Analysis of Pressure and Pressure Derivative Using TDS Technique for Vertical Wells

Abdulmonaem Abdulaziz

Ministry of Oil & Gas/Economic Research Department

[abdulmonaem.abdulaziz@ogm.gov.ly](mailto:abdulmonaem.abdulaziz@ogm.gov.ly)

Bashir Al Saadawi Street, Janet Al Areef Square

Tripoli, Libya, PO. Box: 5335

ABSTRACT

The Taib's Direct Synthesis Technique TDS offers a direct approach to interpreting transient well pressure tests without the need for type curve matching. This method utilizes log-log plots of pressure and pressure derivative against time to estimate crucial reservoir parameters such as permeability, wellbore storage, skin factor, drainage area, and distance to boundaries. TDS Technique's accuracy stems from its use of exact analytical solutions to calculate these reservoir parameters.

This study expands the application of TDS Technique to determine reservoir parameters for Buildup Tests in vertical wells in homogeneous reservoir. The TDS Technique has been successfully tested using both synthetic and field examples. In case of long tests reaching the infinite acting line, the results from TDS and KAPPA SAPHIR were notably similar. However, for short tests in which infinite acting line is not observed on the same wells previously studied, TDS Technique yielded more accurate results than KAPPA SAPHIR.

Two primary conclusions emerge from this study. Firstly, utilizing TDS Technique to estimate permeability and other parameters in short buildup tests produces more accurate results compared to those from KAPPA SAPHIR. Secondly, if an infinite acting line is observed during the test repetition, the test time can be shortened.

**KEYWORDS:** TDS Technique, Buildup Tests, Pressure Derivative, KAPPA SAPHIR