

## Tigress out to capture bigger share of market for integrated reservoir interpretation solutions

The low key announcement in January that Petroleum Geo-Service (PGS) had divested its subsidiary PGS Tigress via a management buy-out ends the company's 10-year proprietorial association with possibly the most ambitious geoscience and engineering integration software development ever launched. Andrew McBarnet takes up the story.

The thing that amazes David Sullivan most is that the Tigress project was ever launched in the first place. 'It is extraordinary that the software ever got written because it set out to create a database from scratch covering everything from geophysics to reservoir simulation. As such it was way ahead of its time.'

Sullivan is chairman of Tigress Geosciences, the management buy-out from PGS based in Marlow, UK now managing the continued evolution of The Integrated Geoscience and Reservoir Engineering Software System (Tigress), best described as a suite of reservoir interpretation software tightly integrated around an Oracle database. For PGS the disposal was, according to Diz Mackeown, president of PGS Marine Geophysical, part of the company's policy to concentrate on core activities. He noted that 'the deal allows a successful relationship for both companies by way of an ongoing corporate licence agreement for the complete Tigress software portfolio.'

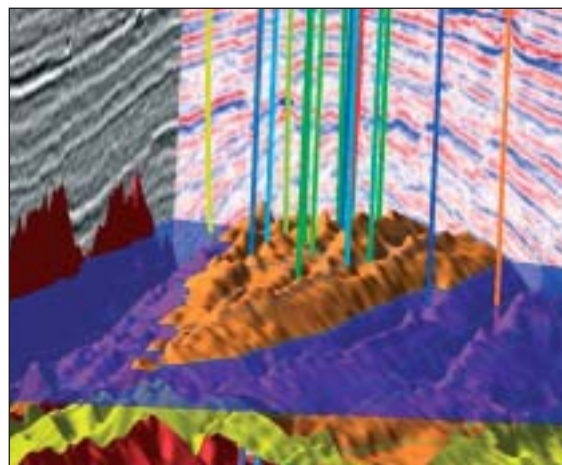
Prior to the buy out, the Tigress operation had had been organised into an independent division but the actual transaction was delayed by the financial restructuring of PGS following the collapse of merger talks with Veritas DGC. Sullivan claims that Tigress Geosciences represents 'the industry's only independent software producer with a totally independent product covering interpretation tools from geophysics to reservoir simulation.'

The description, so relevant to current calls for integrated E&P software products, belies the fact that the Tigress concept dates back to 1988, and has been a reality since the early 1990s. It was then that David Wilson, former academic at Imperial College and later a reservoir engineer with Shell, coaxed the first substantial funding out of the UK Department of Energy's Offshore Supplies Office and company sponsors, Shell, Enterprise Oil and ARCO British for work on Tigress, initially at Robertson Research in North Wales and then at Energy Resource Consultants (ERC) in Marlow, near London. In 1991 *First Break* recorded that after three years work Robertson ERC (as it was then) was ready to launch Tigress. The report said that 50 software engineers were involved in the project development work being carried out by Robertson ERC with Winfrith Petroleum Technology (a spin-off from the UK Atomic

Energy Agency which focused on the reservoir simulation end of the spectrum, led by Dr Joe King). Then as today, Tigress was 'designed to forecast and plan the optimum development of a reservoir from early appraisal through to maturity.'

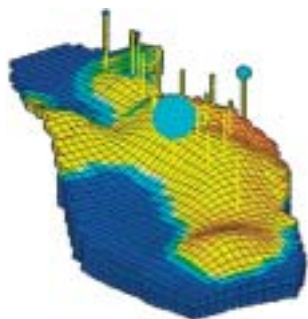
With a background in the software industry, Sullivan joined Robertson ERC to manage the installation and roll-out of Tigress. The very first installation was for Shell in Rijswijk, The Netherlands. He recalls 'the system was, and arguably still is, the most tightly integrated E&P system available. The concept of the asset team and the need to minimise development lead times by taking an integrated approach is commonplace today. But in 1991 these were radical ideas indeed.'

Sullivan admits that the Tigress team in the short term might have been better advised to have limited the scope of its aspirations when it first started. 'In those days companies like Landmark and Schlumberger were focused on workstations and the functionality of individual products in individual disciplines, and clearly that met the needs of the market. Tigress, on the other hand, was a major new technical project and it was also asking industry specialists to work in a different way. That was a tall order.'



*Data integration: a Tigress view of the seismic cube showing intersecting faults and map horizons, with oil water contact and well bore profiles*

## Data Visualization and Interpretation

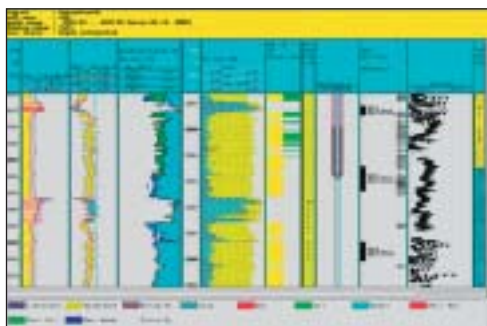


*Integrated analysis of simulation and production data is improved with a mix of standard and user defined reports*

Over time Tigress has managed to establish a market niche with what Sullivan describes as a loyal and remarkably stable customer base. Today it is used in 150 locations in 42 countries. But that it is to jump a little ahead in the story. Tigress enjoyed a brief period in the limelight with Simon Petroleum Technology (SPT). It acquired Robertson ERC in 1992 as part of a wider but ultimately doomed attempt to establish a full service UK-based geophysical contracting business able to trade punches with the big players such as Western Geophysical, Geco-Prakla and CGG.

In 1994 PGS, then a rising star in the geophysical services firmament, acquired Simon-ERC, including the Tigress team, from SPT which was off-loading its oil industry assets on instruction from parent company Simon Engineering. The Tigress part of the purchase was by then showing some promise, not recognised in all quarters. The client base was expanding after early muttering in the industry that the project was too costly and over-ambitious. No one at the time recognised publicly how astute the Tigress management team had been in 1993 by entering the Russian market where the software has built up a very significant following.

Sullivan reflects that the PGS years were invaluable in sorting out what Tigress could realistically achieve. The geophysical offering of Tigress was greatly enhanced. Also for a period control of the Tigress database passed to IBM, which was a partner with PGS in the development of the PetroBank



*Complexity: geological correlation and petrophysical analyses use hierarchical (multi-level), multi-well zonations to fully interpret and illustrate detailed litho- and petrofacies*

data repository in Norway. IBM created a version of the Project Data Store (PDS) which could be sold separately from Tigress. The Tigress product returned to PGS when it bought IBM's share of the PetroBank project (subsequently sold to Landmark). The Tigress PDS claims to be one of the industry's first relational data models and includes thousands of attributes covering all domains from seismic exploration to production management. As a project orientated data store, it provides real-time data retrieval and storage for a number of concurrent interpreters. Data versioning, access controls and audit trails ensure the quality of the data. Tigress applications are fully integrated with the PDS allowing interpretation using data from all disciplines to accurately model the data.

Somewhere along the line it also became clear that Tigress couldn't be all things to all men. 'We don't do economics, that's another business,' says Sullivan. 'Nor do we offer specialist services such as inversion, pre- and post-stack depth migration or data processing in any shape or form. We provide tools for seismic interpreters on the job, and uniquely we have the only software for interpreting 2D and 3D data together. Most importantly the interpreter is using the same data throughout. There's no pushing data out and then pulling it back in again. Using the same data makes for increased accuracy and speed of interpretation with good quality control because you're comparing like with like and there's an excellent audit trail so you can see exactly how an interpretation has been built up.'

Sullivan says there are very significant cost savings in the Tigress integrated approach and the results obtainable meet the needs of oil companies in many environments around the world. It is definitely not a cut cost product. He points out it has taken a long time to get where it is and major oil companies such as ENI and Shell have been long-time customers. Moreover, he believes that the market is moving in Tigress Geoscience's direction. 'It is completely different from 15 years ago with a different range of customers who expect state of the art solutions at very realistic prices. Our larger competitors are finding it more difficult to meet the price range of cost conscious independents and companies in new and emerging markets.'

Typical new clients for Tigress would be small to mid-size companies looking to break into a markets such as Russia and Africa, or the mature provinces of the North Sea and the Gulf of Mexico where there are still prospects for cost effective operations. Sullivan says the gratifying thing is that companies who use Tigress to come up with a quick, uncomplicated interpretation solution, for example, to present to financial institutions and potential investors will often keep going with Tigress into the exploration and development phases.

He is excited by the company's recent successes winning four out of five of the jobs it bid on, in Indonesia, China, Algeria and Turkmenistan convincing him that Tigress can

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finally capitalise on the human and financial investment (estimated at least £35 million) over the years. The company has the advantage of starting with a sound, debt free financial structure, and is rolling out a game plan which Sullivan hopes will match anything offered by Schlumberger and Halliburton at a fraction of the price.

In the past few years Tigress has brought in PC Edition, a Linux PC-based asset appraisal system from geophysics to reservoir simulation that can be used out of the box on a laptop PC. It has also introduced Hub Central, a new generation data-management system utilising GeoBrowse, produced by an Australian partner company ISA, combined with new generation versions of the Tigress database and the industry standard TIES data loading, integration and exchange system. HubCentral v2, to be launched in the second quarter this year, represents a major challenge to the conventional legacy E&P data management systems and tape libraries currently offered to oil companies, according to Sullivan.

This month Tigress 64 will be launched to first customers. It's an ultra-fast 64 bit version of the company's core product using Red Hat Enterprise Server and Oracle 9, with support for the AMD Athlon and Opteron chipsets. The release of Tigress 64 marks the company's fifth year in the Linux Open Source market place.

In Russia where Tigress has been increasingly active over the last 10 years, the company has moved to larger offices in the West Siberian city of Tyumen to support the launch this month of GEOTIG, its first 'all Russian' interpretation system. The product was developed in conjunction with GeoLeader to meet the needs of the burgeoning Russian upstream market. Sullivan says that both Tigress and GeoLeader have increased staff to support the new development.

This month will also see an entirely new departure with the opening of Petroleum Centre Aberdeen, a co-operative venture with Ingen, an expanding Aberdeen energy consultancy, and Bureau-Plus. The aim is to provide a study centre enabling oil companies to rent serviced office accommodation in oil provinces with state of the art software and skilled support professionals. The Aberdeen location particularly targets companies engaged in the DTI's prospect licence scheme and international companies involved in prospect evaluation who need data room and 'instant office' facilities. The Aberdeen centre features Tigress PC Edition and Ingen's RAVE risk and value engineering modelling software.

Petroleum Centre Tyumen and Petroleum Centre Thames Valley (Marlow) are also opening. Petroleum Centre Angola will open in April in co-operation with Terra Angola, subsidiary of Norwegian company Inseis Terra, and Petroleum Centre Houston is planned for later in the year. Service delivery is also available across the web via the company's internet portal.

Keeping Tigress current is an endless task, which Sullivan compares to a car engine. 'We are constantly refining the



*The PC edition of Tigress allows laptop users to run the same applications and data projects as their office counterparts in a networked, or stand alone, environment*

model even if the basic shape is likely to stay the same for a while yet. For, example, we are working with partners to develop new advanced petrophysical tools that will be released to the open market towards the end of the year.' He also says that Tigress is 'made' for the emerging market for 4D and multi-component interpretation. 'Our system is perfectly suited to revisiting old survey data for comparative purposes.'

Needless to say, training plays an important part in familiarising people with the Tigress product and free and 'near free' training and support programmes are available for independent consultants, universities and small firms.

Getting the word out on Tigress Geoscience, the newly independent provider of an integrated software solution for reservoir interpretation, is probably the main task facing Sullivan, his team of 30 odd permanent staff, and the company's agents and resellers around the world. With 'Integrated by Design', the company's slogan, they would certainly seem to have the right message for today's market.



*Raduzhny, Siberia (1998) A serious fire completely destroyed the offices of Varyeganneft. Fortunately the Tigress server and workstations were saved when the user threw them out of a window into the snow. A few days later the Tigress system was re-assembled in another building and started up successfully. A strong candidate for off-site data storage!*