عنوان مقاله:

Effects of Injection Constraints on Oil Production from Heterogeneous Reservoirs

محل انتشار:

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خلاصه مقاله:

Applied constraints on injection and/or production wells have an important effect on the recovery of an oil reservoir at its secondary or tertiary recovery stages. More often optimal well constraints can not easily be determined for a considered oil field, only by petroleum engineering's intuition. In this paper we demonstrate that cumulative oil production has an absolutely nonlinear relation with injection constraints, including both the rate of injected fluid and applied bottom-hole pressure at the injection well. To show this matter, we investigate the achieved cumulative oil production with several different injection constraints on a given field. The first applied model is a 2D reservoir where the effect of gas injection rate is considered on oil production. Furthermore, a real 3D highly heterogeneous reservoir is also investigated. For this model, the effect of bottom-hole pressure is examined on the oil recovery. In simulating models, gravity effect is included while capillary pressure is neglected. Finally, a curve fitted equation is obtained for simulation data which demonstrates a logarithmic relation between oil production and applied injection constraint. The obtained result can play an important commercial role to safely predetermine the optimal injection constraints, in a manner, to get the most possible cumulative oil production.

کلمات کلیدی:

Reservoir Simulation, Immiscible Gas Injection, Water Flooding, Well Constraints, Heterogeneous Reservoirs

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