UNCONVENTIONALS

CASE STUDY

LO-Gard® Service Reduces Lost Circulation in Horizontal Plug Cleanout

LOCATION: DELAWARE BASIN

CHALLENGE

» An operator in the Delaware Basin needed a more reliable and cost-effective method for drilling out the lateral, as compared to the use of N_2 and/or jointed pipe.

SOLUTION

» LO-Gard® service was recommended to successfully reduce or eliminate lost circulation.

RESULT

» The drillout operation was accomplished in less time and with lower costs as compared to the use of N_2 and/or jointed pipe.

OVERVIEW

Located within the Permian Basin, the Delaware Basin is a very active drilling area for horizontal wellbores, especially in the Wolfcamp shale play. After completion of the fracturing treatment, usually the composite plugs are drilled out with coiled tubing (CT) pipe. Often this is not an issue, but, at times, severe fluid losses occur while drilling out the lateral. A common solution has been to utilize nitrogen gas (N_2) to reduce the potential of CT getting stuck or the buildup of cuttings around the bottomhole assembly (BHA). This helps reduce the likelihood of hydrostatically stuck pipe. At times, the cost of N_2 to achieve this is substantial. The Halliburton LO-Gard® service has demonstrably reduced or eliminated fluid losses and enabled returns during drillouts. Once the CT becomes stuck hydrostatically, it can require multiple days to get the pipe free and pull it out of the hole. In a worst-case scenario, it may require cutting the CT pipe and going back in the hole with jointed pipe to extract the residual pipe that was left in the hole.

CHALLENGE

The operator needed to reduce the cost of drilling out laterals in formations that have substantial fluid loss during the drillout operation.

After fracturing a horizontal well, the composite plugs must be removed from the wellbore by drilling them out before production can be achieved from the reservoir. When drilling in an underpressured reservoir, it normally requires N_2 to assist bringing the cuttings back to surface. In a worst-case scenario, the CT may become hydrostatically stuck in the lateral, potentially resulting in a very expensive fishing job.

Halliburton recommended the application of LO-Gard service in a CT drillout of composite frac plugs in order to reduce or eliminate lost circulation – and to also reduce the cost of this operation.

SOLUTION

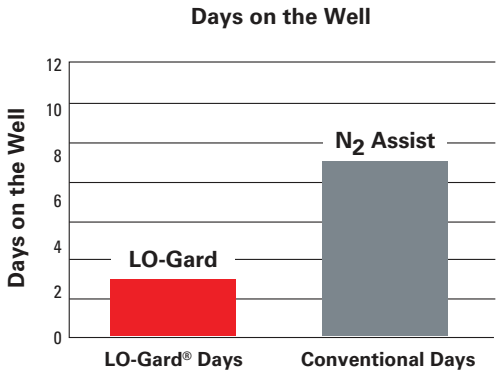
Typically, N_2 has been used to recover the composite-plug cuttings back to surface – and the amount of N_2 required for this operation can easily exceed 5 to 10 million cubic feet, resulting in costs of $500,000 or more.

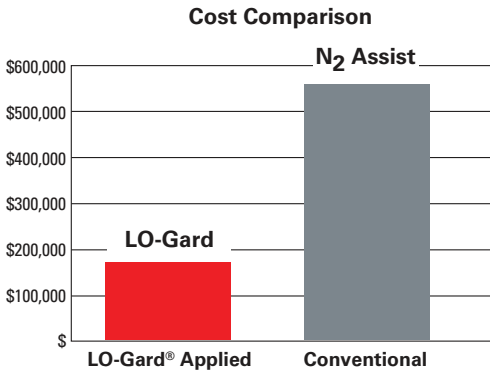
To help reduce this expense, Halliburton recommended LO-Gard service to reduce or eliminate the loss of fluids into the wellbore. LO-Gard service features a chemical that will react with water to become viscous enough to substantially reduce or eliminate the losses. Once the fluid losses have been reduced or eliminated, the plug can be drilled out

with water, or with a greatly reduced volume of N_2. When the composite plugs are drilled out and plug cuttings are removed from the wellbore, the well can be put on production with little, if any, restriction to oil flow.

RESULT

By using LO-Gard service, the operator was able to efficiently drill out the plugs with less time on location (six days less than when using N_2), thus saving approximately $392,000 in operational costs. By decreasing the number of days in the well, and reducing or eliminating the N_2 requirement, LO-Gard service successfully reduced time and cost of the post frac cleanout process – a valuable benefit for all operators in these challenging economic times.





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