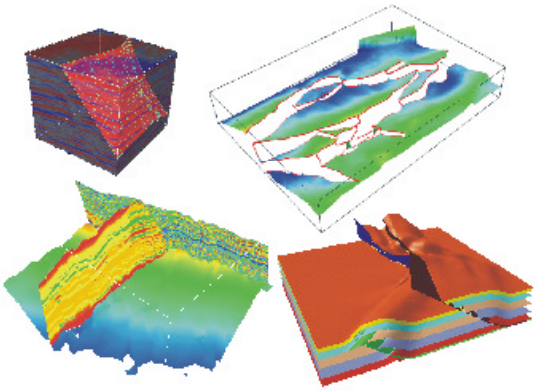
TrapTester . . .

Fault seal,
structural model building
& structural geology toolkit

TrapTester is an interpretation and structural modelling platform for ALL geologists. It presents fast, accurate and consistent structural model building, predicts pre-drill fault flow behaviour, estimates column heights and explains distribution of accumulations in development and appraisal.



TrapTester builds on many years of mapping and structural geological experience to provide the complete solution for geologists who are concerned about the correctness of their interpretation and 3D model.

TrapTester uses "state of the art" technologies to perform geometric tasks and to assist the geologist with QC operations and OIP predictions.

TrapTester is used to:

- Visualize 3D data volumes.
- Load, store and interpret 2D/3D/mixed seismic.
- Slice seismic on faults and horizons.
- Generate linked fault networks.
- Compute complex 3D framework models.
- Analyse fault structure e.g. displacement, form, etc.
- Analyse horizon structure e.g. curvature, roughness, etc.
- Report statistic of fault sets.
- Generate layer, seismic and volume property juxtaposition maps.
- Estimate fault zone compositions e.g. Shale Gouge Ratio, Shale Smear Factor, Clay Smear Potential, etc.
- Predict fault zone properties e.g. threshold capillary entry pressure, permeability, etc.
- Calibrate properties and compositions with pressure.
- Predict column heights and contacts.
- Assess fault reactivation risk.
- Model 3D sub-seismic fractures.

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North Beck House, North Beck Lane, Hundleby, Lincolnshire. PE23 5NB
Telephone: 44 (0) 1790 753472 Facsimile: 44 (0) 1790 753527
Email: info@badleys.co.uk Web: www.badleys.co.uk

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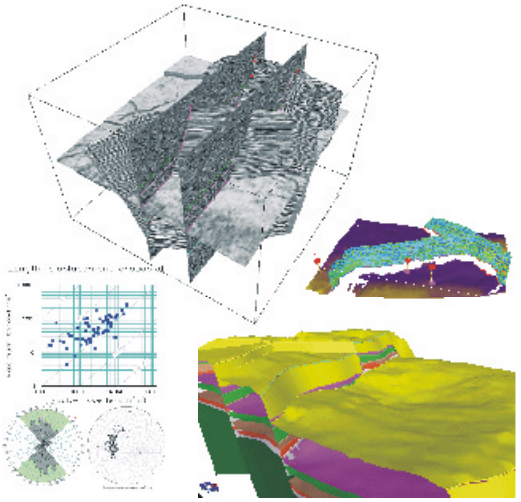

Seismic storage Proprietary format for 2D/3D data and/or local caching from third party systems.

Seismic interpretation and QC horizon and fault interpretation on inline, crossline, timeslice and fault slice. Point to point autotracking. Mixed 2D and 3D interpretation in the same 3D visual environment. Fault interpretation on horizon and fault surfaces, and from the collapse of imported polygons. Horizon and fault interpretation are integrated with well based picks.

Horizon and fault QC Analysis of roughness and curvature with facilities for for area based remedial work. Dip and azimuth displays are available to assist with the delineation of fault traces on horizon surfaces. Faults can be analysed in terms of structure with dip and strike displays and for structural consistency using displacement mapping. Ambiguous or mistied fault interpretation can be hand edited or corrected with gridding procedures.

Fault plane mapping Fault planes are represented as triangulations. These can be simple, constrained or from a grid and may be mixed in a single project. The network and topology of sets of faults is handled through semi automated join and split functions, fault-fault intersections (branches), automated clipping and editable tip line extrapolation.

3D Property model TrapTester provides for a large suite of volume attributes not limited to: porosity, vshale, permeability, formation entry pressure, net-to-gross, and rock mechanical properties. All properties are displayable on horizon and fault surfaces and are available for use in the analytical procedures.

Fluid pressure regimes Fluid pressures from various sources are input and stored as part of a pressure regime that may apply to one or more fault. These are used for calibration of fault seal and for evaluation of fracture stability.

Stress regimes Regional stress scenarios are input and stored via the stress tool. These are used to test the fracture stability of faults, an additional consideration when assessing sealing. The stress regimes are modified by the pore fluid.

Fault seal analysis Using a combination of geometry and/or well attributes, TrapTester provides a large suite of fault surface metrics such as stratigraphic juxtaposition, gouge ratio, fault zone permeability, actual hydrocarbon fluid types, pressures and pressure differences, slip tendency and fracture stability, all used to assess seal potential.

3D Framework building Intersection of horizons and faults to produce polygons and a gapless 3D framework. Structure is continuous around fault-fault intersections. User control over interpolation procedures and modelling parameters. NO requirement for a tabulation of fault relationships, this is entirely bypassed by the geologically intelligent modelling.

Well model A comprehensive well model stores and displays picks and wireline attributes. Discrete attributes such as gamma ray or processed attributes such as vshale can be converted to a zonal representation. There is support for pseudo wells into which may be placed picks, zonal attributes and stratigraphic rules for infill stratigraphy.

3D Stratigraphic modelling Based on the 3D framework and stratigraphic rules in the well model. Infill stratigraphy is defined at a well by a rule of constant or variable thickness referred to the upper or lower bounding control horizons and by a truncation flag. Between wells the stratigraphic rules are blended using Natural Neighbour interpolation.

Hydrocarbon column height and trap testing Estimated hydrocarbon densities are used, with fault zone permeability, to predict the column height (or seal capacity) on fault surfaces. The deepest 'downto' is compared with the structural spill point to estimate trap potential.

Fault reactivation analysis The 3D geometry of the fault system and a regional stress regime is used to analyse the direction and magnitude of the resolved shear stress on all surfaces. Displays are available for slip tendency/dilation tendency and slip stability/fracture stability.

Links with third party software Binary interfaces for transfer of 2D and 3D seismic data and interpretation with SeisWorks and GeoFrame. Direct ASCII links with GoCad and RMS. User definable ASCII I/O for other systems.

Visualization TrapTester operates in a 3D OpenGL environment with the usual animation, colour mapping, lighting and transparency features. It supports multiple viewers with comprehensive session save/load functions and extremely flexible/adaptable display control.

Platforms and Licensing TrapTester operates on Solaris 2.6, Solaris 2.8, IRIX and Linux. The software uses FlexLM network licensing.

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