Abstract

The main goal of this paper was to predict the total organic carbon (TOC) from well logs data using the multilayer perceptron (MLP) neural network machine. This can replace the Schmoker's method in case of discontinuous measurement of the bulk density log. The MLP machine is composed of three layers, an input layer with four neurons corresponding to the Gamma ray, the neutrons porosity, and the slowness of the P and S waves well logs. The output layer is formed with one neuron, which corresponds to the predicted TOC log, and a hidden layer with ten neurons. The MLP machine is trained using the Levenberg–Marquardt algorithm. Data of two horizontal wells drilled in the lower Barnett formation located in USA are used. Comparison between the predicted and calculated TOC log using the Schmoker's method clearly shows the use of the neural network method to predict the TOC in shale gas reservoirs