

3.11 Drillwater Source

Sea water pumped directly from the sea at Flinders 1 was used for the drilling fluid to the base of the 311mm (12¼") hole section.

For the freshwater base mud used to TD, water was shipped from Bell Bay.

The Mud Summary may be found in Section 5.5.

3.12 Mud System and Tracers

Mud Engineering services were provided by International Drilling Fluids Pty Ltd.

The 914mm (36") and 455m (17½") intervals to 128m and 408m respectively were drilled using sea water with returns to the sea floor. Hi Vis pills were periodically pumped to aid hole cleaning, but there was no attempt at controlling the mud properties.

A Sea water/Gel/Poly mud was used to drill the 311mm (12¼") hole section to 1525m. This hole section intersected the dominantly argillaceous lower part of the Torquay Group and Demons Bluff Formation. Neither was considered prospective and evaluation was secondary to keeping the hole clean and maintaining hole stability. Solids content was allowed to build up using the natural clays and then water loss controlled to about 11ml/30min. The associated increase in mud weight was controlled and maintained at 1128kg/m³ through the addition of partially hydrolysed polyacrylamide (PHPA). Hi Vis pills were pumped on connections to aid hole cleaning and no problems were encountered. Hole condition was fair to good down to 1025m despite the bridge encountered at 780m by the logging tools. The caliper log showed the interval from 1025m to 1241.9m to be both heavily washed out and commonly under gauge. There is no open hole wireline data below the bridge encountered at 1241.9m. After hitting a bridge at 780m on the first logging attempt the weight was increased to 1158kg/m³ and fluid loss reduced to 8.6ml/30min but this was ineffective at controlling the swelling clays below 1125m. After logging, the mud weight was increased to 1188kg/m³ and no trouble was encountered running the casing. Casing was set in the Demons Bluff, some 27m above the EVCm and 216m (8½") hole drilled to total depth.

Formation salinities of 40,000 to 70,000 ppm NaCl equivalent were anticipated in the EVCm and a Fresh Water/IDBond mud was utilised primarily to assist in evaluation through enhanced contrast between Rmf and Rw.

To minimise formation damage in the 8½" hole, both weight and fluid loss were targeted to be kept below 1170kg/m³ and 8ml/30 minutes respectively. This was achieved with the mud weight gradually rising from 1070kg/m³ to a maximum of 1120kg/m³ at TD. The maximum calculated ECD being 1200/m³ over the interval 2400m to TD. Fluid loss ranged between 5.8 and 8.6ml/30 minutes. As the mud weight was controlled using drilled solids the barite content of the mud was minimal and never exceeded 0.5%.