

Gas Migration Eliminated While Drilling the Over-Pressured Bossier Shale, Western Louisiana

North America

CHALLENGE:

- ▶ Safely contain the gas influx in the Bossier Shale prior to reaching the targeted producing formation
- ▶ Prevent BHA from getting stuck on bottom
- ▶ Successfully set intermediate casing
- ▶ Achieve full returns for cement job

SOLUTION:

- ▶ Star Shield and Star Shield 100 Wellbore Shielding Technologies were used to treat the drilling fluid system
- ▶ Star Shield prevented mud losses with an EMW as high as 12.8ppg in the Bossier formation

RESULT:

- ▶ Safely removed the BHA at interval depth
- ▶ Reduced gas influx
- ▶ Eliminated drilling fluid losses for the interval
- ▶ Successfully run the intermediate casing
- ▶ Achieve full cement returns



OVERVIEW

Drilling through over-pressured natural gas in the Bossier Shale Formation in Sabine Parish, Louisiana has frequently resulted in expensive non-productive time (NPT) and hole instability events for several operators. In this location, the over-pressured Bossier Shale, which is layered between the Cotton Valley Sandstones and the Haynesville Shale, is typically an important target formation for intermediate casing points. Excessive gas migration from this difficult formation has created several issues for operators while tripping in and out of hole, running casing, or achieving proper cement jobs in these wells.

SOLUTION

One Bossier Shale operator aimed to lower the overall cost of the well by eliminating the NPT associated with a gas influx at the intermediate casing point. Working with Impact Fluid Solutions, the operator was able to pre-treat the active circulating system using Star Shield® and Star Shield® 100, Wellbore Shielding® technologies.

This customized treatment regime enabled the operator to safely increase the mud weight and slightly increase the drilling window, reduce gas influx, and avoid lost circulation and wellbore instability problems. In this specific case study, the operator had to circulate for three days prior to pulling the bottomhole assembly (BHA) out of the hole before Star Shield was introduced to the drilling fluid system, and operations proceeded smoothly.

RESULT

Impact Fluids' Wellbore Shielding Technology works to increase the fracture initiation limits in mechanically fragile formations by limiting fluid and pressure invasion and forming a barrier with low permeability at the fluid-rock interface. Severe NPT due to hole instability issues were eliminated. Additionally, this operator avoided further fracture propagation in the Bossier formation while spotting two 17.3 ppg mud caps with an equivalent mud weight (EMW) of 12.8ppg while using Star Shield® and Star Shield® 100, with no fluid losses.

The BHA was successfully removed from the wellbore, and the intermediate casing string was run and cemented on the bottom with no drilling fluid losses. Complete cement returns were also achieved to the surface.