



PDAC 2006 HIGHLIGHTS

This year's big news is the continuing high-price environment for most commodities – a factor that is driving exploration to new heights globally. Amid this framework, there is also renewed vigor in commodities that have not seen much interest in more than 20 years (Uranium). This issue provides you with an overview of systems for Uranium and Diamond Exploration. We also focus on a new generation of magnetometers with applicability that spans many deposit types.

As one of the main instrumentation suppliers in exploration, Terraplus is pleased to note that they have added a range of new systems that will make the difference in your program.

This overview highlights developments in many geophysical technologies, including:

- **Magnetometers**
- **Uranium Exploration Instrumentation**
- **Diamond Exploration Instrumentation**

Rentals From Terraplus

As projects demand, Terraplus may recommend a rental as an optimal means of executing a survey or evaluating a new and promising technology. This gives you access to the largest Mining rental pool in Canada and one of the largest in the world.

The pool is stocked with the latest in geophysical technologies; and many solutions are available:

- Magnetometer / Gradiometer / VLF
- Radiometrics
- Induced Polarization
- Borehole Logging
- TDEM and FEM Electromagnetics
- GPR and Seismics
- Magnetic Susceptibility

MAGNETOMETERS & GRADIOMETERS

Terraplus recently announced the availability of the new GSMP-35 magnetometer / gradiometer series designed for exploration of traditional and subtle geologic targets.

The new instrument is a key new technology for explorationists seeking gold, base metals or other traditional magnetometry targets. In addition, it provides the high sensitivity needed for subtle targets such as diamond-bearing rocks (kimberlites) and the high gradient tolerance needed for prospecting for iron or very high magnetite-bearing rocks.

The optically pumped Potassium instrument is designed with overall data quality, cost control and ruggedness in mind. Data quality is ensured through high sensitivity which leads the industry (3.7 pT / $\sqrt{\text{Hz}}$ at 5 Hz); minimal heading (orientation) error of less than +/- 0.025 nT; and precision sensor design. Ergonomic design, high sampling rate, and many navigation and other features help to keep survey costs under control. Ruggedness is assured through rigorous testing and the system is covered by the industry's longest warranty (2 years) ... *continued on Page 2.*

URANIUM EXPLORATION

Uranium exploration works on two levels: prospection at surface for boulders, core samples and geologic units that are clearly radioactive, and deeper exploration, for "blind" uranium deposits that may lie at significant depths on or near the bedrock surface.

Terraplus is pleased to be able to provide instrumentation for both of these scenarios ... 1) scintillometers and spectrometers for surface and for core, and borehole logging systems for in situ work, and 2) TDEM and FEM instrumentation for deeper work ... *continued on Page 2.*

MAGNETOMETERS ... Continued

The Potassium Mineral Magnetometer is designed with hands-free, backpack-mounted operation for ease-of-use in the bush and difficult terrain. Another feature is in data acquisition; the system uses a ruggedized Personal Digital Assistant (PDA) for key acquisition tasks. This gives the operator additional safety as the PDA is compact and can be easily stored during difficult traverses. For greatest efficiency and to minimize the number of cables required, data are transmitted from the sensor to the PDA using Bluetooth wireless technology.

Navigation features include the ability to integrate a high-precision, internal GPS unit for accurate positioning of anomalies and geologic units to less than 1 metre. The system also supports georeferencing of existing maps and import of way points. Many different datums are also supported for explorationists working around the world.

Tri-Axial Heli Gradiometer

Terraplus reports that Aeroquest Surveys Ltd. recently flew a tri-axial optically pumped Potassium gradiometer for gold and base metal exploration on Canada's west and east coasts. The system delivers high-resolution, "true" gradients in three orthogonal directions for geologic mapping, characterization of structure and selection of drill targets. For more information on adding this system to your exploration arsenal, contact Terraplus.



URANIUM EXPLORATION ... Continued

Prospecting on surface and via drilling are two exploration activities that bring you face-to-face with your uranium target. They also pose individual challenges -- such as obtaining quantitative results that can be used for general or detailed mapping of your target. Delivering these quantitative results is the key role of handheld and borehole logging devices.

Terraplus provides three handheld units and three borehole scenarios that can assist your exploration significantly.

GR-135G Spectrometer

The GR-135G memory spectrometer is an ideal instrument for the geologist / geophysicist looking for a light weight spectrometer. The 4.5 cubic inch crystal provides more sensitivity than many handheld units. Automatic gain stabilization removes drift. Both of these features contribute to a dramatic improvement in data quality.



One of the most versatile features is the ability to toggle between scan mode and assay mode. Scan mode provides total count information for reconnaissance-type work and assay mode allows you to instantaneously see the %K, PPM eU, and PPM eTh for any samples of interest.

URANIUM EXPLORATION ... Continued

GR-110 Scintillometer

The GR-110 is a rugged, lightweight and portable scintillometer designed for the field geologist who requires the accuracy of a digital display, and large crystal volume for reliable statistics. Even under low light conditions, readings are easily visible on the large four digit Liquid Crystal display (LCD).

In high sensitivity mode (0.08 to 3.0MeV) total counts are obtained at either 1 or 10 second intervals. For work where ground cover is highly variable, a 0.4 to 3.0MeV total count mode, "HE," provides significant geological information. The HE mode can also handle the high count rates found in drill core and mine face analysis applications.

GR-320 Spectrometer

Another instrument with more specific applicability is the GR-320. This system is typically used in gold exploration for identification of potassic alteration. Due to its large crystal size, it can also be vehicle-mounted for high efficiency operation.

The GR-320 features one or two detector input (two crystal sizes); assay mode for %K, PPM eU and PPM eTh; large internal memory with input capability for GPS; 256 / 512 channel operation; automatic spectrum stabilization; and GPS interface.

GR-460 Car-Borne Spectrometer

Interest in survey automation is increasing for cost control and efficiency. The GR-460 is designed for effective car-borne surveys. With two large crystal detectors, GPS and a number of attractive features, the GR-460 is clearly a tool that can assist in minimizing survey costs and acquiring high quality data.

URANIUM EXPLORATION ... Continued

Natural Gamma, SP, Single Point Resistance Borehole Logging Tool

The 2PGA-1000 Gamma tool is a reconnaissance/evaluation tool which reads elevated scintillometer counts within zones of radioactive mineralization (<2% equivalent U_3O_8). When calibrated, the equivalent concentration of U_3O_8 can be determined from the raw gamma counts. Lithologic information can also be recovered using Spontaneous Potential (SP) and Single point resistance (SPR) tools that are run on a second pass.

Spectral Gamma Logging Tool

The 2SNA-1000 Spectral Gamma is a temperature compensated, digital spectral gamma probe, which samples natural gamma with 256, 512 or 1024 channels of resolution. The energy range of 100 keV to 3 MeV is sampled up to once every second and divided into the number of channels specified by the user. Five spectral energy windows can be examined during logging with additional software available for spectral stripping and basic spectral analysis to determine in-situ isotope concentrations.

Triple Gamma Logging Tool

The 2GHA-1000 Triple Gamma tool is also a reconnaissance/evaluation tool, which provides elevated scintillometer counts within zones of high radioactive mineralization. With three sensors -- one (NaI) Sodium Iodide and two (GMT) Geiger Muller Tubes -- the user is provided with the flexibility of logging boreholes with a range of U_3O_8 grades (>2%). If gamma counts saturate the first of the three sensors the tool automatically switches to the next sensor to continue logging.

URANIUM EXPLORATION ... Continued

Much of the uranium mineralization under exploration today is being done through "blind" targets – targets that have no surface expression and which can be quite deep. For these key targets which host significant economic mineralization, some of the most valuable exploration tools are electromagnetic systems.

Time Domain EM (TDEM)

Standard components include Receivers, motor generator driven Transmitters (3 Kw, 10 Kw and 30 Kw), and Accessories, including Controllers and other related items. These items are now available from Terraplus.

For exploration work, Terraplus' specialists recommend the **new 24 bit GDP-32^{II} receiver**. This receiver is capable of detecting variations in the measured value that are 256 times smaller than with 16 bit technology.

The change in resolution of small signals is particularly apparent in TEM soundings. When combined with high power transmitters, this system is ideal for deep target detection.



URANIUM EXPLORATION ... Continued

Other performance advantages include synchronous timing (via a stabilized precision quartz clock or using GPS for further control) and multi-channel acquisition of up to 16 independent analog channels. The system also features high capacity storage (>1 GB) as an option for waveform recording.

Frequency EM (FEM)

The PROMIS-10 is a multi-frequency EM profiling system that features ten frequencies (110 Hz to 56,320 Hz) and is designed for transmitter – receiver spacings of up to 400m. It also features a three-component sensor which enables simultaneous acquisition of EM data in the "MAX" and "MIN" coupling directions. The additional component provides information on the target strike.

DIAMOND EXPLORATION

One of the innovative concepts in diamond exploration in recent years is the implementation of radar surveys for kimberlitic characterization and mapping.



The Rough Terrain Radar system consists of a control unit, backpack, rechargeable batteries, and **flexible towed antenna** capable for easy mapping through even dense bush. It can be operated either in walking or towed mode (behind an ATV, for example).