M-I SWACO
A Schlumberger Company

MUDGARD Workstring Filter Mitigates BHA Failure in Seven-Well Field Trial, Offshore Argentina

Operator captures more than 4,700 g of BHA-clogging debris in shale formation

CHALLENGE

Protect debris-susceptible bottomhole assembly (BHA) components from fluid-borne circulation debris while drilling extended-reach wells.

SOLUTION

Incorporate a MUDGARD* workstring filter directly above critical BHA equipment to screen and retain damaging debris.

RESULTS

- Captured more than 4,700 g of debris over seven runs.
- Eliminated NPT and avoidable failures caused by debris in the drilling fluid system.
- Ran a MUDGARD filter for 1,950 hours with no costly, time-consuming filter replacements.
- Extended the life of critical BHA components, including rotary steerable equipment.

Improve drilling efficiency and prevent BHA failures

During the well construction process, debris from the drilling fluid system can build up in the drilling fluid, damaging sensitive BHA components. To increase drilling efficiency, reduce the recurrence of BHA plugging, and improve tool performance, an operator needed to protect critical BHA equipment from circulation debris. They partnered with M-I SWACO for a field trial of the innovative MUDGARD workstring filter.

Run MUDGARD filter above critical equipment

The MUDGARD workstring filter resists erosion and minimizes pressure losses in the system while capturing and retaining fluid system debris. In addition, the filter features a contingency central bypass—enabling complete wireline access without requiring extra runs to recover drillstring components. M-I SWACO deployed the 4¾-in MUDGARD workstring filter as part of the BHA for the 6⅛-in section of seven extended-reach wells.

Mitigated NPT for seven extended-reach wells

Throughout the seven-well field test, the MUDGARD workstring filter captured and retained more than 4,700 g of fluid-borne debris before it invaded and irreparably damaged complex BHA components—significantly increasing the service interval of the equipment. Over the course of the trial, the operator ran 1,950 h and drilled more than 17,341 m without having to pull out of hole or replace any filter screens.

MUDGARD Filter Performance	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7
Time in well, h	166	306	430	254	283	238	243
Circulating time, h	123	251	354	206	252	210	215
Drilled section, m [ft]	1,870 [6,135]	1,932 [6,339]	2,262 [7,421]	3,307 [10,850]	2,447 [8,028]	3,334 [10,938]	2,189 [7,182]
Weight of debris recovered, g [lbm]	324 [0.7]	965 [2.1]	420 [0.9]	325 [0.7]	860 [0.9]	1,290 [1.3]	580 [0.6]

Due to the field trial's success, incorporating the MUDGARD workstring filter into the BHA has become a standard practice for the operator in these extended-reach wells. The operator plans to use the filter in their upcoming horizontal wells.

The MUDGARD filter captured several large pieces of ferrous debris.

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