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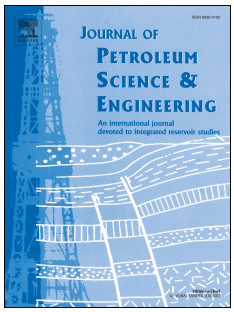

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Abstract

Dynamic optimization of gas lift process (GLP) aims to compute control optimal trajectories of gas injection flow rate so that the oil production can be maximized. It has been observed that dynamic optimization of GLP is little discussed in the recent literature since most of the papers have focused on steady state optimization and multivariable predictive control applications. In this work, a multiple-objective dynamic optimization of a GLP is applied with the goal of maximizing the oil production while minimizing the gas lift amount of a particular process. To this end, a mesh refining sequential method, which transforms the dynamic optimization problem into a finite-dimensional nonlinear program (NLP), was implemented. The main advantages of this approach are accelerating the numerical algorithm convergence and improving the quality of the optimal control profiles. The Pareto curve was obtained from the multiobjective optimization, allowing predicting the set of optimal solutions for the given problem. Numerical examples evidenced that the oil production can be considerably increased with minimal gas consumption.