Effects of Reservoir Properties Upon the Reservoir Models: A Case Study from Blocks 1, 2 and 4, Muglad Basin, Sudan

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Reservoir characters are major consideration for formulating any test design. Permeability dictates test flow rate and duration of the test. Test flow rates and flow times must satisfy several criteria. (1)Test must be long enough to obtain data beyond near-well bore effects, such as wellbore storage distortion, formation damage, or stimulation.(2) .Test must also reach desired radius of investigation and evaluate a representative volume of the formation .In low-permeability reservoirs, flowing time required to satisfy both criteria can be prohibitive, especially when flaring gas. Duration of wellbore storage period depends on wellbore volume and fluid compressibility, reservoir porosity, permeability, net pay thickness, and fluid properties. Reductions in wellbore storage period can be achieved by running bottom hole valves in the tubing string, which allows to shut in the well just above the sand face rather than at the surface. Time to reach a desired radius of investigation in a reservoir increases with decreasing permeability. Drawdown varies directly with flow rate and inversely with permeability. For higher permeability wells, a given flow rate will cause a smaller pressure drawdown than in lower permeability wells .To increase the pressure drawdown, a higher rate must be used. Higher rates will require larger separators and meter runs at the surface. Higher flow rates will also waste more gas through venting and flaring unless well is connected to a pipeline. Higher rates can create larger pressure drawdown which may result in retrograde condensation in gas condensate reservoirs or formation sloughing in unconsolidated sandstones damaging the reservoir immediately adjacent to the well bore. Authors with the help of case history built out a reservoir model and standards for testing the wells effectively in most economical methods.