

# FASTRAK

The Best Boring News from



DIGITAL CONTROL INCORPORATED



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## Tough Boring and Tracking at Nellis AFB

Some directional tracking jobs are faced with so many obstacles and sources of interference that only the most advanced locating equipment will work. Take, for example, a recent remediation job at Nellis Air Force Base near Las Vegas, Nevada.

The job involved the cleanup of diesel fuel under an active runway. Vertical wells, connected by a horizontal bore, will remediate the fuel. Two Vermeer drilling machines, a D50x100 and a D24a, were used with DigiTrak Mark III Remote Systems and Red (long-range) Sondes.

Digital Control was called to come down and help with the tracking, and we soon learned why. During the initial call from the job site, we learned they were drilling directly under ten F-16 fighter aircraft parked side by side.

The bore was 720-ft (220-m) long, with a maximum depth of 60 in. (152 cm). The initial product pulled back was a 10-in. (25-cm) high-density polyethylene pipe, which will serve as an outer wall. A 2-in. (5-cm) pipe will be installed inside a 4-in. (10-cm) pipe, which in turn will be installed in the 10-in. HDPE pipe to carry the pumped solution. The 4-in. pipe will carry the return fluid, while the 2-in. pipe will carry the fluid going downhole.



The geologic conditions at the site were tough; the ground was very hard with a lot of dry clay. Several other obstructions, mostly old pipe, were encountered during drilling. The biggest complications, however, were due to the fact that the job was on an active Air Force base.

We witnessed substantial interference caused by radar, electronic signals, and the Stealth aircraft constantly flying  
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 overhead. One worker at the sight called it "a high-tech electronic nightmare" that heavily interfered with cell phones and radio systems. Yet the DigiTrak system was able to pick up the signal and keep the job going on course.

We did have problems at times

with signal transmission from the locator to the remote display unit due to the parked aircraft. We solved this problem by "hop scotching" the remote display to points between the aircraft and by using walkie talkies.

Even though the situation at the base made for difficult drilling navigation, there were some advan-

tages. Because Nellis AFB is the Home of the Thunderbirds, we were fortunate to enjoy incredible air shows. The beautiful scenery and clear, pleasant weather also made the job far more enjoyable.

This was one of DigiTrak's more difficult assignments. Yet, again, the system proved its value. The contractor was impressed, and the job was completed. 



## Digi Know . . .

- BC Hydro in Vancouver, British Columbia, is diverging from conventional cutting and trenching by using directional drilling to cost-effectively bring power from their plant across the north arm of the Fraser River to a new 600-acre industrial park. The 700-ft (214-m) long installation will be drilled using DCI's Cable Sonde system, which was selected to help overcome interference problems generated from the 230 and 60 kV overhead lines.
- Italian Contractor PATO s.r.l. has just finished a 902-ft

(275-m) long and 56-ft (17-m) deep bore in "Little Venice," Italy, installing a 13-in. (325-mm) steel gas line. A Cable Sonde was selected as the primary locating transmitter because its reliable pitch and roll information, which is transmitted up the wire, was required for the specifications of the steel line installation. As a backup measure for this long, deep, and high-profile bore, a Red (long-range) Sonde was used. Two DigiTraks were calibrated, one to each sonde in their respective housings, which were threaded together with a 1.5-ft (0.5-m)

sub. Both sondes were used to corroborate the location of the drillhead. This required shutting off the Cable Sonde to receive the Red Sonde's signal for depth and direction. As it turned out, the signal from the Red Sonde was not affected, and it provided accurate drilling information. Continued use of the Cable Sonde was therefore not required.

- DigiTrak is the most widely used directional drilling tracking system in the world, according to a study by Hebert Research, 1997.



## TECHNICAL TIPS - What are the Ultrasonics?

Did you ever wonder what those two holes in the bottom of the DigiTrak receiver are? They are used by the ultrasonics to send and receive signals for determining the height of the receiver. The ultrasonics, which serve as an electronic tape measure, allow the receiver to be put on the ground or held at any height and still give accurate depth information. This feature was built into the DigiTrak to accommodate people of different heights. The function is independent of the sonde and does not involve calibration at all.

The ultrasonics are especially important when:

- You are locating above a body of water (you can't set your DigiTrak on the water's surface).
- You need some separation from utilities below ground or from rebar interference.
- You need to verify the calibration of the tool when it is below ground surface.

After the DigiTrak is turned on and the button is clicked, one of the ultrasonic holes emits a high-frequency sound wave that travels to the nearest surface, gets bounced back to the DigiTrak and is picked up through the other hole. From this ultrasonic measurement, the DigiTrak can sense how high off the ground it is being held. It will automatically subtract this height from the distance between the DigiTrak and the drillhead.

When the DigiTrak receiver is held above the ground and the button is clicked (assuming the DigiTrak is already turned on), you will hear one tone, during which the ultrasonic height will be displayed in the bottom window for 2 seconds. That height, typically 18-24 in. (45-60 cm)

depending on how tall you are, will automatically be subtracted from the distance between the DigiTrak and the drillhead to show true below-ground depth.

When the DigiTrak is set on the ground and the button is clicked, you will hear three beeps and you will see a zero in the bottom window (zeroing the ultrasonics); this means that nothing will be subtracted from the depth. In other words, the DigiTrak is zero inches above the ground.

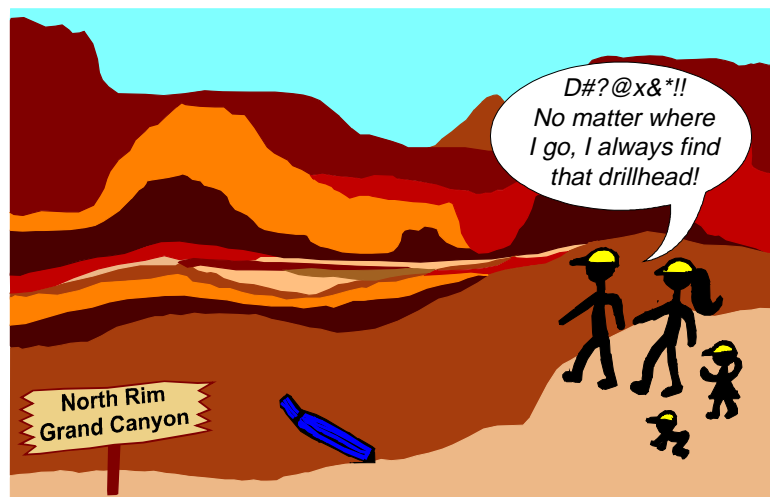
If another crew member takes over the locating and does not change the ultrasonics, the depth display may be inaccurate. For instance, if you are holding the DigiTrak comfortably at your side, 20 in. (50 cm.) above ground surface, and all of a sudden your boss decides to locate the tool by setting the DigiTrak on the ground (without zeroing the electronics), the tool will appear to be 20 in. shallower be-

cause the DigiTrak is still subtracting the 20 in. ultrasonic height you were holding it at.

The ultrasonic function is very accurate and can be used to verify calibration (and tool depth) in the following manner. With the DigiTrak directly over the drillhead, and held approximately 1 ft (30 cm) above ground, take an ultrasonic measurement and note the depth. Keeping the DigiTrak in the same plane above the tool, raise it 2 ft (60 cm) so that it is approximately 3 ft (90 cm) above the ground, and take another ultrasonic measurement, again noting the depth. If the two depth readings are about the same (within 1-2 in. or 2-4 cm), the calibration is good and you can be assured that the depth display is accurate. If the readings are outside of this accuracy range, then you need to recalibrate using the two-point method described in the DigiTrak manual.



### The Adventures of DigiMan




*Our hero, DigiMan, and his family finally arrive at the Grand Canyon for a long overdue vacation.*

## Digital Control Welcomes You

With this first edition of **FASTRAK**, we want to introduce ourselves and welcome you to our newsletter. We look forward to providing you with useful, interesting, and even fun information regarding Digital Control and our products.

As you probably know, our primary product is the DigiTrak drillhead tracking system. This advanced navigational system provides quick and accurate information to the operator. We also make a variety of transmitters for different applications, a remote unit to view drilling progress at the drill rig, and a unit that records drilling data.

We hope that **FASTRAK** will become an enjoyable and educa-

tional resource for you. Please complete and return the survey included with this newsletter. We welcome your input. If you have questions you wish to submit or topics you would like us to address, please let us know. 

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*DigiMan's got the whole world to track.*

Thank you for completing and returning the survey included with this newsletter.



425 S.W. 41st Street • Renton, Washington 98055 USA