

# Subsurface Views

Sensors & Software Inc.

## A new look !

**W**elcome to the premiere issue of Subsurface Views.

Building on over 12 years of newsletter history, Subsurface Views combines EKKO Update and Noggin Notes into one comprehensive newsletter.

Subsurface Views will be published quarterly and feature articles on our pulseEKKO and Noggin products and their applications. The TIPS section of EKKO Update will also return along with a new feature, "Ask the Expert", which is an interactive feature of our website.

To take advantage of modern communications, Subsurface Views will be delivered in electronic format, thereby allowing for more timely distribution.

This issue features our latest product, the new pulseEKKO PRO. This cutting-edge system represents the next generation of GPR instruments.

We hope you enjoy Subsurface Views !

*Peter Annan  
President  
Sensors & Software Inc.*

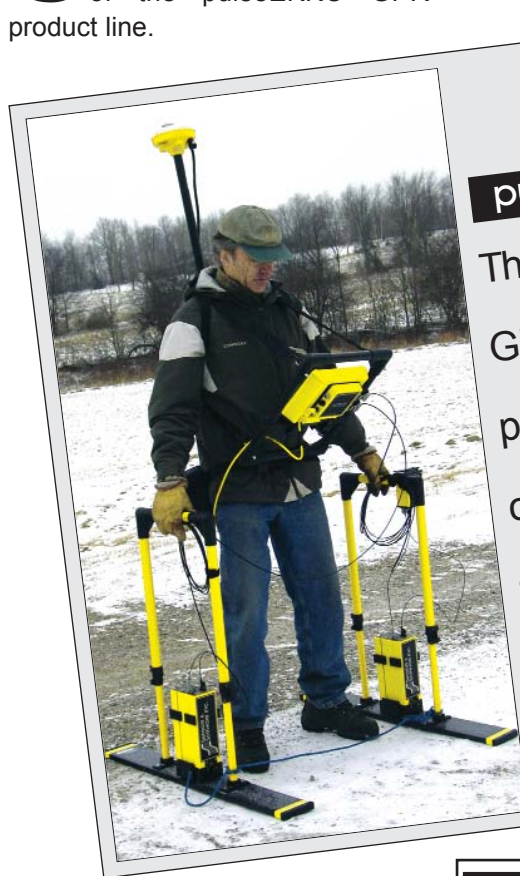
The next generation in GPR:

## pulseEKKO® PRO

**S**ensors & Software has just released the next generation of the pulseEKKO GPR product line.

and professional service providers alike.

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**pulseEKKO® PRO**  
This next generation GPR is the most powerful and flexible commercial GPR system in the world.

The pulseEKKO PRO is the most powerful and flexible commercial GPR system in the world.

The pulseEKKO PRO builds on its predecessors, the pulseEKKO 100, pulseEKKO IV and pulseEKKO III, providing more capabilities and configurations for GPR researchers

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## pulseEKKO® PRO

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2 person operation



SmartCart



Borehole measurements



Transillumination

features retained from pulseEKKO

The pulseEKKO PRO retains all the innovative features of earlier pulseEKKO systems including:

**Modular components** for flexibility in data collection.

**Bistatic surface antennas** of frequencies 12.5, 25, 50, 100 and 200 MHz and 50, 100 and 200 MHz borehole antennas.

**Fibre optic cables** for high quality signal. The antennas can be separated up to 40 metres with standard fibre optic cables or up to 1000 metres with

optional, low cost, glass fibre cables.

**Digital equivalent time sampling (DETS)** for maximum signal fidelity.

**Multiple modes of operation:** button or odometer triggered, time delayed self triggered, and free run.

**Plotting, editing and processing** with PC-based software EKKO\_View Deluxe, EKKO\_Mapper and EKKO\_3D software.

new features of pulseEKKO PRO

New additions to the pulseEKKO PRO system include:

**Integration with the weatherproof, robust Digital Video Logger** for control, display and recording.

**More intuitive user interface** permitting the research scientist full control over all data collection parameters or, for the novice, easy use of default settings to conduct successful surveys.

**200,000 nanosecond time windows** means data collection is no longer limited, especially useful in low-loss environments like glaciers.

**Up to 30,000 points per trace** for unsurpassed time windows with fine temporal sampling.

**Reduced power consumption** allows the system to run all day with lightweight batteries.

**Increased acquisition speed** that enables improved signal to noise with

stacking and/or increased survey productivity.

**Deployment on the easy-to-use SmartCart** featuring the backup arrow, a Sensors & Software innovation that quickly became an industry standard.

**Easy GPS integration.** Automatic GPS positions for every trace or manual collection at significant points in the survey.

**In-the-field velocity calibration** through hyperbola fitting.

**A wide range of transmitters:** FCC approved for the USA, traditional 400 volt and 1000 volt, new variable 200-1000 volt and the supercharged 5000 volt units.

**"Smart" electronics** that ensure data quality by monitoring temperatures, battery voltages, and identifying broken fibre optic cables.

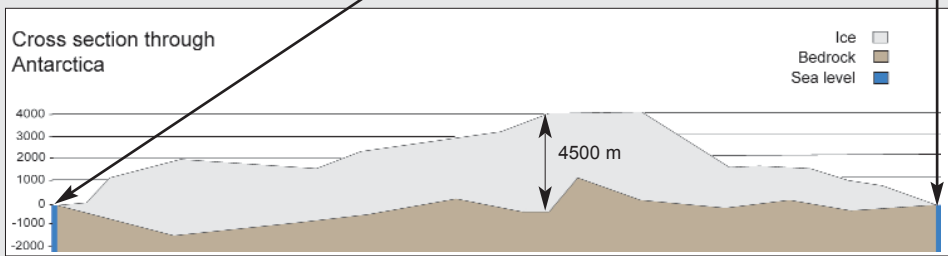
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The pulseEKKO PRO has a 200,000 nanosecond time window available, which is easily long enough to sample the thickest part of the Antarctic ice sheet (4500 m). Moreover, with a maximum of 30,000 points per trace, the pulseEKKO PRO could still resolve ice layers about 1 m thick.

Image from: [http://www.clipartxp.com/Country\\_Maps/index3.shtml](http://www.clipartxp.com/Country_Maps/index3.shtml)



All the features of a pulseEKKO PRO come with the same robustness and provide the high data quality that characterizes a Sensors & Software GPR system. Contact our sales department for more information.

## Ask the Expert

Check out our new "Ask the Expert" email service! "Ask the Expert" is a new feature of our quarterly newsletter. This is a forum whereby you can email interesting questions and get them answered by our highly experienced professional staff.

We have been reviewing the issue of how to share knowledge effectively. Sensors & Software's application staff see a wide variety of uses of GPR on a regular basis. Our GPR products are deployed in many geographic settings around the world for endless new and different uses. Furthermore, our senior staff have decades of experience in the GPR field. The challenge is how do we make this knowledge accessible to other people?

"Ask the Expert" is the vehicle to access this knowledge. For frequently asked questions, we can give you an answer quickly. Using this service for more complex problems, you can access our wealth of knowledge at any time.

In the long term, questions and answers will be organized and made accessible over our website. For now, we are focusing on email responses and posting selected questions and answers in this section of our electronic newsletter.

We want your questions and feedback!! Visit our website and give it a try!!

[www.sensoft.ca](http://www.sensoft.ca)

## Tutton's Artesian Well Flows Again!!

In the January 2004 issue of Noggin Notes, we described a survey to locate a Roman-age well. The well had been artesian but had disappeared with time.

In our previous report, we referred to the well as "Tuttle's Well" as that was the local name at the time of the survey. Subsequent to the GPR investigation and identification of the mechanism for the artesian well flow, the name of Tutton, common in the area, was assigned. Further, a Mr. Tutton kindly donated funds to the site so that the well could be reconstructed.

Last summer, a new well was dug on the site and it is also artesian. The restored well is now a local community park.



Sitting on the benches near the well are geophysicists Dick Benson and Peter Fenning. The photo above also shows the artesian flow pipe carrying the freshwater from the well into the nearby marsh.

This concludes the saga of Tutton's Well - from investigation, to restoration, to a pleasant site for the public!

## Recent Technical Papers

1. **Modeling GPR radiation and reflection characteristics for a complex temperate glacier bed,**  
By: M.L. Moran, R.J. Greenfield, S.A. Arcone,  
2003 *ref 288*
2. **Exploring linkages between coastal progradation rates and the El Nino Southern Oscillation, Southwest Washington, USA,**  
By: L.J. Moore, G.M. Kaminsky, H.M. Jol,  
2003 *ref 289*
3. **Applications of ground penetrating radar in the Three Gorges Project, China,**  
By: Zhangming & Jijian,  
2003 *ref 297*
4. **Applications of Near-Surface Geophysical Methods to Midwest U.S.A. Architecture,**  
By: Allred, Fausey, Daniels, and Ehsani,  
2003 *ref 298*

## See us at ...

### American Academy of Forensic Sciences

New Orleans, Louisiana  
February 21 - 26, 2005  
[www.aafs.org](http://www.aafs.org)

### Delaware Rural Water Association

Harrington, Delaware  
February 22 - 24, 2005  
[www.Drwa.org](http://www.Drwa.org)

## Upcoming GPR courses

**One Day Noggin® Short Course**  
March 7, 2005  
May 2, 2005

Our Noggin® short courses are offered throughout the year to anyone interested in learning more about GPR and subsurface imaging.

**One Day Conquest™ Course**  
March 8, 2005  
May 3, 2005

Our Conquest™ courses are offered to anyone interested in learning more about our concrete imaging instrument.

### Toronto Police Forensic Identification Conference

Toronto, Ontario  
February 23 - 24, 2005  
[www.TorontoPolice.on.ca](http://www.TorontoPolice.on.ca)

## Information Request

Please check off information required below and fax or Email back:

- |   |   |
|---|---|
| <input type="checkbox"/> pulseEKKO® PRO             | <input type="checkbox"/> Recent Technical Paper #1  |
| <input type="checkbox"/> Conquest™                  | <input type="checkbox"/> Recent Technical Paper #2  |
| <input type="checkbox"/> OEM Noggin <sup>plus</sup> | <input type="checkbox"/> Recent Technical Paper #3  |
| <input type="checkbox"/> RoadMap™                   | <input type="checkbox"/> Recent Technical Paper #4  |
| <input type="checkbox"/> pulseEKKO® Borehole GPR    | <input type="checkbox"/> Rental Information         |
| <input type="checkbox"/> Noggin® Systems            | <input type="checkbox"/> 3 Day GPR Short Course     |
| <input type="checkbox"/> Conquest3D                 | <input type="checkbox"/> 1 Day Noggin® Short Course |
| <input type="checkbox"/> EKKO Mapper                | <input type="checkbox"/> Other (please specify)     |
| <input type="checkbox"/> EKKO_View                  |   |

### CONEXPO-CON/AGG 2005

Las Vegas, Nevada  
March 15 - 19, 2005  
[www.conexpoconagg.com](http://www.conexpoconagg.com)

### SAGEEP 2005

Atlanta, Georgia  
April 4 - 7, 2005  
[www.eegs.org/sageep](http://www.eegs.org/sageep)

### North American T&D Conference & Expo

Toronto, ON  
May 9-11, 2005  
[www.natd.ca](http://www.natd.ca)

