

Low permeability reservoirs programme project summaries

Magnetics as a rapid new tool for characterising high resolution permeability variations in low permeability reservoirs.

This project, led by Heriot-Watt University, focuses on development of novel magnetic techniques to provide a rapid, cheap, non-destructive means of characterising high resolution permeability variations in low permeability reservoirs. The techniques can be applied at a variety of scales on consolidated and unconsolidated core. The potential for a downhole tool for predicting reservoir permeability will be assessed.

Gas flow in heterogenous low permeability rock

This project is led by the BP Institute, Cambridge and aims to develop a hierarchy of models to describe the fluid dynamics of gas flow from low permeability porous rock to a well. The work will account for flow between relatively high and low permeability layers, and the effects of fractures in such formations. The importance of well geometry and pressure drawdown in controlling the production history from a formation will be examined.

Improving gas condensate well productivity in tight formations using ultrasonic waves

Researchers at Heriot-Watt University have identified a novel method to alleviate the negative impact of condensate banking. It relies on improving gas-condensate relative permeability using ultrasonic waves, which are generated by placing the source down hole. This study will evaluate key features of the method, essential to its success.

Understanding productivity in underbalanced-drilled wells.

Stress in rock can significantly affect permeability. This is of particular importance during under balanced drilling (UBD) in low permeability reservoirs. This project, which is led by Heriot-Watt University, aims to separate the formation damage and stress effects of UBD and hence improve the interpretation of well test data.