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Outer boundary effects in a petroleum reservoir RHODRI NELSON, DARREN CROWDY, EVERETT KROPF, Imperial College London, LIHUA ZUO, RUUD WEIJERMARS, Texas AM University — A new toolkit for potential theory based on the Schottky-Klein prime function is first introduced. This potential theory toolkit is then applied to study the fluid flow structures in bounded 2D petroleum reservoirs. In the model, reservoirs are assumed to be heterogeneous and isotropic porous medium and can thus be modelled using Darcys equation. First, computations of flow contours are carried out on some test domains and benchmarked against results from the ECLIPSE reservoir simulator. Following this, a case study of the Quitman oil field in Texas is presented.

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