

Wireless Seismic – getting ready for commercial launch

Wireless Seismic Inc of Colorado is gearing up for a commercial launch, manufacturing and selling a wireless seismic acquisition system which can send all recorded data back to a recording truck in real time, wirelessly, eventually with up to 100,000 channels.

The company has been developing the technology since its founding in 2006, and is now ready to become a “full blown commercial operation late this year (2011) or early next,” said company chairman Gary Jones, speaking at the Jan 25 Finding Petroleum forum in London, “advances in seismic”.

“We believe we are disruptive technology in an established market and that’s a good place to be,” he said.

The company expects that “up to 50 per cent” of land seismic recording systems will be cable-less in the next 3 to 5 years, an increase from about 7 per cent of systems sold in 2010.

“There are now authorities in the US requiring companies to go for cable free systems – we expect that trend will continue,” he said.

The company already has 2 customers and a third one is ready. “We’re happy to take orders,” he said.

It has committed an initial run to manufacture the devices, and wants to see how well they are performing in the field before commissioning any more.

There are several cableless seismic systems already on the market, but these are mainly autonomous blind recording systems which store the data locally in a memory for later retrieval. Wireless Seismic claims to be the only system which delivers the data from large numbers of channels in real time to the recording truck.

Gary Jones, chairman, is previously president of WesternGeco and also a director of Ingrain, ARKeX and Novadrill.

In December the company announced \$19.5m in its latest funding round, from Chesapeake Energy, which claims to be the second largest producer of natural gas and the most active driller of new wells in the US, and Energy Ventures, an energy venture capital company.

Real time data

The seismic data is recorded by cable-free transmitters and sent back to a central base station wirelessly, which means that it is all immediately available for processing, not stored on the receiver units until they are col-

lected later.

By making the recorded data available in real time in the central recording truck, it can be quality checked immediately and any problems rectified, rather than only going through the data a few weeks later.

“Our thesis is quite simple - that real time data matters and its pretty imperative,” says Mr Jones. “How many people would prefer to get their data back in real time if they could on a cost competitive basis?”

Some earlier wireless seismic devices stored the recorded data in onboard flash memory devices for downloading later, a very tedious job. “I hate to be the person trying to transcribe a million channels of data collected through flash memory and putting them in proper order for data processing. That’s a tough challenge,” he said.

By immediately transmitting the data to a central location, it avoids the risk of data being lost, for example if a recording unit is stolen or damaged before the data on it is collected.

There are two separate wireless communications systems involved – a short hop system between individual wireless remote units (WRUs) along a line to a backhaul unit, and then a longer range communication system from the backhaul unit back to the central recording truck using a different radio frequency and 20 foot high antennas.

Better without cables

A seismic survey without cables should be much faster to deploy, because transporting and laying cables takes a lot of time. And the faster the survey can be done, the cheaper it can be done.



The wireless seismic equipment on the small truck on the left can do as many channels as the cabled equipment on the large truck on the right

Cables are dangerous. “Most lost time injuries in seismic crews are called by trips slips and falls mainly due to neck rolling cables [people rolling cables around their necks],” he said.

“If you can eliminate the cables you’ll get more uptime, less cable troubleshooting and safer operations.”

“We are aware of increased environmental footprint for less line cutting. Everyone .. would accept there’s a strong case for this direction.”

“Road and river crossings become a breeze if you have a cable less system.”

You can carry the same amount of channels on a mule if they are wireless, as you can with a truck and trailer if they are cabled.

There is also a lot more flexibility in survey design. “One of the beauties of going wireless is that we’re going to free up your geophysicists,” he said. “We can do coil designs, triangular designs, all sorts of designs that will allow for better geophysical attributes.”

“You can do variable density of line spacing. If you’ve highlighted some areas of greater interest through gravity gradiometry survey ahead of time, you might want to double up your density there.”

Wireless remote units

The wireless remote units, which are spread

around the recording area in their thousands, each weigh about 4 pounds (1.8kg) not including batteries. A string of geophones can be plugged into it.

To switch the unit on, you just turn it to a certain position – an accelerometer inside the device switches on the electronics.

Then you put it down and plug in geophones, and it runs through a series of tests.

The units have GPS in them so they know their location. Each wireless unit will look for nearby wireless units and communicate with them. Then they go into a quiet state (to save battery power) and wait for instructions.

The units also have a clock which is disciplined (synchronised) from the recording truck, rather than by using a GPS clock. "It works faster and with greater precision than the GPS clock," he said. The clock is disciplined all the way through the recording, so it does not lose synchronising part-way through.

The system will work in the full temperature range from the Arctic to the desert, and will record at under 10hz and up to 200khz.

The unit has 8 different levels of power consumption, and will automatically use the lowest power consumption which will carry

the data communications required.

Two batteries in the WRU will provide at least 17 days field life, he said. Batteries will normally last for the duration of the survey, so they won't need to be replaced part way through.

The charging status of both batteries can be monitored remotely from the recording truck.

The batteries can be charged up easily using a power supply in a hotel room. Electronics in the battery can manage the charging process and show whether the battery needs more charge or the charging is finished. "We decided to go for smart batteries and dumb chargers," he said.

Backhaul unit

Midway along a line of up to 120 wireless remote units, you position a backhaul unit, which sends the data back to the central recording truck.

The backhaul unit has a 20 feet high antenna, which telescopes. It can be carried by one person and deployed in 10 minutes.

Some people asked for a fibre optic cable for the backhaul. "We have that in case someone really wants that. But the wireless data backhaul is not the bottleneck," he said.

There have been many recent advances



A wireless receiver unit in operation

in short distance data communications technology, and the speeds continue to increase. "We're expecting 3-5 times increase in the very near future in that capability," he said.



I M A G I N E

OUR CUSTOMERS BUY SOFTWARE WHEN THEY HAVE MONEY!

Huh?

I HAVE LOOKED AT THE DATA FOR THE LAST 5 YEARS AND WHEN THE OIL PRICE ROSE OUR CUSTOMERS BOUGHT SOFTWARE, WHEN IT DROPPED THEY DIDN'T. THEREFORE MEGATECH SALES WILL BE LINKED TO THE OIL PRICE.

HAVE YOU INCLUDED ANY INDEPENDENT ANALYSIS?

NO. I DON'T THINK WE NEED TO SPEND TIME & MONEY CONFIRMING WHAT WE ALREADY KNOW.

MEGATECH

WORKING TOGETHER

It will be such a loss if he moves to the Middle East

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