Performances Analysis of the Pressure and Production of an Oil Zone by Simulation of the Flow of a Fluid through the Porous Media

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Abstract : This work is the modeling and simulation of fluid flow (liquid) through porous media. This type of flow occurs in many situations of interest in applied sciences and engineering, fluid (oil) consists of several individual substances in pure, single-phase flow is incompressible and isothermal. The porous medium is isotropic, homogeneous optionally, with the rectangular format and the flow is two-dimensional. Modeling of hydrodynamic phenomena incorporates Darcy's law and the equation of mass conservation. Correlations are used to model the density and viscosity of the fluid. A finite volume code is used in the discretization of differential equations. The nonlinearity is treated by Newton's method with relaxation coefficient. The results of the simulation of the pressure and the mobility of liquid flowing through porous media are presented, analyzed, and illustrated.