

PROBING TIMES

a publication of **Geoprobe Systems®**

INNOVATIVE RIGS AND EQUIPMENT FOR THE
Environmental, Geotechnical, Geothermal and Exploration Industries

Spring 2013



WIRELINE ROCK CORING
GEOPROBE® 7822DT

78 ROCK CORING?

YES!



"The 78 rig is spreading like a wild fire on the prairie! You can see the glow from a distance, and in an instant it's close enough that you feel the heat and hear the roar. And now, with rock coring added to the 78's capabilities, I expect that 'fire' to spread even faster!"

Lee Shaw • Geoprobe® Customer Service,
7822DT Specialist and Master of Prairie Metaphor

"I've been drilling like crazy! Love this new 7822DT rig!" said Chris Rismiller, Ohio Drilling Manager for Environmental Field Services in Lewis Center, OH. Based on feedback from other customers, the 7822DT has proved itself to be a strong force in a relatively short amount of time.

SIMPLE BASE MACHINE ... SCALABLE TO PERFORM WIDE RANGE OF TASKS

In 2009, the Geoprobe® Machine Engineering Team released the 7822DT ... a totally new machine. It was compact, lightweight, and the new combination rig appealed to many customers who just wanted to focus on simple direct push applications using the GH64 percussion hammer. These customers found the rig powerful, easy-to-use, and it got the job done for them in a shorter period of time.



Joel Christy (left) and Nathan Peters, members of the Geoprobe® Engineering Team, core to 150 feet using the new 7822DT rig and industry standard NQ wireline diamond core drilling tools.

Others enjoyed the flexibility of the 7822DT carrier which allowed for easy up-fitting of optional accessories, such as the GA4000 augerhead, overhead mast and winch, side storage racks, hydraulic sample extruder, and water transport systems. This handful of accessories broadened the array of projects the 7822DT could tackle with surprising success.

But at a much faster rate than anticipated, 78 owners were adapting accessories and asking for more options to expand the types of field challenges they could tackle. One specific request was heard repeatedly, "What about rock sampling?"

Fast forward to 2012. That spring, at the Geoprobe® Open House, the Geoprobe® Engineering Team demonstrated rock coring capabilities using the 7822DT – version 2 – equipped with a new GA4100 4-speed head. This new GA4100 allows customers to obtain rock samples using industry standard NQ coring tools operating at over 700 rpm.

"Of course we listened to our customers," Tom Omli said, Director of Sales for Geoprobe Systems®. "Teaming up with them to make their clients happy is what it's all about."

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COMBINATION PERFORMANCE

So why rock? Tom continued, "It's really a logical progression to provide rock sampling equipment. For nearly 25 years, Team Geoprobe® has helped customers obtain high-quality soil and water samples in unconsolidated formations. It's common for these same customers to be involved in

projects that require competent rock sampling. Adding rock coring options to this machine allows users to increase their utilization rates. "Obviously more working days per year translates directly to a positive movement in profitability," Tom added, "but nearly as important, it keeps a steady workload for field crews." The result: Geoprobe® customers enjoy success.

"The compact size of the 7822DT makes it easy to mobilize to the various rock sampling locations," Lee Shaw said, Geoprobe® Customer Service, "some of which are very remote and require customers to travel rugged terrain. And that's another instance where the 78 shines."

Are you interested in seeing this rig in action ... putting tools in the ground and coring through rock? The Geoprobe® Customer Service Center has the door wide open for visitors who want to see the 78 machine run through its paces. Call 1-800-436-7762 to schedule a convenient time for your visit.

NEW OPTIONS NOW AVAILABLE FOR 7822DT



New Geoprobe® GA4100 Four-Speed Augerhead with 4,000 ft. lb. of torque with a top speed of over 700 rpm.

NEW FOUR-SPEED AUGERHEAD

The new GA4100 Four-Speed Augerhead makes rock coring possible for the 7822DT. It provides the same high torque (4,000 ft. lb.) of the popular GA4000 with an additional high-speed range pushing its top speed over 700 rpm. The result is a compact drill head with versatile performance for drilling jobs varying from torquing-in hollow stem augers to high-speed rock coring applications.

Shifting between speeds is as simple as touching a toggle switch to shift-on-the-fly from 1st to 2nd and 3rd to 4th. A manual lever on the head is used to shift from 2nd to 3rd. The drive assembly is equipped with a speed sensor allowing accurate RPM feedback to the operator for machines equipped with the new control panel.

continued on following page

GEOPROBE® 7822DT

INDUSTRY 'FIRST' FEATURES

(MACHINE FOUNDATIONAL ASPECTS)

- X REAR BLADE – DROP RACK
- X FRAME RAIL – EASY ACCESSORY MOUNTING
- X POWERFUL PERCUSSION HAMMER MODULAR POWER CELL PLUS BI-DIRECTIONAL ROTATION
- X EASY SERVICE LAYOUT
- X IMPRESSIVE POWER-TO-WEIGHT RATIO



These core boxes hold the top 115 feet of rock cores taken at the Geoprobe® test site in Marion County, KS. The top of the first core is shown upper left. The blue oval shows where gray chert nodules are present in some of the buff colored limestone. The last two boxes on the right contain dark, greenish gray-to-red shale. The upper 40-ft. of the formation is comparable to the exposed rock face shown on next page.

MORE NEW OPTIONS ...

NEW WATER SWIVEL WITH FLOATING SUB

A new High-Speed Water Swivel can be pinned to the GA4100 which folds out of the way for easy hole access without removing the swivel. The water swivel features a floating sub that makes threading on and off of a light casing trouble free, while helping prolong tool joint thread life.



High-Speed Water Swivel with Floating Sub

Several interchangeable threaded subs are available including, NQ, HQ or NWJ, so the swivel can be used with industry standard coring tools. The water swivel utilizes standard, replaceable packing seals, and has a built-in housing stabilizer that eliminates the hassle of water hose management.

NEW SINGLE ROD BREAKOUT

A new 7-in. Single Rod Breakout is a great asset to have for use with the GA4100. According to Doug Walker, Owner of M&R Soil Investigations in Egg Harbor, NJ, his company almost passed on the breakout assembly when they ordered their new 7822DT. "We thought it was a little pricey, but we got it and we're so, so happy we bought it," Doug said. New developments for the breakout include a circle wrench and clamp jaws specific to NQ tooling (2.75-in. OD). The circle wrench is powered with a hydraulic cylinder that quickly and easily breaks rod joints without the distortion caused by a standard pipe wrench.



New 7-in. Single Rod Breakout

NEW HEAD FEED PRESSURE CONTROL MODULE

Another new optional feature for the 7822DT v2 is the Head Feed Pressure Control module. The rig operator can control and monitor the force the machine applies to the drill bit while also achieving hands-free operation. With the simple twist of a control knob, the operator can adjust the machine's 'weight on bit' and let the machine automatically adjust its feed rate to varying soil conditions. Bit weight control is specifically beneficial to rock coring and rotary air hammer work.



New Head Feed Pressure Control module for the 7822DT Control Panel

Both head feed and rotation are interlocked with a Safety Cage Rotation Guard, another safety feature of the 7822DT. The module also provides good visual feedback to the operator of bit weight and water pressure. A large hydraulic gauge, scaled in pounds, allows for easy reference of bit weight, and can easily be calibrated to compensate for rod weight hanging from the head.

The GA4100 option and related accessories for rock sampling with the 7822DT are in full-speed production. Call us at 1-800-436-7762 if you have questions or need additional information.



OUR ROCK CORING TEST SITE HAS PLENTY OF CHALLENGES

Our test site for rock coring with the 7822DT is adjacent to an active rock quarry in southeast Marion County on the central Kansas Prairie. The image above includes a photograph of a 40-ft. exposed rock face near the site. A computer-generated rig and tooling image is superimposed over the photo. The site is underlain by Permian Age formations consisting of an alternating series of limestone and shale. Several of the limestones are cherty and form much of the Flint Hills region in Kansas.

78 SOUND OFF!

7822DT Owners share rig performance reviews and why the machine is a good fit for their companies.

Doug Walker, MGWC • Owner/President
M & R Soil Investigations • Egg Harbor, NJ

"I'm ecstatic about our 7822DT! It's so great I can't believe it! Doing SPT work with it is unbelievable! And we're so, so happy we bought the breakout ... it's awesome!"



Don Zier • Rig Operator
Olympus Technical Services • Billings, MT

"I'm smiling! This rig is so nice to run. If anyone has run the older models, try this one. You won't go back. I commend Lee Shaw and everyone at Geoprobe® for their awesome customer support and service."



Jeff Stone • Drilling Manager
LT Environmental Drilling • Brownsburg, IN

"The 7822DT has really made me happy! We needed a rig to keep us competitive now and in the years to come. This 7822DT has done it! The unit's layout is much improved making rig maintenance and repair less labor intensive."



Brian Edwards • Env. Compliance Specialist
BeneTerra • Sheridan, WY

"Our experience with Geoprobe® has been great since day one. We are very excited about what the future holds for our company, especially with the addition of the 78 rig and the support from Geoprobe®."



FREE! GEOPROBE® ROCKS T-SHIRT

7822DT Owners: Send us your high resolution 7822DT rock coring or down hole hammer (DHH) photos with your name and company information, and we'll send you a new Geoprobe® Rocks T-Shirt!
Email to: laceyg@geoprobe.com.

Stearns Drilling Aims for Maximum Client Satisfaction



Bryan Marshall, 8140LS Operator, gets up close with the 10 in. x 10 ft. sonic casing.



A Few Good Men. Tom Ulrich works with the 8140LS Rotary Sonic in Parchment, MI, in wind chills to -25 degrees F. Also on site that day was Bryan Marshall. Yes, the joys of drilling!

When Stearns Drilling in Dutton, MI, wanted another sonic rig, their needs were specific. They wanted the ability to install 2 in. wells to 100 feet, drill deeper on an as-needed basis, and have a rotary rig with a lower tower height than many truck-mounted drills. “We chose a Geoprobe® because of their responsive people and their drive to keep searching for improvements,” the Stearns Team said. “Our goal is to provide our clients with the highest quality of services. The people at Geoprobe Systems® listen to us and work hard to provide a product that meets our needs. And that’s why we looked to them when we wanted an off-road sonic drill rig.”

Stearns Drilling has been a Geoprobe® customer for nearly 20 years.

Even though Stearns Drilling purchased a Geoprobe® 8140LS (long stroke) Rotary Sonic, they appreciate being able to work under lower clearance sites and inside facilities their larger sonic drill units can’t access. “And because the unit has rubber tracks, we can get to a lot of sites where a truck-mounted unit can’t reach without site access improvements,” the Stearns Team said. Stearns Drilling uses the rotary sonic rig to collect high-quality soil samples for sand and gravel exploration in addition to other geotechnical or environmental projects.

“We also selected Geoprobe® because of their responsive people,” they added.

Bryan Marshall, 8140LS Operator, needed a special adapter for their 10-in. diameter sonic tooling when he was planning to install electrical resistivity heating electrodes. “We made a call to Lee Shaw in Geoprobe® Customer Service,” Bryan said, “and the Geoprobe® Engineers went into action and responded with a custom-made adapter so we could start the project on time.”

“When we needed a replacement sonic head for our 8140LS, Team Geoprobe® responded immediately,” Bryan said. “They drove a replacement head to our office and we installed it within just a few hours.”

The Stearns Drilling team has kept their new 7822DT busy since it’s arrival in September. The company took advantage of the many new features and options now available for the 78 rigs. “This new rig increases the work that we can do for our customers,” said Tom Ulrich, who’s been running probes for Stearns Drilling for 15 years. “We use the 7822DT mainly in Midwest glacial deposits.” Tom, 7822DT Operator, said they’ve used the rig for chemical injection work and numerous soil and groundwater sampling projects. “The 78 is easy on landscaped or soft ground where not disturbing the ground surface is important,” he added.



The Stearns Drilling 7822DT, with Tom Ulrich the one-man drilling crew and photographer, works in Marysville, in southeastern Michigan, at a Detroit Edison coal plant, built in the 1920s. Tom was collecting soil samples and setting 1.0 in. PVC temporary monitoring wells. Marysville is on the western shore of the St. Clair River across from Corunna, Ontario in Canada.



Onsite with the Stearns Drilling rigs. (above) The 8140LS is in a thick, wooded area near Chelsea, MI, for a gravel exploration project. (right) At work with Bryan Marshall and Roger Christensen, lead operator of the 6620DT. (center right) The 7822DT rig at a southeast Michigan facility for a groundwater investigation. (far right) This time the 78 rig is in a field in southern Michigan for a subsurface investigation. (below) The 8140LS Rotary Sonic and supplies head down a river in southern Michigan for a river sediment investigation.



Drilling is a Family Affair

Charley Roberts, Owner of Roberts Environmental Drilling Inc. (REDI), in Millstadt, IL, first became acquainted with the Geoprobe® brand while working for Mathes/Burlington Environmental in Columbia, IL. “Early on I saw the value of obtaining excellent quality samples with little to no drill cuttings, as well as the speed and ease of a Geoprobe® machine,” Charley said. “Also, the quality of the Geoprobe® brand is unsurpassed in this industry. Nothing else compares to a Geoprobe®, both in quality and innovation.”

His first Geoprobe® purchase after starting REDI in 1992 was a 540M that they adapted and mounted onto a BobCat® loader. Another 540M arrived, then a 6610DT, followed by a 6620DT. “We use those a LOT for probing/sampling then switching over to hollow-stem augers for installing monitoring wells. The DT machines are our two most utilized rigs,” Charley said.

Just last year they purchased a slightly used 8040DT. “Wow! What a machine! It is just incredible!” he said. “The power and usability of that rig is phenomenal! We feel like we are giving our clients a far superior service/product with that rig.” REDI also owns four drill rigs, an air rotary rig, and two air knife machines. “We typically only run 5-6 rigs at a time, but we have a full range of equipment and service vehicles to provide our clients with most anything needed on their job,” Charley added. REDI also does Private Utility Locating with GPR and EM surveys.

Charley first became interested in drilling by helping his father-in-law, Lyle Henry, on weekends. Mr. Henry was a Sales Rep, Lead Field Tech and Company Pilot for CME, so Charley helped set up rigs for photo shoots, ship parts and doing whatever was needed. Charley’s first drilling job was with A&H Engineering in Peoria, IL, later changing to Professional Services Industries (PSI).

Five years later he moved back to the St. Louis area and worked as a driller for John Mathes & Assoc. in Columbia, IL. After about 5 years, he was promoted to management and then to Drilling Division Manager in the Columbia office. “During a peak time, I had 28 employees running 10 drill rigs and probe rigs all over the country,” he said.

Mathes sold to Burlington Environmental in the late 80’s. Charley left in 1992 to start his own company with his wife, Brenda. They started off with one drill rig and built the company over the next 20 years to the 10 drill rigs and probe rigs that it is today. Travis, Brandy, and Sean (son, daughter and son-in-law) continue the family tradition and play a large part in running the company.

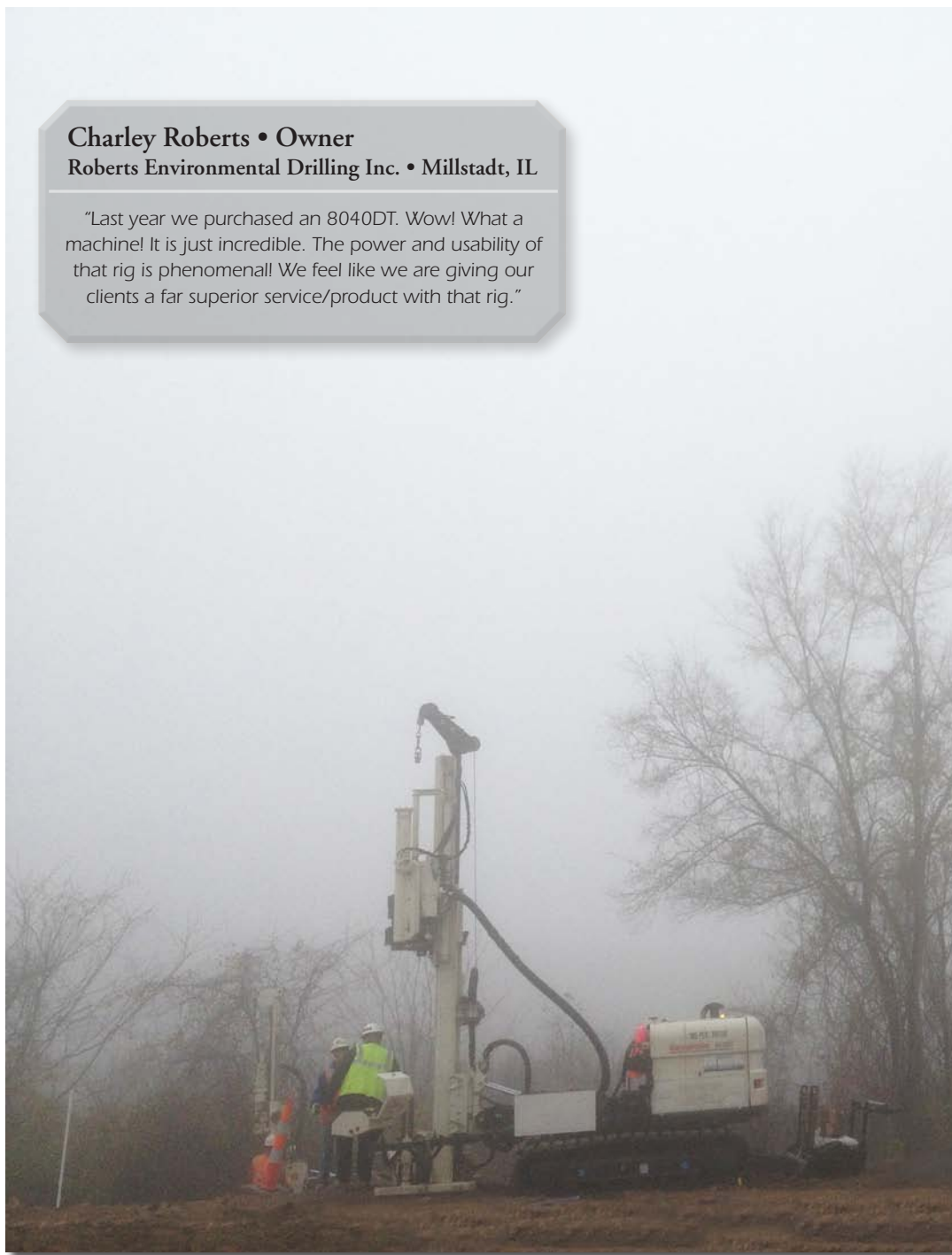
“I believe reliability is one of the most important things we provide our clients,” Charley said. “We need to keep their repeat business to keep being successful. We get repeat business by having high-quality employees, high-quality equipment, and giving our clients more than they ask for and more than they pay for.”



Driller Shawn Seymour and Helper Joe Luberda run the 6610DT in St. Louis, MO, in the shadow of the Gateway Arch. This rig and the REDI 6620DT are used a lot for sampling and augering for installing monitoring wells.



Drillers Pat Seymour and Brian Schilling use the 8040DT at Lambert International Airport, St. Louis, MO, to install 2-in. double cased wells utilizing Geoprobe® DT45 casing.



Driller Pat Seymour and Helper Matt Kwiatkowski operate the 8040DT on an abandoned site near the banks of the Mississippi River in St. Louis, MO.



(above) Lyle Henry, father-in-law of Charley Roberts, started in the business in the 1950’s drilling shallow water wells and cesspools in and around Esbon, KS, using an old cable-tool rig. He later got into geotechnical drilling with a Falling Rig and drilled for the State of Missouri. In the 60’s, he started drilling for Layne-Western, and in the late 60’s, he began his career with CME, retiring in the mid 90’s after 25 years with the company.



Fishin’ in northcentral Kansas. Lyle Henry (right) holds a string of catfish with his father-in-law. The family is looking for the same model 1950 Ford truck to recreate the old service truck as a tribute to Lyle’s influence in Roberts Environmental Drilling. Know any for sale?



A young Travis Roberts (third generation driller, son of Charley Roberts and grandson of Lyle Henry) rides with his grandfather on the very first CME-850 in the early spring of 1984. Mr. Henry was a Sales Rep, Lead Field Tech and Company Pilot for CME.



(right) Charley and Brenda (Henry) Roberts have been married 40 years. They started Roberts Drilling in 1992. They have a son and daughter: Travis, and wife, Suzanne; and Brandy, and husband, Sean Dodel. Charley and Brenda also have four grandchildren: Elise, Justin, Brandon and Logan.



The Roberts Environmental Drilling Team and their fleet of drill rigs. (from the left) Billy Harrison, Chris Hebel, Joe Luberda, Matt Kwiatkowski, Pat Seymour, Travis Roberts, Sue Naumann, Jeff Crank, Garen Stulce, Shawn Seymour, Eric Wetzel, Nate Frischkorn, Charley Roberts, Brenda Roberts, Ed Brown, Brian Schilling, Brandy Dodel, Sean Dodel, and Jim Breeding.



A Geoprobe® 8140LS Rotary Sonic works at a geothermal loop installation site near Florence, KS.

Geothermal Loop Installation

When Morning Star Ranch near Florence, KS, decided to build a new dining hall and the idea of using geothermal technology in the build was entertained, Joe Graham, Director of World Impact Ministries in Colorado, and Merle Flaming of Flaming Heating & Air from Marion, KS, contacted Geoprobe Systems® for help. Morning Star Ranch is operated by World Impact Ministries as a summer Bible Camp for inner city youth. Over the years, both

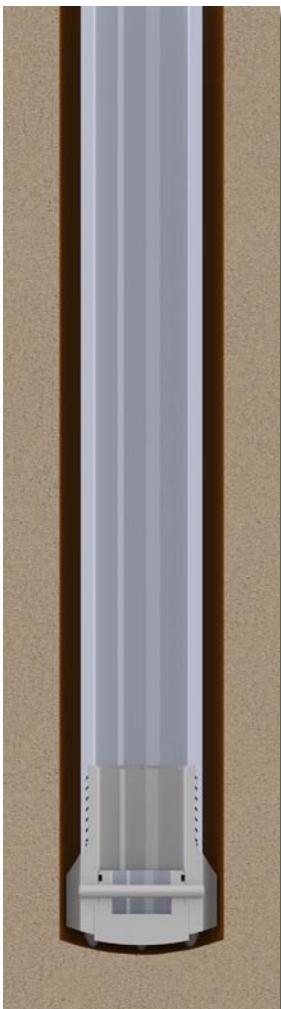
Flaming Heating & Air and Geoprobe Systems® have donated numerous hours of time and resources to help the ranch with its facilities and upkeep. This site is located in close proximity to the Geoprobe® diamond coring test site detailed on pages 2 and 3. For drilling purposes, most of the rock at the site would be classified as soft-to-medium with intermittent hard, cherty zones.

According to Joel Christy, Geoprobe® Product Engineer, the geology of the area was a challenge. “Working in this area was definitely different than our routine backyard drilling,” he said. “The Ranch facilities are all built in/on a hill in the Flint Hills, and the drill site was on a significant slope.” The rocks scattered around the hillside were also telltale signs of what the field team would encounter once the drilling began. The top 3 or 4 feet of profile at the site is soil. After that, it’s all bedrock; limestone and shale.

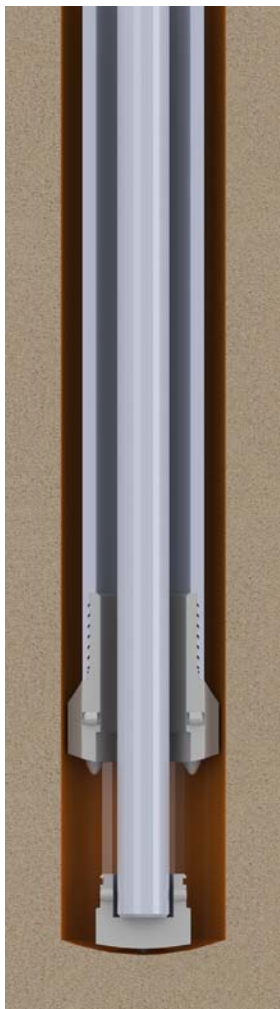
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Geothermal Loop Installation Process – Competent Rock

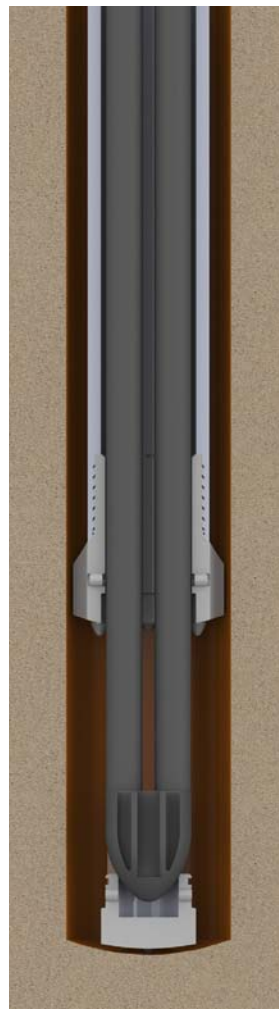
The Florence site is underlain with alternating limestone and shale beneath a thin (3 to 4 feet) soil cover. All told, more than 3,000 feet of rock was drilled for this installation. Drilling rock with the sonic requires the use of carbide insert drill bits. For this project, the field team used a simple, carbide inserted, expendable bit (shown on next page) that allowed placement of loops through the sonic casing.



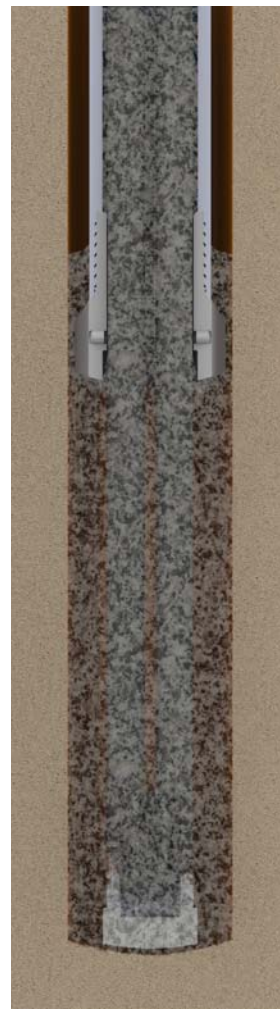
The boring is drilled to depth using an expendable bit. Since the drilling was primarily rock for this project, both the crown bit (holder) and expendable bit have carbide cutting teeth. The expendable is held into the crown bit using a metal shear pin. Rock is cut at the bit face by sonic drilling and flushed up the narrow annulus with water. At times there were returns on these cuttings but that was not a major concern. Sonic drilling does not require keeping the annulus flowing.



Once total depth was reached, the drill rod was lifted about 6 inches (15 cm) off the hole bottom. A heavy rod was inserted on a cable down the bore to knock off the expendable bit. For this task the field team used 15 ft. of 1.5 in. Geoprobe® rods lowered on a 0.25-in. cable. Manually lifting and dropping the knock-out rod was sufficient to shear the pin and disengage the center bit.



The geothermal loop was inserted down the open bore of the drill rods. For the Geoprobe® 3.5 in. sonic casing system the maximum loop size is 0.75 in. The top of the loop was cut off just below the top of the drill rod so the spindle could be re-attached for pumping grout and pulling rods.



With the loop on the bottom, the field team connect directly to the top of the casing and began pumping grout. In general, the field team pumped one hole volume of grout before pulling drill rods. This filled the bore of the casing and may have returned grout up the annular space to ground surface. As they pulled the drill rods from the hole they pumped grout. This both fills the void left by the retreating drill rod and keeps the loop in place at the bottom of the hole. In this case they were placing geothermal loops, but this bit system could be used to install anchors, tie-backs, or piezometers.



The sloping hillside and generous amount of trees are the ideal setting for a relaxing, get-a-way ranch, but the sloping construction site of the new dining hall provided plenty of challenges to the Geoprobe® R&D team as a test site for a geothermal loop installation.



No, it's not a lunar landing! Team Geoprobe works at the geothermal loop installation site in the really cold, early morning hours.

Geo = Earth. Thermal = Heat. Geothermal = Heat from the Earth

15 Loops Set At 200 Ft. BGS

The Field Team loaded up the rig and supplies and made the 85 mile trek Florence to drill the test hole. "After unloading the truck and getting set up, the 8140LS got us down to 200 ft.," Joel said, "and we were able to complete the loop, load up, and make it home in time for dinner with our families that evening."

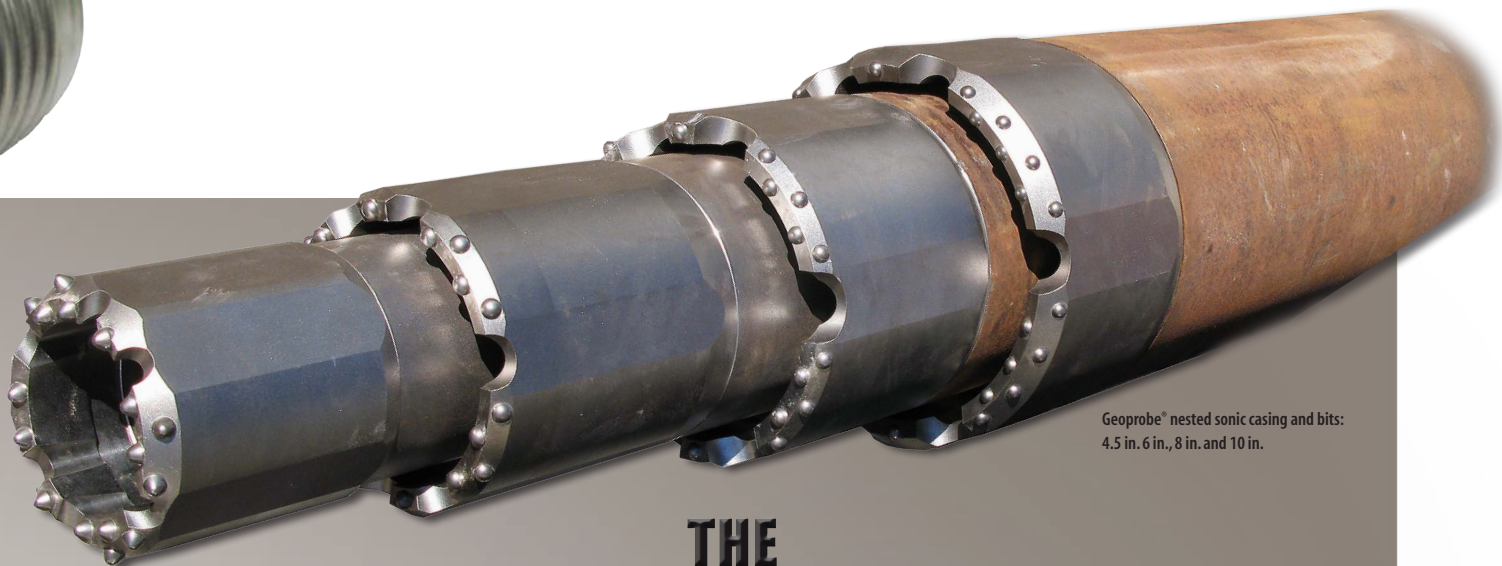
The 8140LS completed three groups of five loops for a total of 15 loops set at 200 ft.bgs. The field team used an expendable Geoprobe® carbide bit on 3.5-in. by 10 ft. sonic drill stem. At 200 feet, the expendable bit was knocked out and the loop was installed inside the 3.5-in. drill stem, then capped. According to Joel, "Grout was pumped into the drill stem to fill it, and then we continued to pump while tripping out our drill stem. This method assured us that the grout was 'placed' properly at the bottom of the borehole," he said. "We were very pleased at how well the 8140LS tackled the tough formation. The tracked rig made easy work of the steep, muddy drill site," he added.

The Geoprobe® field team consisted of Joel, Tom Christy, Jed Davis, Mike Carlin, Dave Golden, Blake Slater, and Nathan Peters.



Using a Geoprobe® 8140LS Rotary Sonic, Jed Davis, Geoprobe® Tooling Engineer, prepares geothermal loop for installation at a new dining hall construction site. As things worked out, the field team made a single test hole in the hottest part of summer, then completed the other 14 holes in the grip of winter. Ah! The joys of drilling!

Geoprobe® sonic rock drill bit for 3.5 in. rods used on geothermal project. This is a full-face bit with drop-out center designed for drilling in soft-to-medium rock. The outer crown bit, or holder, is P/N 216055. The center, expendable bit is P/N 216052.



Geoprobe® nested sonic casing and bits: 4.5 in., 6 in., 8 in. and 10 in.

GEOPROBE® SONIC

Specialized Soil and Rock Sampling Systems

THE TOOLING



- Solid Steel Casing (no welded joints)
- Exclusive Dual Tube Systems ... DT45 and DT60
- For Use With ALL Sonic Machines
- For Traditional Sonic Drilling Methods
3.5 in., 4.5 in., 6.0 in., 8.0 in., 10.0 in Sonic Casing Sizes in 5 ft. and 10 ft. lengths
- IN STOCK and Ready for Distribution

THE RESULTS



Geoprobe® Tooling Engineers collected 200 ft. (61 m) of cores in the backyard using a Geoprobe® 8140LS Rotary Sonic and SDT60 (sonic dual tube 6 in. OD) tooling. Each of the recovered core samples was approximately 4.3 in. (109 mm) OD and 10 ft. (3 m) in length. This photo shows the bottom 100 ft. (30 m) of the 200 ft. boring. The top of the core segment is at the lower right, and the final 10 ft. segment begins at the upper left.

MiHpt Site Investigation in Skuldelev, Denmark

Working in coordination with Mads Terkelsen at the Danish Capital Region, Department of Environment (DE) in Denmark, NIRAS A/S, an environmental company in Allerød, Denmark, has been conducting investigations and pilot studies at a PCE contaminated site in the small town of Skuldelev. Skuldelev is located in the pastoral country side about an hour west of Copenhagen.



Many of the homes in the small community of Skuldelev were built with thatched roofs which add to the charm of the countryside.

A small machining/manufacturing facility located next to the community park in Skuldelev had used PCE in their machining and clean-up

processes. Unfortunately, PCE was released to the environment, and the soil and groundwater was contaminated. MIP logging, coring, and groundwater monitoring were used to define several areas of elevated PCE contamination at the former manufacturing facility, including some dense nonaqueous phase liquid (DNAPL) source areas. Investigations by NIRAS had previously defined a groundwater plume migrating about a kilometer off site. Additional



Robert Berlowicz (left) and Thomas Layborn, both with NIRAS, collect groundwater samples at location SK04. The SP16 Groundwater Sampler was installed with a 30 cm (1 ft.) screen interval at increasing depths for profiling water quality. The Mechanical Bladder Pump and 12V actuator were used for pre-sample purging and sampling of X-VOCs. Robert records water quality parameters as Thomas prepares to collect a sample. The former machining/manufacturing building is in the background.

investigation determined that residential sewer lines/trenches were providing conduits for vapor intrusion. Corrective measures were quickly taken to eliminate the hazard. However, there was still work to be done to define the full extent of PCE contamination and develop an effective remediation strategy.

When Anders Christensen of NIRAS and Mads Terkelsen of



(left to right) Dan Pipp, Geoprobe® Chemist; Fabian Deweydt, Geoprobe® Environmental Technologies, (GET) Belgium; Peter Stig Thomsen, NIRAS, MIP Operator; and Thomas Layborn, NIRAS, MIP/Geoprobe® Machine Operator. Conducting response tests and reference tests on the MiHpt probe before a log is started. NIRAS has a specially designed MIP 'wagon' to move the MiHpt instrumentation around the site.

the DE learned about the new Direct Image® MiHpt system, they were interested in using it to run some logs at Skuldelev. MiHpt is a combined Membrane Interface Probe and Hydraulic Profiling Tool (Figure 1). They had learned from previous site work that the EC logs were not providing a clear distinction between the sand ± gravel of the local formation and the clay-till present beneath much of the site. This was due to the low electrical conductivity of the clay-till material. They were interested to see if the combination of the MIP probe and HPT would help them understand how the formation hydrostratigraphy may be influencing or controlling contaminant migration at the site.

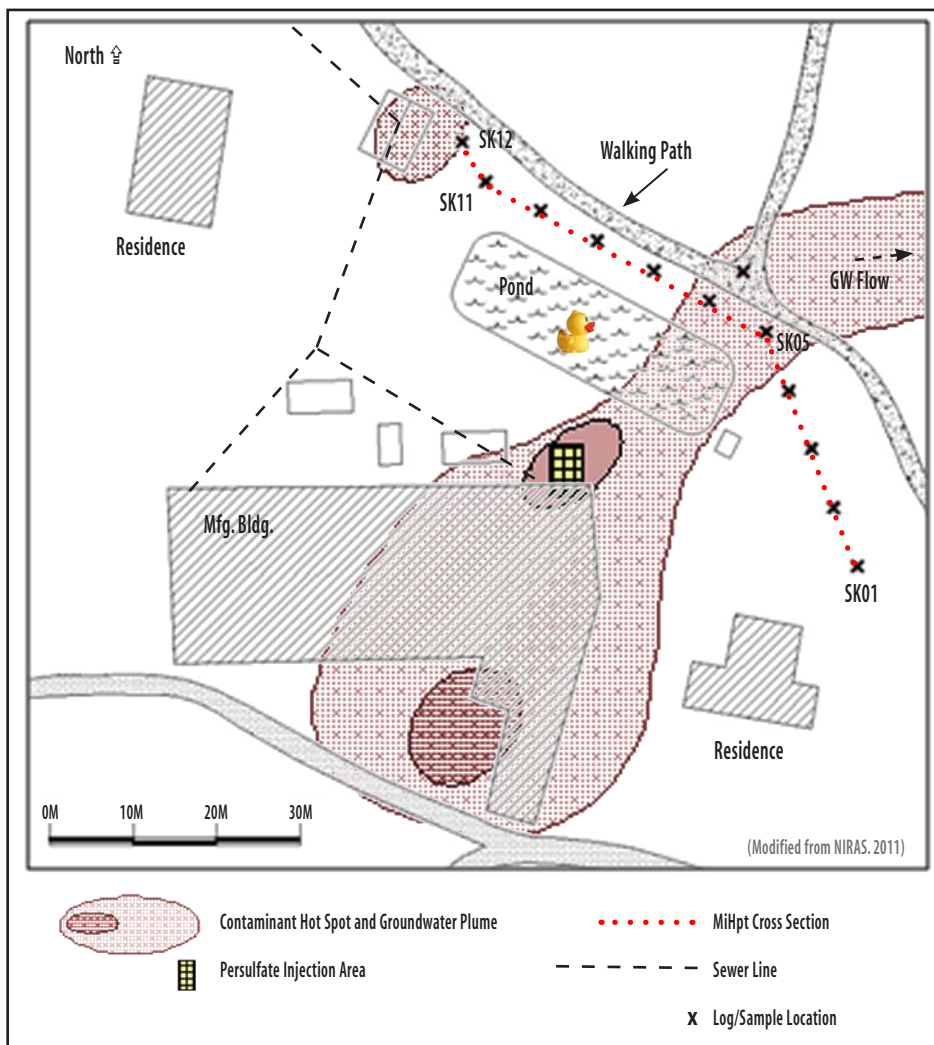
Wes McCall, Geoprobe® Environmental Geologist, and Dan Pipp, Geoprobe® Chemist, went to Denmark to work with the NIRAS field team on the project. After reviewing existing site information and assessing onsite conditions, the team decided to run a transect of MiHpt logs across the community park (Figure 2) to assess how contaminant concentrations varied across the area and how the local geology changed along the transect.

According to Wes, a good way to understand the local geology is to run a few MiHpt logs and then select a couple of good locations for coring. Wes explained that they used the DT325 coring system to collect 2-in. diameter cores at the SK04 and SK05 locations to verify what the HPT pressure and EC logs were revealing about

the formation. "When we compared the lithologic log based on the core samples collected at the SK04 and SK05 locations to the HPT pressure log," he said, "we saw the HPT pressure going up in the clay-till as we would expect (lower permeability = higher pressure) as compared to the lower pressure in the sands and gravels above." (Figure 3.) Wes continued, "At the background SK04 location, the EC did not significantly increase in the clay-till as compared to the overlying sands and gravels. This confirmed that the clay till has a relatively low electrical conductivity for a fine-grained formation. Generally EC ranges between 100 mS/m to 300 mS/m in similar fine-grained formations, but

continued on following page

Figure 1: The combined membrane interface probe and hydraulic profiling tool (MiHpt) also includes an electrical conductivity dipole to provide EC logs of the formation. Water is injected at 300 mL/min at the screened HPT and a downhole pressure transducer measures the pressure required to inject water into the formation. Nitrogen carrier gas flows behind the MIP membrane and carries VOCs via trunkline to gas phase GC detectors to the surface. The heater block enhances transfer of VOCs across the membrane. The MiHpt probe was advanced at 2cm/sec and stopped every 30cm (~1ft) for 45 seconds to allow for VOCs to cross the semipermeable membrane.



(left) Figure 2: Site and log location map for Skuldelev, Denmark. (above) A view across the east end of the pond in Skuldelev as the field team sets up for MiHpt logging in the community park. Note the large glacial erratic boulder behind the van. A PCE-contaminated plume migrates just a few meters beneath part of this community park and pond, shown in the site and log location map to the left. Local children and their families use the area for recreation and picnics.

this depends on the clay mineralogy and other factors. The SK05 EC log shows the EC increasing sharply about 0.5 m above the clay-till as defined by the HPT pressure increase. This suggests the possibility of an EC anomaly caused by an ionic contaminant,” Wes concluded.

When groundwater profiling was conducted at the SK05 location for X-VOCs, specific conductance measurements at each discrete depth revealed a distinct increase with depth in the formation, again suggesting an ionic contaminant in the groundwater. According to Wes, “When we discussed this with Anders, he explained that a sodium persulfate pilot test had been conducted in one of the DNAPL areas (Figure 2) up gradient of the MiHpt transect. His team had sampled several wells across the site and found increases in specific conductance in several of the wells together with elevated sodium persulfate concentrations. It appears that the elevated EC response we observed in several of the logs across the site was defining the extent of the elevated sodium persulfate concentrations in the formation,” Wes said.

Near the center of the MiHpt transect at the SK05 location, the field team observed elevated XSD and PID detector responses (Figure 4). These detector readings indicated that elevated X-VOC contamination is present in the formation from about 2 m. to -1m. elevation. The HPT pressure and Est. K logs (estimated hydraulic conductivity) showed that the contamination was present in the coarse-grained, highly-permeable sands and gravels (migration pathway) of the local formation. This is part of the X-VOC groundwater plume migrating off site. Soil samples were collected at the SK05 location with the DT325 sampling system and groundwater was profiled using an SP16 groundwater sampler and MB470 mechanical bladder

pump. Total X-VOC results of the groundwater samples roughly correlate with the contaminant plume as defined by the MiHpt-XSD detector log (Figure 4). The XSD log shifted slightly deeper relative to the groundwater results. Wes explained that this may be due to a slight delay in the MiHpt-XSD system response or a

stabilized groundwater quality (pH, DO, ORP and specific cond.) before sampling.

The soil sample results at the SK05 location were quite variable, but generally higher across the zone of elevated XSD detector response. The field team observed significant water/fluid loss when the saturated sand ±gravel material was sampled at the site (water simply draining out of the cores as the cutting shoe was removed from the sample tube to get the core out of the sample barrel). Wes said that it appeared that most of the X-VOCs in the soil samples were lost with this fluid. “We also observed that all of the groundwater samples at the SK05 location contained vinyl chloride (220 µg/l to 1700 µg/l) while no vinyl chloride was detected in any of the soil samples at this location. This demonstrates again the difficulty in obtaining a representative soil sample for VOCs, especially from saturated sands,” Wes said. “This is probably one of the many factors that contributes to the difficulty in obtaining a good correlation between soil sample analytical results and MIP detector log results observed by some investigators.” Soil type, the specific analyte(s), was done to achieve

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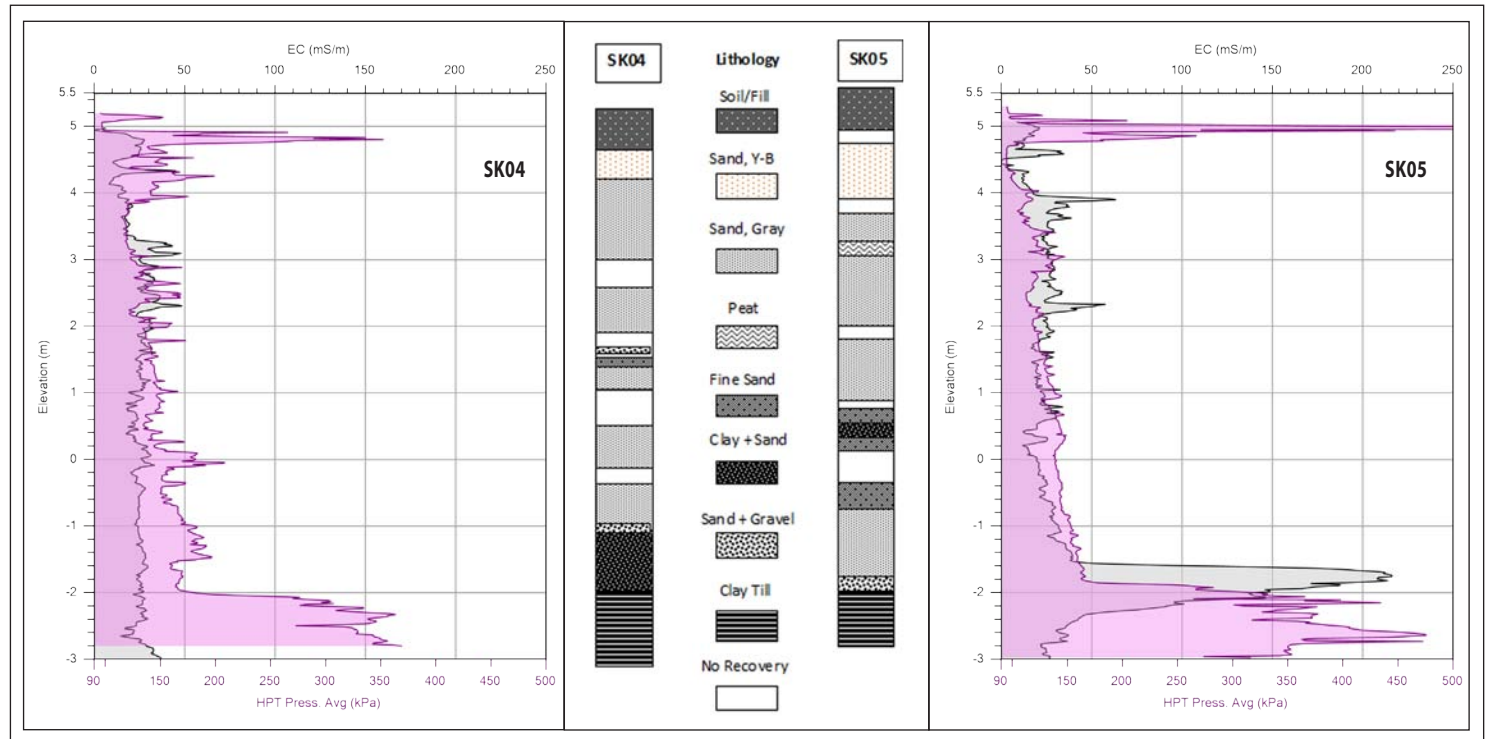


Figure 3: Comparing lithologic logs based on soil cores to Electrical Conductivity (EC, gray) and HPT Pressure (purple) logs at the SK04 (background) and SK05 locations. Note, at the SK04, there was no EC increase when HPT pressure increases in the low EC clay-till. Conversely, EC at SK05 increases sharply about one-half meter above where HPT pressure increases, suggesting an EC anomaly. Difficult recovery in some of the saturated flowing sands. Y-B = yellow to brown, suggesting oxidized, kPa = kilopascal (690kPa = 100 psi), mS/m = Millisiemens per meter. Elevation is relative to mean sea level.



(above) Adam Morkeberg (left) and Jacob Slotner, with NIRAS, use a drill and core-bit cut holes in the side of the filled PVC liners to access the core inside. (center) 25g samples of soil are extracted from the liner, and (right) dropped into VOA bottles for analysis. Samples were analyzed at the Milana Laboratory in Denmark by GC-MS for PCE, TCE, DCE, vinyl chloride and other associated chlorinated volatile organic compounds (X-VOCs).

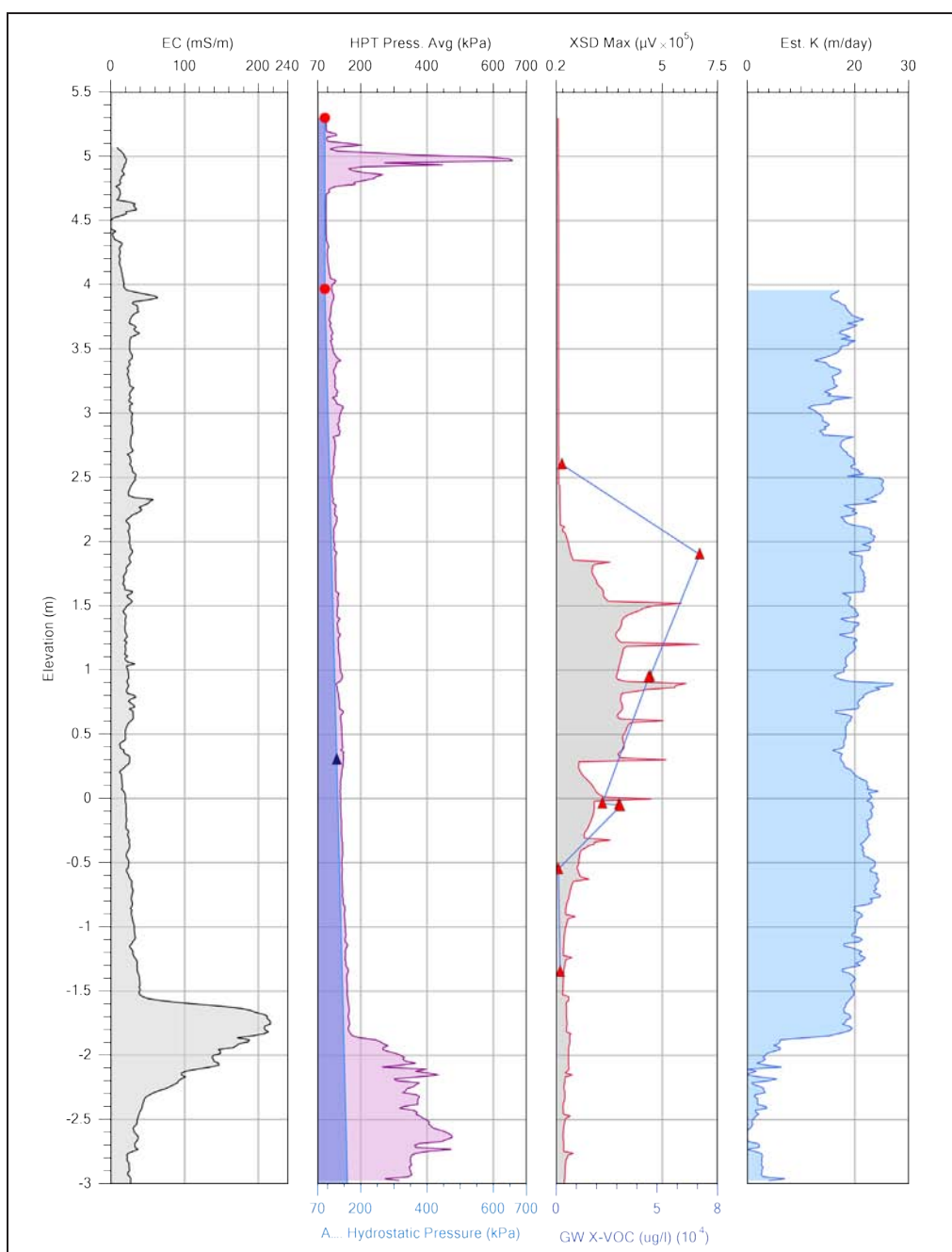
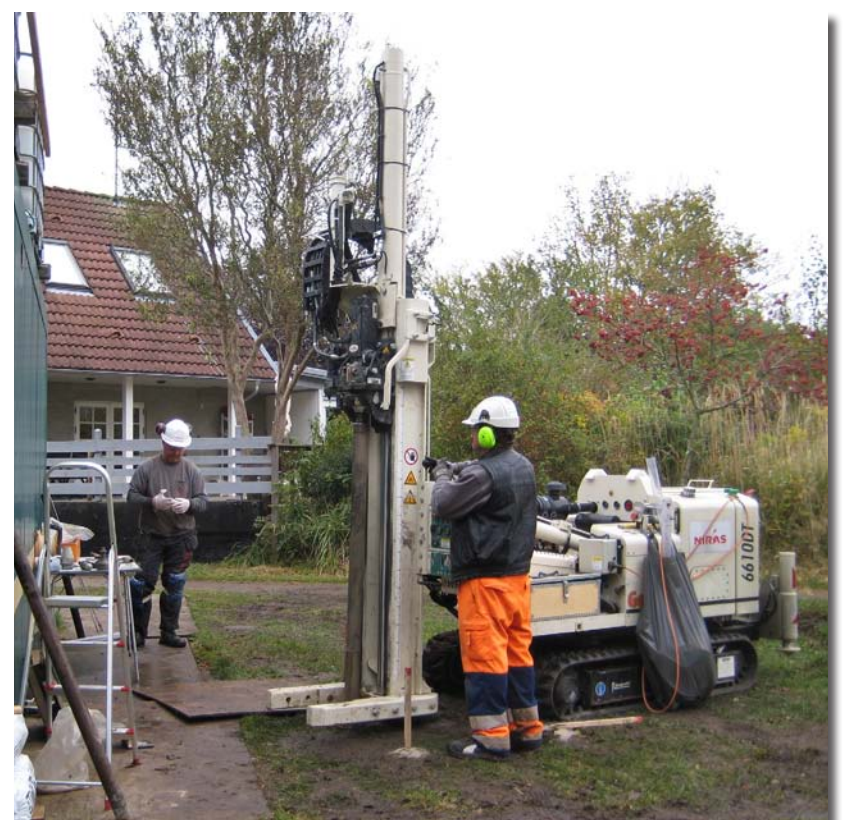
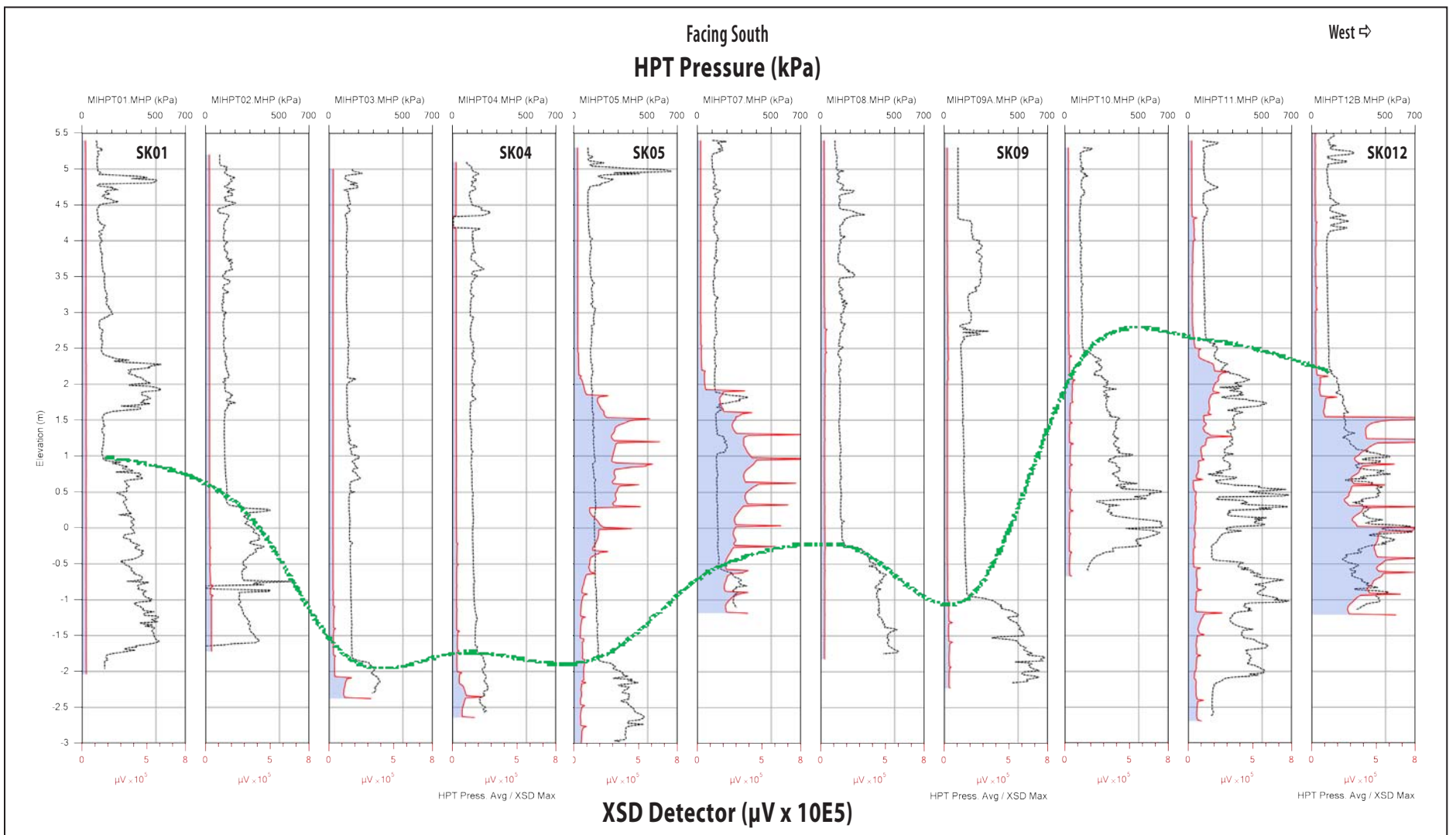


Figure 4: This is the MiHpt log obtained at the SK05 location. (left to right) electrical conductivity, HPT pressure (purple) with hydrostatic pressure (blue), XSD detector (red with gray fill) and groundwater total X-VOC (red triangles), and finally the estimated hydraulic conductivity log (Est. K). The Est. K log is calculated with corrected HPT pressure and flow rate using an empirical model. Groundwater X-VOCs include PCE, TCE, DCE and vinyl chloride. (Total X-VOC units are 10E4 µg/l).



DT325 soil sampling using one of two Geoprobe® 6610DT's at the site.



(Figure 5) Two-dimensional cross section at the Skuldelev site. Elevation is mean sea level. MiHpt logs were run in a general E-W line across the site. HPT pressure (black dashed lines), XSD detector response (red lines with blue fill). Green dashed line traces the top of the clay-till based on HPT pressure. Spacing between logs is approximately 8 meters. Top of the till defines a paleo-stream valley cut in the till by a late glacial stream and later filled with sand and gravel. The groundwater plume (SK05 and SK07) is migrating down the sand and gravel filled valley and migrating about one kilometer off site.

Skuldelev Site Investigation ...

organic carbon content, and sampling technique are some of the other factors effecting correlation of soil-sample-to-MIP-detector-log results.

After completing the transect of logs at Skuldelev, a cross section was assembled in the DI Viewer software using the HPT pressure logs and XSD detector logs (Figure 5). The elevation at the top of the clay-till (where HPT pressure increases) varies from about 2.5 m. to -2 m. elevation along this transect. A green, dashed line was added to the transect along the top of the clay till as defined by the HPT pressure increase. Above the green, dashed line, the formation consists primarily of sands and gravels (low HPT pressure); below the line the formation is a clay-till (high HPT pressure). According to Wes, this transect makes it evident that "a late glacial stream cut a small valley in the underlying till that was later filled with sand and gravel by an aggrading stream." The XSD detector logs on the cross section show that the groundwater X-VOC plume (logs at SK05 and SK07) is migrating down this paleo-stream valley filled with sand and gravel. Several years of work had been conducted at this site, and prior to completion of this MiHpt transect, it wasn't understood why the groundwater plume was migrating in this direction.



NIRAS uses a mobile Direct Image® logging trailer to transport their DI equipment and tooling to various sites. The trailer also protects the instrumentation inside during the process logging.

At the west end of the transect (logs SK11 and SK12), the elevated XSD detector responses occur in the higher HPT pressure clay-till, with little response in the overlying



NIRAS set up two of their Geoprobe® 6610DT rigs in the community park for the MiHpt Investigation. The MIP wagon and probe unit are set up at the SK04 location. Note large glacial erratic boulders in the park. A machining/manufacturing facility located next to the park had used PCE in their machining and clean-up processes. The PCE was released to the environment, and the soil and groundwater in the area was contaminated.

sands (low HPT pressure). This X-VOC hot spot is the result of a sewer leak after PCE was disposed of in the local sanitary sewer (Figure 2) at the manufacturing facility.

NIRAS and the DE continue with pilot tests and interim remedial actions at this site. While exposure hazards to the local residents essentially have been eliminated, there is still work to be done to complete the remediation and clean up.

NIRAS has been running Electrical Conductivity (EC) and Membrane Interface Probe (MIP) logs for several years, and a couple of years ago added the Hydraulic Profiling Tool (HPT) system to their tool box.

Geoprobe Systems® is currently coordinating with Anders Christensen at NIRAS and Mads Terkelsen at the DE to return

to Denmark and help with investigations at another site where VOC contamination is a problem. The NIRAS team and DE are interested in testing the new low level (LL)-MIP and HPT-GWS (groundwater sampler) at these sites to better understand site conditions and contaminant migration.

NIRAS is a full service Geoprobe® services provider in Denmark and Sweden. The company provides MIP, MiHpt, HPT, and other Direct Image® logging services, and have an inhouse mobile laboratory used for regular TRIAD based investigations.

If you're needing Direct Sensing Service Providers ... anywhere in the world ... we'll help you find them. Either go to www.geoprobe.com/di-field-contractors, or contact any of our Direct Image® Specialists at 1-800-436-7762.

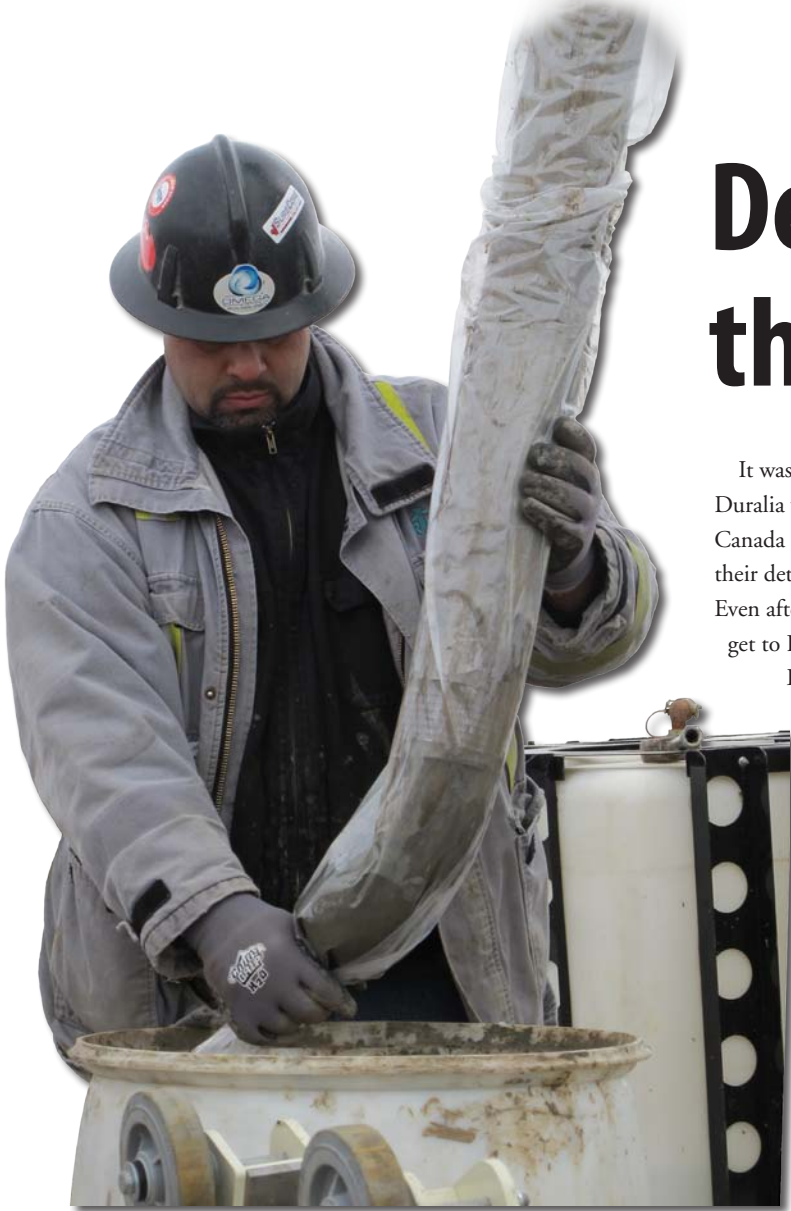
Direct Image® Webinars

Two Direct Image® Webinars were broadcast in March and April of this year to viewers across the globe. Presenters were Tom Christy, P.E. and VP of Geoprobe Systems®; Wes McCall, P.G., Geoprobe® Environmental Geologist; and Dan Pipp, Geoprobe® Chemist. If you missed the DI webinars, they can be viewed at www.geoprobe.com/webinars.



Mission Control. Wes McCall (left), Geoprobe® Environmental Geologist, and Dan Pipp, Geoprobe® Chemist, appear relaxed and ready during the pre-webinar countdown for the first Direct Image® webinar. Post-webinar photo ...not so pretty!!

Determined to Experience the Geoprobe® Experience



Bobby Tura, Owner and Operations Manager for Omega Environmental Drilling, received favorable feedback from Geoprobe® customers when he was researching which sonic machine to purchase. "They said you're a bar above the rest."

It was a nearly 4,000 mile round trip, but Bobby Tura and Clayton Duralia with Omega Environmental Drilling in Vancouver, BC in Canada didn't let distance or a late winter snowstorm interfere with their determination to take advantage of the 'Geoprobe® Experience.' Even after seven of their flights were cancelled, "we were excited to get to Kansas," Bobby Tura said, Operations Manager for Omega Environmental Drilling.

"We had heard that Geoprobe® rigs were a bar above the rest," Bobby continued. "I called around to other sonic suppliers and none of them offered training anything like what was being offered with your company. We called some of your customers without you knowing to find out about your products."

Clayton Duralia, who is the new 8140LS Operator for Omega said he was "nervous about coming, but the training staff made everything easy." The two days of training was definitely hands-on. Neither Bobby nor Clayton had previous sonic experience, but both said they went back to Vancouver confident and ready to go out in the field. "It was a great learning experience. The training was fantastic," Clayton said, "and the rig is very user friendly. It's quite easy to use."

Although the snowstorms caused some major scheduling problems for the Canada travelers, it didn't interfere with their excitement. Bobby said, "We were determined we would get to Kansas, and we're so glad we did. It was a great learning experience and worth every minute! Sonic will now be our specialty service to our customers."

Jeff Bibbings, National Sales Manager for Groundtech Solutions (exclusive Geoprobe® distributor in Canada) said that bringing Bobby and Clayton to Geoprobe® Kansas was an important step in the delivery process of their new sonic rig. "Besides getting first rate training," Jeff explained, "they were able to witness at 'ground level' the manufacturing of the machines and sonic tooling for themselves. They also see the people supporting the product and develop relationships with them."



Clayton Duralia (left) and Bobby Tura, with Omega Environmental Drilling in Vancouver, learn the art of sonic drilling during their two-day training.



Training Day One at Geoprobe® Systems in Kansas: Jeff Bibbings, National Sales Manager for Groundtech Solutions in Canada; Quinton Wilson, Geoprobe® Customer Service; Clayton Duralia (left) and Bobby Tura, with Omega Environmental Drilling in Vancouver; and Joel Christy, Geoprobe® Customer Service.



Clayton Duralia (left) and Bobby Tura, with Omega Environmental Drilling, control the movements of the rod handling equipment on the 8140LS.

Bobby Tura • Owner/Operations Manager Omega Environmental Drilling LTD • Vancouver, BC Canada

"I was really excited about coming in for training. We heard through the grapevine that if we wanted sonic we needed to talk to you guys. We called some of your customers without you knowing to find out about your products. The training was excellent! We didn't expect anything like this!"



Clayton Duralia with Omega Environmental Drilling in Vancouver, learns the controls of the Geoprobe® 8140LS Rotary Sonic.

THE **Genuine Geoprobe®** DIFFERENCE

SAFETY STANDARDS



This symbol is a CE Marking. It's a declaration by a manufacturer that a product, in this case a Geoprobe® machine, complies with the requirements of all relevant health, safety, and environmental protection legislation of the European Community. "I don't do business in Europe," you say, "so, why should this matter to me?"

Because safety is important, and if a design feature makes a machine safer in Europe, then it will likely make the machine safer in the rest of the world. Geoprobe Systems® incorporates many of the 'CE Marking' features in to all of their new machines. Reproduction of the symbol is the easy part! CE documentation requires mounds of paperwork and letters of compliance, and it means that Troy Bourbon, Geoprobe® Safety Coordinator, must monitor all of the documentation and equipment required for this CE Marking. It means design teams need to constantly maintain the highest level of safety standards when new machines and options are being conceptualized, or when design changes are made. Risk assessments are conducted to identify possible hazards from use or misuse. And the list goes on. "E-stops, rotation guards, cylinder pressures, hydraulic controls, we need to know that everything on the machine is as safe as we can make it for our customers," Troy said. "It's another important Geoprobe® difference."



Troy Bourbon, Geoprobe® Safety Coordinator

TRAINING

Do you have work for a new Geoprobe® machine but you don't know how to properly operate it? Have you purchased a used Geoprobe® machine and would like training to maximize operational efficiency? Has your company hired new field staff that needs trained in the safe operation of your current equipment? If you've answered 'YES' to any of these questions, help is available. At Geoprobe Systems® we frequently provide hands-on training in the safe operation of our machines and tooling systems to customers from all corners of the globe. Call Geoprobe® to discuss your training options.



SERVICE

The Geoprobe® Service Team is dedicated to your success in the field. There's phone support to help with ordering maintenance parts, for talking through a unit issue, or troubleshooting to help keep a sluggish rig running in the field. The Service Team can ship parts late in the day for next-day arrival. They also maintain a large inventory of both new and older machine parts. The Service Team not only helps service your equipment, but they'll also train your staff to properly service and maintain your Geoprobe® rig. During the training sessions customers are instructed on hammer maintenance, replacing sonic heads, where to check fluid levels, grease point locations, and suggested maintenance intervals. And, if necessary, members of the Service Team can react quickly and help get your rig up and running at your site. Unmatched Service. Team Geoprobe believes there's no better service available anywhere! And they're ready to stand behind that statement.



Bryan Lorenson (kneeling), Geoprobe® Customer Service, explains the use/location of fuses and relays on an 8140 live wire harness display during a customer training session.



Collecting MCS soil samples between two active fuel storage tanks at Cape Newenham Air Force Station Long Range Radar Site (LRRS) in southwest Alaska.

54LT: The Little Rig That Could

Discovery Drilling in Anchorage, AK, purchased a new Geoprobe® 54LT in July of last year. After testing it out in their backyard to better understand the machine's capabilities, they packed it up for mobilization to Cape Newenham and Indian Mountain – two US Air Force Stations operated by the Alaska Air Command in the remote Alaskan wilderness. The two locations were part of an ongoing Compliance Site Investigation where Discovery Drilling, working with CH2M HILL, provided soil and groundwater sampling at Long Range Radar Sites scattered all over Alaska.

As with many of the remote locations in Alaska, Cape Newenham and Indian Mountain have no road access. The only option to mobilize equipment and supplies is to fly in the drill rig and tooling. "We selected the 54LT for Cape Newenham and Indian Mountain based on logistical constraints and the scope of work," said DJ Wardwell, Assistant Operations Manager for Discovery Drilling. "We were able to fly it in and out of both sites with smaller cargo aircraft than would be required for a larger rig, which substantially decreased our mobilization costs. We drilled many of the 10-foot borings in a fast and efficient manner, and the 54LT was able to access locations that a larger rig would have no way of getting to," he added.

Soil sampling was completed using the Geoprobe® MC5 Soil Sampling System collecting 4-foot samples. When groundwater was encountered, Mill Slotted 2.25-in. rods were driven to the required depth and water was collected with a peristaltic pump.

Although the boreholes were relatively shallow, the geological conditions were challenging none-the-less. "I admit to being skeptical of the 54LT's abilities upon first seeing it," DJ recalls. "You most always sacrifice power when using a smaller-sized rig. But the samples speak for themselves. I was really impressed at how the 54LT was able to advance the probe through large, gravelly material."

The Discovery Drilling 54LT has earned the nickname, 'The Little Drill Rig That Could.' DJ added, "Even our most battle-hardened drillers had to comment on what a 'cute' little rig it was when they saw it for the first time! It's a great addition to our fleet, and we expect to use it much more in the future for remote site work."



DJ Wardwell with Discovery Drilling uses the 54LT to collect soil samples at Indian Mountain Air Force Station in Alaska near the top of the runway.



DJ Wardwell uses the 54LT to collect MCS soil samples near an active above-ground fuel line at a site at Indian Mountain in Alaska.

**DJ Wardwell • Assistant Operations Manager
Discovery Drilling Inc. • Anchorage, AK**

"I was really impressed at how the 54LT was able to advance the probe through large, gravelly materials. You always sacrifice power for a smaller-sized rig, but the samples we recovered speak for themselves."



The 54LT and MC5 soil sampler had no problems with the large, gravelly materials encountered at the Cape Newenham drilling location.



(below) DJ Wardwell, Assistant Operations Manager for Discovery Drilling, loads the 54LT onto the Skyvan at Cape Newenham after sampling operations were complete.



(above) The 54LT's small size and light weight made it a perfect candidate for remote Alaskan sites with logistical constraints. There was no need to disassemble any part of the rig for transport.

ALASKA

Cape Newenham served as a U.S. Air Force General Surveillance Radar Station until its closure in 1983. It has been re-designated as a Long Range Radar site and operates as an active part of the Alaska NORAD Region under the jurisdiction of the 611th Air Support Group in Elmendorf AFB, AK. As with Cape Newenham, Indian Mountain is supported by Elmendorf AFB, but it is generally unattended. Cape Newenham, in southwestern Alaska, is approximately 475 miles from Anchorage, and Indian Mountain is approximately 350 miles from Anchorage in central Alaska.



THE BIG AND THE LITTLE

"It is such a simple, uncomplicated thing that makes her life better, and the fact that we can provide it is a blessing to us."

... Mike Carlin, Geoprobe® Tools Engineer and volunteer for Big Brothers Big Sisters

This is a little story about two Bigs who have had a big impact on a Little.

Mike Carlin, Tools Engineer with Geoprobe Systems® for nearly 20 years, and his wife, Stephanie, are Bigs. They've been Big Brothers Big Sisters volunteers in Salina since early 2000. (Volunteers are known as Bigs, and the youth they're paired with are Littles.)

Mike and Stephanie began as a 'Couples Match' for Big Brothers Big Sisters with 9-year-old Justin for several years until his family moved out of town. "A year after our first son, Cooper, was born, I felt the need for us to get involved again," Stephanie said, "but this time with a little girl. There was way too much boy stuff going on in the Carlin household!" A few months later, they became 'School Based' matches with 7-year-old Mykyla, and had lunches with her at school or played with her during recesses. The Carlins soon moved to a 'Community Based Match' which allowed them to spend more time with Mykyla. "Her mom was not in the home, and we felt she needed someone to spend time with outside of the school environment," Mike added.

Big Brothers Big Sisters recommends spending 2 to 4 hours a week with a Little. Before the twins were born, Stephanie said, "Mykyla and I would have slumber parties, and she would spend weekends or at least a full day on Saturday with us which included shopping and mani's and pedi's for us girls!" After the twins arrived in 2009, Mykyla enjoyed helping with the babies. "She has really become part of our family over the years," Mike said. They have also enjoyed numerous trips to the local zoo, yearly visits to the Pumpkin Patch, and time at the circus, the Expo Center and ice skating in Wichita, movies, carnivals, the River Festival, swimming, and evenings out for dinner.



Mykyla and Stephanie dancing at the Starlight Skating Rink.

Mike and Stephanie have enjoyed their times with Mykyla, and believe the relationship has been very rewarding for the entire family. Stephanie shared: "I really enjoy spending time with Mykyla; when it's just the two of us or as a family. She's smart, she's beautiful, and Mykyla has the potential to do whatever she wants to do. We've approached our relationship with Mykyla in a similar way we're raising Cooper, Zach, and Brooks. Mike and I know that our responsibility to the kids is to teach them values and show them a way of life that we believe will start them down the right path. We can only model a lifestyle and family relationships for Mykyla and the boys that, if they chose, they can achieve."

Mike added: "As a parent of a 6-year-old boy and 3-year-old twin boys, my time with Mykyla reminds me of how astronomically huge the responsibility of parenting is. Providing guidance, structure, direction, praise, discipline, support, and love are just a few things that could be considered the tip of the iceberg. Spending time with Mykyla is a humbling reminder that a simple commitment of our time spent

Mike Carlin • Big Brother

"I wear an orange rubber band on my left wrist. Mykyla gave it to me a long time ago. It's one of those friendship bands, I think. I haven't taken it off. Ever. Not even at the security checkpoint at the airport. When things at home are nuts ... cranky kids who are crying, Steph is mad at me, behind at work, coming down with the flu, ... I give that rubber band a little snap, and it reminds me of Mykyla, and I become aware of how much I've been blessed in life. It is a simple, humbling reminder that no matter how tough I think I have it, I know Mykyla has it tougher, and it makes me want to help her in every way I can."



Saturdays are sometimes Park Day for the family. 'Little' Mykyla shares her day in the park with 'Big' Mike and one of the Carlin twins, Brooks.



(above) Zaaaam! Holy Salt Shakers, Batman! Cooper and Mykyla check out the salt caverns and museum 580 ft. below the streets in Hutchinson, KS, during a field trip with Mike. (center) Mykyla shares some dress-up time with Stephanie celebrating Mykyla's completion of 5th Grade Band class. (right) It's all smiles with Grandma's Phylliss Werth (left) and Marcia Klingzell as they work their 'grandma magic' at the park with Cooper and Mykyla.



(above) Mykyla and a girlfriend celebrate strikes at the bowling alley with Cooper. (center) Mykyla blows out candles on her 8th Birthday cake as Cooper keeps an eye on a chunk of frosting. According to Stephanie, "Our boys absolutely LOVE Mykyla." (right) Mykyla and Cooper, best buds, enjoy Slurpies together.



with her makes such a positive influence in her life. A commitment to spend time with her ... something she can always depend on regardless of what is going on in her life."

Heather Murdock • Program Coordinator Big Brothers Big Sisters • Salina, KS

"It is truly amazing to see how tremendous the effects can be when our Bigs, like Mike and Stephanie, spend a few hours each week with their Littles. It is not uncommon for family units to become more manageable when a child has been in our program. We often see negative behaviors diminish and grades improve."

Big Brothers Big Sisters creates, monitors, and maintains meaningful and impactful relationships between adult volunteers and children, ages 5 through 18. The program helps children attain their greatest potential by finding those individuals who are struggling, for a variety of reasons, and offering them role models who can offer the tools necessary to be successful in life.

Just about anyone can become a Big Brother or Big Sister. Mike and Stephanie believe that positive mentoring is very important in young children. "For those who are considered 'at risk,' early intervention is the key," Mike said. "I firmly believe that the primary reason a lot of youth today seem so troubled is

because they do not have positive role models/mentors in their life."

"Being involved in this organization has been a life-changer for me," Mike concluded. "It's been a reminder that I need to think outside my family's circle. Mykyla has become a part of our family, and we really want to help her break the cycle and become something better than she ever could have imagined."

For more information about the Big Brothers Big Sisters organization, go to www.bbbs.org.



Mike took this photo of his family: wife, Stephanie; Cooper (yellow shirt), Brooks (red shirt), Zach (green shirt), and their Little, Mykyla. "Something as simple as going to the park for a picnic can have a lasting impact on a young person who has never been able to do those things," Mike said.



Geoprobe® Service Resource Center

Super Service Professionals

Steven Gautney and Kevin Heinrick with Major Drilling in Huntsville, AL, called the Geoprobe® Service Team on a Monday afternoon to discuss the situation of a 'rig down' near Bristol, TN. The rig was an 8140LS Rotary Sonic, and it had been working on the back side of the South Holston Dam. According to Darren Stanley, Geoprobe® Service Manager, "The whole key to the happy ending of this story was the excellent phone feedback we received from Steven and Kevin so we could diagnose the problem." Before leaving Kansas, the service group initiated a get together with design engineers to cross check the field feedback to ensure a solid service repair strategy was in place. "Although Geoprobe® engineers take great pride in designing durable machines, all man-made machines have something in common. "Machines require maintenance," Darren said, "and they will break down at some point. That's why Geoprobe Systems® invests resources to support an industry-leading service team."

Darren and Todd Ewing, 8140 Sonic Specialist, loaded a service truck and were headed east to Bristol by 4:30 the next morning. Twenty-one hours later they arrived onsite with the proper safety attire, the right tools for the job, and safety supplies to prevent any site contamination. Todd and Darren could also explain to the site safety officer and the Tennessee Valley Authority personnel what repairs were needed and also what safety measures they had planned to protect the environment. After the repair work was completed at the dam site, and after some maintenance issues were taken care of, the 8140 started back to work, and Todd and Darren headed back to Kansas, arriving just in time for lunch on Friday.

Steven, the 8140LS Operator, appreciates the easy accessibility of the Geoprobe® Service Team. "If I have field issues, they are always willing to spend however much time on the phone it takes to help get the equipment back up and running," he said. "They can walk me through a problem in a way that's easy for me to understand."

"We have five extremely qualified guys here in service that want to keep you running in the field," Darren added. "We enjoy talking to our customers, and try to make sure they understand our machines, the repair at hand, or maybe just general service issues that need taken care of. I think we've got a world class team here!"

So why is Geoprobe® Service unmatched in the industry? Their names are Darren Stanley, Bryan Lorenson, Roman Burrows, Brian Rogers, and Todd Ewing, and they have the support of Team Geoprobe behind them.



The Geoprobe® Service Resource Center Team: (l to r) Darren Stanley, Brian Rogers, Todd Ewing, Bryan Lorenson, Roman Burrows



Todd Ewing (left) and Darren Stanley, Geoprobe® Service Resource Center, helped the Major Drilling Environmental field team with rig repairs in Bristol, TN.

Steven Gautney • 8140LS Sonic Operator Major Drilling Environmental • Huntsville, AL

"When Todd and Darren came to Tennessee, their work and knowledge of the rig were top notch. They came prepared with all of the parts and tools they needed. Both of these guys are excellent. It's always a pleasure having service professionals to help us drillers handle problems big or small."

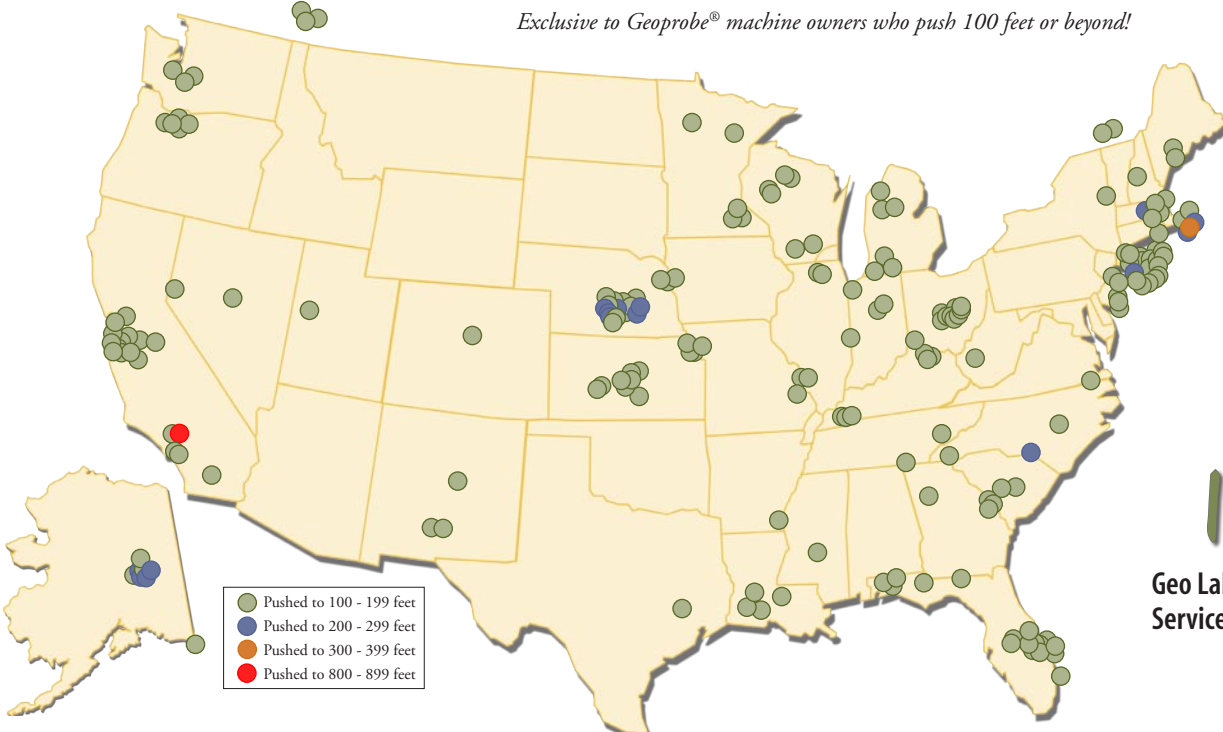


South Holston Dam, located on the south fork of the Holston River in Sullivan County, TN, (near Bristol) is a hydroelectric and flood control dam operated by the Tennessee Valley Authority. It was under construction for over eight years, and officially opened in 1950. The earth and rock structure has a fixed crest morning glory spillway. The dam is 285 ft. high and 1,600 ft. long and has a generating capacity of 38,500 kw. The maximum discharge rate of South Holston Dam is 116,200 cu. ft./sec.

Join the "elite cadre of probists" who belong to ...

GEOPROBE® "100" CLUB

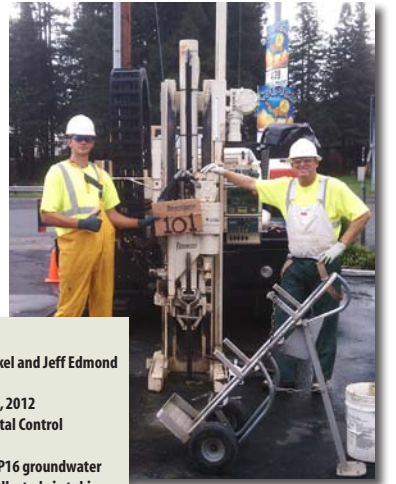
Exclusive to Geoprobe® machine owners who push 100 feet or beyond!



● Pushed to 100 - 199 feet
● Pushed to 200 - 299 feet
● Pushed to 300 - 399 feet
● Pushed to 800 - 899 feet

101 feet

Environmental Control Associates – California



--- FIELD NOTES ---
Field Team: (1 to 1) Wolfgang Hankel and Jeff Edmond
Field Site: Santa Rosa, CA
Depth/Date: 101 feet / Nov. 16, 2012
Geoprobe® Owner: Environmental Control Associates, Aptos, CA
Field Data: Model 6600 using SP16 groundwater sampler. GW samples were collected via tubing check valve.

153 feet

Geo Lab Probing Services – Georgia



--- FIELD NOTES ---
Field Team: (1 to 1) Matthew Farley with Geo Lab, and Daniel Hunt with AECOM (client).
Field Site: Waynesboro, GA
Depth/Date: 153 feet / Jan. 30, 2013
Geoprobe® Owner: Geo Lab Probing Services, Dacula, GA
Field Data: Model 7822DT using 2.25 in. rods and SP16 groundwater sampler to collect a discrete groundwater sample. Other 100+ ft. borings over the two-week period included 134, 105, 114, 118, 116, 105, 106, 136, 105, 152, and 114.



--- FIELD NOTES ---
Field Team: (1 to 1) Jerry Droze & John Rogie with California Push Technologies and Eric Garcia with ASC Technologies
Field Site: Livermore, CA
Depth/Date: 100.35 feet / Nov. 2012
Geoprobe® Owner: California Push Technologies, Menlo Park, CA
Field Data: Model 6625CPT running combined MIP-CPT logs.

100.35 feet

California Push Technologies – California

geoprobe® 100 club



108 feet

MW Drilling – Tennessee

--- FIELD NOTES ---
Field Team: (1 to 1) David Griffis and Dave Duncan, and Nick Fuller (not pictured)
Field Site: Murphy, NC
Depth/Date: 108 feet / Oct. 25, 2012
Geoprobe® Owner: MW Drilling, Knoxville, TN
Field Data: Model 6610DT collecting DT22 soil samples, and SP22 groundwater sampler for water samples every 10 ft.

120 feet

Alt & Witzig Engineering – Indiana



--- FIELD NOTES ---
Field Team: (1 to 1) Brian Ortega and Bill Rutherford
Field Site: Great Bend, KS
Depth/Date: 120 feet / Oct. 16, 2012
Geoprobe® Owner: Alt & Witzig Engineering, Carmel, IN
Field Data: Model 7730DT using groundwater sampler and HPT logging system.
Project totals: 920 ft. HPT and 900 ft. groundwater sampling, Oct. 15 to Oct. 24.

100 feet

Subsurface Environmental Technologies – New Jersey



--- FIELD NOTES ---
Field Team: (1 to 1) Steve Weigand and Mike Parell
Field Site: near Atlantic City, NJ
Depth/Date: 100 feet / Nov. 21, 2012
Geoprobe® Owner: Subsurface Environmental Technologies, Pennington, NJ
Field Data: Model 7822DT using DT22 groundwater profiler.

136 feet

S.M. Stoller – Ohio



--- FIELD NOTES ---
Field Team: (1 to 1) Bill Gutzwiller, Jonathan Walters, Henry Becker, & Jim Gore
Field Site: Harrison, OH
Depth/Date: 136 feet / Jun. 12, 2012
Geoprobe® Owner: S.M. Stoller, Harrison, OH
Field Data: Model 6600. Field team drilled 12 locations greater than 100 ft. and dozens of other locations at the Fernald Preserve and Mound Department of Energy Legacy Management sites. Total footage for the year was 5,658 ft.

112 feet

Roberts Environmental Drilling – Illinois

--- FIELD NOTES ---
Field Team: Pat Seymour & Shawn Seymour
Field Site: East St. Louis, IL
Depth/Date: 112 feet / Oct. 18, 2012
Geoprobe® Owner: Roberts Environmental Drilling, Millstadt, IL
Field Data: Model 8040DT using DT22 casing to set temporary piezometer on top of bedrock.



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217 feet

SAEDACCO – South Carolina

--- FIELD NOTES ---
Field Team: (1 to 1) Ryan Price, Tim Thomas & Chris Ruffer
Field Site: Aberdeen, NC
Depth/Date: 217 feet / Dec. 18, 2012
Geoprobe Owner: SAEDACCO, Fort Mill, SC
Field Data: 8140LS. Drilled to 217 ft. and completed 2 in. PVC well at 180 ft. Site was located in sand hills area and geology consisted of silty sand overburden with two dense clay laers that had to be drilled through to reach total depth. Client was installing monitoring wells as part of a TCE investigation. This borehole was completed by Tim, his first time drilling with the 8140LS!



The Probing Times is the official newsletter of Geoprobe Systems®. Suggestions for future newsletter articles or submission of 100 Club information are encouraged. Call Gayle Lacey at 1-800-436-7762 or email probingtimes@geoprobe.com. An online version of the newsletter is available at www.probingtimes.com

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