



Issue 14: December 2004.

Upcoming features in TrapTester & TransGen - Q1 2005

TrapTester 5.3

Since the release of **TrapTester 5.2** there have already been 15 incremental upgrades made available. Some of these have been reactive improvements to workflows suggested by users but most have been for major functional additions, for example the implementation of the BGL 3D seismic capture tool and volume manager, which enables a user to work completely independently of a 3rd party system's seismic data source.

With the upcoming release of **TrapTester 5.3**, we will be introducing several new features and tools that will further extend the capabilities of the system and enhance workflows. Many of these new features are at users' request.

For more information on the new features please do [contact us](#). We will be happy to discuss all the new features with you.

WellEditor/CurveMapper

CurveMapper has become a very popular tool since its release in March 2004 and for many people has become the default method for generating fault properties. In order to extend the utility of **CurveMapper**, the **WellEditor** has been given new functions for creating pseudo wells with "real" property curves.

The curves can either be completely synthetic, following some user-defined compositional and spatial parameters, or can be cut and pasted from real wells or generated by hand from scratch. This extra functionality is part of a comprehensive well curve editing toolkit.

StressTool

The **StressTool** has been comprehensively upgraded in order to give it a more obvious geomechanical context. It now incorporates an extremely flexible graphical interface with the

Custom Fault Attributes

Until this release all the fault attributes derived from SGR such as permeability, column height etc., have been hardwired to BGL calibrations or other published sources. In **TrapTester 5.3** there is a new facility to create custom attributes according to a user-specified relationship with one or other "native" **TrapTester** attributes.

EarthGrid

EarthGrid is a completely new infrastructure within **TrapTester** for import, display, analysis and export of corner-point grids, their properties and structure. This means that **TrapTester** is not restricted to using well-based property models but will now interact with the spatially modelled volume attributes from modelling packages.

OpenSpirit

Following our long standing commitment to providing the best possible links to 3rd party applications we will be releasing an **OpenSpirit** client with **TrapTester 5.3**. The purpose of this is to simplify the data transfer procedures for users who deal with more than one 3rd party application.

Midland Valley Exploration

In tandem with the recently announced collaboration between MVE and BGL **TrapTester 5.3** will incorporate a custom, fast link between **TrapTester** and **3DMove** data objects. In addition, output from the **FaultED** module will be tailored for MVE's discrete fracture network (DFN) modeling.

Fraca

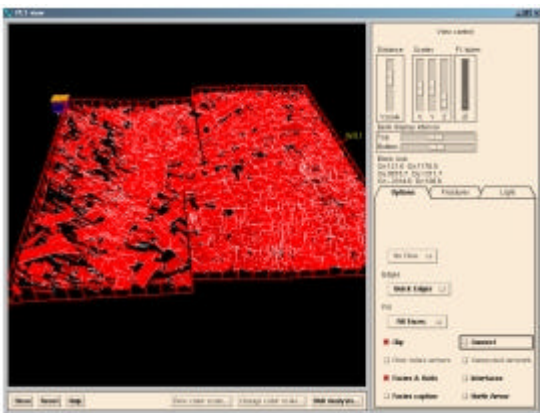
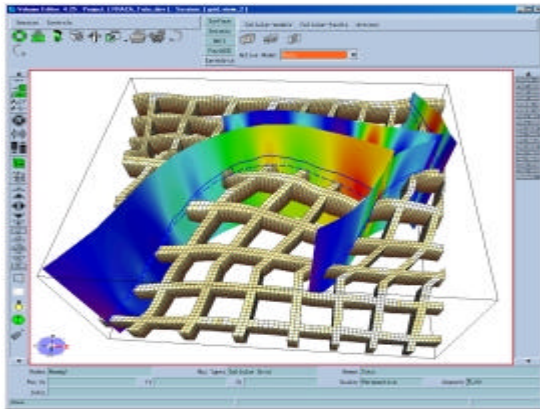
TrapTester 5.3 supports a new workflow and export procedure enabling the use of fracture mode, orientation and density derived from

addition of a Mohr circle display.

The Mohr diagram indicates the current stress field, then stress points inside the Mohr region are tied to their location on the stereographic plot of mechanical stability and *vice versa*.

New Structural Attributes

A new set of structural attributes have been added to the **FaultStruct** toolkit with the express purpose of quantifying the shapes of faults and their displacement distributions. The new attributes map gradients and curvature of fault surfaces and gradients of displacement.



FaultED to be incorporated into **Frac** models.

In **Frac** the **FaultED** information is used to condition DFNs that are then calibrated to structural permeability and upscaled for use in reservoir simulation.

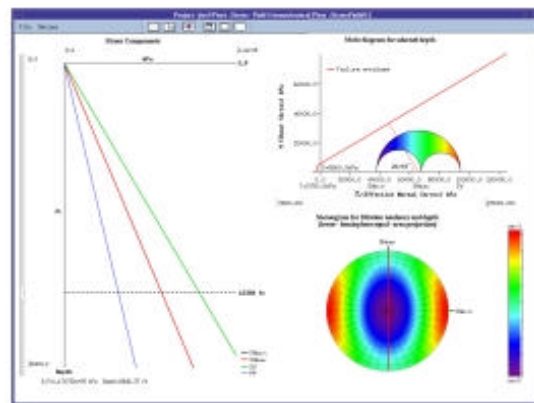
Licensing

The license subsystem will support the concept of "borrowing" licenses from an available pool. This feature can be enabled in license files and is intended primarily for our corporate clients with users running Linux laptops.

Fixed views in VolumeEditor

In addition to the normal multiple 3d display usage, **VolumeEditor** now supports fixed orientation displays akin to traditional map and section views.

EarthGrid (left), StressTool (below), and FaultED output used in FRACA from Beicip Franlab (below left).



TransGen 3.1 - beta release

In-house testing of TG3.1 is now under way. The headline news for **TransGen 3.1** is the completion of:

(I) A module incorporating much expanded functionality for fault property modelling (including deterministic and stochastic modelling of shale gouge ratio, clay smear potential and shale smear factor algorithms), and,

(II) A new module (**2PhaseGen**) for the routine calculation of two-phase fault-rock properties for use in flow simulation models.

The **2PhaseGen** module is motivated by the fact

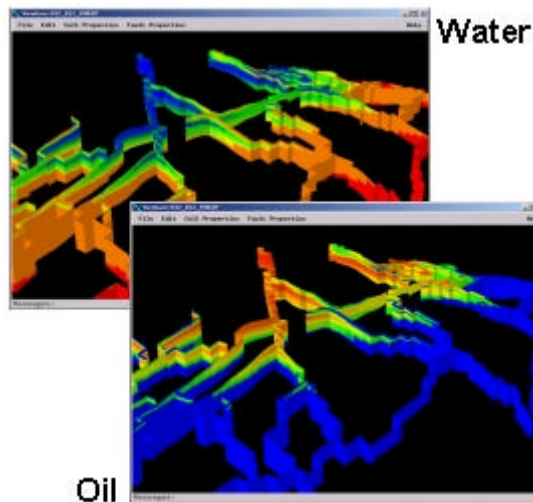
Rel perms are output via KRNUM keywords and a revised set of SWOF tables (grid-block relative permeability functions) for inclusion in the simulator.

2PhaseGen is initially only available to the TransGen sponsor companies (Shell, Statoil, Petrobras), but within the next few months it will become an optional module within the TransGen release.

Future modules to be released early 2005 will also include a module permitting the routine inclusion of sub-resolution structure (including the stochastic and deterministic modelling of normal drag and relays).

that existing flow simulation runs with conventional fault-transmissibility multipliers omits two-phase fault-rock properties (relative permeability and capillary pressure functions). These cannot be indexed to fault-rock saturation in a model where the faults are represented as planar discontinuities.

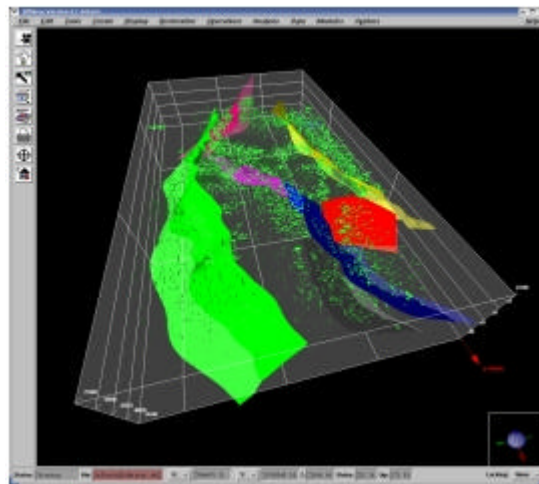
The new capability is the result of cutting-edge research at the Fault Analysis Group at University College Dublin. Based on the evolving water saturation adjacent to faults and the across-fault flow rates, a novel pseudoisation technique has been developed to calculate fault-rock relative permeabilities and capillary threshold pressures through the production timescale.



The screenshots to the right show fault zone relative permeabilities for water (top left) and oil

MVE collaboration

Our links with Midland Valley Exploration have been growing stronger over the last couple of months. In addition to developing better links between our software tools, we have also been looking at improving workflows. We are improving the exchange of data between Badley's **FaultED** module, for the prediction of small-scale faults and fractures, with MVE's Fracture Generator within **3DMove**. Effective exchange of data will facilitate the integration of geological and geomechanical based modelling concepts within MVE's **3DMove**.



For further information on our collaborations please do [contact us](#).

Results from FaultED imported and used in MVE's fracture generator.

iSIMM at the DTI Ocean Margins Meeting.

iSIMM was very high profile and well received at the recent DTI Ocean Margins meeting. Craig Parkin (Cambridge PhD) received the best poster award.

The project is currently looking for sponsors for Phase 2 and anyone interested should contact [Alan Roberts](#) at Badleys, on behalf of iSIMM partners at Liverpool and Cambridge Universities, Nick Kuszniir and Bob White.



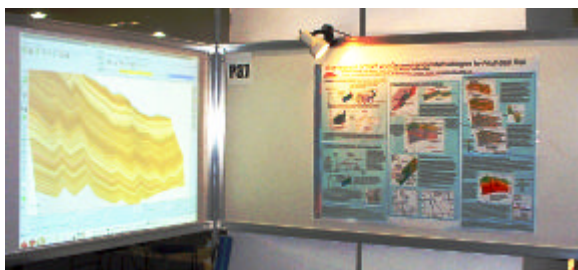
Bashir Koledoye (right) from Geoscience Solutions Limited, Nigeria, receiving the award from Donnie MacDonald (left), General Manager, Deepwater Exploration, Chevron Texaco Nigeria.

Out and about

Brett Freeman recently visited China, visiting clients and our agents GeoTech Solutions Limited.

Steve Dee, Graham Yielding and Brett Freeman gave two presentations at the Fractured Reservoirs Conference held at the Geological Society in London during November. This was a great forum enjoyed by all.

Graham Yielding visited Cancun for the AAPG international Conference and Exhibition in Cancun, sharing a stand with Midland Valley Exploration. Graham chaired a session and presented a poster (below) comparing geological and geomechanical fault seal methods.



Congratulations to Bashir Koledoye, Geoscience Solutions Limited, Nigeria

Congratulations to Bashir Koledoye who has joined Geoscience Solutions Limited (GSL) as technical director. Bashir's professional experience includes expertise in Fault Seal analysis and he will represent Badleys in Nigeria.

Bashir is pictured above receiving an award for a paper jointly published with Pete Bretan and Brett Freeman from Badleys during the first Africa Regional Deepwater Conference of the AAPG, organized in partnership with NAPE (Nigerian Association of Petroleum Explorationists).

(left) Graham Yielding's poster at Cancun. Having the TrapTester model projected alongside the poster was a great opportunity to explore the results with clients.

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