

McLellan, P.J., Assessing the Risk of Wellbore Instability in Inclined and Horizontal Wells, Journal of Canadian Petroleum Technology, Vol. 35, No. 5, 21-32, May 1996.

Abstract

Wellbore instability can lead to expensive operational problems during the drilling, completion and production of horizontal and inclined wells. This paper reviews the direct and indirect symptoms of wellbore instability, its root causes, and various empirical and deterministic modelling approaches to predicting the risk of hole collapse or convergence. In general, linear elastic models that are only concerned with stability at the wellbore wall often give overly pessimistic predictions. An alternative approach, using the extent of the "yielded" zone around an unstable wellbore and the kinematics of rock detachment, is proposed for practical risk assessments. A case history for an open hole completed horizontal well in a limestone reservoir under high drawdown is described. General guidelines for conducting field-oriented stability assessments conclude the paper.

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