Case History

Lost Circulation Strategy, Incorporating NewSwell™ Swellable Copolymer, Proves Effective to Resolve Total Losses While Drilling Across Shallow Carbonate Formation, Onshore Albania

The engineered solution of a swellable copolymer was used to reduce losses and cut downtime in a shallow carbonate formation.

CHALLENGE	SOLUTION	RESULTS
• **Mitigate total loss scenario while drilling through fractured shallow carbonate formation**	• **Newpark's NewSwell™ Swellable Copolymer**	• **Total losses mitigated** • **Well safely drilled to TD**

OVERVIEW

An operator in Albania drilled the 17 ½" interval through highly fractured limestone from 1302m to the top of the shale formation located at 3338m with the use of the Newpark GageDrill™ mixed-metal oxide (MMO) System. Lost circulation events were predicted, and mitigation was of the utmost importance.

CHALLENGE

As predicted with analysis of the geology, partial to total losses occurred due to large formation fractures, starting from a depth of 1540m.

When total losses occurred, water replaced the GageDrill fluid lost in the hole. Open fractures existed in intervals from 1617m to 1672m and from 2920m to 2932m, with the largest fractures at around 1659m and 2932m respectively.

SOLUTION

Newpark fluids specialists implemented the planned lost circulation strategy.

To mitigate total losses in the interval between 1920m and 2932m, the team decided to pump a Lost Circulation Material (LCM) tandem pill.

The tandem pill used a swellable copolymer pill formulated with 12 ppb NewSwell™ copolymer pumped ahead of a second conventional lost circulation pill composed of 5 ppb extrusion-spun mineral fiber, 4 ppb synthetic fiber, 30 ppb calcium carbonate medium, and 40 ppb calcium carbonate fine.

This combination proved effective in remediating the total losses in

NewSwell copolymer after hydration

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this extremely difficult and highly fractured wellbore. Losses were significantly reduced from ‘total’ to 8 m3/h, thus allowing the operator to complete drilling of the section safely and efficiently to TD.

The 13 3/8” casing was then successfully run to bottom and cemented.

RESULTS

The planned strategy to mitigate lost circulation was successful in its implementation.

The NewSwell swellable copolymer proved highly effective and was successful in resolving the total, persistent losses.

The ability to successfully remediate the losses allowed the operator to continue drilling the well and reach TD safely.