

“The unconsolidated formations in this area are extremely problematic and several operators had major problems drilling and stabilizing these sands. The DRILPLEX system performed extremely well by reducing losses enabling a trouble-free section to be drilled.”*

Dave Bennett – Project Engineer, Perth Australia

Well Information

Location.....Barrow Sub-basin, Offshore NW Shelf, Australia
Spud February 2004
Interval drilled..... 17½-in. hole from 500 to 1475 m (1640 to 4839 ft)

The Situation

The formations in the 17½-in. sections in this area of the Barrow sub-basin on Australia’s North West Shelf are mixed limestones that are highly fractured with unpredictable lost circulation zones. These zones are interbedded with poorly consolidated, coarse sands that are very susceptible to washouts, which frequently destabilize the wellbore causing limestone blocks to cave into the wellbore, packing off the drillstring. Occasionally, cobbles of limestone and dolomite combine with the loose sands to further complicate the hole-cleaning problems. Difficulties re-entering the wellbore are common, resulting in sidetracks and frequent well abandonment.

The Solution

The DRILPLEX system was chosen because of its well-documented cuttings-carrying capacity and ability to control losses into permeable and porous formations. This feature, combined with the reduced erosion of the mechanically weak formations due to the low shear rates at the wellbore wall, reduces the risk of destabilizing the sands and causing the overlying limestone bands to collapse into the wellbore.

The Results

- The DRILPLEX system successfully reduced fluid volumes compared to offset wells.
- Non-productive time was significantly reduced.
- The well was completed without incident.
- The wellbore was near-gauge resulting in a good cement job.



The Details

An all-freshwater DRILPLEX system was formulated with GELPLEX* bentonite (20-30 kg/m³), DRILPLEX MMO* (2-3 kg/m³), HIBTROL* cuttings encapsulator (10-15 kg/m³), and caustic soda and soda ash to control hardness and pH to ensure the highest possible LSRV. The 17½-in. section was drilled from 500 to 1,475 m (1,640 to 4,839 ft) with a yield point of between 40 and 80 lb/100 ft² and plastic viscosity of 10 to 15 cP. Fann dial readings at 6 and 3 rpm were maintained between 20 and 45 Fann units, respectively.

The DRILPLEX system was used to drill out the shoe. As predicted, large cobbles and “boulders” were carried out of the hole. The system was treated for CO₂ contamination from the carbonate sections. All properties remained stable.

Shakers were dressed with 120-mesh screens. Losses were encountered and successfully treated using ultra-high-viscosity DRILPLEX lost circulation pills.

The system was gradually broken over to a mixed freshwater and seawater system. The section was drilled and 13¾-in. casing cemented successfully.

Questions? We'll be glad to answer them.

If you'd like to know more about the DRILPLEX systems and how it's performing for our other customers, please call the M-I SWACO office nearest you.

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