissolution	tr