**SPE 104580:** [**Verification and Proper Use of Water/Oil Transfer Function for Dual-Porosity and Dual-Permeability Reservoirs**](http://www.spe.org/elibrary/servlet/spepreview?id=SPE-104580-MS)**.**

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**Abstract**: Accurate calculation of multi-phase fluid transfer between the fracture and matrix in naturally fractured reservoirs is a very crucial issue. In this paper, we will present the viability of the use of a simple transfer function to accurately account for fluid exchange resulting from capillary and gravity forces between fracture and matrix in dual-porosity and dual-permeability numerical models. With this approach, fracture and matrix flow calculations can be decoupled and solved sequentially, improving the speed and ease of computation. In fact, the transfer function equations can be easily used to calculate the expected oil recovery from a matrix block of any dimension without the use of a simulator or oil recovery correlations.

The study was accomplished by conducting fine-grid simulation of a typical matrix block and comparing the results with those obtained with the use of a simple transfer function for a water-oil system. This study was similar to a previous study (Alkandari, 2002) we had conducted for a gas-oil system.

The transfer functions of this paper are specifically for the sugar-cube idealization of a matrix block, which can be extended to simulation of a match-stick idealization in reservoir modeling. The basic data required are: matrix capillary pressure curves, densities of the flowing fluids, and matrix block dimensions.