# Well Test Dual-Porosity Response in Naturally Fractured Reservoirs (NFR)

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NFR account for a significant amount of the world reserves. They are highly heterogeneous and very difficult to properly characterise. In well-test analysis, the key concept for interpreting fractures from well test data from NFR is the dual-porosity model theory developed by Warren and Root (1963).

However, this model does not account for the key reservoir features that cause dual-porosity Vshape and why this signature absent in some NFR and present in others.

Methodology

### Well in Matrix vs Fractures



## **Effect of Fracture Skin & Tight Matrix Permeability**



### **Effect of Network Connectivity and "Hit" Fracture Size**



**Effect of Multiple Conductivity Fractures** 





We apply a geoengineering workflow with Discrete Fracture Modelling (DFM) techniques and unstructured-grid reservoir simulator to generate synthetic pressure transients for interpretation using standard well testing tools. The key advantage of our workflow is that it enables us to correlate the transient pressure responses to the known geological features of the reservoir model.





