

## NEWSLETTER

Sign up for our newsletter  
 ... enter your email ▶



**AkzoNobel invests \$20 million to increase surfactants capacity** (Oct 10, 2011)

AkzoNobel has announced its plan to invest \$20 million to increase capacity at its Surface Chemistry plants in Itupeva, S.P., Brazil, and Morris, Illi...

**GTSC opens new training centre in North Iraq** (Oct 10, 2011)

Gulf Technical & Safety Training Centre (GTSC) has opened a new facility in Erbil, North Iraq

**Technip awarded umbilical contracts in the US** (Oct 10, 2011)

Technip was awarded two contracts, by Shell Offshore Inc, for the Cardamom and West Boreas field developments



## Latest Petroleum News

Home / News / Latest Petroleum News

## There's something about the seabed

10/10/2011

Back from the SEG annual meeting in San Antonio, **Andrew McBarnet** detects stirrings in the market for ocean bed seismic services.



Ten years ago when the Society of Exploration Geophysicists (SEG) held its annual meeting in San Antonio, the event was interrupted by the catastrophic event we now know as 9/11. Amid the shock and confusion, the organisers were saddled with the troubling dilemma of whether to continue with the show. No one would have blamed them for cancelling the remaining few days, but a mixture of outrage and defiance, plus consultation with various authorities and a quick straw poll of participant opinion persuaded them to persevere. Truth be known, for the rest of the week no one could really focus on the business in hand. Conversation soon reverted to the horrific terrorist attack on US soil. On a practical level, foreign visitors and anyone living a flight away from San Antonio were left wondering how on earth they would ever get home. Happily last month's SEG gathering was a much calmer affair, indeed business as usual would be a good description. There were no discernible stirrings suggesting that the marine seismic community was likely to witness any abrupt change in its commercial outlook or in the direction of technology developments.

What few whisperings there were mainly concerned the likely fate of SeaBird Exploration, the Norwegian listed company which has been testing the forbearance of its creditors for what seems an implausible length of time. During the SEG meeting the company had negotiated a five-day grace period for discussion with its investors following default of interest and principal payments under a bond agreement. Consensus at the time of writing was that a serious restructure of the company could not be put off for much longer, and that

Petroleum Geo-Services (PGS) would be a key player in any resolution. SeaBird began life modestly enough in 1996 with its ambitions apparently aimed at the unglamorous 2D marine seismic market, not a bad idea given its neglect by the major players who at that time were fully engaged in meeting the upsurge in demand for 3D towed streamer surveys. Everything changed in 2006 when the company was listed on the Oslo Børs and money was raised to purchase SeaBed Geophysical. All at once the company went from running an expanding fleet of 2D and seismic source vessels to being committed to developing ocean bottom nodal seismic technology. This was a big ask for a small independent contractor, but the Norwegian financial market was flush with money and seismic was flavour of the month.



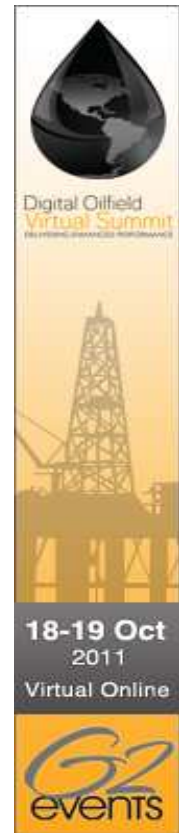
Realistically SeaBird would have had to enjoy an extraordinary run of good fortune to have succeeded with its investor-driven gamble on establishing and supporting a viable business for nodal seismic on its own. To be fair, SeaBed Geophysical had demonstrated in a survey for Pemex in 2003/04 that OBN could be an alternative to ocean bottom cable (OBC) seismic in providing multi-component data. Both techniques are intrinsically superior in imaging resolution to anything achievable with towed streamers. In addition OBN and OBC can be used in obstructed areas around offshore facilities for targeted seismic over producing reservoirs.

The caveat for SeaBird should perhaps have been that SeaBed Geophysical languished in relative anonymity after its Pemex survey and had won no further work. SeaBed management did have a plan which SeaBird bought into, namely to build a purpose-built vessel for deploying, retrieving and servicing seabed nodes. *Hugin Explorer*, built in 2006, was duly converted to node operations at a cost of over \$60 million and was ready for operation by mid 2008. At the same time SeaBird was completing an aggressive programme of updating its fleet of eight conventional vessels. In the short term, the source vessels in particular proved easy to hire out as the major contractors were embarking on the newly emerging multi-vessel wide-azimuth 3D surveys. However, the wide-azimuth market has proved sporadic, partly as a result of the *Deep Horizon* disaster in the Gulf of Mexico.

## Little enthusiasm

But frankly you can't find anyone who is enthusiastic about operating a 2D seismic/source fleet, it's certainly not a line of business that the big boys get involved in. For example, PGS has been hiring the *Harriet Explorer* from SeaBird Exploration to carry out some frontier exploration seismic for the Norwegian Petroleum Directorate. Meanwhile TGS, the consummate manager of economical operations, invariably rents vessels shortterm when undertaking 2D multi-client surveys, and the choice of available vessels is always extensive. Bottom line, the earnings from 2D seismic were never likely to provide much financial cushion for SeaBird, and predictably 2D demand has not been strong enough for SeaBird to sustain a high utilisation rate for its vessels.

To the company's credit, the *Hugin Explorer* had by May 2011 completed six commercial surveys offshore



18-19 Oct 2011  
 Virtual Online  
 G2 events

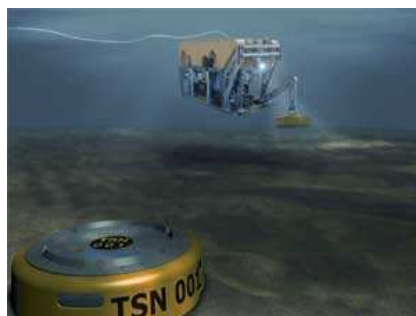


DRILLING + COMPLETING  
 Troubled Zones  
 October 25-27, 2011  
 Galveston Island  
 Convention Center

SPE Arctic & Extreme  
 Environments  
 Conference &  
 Exhibition

West Africa, in the Gulf of Mexico and in the North Sea for four different major oil companies. In August SeaBird won a 4C-3D seismic pilot project from the Indian Oil & Natural Gas Corporation (ONGC) for work in the Mumbai High Field. *Hugin Explorer* and *Munin Explorer* were due to mobilize following completion of a contract for ExxonMobil in the Norwegian North Sea. The data to be acquired is said to be needed for the optimal planning of two development wells on platforms being installed in the survey area by June 2012, ie a bit of a rush job.

SeaBird has therefore proved beyond doubt the value of OBN, but at a cost which it could not afford. Even the majors, such as Total, BP and Chevron, who were prepared to invest in this virtually untried seismic acquisition technology, have been circumspect in their ordering. As a result, work for *Hugin Explorer* has been profitable but not continuous. There has also been a steep operational learning curve since the first survey off Angola for Total, which is wholly understandable in the development of new technology. Unfortunately the cost was not easily absorbed by a company as small and financially stretched as SeaBird. In fact the flagship *Hugin Explorer* may be proving something of a liability, although no one is admitting this publicly. The vessel is probably over-engineered for its current operational mode working with a source vessel when it was originally envisioned as a single unit. SeaBird had hoped to build a second generation OBN vessel but that plan was scrapped in May. Adding to the company's woes, it suffered the basic difficulty encountered by many small companies with global aspirations of having to chase contracts around the world with limited resources.



One company that has not wanted to see SeaBird go under is PGS. In January this year the company signed a strategic cooperation agreement to further develop ocean bottom node solutions for deep water. PGS had an eye particularly on offshore Brazil where it is working with Petrobras on a fibre-optic based seismic permanent reservoir monitoring project. The company sees a node offering as an attractive addition to its broadband GeoStreamer and GeoSource solutions for towed streamers. In return for exclusive rights to offer node technology in Brazil, PGS provided SeaBird with some welcome financial assistance with a five year \$240 million convertible loan. PGS CEO Jon Erik Reinhardsen said the agreement 'enabled the two companies to provide a complete seismic offering in deep water areas, in areas with complex geology, and in areas with heavy infrastructure on the sea bottom.'

#### Article of faith

At SEG there was an assumption that PGS would be involved in the mix however the current financial issues of SeaBird are resolved. This speaks to an article of faith which has been around the marine seismic business for more than a decade: it is the belief that some form of receiver on the seabed, equipped with both geophone and hydrophone to record both P- and S-waves, will be a winner in the reservoir imaging stakes. In this context nodes are effectively the new competitor to ocean bottom cable technology which the big players have flirted with in the past and virtually abandoned. Indeed PGS, WesternGeco and CGGVeritas have been doing their damndest to show that the broadband seismic data possible from the latest towed streamer technology is a cost effective solution to oil company demand for better imaging of reservoir targets without all the trouble of placing and retrieving equipment on the seabed.

PGS interest in nodes may suggest that some of the pooh-poohing of ocean bottom seismic solutions may now just be a smoke screen as the contractors weigh their options. No one doubts that ocean bed acquisition produces vastly enhanced imaging. Yet critics in the past have insisted that the technology is a) too expensive and b) too complicated for the average bear, ie only the larger oil companies have the resources to properly understand and benefit from the multicomponent data acquired.



So, in part, the problem is simply demand. It will not have escaped anyone's notice that the long established, privately held FairfieldNodal based in Houston last year went as far as to change its name from Fairfield Industries, an indication of its intentions and commitment to nodal solutions. It has been quietly building up a track record for its Z700 units which have seen service among other places in Alaska, Southeast Asia, the Red Sea, the Caspian Sea and the North Sea. Its Z3000 deep water node solution has seen successful action in the Gulf of Mexico. The company's interest in nodes

stems from its development of a cableless seismic acquisition system for onshore applications.

Fairfield likes to point out that over the years it has always been profitable, which is code for saying that node operations can make money. It also claims that OBN is significantly less expensive and more efficient than OBC, which has always been bugged by industry mutterings about its cost and complexity.

Recent product developments suggest that the CGGVeritas group is focusing more on seabed solutions. CGGVeritas independently of its equipment manufacturing subsidiary Sercel, has reaffirmed its commitment to the deepwater Trilobit nodal technology that it acquired with its purchase of VeritasDGC but hardly used. The company has ordered the manufacture of an additional 800 Trilobit 4C OBN units to make a total of 1000 in its equipment pool by early 2012. The system works on the same principle as the SeaBird and Fairfield deepwater solutions using a flexible, containerized design which can be rapidly mobilized using ROVs.

#### SEG launch

Meantime at SEG, Sercel launched its SeaRay 428 cable-based seabed seismic acquisition system emphasizing higher channel count and greater layout flexibility to support operations down to 500m, with a lighter cable

option for water depths of less than 100m. Sercel management made it clear that it expects a spike in the market for OBC seismic as oil companies seek to maximize return from their reservoir assets.

Sercel's view will be welcome news to RXT, the Norwegian contractor which set out years ago to convert the world to OBC and nearly died in the process. Its history is oddly similar to SeaBird in its championing of new technology. The company was launched on a wave of investor enthusiasm and demonstrated the value of OBC on projects worldwide. But over-enthusiastic expansion and operational costs nearly got the better of the company. Respite and potential to regroup and prosper has come in the form of GeoRXT, a joint venture with the major Brazilian oil and gas services company Georadar.

Under the agreement, in which Georadar has a 55% holding, the JV will have exclusive marketing rights in the highly prospective Brazilian offshore, as well as the rest of South America, Angola, and some areas of the Middle East. RXT will focus on other parts of West Africa, the North Sea and Gulf of Mexico where it has had success in the past.

So, one takeaway from SEG was that there may be more to this ocean bed seismic business than meets the eye. If there was a sceptic in the house, it would be Schlumberger. The company has one operational OBC crew, no serious interest in nodes and a very much 'waitand-see' approach as to whether there is any serious money to be made. As we all know, a company of Schlumberger's size and financial clout can catch up overnight if it wants, with a technology acquisition always an option. Talk of a possibly growing potential market for OBC and OBN seismic begs the question as to whether some of the optimism will rub off on the prospects for seismic permanent reservoir monitoring (PRM) solutions. At SEG at least the usual stalemate ruled. Of course it makes sense, everyone says in one breath, and then in the other admit that the upfront cost of life of field seismic installation, doubts about the longevity of the seabed systems and worries about the technology being outdated continue to outweigh the perceived benefits.

Apparently this negativity did not deter US Seismic Systems (USSI), a Californianbased company making a first appearance at SEG. It was touting a fibre-optic based geophone in development, designed specifically for permanent installation on the seabed. Like the Stingray fibreoptic offering acquired this year by TGS, the USSI technology originates from the defence business.

According to Bjarte Fageras of the Norwegian-based Octio group, oil companies may be won over to PRM by the fear factor of not knowing enough and not doing enough to find out what is going on in the reservoir. You can certainly argue that the advent of microseismic monitoring has drawn new attention to the effect of drilling operations on rock structures, and that is certainly an undeveloped art in offshore reservoir production operations. The Octio concept envisages a total permanent reservoir monitoring solution (ReM), as the key to both increased recovery and reduced risk. The system is based on a digital network including high vector fidelity seismic MEMS sensors with interface to EM sensors, chemical sensors, biological sensors, oceanographic sensors and any other future sensor design. In other words it can keep an eye on just about everything over the lifetime of the field.

Sounds just like the digital oilfield that everyone has been eulogising about forever and doing ever so little to progress . . .OE

By: Andrew McBarnet  
Issue: October 2011

Comments (0) [Post comments](#)



Stop hammering sticky valves!

Introducing super-reliable stainless steel pilot valves for offshore applications.

ASCO®  
Right. Now.™

8361 Series

Quick Links ▼ ▲