

Why Firefly can deliver key benefits

IN A RECENT interview with *Oil Review Middle East*, Paul Brettwood, Director of FireFly Solutions Delivery at Input/Output explained the thinking behind Firefly, the world's first cableless system for full-wave land acquisition. FireFly is purpose-designed to deliver key benefits to both E&P companies and seismic acquisition contractors.

What prompted I/O to develop FireFly?

AS AN INDUSTRY, we are reaching the limits of what's possible in terms of seismic imaging with today's cable-based recording systems. These systems constrain how surveys are designed in a number of ways; requiring sensors to be spaced using regular, gridded geometries rather than being tailored to address particular imaging problems and also limiting the number of sensors that can be deployed. Many geophysicists are reluctant to design surveys that utilize more than, say, 5,000 sensors with a conventional system, simply because of the amount of cables involved. With today's imaging requirements taking us towards the need to have 50,000 or more sensors deployed, it was clear that the change to a cableless system was required. However, it was also clear that along with an increase in the channel-count capabilities, there also needed to be the development of software technologies to help manage and deploy the system – what we call the FireFly ecosystem.

What particular challenges/difficulties faced the seismic team prior to FireFly's creation?

THE BIGGEST CHALLENGES faced by a seismic crew using a high station-count cable-based system are principally logistical; the weight of all the cables to be deployed and the associated manpower and vehicles required. Reducing both of these elements significantly reduces the health and safety risks to the crew as well as the environmental impact of the survey. Cable-based crews can also spend a lot of their time troubleshooting the cables and effecting repairs – FireFly overcomes all of these challenges and



actually delivers productivity improvements as the station count increases.

What are the main benefits (or breakthrough advantages) of FireFly?

THE BENEFITS COME from the scalability of the system in terms of station count; this goes straight to the bottom line in terms of image quality. Cable-based systems are generally not very scalable, simply because of the number of cables required and the associated telemetry. FireFly overcomes this scalability issue by eliminating the cables and through the use of an ecosystem approach the hardware, software and processing techniques are combined to make operations more efficient. This ecosystem includes power management, navigation and positioning and active data quality-control together with new survey-design and processing technologies which take advantage of the denser image sampling. It also allows the acquisition contractor to work with fewer people per deployed station (which reduces cost and HS&E exposure);

eliminates expensive surveying (again, reducing cost and HS&E exposure), and guarantees comprehensive data integrity (less effort required in the processing centre for reduced cost). All three of these factors significantly reduce the total cycle-time of a project. A better image with reduced costs in a shorter time, with a reduced HS&E risk: that's a real value proposition.

Is the technology applicable to region's with harsh climates, such as the Heat of the Middle East, or the severe cold of Canada?

THE SYSTEM HAS been designed to take advantage of technologies which will allow us to operate in difficult environments; new battery technologies allow the system to operate efficiently in Arctic terrain whilst solar-power options are ideal for the Middle East.

The FireFly solution is still relatively young, but can you say so far which markets have proven excellent, and which require further progress?

We are in the early stages of commercialising the system but we've received a lot of interest from major oil & gas companies looking to use FireFly in a number of geographical areas including the Middle East and North Africa, South America and Russia.

Can FireFly be an optimal solution for the Middle East?

ABSOLUTELY! THE MIDDLE East market is one which demands high-technology solutions in order to address the particular imaging problems in the region, and high station counts together with full-wave sensors are key elements in solving these problems efficiently.

Has the technology been tried and tested in the Middle East?

AS I MENTIONED earlier, we are still in the early stages of rolling out the system and, to date, FireFly has not been used in the Middle East. However, we do have a number of enquiries from oil & gas companies in the region, keen to exploit its unique imaging and productivity benefits.

At the moment we are in the process of conducting surveys with our two launch partners, BP and Apache. In March 2006, BP committed to a 10,000-station FireFly field trial project at its Wamsutter gas field in Wyoming. This survey, which was conducted by Global Geophysical, has now been successfully completed and the results will be published shortly. The system is currently being mobilized for Apache, for another 10,000-station survey due to start in March.

