

## Lost Circulation Materials

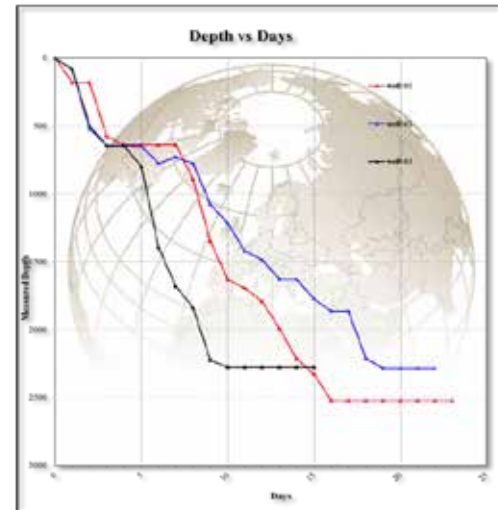
# Optimized Bridging Package Helps Reduce Total Operational Time and Obtain a Nominal Borehole Diameter

Location: Argentina

### Overview

The operator was looking for a solution that would help increase wellbore stability and maximize efficiency in order to reduce the number of days spent completing the well. Prior wells drilled in the field experienced excessive dragging during tripping operations, instability issues, and irregular borehole diameters.

The first wells drilled in this formation experienced dragging during wiper trips. In addition, due to increased low-gravity solids (LGS) content and high clay content/drill solids indicated by a high methylene blue test (MBT) value, increasing, rate of penetration (ROP) along the interval was lower than anticipated. The mud weight was increased from 1.12 to 1.16 sg to maximize hole stability.



CHALLENGES	SOLUTIONS	RESULTS
<ul style="list-style-type: none"> <li>• Reduce days spent completing the well</li> <li>• Prior wells experienced excessive dragging during tripping operations, instability issues, and irregular borehole diameters.</li> <li>• Increased low-gravity solids (LGS) content and high clay content/drill solids increasing</li> <li>• Rate of penetration (ROP) along the interval was lower than anticipated</li> </ul>	<ul style="list-style-type: none"> <li>• Halliburton Baroid customized a bridging package consisting of STEELSEAL® 50 and STEELSEAL® 100 lost circulation materials; BARABLOK™ 400 Filtration Control Agent; BARO-TROL Shale Stabilizer; and BARACARB® 25, BARACARB® 50, and BARACARB® 150 bridging agents</li> </ul>	<ul style="list-style-type: none"> <li>• The application of this bridging package helped to stabilize the reactive clays in the sensitive formation, providing increased wellbore stability</li> <li>• Quality of wiper trips was improved and fluid properties were maintained</li> <li>• Total fluid volume used along the section was minimized</li> <li>• Clay and drilled solids content and LGS content were minimized.</li> <li>• Quality of the tripping operations improved along this section of the well.</li> <li>• Drilling time on all wells drilled was reduced by seven days</li> <li>• 30% reduction in total fluid costs was achieved</li> </ul>

Well	True Depth (m)	Avg ROP (m/h)	Total Operational Time (days)	BHC (in)	Total Fluid Volume Used (m3)
#1	2524	11.83	23	9.2	350.87
#2	2285	11.93	22	9.3	295.99
#3	2275	19.04	15	8.55	235.99

*After the application of the customized bridging package, the operational time decreased; the average borehole diameter improved; and the fluid volume decreased.*

Halliburton Baroid customized a bridging package consisting of STEELSEAL® 50 and STEELSEAL® 100 lost circulation materials, BARABLOK™ 400 Filtration Control Agent, BARO-TROL Shale Stabilizer, and BARACARB® 25, BARACARB® 50, and BARACARB® 150 bridging agents. The application of this bridging package helped to stabilize the reactive clays in the sensitive formation, providing increased wellbore stability. Quality of wiper trips was improved and fluid properties were maintained, while minimizing total fluid volume used along the section.

By customizing bridging material concentrations specific to the formations, fluid properties were maintained, which in turn helped minimize clay and drilled solids content and LGS content. In addition, the quality of the tripping operations improved along this section of the well.

Overall, drilling time on all wells drilled was reduced by seven days. The average borehole diameter was improved from 9.39-in to 8.6-in, showing more homogeneous wellbore geometry than previous wells. In addition, a 30% reduction in total fluid costs was achieved during the drilling campaign.