

01 June, 2008

RDRG 2008 - San Antonio, Texas

Reservoir Deformation Research Group Committee Meeting

San Antonio, Texas

April 22, 2008 • 7:00 – 10:00 PM

Report

Current Chair John Walsh (University College Dublin) opened the meeting, along with vice-chair Alex Bump (BP) and more than 70 attendees. John solicited nominations for vice-chair in 2009. Chris Zahm (University of Texas, Austin) was nominated, and with no further nominations from the floor, Chris was overwhelmingly elected. Structural geology / tectonics sessions for future meetings (2008 Cape Town, 2008 AAPG-SEG-SPE Hedberg, 2009 Denver) were reviewed, with contributions from various people including Peter Hennings.

John then introduced the main topic for the evening, Fault property modelling in clastic reservoirs: existing methods and future developments, and the panel group. The panel included Quentin Fisher (University of Leeds), Tom Manzocchi (University College Dublin), Rod Myers (ExxonMobil), Scott Wilkins (Shell). Each panel member provided a 10-15 minute presentation, which was punctuated and followed by discussions.

Their powerpoint files are provided below as PDFs:

- John Walsh and Alex Bump: [Agenda & Introduction](#) (500 Kb)
- Quentin Fisher: [Fault property modelling: recent advances and future directions](#) (4.9 Mb)
- Rod Myers: Fault property modelling
- Tom Manzocchi: [Niceties of the transmissibility expression for single and two-phase faulted CPG models](#). (2.2 Mb)
- Scott Wilkins: [One or two deficiencies of current fault seal analysis methods](#) (0.9 Mb)

Open discussions were conducted throughout the presentations. Among the major topics/issues raised and the general conclusions arrived at are:

- Existing techniques are a vast improvement on those available a decade ago, when fault property modelling involved *ad hoc* manipulation of transmissibility multipliers.
- Fault property modelling is now more routine but it has not yet been fully integrated into the workflow of company geoscientists. The challenge is to

take this type of modelling beyond the preserve of specialist structural geologists.

- Increased application of fault property methods in reservoir flow simulation will provide an improved knowledge of fault properties and the processes controlling fault rock generation.
- Flow modelling studies must be mindful of the shortcomings of reservoir simulators and of fault property predictive methods and modelling techniques.
- Geometric juxtaposition effects can have a major impact on reservoir flow and must be included accurately in reservoir simulation models: considerations of the impact of juxtaposition effects, and not just fault properties, are an essential component of reservoir modelling studies.
- The 2- and 3-phase flow properties of faults can have a significant effect on both the filling of reservoirs and the production from reservoirs. Improved constraints on multiphase fault properties and their routine inclusion in flow simulation studies are recommended.
- In areas where faults are still active, faults which trap hydrocarbon columns can also, and at the same time, act as conduits for up-fault leakage. Such fault-related flow systems can be complex and their modelling is not yet routinely captured in existing flow modelling methods.
- Future research should be directed towards improving our techniques for predicting and modelling fault properties: related research should extend from outcrop through to reservoir studies.

John