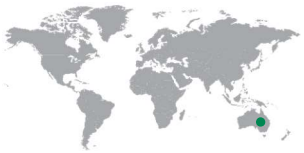
Case History



Customized chemistry solves critical production problems for Coal Seam Gas (CSG) Operator, and is subsequently adopted to enhance production on over 250 wells, Queensland Australia

A custom solution was designed by Newpark Engineers, which is now being adopted in many other Australian basins

CHALLENGE	SOLUTION	RESULT
• **Mud losses downhole were traditionally mitigated with unconventional Lost Circulation Material (LCM)** • **This technique resulted in low production or even no production from the wells**	• **Customized chemistry, designed by Newpark, featuring an innovate microemulsion formulation that lowered capillary pressure and regained reservoir permeability to increase well production**	• **Significant increases in production were recorded with the use of this innovate production enhancer** • **Fluids trapped in reservoir now flow into the borehole** • **Solution now being used in over 250 wells in Australia**

OVERVIEW

A major Coal Seam Gas (CSG) Operator based in Queensland, Australia, approached Newpark's local engineering office for support in helping overcome their lower-than-expected production. Newpark Engineers designed a customized solution to improve production efficiency from these wells.

CHALLENGE

These wells experienced mud losses during drilling, which were cured with unconventional LCMs. However, low or no production from these wells occurred as an undesired side-effect from the techniques used.

SOLUTION

Adopting a detailed evaluation and analysis approach, Newpark conducted a series of lab tests, including regaining permeability, determining a customized approach to solve the problem. The solution included pre-treating the well with calcium hypochlorite, thereafter, displacing the hole volume with a clear brine fluid enhanced with a blend of surfactant and micro-solvents.

The latter treatment has the capability to lower the reservoir capillary pressure, which is responsible for the capillary blocking damage in the reservoir. In addition, this microemulsion is able to increase the relative permeability of the producing formation, thereby allowing fluids trapped in the reservoir to flow to the borehole.

NEWPARK FLUIDS SYSTEMS

The permeability improvement was confirmed in the customer's lab and the process was subsequently approved and run in the field.

During the field trial, the wells started flowing water first and production was re-established. After the initial field trial, the customer also ran their own reverse permeability testing and once again the results exhibited overwhelming indication of reverse permeability enhancement.

RESULTS

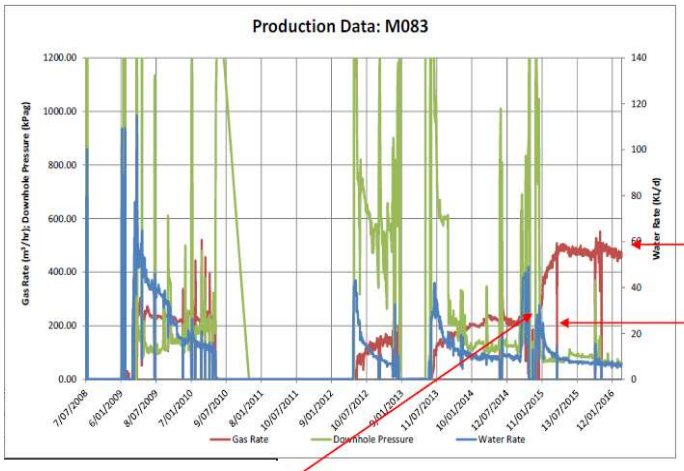
The microemulsion was initially used successfully with one of the major operators in the Cooper Basin, in one of the Cook well campaigns (tight oil reserves) and has been specified for all wells drilled in the area ever since. The customer ran reverse permeability tests to verify the customized chemistry performance, and on both occasions proved that the microemulsion addition process improves reverse permeability.

The customer revisited producing wells and discovered that production was tripled in some cases after addition of the blend of surfactant and micro-solvents into clear brine fluid.

A second operator ran a campaign of 14 vertical wells, using the microemulsion application during the drilling phase of the wells. Technical issues meant that four of the wells could not produce, however the other ten wells produced far in excess of expectations for the entire 14 well campaign. The customer subsequently completed a 24 wells campaign, including the microemulsion process in the drilling fluid program for the wells.

Further tests showed how this blend can be added into Reservoir Drill-In fluid, clear brine fluid and stimulation fluid, working as a production enhancer in some of the Australian fields. This kind of application has subsequently been successfully run on approximatively 250 wells in different Australian basins.

Newpark's success has led to further applications for the regain permeability enhancer microemulsion, with additional projects for operators in Surat and Bowen Basin, SE Queensland.



Mar/16
530 m³/h
Aug/15
210 m³/h

Documentation: No additional documentation available
Details: Pull the Completion and Clean the well after a Chemical Flush of the Lateral Well.
The well has been suspended with Microflow to stimulate production.
New Completion is Run with Standard Tubing and Rods.