Performance Report

NewTex™ improves drilling performance through unstable shale section - Indonesia

SHALE STABILISER OUTPERFORMS ALTERNATE PRODUCTS IN LABORATORY TESTING, IMPROVES HOLE CLEANING AND REDUCES NPT RELATED TO CASING RUNNING IN FIELD, SOUTH SUMATRA.

CHALLENGE	SOLUTION	RESULT
• **Unstable shales encountered in intermediate section** • **Excessive circulation and back-reaming while drilling** • **NPT related to borehole restrictions when running casing**	• **Laboratory testing performed on fluid treated with shale stabilisers** • **NewTex™ provided best results in laboratory testing, outperforming other additives with similar chemistry and function.**	• **NewTex™ added to fluid formulation for subsequent wells** • **Drilling and casing running performance improved, reduced incidents of NPT** • **Extending intermediate sections allowed well profile to be optimized**

OVERVIEW

Newpark Drilling Fluids operates in Indonesia through a local fluid provider under the "Powered by Newpark" model, where Newpark supplies engineering expertise, technical knowledge, and specialty chemicals, while the local company manages field execution using its own Drilling Fluids Specialists and equipment.

This partnership successfully secured an onshore fluid tender with a major operator on the islands of Sumatra and Java. The drilling in this area can present various challenges to the design and engineering of the drilling fluids. The operator recognized the influence of fluid selection on overall drilling costs and how high performing fluids can reduce Non-Productive Time (NPT) and minimize Invisible Lost Time (ILT).

NewTex™ was introduced into the WBM drilling fluid formulation following a comprehensive laboratory testing campaign that compared the Newpark proprietary shale stabilizer with an industry standard product with similar functions and chemistry. Subsequent field trials confirmed the effectiveness of NewTex for enhancing fluid stability.

CHALLENGE

Offset wells in the region presented significant challenges during drilling of intermediate intervals through shale formations. These problems stemmed from the inherent instability of the shale and a tendency to swell or collapse. Key issues related to this included poor hole cleaning and risk of pack-off while drilling, plus operational delays when running casing.

NEWPARK FLUIDS SYSTEMS

PT. MATRA UNIKATAMA

SOLUTION

Two shale stability additives were evaluated in the fluid provider's laboratory and the results shared with the operator. A 7% KCl / Polymer water-based drilling fluid at a density of 1.40 sg (11.7 ppg) was used as the base fluid. This sample was split into two. One was treated with 17.1 g/l (6.0 ppb) NewTex, the second with the same concentration of the standard shale inhibitor. The properties of both samples were tested before and after hot-rolling for 16 hours at 200°F. Fluid loss properties (API Fluid Loss and Pore Plugging Test) were similar for the two samples before and after heat ageing, but the Newtex sample exhibited better rheological performance post hot-roll, with a lower Plastic Viscosity (24 cP v's 15) and a higher Yield Point 19 lbs/100 ft^2 v's 11).

	+ 6 ppb Shale Inhibitor		+ 6 ppb NewTex	
	Base	**Post H/R**	**Base**	**Post H/R**
Rheology Temp. (°F)	120	120	120	120
PV (cP)	16	24	16	15
YP (lbs/100ft²)	23	11	24	19
6 rpm	8	6	6	6
3 rpm	6	4	5	5
LSYP	4	2	4	4
Gels (10s./10 min.)	10/24	6/14	7/18	5/15
API FL (cc)		3.8		4.0
PPT (total, cc)		4.0		4.8
Spurt Loss (cc)		0.0		0.0
PPT FL (30 min., cc)		2.0		2.4
pH		11.04		11.19

Key performance attributes of NewTex include:

- **Improved inhibition:** Enhances wellbore stability through mechanical and chemical inhibition of unstable shale formations.
- **Improves Fluid Properties:** Aids the development of thin, compressible filter cake, minimizing HPHT fluid loss. NewTex may also be used to reduce high temperature gelation and generally stabilize fluid properties.
- **Thermal Stability:** Chemically stable up to 200°C–220°C (390°F–430°F), maintaining effectiveness as a fluid-loss additive and shale stabilizer within this range.
- **Versatile:** Can be used in both water-based and non-aqueous drilling fluids.

FIELD RESULTS

Deployment of NewTex™ at 3 ppb yielded the following operational improvements:

- No borehole instability or restrictions observed through intermediate shale sections
- Increased average Rate of Penetration (ROP)
- Reduced circulation and back-reaming time during drilling and tripping
- Lower hookload during slack-off and pick-up, indicating improved hole cleaning
- Enhanced casing running efficiency

Cuttings observed over the shakers when drilling the shale section appeared dry and discrete, with no signs of wellbore instability (see fig. 1).

Fig. 1 – Sample of Cuttings from first field application

These results enabled the operator to plan longer intermediate intervals and further optimize well profiles, contributing positively to improved drilling economics and reduced NPT.