



IPTC 11794

INTEGRATED LOCAL RESERVOIR CONNECTIVITY ANALYSIS IN A CHANNELISED TURBIDITE RESERVOIR

Asghar Shams, Heriot-Watt University

This abstract was prepared for presentation at the 2007 International Petroleum Technology Conference held in Dubai, U.A.E., 4–6 December 2007.

A good understanding of reservoir performance for management and production requires information on the pressure and saturation variations together with the major connected paths in the system. However in complex geological settings such as channelised turbidite sands, the pathways for fluid movement and pressure evolution between the individual sand bodies are not obvious and cannot be easily inferred from geological data. The effect of gas/water injection and production is therefore hard to predict with certainty. To address this problem, a method which integrates both time-lapse seismic data and a well interference test is developed to help provide a local update to the reservoir simulation model. The benefit is derived from the overlap between the aerial resolution of the time-lapse seismic with the harder, more localised pressure data from the well test. The seismic contributes to an understanding of the 3D geometry of the connected bodies, and this information is fed into an inversion of the well test data to help reduce the non-uniqueness in the interpretation and improve stability. The technique is successfully applied to a deepwater turbidite reservoir with satisfactory results.