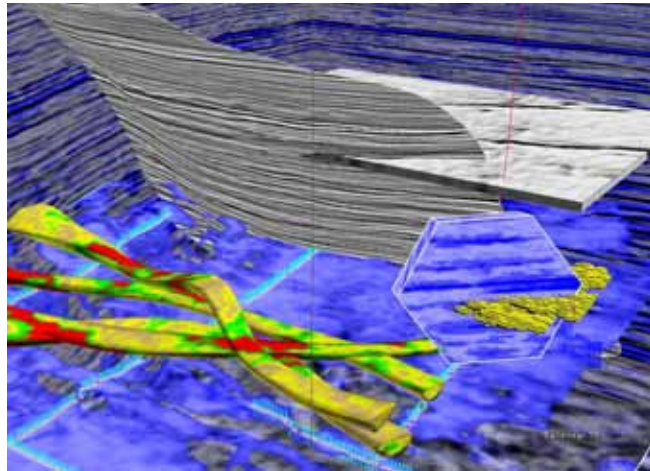


AAPG Annual Meeting and Exhibition Dallas – April 2004



Earth Decision Science's GoCad¹

The 2004 AAPG was moderately well attended (5000) but as ever, popular talks and the immense Dallas Convention Center meant that exhibit visitors seemed thin on the ground. A session on '**lessons learned** from failures' succeeded in providing entertaining accounts of past glories. But those who have truly failed are not ready to 'tell all'. The **big picture**, as determined by consultancies like Wood Mackenzie, Robertsons and IHS Energy is that we may really be seeing a move to **durably higher** oil prices. Industry has failed to replace consumption for some 20 years now and once profitable basins like the North Sea are now '**value destroyers**'. Hope and economic viability can still be found in the deep offshore.

Paradigm and CGG were noteworthy by their **absence** at the AAPG this year. But there were plenty of smaller software houses around to show their wares. Earth Decision Sciences appears to be turning GoCad into a fully featured interpretation and modeling environment and SMT is expanding its Windows-based Kingdom Suite to offer 'seismic to simulation' technology. The majors failed to generate much excitement. Landmark made heavy weather of selling its consultancy and outsourcing services while Schlumberger's cluster-based visualization lacked pizzazz.

We noted further developments from various universities in the field of laser mapping of **outcrop geology** – for integration within Virtual Reality environments. Applications for capturing awkward geo-data types like **cores and cuttings** from companies such as Core Laboratories, HRH Ltd., Cambrian and Pason show that these field-work derived applications have established themselves in their particular niches.

Looking forward we heard several companies describe emerging interpretation software that is developed, not with the ubiquitous OpenGL interface, but with Microsoft's **Direct-X**. Whatever the politics of this move, Direct-X may change the game in the near future as supercomputer graphics capability is available from PC-based graphics cards selling for a few hundred dollars.

There was some interesting research from the Kansas Geological Survey on the use of Semantic Web technologies to describe geological terms – notably formation names and chrono-stratigraphic units. Such '**ontologies**' are used to tie together maps from different areas.

¹ All images in this report are © and courtesy of the companies involved.

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[Chevron Texaco’s Tech Teams](#)

[Get Back to Exploration](#)

[Cyber Infrastructure](#)

[3D VSP Modeling](#)

[EDS GoCad](#)

[‘No glasses’ 3D Display](#)

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Presidential Address and Keynotes

Presidential address: Steve Sonneberg on 'declining professionalism in our industry'

AAPG President Sonneberg deplores a 'short term, get rich quick attitude' where 'the end justifies the means.' People look for short cuts and easy ways out. Some companies have relegated geosciences to second or third class status. On professional ethics - recent reserve write downs are 'perhaps related to ethical problems'. Why? Not following codes of conduct. Socrates taught that we should 'lead noble lives'. Or in other words, 'teach your children well'. Individuals should try to keep up with education and companies should support training initiatives. Today there is a lack of recognition - and a lack of mentoring and the industry is getting worse with a 'gradual erosion of professionalism.' On ethics - 'there is no pillow so soft as a clear conscience.' Ethics should be the central building block of the professional pyramid². We need codes of conduct and ethics. Folks should 'get involved, get active, mentor the young, promote image of professionalism and get back to long termism'.

Special Session on 'Lessons Learned from Failures'

Bypassed Pay - Bob Sneider, Sneider Exploration, Houston



Sneider

Sneider's thesis is that today, younger colleagues 'refuse to look at older data'. Hydrocarbons are missed despite improvement in technology. This was not the case in Sneider's youth. The Elmworth supergiant gas field had 61 wells drilled before discovery (objective was the limestone beneath). The reasons; 'poor integration of geology, geophysics and engineering. Folks failed to spot shows in the mud pit and failed to note the hydrodynamic seal. The Elmworth Field is some 65x30 mile in areal extent and 720 feet thick. Canadian Hunter and Sneider Meckel group made the discovery with 'gas in every sand from 2,500 to 10,000 feet (TD)'. This is trapped by updip water in an enormous stratigraphic trap. The field was developed with a 'mining philosophy' - after John Gray's 'resource triangle.' Gray noted that low grade ores have far greater reserves than high grade deposits. The companies also bet on rising gas prices (discovery was in 1974). All data was made available from early non-producing wells thanks to Canada's enlightened regulators - these 'set the standard for data preservation and availability' and were copied all over the world. Find was made following a systematic search for bypassed pay - with eyeball scan of logs - patten recognition and used production logs to see exactly where the oil is coming from - the best reservoirs may not have been cored. Production to date 5TCF gas plus 1bn bbl condensate - maybe another 5TCF to go.

Prospect 'C' was an almost-missed³ billion barrel West African condensate field. The first well was interpreted as showing an oil water contact near the top of the structure - and nobody wanted the gas anyway. Sneider looked at the rocks and into the mud pit noting a skin of oil which had been dismissed as of 'no economic significance'. Sneider advocated a second well - which found evidence for condensate in

² One slide showed the AAPG's 'professional pyramid'. At its base was the publications, explorer, scientific papers etc. But nearly at the top of the pyramid featured the AAPG's offerings in Life Insurance, and Car Rental!

³ Allowing Sneider to shoehorn it into the 'failure' category.

side wall cores. Re-evaluating the logs by tweaking Archie M&N values showed the 'water' in the first well was actually condensate. The well tested at 12,000 bbl per day - and the structure was proved at over 1 bn bbl recoverable. The 'near failure' was due to an incorrect petrophysical model and the effect of conductive clays and pyrites on log analysis.

Human Factors and System Failures in Industrial Disasters - James Chiles

Little things add up - a small piece of metal punctured Concorde's tire. But there were warnings - 30 tire blow-outs of which 6 had already punctured a fuel tank! A 'trend towards badness' in NASA terminology. Chiles described the period 1979-89 as ten bad years - starting with Three Mile Island, through the Alexander Kieland, Bohpal, Challenger, Tchernobyl, Piper Alpha and the Exxon Valdez. While some may look for guilty 'villains', Chiles looks for 'nice people who create terrible accidents'. During the boom times of the 1980's many oil rigs were staffed by inexperienced personnel. The Ocean Ranger broke up and sank in 1983 when a series of mistakes in the ballast control room exacerbated an initial problem. The investigators found a catalogue of failures including 'pro-forma' safety exercises without training and no survival suits. Another disaster struck when a Value Jet DC9 transported boxes of 'spent' oxygen cylinders - despite two previous instances of these catching fire. An accident in a nitro glycerin factory actually showed how good design and training saves lives. When the chemistry began to go wrong the operator 'knew where to run.' The plant was designed so that one unit could explode without sending the whole factory up. Chiles is the author of 'Inviting Disasters' - see www.invitingdisasters.com.

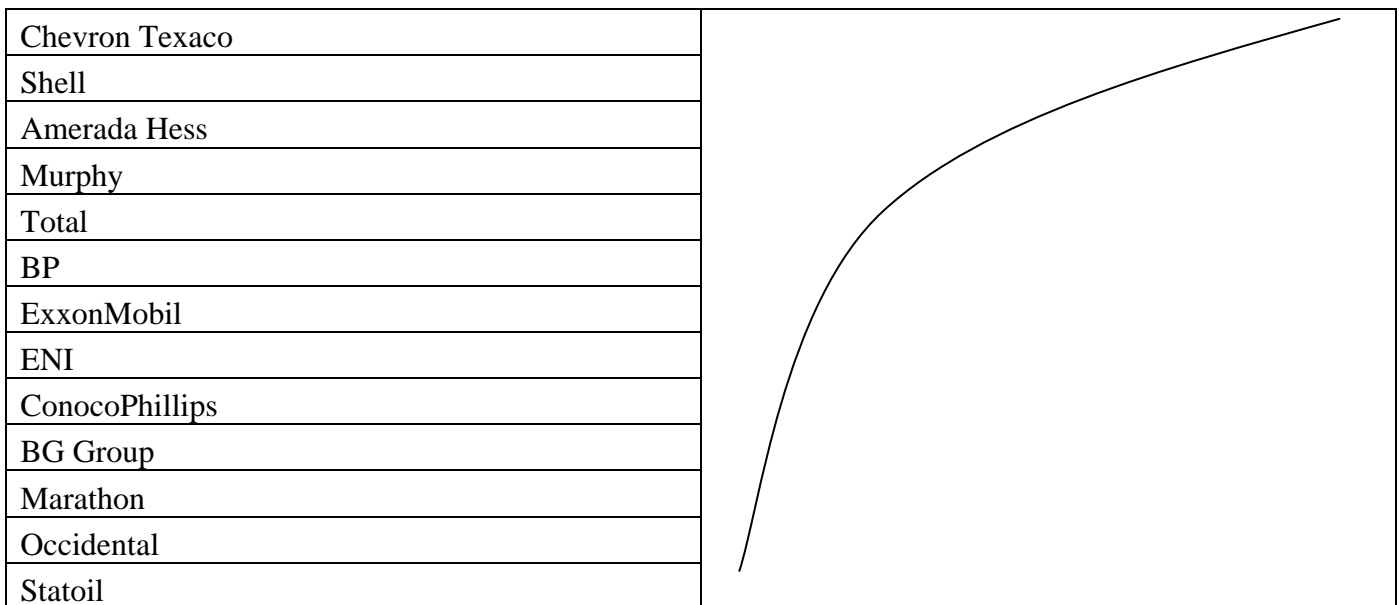
Wood Mackenzie - Reserves, the Big Picture

Of the 25 companies studied, Repsol and ConocoPhillips are in a 'black hole' as far as reserves go. Exxon is a 'red dwarf'. Overall 11% ROI for exploration by majors. The UK has seen \$2 bn. value destruction (on an 11bn investment) over the period (1997-2003). Worldwide, onshore and shelf environments destroy value. Deepwater and Kashagan create value. Acquisitions have created a 12% ROI - broken down as follows - a purchase price premium destroys value, 'self help' - as fields turn out to be larger than expected gives a premium and exploration upside helps more - this is the most significant contribution. A&M during low oil prices creates value. Today, with high oil prices Wood Mac has taken another look at exploration. Deepwater is the big trend - with 2/3 of all discoveries and 'plenty of life' left in deepwater as witnessed by the global creaming curve. Wood Mac is working with Fugro-Robertson to assess remaining reserves by basin. Quality of new reserves is an issue. The value of the discovered barrel is going down with a move to higher tax regimes, stranded gas, longer lead times and fewer giant fields. A Wood Mac survey found that most companies expect strong organic growth from exploration and significant increase in investment. Problem is that investment is constrained by dwindling opportunities. This is likely to bring increased competition.

Tech Teams and Portfolio Management in ChevronTexaco - Rob Ryan

Since the mid 90's wildcat success rates have been constant around 30%. Average discovery is 50mm bboe. Major's performance is 'OK' - but less so since 2000. NPV of discoveries is declining. According to the Wood Mackenzie study - many companies explore in 'value destructive' countries. The problem is not a lack of investment dollars, 'we have the money'. Access to opportunities presents 'some challenges' but there are significant opportunities. Efficiency is an issue. Industry should focus on selection and prediction process efficiencies, from technical assessment through risk evaluation review and planning. But technical assessment, risk assessment and volume validation is the key. Need consistency through exploration review teams - collaborating on geometry, seal, reservoir, engineering all as contributing to risk of hydrocarbon charge? In 2002 ERT and asset teams evaluations were compared. The asset teams proved 'wildly optimistic' compared with the ERT. There is no better way to destroy value than the high risk prospect. Exploration workflows should focus on the basics - amplitude risking standards, seal standards, reservoir quantification standards and hydrocarbon charge standards. 'It's Nintendo

exploration – plus!’ Think globally, act locally. It can be hard to tell the local OPCO that their prospect doesn’t cut the mustard at the world-wide review level. In 2002 ChevronTexaco was ‘best in class’ for exploration success. The Deutsche Bank ranking was (no scale)...



COTS technology in Apache - Mike Bahorich

Apache gives local units the decision making power – but ‘measures’ centrally and rewards success through the ‘#43 incentive system’ – when Apache stock goes through \$43 for over 10 days, staff get a 100% salary bonus⁴. Apache is a ‘smart shopper’ – buying common off the shelf (COTS) technology at the right price for horizontal wells, 3D seismic etc. Technology Watch is important for Apache – looking out for emerging and especially ‘disruptive’ technologies. Cost of storage and bandwidth are dropping rapidly – so Apache advocates storing pre-stack 3D seismic on disk.

‘Get back to exploration’ – Pete Stark, IHS Energy

From Stark’s analysis, onshore activity has been ‘low but stable’, offshore shelf drilling is down, but the deepwater shows significant rise in activity. There has been a ‘precipitous’ drop in gas discoveries in the last three years. A dramatic change in operator mix has also occurred with a move from the western majors to the NOC’s and former NOC’s. The world wide exploration slump is a cause for concern. The world has now failed to replace production for the last 20 years. Operators need to get back to exploring.

⁴ Not clear if this is for a year – or for the 10 days!

Poster Sessions

Automatic Fault Extraction (AFE) and AHAA attribute analysis from BP Center for Visualization

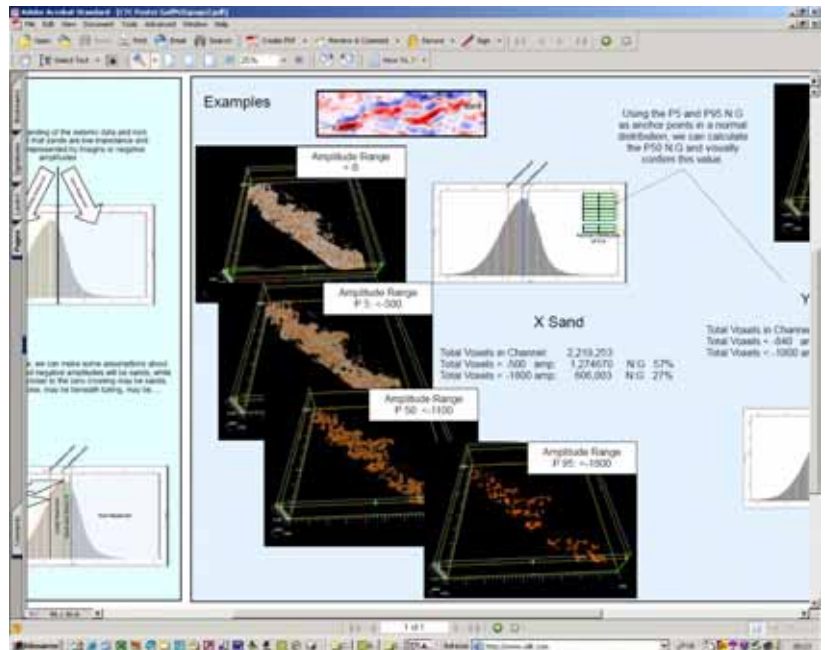


Geoff Dorn demonstrates fault extraction.

The BP Center for Visualization at the University of Colorado has developed patented technology (ex Arco) for Automated Fault Extraction (AFE) from 3D seismic data volumes. The software will likely be rolled-into Paradigm’s VoxelGeo. A companion methodology AHAA offers advanced horizon attribute analysis.

Contact Geoff Dorn gdorn@colorado.edu
Website www.colorado.edu

Net to gross estimation from visual histograms - ChevronTexaco



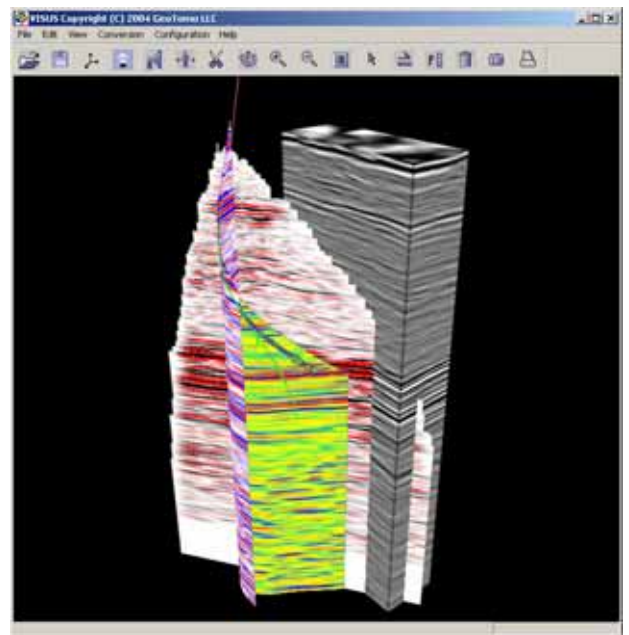
Seismic attribute histogram used to tune voxbody extraction.

ChevronTexaco’s Southern Africa Business Unit makes pre-drill estimates of net to gross deep-water turbidites by sculpting seismic volumes to channel morphology. Histograms of the voxbodies are examined to determine ‘inflection points’ in the data.

These are used to characterize Geoprobe ‘sweetness’ – where sands and shales have opposing polarities.

Contact Douglas Goff dougoff@chevrontexaco.com
Website www.chevrontexaco.com

3D VSP 'VISUS' from GeoTomo



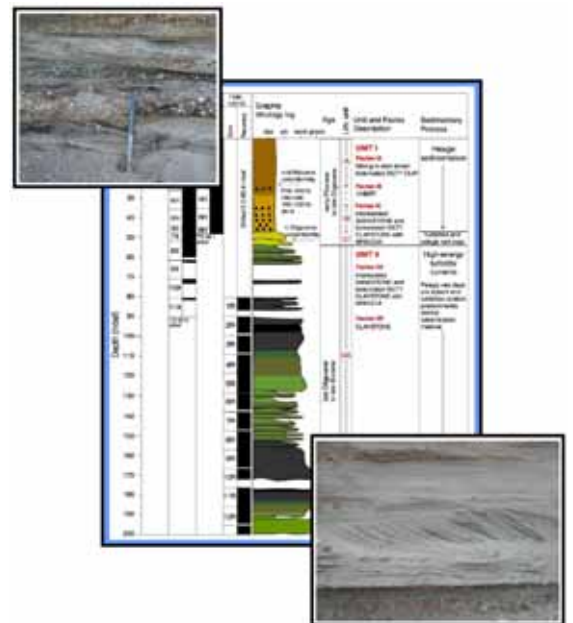
3D VSP visualization.

New 3D Vertical Seismic Profile (VSP) Visualization product 'VISUS' developed in association with VsFusion (CGG-Baker Hughes joint venture).

Contact Kendall Lemke kendall@geotomo.com

Website www.geotomo.com

Gravitas from HRH Geological Services



Sedimentological data in Winlog.

HRH Ltd. is bringing all its wellsite and log drafting software together under the Gravitas brand. Along with Aberdeen University, HRH is working on the use of Bezier curves to characterize bedding and other sedimentological features. The software is said to be a modern version of the old [AppleCORE](#) product from GeoMEM. Other developments including real time data control (uses WITS Level 0 as real time data feed to the Gravitas database) have been financed by Total. Future work will include scanning of core photos to obtain poro perm data.

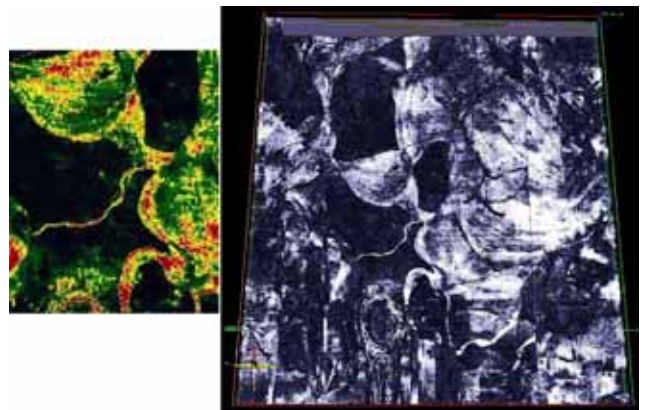
Contact Jeremy Preston Jeremy.preston@hrh.ltd.uk
Website www.hrh.ltd.uk

Cyberinfrastructure and the Chronos Network, Kansas Geological Survey

Several different projects linking geological resources across the USA. The GEON Grid seismic infrastructure is a federation of ArcIMS servers supporting the National Carbon Sequestration database. CHRONOS is a national stratigraphic database, or more accurately a portal providing access to distributed databases across the country. See www.geoinformatics.info. Parts of the Cyberinfrastructure leverage emerging standards for ontologies using semantic web standards like OWL. See for instance the seismology ontology at www.kbi.sdsc.edu/GEON/ontores/seismology_ontology.jpg and www.sdsc.edu/~ludaesch/Paper/GEON-VT-03-04-KR-SMS.ppt. This work will be presented in a paper 'On Integrating Scientific Resources through Semantic Registration,' S. Bowers, K. Lin, and B. Ludäscher, 16th International Conference on Scientific and Statistical Database Management (SSDBM'04), 21-23 June 2004, Santorini Island, Greece – see: <http://www.sdsc.edu/~ludaesch/Paper/ssdbm04-semreg.pdf> if anyone fancies a holiday.

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Recon Cube from Landmark

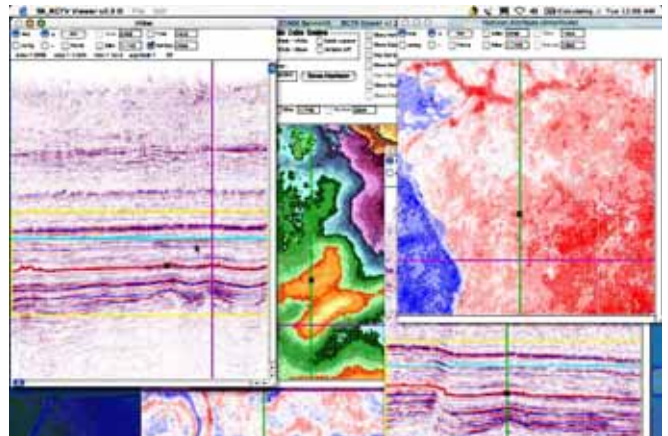


Landmark's Recon cube with 40 ms visualization window

Magic Earth's GeoProbe was used to display a 'Recon Cube' of geobodies obtained through spectral decomposition. Lithologies are derived from well data.

Contact Eileen Huang ehuang@lgc.com
Website www.lgc.com

Relative Geologic Time Volume from Stark Research

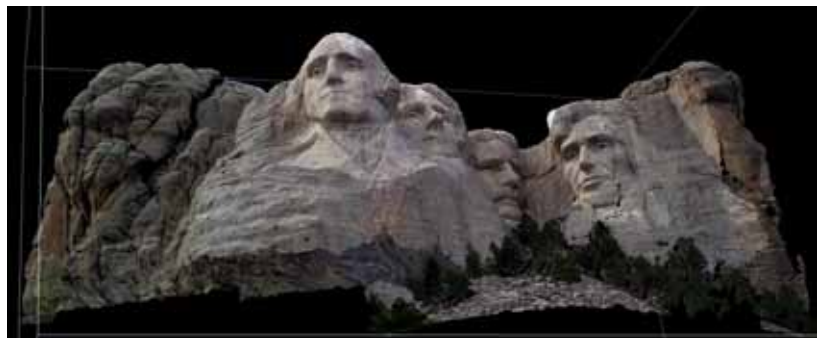


Stratal time slices obtained with Stark's RGT analysis.

VoxelGeo running on TeraRecon VolumePro card used to develop videos of 'Relative Geologic Time' volumes. Each voxel holds an estimate of Geologic Time. The top of each RGT Volume is analogous to a geologic map while the sides of the cube are analogous to geologic cross-sections.

Contact Tracy Stark tstark3@attglobal.net

3D digital photorealistic outcrop imagery and visualization from University of Texas at Dallas



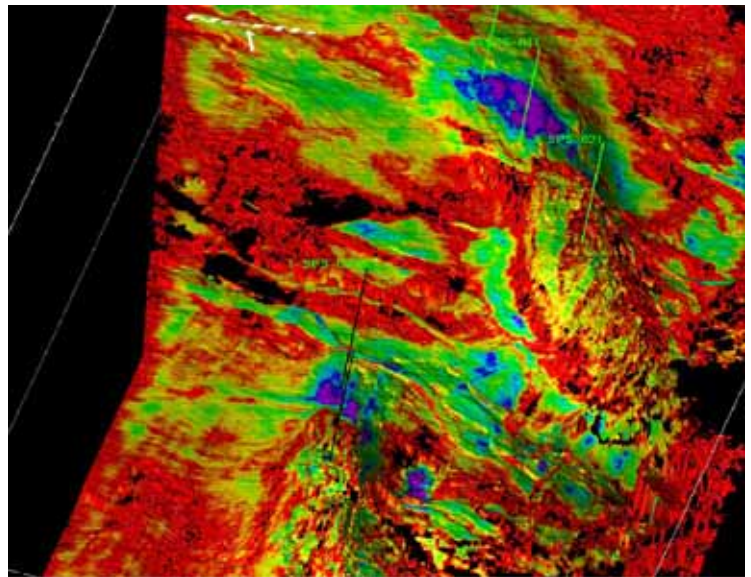
3D model of Mt. Rushmore with photorealistic draped imagery.

Carlos Aiken and Xueming Xu of The Center for Lithospheric Studies at the University of Texas at Dallas have developed a patented method for mapping natural features. Photorealistic models combine laser scanning data sets with digital photography and GPS for positioning. Outcrop models of key geological locations in England, Spain, Ireland, Mexico and the US have been used for reservoir characterization studies of analogs, geologic mapping, and training courses. See www.utdallas.edu/~aiken/pro2003.

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Fast track interpretation from Veritas Exploration Services



Draped attributes highlight turbidite deposition.

Veritas was showing the results of its ‘fast track’ interpretation workflow using El Paso data from Brazil’s Santos basin. Seismic acquisition, processing and prospect generation was achieved in under one year – thanks to a technique for rapid scanning of data, and cross plotting AVO attributes. VoxelGeo was the main interpretation tool. The resulting Luana gas discovery is estimated at 250 bcf. Not bad from an ExxonMobil relinquishment.

Contact Don Dean don_dean@veritasdgc.com

Website www.veritasdgc.com

Exhibitors

Commercial release of SBED from Austin Geomodeling

SBED ‘fills a gap in the reservoir model’ working between the micro scale of core measurements and the macro scale of seismics. SBED addresses ‘the biggest problem in reserve estimation’ that of sampling with multi-scale simulation including sedimentological process modeling, geological modeling and upscaling.

Contact H. Beverly Taylor btaylor@austingeo.com

Website www.austingeo.com

FaultED from Badleys

FaultED is new functionality within Badley’s TrapTester 5.2. FaultED predicts fracture densities from a TrapTester model using forward modeling of elastic dislocations.

Contact Stephen Dee steve@badleys.co.uk

Website www.badleys.co.uk

WellLink and LiveWire from Baker Atlas

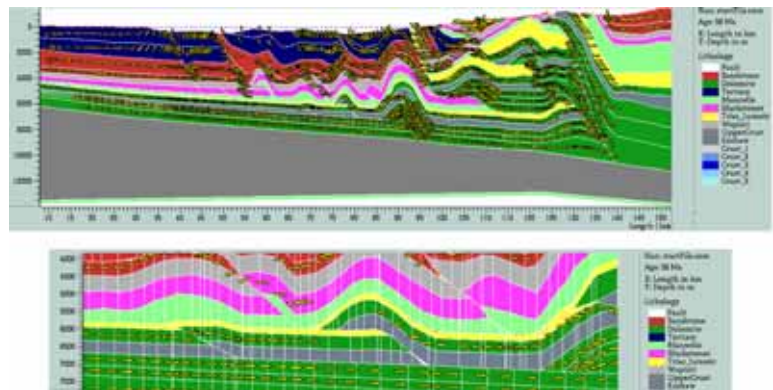
LiveWire – Baker’s Real Time wireline protocol (there is no RT wireline standard like WITS). Allows remote users to visualize logging results in near real time – and to chat with the logging engineer. Uses Tarantella which only transmits pixels that change – so it works over a low bandwidth (14k modem) link.

Security in Recall has moved from the project level to individual well bores. WellLink (Total Recall's new name) and LiveWire Real Time.

Contact Ray Lamborn ray.lamborn@bakerhughes.com

Website www.bakerhughes.com

Ceres from Beicip



Barbados structural evolution evaluated by Ceres

A new, 2D basin modeling tool from the French Petroleum Institute (IFP) models petroleum systems in overthrust terrains. We queried Beicip as to why this functionality was not integrated into its existing Themis package – the answer is that ‘this is a different research project’.

Contact Patrick Wojciak Patrick@beicip-inc.com

Website www.beicip-inc.com

Rapid core database and RIB HTML browser from Core Laboratories



RAPID stratigraphy display from CoreLab.

Core Laboratories has expanded its digital data management offering with the Rapid core database and RIB, an HTML-based data archiver. Rapid stores well information, core imagery, thin sections, SEM data, poro perm, cross plots and photomicrographs. ‘The focus is on rocks.’ Data can be exchanged through LAS, CSV files and Oracle. Another component/product is RIB – an HTML based core data archive with high resolution photos of slabs etc. What’s new? – The integration of the Rapid database with the RIB HTML reporting tool. These products will likely merge at a later date.

Contact Allen Britton allen.britton@corelab.com

Website www.corelab.com

Deepwater Field and Reservoir Database and Reports from Cossey & Associates

814 fields in the database – with a focus on deepwater. Two new clients – Noble Energy and Bass Resources.

Contact Steve Cossey cosseygeo@aol.com

Website www.cosseygeo.com

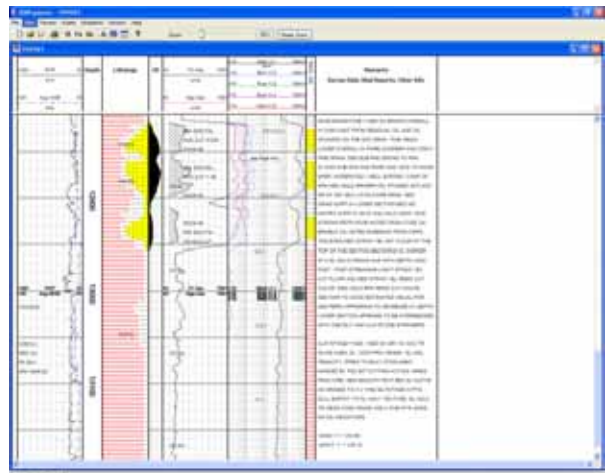
Envision VSX from Divestco.com

Envision 3D's 'big brother' Envision VSX is a Microsoft .NET development written with Direct X. The software reads WinPics projects and displays 3D seismic cubes, horizons and time slices. VSX also offers a novel 'light and composite density' display of seismic data.

Contact Ann Young ann.young@divestco.com

Website www.divestco.com

Real Time mudlogs in myWells.com from Epoch Well Services



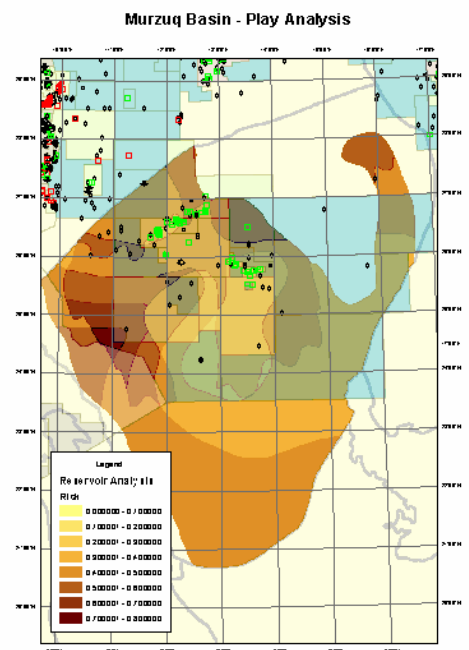
Real time logging from Epoch.

Epoch Well Services now offers real time data feeds to users of its myWells.com well data gathering and distribution system. Users can follow drilling activity from anywhere over a secure internet connection.

Contact Kevin Romey Kevin.romey@epochwellservices.com

Website www.epochwellservices.com

Tellus 2004 and new functionality in GeoScout from Fugro Robertson

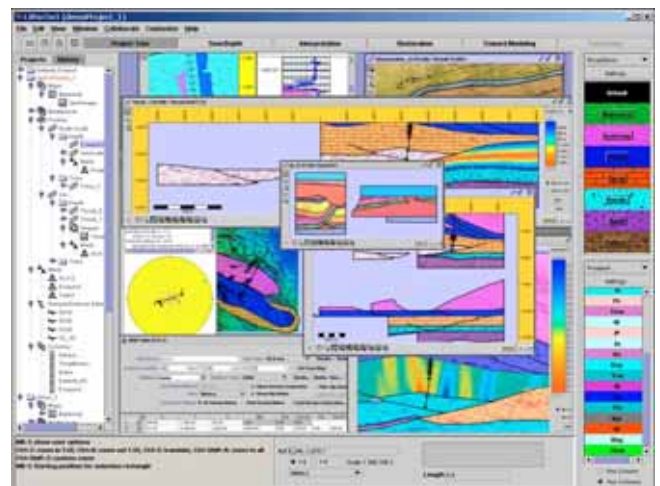


Geochemical evaluation with Fugro-Robertson's Tellus 2004

The 2004 release of Fugro-Robertson's Tellus database adds 8 million data points of geochemical source rock and seep data. More on-the-fly mapping from the database including petroleum system mapping and chromatography plots.

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Website www.fugro-robertson.com

LithoTect Interpreter from Geo-Logic Systems

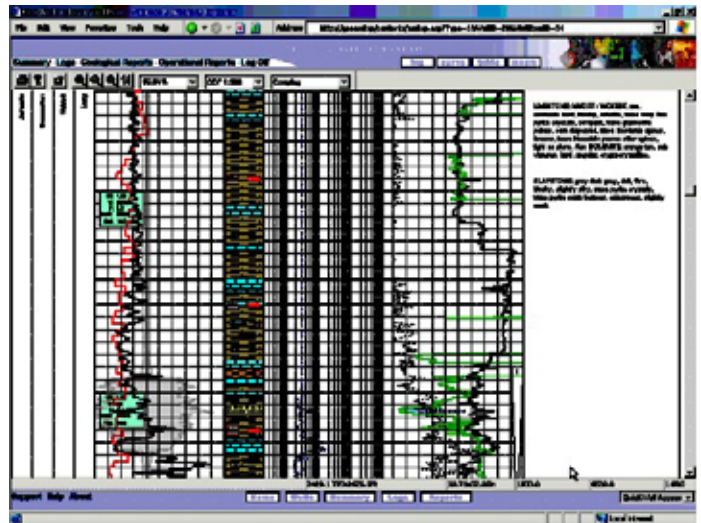


LithoTect from Geo-Logic Systems

LithoTect interpreter is a low cost version of Geo-Logic's geological map, well, seismic, cross section, and 3D interpretation tool. LithoTect Interpreter includes depth conversion and well picking, monitoring, and projection capabilities. Interpreter is a 'pure' Java application that runs on laptops and workstations of every type.

Contact James Geiser jim@geologicsystems.com
Website www.geologicsystems.com

Well Explorer from Geologix



Geologix Well Explorer

WellExplorer lets companies set up a departmental-level intranet for dissemination of well summaries, logs, and reports. WellExplorer uses Microsoft's Internet Information Server (IIS) with a SQL server back-end. Other well log authoring tools include GEO, GEOLite, GEOLogger and GEODraft. All use the GEO dynamic document structure which can interact with the emerging WITSML standard.

Contact Samit Sengupta ssengupta@geologix.com

Website www.geologix.com

Thematic Mapper from Geoplus

A new Thematic Mapper manages ESRI shape files, offering tight integration of external lease polygon selection and shading. Another new product is a SEG-Y viewer – free to existing and 'potential' customers. The Petra community has doubled in size over the last two years and now claims 2200 licenses.

Contact James Redman jredman@geoplus.com

Website www.geoplus.com

Isatis V5.0 from Geovariances



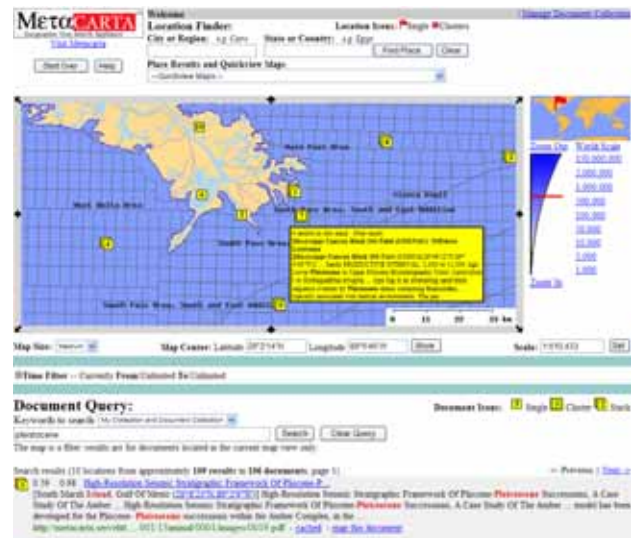
Multi-Gaussian simulation in Isatis 5.0

The latest release of Geovariances' geostatistical package Isatis now offers Multi-Gaussian Simulation, a pixel based technique. Isatis can be used in stand-alone mode, or coupled to Petrel, Gocad, RMS, RML, and PowerModel. According to Geovariances, 'vendors are now offering Isatis links within their own packages'.

Contact Viviana Alderete valderete@geovariances-americas.com

Website www.geovariances.com

MetaCarta GeoDrive



GeoDrive: oil and gas targeted MetaCarta.

GeoDrive is a customized version of MetaCarta for the Oil & Gas vertical. Actually more of a re-branding of MetaCarta's offering already presented in our TW Reports.

MetaCarta claims a 'significant investment' in its oil and gas sector gazetteer - an index of names and locations used to determine geographic relevance.

Contact Mike Odell mike.odell@metacarta.com

Website www.metacarta.com

4D Vista from Midland Valley

4D Vista – described as an 'Adobe Acrobat for 3D' now links to the 2DMove and 3DMove toolsets to provide 'an integrated structure analysis workbench'.

Contact Joanna Brownlee Joanna@mve.com

Website www.mve.com

NeuraScanner from Neuralog



NeuraScanner capturing paper logs.

A new adaptor lets you scan transparent (film) logs with transmitted light. Volumetrics and reserves have been added to NeuraMap and petrophysical analysis is available for Neuralog. The NeuraScanner from Neuralog may not be very high tech – but it sure fills a niche and is obviously popular with users – we even overheard unsolicited testimonials from passers by.

Contact Sherry Land sland@neuralog.com

Website www.neuralog.com

Oil sample and information database from OilTracers

The OilTracers web sites (oiltracers.com and gaschem.com) offer free searching of an oil sample library - a database of over 33,000 oil, gas and rock samples from all over the world. A second product OilRef holds over 11,000 citations from 300,000 pages of geochemistry literature.

Contact Mark Beeunas beeunas@oiltracers.com

Website www.oiltracers.com

New geomechanics lab in Houston from Omni Laboratories

Omni labs has opened a new rock mechanics laboratory in Houston offering up to 1 million lb. ft. axial loads and 15,000 psi pore pressure and 30,000 psi confinement testing.

Contact Tracie Komm tkomm@omnilabs.com

Website www.omnilabs.com

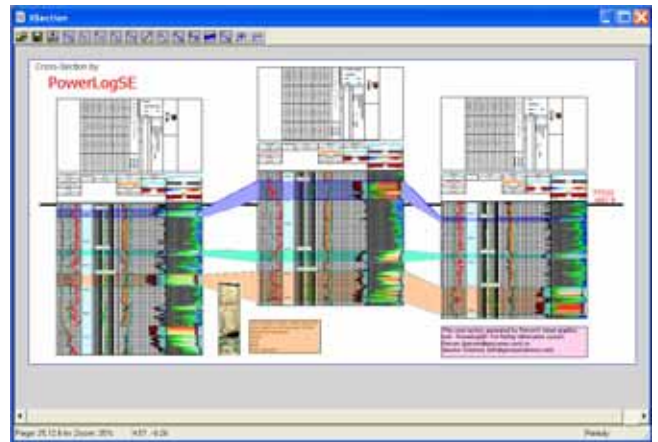
AutoDriller from Pason Systems

AutoDriller – as yet to be announced is designed to maintain constant drilling parameters – especially for horizontal wells. The feedback system is tied to the electronic drilling recorder and adapts to its environment. AutoDriller was developed atop of Pason's Electronic Drilling Recorder (EDR) – a hardware, software and database combination.

Contact Joe Watson jwatson@pason.com

Website www.pason.com

Powerlog SE from Geostarsolutions



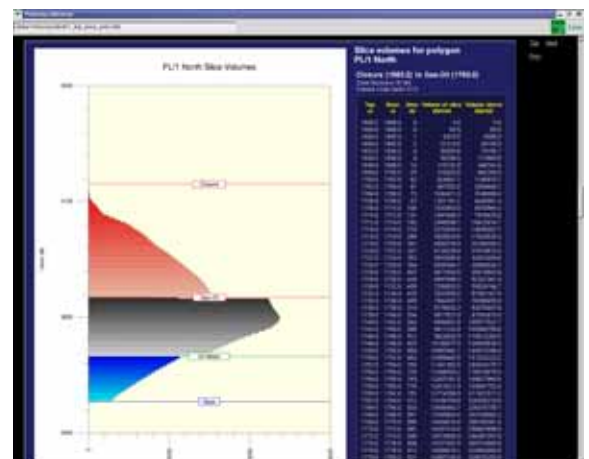
Correlation in Petcom PowerLog SE

Fugro-Jason has acquired Petcom. PowerLog SE (Second Edition) introduces an updated user interface and a new cross-section montage capability. Users can include and correlate depth-registered graphical images such as scanned log plots and maps (raster images), core photos and interpreted well log data.

Contact Mike Barnett info@geostarsolutions.com

Website www.geostarsolutions.com

New functionality in Petrosys R14.3 from Petrosys



Volumetric tools in Petrosys 14.3

The latest release of Petrosys' mapping package now includes 'slice volumetric charting'. The user interface, computations, and output styles have been tested against geometrically exact shapes to ensure accurate volume reporting.

Contact Tom Robinson trobinson@petrosys-usa.com

Website www.petrosys-usa.com

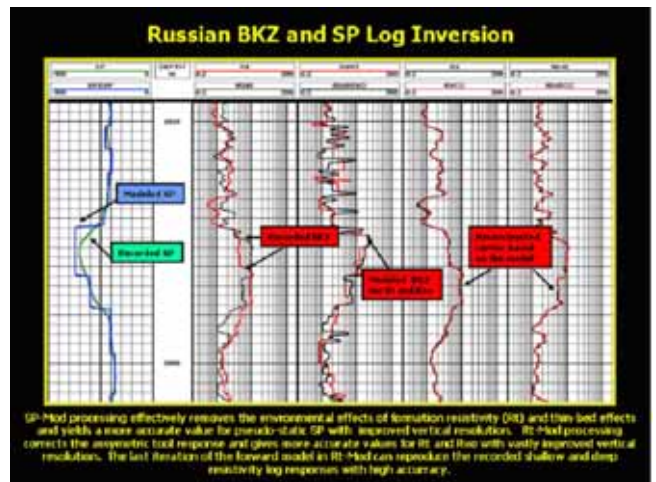
ODM 2.3 and Integration Canvas from PGL

Production Geoscience's Oilfield Data Manager is now at release 2.3. A new 'integration canvas' allows for the display of cultural and regional data alongside geological data. ODM offers data management, correlation displays and wells and surfaces in 3D. ODM is used by Shell to QC data before entry into the corporate database. Also used by Saudi Aramco for stratigraphic correlation.

Contact Frank Barker fbarker@pgl-aberdeen.com

Website www.pglweb.com

Rt-Mod from PSTechnologies



New Russian BK2 format resistivity log processing.

Rt-Mod can perform a two-curve inversion on ES logs (lateral and normal logs of all transmitter/receiver spacings), Russian and Chinese BKZ logs, Russian induction logs, Western 6ff40 induction logs, the Limestone Lateral Log, the Dual Laterolog, the MPR and ARC MWD logs, Schlumberger’s AIT log and Halliburton’s HRAI log. SP-Mod brings the SP measurement to a 0.5 m vertical resolution and corrects for Rt/Rmud.

Contact Jeff Arbogast arbogast@pstware.com

Website www.pstware.com

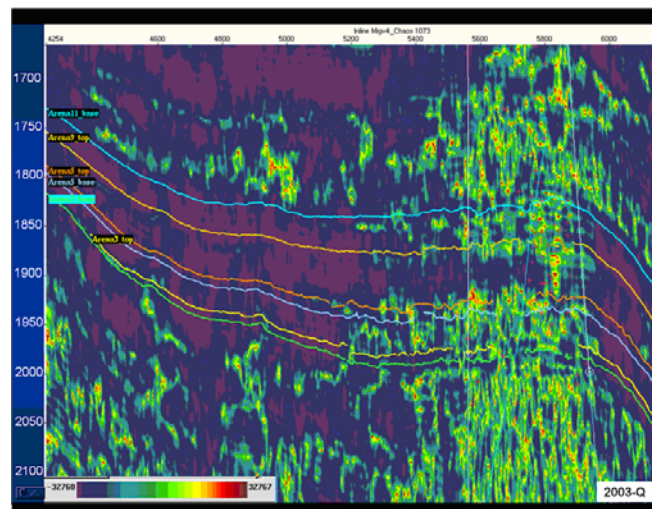
Gigaviz on 16 node Cluster from Schlumberger

Some problems setting up this demo – planned for a 16 node Linux cluster which was down, so the presentation was done on a PC. Not the best support for a ‘high end’ visualization tool. The next day we had a re-run on the cluster, but frankly couldn’t see much difference. GigaViz offers a lot of sophistication for image processing and ad-hoc, rule based voxbody extraction. But the demos fail to capture attention in the way that Magic Earth does. Whether this is a substantial or presentational difference is hard to tell.

Contact Mary Jo Caliandro caliandro@slb.com

Website www.slb.com

Q-Marine study on Lankahuasa field (Schlumberger)



'Chaos' Cube extracted from Schlumberger's 'Q' data.

A Q-Marine proof of concept survey was run for Pemex over the Lankahuasa field. Fast track acquisition, processing and interpretation gave a 2 month turn-around time. A 'Chaos' attribute section shows high density faulting and fracture pathways. The Chaos attribute is thought to react to the presence of fluid in addition to structure and it may provide a 3D picture of gas migration.

Contact Richard Salter rsalter@slb.com

Website www.slb.com

New release of SDI CGM

The new release (7.2) of SDI's CGM plotting environment leverages the Windows printing system and offers enhanced integration with Office/Windows and SDC files.

Website www.sdicgm.com

No glasses 3D Display from SeeReal Technologies



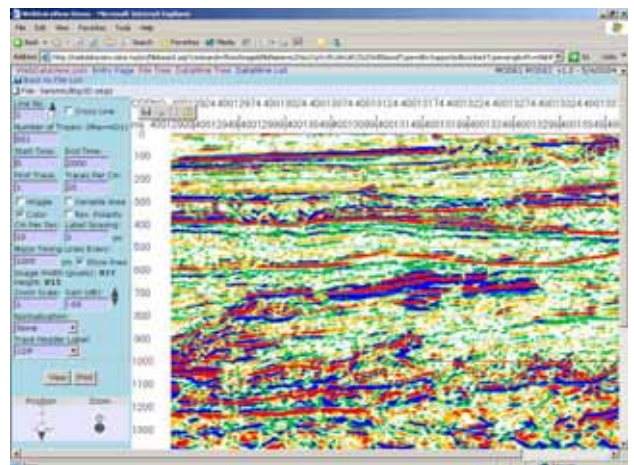
SeeReal - The eyes really do follow you around!

SeeReal offers 'glasses-free' true 3D visualization. The two eye tracking devices on the display recognize and track the user's eyes. Takes a bit of getting used to but it does work. It is suggested for use in twin screen environments where a 2D map display is used simultaneously with the 3D screen.

Contact Erik Nielsen en@seereal.com

Website www.seereal.com

EZ Dataroom from Zebra Geosciences

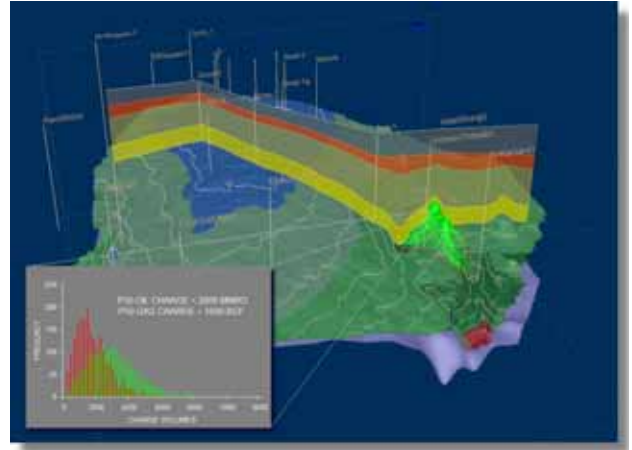


Zebra's WebDataView of SEG-Y data.

EZDataRoom from Zebra Geosciences uses WebDataView offering upstream document visualization from any browser. All data resides in the data room - data never needs to be passed to a user thereby providing enhanced security. Client Controls provide individual security rights to view, print and or download information.

Contact T.A. Jackson tajackson@zebrageo.com
Website www.ezdataroom.com

Trinity Petroleum Systems Analysis and Genesis basin modeling from ZetaWare



Interactive Petroleum System Analysis from ZetaWare

New map-based charge risking uses Monte Carlo analysis of source rock burial, thickness and fetch history. Volumes are integrated over time to give total charge. A variety of displays including probability distributions and tornado plots of risk.

Contact Zhiyong He he@mindspring.com

Northern North Sea Evaluation from Ternan Ltd.

New study of the prospectivity of the Northern North Sea, commissioned by Apache and Talisman Energy. Available for purchase Fall 2004. Study is delivered as a paper based report and as digital data compatible with PGL's Oilfield Data Manager.

Contact Dave Mudge dmudge@ternan.com
Website www.ternan.com

GMI Imager from GeoMechanics International



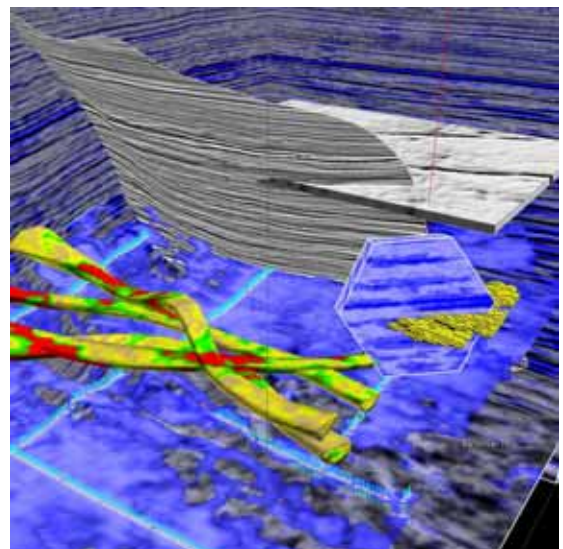
Fracture analysis displayed in GMI Imager.

GMI Imager now has ‘write back’ capabilities with Landmark’s OpenWorks. Imager analyses can be written back to the database for stratigraphic correlations and other applications. GMI was showing an impressive video from which the above image is extracted. The software is used in GMI’s studies.

Contact Lisa Dell’Angelo dellangelo@geomi.com

Website www.geomi.com

EDS new features in GoCad 2.1 and ‘Y-Faults’ modeling



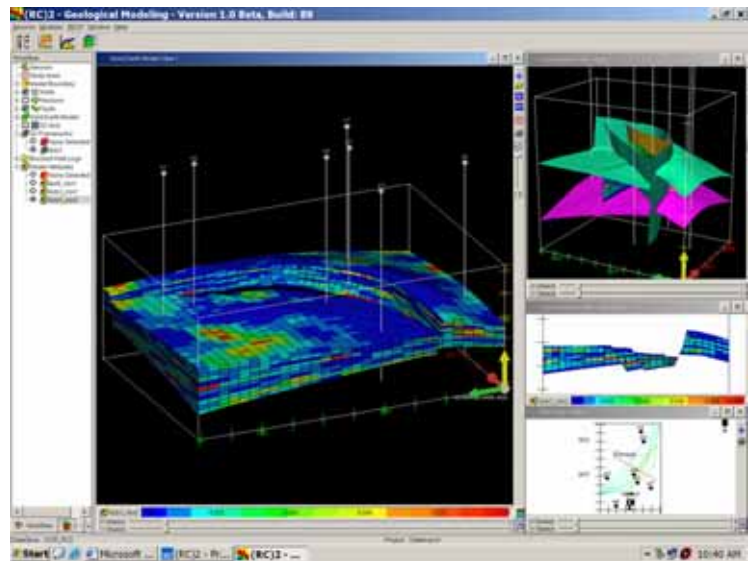
EDS interpretation suite embeds GoCad.

Earth Decision Sciences’ interpretation tool, built around its 3D modeling engine GoCad is maturing into a fully functional interpretation suite. V2.1 of the software offers enhanced uncertainty management and modeling capabilities.

Contact Susan Morgan morgan@earthdecision.com

Website www.earthdecision.com

SURE and RC(2) port to Windows from Seismic MicroTechnology



RC(2) modeling now on Windows.

SMT has nearly completed the port of the Sure fluid flow modeling tool to Windows and can now claim a full seismic-to-simulation ‘all Windows’ workflow. Note that Veritas has retained the HOT Engineering name, SMT uses the Sure product name. Sure is best known for its flexible PEBI gridding capability – a new version tailored for horizontal wells was released earlier this year as Sure V 5.3. The next version of the RC(2) geological modeling tool will also be a Windows port. QT has been used to offer cross platform client server operations. The old Veritas ‘Antero’ name has been dropped. An SMT OpenSpirit data server will be released later this year.

Contact Dave Brock dbrock@seismicmicro.com

Website www.seismicmicro.com

Miscellaneous

AMX Lightwave from IVT

IVT is a systems integrator that has supplied AMX Lightwave technology to Veritas DGC. The fiber optic-based technology lets Veritas share visualization resources throughout its Houston head office. Users can access SGI, clusters etc. from their workstations and control mice etc over the AMX system.

Contact Dan Knupp dfknupp@ivtco.com

Website www.ivtco.com

TIFF format geological map server – Kansas Geol Soc Library

TIFF formatted geological maps held on the server and paged on demand. Can be assembled at client workstation for visualization and correlation. Exposes the ‘Rob Walters’ geological library.

Contact David Bayer Ibrosius lbrosius@kgs.ku.edu

Website www.kgs.ku.edu

Open Spirit version of TerraSciences – and TS II from TerraSciences

TerraSciences is moving to an OpenSpirit version – currently in Beta test.

Contact Andy Jagger sales@terrasciences.com

Website www.terrasciences.com

Rack Saver Blade Cluster from Verari Systems



Blade technology from Verari (ex-Racksaver)

First RackSaver acquired the MPI Software brand. Then Verari systems acquired RackSaver. Quite what the high-end cluster manufacturer was doing at the AAPG is another matter.

Contact John McManus john.mcmanus@verari.com

Website www.verari.com

Fossil Safaris from Warfield Fossil Quarries



A substantial copralite – yours for a mere \$800.

Sign up for a fossil safari in Wyoming with Warfield and you might get lucky and find a fossil turd like this one!

Contact warfosq@silverstar.com

Website www.fossilsafari.com

Papers of note

A1⁵ - Deal Promotion - Dave Abbot, consultant

Those involved in deal promotion are subject to anti-fraud provisions of state and federal law. ‘Transparency’ is the key to dealing with investors. Violation could result in you losing your home!

⁵ Numbers refer to pages in the AAPG Abstracts Book – available from www.aapg.org.

A8 Seismic Reservoir Description, Bachrach et al.

Schlumberger technique uses Bayesian statistics used to classify lithology combined with structural modeling.

A9 Exploration Technology, Mike Bohorich, Apache Corp.

‘Smart shopping’ and COTS for cost-effective 3D seismics. Competitor analysis and technology transfer in group. Centralized management systems with real-time feedback for effective capital allocation.

A10 Pompano field visualization with GeoProbe, Banfield et al.

BP uses ‘color inversion’ of stack, AVO and intercept seismic attributes used to tune output to lithology.

A11 Modeling 3D outcrop data, Barton et al. Shell.

Outcrop data used to build ‘realistic’ 3D models of deepwater turbidities.

A17 Gravity calculations and Visualization – Brew, Dynamic Graphics.

New method to compute gravity anomaly from a 3D geological model. 3D visualization used to compare with real data.

A22 Why accept exploration risk? – Carvagher, BP.

Despite advances in understanding of risk, there are still performance gaps between companies. Some managers are “less accurate in their estimations of uncertainty⁶”.

A41 Leveraging GoCad for hydrocarbon migration assessment - Evendi et al ChevronTexaco.

Paper describes an XML schema for kinetic data.

A43 Improving the E&P value proposition – Evans, ChevronTexaco.

Industry struggling to replace reserves. ROI from exploration not ‘compelling’. We need better portfolio management, technology and access?

A50 Biostratigraphy Web Portal – Gary et al., Tramontane Inc.

Unocal’s web portal for biostrat and log-derived sand count.

A64 Model building with remote sensing data – Hodge et al., Midland Valley.

Combine digital elevation model (DEM) with satellite imagery with structured modeling.

A67 Volume-based Visualization - Huang et al., Landmark.

Introduction to volume based interpretation.

A81 Geological uncertainty in reservoir modeling – Larue, ChevronTexaco

There is a perception that, as a field is developed, volumes and production uncertainty is greatly reduced. This is probably over-optimistic. Larue shows examples of uncertainty > 50% in mature fields. Moreover, database and reservoir modeling studies downplay the importance of depositional environment on recovery.

⁶ Does this equate to saying they are “less accurate in the accuracy of their accuracy”?

[*A86 Value of digital outcrop data in reservoir modeling – Loseth et al., Norsk Hydro*](#)

Digital 3D outcrop data collected in Spain with GPS – enables laser scanners. Surface core data input in model which was then compared with less constrained subsurface model. Fluid flow models on both showed importance of capturing true reservoir heterogeneity.

[*A91 ‘We deliver what we promise’ – Bill Maloney, Statoil*](#)

Statoil is near best in class for ROI post privatization thanks to (in part) effective portfolio management. Same techniques applied to asset disposal and exploration. 31 out of 51 wildcats since IPO successful – finding cost of \$0.74/boe.

[*A92 Beyond outcrop visualization, reservoir models in the CAVE – Martinsen et al, Norsk Hydro*](#)

DEM, aerial photography, hi-res LIDAR and photo-realistic models are used to achieve better overview and feedback. But greater leverage is obtained when these are combined with ‘behind the outcrop’ data such as wells, shallow seismic and ground penetrating radar. All can be viewed in the CAVE. To reveal ‘obvious’ sources of error and misconceptions as to body geometrics.(geometries ?)

[*A95 Design of Experiment techniques in estimations of OOIP – Meddaugh et al., ChevronTexaco.*](#)

DoE methods used to minimize number of models needed to evaluate OOIP. DoE also shows different contributions to uncertainty from various model parameters. Plackett – Burman methods used.

[*A113 Visualization and Digital Storage of Sedimentological data – Preston et al., HRH Ltd.*](#)

Lithological unit descriptions constructed with Bezier curves and stored along with geological data. Grain size data can be scaled and integrated with other digital data such as wireline and MWD.

[*A134 BP’s AVO Workbench – Sublette, Weinman GeoSciences*](#)

AVO analysis using Swan’s technique and software licensed from BP. See also Trendgold A140

[*A138 Outcrop Analog data in 3D world – Thurmond, University of Texas at Dallas.*](#)

3D outcrop data used in reservoir characterization. GPS, LIDAR & photorealistic mapping (texture draped onto on 3D outcrop data). Used to help in reservoir characterization.

[*A150 Decision Support Systems for exploration – Wygrala et al., IES GmbH*](#)

DSS from 3D model of prospects in context of petroleum system. 3D simulation of generation & migration. Bayesian methods used to evaluate risk. Techniques to be built-in to corporate risk assessment workflows.

[*A151 3D photorealistic outcrop mapping – Xueming, University of Texas at Dallas.*](#)

DoE funded study of Ferron sandstone with GPS, GPS, laser etc. Outcrops now digitally photographed and draped on outcrop.

[*A152 3D visualization of VSP – Yang, VS Fusion*](#)

Java 3D-based tool for VSP visualization. Can create movies & 3D stereo displays.

[**Resources**](#)

[Metadata Tools for Geospatial Data](#)

[Technology Watch Service](#)

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