



Product feature overview

TASK GEOMODELLING LIMITED

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Attitude Viewer

Visualisation of interpreted dip data

Overview

Attitude Viewer is used for delivery of interactive multiwell image log interpretations by Task Geoscience. Well survey data, manual and/or automatic dip picks, borehole images and stratigraphy are used to generate 2d and 3d views of the subsurface geology. Views that illustrate key points of the interpretation are available. Data can be toggled on and off, camera positions and projections adjusted and the resultant views saved for later use.

Features

a 3d visualisation

- a** View wells, borehole images, dip picks and stratigraphy in a 3d perspective display, with well tubes honouring caliper data. The 3d model sits within a 'sky-box', allowing the direction, pitch and tilt of the view to be readily understood.
- a** View extended dip planes between wells to test fault or key surface locations.
- a** Manipulate camera position, using intuitive controls to fly around the 3d model. Centre on saved points of interest that illustrate key results.
- a** Set points of interest to allow close control of zoom and rotation.

a Cross-section and plan views

- a** Examine well paths, dip picks and stratigraphy along lines of section and in plan view.
- a** View projected extended dip planes in both 2d views.

a Interrogation

- a** Interrogate dip picks in 2d views to find dip category, quality, parent data-file and location in 3d space and relative to the wellbore.
- a** Derive detailed position information from extended dip planes, allowing the exact location of intersections in neighbouring wells to be found.

a Control of displayed data

- a** Toggle loaded data on and off via a tree display in Attitude Viewer, enabling control of visible dip types, dip files, stratigraphic layers, borehole images, extended dip planes and well paths.
- a** Adjust all important display attributes, including dip category colours and size, extended dip plane colour and size and sky-box colours.

a Saving of work sessions

- a** Prepare and save views for later use.
- a** Export or print views.

Getting Attitude Viewer

- a** Available now.
- a** Requires Microsoft Windows and an OpenGL capable graphics card.
- a** Distributed by Task Geoscience as part of all image log interpretation projects.
- a** Cost from £2000.

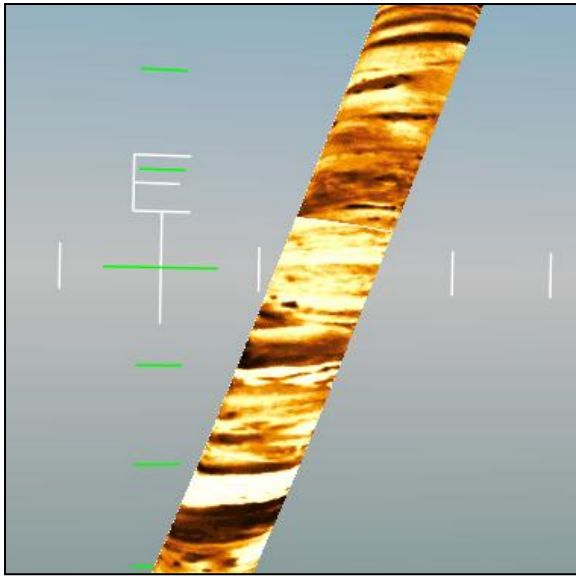
Contact John Ebborn or Adam Styles on +44 (0) 1224 357250 for more information.

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3d view of wellbore draped by StarTRAK LWD image log (Baker Hughes Inteq)

Colour variation records formation resistivity response from resistive (white) to conductive (black). The regular sub horizontal fabric is bedding, and the inclined, discordant resistive and conductive band across the centre of the image is a fracture.

The sky-box is visible in the background, with up shaded blue and down shaded green. Horizontal and vertical ticks have 5° increments.

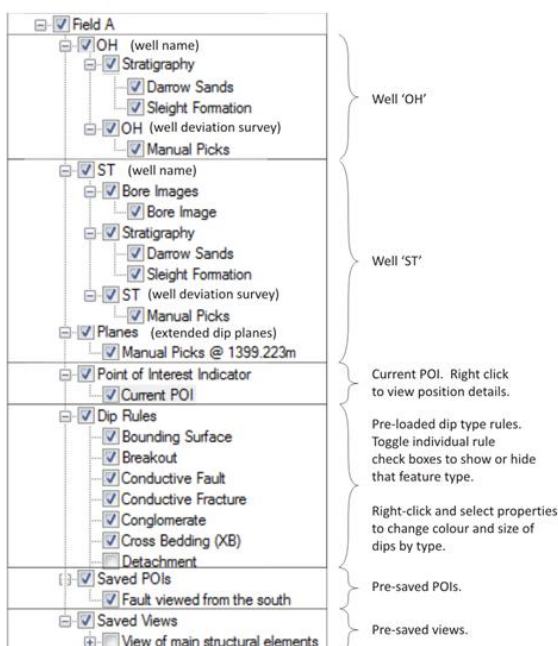
The user can zoom, rotate and pan around the model.

3d view of dip data posted along a two well sections

Each dip pick is drawn as a square, and is oriented to true subsurface dip and coloured by category. Where images are loaded along the well path, features may be scaled to show the dip squares emerging from the images.

Mudstones are shaded green, sandstones brown, sandstone cross-beds red and pink, and bed boundaries magenta. Resistive fractures, shaded yellow, are seen to cross-cut sandstone bedding planes.

Attitude viewer is designed to work with large multiwell data-sets.



Typical tree view

Choose visible data and set display attributes from the tree view. Key interpretation displays may be saved, preserving the state of all data in the tree, for later recall.

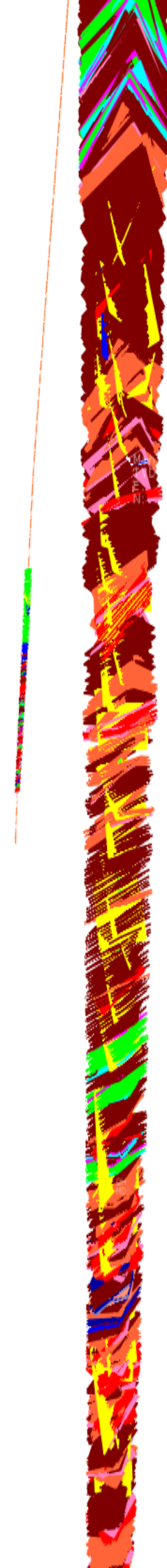
Task Geoscience provide a number of saved views and saved points of interest that are discussed in the main report, allowing better communication of analyses.

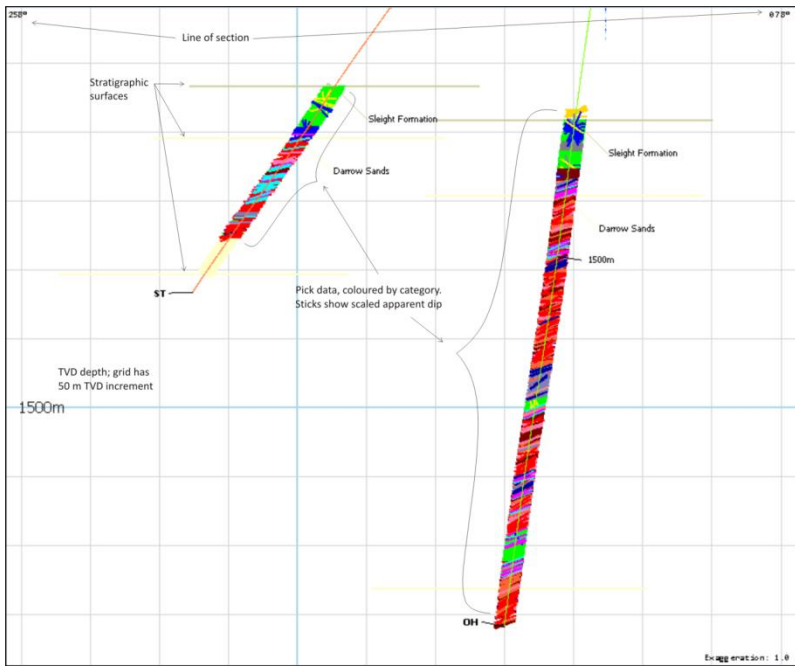
Extended dip planes may be chosen for display from the tree, and their properties interrogated.

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Cross-section view

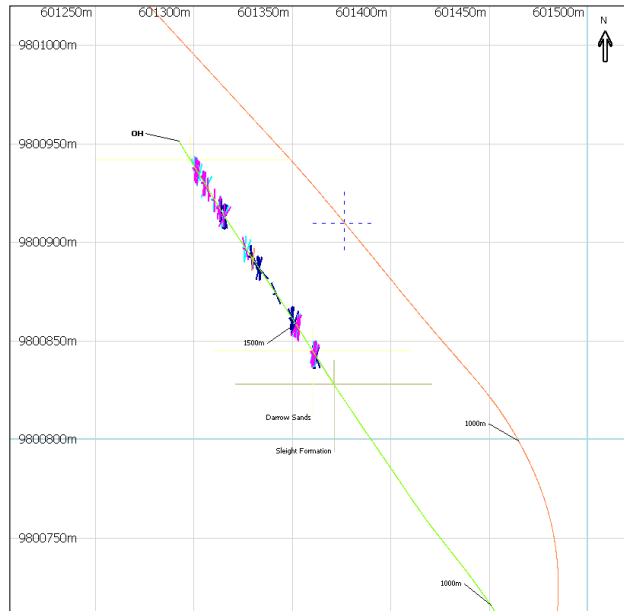
Multiwell cross-sections may be constructed along chosen lines of section. Dips are displayed as apparent dip sticks.

Stratigraphical information is plotted on well paths to allow correlation of intervals between well paths.

Plan view

Spider plot of well traces with dip data shown as strike bars and dip ticks, coloured by dip category.

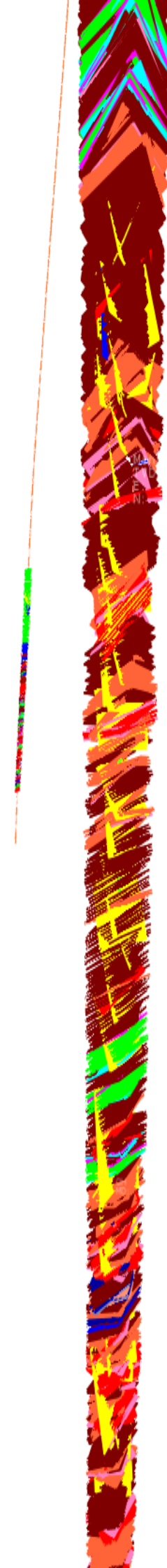
Measured depth labels are shown along the well paths and stratigraphical information is overlain.



MD (Metres):	TVD (Metres):	Dip Inclination (Degrees):	Azimuth (Degrees):	Dip Category:	Quality:	Dip Type:
1587.08	1471.25	20.4	229.2	Pebbly Sandstone	1	7
1588.36	1472.44	16.5	269.6	Pebbly Sandstone	1	7
1590.12	1474.08	22.8	284.1	Pebbly Sandstone	1	7
1590.58	1474.5	19.8	264.6	Pebbly Sandstone	1	7
1597.99	1481.35	39.3	250.9	Pebbly Sandstone	1	7
1598.2	1481.55	39.1	250	Pebbly Sandstone	1	7
1598.7	1482.01	39.8	243.8	Pebbly Sandstone	1	7
1608.37	1490.95	19.5	266.4	Pebbly Sandstone	1	7

Interrogation view

Detailed pick information is presented for picks in 2d views.



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Attitude

Powerful analysis and visualisation of dip data

Overview

Attitude is a fully featured software package for the interpretation and display of dip data gathered from borehole image logs. It was developed by borehole imaging experts to address shortcomings of traditional dipmeter analysis and to extend interpretations away from the borehole.

Attitude is the platform used in-house by Task Geoscience to evaluate structural and sedimentological information from dip data.

Features

Visualisation

- Use components of the Attitude Viewer including 3d and 2d plan and section displays.
- Save points of interest in the 3d view, cross-section and plan view.

Inputs

- Load LAS and ASCII data files of survey data, tool orientation and caliper data, pick data, dip category rules and interval files such as stratigraphy.
- Load bitmaps for draping borehole images along wells in 3d view.
- Coming soon! Surfaces in CPS3 ASCII grid format.

Stereographic analysis

- Schmidt, Wulff, Cyclographic and Tangent projections in upper or lower hemisphere.
- Full Fisher and Bingham statistics.
- Schmidt and Kamb contouring.
- Rose histograms coloured by category in azimuth and strike forms.
- Terzaghi and confidence weighting of statistics, contours and rose histograms.
- Selection of dip populations by point, rectangle or ellipse for statistical analysis.
- Dip rotation by point, data population or about an axis, allowing residual dip analysis.

Dip plots

- Tadpole and azimuth versus depth plots.
- Dip versus azimuth plots with eigensystem overlay for SCAT analysis.
- Selection of data using ellipse, point or rectangle select.
- Shows data before and after dip rotations.
- Stratigraphy overlays

Vector plots

- Dip azimuth vector walkout and cumulative dip magnitude plots.
- Stratigraphy and measured depth markers.
- Select data using ellipse, point or rectangle tools to allow assessment of populations against stereonets and dip plots.
- Shows data before and after dip rotations, so suitable for residual dip analysis.

Getting Attitude

- Available now.
- Requires Microsoft Windows and an OpenGL capable graphics card.
- Cost from £8000.
- Server licensing options available.
- Contact John Ebborn or Adam Styles on +44 (0) 1224 357250 for more information.

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Active development projects

New functionality under development in-house for inclusion in the Attitude product line.

Overview

Attitude is actively under development in Aberdeen and Houston, extending the capabilities of the existing software products and writing new applications.

Attitude Viewer

Attitude

Curvature analysis

Statistical curvature analysis techniques (SCAT; Bengtson 1981) allow axes of curvature to be derived where a progressive change in structural dip is identified. Using a dip isogon approach, this may be used to drive surfaces away from each wellbore and hence construct sections of cylindrical and conical folds. SCAT is a powerful technique for interpretation of structure in folded sequences, fault kinematics from bedding dips in drag zones,

Surface modelling

LWD interpretation tools

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