

Off the Cusp

Maturing Sonic Technology Tips Sampling in Environmental Firm's Favor

By Tom Way

In a recent discussion about his purchase of a Dando Drilling sonic rig, Enviroprobe Service Inc. CEO Tim Gallagher said, "Everyone knew that, at some point, sonic head technology would become important to the environmental and geotechnical drilling sectors."

"It's been around for a long while now," he continued, "the issue has always been reliability, but improvements over the last few years have remedied that. For a long time sonic drilling was on the cusp, but now it has become a truly beneficial technology."

Enviroprobe, based out of New Jersey and with additional offices in Florida, has provided sampling and analysis services to customers along the eastern seaboard since their establishment in 1995. Their extensive range of rigs and

probing equipment reflects the geology, ground conditions and job requirements of the region.

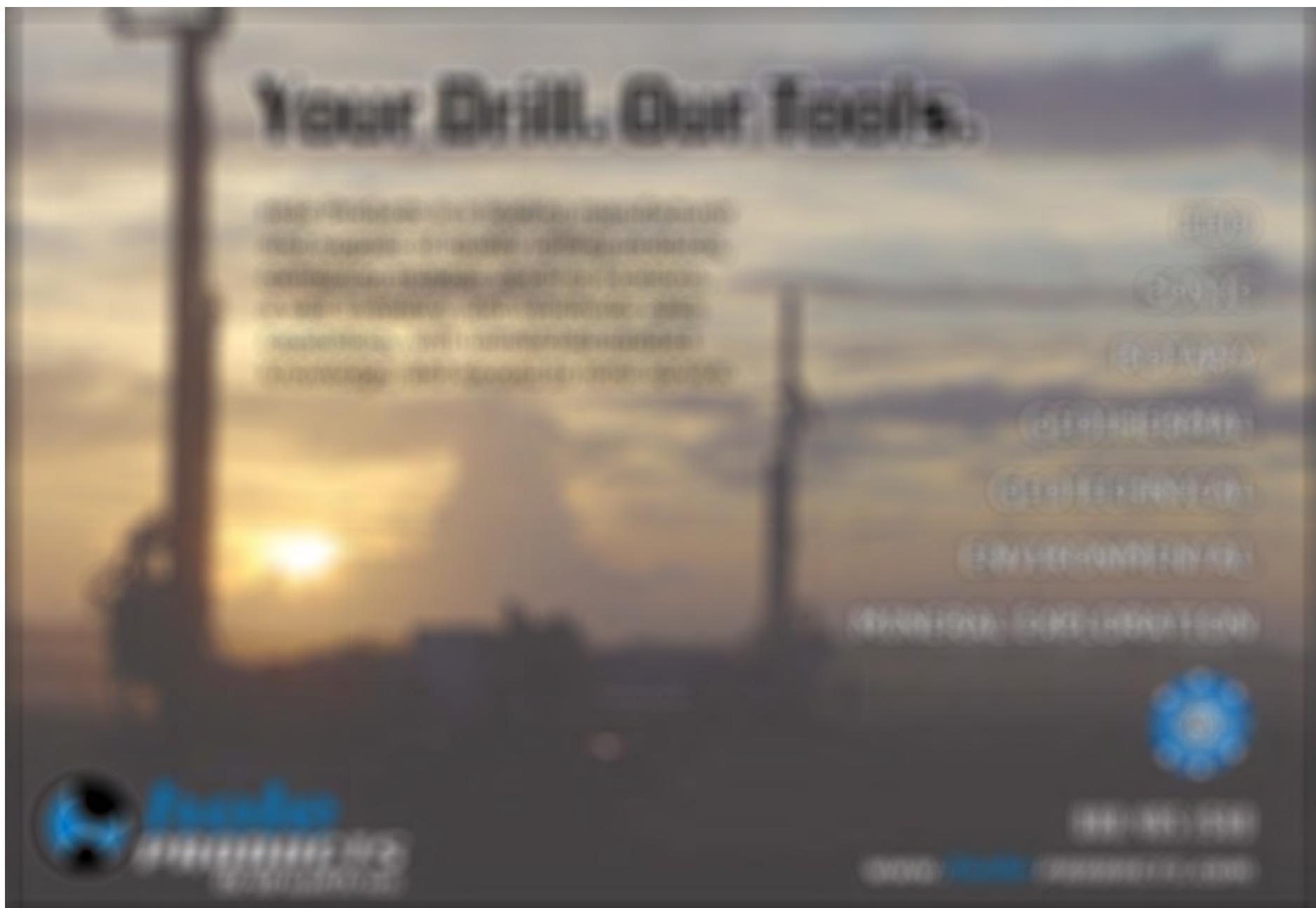
"We have mostly been using continuous-push rigs for collecting samples," describes Gallagher. "For the sand, gravel, clay and other softer geologies we typically encounter they are excellent for quickly retrieving uncontaminated samples at shallow depths."

However with a growing demand for sampling and testing in more difficult geologies, a new approach was required. "We had really gone as far as we could with our current equipment. Especially in areas like the northern parts of New Jersey where we often encounter geologies like glacial till."

Till is problematic because of the varied nature of the glacial sediment.



The SDC375 helps address Enviroprobe's growing demand for soil sampling and testing in more difficult geologies, including glacial till. Source: Dando Drilling





Enviroprobe's Dando SDC375 is fitted with a single-rod loader, which uses the most powerful Sonicor 50K head. Source: Dando Drilling photos

As well as sands, gravels and clays, boulders can often slow down or halt progression of sampling, or cause deviation of the drill string.

Gallagher considered a number of options for a new rig purchase before settling on a solution based on sonic drilling.

"Mud rotary isn't really an option when the majority of your work is environmental and requires uncontaminated samples and as little disturbance to the surround-

ing area as possible. Expanding our air drilling capability was another avenue I really didn't want to take," he explains.

After a period of research on the available sonic systems, Gallagher finally settled on Sonic Drill Corp. to provide the technology. Sonic Drill had recently teamed up with British manufacturer Dando Drilling International to produce rigs using their well-proven sonic heads.

Dando CEO Martin Fitch-Roy describes the collaboration. "We had been looking to build a sonic rig for some time but wanted to make sure we had a bullet-proof sonic head to use. Sonic Drill provided exactly that. The Canadian built head is the most tried and tested on the market."

The longest serving drill rig manufacturer in the world, Dando produces its range of rigs on a continuous build schedule and uses progressive, modular designs that allow the company to develop new models on short lead-times and, more importantly, keep costs low.

Dando engineer Rupert Coler worked with Gallagher to provide a rig that met the needs of the job. "We enjoy new design challenges at Dando," he explains. "We have an enthusiastic team of design engineers who, in the last year, have produced more new rig designs than ever before. It's an exciting atmosphere to work in."

The final Dando SDC375 sonic rig uses the most powerful Sonicor 50K head mounted on a steel-tracked crawler unit with rubber pads. Power for the crawler and the high-pressure hydraulics required for the sonic head are provided by a 225-horsepower Caterpillar C6.6 engine.

The mast has a hydraulic dump to enable Enviroprobe to drill at angles up to 45 degrees, and pullback on the head is rated to 10,000 kilograms, ample for the deeper drilling required. A 4.2 meter head travel means that 3 meter rods can be loaded and tripped.

The mast is also offset with the engine and hydraulics mounted on the opposite side of the chassis. This allows the mast unit to lie almost flush with the crawler when lowered and, incredibly, the whole rig can be loaded in a single 40-foot ocean container, which also helps reduce delivery costs and provides easier logistics between jobs.

To ensure safe handling of rods and tooling in line with Enviroprobe health and safety policies, Gallagher requested an automatic rod loader be fitted to the rig. A hydraulically operated single-rod loader provides an elegant solution. A rod is placed horizontally into a carriage at ground level, close to where the rods are stored on a rack. The rod



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The entire SDC375 drill rig can fit inside a 40-foot ocean container, which is ideal considering demand for the machine is expected to expand globally.

is then quickly raised vertically in line with the head and over the bore. Double hydraulic rams at the foot of the mast help break joints when tripping rods

prior to lowering them back to the rod-rack via the same mechanism.

Sonic drilling excels in problematic drilling conditions. In unconsolidated

or soft geology unparalleled sampling rates can be achieved. Unlike other drilling methods suitable for soft and unconsolidated geologies — rotary auger or percussion shell and auger, for example — sonic drilling is also able to continue drilling quickly through rocks and boulders. Continuous sampling consistently achieves very high quality core recovery without the need for drilling fluids or compressed air.

These are exactly the kinds of conditions found on the eastern seaboard of the U.S. and an increasing number of contractors like Enviroprobe are starting to adopt the technology. However, similar conditions are also found in most countries: so why hasn't sonic drilling been taken up with the same fervor elsewhere in the world?

Gallagher believes the reason is financial. "Sonic drilling rigs have traditionally required a greater initial outlay than rotary rigs," he explains. "Despite the economic downturn over the last few years, I believe it is still relatively easy to find financial backing in the States compared with elsewhere in the world."

Fitch-Roy is confident that, with the SDC375, Dando will make sonic drilling more accessible to all. "As far as we know, this is the most powerful yet most economical and compact sonic drilling rig in existence," he says.

"We are sure that in areas where contractors are willing to move away from the safety of traditional methods in lieu of more productive and efficient designs, this rig will be a very attractive proposition. As well as expanding into the North American market, we are expecting increasing numbers of orders from Europe, Africa and Asia."

Gallagher, who received his rig last month, has been impressed with the initial after sales service he has received. Dando drill engineers followed the rig to commission it onsite and quickly responded to his requests for adjustments to suit the needs of Enviroprobe. Now he is looking forward to putting the rig to good use, confident that he will be well supported by the manufacturer.

"The Dando SDC375 substantially increases the scope of work we are able to offer at Enviroprobe," he says. "Our early tests with the rig show that we are going to be able to offer our customers faster drilling rates and better samples at greater depths and in a wider variety of geologies than ever before." **ND**

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