

3.9 King #1, Core plug 23, depth 1430.00m

Thin section description

The sample is a cross bedded, laminated siltstone that is cross cut by burrows filled with cleaner silt. The burrows tend to be parallel to bedding, are up to 1mm in width and partially lined by opaque material. Laminae are outlined by varying concentrations of clay, mica and micrite. Average grain size is medium silt and grains range in diameter from 0.01mm (medium silt) to 0.06mm (coarse silt) and are moderately sorted. Typically grains are subangular with low to moderate sphericity. Texturally the siltstone is grain supported with dominantly tangential and concavo-convex grain contacts. Crenulated stringers of opaque material and clay indicate that there has been minor mechanical compaction.

Porosity is a combination of primary intergranular pores and secondary dissolution pores. The latter are typically oversize and appear to be approximately the same size as patches of micrite. Intergranular pores are more abundant in the burrows and cleaner laminae (Fig. 11). Permeability will probably be good in these zones.

Framework grains of quartz, mica, opaques and zircon are apparent. Matrix is comprised of anhedral reddish brown to dark brown clays and stringers of opaque material. Micritic carbonate is the dominant authigenic mineral. There are traces of carbonate spar, iron oxide and pyrite framboids. Triple point junctions suggest the presence of quartz overgrowths in the cleaner laminae.

| Visual Estimate of Composition | | % |
|---------------------------------|--------------------|----|
| Framework grains | Quartz | 54 |
| | Mica | 5 |
| | Accessory minerals | tr |
| Matrix | Clay | 10 |
| | Opaque material | 7 |
| Authigenic minerals and cements | Quartz | tr |
| | Carbonate | 6 |
| | Pyrite | tr |
| | Iron oxide | tr |
| Porosity | Intergranular | 5 |
| | Dissolution | 12 |