MIP Used to Identify BTEX Plume at Abandoned Airfield

Geo-log GmbH, in Braunschweig, Germany, mobilized their new Geoprobe® 6620DT to an abandoned airfield facility in eastern Germany for a limited MIP investigation project. The goal of the project was to identify a plume of BTEX, PAH, and hydrocarbons which was released by single sources within the tank farm of the airport. According to Axel Oppermann, Company Director for geo-log, the company used their MIP Logging System, DT21 Soil Sampling System, and the SP16 Groundwater Sampler to depths of 11 meters to map the jet fuel contamination plume at the facility.

A second field team was needed for the project, so geo-log called upon Dr. Johannes Koerner with Dr. Koerner Geomonitoring in Tuebingen, Germany, who provided a 6610DT and field technicians for the work.

The two field teams completed a subsurface investigation of the airfield's fuel farm which was highly contaminated with aircraft fuel. For the project, the field teams and machines operated in very rough terrain where there was no access for standard vehicles. The 6620DT field team focused on collecting groundwater and soil samples to verify the MIP data which was being logged by the 6610DT field team.

Hergo Lensky, MIP field engineer for geo-log, reported that the client's field supervisor was pleased with the site operations. "He saw how fast both teams went from one investigation point to another in a terrain where normally construction of simple roads are required to get around," Hergo said. The data from the MIP logs was delivered immediately after completion of each log to the office by use of mobile phone service from the laptop computer. The logs were processed within hours and sent by email to the desk of the client. Hergo continued, "Using this approach, the client received the data in a warm, comfortable office setting with a cup of coffee in front of him instead of being on the job site next to a machine in cold and wet weather." The project was completed last fall.

Early this year geo-log headed their 6620DT to colder climates to a site in eastern Hungary to follow up on another limited MIP investigation which had been completed in late summer 2005. "Due to the continental climate of the region," Axel said, "the team experienced temperatures below –10° C in contrast to +30° C during the first campaign." At this particular site, geo-log performed MIP Logging, SP16 Groundwater Sampling, and DT21 Soil Sampling to depths of 35 meters to map VOC contamination at the site. "Our team and our client were impressed at the reliability of the 6620DT machine and how well the tools worked under these extreme conditions," Axel added.

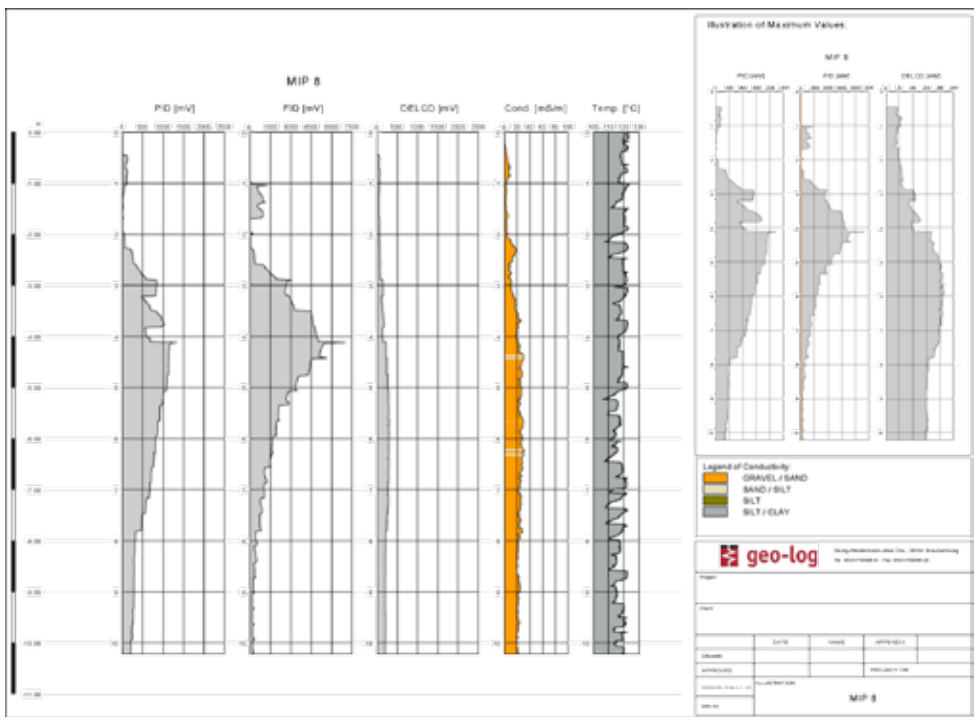
A Pinzgauer (Pinz) and a 6610DT (upper right) are shown on the former Russian airfield in eastern Germany. Geo-log configured the Pinz to house and independently operate their MIP System, or the MIP tooling can be removed from the vehicle and operated separate from the Pinz.

As a side note, geo-log's Pinzgauer Type 710K was formerly used as a Swiss army radio truck, and was produced by Steyr-Puch in Austria.

A 6610DT pushes cabled MIP rods (housed in the Pinzgauer Type 710K) at an abandoned airfield in eastern Germany. The Pinz is the dedicated MIP vehicle for geo-log.

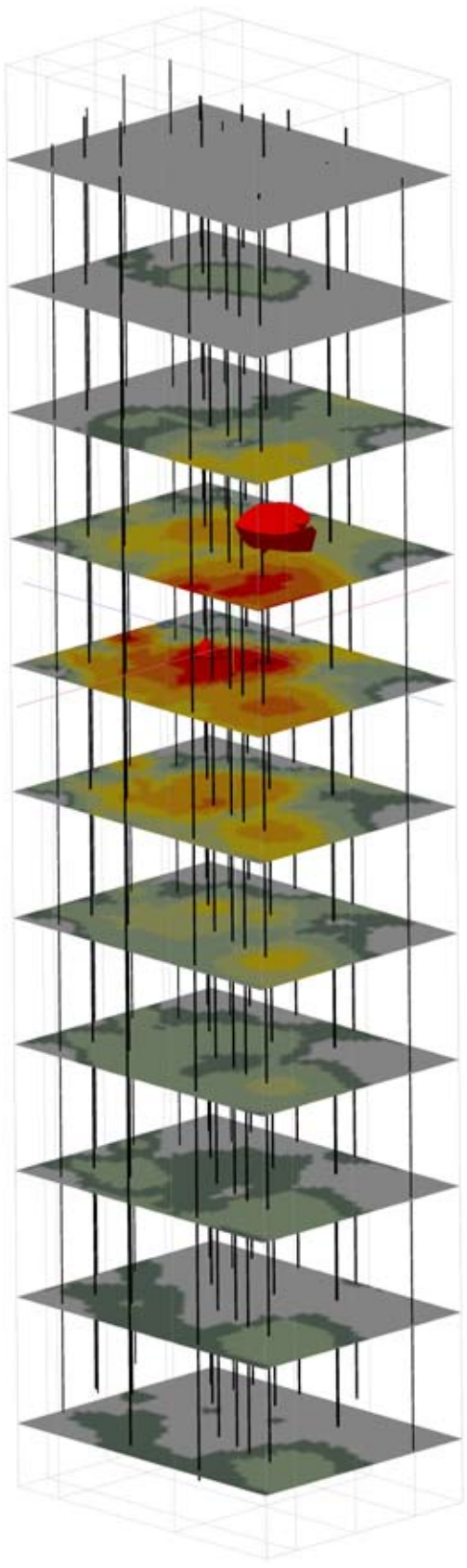
Hergo Lensky, MIP field engineer for geo-log, transmits data logs from the laptop inside the Pinz to the desk of his client within hours of the logging event.

At a site in eastern Hungary, the geo-log team experienced temperatures below –10° C while performing MIP logging, groundwater and soil sampling.



A typical log from the tank farm of the abandoned Russian airfield. Log graphs are (l to r) MIP-PID, MIP-FID, MIP-DELCD, and soil EC with colored interpretation of petrography and temperature. The total log depth is approximately 10 m. The PID and FID indicate the presence of organic compounds between 2.5 m and 8.0 m below grade. The signals are caused by BTEX since there is only low detection by the DELCD. Nevertheless the DELCD shows a low-to-moderate contamination by chlorinated solvents which is not related to the BTEX contamination. On the left of the logs are graphs which are scaled equally to allow comparison to other MIP logs. The right graph shows maximum values of the PID, FID, and DELCD signals with different scales for each log to identify details. The low EC signals indicate the presence of sandy soil with discrete layers of silt. The temperature log shows the stepwise pushing of the probe which is always being performed in highly contaminated areas. Note that the temperature is always between 110° C and 120° C although the log was performed in sandy soil with high hydraulic conductivity. According to the geo-log MIP team, they believe the 110V heater block is an important advantage of the new MIP probes.

(right and above) Although their 6620DT is only a few months old, the geo-log machine has traveled extensively, secure in the MAN transport truck. The 6620DT started a project in eastern Hungary during the winter. The machine is loaded into the truck via a hydraulic ramp. The MIP equipment is situated in a "clean room" in the front of the truck.



The BTEX plume was delineated using this 3-dimensional shape which visually identified the "hot spot" at the airfield site. The horizontal slices were created by using the software RockWorks 2006. The visualization of MIP data is a standard service geo-log offers their clients, and is part of the technical reports they provide for the projects.