Thirty Intervals in the Marcellus Shale Fractured in One Trip using CobraMax® DM Service
Location: West Virginia

CobraMax® DM service with downhole mixing enables a discreet placement of an unlimited number of fracturing stages in a horizontal section with the flexibility of on-demand, downhole changes in proppant concentration.

**CHALLENGE** – The operator, recognizing that conventional methods place less priority on the effectiveness of the stimulation treatment or the risks involved in recovering from unplanned events, was looking for an innovative method to hydraulically fracture 30 intervals in the Marcellus Shale.

**SOLUTION** – Halliburton recommended the new coiled tubing deployed CobraMax DM service due to its ability to offer a low risk, operationally efficient service while optimizing the stimulation treatment. The highlights of the CobraMax multistage fracturing process demonstrated in this case history are as follows:

- Performed 30 fracture stages and 2 cleanouts with only 1 trip in hole
- Pumped a total of 4 million lbm of proppant through tools on a single job
- Average rate per interval was 37 bbl/min
- Time between treatment stages was reduced to about 40 minutes, compared to the 4 hours per stage using the conventional perf & plug method which requires a trip in and out of the well
- Demonstrated ability to increase net pressure using Slug-and-sweep technique (pumping a high proppant concentration followed immediately by a low concentration)
- Induced far-field complexity

CobraMax DM service in West Virginia, hydraulically fracturing in the Marcellus Shale.

CobraMax DM service involves pumping concentrated sand slurry down the tubing to mix downhole with a high rate clean fluid being pumped down the annulus. This creates a uniform slurry within 6ft of the mixing tool.

- Proved the ability to completely avoid a screenout and continue pumping into the same fracture
- Used less than half of the hydraulic horsepower typically used on conventional jobs in the area
- Used together with PowerReach™ system to reach the long horizontal wellbore. PoweReach system uses a unique downhole valve to combine strings of larger OD jointed tubing and coiled tubing under live well conditions
ECONOMIC BENEFIT – Rapid production decline following fracturing treatments of shale reservoirs has been accepted as simply a fact of life. The CobraMax DM service offers the potential to improve long-term production. Reservoir diversion as a means of increasing conductive stimulated reservoir volume has been approached tentatively in the past due to the sensitivity of the rock to changing proppant concentration and the lack of downhole control of proppant schedules. CobraMax DM service enables this downhole control and enables low-risk, aggressive treatment schedules required for effective reservoir diversion and optimized stimulation of each treated interval.

For more information about how CobraMax® DM service can help optimize your stimulation treatment, contact your local Halliburton representative or email stimulation@halliburton.com.