

AMC BOSTM saves 77% in operational costs compared to traditional cementing method

CASE STUDY

AMC BOSTM reduced drilling fluids needed by 50%, eliminated the need for a costly, time consuming cementing/grouting and improved the average bit life used. The new solution delivered significant productivity improvements to the operation at the Resolution Copper site in Arizona, USA.

After a successful trial on another hole at the Resolution Copper Mine in Arizona, AMC was assigned a dedicated hole to trial of the AMC Borehole Optimisation SystemTM (AMC BOSTM) to improve efficiencies across the full course of drilling.

The crew had been facing a variety of issues in the region with sections of the whitetail conglomerate formation breaking free and causing constant reaming and excessive wear on bits. Drilling through the other troubling formation; cretaceous volcanic sediment, resulted in excessive clay leaching and swelling of the ground, causing the rods to stick and pinch.

These unpredictable and unstable formations contributed to excessive drill bit wear from the repeated reaming and rod tripping. The increase in rod tripping increased exposure to hazards for the crew on site.

Solution

Due to AMC's success on the original hole, a three month trial was to be conducted with the new AMC BOSTM. The AMC BOSTM is a rapid descent, dual action in-hole casing unit which delivers a measured amount of AMC BOS FIXTM at regular intervals down the borehole. The AMC BOS UNITTM deploys the AMC BOS FIXTM at precise locations from the bottom of the drill string into the strata and migrates into the annulus to develop a plasticising membrane on the borehole wall.



Results

- Eliminated cost of cementing/grouting, vacuum truck and displacement of contaminated drilling fluids
- Improved rig productivity by 4 days, contributing to considerable cost savings
- 50% reduction in drilling fluids used on-site, allowing drillers to focus on drilling and not mixing mud
- Improved site safety – less exposure to injury due to unnecessary rod trips for prematurely worn drill bits
- Significant torque reduction – up to 27%
- Over 50% improvement in bit life, only 4 bits used from the cut-out wedge at 3,428 ft to the bottom of the 6,770 ft borehole.

AMC BOS™ CASE STUDY

Saves 77% in operational costs compared to traditional cementing method



Due to formation instability in the area, the drill crew had previously implemented cementing/grouting to cure a borehole. Carrying out a cement squeeze raises the challenge of disposing of 20,000 gallons of contaminated fluids, and then requiring vacuum trucks to haul the contaminated drilling fluids off-site. In comparison, AMC's system proved more cost effective, with an estimated 77% saving compared to the traditional method.

In addition to the 77% saving in costs associated with a potential cement squeeze, there was also a significant productivity improvement. With the new AMC BOS™ in place, it enabled the crew to improve their rig productivity by 4 days over the course of drilling the borehole.

There was a significant increase in fluid returns once the new system was in place. It was not uncommon for the fluid returns to reach only a maximum of 30% prior to the introduction of the AMC BOS™, now close to 80% returns had been achieved with the new system in place. Circulation was lost on six separate occasions throughout the duration of the program and each time was regained due to targeted injections from the AMC BOS™.

Prior to the introduction of the AMC BOS™, there were eight individual products being used on each hole. The new system provided a 50% reduction in products used, allowing the crew on-site to focus drilling through the tough formation rather than mixing mud.

Project Outcome

In comparison to using the traditional cementing/grouting methods, the AMC BOS™ provided a number of operational efficiencies on site, proving to be a highly cost-effective. The solution provided the following significant operational efficiencies;

- Reduced rig utilisation by 4 days, contributing to considerable cost savings
- Saved significant time compared to the traditional grouting/cementing method due to the fast setting and inexpensive AMC BOS FIX™
- Eliminated the cement squeeze cost, vacuum truck and displacement of contaminated drilling fluids
- Improved site safety – reduced exposure to hazards due to unnecessary rod trips of prematurely worn drill bits
- Significant torque reduction – up to 27%
- Over 50% improvement in bit life, only 4 bits used from the cut-out wedge at 3,428 ft to the bottom of the 6,770 ft borehole.

Before



Formation before deploying the AMC BOS™.

After



Using the AMC BOS™ stabilised the formation.

Further Information

For more information about this case study, please contact amc@imdexlimited.com or your local AMC representative.

ASIA PACIFIC

Perth, Australia (Head Office)

T +61 8 9445 4000

E amc@imdexlimited.com

Indonesia

T +62 (0) 21 759 11244

AFRICA

South Africa

T +27 (11) 908 5595

EUROPE

Germany

T +49 4402 6950-0

United Kingdom

T +44 (0) 1273 405 975

SOUTH AMERICA

Argentina

T +54 (9) 261 426 1116

Brazil

T +55 (47) 3404 5920

Chile

T +56 (2) 2589 9300

Peru

T + 51 (1) 322 8850

NORTH AMERICA

USA / Canada

T +801-364-0233

Mexico

T +52 (871) 169 2095