
Petroleum Society 2001-106

PROPPANT FLOWBACK CONTROL IN DEVIATED SHALLOW GAS WELLS

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This paper was published in the Journal of Canadian Petroleum Technology, Volume 42, Number 11 and was presented at the Petroleum Society's Canadian International Petroleum Conference held in Calgary, Alberta, Canada, June 12 - 14, 2001.

ABSTRACT

This case-history paper presents results from various proppant flowback prevention methods. The wells studied are part of a shallow gas development project near Brooks, Alberta, Canada. The wells were drilled from multi-well pads resulting in deviated wellbores that reach the gas targets. Each well penetrates two or three gas bearing geologic formations, 400 m to 800 m in depth. Each formation has multiple sand and shale layers that were typically completed by perforating six or seven 2.0 m pay intervals. Then each interval was hydraulically fractured with energized, viscosified water frac fluid that placed 12 tonne of proppant in the formation. The fracture treatments were pumped through coiled tubing and a straddle packer was used to isolate each pay interval. The occurrence of undesirable proppant flowback into the wellbore lengthened clean-out time and increased disposal cost. Three solutions to the flowback problem were tried: a) curable resin-coated proppant; b) proppant surface- modification agent; and, c) fibre elements. Each product was tailed into the end of the frac treatment and the amount of each product used had to stay within the economic limits of the project. This paper describes the proppant flowback control achieved by each technique. Other considerations that were required to successfully pump the flowback control products are also discussed.

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