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Description of rocks from Esso Bass Strait No. 1 drill hole

by G. B. Everard

The following descriptions are of rocks comprising the core in Esso Bass Strait No. 1 drill hole.

7422-25 & 7425-28

The hand specimen is a buff coloured siltstone with irregular dark brown bands, some of which are very finely laminated. Irregularly-shaped inclusions of the buff material appear in the dark bands. The rock tends to fracture along the brown bands revealing innumerable minute flakes of white mica on the fracture surfaces.

In thin section the paler bands consist of a mosaic of interlocking quartz grains about 0.03 mm across, together with plates of muscovite, flakes of opaque carbonaceous material and very fine grained masses of carbonate.

The darker bands consist largely of carbonaceous material together with well-orientated platelets of muscovite and a few quartz grains.

2637-40

The hand specimen is a fine grained banded yellowish green rock.

In thin section the specimen consists of irregular greenish grains of partly devitrified glass about 0.05 mm across. Many of the grains have curved re-entrant outlines and show radiating structures. Interstices are filled with colourless isotropic analcite, also showing radiating structures, and other zeolites, and minute grains of calcite and chalcedonic silica.

The rock is a glassy tuff.

5383-86

The hand specimen is a brownish sandy rock with remains of carbonate shells and tests. Greenish grains of glauconite are prominent.

In thin section two generations of grains are visible. The larger are rounded grains of quartz averaging about 0.3 mm across. These grains are cracked and worn. The second generation consists of angular quartz grains averaging 0.03 mm across, thickly set in a matrix of semi-opaque carbonaceous material and clay. Glauconite is in green grains averaging about 0.2 mm across and showing aggregate polarisation. Foraminiferal tests and fragments of small shells are frequent.

The rock is a glauconitic mudstone.

2619-22

The hand specimen is an indistinctly banded green rock containing light and dark coloured fragments up to 5 mm across in a finer grained matrix.

In thin section the rock is a mass of indefinite fragments of vesicular greenish glass, some of it opaque and some partly devitrified. The vesicles are partly filled with analcite, carbonate and chalcedonic silica, which later forms spherulitic and crustification structures.

The rock is a glassy tuff.

3154-57

The hand specimen is a pale brownish, fine grained, structureless sediment containing organic remains, e.g. the remains of small gastropods. Minute flakes of mica, showing no particular orientation, are visible on cut and fractured surfaces.

In thin section the rock consists of angular grains of quartz averaging 0.01 mm across, minute plates of white mica, irregular small fine grained masses of carbonate, and organic remains, including foraminiferal tests, in a semi-opaque matrix of clay minerals and carbonaceous material.

The rock is a calcareous mudstone.

5392-95

The hand specimen is a greyish brown fine grained rock.

In thin section it consists of angular quartz grains averaging about 0.05 mm across set in a matrix containing argillaceous and carbonaceous material.

The rock is a carbonaceous mudstone.

5398-54

The hand specimen is a very fine grained creamy-brown coloured rock. There are several rounded and irregular aggregates of minute crystals of pyrite.

In thin section the rock consists of angular quartz grains averaging about 0.03 mm across, thinly scattered in a matrix of particles of carbonate and clay minerals averaging about 0.001 mm across.

The rock contains a few organic fragments, including foraminiferal tests.

The rock is a calcareous claystone.

4859-62

The hand specimen is pale brown with minute shelly fragments and flakes of mica.

In thin section the rock consists mainly of angular quartz grains averaging about 0.04 mm across set in a matrix of fine grained argillaceous and organic material, together with grains of calcite, glauconite, pyrite, ilmenite and platelets of muscovite, small shelly fragments and foraminiferal tests.

The rock is a calcareous mudstone.

6420-23

The hand specimen is a pale coloured fine grained siliceous rock with very fine banding in places. There are few aggregates of pyrite. Minute flakes of white mica are prominent on fracture surfaces.

In thin section the rock is a mosaic of angular quartz grains, with occasional opaque white grains, plates of white mica, grains of clear feldspar, rock fragments and brown organic material. The average grain size is about 0.03 mm, and the grains are very well sorted.

The rock is a fine grained arkosic sandstone.

3896-99

The hand specimen is a pale greyish brown fine-grained rock with numerous small white tests.

In thin section the rock consists of angular quartz grains about 0.04 mm across, together with foraminiferal tests and shells of small molluscs, and occasional grains of glauconite, set in a matrix of fine grained calcite.

The rock is a foraminiferal calcareous siltstone.

3670-73

The hand specimen is a greyish brown fine grained rock, with some shelly and organic remains.

In thin section the rock consists of angular quartz grains averaging 0.04 mm across set in a matrix of opaque brown argillaceous and carbonaceous material. Thickly disseminated through the whole section are innumerable minute rhombs of carbonate averaging about 0.015 mm across the long diagonal.

Organic remains are common, especially minute tests of foraminifera.

The rock is a foraminiferal calcareous mudstone.

6951-54

The rock is a fine-grained buff coloured sandstone with irregular finely laminated bands of much finer grained dark brown material, including micaceous minerals.

In thin section graded bedding is shown by the sandstone close to the mudstone bands, which are much finer grained and contain in addition much clay and micaceous material stained by iron oxides. The sandstone consists of angular grains of quartz, rock material and feldspar in that order of abundance, the quartz greatly predominating.

The hand specimen is a grey rock with irregular black bands and numerous grains of quartz and feldspar up to 2 or 3 mm across in a fine grained groundmass.

In thin section the specimen shows an unsorted mass of angular grains of quartz, feldspar, quartzite, muscovite and biotite in a matrix of fine grained fragments of quartz muscovite and clay minerals together with much reddish opaque brown, bituminous material. Strong orientation parallel to the bedding is shown by the finer fragments.

The rock is a carbonaceous greywacke.

The hand specimen is a dark and light brown banded rock, the banding being confused by slump structures including folding and faulting on a minute scale and the interpenetration of beds of coarse and fine grained material.

In thin section the rock consists of angular grains of quartz and feldspar, micaceous minerals and bituminous material in irregularly alternating bands showing graded bedding.

The rock is a carbonaceous greywacke.

The hand specimen is a fine grained dark brown rock with occasional larger grains and lenticular composite aggregates up to 5 mm long.

In thin section the rock consists of angular grains, mainly of quartz, averaging 0.05 mm across. There are also rarer grains of clay minerals, white mica and calcite. The matrix consists mainly of brown bituminous material.

The rock is a carbonaceous siltstone.

The hand specimen consists of a dark brown bituminous material, rather impure, and with bands and lenticles of silty material.

The specimen was not sectioned, but fragments examined in clove oil under the microscope consisted of the same reddish brown bituminous material seen in other specimens from the core. The specimen appears to be of cannel coal grade.

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