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### **GEM's Upcoming Events**

- **SME 2009**  
February 22-25, Colorado Convention Centre, Denver, CO, USA
- **PDAC 2009**  
March 1-4, Metro Toronto Convention Center, Toronto, Canada
- **SAGEEP 2009**  
March 28-April 1, Renaissance Worthington hotel, Fort Worth, TX, USA
- **SAA 2009**  
April 22-26, Atlanta Marriott Marquis hotel, Atlanta, GA, USA
- **EAGE 2009**  
June 8-11, Amsterdam RAI Building, Amsterdam, The Netherlands

## Airborne Developments



### **New version 8 of redesigned complete Airborne System GSM-35AM with VLF Option**

GEM's Potassium sensors provide the highest sensitivity available in the industry. The new tri-axial bird uses larger volume (70 mm) sensors that are specifically designed for low-gradient applications such as exploration for diamonds, gold, silver, platinum & palladium, which map geologic structures that are weakly magnetic and may have concentrated precious metals.

GEM's R&D team made successful efforts to modernize Airborne System. The new bird has maximized sensitivity of sensor location, redesigned electronics and dismountable elements for easy transportation.

High sensitivity (0.0007 nT) together with high sampling rates (20 readings per second) allows you to make very detailed mapping.

Using GEM's Complete Airborne System you will receive:

- High definition range of multi-sensors configurations (Magnetometer, Vertical Gradient or Tri-Axial Magnetic Gradiometer).
- TRA series Radar Altimeter.
- 20 Hz DGPS with SBAS (WAAS / EGNOS / MSAS) and OmniStar (Subscription not included).
- GEM Data Acquisition Software with real time Data and altitude display.
- All weather highest sub-pico Tesla Sensitivity.
- VLF option.

<http://www.gemsys.ca/PDFDocs/GEM Airborne Solutions.pdf>

For more info click [here](#)

Request for quotations click [here](#)



### **GEM's New Airborne GSM-90AV VLF-EM System**

The VLF-EM system is a two frequency multi-component receiver that measures the in-phase and quadrature-phase fields from two separate radio transmitters in the VLF frequency range (e.g. 15-30 kHz). Such measurements can identify low conductance structures containing sulphide-bearing fluids rich in precious metals.

The GSM-90AV VLF-EM is a state-of-the-art airborne system that acquires data simultaneously from up to 2 transmitter frequencies. Data include in-phase, out-of-phase, horizontal component (x),

vertical component (y) and field strength in pT.

With data quality exceeding standard VLF instruments, GSM-90AV represents a unique blend of physics, data quality, operational efficiency, system design, and options that clearly differentiate it from other VLF systems.

A very low frequency (VLF) investigation is well suited to the location of geologic faults (and approximating their altitudes), some types of geologic contacts, and buried conductive bodies including water-bearing faults. The VLF-EM frequency method is a passive system as it utilizes a fixed position transmitter broadcasting a frequency between 15 and 30KHz.

In a VLF investigation, the magnetic field components of the transmitted signal are measured.

This method can delineate contrasts in conductivity at depth and is used in the search for contacts, faults, mineralized bodies, overburden, fractures, voids and for a variety of other purposes, including the location of utility lines and siting of water wells.

Targets are of two primary types:

- 1) linear trends of considerable length that are more than 30 degrees from the horizontal.
- 2) broader zones of lateral changes in conductivity related to such features as plumes or alteration zones.

<http://www.gemsys.ca/PDFDocs/GEM Airborne Solutions.pdf>

For more info click [here](#)

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## Ground Developments

As ground magnetics is one of the most-frequently employed and effective geophysical methods applied to mineral exploration, GEM continues to implement new strategies for enhancing measuring techniques and results.

Our Research and Development team has led to the development of the next generation of Potassium magnetometers GSMP-35 version 8 designed to assist exploration groups and contractors acquire, high-quality magnetic results.

### **New release of GSMP-35 version 8 backpack mounted Potassium magnetometer / gradiometer**

GEM is releasing a new version of its GSMP-35 optically pumped Potassium magnetometer (K-Mag) designed to provide backpack-based, hands-free operation while acquiring high sensitivity ground-based magnetics data. The first presentation of the instrument will take place at PDAC 2009 (March 1-4, 2009 in Toronto).

The main features of GSMP-35 include:

- Low power consumption (16 hours of continuous operation)
- Very high sensitivity
- Light weight
- Compact design
- New introductory price

The system eliminates the use of supporting sensor poles (with the backpack), thereby providing convenience and greater efficiency during survey operations (with the console).

The new K-Mag technology also delivers sensitivity and high sampling (20 times / second) for mapping of subtle geologic signals. The system's high gradient tolerance and higher range of measurement (up to 3 Gauss, optional) is especially useful for exploring in areas with iron formations, magnetite outcrops, and other similar targets.

The new K-Mag will give you the following advantages:

- |                          |                     |
|--------------------------|---------------------|
| • Sensitivity            | 0.0025 nT @ 1 Hz    |
| • Resolution             | 0.0001 nT           |
| • Absolute accuracy      | +/- 0.1 nT          |
| • Gradient tolerance     | 30000 nT/m          |
| • Sampling rate          | 1, 5, 10, 20 Hz     |
| • Electronics box weight | 0.63 kg             |
| • Electronics box size   | 229mm x 56mm x 39mm |



<http://www.gemsys.ca/PDFDocs/GSMP-35.pdf>

For more info click [here](#)

Request for quotations click [here](#)





### New Suspended dIdD Potassium Vector System for Observatories

GEM introduced the dIdD (delta Inclination / delta Declination) Potassium vector system for high precision results in obtaining total field and variability measurements. The high sensitivity Potassium sensor (0.05 nT/Hz<sup>1/2</sup>@ 1 sec) provides high speed measurements. The Suspended dIdD comprises a small diameter (250 mm), spherical Potassium sensor with a bidirectional set of bias coils. Data is acquired directly to a GEM Potassium magnetometer.

The Suspended dIdD simplifies the set-up of magnetic observatory installations by eliminating the need for fluxgate magnetometers and thermally insulating structures. In addition, the new system minimizes ongoing system calibrations, which, in turn, frees personnel to concentrate on more essential tasks (such as interpreting and understanding data).

These important new benefits are achieved through system design:

- \* Temperature coefficients that reduce drift to less than 0.1 nT / °C (compared with 0.5 nT / °C for high-end fluxgate magnetometers).

- \* Physical suspension of the Potassium sensor (shown experimentally to contribute to reduced drift);

- \* Long term drifts that are less than 2 nT / year - matching or exceeding the best component measurement at any observatory and Suspended dIdD system.

For more info click [here](#)

Request for quotations: SuperGradiometer click [here](#)

Request for quotations: Suspended dIdD click [here](#)

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## Archaeology

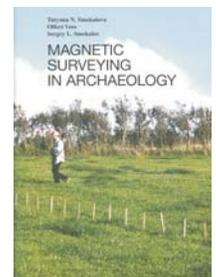
Archaeologists are increasingly looking at remote sensing methods as techniques to explore sites with minimum disruption to the surroundings. This work is delivering new means of mapping prehistoric and historic sites in three dimensions rather than traditional two-dimensional methods. Magnetics is a primary remote-sensing technique that offers both ease-of-use and cost efficiency. Its main benefits lie in the ability to resolve details non-invasively, the wide range of artifacts and cultural objects that are detectable, and the low cost of magnetics in comparison to other methods.

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### Updated with New Discoveries

New extended 2008 version of a book named Magnetic Surveying in Archaeology. More than 10 years of Using The Overhauser GSM-19 Gradiometer in which Tatyana N. Smekalova takes you in a journey of the practical aspects of magnetic surveys for the investigation of various archaeological sites.

Archaeologists will definitely have an interest in this new work produced by researchers in Russia, Denmark, Ukraine, Greece, Syria, Norway, and Egypt over the last 12 years. The book begins with an overview of methods of magnetic surveying followed by a description of magnetometers. The remainder of the book provides case histories from many sites across Africa, the Middle East and Europe but general lessons may also be applicable to investigations in other parts of the world.



For more info click [here](#)

Request for quotations: SuperGradiometer click [here](#)

### **New Design of GEM's Web-Site**

At GEM we like to hear from our customers. If you have any suggestions, commendations, complains, great ideas, industry-related articles, testimonials, or questions of any type we would love to hear from you. We guarantee a prompt respond.

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