

Western man ushers in new era at PGS

As appointments go, the arrival of Chris Usher at PGS is one of the more interesting of late signalling a new emphasis in the company's business strategy. Andrew McBarnet spoke to the man in question.

The emergence of Petroleum GeoServices (PGS) as a major hitter in the geophysical services business must count as one of the great industry success stories of the 1990s. But Chris Usher, newly recruited from Baker Hughes Western Geophysical, believes that some of the story has still to be told and that he is the man destined to tell it.

From his vantage point working at Western, Usher lived through the period which saw the founding of PGS in 1991 by a team of ex-Geco executives. Like everyone else, he watched the company vault to the forefront with what at the time was a highly innovative approach to 3D marine seismic acquisition. PGS's instant success was based on the revolutionary technology offered by the Ramform design vessel designed to maximize productivity. The delta-shaped Ramforms, with their 40 m beams offered a quantum leap in the number of streamers which a seismic vessel could tow. PGS made eight streamers the norm and proved that 10 and even 12 streamers were workable with correspondingly impressive km² acquisition rates. This was not just a technology-led advance. The company was also aggressive in its building of a 3D non-exclusive seismic data library.

PGS's dramatic entrée undoubtedly put pressure on the

competition. In addition, the market for seismic – both proprietary and non-exclusive – seemed to offer limitless opportunities for new technology vessels as deep water acreage worldwide appeared to be opening up for exploration and production. The result was a spate of new buildings and upgrades in the late 1990s by virtually every player in the market. Unfortunately the hoped-for survey opportunities turned into something of a mirage, impacted by oil price woes and oil company consolidations.

The PGS success story stalled, unable to escape the abrupt halt in exploration spending worldwide which affected all seismic contracts and put one out of business. PGS's response was to shed virtually all its fleet, except the Ramform seismic harvesting machines, and like everybody else embark on some painful restructuring. The suddenness of the 1998/99 crisis might have snuffed out a company like PGS, which was highly leveraged in order to achieve its rapid expansion targets. However, prescient diversification into FPSO (floating production, storage and offloading) system operations, notably on BP's Foinaven field and Conoco's Banff field, proved an inspired move. Although troubles at Banff have left the company with something to prove in its technical capability, the FPSOs have generated valuable cashflow to carry the company through the rough patch.

Which brings us back to Chris Usher's decision to trade companies at a point when both PGS and Western are arguably at a crossroads of sorts. He joined Western straight after graduating in geology and geophysics from Yale University



Chris Usher



in 1983. A fast track career soon saw him transferred in 1986 to London as senior supervisor, data processing, which led to area manager and then in 1997 to vice president and general manager of data processing for Europe, Africa and the Middle East. Following the Baker Hughes acquisition of Western, Usher was made responsible for data processing, Eastern Hemisphere and then vice president, technology for Western Geophysical.

It looked to be a career with plenty of prospects in a company as substantial as Baker Hughes. Usher agrees, saying that his last technology brief was taking him into new fields. 'I was exposed to cross divisional experiences as a member of the Technology Council of Baker Hughes and that was exciting.' So why did he quit? Usher mentions the changes and commotion inevitable with a new parent company, but you don't get the impression that these were the decisive factors. More significantly, he was under pressure to move to Houston, which for personal reasons he was resisting. But also, when the opportunity arose, he really liked the idea of becoming part of the next chapter in the PGS story. From the outside he viewed the company as 'a young, motivated company with a global reach.'

So it came to pass that in March this year, on taking up his new post as president of data processing for PGS worldwide, Usher began to publicise a revised version of the PGS story to include what he believes to be the company's unacknowledged achievement in processing. What we missed during the 1990s, says Usher, was that by the end of the decade PGS was processing more 3D marine seismic data than any other company. He bases the claim on the fact that PGS was acquiring some 100 000 km² of new data a year, representing around 45% of the total 3D seismic market worldwide, and that the company was processing most of this data itself.

Arriving at PGS has been a revelation for Usher in terms of the potential market he sees for the company's proven processing capability. 'My perception from competitor analysis was that in the early nineties, PGS took over Tensor, which was known for its parallel processing, and bolted its expertise on to the back of its boats.' In his days at Western, Usher never experienced PGS as serious contender for third party



processing contracts because the emphasis at PGS was to get the multi-client projects out. With a growing shift in focus towards the multi-client market, in which companies are offering increasingly processed data as part of the survey acquisition data package, Usher now views things differently. 'PGS has become the industry leader in getting masses of data and turning it round in the shortest possible time. That takes a lot of resources. You always hear of amazing records for the time taken from last shotpoint to processed data delivered to the client, but these are usually a one-off. What impresses me is that PGS has, for the last 18 months, been achieving rapid turnarounds consistently from every vessel.'

'We have the performance, quality and consistency, so what we need to do now,' says Usher, 'is to make people aware of our processing capability. We have got spare capacity to approach the market, we have got the success story of the Ramforms to tell, and corporately, processing is seen as a growth market for us. So, from the current starting point I can only see upside.'

Usher's arrival crystallized a company reorganization of processing within PGS to take account of future market opportunities. The company now distinguishes between exploration processing and reservoir processing, both of which come under Usher's wing along with software development. 'As a company we have been diversifying away from streamers to a strong reservoir focus, highlighted by the floating production side of the company, and we need to get across that we offer a full spectrum of data processing.' The exploration processing side is effectively the back up to the Ramforms – fast, efficient and fairly routine turnaround of large data volumes. The PGS reservoir processing business includes smaller volumes of data which are typically reservoir specific, i.e. from ocean bottom cable, multi-component and vertical cable survey work. Land data is also part of the reservoir processing business. Although not normally regarded as a processor of onshore data, Usher says that in Egypt PGS has successfully won contracts for land, shallow water and marine seismic data. It also pioneered onshore prestack depth Migration in the company.

From a technical standpoint, PGS has been a leader in technology such as pre-stack depth migration and AVO, according to Usher, but this has not been fully appreciated because much of the work has been carried out under the Diamond Geophysical umbrella in the US. He points to the company's contract announced a few months ago from Phillips Petroleum as proof positive of the leadership role PGS has earned in reservoir processing. The company announced that, in direct competition with Schlumberger, it had won the largest seafloor multi-component contract in the seismic industry. The data set is being acquired over the PL19-3 field in China's Bohai Bay, where Phillips has a major discovery, with the northern portion of the field estimated to contain 400 million barrels of potentially recoverable reserves. The PGS survey is expected to provide better imaging of the reservoir's structure in order to optimize the field's development.

Usher points to the huge increase in valuable data from multi-component and 4D (time-lapse) studies as the future for the seismic industry because the pressure in the near term, say the next 10 years, is going to be on producing as much as possible from existing reservoirs. He recognizes, however, that the market may not be ready yet.

'The question is what is it going to take to get customers to put substantial amounts of money into this new technology. There are enough case studies to demonstrate the improved imaging compared with conventional methods. The fluid predictions and lithology possible out of data sets have obvious values for reservoir characterization and production. It may be a cost issue because the acquisition and processing does mean significant extra expense. But it may also be that the technology is not well enough understood.'

He speculates that 'to develop reservoirs and to have all the attributes you need in a time-lapse sense in order to understand where the unswept oil or producing problems for engineers might be, you're going to need wide azimuth data

or higher frequency data. This may still be too expensive to do with bottom reference systems. We could instead see streamer boats shooting in multiple directions and may be with different cable depths in order to get the required frequency spectrum. This option may be particularly attractive in deep water.'

Earlier this year, Usher wrote a light-hearted piece for *American Oil and Gas Reporter* in which he envisaged life working in the 'downhole factory' of the future. At mission control the multi-disciplinary team of geophysicists, geologists and reservoir engineers review the operations of a multi-component deep water survey. Their perfectly integrated views of the reservoir are based on virtually real-time, interactively processed data (delivered from the survey for processing by satellite) allowing immediate reservoir management decisions.

Most aspects of that imagined future are in process. For example, PGS's main processing centres in Oslo, Houston and London have advanced 'holoSeis' visualization facilities, basically designed to allow the company to explore large data volumes with clients.

Tasks might include QC of acquisition data, seismic processing optimization or seismic interpretation verification. Software for holoSeis, based on Silicon Graphics hardware, was written exclusively by PGS Seres, the research arm of the company. PGS Seres, along with the data processing department, was also responsible for the considerable modifications to Cube Manager, the basic in-house processing system which the company inherited with its acquisition of Tensor.

Usher admits that PGS has a way to go in developing the company's processing business to the oil industry, particularly when the old bugbears of over-capacity and cut-throat pricing continue to endanger the market, but he clearly does not regard it as mission impossible: rather, a challenge worthy for his talents and those of his new colleagues.

