

Sample: TSC47100; Location: Sidewall Core 55, 3093 m

Rock Name:

Dolomitic compact sandstone

Thin Section:

It is estimated that authigenic carbonate comprises about 10 to 15% of the volume of this rock; the carbonate has not been stained by alizarin red-S and does not appear to be associated with ferruginous staining and therefore is most likely to be dolomite. This mineral is generally distinctly fine-grained and evenly and widely scattered over the area of the thin section. There are some crystals and aggregates up to about 0.1 mm in size and some of these could be derived from limestone fragments which were recrystallised in situ. The wide distribution of the dolomite, however, suggests that it may well be a mineral introduced into the rock and probably relatively late in the diagenetic process.

For the remainder, the rock is a somewhat lithic sandstone in which the quartz grains are well sorted about an average size of 0.1 to 0.15 mm. Clays derived from lithic fragments are rather difficult to estimate but probably do not exceed 5% of the volume of the rock. There are small amounts of detrital feldspar and mica and both of these minerals appear to be fresh. Kaolinite is essentially absent.

Most parts of the thin section show evidence of the development of long and concavo-convex boundaries between the quartz grains and it is likely that modifications to these grains during compaction, together with the crystallisation of dolomite, has been the main factor in lithifying the rock and in reducing the original permeability of the sand as it was deposited. The thin section does contain a small amount of porosity but the more compact and less damaged parts of the sandstone appear to be essentially impervious and it is likely that the rock has rather poor permeability and porosity. Reactive clays are probably present to a relatively small extent. The presence of the dolomite would have to be taken into account in designing any stimulation of the reservoir.