

Project Report

Baroid Industrial Drilling Products

QUIK-TROL® GOLD and POLY-BORE™ In Large Diameter Coring

Project Background

An Australian operator had a contract to obtain six inch cores targeting iron ore in Western Australia's Pilbara area. The ore formations drilled ranged from fine friable material to more competent rock types.

Polymer based systems had previously been used and had issues with unyielded materials (fisheyes) due the mix time required for them to work effectively. Poor fluid properties resulted issues with core recovery.

Challenge and Equipment

Improving the fluid properties for the targeted formations presented an issue because bentonite additives were not permitted to be used. This meant the recommended solution for finer friable ore material -- a controlled filtrate -- would be difficult to achieve.

The geography of valleys and hills did not allow for large fluid system volumes. The restricted drill pad sizes allowed mix and active tanks of only 2,800 L each and restricted sump sizes to 10,000 to 20,000 L for holes drilled from 70 to more than 150 meters. This meant the additives run had to hydrate effectively in a short amount of time because of the high pump rates (>200LPM) the system used to recirculate the fluid continuously.

The Solution

The required solution was a fluid system that could be mixed in a short amount of time and provide properties desirable to the formation being drilled without the inclusion of a bentonite additive.

This was done by running QUIK-TROL® GOLD filtration control polymer to aid in controlling the filtrate (water phase of the drilling fluid lost to the formation). Due to it's dispersant coating it was able to mix and hydrate in a short time frame and would prevent the occurrence of fisheyes. POLY-BORE™ was added to aid in hole stability and encapsulate any encountered clay/shale. N-SEAL™ lost circulation material was introduced to the fluid system prior to encountering the friable ore to aid in bridging it off to prevent fluid invasion resulting in improved stability for the both the formation and drilled core.



Limited space available for settling sump and tanks

Drilling Fluid Additives

0.5 kg Soda Ash

2.0 kg QUIK-TROL® GOLD

0.5 POLY-BORE™

1/2 to 1 sack N-SEAL™ (as required)

Per 1,000 L. pH: 7, Total Hardness: 425ppm.



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Fluid Properties

	Original Fluid	Baroid Fluid
Date	16 February	17 February
Depth (m)	12	14
Funnel Vis sec/qt	39	36
Mud Weight SG	1.01	1.01
Filtrate ml/30min	U/C	54.8
pH	7	9
Hardness ppm	250	250

Observations

The fluid properties were tested twice. On 16 February the tests were on the additives being run before Baroid IDP recommendations.

The fluid properties were changed to the Baroid IDP recommendations on the 17th and tested during this shift.

Upon the change the properties improved, there was no evidence of unyielded material, and core recovery increased.



A recovered six inch core

Total Value

Through improved fluid properties both the operator was able to achieve a higher rate of core recovery for the remainder of the program. If this had not been achieved and re drilling of a hole had to occur, the costs to both the operator and client would be estimated at \$100,000 per hole factoring in labor, consumables, and time.

Contact Baroid IDP

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