Production Optimization of an Oil Reservoir

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Abstract

The production of hydrocarbon fluids is via production system. The production system has different parts with different features. Assurance in optimized performance of this system is required precise knowledge of its different parts. The production system can be categorized to: 1- Inflow that related to fluid flow through porous media 2- vertical well flow (from sand face to the wellhead choke) 3- flow through surface facility.

By using available models any part of production system can be modeled. Inflow information of production system such as reservoir pressure and temperature, fluid type and porous media characteristics and vertical well flow information like well geometry and pressure control devices can be used to model the production system. After modeling of the production system, any problems can be specified and then proper methods are applied to remove them.

Selection proper tubing and wellhead choke sizes are essential to maximize reserve recovery in depletion drive oil reservoirs. In this study two wells of an oil reservoir were analyzed to determine optimum tubing and choke sizes for production optimization. Databases consist of flowing, static and buildup test data was analyzed with PANSYS and PIPSEIM software's. Nodal analysis technique was used to analyze tubing and choke sizes for these wells. Also effects of skin damage change on IPR curve and well deliverability were examined.