

Sample: ISC47109; Location: Sidewall Core 4, 3592 m

Rock Name:

Compact lithic sandstone

Thin Section:

The average grain size of the quartz in this rock is approximately 0.3 mm and the sample appears to be well sorted. The shapes of the quartz grains have been effected by pressure solution and most fields of view show numerous long and curved contacts and even a few somewhat sutured contacts between the grains. Where the quartz grains are not in contact with each other there are patches of clay which essentially completely fill the spaces where they occur. The heterogeneity of this clay is taken as an indication that it is derived essentially entirely from lithic fragments. Some of these were cherty but most are aluminous lithologies of sedimentary or metasedimentary origin. During compaction these have been compressed and squeezed between the more rigid quartz grains and, by this mechanism, much of the porosity and permeability have been occluded.

The lithic fragments probably comprise 20 to 25% of the volume of the rock and the sample also contains a small amount (less than 3%) of authigenic kaolinite which forms monomineralic patches. Carbonate is also present as an authigenic phase to the extent of about 3 to 5% and forms both isolated crystals and some distinctly irregular fine-grained monomineralic patches.

The thin section contains a little porosity but it is thought that this is a function of disturbance of the sample; it seems more likely that, as far as can be determined in thin section, the rock is impervious and impermeable.