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Optimization of Drilling Rig Hydraulics in Drilling Operations Using Soft Computing Techniques

Authors

Authors and affiliations

G. SangeethaB. Arun kumarA. SrinivasA. Siva KrishnaR. GobinathEmail authorP. O. Awoyera

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Abstract

The primary goal for all oil and gas producing companies is to produce oil as much as possible by optimization with lower cost. One way to increase the productivity index is essentially related to a proper drilling technique. In this study, optimization of drilling rig hydraulics in drilling operations was performed using soft computing techniques. Data such as flow rate, the angle of inclination, yield point, plastic viscosity and depth of the well were used as input. Thus, using the neural network (ANN) approach, five process parameters are the inputs to the model and output from this model is cutting concentration. The best model for the drilling rig contains five input parameters, seven hidden layers and one output parameter. The optimization aids the inherent characteristics of the system as well as the factors like exorbitant surface torque, unexplained drop in the rate of infiltration and a sudden change in surface weight

Keywords

Drilling Drilling fluid carrying capacity Hydraulics Optimization Rate of infiltration Rate of penetrations

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