

Analysis of CT Stress during Horizontal Annular-Delivery Sand Fracturing

Feng Fuping¹, Ai Chi¹, Yu Fahao¹, Wang Yishan², Zhou Junran², Guo Chao²

¹Northeast Petroleum University, Daqing 163318, China. Email: fengfuping2005@163.com

²Engineering Technology Research Institute of Bohai Drilling Engineering Co, Ltd, CNPC, Tianjin 300457, China
Corresponding Author

The CT-conveyed hydrajet perforating and annular-delivery sand fracturing in horizontal well can meet the requirements of large-scale stimulated reservoir volume and separate-layer multistage fracturing. So it is always as an effective technique to stimulate low and ultra-low permeability reservoirs. Unfortunately, in the process of annular-delivery sanding fracturing, the CT will endure a larger piston force, the accuracy of fractured intervals and the security of fracturing string can't be guaranteed. In this paper, with the method of mechanical analysis on horizontal CT and numerical simulation on packer's anchorage force, we obtain the effect of CT pump rate on its stress: When CT pump rate is smaller, the maximum axial and Von Mises stress happen at the CT bottom, where there exists a risk of strength failure; As CT pump rate increases, axial stress and Von Mises stress decreases gradually; The maximum safety factor can be obtained at the CT critical pump rate. Therefore, for annular-delivery sand fracturing, we'd better insure CT pump rate more than the critical value.

Keywords: coiled tubing; annular-delivery sanding; critical pump rate; string stress; horizontal well

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