

Water Management - Maximize Your Well Potential

Jiasheng Zhou, Jichao Chen.

Schlumberger, Sudan E-mail:

Cell: +249-9

Abstract

High water cut in some of the production wells are one the major issues in Sudan field development. Identifying the zones that the water come from and take the proper remediation actions can effectively solve the high water cut issue. Production logging technology is routinely used for this purpose as part of the water management project.

In this paper, one case study is discussed on how the production logging measurement and timely interpretation helps reduce the water cut successfully, from 80% to 8.5% .In this case study, the water cut in the well (FK-25) was 80% after three attempts to reduce the water cut without production logging. The water cut still quite high although it dropped from 93%. The production-logging program is planned to work out the detailed flow profile before taking any more actions.

Due the low pressure in the formation and relatively heavy oil, the oil cannot flow by itself. An artificial lift method has to be used to produce the well. An ESP and a by-pass system, which allows the production logging while pumping, are installed.

The objective of this work is Determine the flow profile. Perform remedial work over to reduce the water cut.In the implementation of this production logging operation, firstly the pump and by-pass system were install in the casing. Secondly, one dummy run was conducted to ensure the production logging tool can moving smoothly across the designed logging intervals.

Three passes of production logging were conducted then Shut-In pass, to identify any cross-flow between producing zones. Flow the well with lower rate (2700 B/D) and log the well with three different logging speeds. So three UP and three DOWN logs were recorded. Flow the well with higher rate (3000 B/D) and log the well with three differently logging speed to get another three UP and three DOWN passes. Station logs are also recorded at the depth where we believe no flow to the wellbore.

The production logs were interpreted within 4 hours after the data is acquired. Squeeze and re-perforation actions were taken immediately after the interpretation result being discussed. The outcome of the work is extremely encouraging after the well was put back to production. The water cut is reduced to 8.5% from 80%. Oil production increased to 1040 B/D from 400 B/D.Production logging is an effective method to determine the flow profile and provide clear guidance to a successful remedial work over. Running production logging before attempting remediation is highly recommended.