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Examination of Bass Strait bore core

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Pieces of the core from a Bass Strait borehole have been examined and are described hereunder.

Core 4, footage 2631

In hand specimen the rocks consist of irregular rounded fragments, from a centimetre to less than a millimetre across, of dark greenish to black aphanitic material. The rock is somewhat porous but the interstices between the fragments, for the most part, are filled with a fine grained white friable material.

In thin section the rock consists largely of fragments of green glass with smooth irregular edges, and smaller shard-like shapes. The glass contains much opaque material including small crystals of ilmeno-magnetite, but much is opaque white, and may consist of finely divided zeolite. The fragments are riddled with vesicles, some of which have been elongated into narrow tubes by flow. The vesicles are filled with analcite, natrolite and calcite. Pseudomorphs up to 1 mm long of natrolite after chabazite and stilbite are common, the original zeolite having been replaced by fibrous natrolite radiating from many centres. There are also fragments similar in structure to the glassy fragments, but consisting almost entirely of zeolite, with only a little glass present. Analcite fills the interstices between the fragments.

The rock is a lapilli tuff.

Core 12, footage 6412

The specimen contains angular grains of quartz up to 4 mm across set in a much finer grained, siliceous matrix coloured a streaky brown by heavy minerals. Some opaque white grains and minute flakes of white mica are also present

In thin section the rock consists of clastic grains of quartz, feldspar (oligoclase), quartzite, schistose quartzite, and possibly granitic rock, averaging 2 mm across in a matrix of similar fragments averaging 0.1 mm across. The matrix has a ferruginous cement and contains the heavy minerals tourmaline, zircon, topaz, ilmenite and rutile, and also muscovitic biotite.

Core 13, footage 6957

The specimen is a fine-grained white granular quartzose rock with many irregular bands and thin wisps of finer grained dark brown material, a structure due to post depositional flow.

In thin section the white part of the specimen consists of well compacted angular grains of quartz, averaging 0.2 mm across with subsidiary feldspar, mica, tourmaline and ilmenite partly altered to white opaque leucoxene. Rare larger grains of quartz up to 2 mm across may be seen.

The brown material is much finer grained, consisting of quartz grains averaging 0.01 mm, mixed with a great deal of limonitic material and orientated flakes of white mica.

Core 3

The rock is a pale brown mudstone with organic remains.

In thin section the specimen is a very fine grained mixture of quartz and sericite stained with limonite. Angular grains of quartz up to 0.02 mm are common but most of the material is much finer grained. Calcite from the organic remains constitutes an appreciable proportion of the rock.

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