



Weatherford®

REAL RESULTS

Critical Velocity Reduction System Unloads Liquid From Vertical Gas Wells Perforated in Long Intervals, Redefines the Decline Curve

Objectives

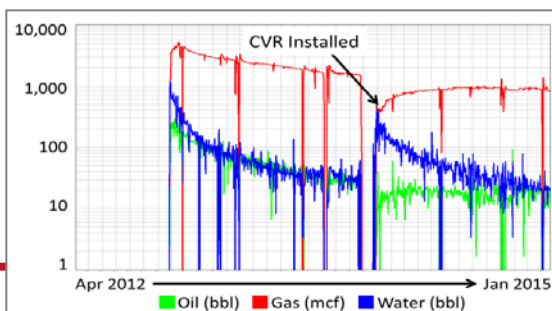
- Reduce liquid loading caused by the completion of 16 onshore vertical gas wells. The wells were completed with 2,000 ft (610 m) to 4,100 ft (1,250 m) of long-interval perforations below the end of tubing, which resulted in excessive liquid loading in the perforation area.

Our Approach

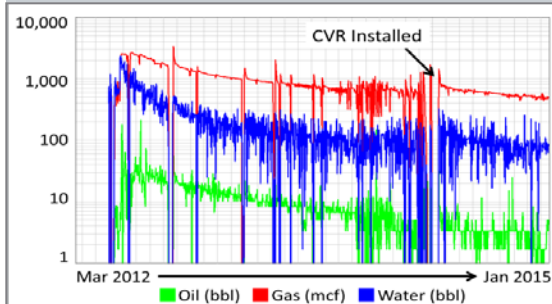
- Weatherford installed a critical velocity reduction (CVR) system in each well. The critical rate within the 5 1/2-in. casing is greater than the rate within the production tubing. Therefore, to reduce the flow in the annular area, the Weatherford team created the CVR systems by setting a 2 7/8-in. dead string with a perforated sub and a plug in the XN nipple below the perforated sub assembly. This new cross-sectional area reduced the critical rate in the annular area and effectively unloaded the wells.

Value to Client

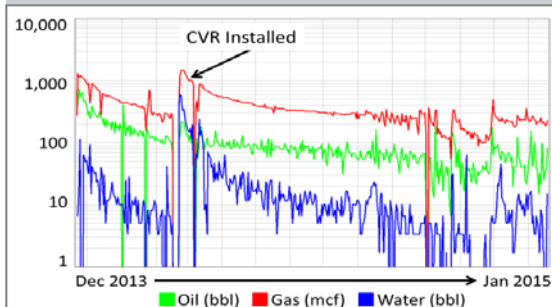
- The Weatherford CVR systems allowed the client to reduce the critical rate, thereby successfully unloading the long perforated section. Once the wells were unloaded and production was stabilized, the client was able to redefine the decline curve.



The 4,100-ft (1,250-m) perforation interval in the 5 1/2-in. casing of this well was liquid loading. As the graph indicates, once the CVR system was installed, the fluid production increased and eventually the gas increased.



The 3,400-ft (1,036-m) perforation interval in the 5 1/2-in. casing of this well was liquid loading. As the graph indicates, once the CVR system was installed, production stabilized and redefined the decline curve.



The 2,300-ft (701-m) perforation interval in the 5 1/2-in. casing in this well was also liquid loading. As the graph indicates, once the CVR system was installed, the fluid production increased and redefined the decline curve.

Location

Lindsey, Oklahoma

Well Type

Onshore vertical gas

Number of Wells

16

Tubing and Casing Size

2 3/8-in. tubing, 5 1/2-in. casing

Dead String Size

2 7/8-in.

Products/Services

CVR system

Weatherford
po-info@weatherford.com