Letter from the President

Hello again fellow near-surface specialists. Spring approaches, bringing with it in April the Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP) meeting in Atlanta. We’ll be having our informal Near-Surface Geophysics (NSG) Section meeting during the conference (refer to page 2 for details).

The past quarter has brought surprising mayhem in the forms of continuing cleanup from four major hurricanes here in Florida, mudslides in California, floods in the Midwestern United States, and the unbelievably tragic effects of the tsunami in southeast Asia. Recovery from these catastrophic events will require years of effort. I am sure our community will become involved in these efforts. It is interesting to note that Craig Beasley in his (SEG) President’s Page in the February 2005 issue of The Leading Edge called for exploration geophysicists to search their seismic test records shot around the moment of the SE Asian earthquake to see if any had recorded the event itself along with the exploration data – such information may or may not have value in understanding the mechanics or fine detail of that event, but it demonstrates how much our community wants to contribute and help in some way.

I would add to this by asking our community of Near-Surface geoscientists to share their experiences and involvement in these stricken areas. We would bring a more intimate understanding of the effects at the “people” level, and what we can learn from this devastating sequence of events may mitigate some future catastrophe if we can share that information now. A very relevant, recent happening involves our NSG Vice President, Lawrence Gochioco. Lawrence was recently invited to visit the United Nations (UN) to discuss this tragedy and other disaster mitigation situations in third world countries and to share with the UN how geophysics can play a role. Look for more about Lawrence’s visit in the March issue of The Leading Edge and, hopefully, in a future edition of Near-Surface Views. Consider if you will, sharing any of your experiences and findings if you have participated in recovery efforts related to these catastrophes. Please forward your notes to me or to any of the NSG Executive Committee members, with copy to the editor.

Sincerely,

Tom Dobecki, President
Near-Surface Geophysics Section
NSG SECTION EXECUTIVE COMMITTEE

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NSG Section Meeting at SAGEEP

The NSG Section meeting at SAGEEP is scheduled for April 3, 2005, between 4 and 5 pm, location to be announced via e-mail. Please join the Executive Committee at the meeting. We look forward to seeing you!

First Notice: SEG Meeting in November 2005

The time to prepare for the 75th Annual SEG Meeting is fast approaching. David Monk, this year’s overall technical program committee chairperson, anticipates that there will be a record amount of abstracts submitted this year since it is the SEG’s 75th anniversary and the meeting is located in Houston. Last year, the SEG received about 675 abstracts.

The key dates are:
- March 23: SEG website opened to accept abstracts online
- April 20: Website closed
- April 21-May 20: Abstracts reviewed
- May 23: Technical program finalized

At the SEG 2004 meeting in Denver, Colorado, the NSG Section had four technical sessions, with eight papers in each session. Let’s keep up the volume of submissions to maintain or increase the number of sessions!

Opportunities also exist to volunteer to review abstracts and chair sessions. At least three reviewers for each respective subject, such as seismic, ground-penetrating radar, electrical resistivity, electromagnetics, case studies, etc. are needed. If you also have ideas for sessions, such as Near-Surface Geophysics in China or Extreme Geophysics, the meeting organizers would like to know. Contact Lawrence Gochioco, preferably by March 31, 2005, and let him know how you can contribute.
NEAR-SURFACE VIEWS

Near-Surface Views is published quarterly by the Near-Surface Geophysics Section of the Society of Exploration Geophysicists to convey information of common interest to people working in near-surface geophysics.

To be effective, Near-Surface Views requires the contribution of information from a variety of sources. If you have an item to communicate to other members of the near-surface geophysics community, especially a feature article, please send it to the Editor. All contributions are welcome. The Editor reserves the right to reject items that are felt to be too highly commercial or technically inappropriate.

ALL SUBMISSIONS SHOULD BE SENT DIRECTLY TO THE EDITOR.

Submissions for the next newsletter should be sent by May 31st.

NSG Section Treasurer’s Report

Michael Knoll, NSG Section Treasurer

The NSG Section fiscal year (FY) starts on July 1 and ends on June 30. We started FY 2005 with an account balance of $22,419. For the six months ending on December 31, 2004, revenue totaled $4,276, and expenses totaled $4,810. Membership dues constituted 57% of the revenue and the remainder was attributed to sale of advertising space in the newsletter. Major expenses included costs associated with the NSG annual meeting ($2,330), printing and mailing the newsletter ($1,177), and monthly administrative fees charged by SEG ($840).

Activities during this period included filing of Form 990 with the Internal Revenue Service to maintain our tax-exempt status and changing our type of small business checking account with the Bank of Oklahoma to one that has no monthly fees.

The NSG Section account balance as of February 28, 2005 was $21,885, which is about $780 less than one year ago, but more than $8,000 above our 5-year average balance thanks to the income received for hosting the SEG 2002 meeting. Our financial situation is healthy, and I think that we are in a position to consider proposals for some new initiatives aimed at increasing member benefits and advancing the science of new surface geophysics.

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NEAR-SURFACE VIEWS ADVERTISING
Advertisements may be placed in Near-Surface Views. Rates are listed below; advertisements will run for a minimum of one year and until expressly stopped by the advertiser unless arranged otherwise. For complete advertising information contact the Editor.

Current advertisers should notify the editor of any changes by the next issue’s submission deadline. The submission deadline for the next issue is May 31st.

Advertising Rates/Issue
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$100 (3.75” x 6.5”)
or (3.25” x 9.0”)
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$200 (7.0” x 9.0”)
Business Card  
Four (4) Insertions  
$150 (2.0” x 3.75”)

The EEGS/NSG Frank Frischknecht Leadership Award

Louise Pellerin, NSG Section President-Elect

The level of cooperation between NSG Section and EEGS (the Environmental and Engineering Geophysical Society) continues to increase by jointly bestowing the Frank Frischknecht Leadership Award. The presentation will be made approximately every 18 months alternately between the Spring EEGS meeting (SAGEEP) and the fall meeting of NSG Section at the SEG annual meeting. The first joint presentation will be made in April at SAGEEP 2005 in Atlanta, Georgia.

The EEGS/NSG Frank Frischknecht Leadership Award has been established to recognize an individual who shows extraordinary leadership in advancing the cause of near-surface geophysics through long-term, tireless, and enthusiastic support of the environmental and engineering geophysics community. Such leadership is often boldly displayed by an invention, a new methodology or technique, a theoretical or conceptual advancement, or a unique innovation that transforms the nature and capabilities of near surface geophysics.

The NSG Section also awards the Hal Mooney Award “in recognition of scientific and technical excellence and innovation leading to the advancement of near-surface geophysics.” The EEGS also awards the Gold Award “established to recognize an individual who is deserving of special recognition due to exceptional contributions made to the engineering and environmental geophysics community and to EEGS. Such contributions include development of educational tools or curriculums, innovation in outreach efforts, or creating communication methods and opportunities with other professional disciplines that comprise potential geophysical end-users.”

The following recipients of all these awards have made significant contributions to our profession and we give them our thanks.

Awards bestowed by the Near-Surface Geophysics Section

<table>
<thead>
<tr>
<th>Year</th>
<th>Frischknecht Award</th>
<th>Mooney Award</th>
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<tbody>
<tr>
<td>1995</td>
<td>Bob Ballard</td>
<td>Rick Miller</td>
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<tr>
<td>1996</td>
<td>Don Steeples</td>
<td>Peter Annan</td>
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<tr>
<td>1997</td>
<td>Bill Jones</td>
<td>Duncan MacNeill</td>
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<tr>
<td>1998</td>
<td>Pieter Hoekstra</td>
<td>Doug Crice</td>
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<tr>
<td>1999</td>
<td>Peter Hanei</td>
<td>Gary Olhoeft</td>
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<td>2000</td>
<td>see note</td>
<td>see note</td>
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<tr>
<td>2001</td>
<td>Dwain Butler</td>
<td>Charles Stoyer</td>
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<tr>
<td>2002</td>
<td>Rosemary Knight</td>
<td>Mats Lagmanson</td>
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<tr>
<td>2003</td>
<td>Roger Young</td>
<td>Jim Hunter</td>
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<tr>
<td>2004</td>
<td>Rob Huggins</td>
<td>Ken Stokoe</td>
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Note: recipient unknown at time of printing; please help complete the record and contact us if you have this information.

Awards bestowed by the Environmental and Engineering Geophysics Society

<table>
<thead>
<tr>
<th>Year</th>
<th>Frischknecht Award</th>
<th>Gold Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Duncan McNeill</td>
<td>John Greenhouse</td>
</tr>
<tr>
<td>2004</td>
<td>Peter Annan</td>
<td>Dick Benson</td>
</tr>
</tbody>
</table>
NSG SECTION & EEGS
The NSG and EEGS are actively pursuing common areas of interest and cooperation.
If anyone has comments or ideas on areas of cooperation, please contact Steve Danbom by email steve.danbom@worldnet.att.net or telephone 713-937-7530.

NSG SECTION WEB SITE
Don’t forget to add your input at the NSG Section site (http://nsgs.seg.org).
You can send information about “Calls for Papers” or other announcements to be posted on the web or included in the newsletter.
Stay involved!

---

Goodbye to Alan Witten: Teacher, Innovator, Adventurer

Dr. Alan J. Witten died on February 13, 2005, in Norman, Oklahoma, after suffering a sudden heart attack the previous day. He is survived by his wife, Cathy, and two sons, Seth and Ben. Alan earned his undergraduate and graduate degrees from the University of Rochester in the 1970s, and later moved west settling at the University of Oklahoma as the Frank and Betty Schultz Chair in Geophysics Professor.

Alan specialized in cutting-edge quantitative, high-resolution imaging and target detection algorithms for seismics, ground penetrating radar, and magnetometry. He worked on many challenging problems including location and identification of buried waste, detection and characterization of buried unexploded ordnance, location of tunnels in the Korean Demilitarized Zone, imaging of a prehistoric subterranean culture in Israel, and imaging the buried skeletal remains of a supergiant sauropod dinosaur.

Dr. Roger M. Slatt, the Director of the School of Geology and Geophysics at the University of Oklahoma and long time friend and colleague, eulogized Alan to a packed auditorium of colleagues, students, and friends on February 14, 2005.

“Tonight I want to represent Alan’s other family, his professional family at the University of Oklahoma, and talk a bit about his accomplishments. For me, it was truly an honor and privilege to know Alan as a friend and colleague. He was a remarkably talented, creative, and most important, caring individual.

As you all know, Alan was almost fanatical about good health, which makes his loss all the more tragic. The only real vice that I knew Alan had was his love of desserts. Anyone who ever watched Alan eat chocolate cake knows how forcefully he could stab that fork into the cake and devour it without shame and with intense gusto.

Thinking of the word ‘gusto’, it is not used much anymore and I would bet there are people here who do not know what it means. The dictionary defines gusto as ‘keen enjoyment; relish; zest; great vigor or fervor’. Gusto really describes Alan’s approach to life.

As an educator, Alan was always available to talk with students. His enthusiasm for the subjects he taught routinely spilled out into the audience. He truly lived up to the title of his freshman course ‘Adventures in Geophysics’ by taking his students on real adventures, from searching for burial plots in Norman to imaging buried cities in Jordan and Greece. He always wanted students to share in his adventures. His approach to students was sometimes unconventional, but always effective. For example, instead of giving routine exams in his classes, he would have students meet individually in his office for their final exam, ask them what they had learned, and grade them accordingly. Whenever an opportunity arose for him to go out and conduct geophysical research, his first question was ‘can I take students along?’ In his spare time, he taught geophysics at Norman High School on a volunteer basis.

He also approached scientific endeavors with great gusto. Alan called his research ‘high-visibility geophysics’, not only because it involved precise three-dimensional imaging of shallow-subsurface features, but also because his work garnered considerable respect and attention in
the scientific and non-scientific communities. He developed
and applied imaging techniques such as high-resolution seismic
reflection, ground penetrating radar, electromagnetic induction,
diffraction tomography, and most recently, resistivity imaging.
As an indication of his diversity, his credits include exploring a
6,500-year old civilization in what is now Israel, imaging an
ancient copper mining village in Jordan, investigating a mass
grade from the 1921 Tulsa, Oklahoma race riot, finding
Captain Kidd’s sunken treasure ship off Madagascar, mapping
high- and low-level underground contaminants and waste,
exploring Jesse James’ hideout caves near Atoka, Oklahoma
and locating the longest dinosaur ever found, which was
appropriately named Seismosaurus. This dinosaur formed the
model for dinosaurs used in the movie Jurassic Park. Just two
weeks ago Alan was in Florida imaging sinkholes for a
homeowners association and a month before that, he was in
North Dakota imaging concretions in coal deposits for a strip-
mining firm. His abilities also extended to working with
military and criminal agencies. On many occasions Alan
would disappear for a week or two, and we knew he was up to
some top-secret activity, ranging from locating tunnels near
border crossings, to developing techniques for imaging caves.
A plaque from the Homeland Security office thanking him for
some unknown activity even hangs in his office.

Alan has received considerable acclaim for his
accomplishments. He has been on the History Channel on
more than one occasion, appears in the local newspapers
regularly for some ‘adventure in geophysics’, has published
numerous articles from archeology to petroleum geology
applications, holds several patents, and his new book titled
Handbook of Geophysics and Archaeology is scheduled to be
released this month.

Finally, I want to mention that Alan’s greatest enthusiasm
and joy came from conducting scientific field studies with
his two sons Ben and Seth. On several occasions I had the
opportunity to witness the pride he had in working with
them. His son’s names appear as co-authors on some of
Alan’s publications. Ben and Seth are well versed in Alan’s
gеophysical techniques, are real contributors to his research
activities, and sometimes would even grow impatient with
him in the field and say ‘Dad, give it here and let me do it, I
can do it better’. Alan was always very proud of that.

What else can be said? Alan’s loss extends far beyond the
reaches of the University of Oklahoma and the city of
Norman. He has truly left his mark on society far and wide
and has guided many, many people to success. Helping
others succeed was always his greatest goal. We will all
miss him.”

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Geometrics, Inc. recently produced the first multi-sensor magnetic gradiometer of its kind for a research institute in Austria. The system (Figure 1) comprises six independent sensor systems performing synchronized measurements of the earth’s magnetic field.

The unique array is configured with four optically-pumped cesium vapor magnetometer sensors mounted on a horizontal bar approximately 12 cm above the ground separated by 0.5 m. Mounted above the horizontally-mounted sensors is a pair of sensors that provide vertical gradient information. Together this six sensor system provides horizontal gradient, vertical gradient and wide swath coverage for the location of small ferrous objects or soil alterations.

Cesium magnetometers produce the highest sensitivity and speed of any commercially available portable system. These factors allow a synchronized multi-sensor array to detect very small distortions in the earth’s magnetic field caused by ferrous materials or disruptions to the normally evenly magnetized soil.
The system cycles at 10 or 20 times per second providing spatial sampling at every 5 to 10 cm at normal walking speeds. The system positioning is provided by a sub-meter differentially corrected GPS. The data stream from each magnetometer sensor is appended to the previous sensor’s data to provide a single stream of data which is logged into a single communication port on the data acquisition computer. Geometrics, Inc. MagLog software applies offsets and computes interpolation points for all the sensor positions in real time, producing a latitude, longitude and magnetic field file with all six sensor’s information for later processing and analysis.

The array is installed on a non-magnetic cart to provide a constant altitude and spacing for the array. The cart is also designed to generate a minimum of eddy currents as it is moved through the earth’s magnetic field and to be lightweight yet rigid. The cart can be towed by an all-terrain, 4-wheel or 6-wheel tracked vehicle with a low magnetic signature or pulled by a survey crew (Figure 2). Power (24 Volts DC at 2 Amps) for the array is supplied from the tow vehicle or secondary cart.

Applications for the cart include mapping of unexploded ordnance (UXO), archaeological investigations and forensics. Small objects such as 20 mm or 60 mm shells, early human artifacts and soil disturbances from hundreds of years earlier can be imaged using standard contour mapping programs. The shaded relief maps of the Stanford Test Site (Figures 3 and 4) show small anomalies associated with soil movement or compaction consistent with horse-drawn wagons from a century earlier. Also shown are anomalies associated with a French fort built in 1730 by the LaSalle expedition in present day Texas (Figure 5). The dataset was collected with cesium sensors mounted on carts and shows sub-nanoTesla anomalies associated with cultural artifacts and excavations.
NSG Section Member Milestones

The NSG Executive Committee, on behalf of all members of our section, is honored to congratulate the following NSG Members who have reached twenty-five years membership with the Society of Exploration Geophysicists (Silver Certificate Awardees). We look forward to seeing each receive their Gold Certificates as well. Congratulations to:

William Ernest Black (Norcal Geophysical Consultants)
Mark A. Bronston (Lake Ronel Oil Company)
Dr. V.J.S. Grauch (USGS Denver)

Volunteers Needed to Judge Science Fairs

The SEG is a strong supporter of the International Science and Engineering Fair (ISEF) and provides volunteer judges for the "Special Awards" division. The SEG is actively recruiting volunteer judges to represent SEG at the 2005 ISEF to be held in Phoenix, Arizona, May 8-13, 2005. Judging will take place on Tuesday and Wednesday, May 10 and 11, 2005.

Information on the 2005 ISEF can be found at URL: http://www.intelisef2005.org/.

International Congress and Exhibition on Near-Surface Geophysics

The Turkish Chamber of Geophysical Engineers is organizing an international conference on near-surface geophysics to take place in Istanbul, Turkey in 2006. The tentative topics are:

- Archeology
- Soil Investigations
- Near-surface natural resource exploration
- Environmental studies
- Infrastructures

For more information, please contact Lawrence Gochioco, NSG Section Vice President.
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2005 Calendar of Select Events


European Association of Geoscientists and Engineers (EAGE) Annual Meeting, June 13th to 16th, Madrid, Spain, http://www.eage.nl/conferences.


SBGII/SEG/EAGE 9th International Congress of the Brazilian Geophysical Society, September 11th to 14th, Salvador - Bahia, Brazil.

SAGA/SEG/EAGE 9th Biennial Conference and Exhibition, September 13th to 16th, Cape Town, South Africa, www.sagaonline.co.za.

AGU Fall Meeting, December 5th to 9th, San Francisco, California, http://www.agu.org/meetings.

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Near-Surface Geophysics Section of the SEG
Membership Application

The Near-Surface Geophysics (NSG) Section of the Society of Exploration Geophysicists is a professional organization chartered by the SEG to promote the rigorous practice of the science of shallow-earth geophysics. You may read about the origin and goals of the section at http://edge-online.org/pdf/tle1209r0922.pdf.

Class of Membership:

- _____ Active Membership¹ $10.00 Includes quarterly newsletter
- _____ Affiliate Membership² $10.00 Includes quarterly newsletter

Please clearly print or type all entries.

Applicant name: __________________________________ Title: __________________________________

Company/affiliation: _____________________________________________________________________________

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Email: _________________________________________________________________________________________

Primary application: _____________________________________________________________________________

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- ___ Groundwater Geophysics
- ___ Mining Geophysics
- ___ Petroleum
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- ___ Other _______________________

SEG membership is NOT required to join the NSG Section. I am currently a member of the SEG: _____YES or _____NO.

If you are not a member of SEG, list the names of two NSG Section or SEG sponsors or attach a current resume.

Sponsors: ________________________________________________________________________________________________

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¹ Geophysicists & SEG member or sponsored by two NSG or SEG members. See NSG Bylaws III.1.a. for details.
² Interest in NSG & SEG member or sponsored by two NSG or SEG members. See Bylaws III.1.b. for details.
³ Please include country and city telephone codes, if applicable.
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