

Sample: ISC47105; Location: Sidewall Core 17, 3442.5 m

Rock Name:

Dolomitic lithic sandstone

Thin Section:

The average grain size is approximately 0.25 mm and the quartz grains for the most part retain their original subround to subangular detrital outlines. There is little development of long contacts in places where there is a relative paucity of clay. In most fields of view, however, fine-grained constituents comprise 30 to 50% of the volume of the rock. Most of this material is rather heterogeneous and fine-grained and consists mainly of phyllosilicate minerals with intergrown fine-grained quartz and small amounts of carbonate and secondary ferruginous phases. The heterogeneity of the material is a clear indication of its derivation from lithic fragments and the abundance of this material and the way in which it has been compressed and squeezed between the more rigid quartz grains is responsible for the apparently impervious nature of the sample in thin section.

As well as this clay the rock does contain, in places, rather large aggregates of extremely fine-grained carbonate. The largest of these is about 1 cm in size but there are several which are of the order of about 0.2 mm in width and 1 mm in length. The largest of these fragments could well be some kind of concretion which has been caught up in the sandstone but the smaller aggregates of carbonate may well be derived from recrystallisation and deformation of original limestone fragments. Also present in one part of the thin section, particularly, are elongate and irregular aggregates of opaque material which could well be of plant origin.

This is a distinctly lithic sandstone which has, probably, extremely poor petrophysical characteristics. These result from the abundance of the lithic materials and hence from the sedimentological maturity of the sandstone. As well as low porosity and permeability it should be noted that this sample (like many others from this well) is likely to contain a wide variety of reactive minerals including several types of phyllosilicates as well as carbonate and kaolinite derived from authigenesis.

In one place in the thin section there is a small aggregate of a green mineral tentatively interpreted as glauconite.