

Sample: TSC47118; Location: Sidewall Core 14, 3891.5 m

Rock Name:

Compact lithic sandstone

Thin Section:

Most of the sample in the thin section has been extremely damaged by collection of the sidewall core and now consists of broken fragments of quartz grains in a melange of comminuted fragments of quartz, clay and carbonate. There are, however, more compact and less damaged patches and these contain approximately 30% of fine-grained material which is heterogeneous on a scale of 0.2 to 0.4 mm and is thought to have been derived from lithic fragments. The quartz grains in this part of the rock are moderately well sorted and have an average size of 0.25 mm. Where several quartz grains occur together they show well developed concavo-convex boundaries but in most parts of the sandstone the quartz grains are more or less rimmed by clay material derived from compressed and deformed lithic fragments. Overgrowths are not common on the quartz grains and it appears likely that the principal process involved in reducing the porosity of original sand was the compaction and deformation of the relatively soft clay lithic fragments.

This part of the rock contains traces of authigenic kaolinite and approximately 5 to 10% of fine-grained authigenic carbonate. Most of the latter is widely distributed and is present either as individual crystals or as rather porous patches where the carbonate appears to have partially replaced lithic material. Unusually, there are one or two relatively coarse grained patches of calcite, also. In view of the scarcity of this mineral and its very different texture (compared to the fine-grained authigenic carbonate) it seems likely that this has been derived from a limestone detrital fragment.

The sample is essentially impervious in thin section.