Using ANN for Well Type Identifying and Increasing Production from Sadi Formation of Halfaya Oil Field South of Iraq – Case Study.

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Abstract

The current study focuses on utilizing artificial intelligence (AI) techniques to identify the optimal locations for achieving the production company's primary objective, which is to increase oil production from the sadi carbonate reservoir of the Halfaya oil field in southeast Iraq, with the determination of the optimal scenario of various designs for production wells, which include vertical, horizontal, multi-horizontal, and fishbone lateral wells, for all reservoir production layers. The ANN tool was used to identify the optimal locations for obtaining the highest production from the reservoir layers and the optimal well type. For layer SB1 the average daily production is 291.544 STB/D with horizontal well, 441.82 STB/D for multilateral, and 1298.461STB/D for the fishbone well type. Also, for SB2 layer 197.966 STB/D, 336.9834 STB/D, and 924.554 STB/D, and for SB3 333.641 STB/D, 546.6364 STB/D and 1187.159 STB/D for the same well types sequence. While the cumulative production for each formation layer is 22.440 MMSTB from the horizontal well, 59.05 MMSTB from multilateral and 84.895 MMSTB from fishbone well types for SB1 layer, Also 48.06 MMSTB, 70.1094 MMSTB, and 160.254 MMSTB for SB2, and 75.2764 MMSTB, 111.7325 MMSTB and 213.1291 MMSTB for SB3 for the same well types.

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