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# Modeling the effect of entrained sand particles on pressure transverse in a flowing gas well


Author(s):

Adesina Fadairo , (Department of Petroleum Engineering, Covenant University, Ota, Nigeria)
Olusegun Oyedele-Adeyi , (Department of Petroleum Engineering, Covenant University, Ota, Nigeria)
Adebowale Oladepo , (Department of Petroleum Engineering, Covenant University, Ota, Nigeria)
Ogunkunle Temitope , (Department of Petroleum Engineering, Covenant University, Ota, Nigeria)

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Abstract:

**Purpose**

The production of natural gas from the reservoir is always associated with entrained solid particle of different sizes mainly sand particles and crystalline salts. Entrained solid transport along the gas phase has been a great concern for gas production engineer, as the detrimental consequences are often associated to a desirable high operational parameters such rate and pressure transverse in producing well.

**Design/methodology/approach**

A variety of models for predicting pressure transverse in flowing gas wells have been reported in the literatures. Most of the models were based on steady state fluid flow equation that did not consider time factor which results in inaccurate at early production time. Some of the early investigators overlooked the effect of the entrained solid on the pressure transverse phenomena in a gas well. Hence, there is a need for developing a more realistic model for estimating pressure transverse at all times in flowing solid-gas vertical well.

**Findings**

This study presents equation for pressure drop in flowing vertical well without neglecting any term in the momentum equation by the inclusion of accumulation and kinetic term. The solution of the resulting differential equation gives functional relationship between solid-gas flow rates and pressure at any point in flowing well at any given production time.

**Originality/value**

The results show improvement over previous studies, as the assumptions previously neglected were all considered.

Keywords:
Modelling, Flowing gas well, Pressure transverse, Sand particles
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