


The Buzz

>> Our Website
>> Drill Rig Purchases
>> Press Releases
>> Brochures
>> Contact Us

SONIC August 2010

Sonic Drill Helps Students Reveal Glacial Secrets

IN THIS ISSUE

The Buzz is produced monthly for subscribers.

Click here to subscribe.

Click here to unsubscribe.

Click here for past issues.

In the summer of 2009, Dan Kelleher and Ken Borrell of the Midwest Geosciences group drove 20 hours from their home of Waverly, Minnesota, USA, to the University of Calgary in Calgary, Alberta, to experience drilling their first sonic borehole in Canada. The duo were in Calgary to deliver a workshop on glacial successions for more than 50 geologists from Canada and the United States.

"The sonic drill was awesome," says Kelleher, a hydrogeologist and project manager with Midwest Geo and co-founder of the company. "It's the answer this industry needs so badly. The word really needs to get out about what these rigs can do."

The company that actually drilled in Calgary was Crater Lake Drilling from Red Deer, Alberta, working with personnel from Sonic Drilling Ltd. of Surrey, British Columbia. "The crew did a world-class job of carefully sampling and providing 100 per cent core recovery which makes teaching sedimentary sequences much easier," says Kelleher.

First, the team drilled a pilot hole the day before the course, to better understand the geology of the region. Next, for the instructional hole, Kelleher had the sonic rig drill down 100 feet. The continuous core was then placed from end to end on a table enabling them to analyze it and read the story of the sediments below. "The soil core is remarkable when inspecting it in this manner," says Kelleher. "The sedimentary story is so much easier to read and the geologic history is apparent, even to those without a science background."

In environmental investigations like the Calgary workshop, high sample recovery rates combined with large sample volumes increase subsurface resolution which is a key element in why sonic is gaining so much popularity for environmental and engineering projects. "The sonic's wide sample diameter of 4.5-inches allows for large-volume samples," says Kelleher. "That is priceless when geologic conditions are comprised of buried large gravel and cobbles. Plus, the rapid sampling rate often does not reduce the sample recovery, yielding financial benefits for appreciable-sized projects."

Although the Calgary instructional hole was only drilled to 100 feet, sonic drill rigs are capable of providing uninterrupted core samples to 300 feet and beyond – a distinct advantage in many applications.

Geothermal Energy Melts the Way for Safer Streets

Although it sounds revolutionary, pavement snow-melting technology has been in use in a number of countries including Argentina, Japan, Switzerland and the United States and, in some cases, for as long as 50 years.

In a typical installation, snow-melting geothermal grids are buried under sidewalks, roadways and bridges – places where a particular stretch of pavement has a specific concern due to its location, climate or local conditions. By installing a geothermal grid, the problem area gains the many advantages of snow-melting technology which include:

- elimination of cost and inconvenience of snow and ice removal
- reduced wintertime liability from slick sidewalks or road surfaces
- a reduction in tracked-in sand, salt and slush to buildings
- elimination of damage to sidewalks and pavement from freeze-thaw cycles

In September 2004, the government of Japan's Akita prefecture decided it would use geothermal energy on a roadway snow-melting project to keep a problem tunnel entrance bare and dry. In this area, motorists were often at the mercy of the area's high Shirakami mountain range, formed long ago by volcanic activity.

At the entrance to a main tunnel, unsuspecting motorists travelling up from the sunny valley below were surprised to suddenly find themselves driving on ice. Due to the area's tough rock formation, a Tone-Sonic drill rig was used to drill the geothermal holes for this project. Licenced by the Sonic Drill Corporation to service the Asian marketplace, Toa-Tone Boring Co., Ltd. manufactures the same patented drill head as those manufactured by its developer, the Sonic Drill Corporation.

For the Akita project, 28 holes were drilled through volcanic andicite rock using 7" casings (178 mm) to a depth of 300 ft. (100 m). Although andicite presents a challenging rock formation, it does fracture which allows the sonic drill to penetrate while also delivering superior performance results. The Akita geothermal pavement grid marked the first time a sonic drill had been used in that type of application.

Sonic Drilling Development (Part Three) 1985-1995

Inventor, Ray Roussy left Hawker Siddeley to continue development work on the sonic drill and to adapt it to different applications. At least three years were spent trying to secure conventional financing but, like many other innovators, the banks were unwilling to support it. He was also turned down for government research grants. Given that a larger company, such as Hawker Siddeley, had tried to develop the technology before him, there wasn't a lot of confidence that one self-employed engineer could do it. Roussy even examined the possibility of going public on the stock exchange but a stock market crash in 1987 put an end to those plans. Eventually, with so many doors closed,Roussy decided there was only one way forward: design and build a sonic drill rig that could withstand the intense forces it produces, put it into operation and prove, once and for all, that it could operate successfully in the field.

Roussy decided to attack the problem on two fronts: design a drill head that would not vibrate itself apart and engineer a drill tooling system that could compliment the technology — all at the same time. Despite having an intimate knowledge of past sonic research, the challenges were daunting and finding the solutions took much longer than Roussy had ever expected. But, by applying ingenuity and mechanical engineering principles, he was ultimately successful in creating a winning design.

After building his first sonic drill rig in the backyard of his Surrey, BC, home, word of mouth spread quickly about the unique capabilities of the "Roussy sonic drill head" and Roussy was able to patent his ideas and develop his two companies with no public funds or grants required. Today, Sonic Drilling Ltd. and the Sonic Drill Corporation are privately-held — a testament to Roussy's pioneer spirit and determination. Ironically, the first contract for Roussy's sonic drill came quickly from the Canadian federal government to help investigate climate change in the arctic and the rest, as they say, is history.

www.sonicgeothermal.com SONIC DRILLING LTD. www.sonicdrilling.com

12055 - 102 Avenue, Surrey, BC, Canada V3V 3C5 Office: 1-604-588-6080 Fax: 1-604-588-6090