AIPG 43rd ANNUAL MEETING
“Sustainability”

Saint Paul, Minnesota
September 23 - 28, 2006

Hosted by: The Minnesota Section of AIPG
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ON THE COVER - The photograph is looking south from the summit of Mt. Sneffels (14,150 feet), in Colorado’s San Juan Mountains. The foreground shows weathered granodiorite boulders of the Mount Sneffels-Stony Mountain stock (and a marmot enjoying the sun). Gilpin Peak (to the left; 13,694 feet), exposes units of the Tertiary Gilpin Peak Tuff. The valley beyond shows portions of the Telluride Ski Resort and the Turkey Creek Landslide deposit. The photograph was taken on June 17, 2006 by Thomas A. Chapel, CPG-10504.
I just booked my airline ticket for the Annual Meeting – electronically. The same is true for my registration for the Annual Meeting. If you read TPG from cover to cover, you may be reading this issue at your computer. If so, then you received it electronically.

It seems as if we have come a long way over the past three years since I became Editor of TPG. I had one goal as Editor of TPG - Get the membership involved in TPG. To do this, I was hoping to increase the number of articles submitted to TPG, attract student publications related to thesis and research topics, improve communications with AIPG sections, and expand the use of the electronic media for TPG. I think we have come close, if not exceeded, on this goal. Thank you for improving the content of TPG. As always, this has been done in a manner that maintains the integrity of TPG and acknowledges the tremendous efforts of so many repeat contributors.

Although the summer is still with us, the anticipation of the Annual Meeting only a month away is growing. The technical program, field trips, and activities will keep you out of breath for a week. We are looking forward to another great Annual Meeting and a chance to enjoy the hospitality of the Minnesota Section as well as catch up with friends and meet other members of AIPG. We look forward to seeing all of you in St. Paul September 23 - 28.

Our next issue will be the last one for 2006 and we have already sent out the notice requesting contributions for the January/February 2007 Student Issue. There is plenty of time to get material in for the November/December issue before we sit down to enjoy the Holiday Season. Please feel free to e-mail or call me with any questions or thoughts you may have regarding material for TPG.

See you in St. Paul for the 43rd Annual Meeting!

Thank You.
Arizona Section

Earth Fissure Legislation Signed. During the past legislative session the Legislature passed a bill to fund mapping of earth fissures and make their locations available online. Governor Napolitano recently signed the bill, which will become effective in mid September. The AZ Geological Survey (AZGS) will receive funds to map the fissures and provide them to the AZ State Land Department and the AZ Department of Real Estate. The bill received wide support from the business community, including home builders and realtors, the State agencies involved, legislators, and the Governor. Lee Allison, Director of the AZGS and State Geologist (and an AIPG member), will give the new assignment high priority. We will keep you up to date on the progress of this important activity.

Arizona Geological Society (AGS) - August Meeting.

The AGS Dinner Meeting Speaker on August 1 will be Doug Bartlett, Clear Creek Associates. Doug (an AIPG member) will discuss “Environmental hydrogeology of porphyry copper mines in Arizona.” Mark your calendars. Details will soon be posted on the AGS website: www.arizonageologicalsoc.org/ Let’s go down to the Inn Suites Hotel to hear Doug’s talk and give him our support as well.

Section Plans

• The AZ Section, as one of the sponsors of the 2006 Arizona Hydrological Society Symposium to be held in Glendale September 13-16, will have a booth. If anyone is willing volunteer to spend an hour or two helping at the booth, please let me know.

• A member of the Executive Committee will be chosen to represent the AZ Section at the Annual Meeting of the AIPG in Minnesota in September.

• The Executive Committee is discussing ways to encourage university geology majors to become active in the AZ Section. Contacts will be made within geology departments at NAU, ASU, and UA.

• Partial plans have been made for a Fall Field Trip in the Willcox area Saturday, November 11. The field trip will feature the impacts of playas on the settlement and development of the area, including grazing, irrigated agriculture, railroad maintenance, water supply, and sources of construction aggregate. The Willcox Playa is one of only two active playas in Arizona. Field trip stops will be made at sand dunes, beach ridges, earth fissures, and desiccation polygons.

• An Executive Committee Meeting, open to all members, will probably be scheduled for Friday evening, November 10. The Dinner Meeting will be at the Elks Club in Willcox shortly after the field trip November 11. On Sunday, members can explore the Playa and surrounding areas (Chiricahuas, Fort Bowie, Amerind Foundation, historic Willcox, etc.) on their own before departing for home.

• Preliminary discussions of the 2008 Annual AIPG meeting in Flagstaff are under way. This will be an International Geological Conference. AZ Section volunteers will be needed to assist – let me know if you would like to participate.

• The Annual Business Meeting will be held February 8-11, 2007, in conjunction with the Tucson Gem and Mineral Society’s Annual Show. Tentative plans are for the business meeting to be Saturday morning, February 10, followed by an afternoon tour of the Gem Show in the Community Center. The dinner meeting will be Friday night, February 9. An Executive Committee meeting, open to all members, will also be held that weekend.

Larry D. Fellows, CPG-04447

Colorado Section

The May Luncheon meeting included an excellent talk by Vince Mathews, Director of the Colorado Geological Survey, regarding mineral resources in Colorado as well as the implications of the worldwide use of mineral resources. He had some interesting, but scary statistics.

At the June Executive Board meeting, the Board voted to transfer $5,000 from our operating budget account to our Rex Monahan Scholarship Fund (a separate account). Hopefully this action will entice the Section membership to contribute. A hearty thanks to Bob Weimer, CPG-00098 for his generous contribution to the Scholarship Fund.

Dave Holmes arranged a field trip to the Uranium activities on the western slope on July 22 and 23. The Colorado Section’s summer picnic was hosted by David and Sue Abbott on August 12th.

Kentucky and Virginias Sections

2006 Spring Field Trip and Kentucky Section Awards Banquet

Geology and Geomorphology of the Breaks Interstate Park Area


Geologists and guests from the Kentucky and Virginia Sections of AIPG gathered at The Breaks Interstate Park at Breaks, Va., for the 2006 Spring Field Trip and Kentucky Section Awards Banquet on Friday, May 19. This was the first time that these AIPG sections had co-hosted such an event. That evening it rained, but by the morning the rain had cleared and the local weather report called for clearing skies for our field trip on Saturday, May 20. The rain had prevented fog from totally obscuring the early morning view of The Towers.

The field trip started after breakfast, when we gathered at The Towers overlook to introduce the field trip lead-
ers, Steve Greb and William “Drew” Andrews, who briefed us on the itinerary of the field trip, which was to view bedrock outcrops along local roads and then take advantage of the clearing weather in the afternoon and do some hiking to various scenic overlooks within The Breaks Interstate Park. The field trip attendees then introduced themselves, along with our four-legged guest, who went by the name of Huck.

The Breaks Interstate Park is situated on Lower Pennsylvanian/Breathitt Group rocks, at the northeastern end of Pine Mountain. This area of southwestern Virginia and southeastern Kentucky resulted from differential Cenozoic erosion of strata pushed to the surface along the Pine Mountain Thrust Fault. The Breaks Interstate Park straddles the Kentucky-Virginia state line and is named for a break in Pine Mountain where the Russell Fork River has carved a 1,600-ft-deep, 5-mile-long gorge, referred to as the Grand Canyon of the South.

Our first stop of the morning was to view the Betsie Shale. The Betsie Shale is a marine prodelta shale with an upward-coarsening sequence with preserved tidal-influenced rhythmic bedding. Continued progradation led to large paleoslumps, possibly as a result of growth faulting.

This concluded our morning outcrop viewing, and we went back to the park’s lodge for lunch. After lunch we proceeded to a cliff-lined trail of the Bee Rock Sandstone located within the park. The trail starts on the ridge of oak and hickory trees that form the climax of the hardwood forest. An ancient chestnut virgin forest once dominated, but the chestnuts are now gone from felling for cultivation and then a blight introduced from China in the 1900’s, which killed all the chestnuts by the end of the 1930’s. Descending down to the Bee Rock Sandstone cliffs, we passed through sassafrass, earleaf magnolias, hemlocks, mountain laurels, and rosebay rhododendrons, along with mosses and various wildflowers that grow in the cooler, moist areas. The Bee Rock Sandstone, previously a sandstone of the Lee Formation, was thought to be an offshore sandbar of marine origin. More recent research indicates that the large and upward-finining crossbeds with layers of conglomeratic sandstone were deposited in braided, fluvial depositional environments. The trail let the group

Large paleoslump in the Betsie Shale on Virginia 609.

Crossbedding features in the Bee Rock Sandstone.

State Line Overlook on the Virginia side looking north-southwest into Kentucky. To the southwest, (dashed line showing the inferred trace) a thrust fault developed in the valley walls, and the topographic expression of the Pine Mountain front can be seen in the distance.

Tim Crumbie presenting the Outstanding Student Award to William Gilliam, Morehead State University. Our other student award recipient, Kristen Enzweiler, Northern Kentucky University, was unable to attend.
view the various bedding features associated with this type of fluvial depositional environment.

The trail exited at the State Line Overlook, where we could view the states of Kentucky and Virginia, with U.S. 80 following the Russell Fork River on one side, and the CSX Railroad tracks (formerly Clinchfield) used for carrying coal following it on the other side. The Pine Mountain Thrust Fault could also be viewed.

From here we proceeded down the road and looked at some thick, silty gray shale exposures with carbonate concentrations. Our final stop was the Russell Fork River where the Bee Rock Sandstone is exposed in the lower part of the Breaks Gorge.

That evening we had our banquet and annual Kentucky awards ceremony at the park lodge.

A pdf version of the field trip guidebook will be available on the Kentucky AIPG Website: www.professionalgeologist.org.

The Kentucky and Virginias Sections of AIPG would like to extend their appreciation to Speedway SuperAmerica LLC, Spade Corporation, Republic Services Inc.’s Kentucky Landfill Division, Regenesis Bioremediation Products, and The Allen Company for their financial support of the Spring Field Trip and Awards Banquet. The field trip and awards banquet were both well attended, and we hope that both sections of AIPG will be able to co-host similar events in the future.

Donnie Lumm presenting the Lifetime Achievement Award to Dr. James Howard.

Tim Crumble presenting the Geologist of the Year Award to Tom Spalding. AIPG Kentucky Section. Tom was also recognized for his tireless efforts in organizing the 2005 AIPG National Meeting.

Tim Crumble presenting to Donnie Lumm, Past President of the AIPG Kentucky Section, a plaque recognizing his outstanding service during his term as the 2005 president.

MARK YOUR CALENDAR!

Energy and Environmental Compliance
In the West Conference
Denver, Colorado

NOVEMBER 9-10, 2006

Wrestling with regulations and governmental organizations that make the work of exploration and development a challenge...some would say a nightmare. This conference will bring the players from all sides together so as to clarify issues and make the process more effective and efficient. Want to work smarter not harder...this conference is for you.

Register Online - www.aipg.org - Click on Events

Presented by
American Institute of Professional Geologists and
AIPG Colorado Section

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(303) 412-6205 • aipg@aipg.org • www.aipg.org
SCHOLARSHIP PROGRAM

Purpose
To assist students with college education costs and to promote student participation in the American Institute of Professional Geologists (AIPG). Up to four scholarships will be awarded to declared undergraduate geological sciences majors who are at least sophomores.

Scholarship Awards
Scholarship awards in the amount of $1,000.00 each will be made to eligible students attending a college or university in the U.S. Scholarships are to be used to support tuition and/or room and board.

Eligibility Requirements
Any student who is majoring in geology (or earth science), is at least a sophomore, and is attending a four-year accredited college or university in the U.S. can apply. Also, the student must be either a student member of AIPG or must have applied for student membership at the time the application for the scholarship is submitted.

Each student who is awarded a scholarship agrees, by accepting the scholarship, to prepare a 600 to 800 word article for publication in The Professional Geologist. The subject of the article must be related to a timely professional issue.

Application Process
Applicants must submit: a letter of interest with name, mail and e-mail addresses, and telephone number; proof of enrollment in an eligible geological sciences program, transcripts; an original one-page essay on why the applicant wants to become a geologist; and a letter of support from a faculty member familiar with the applicant’s academic work. The application packet should be submitted to:

American Institute of Professional Geologists
Attn: Education Committee Chr.
1400 W. 122nd Ave., Suite 250
Westminster, CO 80234

For questions regarding the application process call (303) 412-6205 or e-mail: aipg@aipg.org.

Applications must be received by FEBRUARY 15th Awarded the month of SEPTEMBER

Basis of Awards
Awards will be based on the content and creativity of the essays as judged by the Education Committee. The decisions of the Education Committee are final.
Answers to Questions July/August TPG

I take exception to part of the “Answers to Questions” on page 38 of the July/August 2006 TPG, specifically with the third paragraph of the answer to question 2 concerning olivine. Olivine, (Mg,Fe)\(_2\)SiO\(_4\), is not commonly used for magnesium production—brines are a primary source. However, olivine, particularly the forsterite end member, Mg\(_2\)SiO\(_4\), with its high melting temperature, 1,890 ± 20°C, makes it very useful as a foundry casting sand for such things as engine blocks. Olivine is also used for construction ballast, slag conditioning in steel mills, as an abrasive, making refractory materials, and other uses. The gem variety, peridot, is pretty, but is not a high tonnage use.

David M. Abbott, Jr., CPG-04570

Response to Answers and Questions July/August TPG

More Information on Olivine and Its Usage

The following expands on my previous comments on “olivine” and on the remarks by my good friend, Dave Abbott, in his “letter to the editor.”

Minerals of the olivine group form part of a series between two end members, “fayalite” and “forsterite.” Fayalite is the iron rich end member with a pure formula of Fe\(_2\)SiO\(_4\), whereas forsterite constitutes the magnesium rich end member with a pure formula of Mg\(_2\)SiO\(_4\). Minerals of the olivine group are recognized as important, rock-forming silicate minerals and are integral components of certain mafic and ultramafic igneous rocks. Specimens of the olivine group are among the first to form in a cooling magma and form an integral part of the discontinuous “ferromagnesian” branch in Bowen’s Reaction Series.

Olivine may, in some cases, also form from the metamorphism of sediments with high magnesium content. (http://www.answers.com/topic/olivine). Formerly called “chrysolite,” transparent specimens of olivine form the gemstone called “peridot.”

Concerning the usage of olivine, the following constitute a sampling of many available references:

Magnesium Source: (http://www.minsocam.org/MSA/collectors_corner/article/oremin.htm).

“Although magnesium is found in many minerals, only dolomite, magnesite, brucite, carnallite, and olivine are of commercial importance. Magnesium and other magnesium compounds are also produced from seawater, well and lake brines and bitterns.”

Olivine Utilization: Minerals in the olivine group are used in industry “as refractory sands and abrasives, an ore of magnesium and as mineral specimens.” (http://www.galleries.com/minerals).


Specifically, the “SME” or Society for Mining, Metallurgy, and Exploration, Inc. (http://books.smenet.org/Surf_Min_2ndEd/sm-ch02-sc10-ss18-bod.cfm) lists some uses of “olivine” to include the following:

- As a mineral used in various applications involving hot metal.
- As a special foundry sand in mold making for the brass, aluminum, magnesium, and manganese steel foundries.
- As a refractory material;
- As a fertilizer (magnesium source);
- As a plant food along with rock phosphate to produce a magnesium phosphate; and
- As a potential source of both magnesium compounds and as a source of metallic magnesium.

Robert G. Font, CPG-03953

Robert Northcutt Resigns from National Screening Board

I have been involved with the AIPG National Screening Committee since its inception in 1989 and have thoroughly appreciated the efforts and dedication of all the NSC members and Headquarters Staff with whom I have been fortunate to serve.

After much consideration, I have decided that it is time to step down. Therefore, I hereby tender my resigna-

tion as a member of the AIPG National Screening Committee to be effective June 30, 2006.

Larry, it has been a pleasure to work with you throughout the many years we have known one another. I cherish many fond memories of the EXCOM meeting and other AIPG functions we have attended together.

Keep up the good work.

Robert A. Northcutt, CPG-02704

Dedication to AIPG

On behalf of the AIPG Executive Committee, National Screening Committee, the entire AIPG membership, and National Headquarters staff, we offer our sincere thank you for all your years of dedication and sterling service to AIPG and the National Screening Committee.

Your efforts and devotion to upholding AIPG’s high standards of competence, integrity, and ethics are extraordinary and highly appreciated, and a testament to your commitment to the Institute. Your contributions will be sorely missed.

Thank you!

Sincerest wishes for a long life and a healthy and happy future.

Lawrence C. Weber, CPG-07120
William J. Siok, CPG-04773

Student Scholarships are Appreciated

I want to thank you for the scholarship I was awarded. I was thrilled to come home from Geology Field Camp, open my mail, and find that I had been awarded your scholarship! I have not been able to work yet this summer because I have been at field camp, and the money is a real blessing.

I am starting my senior year this next semester and I can’t wait to finish my undergraduate degree and move onto graduate school. I am really looking forward to using the skills and information that I learned in my undergraduate career to guide me in my graduate work.

I hope to participate further in AIPG by writing a small article for The Professional Geologist on my recent experiences at field camp. I enjoy reading the magazine and am excited to see my writing within it. Thank you again for the award money and the opportunity to participate in AIPG.

Jaron Andrews, SA-0871
Thank you for contributing to my education as a volcanologist. Your scholarship will provide me with the financial freedom I need to pursue my studies and research on volcanoes in Ecuador. On August 14th, I fly to Ecuador where I will join the scientists at the Instituto Geofisico. Here, I will gain exposure to all facets of volcano monitoring and hazard mitigation. I will also have the unique opportunity to work with the Institute's geochemist to develop a project that may form the basis for a master's project at an American university the following year. I will now be able to afford to return to Colgate University in N.Y. to analyze samples for major and trace element concentrations. Dr. Karen Harpp, my advisor while a student at Colgate, has been gracious enough to offer her facilities.

Branden Christensen, SA-0874

I am writing to express my appreciation for being awarded the AIPG undergraduate scholarship. It was a very pleasant surprise to find in the stack of mail waiting at my house upon my return from field camp. I have enjoyed serving as AIPG student chapter president at Georgia State University and have benefited greatly from the connections I have made through the Georgia Section of AIPG. I would like to give particular thanks to Georgia section President Ron Wallace and Vice-President Eric Lowe for their ongoing support of the student chapter activities as well as assisting individual students with career goals. I certainly plan to maintain my AIPG membership and will continue to encourage geology students to join the organization.

Beth Lavoie, SA-0729

AIPG BYLAWS
UPDATE
(February 10, 2006)

2.3.1.1. Continuing Professional Development

A voluntary program for recognizing Continuing Professional Development (CPD) activities by Certified Professional Geologists has been approved by the Executive Committee. Participation in the CPD Program is voluntary for those who initiate the CPG application process prior to July 1, 2006. Applicants who initiate the CPG application process on July 1, 2006 or later must participate in the CPD program upon award of the CPG. Details about this program can be found on the Institute's web site and descriptions of and discussions concerning the CPD have been and will continue to be published in The Professional Geologist.

AIPG Student Chapters

Bowling Green University
Founded in 2004
Chapter Sponsor:
Robert K. Vincent, MEM-0216

Central Michigan University
Founded 2003
Chapter Sponsor:
David J. Matty

Colorado School of Mines
Founded 1999
Chapter Sponsor:
Graham Closs, CPG-07288

Eastern Michigan University
Founded 2006
Chapter Sponsor:
Walter J. Bolt, CPG-10289

Georgia State University
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Chapter Sponsor:
Ronald Wallace, CPG-08153

James Madison University
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Chapter Sponsor:
Cullen Sherwood, CPG-02811

Ohio State University
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Chapter Sponsor:
Thomas Berg, CPG-08208

Temple University
Founded 2006
Chapter Sponsor:
Dennis Pennington, CPG-04401

Wright State University
Founded in 1996
Chapter Sponsor:
Thomas Berg, CPG-08208
**Bennett L. Bearden Selected Most Outstanding Professor of the Year**

AIPG member Bennett L. Bearden, CPG-07700, has been selected as Most Outstanding Professor of the Year by the Birmingham School of Law graduating class of 2006. Bearden is Director of the Petroleum Technology Transfer Council Eastern Gulf Region at the University of Alabama in Tuscaloosa. He received the award at the School’s 91st Annual Banquet on Friday, May 19, 2006 in Birmingham. Bearden has served as an adjunct professor at the Birmingham School of Law since 1994 where he teaches water law and environmental law. This is his fifth faculty honor and fourth consecutive teaching award. He received similar awards as one of the outstanding professors of the year in 1997, 2003, 2004 and 2005. He is a member of the Alabama State Bar, Washington, DC Bar and has been admitted to the Roll of Solicitors of the Supreme Court of England and Wales. Bearden received his BS (geography-1980), BS in Geology (1981) and MS (geology 1984) degrees from the University of Alabama (Tuscaloosa). He is a 1992 graduate of the Birmingham School of Law where he ranked number one academically in his class.

**Ramon E. Bisque to Step Down as Chairman of the Board of ADA-ES**

Ramon E. Bisque, CPG-01595, has stepped down as Chairman of the Board of ADA-ES and will Chair a newly chartered advisory committee on science and technology for that company. Dr. Bisque, a co-founder, was Chairman of Earth Sciences, Inc. (ESI) since 1964. ESI acquired ADA-ES in 1998 and the company was spun-off as a separate entity. ADA-ES serves the coal industry in reducing environmentally harmful emissions. Dr. Bisque is Professor Emeritus, Colorado School of Mines (CSM) where he served on the faculty for thirty years and was head of the department of chemistry. In the eighties he served two four-year terms as Secretary of The Geology Section of the American Association for the Advancement of Science (AAAS) and is a Fellow of that organization. On sabbatical from CSM, he directed the Earth Science Curriculum Project (ESCP) that was sponsored by the American Geological Institute. ESCP introduced earth sciences to thousands of secondary schools and was translated into Japanese and Spanish. Bisque served as a trustee for his alma mater, St. Norbert College for ten years and on advisory committees for the earth science departments at Iowa State and the University of Venezuela.

**Dr. Marcus E. Milling to Step Down as Executive Director of AGI**

Dr. Marcus E. Milling, CPG-04518 has announced his plans to step down as Executive Director of the American Geological Institute effective July 31, 2006. He will remain on the AGI staff as Senior Advisor, serving at the pleasure of the Executive Committee. Dr. Milling’s exceptional geoscience career spans 42 years in the private and public sectors. During his past fourteen years with AGI, working with AGI Foundation Executive Director Jan van Sant, the Institute has experienced unprecedented financial growth. The Institute’s bottom line has improved from being negative in 1992 to 13 years of consecutive positive results. Annual revenues have increased from $3 million to over $6 million and cash investments have improved from $500,000 to nearly $4 million – an eight-fold increase.

Dr. Milling’s leadership of the American Geological Institute is particularly laudatory in light of the Institute’s growth and increased program activities. During his fourteen year tenure as Executive Director, AGI membership increased from 14 Member Societies to 44 geosocieties, representing over 125,000 geoscientists as well as some 250 university and college associates. AGI’s acclaim has grown consistently and substantially during his tenure with the Institute becoming an important supporter of public earth science education.

With all of this success, Dr. Milling continues to lead by example while remaining low key. He has provided vision and leadership for continued growth of the geoscience profession, for the preservation of geoscience data, for the support of geoscience research and the dissemination of the research results in a timely manner, for the development of scientific education programs at all levels, for the support of scholarships for underrepresented groups in the sciences, for the support of young professionals in countries from outside the United States, and for the development of effective public outreach programs to facilitate public awareness of the importance of geoscience to society for its present and future needs, safety, health and security.

Last, but not least, is the outstanding staff and directors that Dr. Milling has assembled to execute the Institute’s program and business affairs. AGI is the strongest it has ever been in the Institute’s 58-year history.

Dr. Milling has been honored by the American Association of Petroleum Geologists with Honorary Membership, by the American Institute of Professional Geologists with the Ben H. Parker
Richard J. Proctor, CPG-05091, wears another hat, that of historian. He just completed his two-year term as President of the Conference of California Historical Societies (CCHS). This organization represents more than 700 museums, libraries, local historical societies, and individuals committed to the preservation of history and of historical places.

Richard said he became interested in Western history when he and his two brothers inherited a Colt revolver belonging to the infamous Wyoming lawman-turned-outlaw, Tom Horn. The gun’s provenance is undisputed, as Horn gave his gun to Richard’s grandfather, who was the Cheyenne deputy sheriff assigned to be Horn’s caretaker in jail, before Horn was hanged. So for two years (1901-03), they were friendly, and Horn also gave Richard’s grandfather a handmade horsehair quirt (whip) and a braided leather-strip bridle. (Horn learned to weave when he lived with the Apaches in Arizona.)

Richard has written articles about Tom Horn’s amazing exploits, as retold in family history. These include Horn being the interpreter at the surrender of Geronimo in 1886, and his being the chief mule-packer for Teddy Roosevelt and Leonard Wood in the Spanish-American War in 1898; Horn was most proud that he helped the U.S. liberate Cuba from Spain.

In 2005, Richard was involved in hosting the CCHS Annual Meeting in San Clemente, wherein with others, obtained the almost-impossible permission to tour the privately owned Western White House of former President Nixon. It is a large estate overlooking the ocean, and the present owner graciously allowed two busloads of historians to visit. The owner even told first-person tales of when President Nixon lived there, as he was Nixon’s head gardener! (And who now employs five full-time gardeners.) The meeting was a success.

Nonetheless, Richard’s main hat is geology, and he is most proud of his recent book “A History of AIPG 1963-2003.” He suggests readers can learn more about many members by going to the book’s Index: Who’s Who and Who Was Who in AIPG.

James M. Prudden, CPG-04455, Volunteers at Philmont Ranch

This was the second year that I participated in the Geology Volunteer program managed by Ed Warner. We volunteers devote one or two weeks to introduce field geology of the Philmont Ranch to thousands of eager Boy Scouts.

Mr. Michael W. Ruddy, CPG-09741, is a Registered Geologist in Missouri and a Professional Geologist in Minnesota and Wyoming. Mr. Ruddy has nearly 16 years of environmental and water supply consulting experience.

His experience includes soil and ground-water remediation projects for government and private sector clients, and has experience in water quality assessment and treatment technologies. In addition, Mr. Ruddy has provided environmental emergency response for ground-water impact.
Mr. Ruddy is also a Certified Professional Geologist (CPG) through the American Institute of Professional Geologists (AIPG) where he currently serves on the Ethic’s Committee. Mr. Ruddy is a graduate of the University of Missouri at Columbia with a B.S. degree in Geology.

IN MEMORY
James R. Neff
CPG-04222
Member Since 1978
August 5, 2006
Grayson, Kentucky

James R. Neff, CPG-04222, PG #0043, age 58, Grayson, KY passed away on Saturday, August 5, 2006 following a long battle with cancer.

Jim was born March 21, 1948 in Portsmouth, OH. He was a 1971 graduate of Marshall University.

His career retirement came in 2005 as a senior exploration geologist with Arch Coal, Inc.

He also worked for Marshall Miller & Associates in Lexington during the 1990’s.

Jim was also a Master Mason, a Kentucky Colonel, a former volunteer firefighter with the Grayson Volunteer Fire Department, and served the First Church of Christ, Grayson, as an elder.

Surviving are his wife of 35 years, Donna J. Neff of Grayson, KY; a son, Christopher Neff and his wife, Christine of Denton, KY, and two grandsons.

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AIPG 2006 NATIONAL AWARDS

Ben H. Parker Memorial Award
Robert R. Jordan, CPG-01262
Yorklyn, Delaware

Martin Van Couvering Award
Richard M. Powers, CPG-06765
Lakeland, Florida

John T. Galey, Sr. Memorial Public Service Award
Richard M. Lane, CPG-06091
Suncook, New Hampshire

Honorary Membership
David M. Abbott, Jr., CPG-04570
Denver, Colorado

Honorary Membership
Myrna M. Killey, CPG-06033
Savoy, Illinois

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Questions

1. In structural geology, tectonics and rock mechanics, we often deal with the concept of stresses and, specifically, stress at a point. Thus, if the stress tensor \((t)\) at point \(D\) is:

\[
\begin{pmatrix}
7 & 0 & -2 \\
0 & 5 & 0 \\
-2 & 0 & 4
\end{pmatrix}
\]

find the stress vector \((T)\) on the plane passing through \(D\) whose unit normal vector is:

\[V = \frac{2}{3}x - \frac{2}{3}y + \frac{1}{3}z\]

Choices:

a) \(T = 8x + 2y - 6z\)
b) \(T = 4x - \frac{10}{3}y\)
c) \(T = 4x - \frac{2}{3}y - \frac{5}{3}z\)

2. Given the stress tensor shown below, define the normal stresses:

\[
\begin{pmatrix}
T_{11} & T_{12} & T_{13} \\
T_{21} & T_{22} & T_{23} \\
T_{31} & T_{32} & T_{33}
\end{pmatrix}
\]

Choices:

a) \(T_{11}, T_{12}, T_{13}\)
b) \(T_{11}, T_{22}, T_{33}\)
c) \(T_{11}, T_{21}, T_{31}\)

3. The chemical reactions and equations highlighted below:

\[
\begin{align*}
\text{H}_2\text{O} + \text{CO}_2 & \text{ yield } \text{H}_2\text{CO}_3 \\
\text{H}_2\text{CO}_3 & = \text{H}^+ + \text{HCO}_3^- \\
\text{CaCO}_3 & + \text{H}^+ + \text{HCO}_3^- \text{ yield } \text{Ca}^{2+} + 2\text{HCO}_3^-
\end{align*}
\]

indicate the following:

Choices:

a) The dissolution of calcite through chemical weathering and the action of carbonic acid.
b) The process of dolomitization.
c) The chemical weathering of orthoclase feldspar.

4. You are out in the field and find “drumlins” and “eskers.” These deposits are best related to:

Choices:

a) Coastal depositional processes
b) Fluvial depositional processes
c) Glacial terrain depositional processes

5. An igneous, volcanic rock that contains less than 10% quartz and that is dominated by sodium plagioclase feldspar content is most likely to be:

Choices:

a) rhyolite
b) andesite
c) trachyte

Answers on Page 40
2006 AIPG Student Scholarship Winners!

The AIPG Executive Committee is pleased to announce that awardees for the 2006 AIPG Student Scholarships. This year four scholarships were awarded to Jaron Andrews, New Mexico Tech, Socorro, New Mexico; Branden Christensen, Colgate University, Hamilton, New York; Alexandros Konstantinou, Macalester College, St. Paul, Minnesota; Beth Lavoie, Georgia State University, Atlanta, Georgia. Each awardee received $1,000 to be used to support tuition and/or room and board.

Congratulations!

Why I Want To Be A Geologist

Jaron Andrews, SA-0871

I have often been called a “rock licker” by some of my friends at school. They joke about how geologists lick rocks and it is true; I often lick rocks (to see if it is halite of course) or smell dirt and try every means possible to figure out what I am working with. I want to be able to be that friendly man in the funny looking hat that strolls up to kids and tells them what that rock is and how it got there.

The main reason why I want to be a geologist is because I want to know how my environment functions. I want to know why that bedding plane strikes N 20° E and dips 12° to the southeast; I want to know how things formed and why. It has been a lifelong question that I have asked everyone in my life: “Why?”

I really had to ask myself why do I want to become a geologist, “what makes it so great?” Being a geologist never came to mind as I was in high school, or when I would fill out career builder worksheets. I always thought I wanted to be a mechanic. However, when I was a boy though, geology was all that I would talk about: asking if that hill was a volcano or if that rock was from that mountain top and why rocks were so hard. My boyhood curiosity was what got the best of me; geology is what I have always been interested in and wanted to study. I figured if I had to go to school to study a subject, it would be one that I was interested in, and one where I get to be outdoors.

Academically, I want to become a geologist so that I can learn more about geomorphology and stream erosion. I think it is amazing that the world is shaped by water more than any other source. I want to enter graduate school and attain a M.S. in hydrology so that I can apply my geology background to the most important resource in the southwest, water. Becoming a geologist will give me the knowledge to become a better hydrologist and to help in the task of resource allocation and management. In all, becoming a geologist is the stepping stone to a better career and a brighter future.

Why I Want To Be A Geologist

Branden C. Christensen, SA-0874

Drawn to volcanic landscapes by their complex geologic processes, impact on surrounding communities, and physically demanding environments, I have devoted the majority of my undergraduate education to studying them. Through my research partnership with Dr. Karen Harpp at Colgate University and Dr. Dennis Geist at the University of Idaho, I have carried out two major research projects, involving a month long field study of Hekla volcano, Iceland, and the use of state-of-the-art analytical instruments.

My first research project focused on investigating the geochemical evolution of Floreana Island, Galapagos. I obtained trace element contents in Floreana lavas using an Inductively Coupled Plasma-Mass Spectrometer (ICP-MS) at Colgate University during the spring semester of my sophomore year and fall semester of my junior year. I spent part of that summer determining radiogenic Sr, Nd, and Pb isotopic compositions at Washington State University (WSU). I first presented my interpretations regarding the role of metasomatism in controlling Floreana lava compositions as a poster at the International Association of Volcanology and Chemistry of the Earth’s Interior in Pucon, Chile, in November, 2004. I was co-author on a talk given by Dr. Geist at the same conference. I recently presented additional results from the Floreana project at Cities on Volcanoes 4 in Quito, Ecuador, in January, 2006. These conferences have reaffirmed my determination to continue to study volcanoes.

In January, 2005, I began my senior research project on the petrogenetic relationships among recently erupted Hekla lavas. For one month during the summer of 2005, I participated in a field
expedition to Hekla, during which we sampled every historical lava flow and tephra deposit identified to date. My extensive experience in the outdoors, acquired from a lifetime of skiing and backpacking, enabled me to overcome Iceland’s harsh environment.

This year, I am studying the petrogenetic relationships among Hekla’s most recently erupted lava flows (1970-2000) using trace element data I am generating with our ICP-MS at Colgate and major element data from WSU’s XRF instrument. In November, 2005, I determined the major element compositions of plagioclase, olivine, and pyroxene phenocrysts in selected Hekla lavas with an electron microprobe at WSU. I will be applying a series of petrological models to identify and quantify the fractionation processes taking place in Hekla’s magma chamber(s). I intend to present my interpretations on the petrogenesis of recent Hekla lava flows and tephra deposits at the 2006 fall AGU meeting.

This scholarship will provide me with the necessary funding to further develop sound scientific techniques essential to my post-undergraduate research of volcanic systems in Ecuador. Through my research in Ecuador, I will continue to lay the foundation for a career in volcanic research and teaching while actively contributing to the field and gaining exposure to many different facets of volcanological research and monitoring techniques.

**Why I Want To Be A Geologist**

**Alexandros Konstanitnou, SA-0872**

My decision to be a geologist was taken several years ago, when I was in high school. I always loved natural sciences and appreciated the beauty of nature. My first contact with Geology was through the lesson of Geography and in particular Physical Geography, when I was 15. Our high school Geography teacher was very interested in Physical Geography and was always urging us to go to fieldtrips. He was part of the reason that I got interested in Geology and started thinking of a career in the Earth Sciences.

My first Physical Geography courses were the first opportunity for me to view the world at different scales and make connections between the ways different bedrocks and geologic structures exist. It seemed to me – and still does – so fascinating how the world works at the tectonic scale, like continental drift and mountain building, yet it is connected with much smaller systems such as coastal and river systems. Later I discovered how everything correlates to the observations at the microscopic scale – like mineral formation and alteration as viewed under the Scanning Electron Microscope.

My love for Physical Geography as well as the fascinating Geology of my home country (Cyprus), were the primary reasons that led to my decision to be a Geologist. Coming to college I realized that Geology is much more beyond simply the study of rocks and the structures of nature. Geology is considered by many an “intergrated science”. It is the collective application of all the Natural Sciences. The Laws of Physics can help to explain the formation of the geologic structures we see around us; the principles of Chemistry explain the formation of minerals and rocks, while the evolution theory of Biology is reinforced by fossils and Paleontology.

Being a geologist really means being “a little bit of everything”. It can correlate with the entire Natural Science world and in my opinion anybody who is interested in all the Natural Sciences, can be a Geologist and satisfy in that way the love for Natural Sciences. In addition it also means that most of the time you have to use your imagination and creativity to infer the solution to a Geologic problem, since often the evidence is either non-existent or most of the time impossible to observe directly.

In addition to the excitement of applying all the Natural Sciences to the real world, Geology also offers opportunities for research, investigating, and understanding the processes that shape the natural environment as well as the chance to discover new things. These things are what strongly encourage me to study Geology and make me anticipate the time when I will be able to make my own research and discover things that will be appreciated by the science world.

I know that it is still very early to look forward to that, but I am confident that my Geology background that I will have from college will help me achieve my goals. As an extra “bonus”, to the rest of the things that make me want to be a geologist, comes the everyday interaction of geologists with nature. It is in the field that I will gain the experience that is required to study and understand Geology. Being in the field is probably my favorite geologic activity.

My vision is not only to be a “good” geologist, but also to help people understand the importance of Geology both in the explanation of the formation and evolution of the Earth and the Universe, and help people realize the role of Geology in the evolution of humanity and the maintenance of civilizations.

**My Journey to Geology**

**Beth Lavoie, SA-0729**

This essay would be much easier to write if I could say, “ever since I was a little girl I dreamed of being a Geologist,” but nothing could be further from the truth. In high school, I developed an acute aversion to hard science. Finding it abstract and uninspiring, I took as little science classes. Throughout my twenties I worked for a number of non-governmental human rights organizations on foreign policy issues dealing with Latin American and the Middle East. When I entered college at twenty-five as an economics major, I had every intention of continuing on that path. Then one day, while attempting to enroll for next semester courses, I was informed that I had a “science deficiency” and was required to take a science class immediately, without receiving any credit hours, before I could take any other classes. As an adult student working full time to put myself through college, I was miffed to say the least. No way would I take biology and dissect things or chemistry with all those formulas or physics- much too
hard. That left Astronomy or Geology. I chose Geology- why, I am not certain. Perhaps because as a child my family’s landlord would bring me rounded pebbles from Lake Oneida and be known forever after to me as Rockman. Or maybe it was memories of my high school earth science professor with his teaching style reminiscent of Robin Williams in Dead Poet’s Society. At any rate, I had no idea what Geology was but I took it and loved it. To my delight it was not dry and abstract but earthy, based on a tangible reality I could walk outside and observe. It was all encompassing from the tiny flecks of mica that make the soil sparkle, to the sweeping morphology of powerful rivers, to the origins of time and the transience of existence with plate tectonics not just rearranging the continents like chess pieces, as implied in grade school, but continually building and destroying worlds throughout Earth’s history.

Still, I would not have changed my chosen course had other things in my life not simultaneously transpired. At the same time, I was also taking a writing class and had picked big dams as the focus of a research paper. I had a familiarity with the topic stemming from my policy and human rights work. However, through my research I found myself reading technical reports about the impact of super dams on sediment transport, riverine ecology, downstream agriculture, and seasonal flooding. Moreover, I could better understand the scientific papers because I was studying river systems in Geology at the same time. At one point, while struggling with citations and contemplating the stale existence of my first-ever desk job, I imagined myself instead standing with waders on waist deep in the river measuring the silt building up. The image stuck- I decided I wanted to be a Geologist.

Had I realized at the time majoring in Geology would require me to take Chemistry (not so bad), higher math (I have formed entirely new synapses), and Physics (still my bete noire) perhaps I would have thought twice, but true to my nature I plunged in head first and have never regretted my choice. I do not see my pursuing a career in Geology as a departure from my original path of human rights and social justice. My passion is water- an issue of importance to all societies and of increasing urgency as natural resources are ever more overtaxed by our consumption. I am unashamedly an environmental hydrogeologist (or a fake geologist as my department chair likes to say). As such you will never find me feverishly flaying a rock hammer in search of rutile like my mineral hound friends. And while I am entranced by the awesome reality of deep time, I do not have the desire to spend my life in a lab ever perfecting better radiometric dating techniques. At the risk of sounding altruistic, I want to be a Geologist to serve the greater good on a practical level through stewardship of our natural resources for the betterment of the environment and lives of all peoples. These days, of course, with many friends in both private consulting and governmental regulatory jobs, I have few illusions about the amount of time I will spend in the field versus behind a desk, but it will be in the context of work that I find meaningful. And as a Geologist there is the added bonus of having the chance, at least on some days, to be that woman working waist deep in the river.
In my last column, I commented on the difficulty that we as an organization have had in building and sustaining membership. It has been one of the most important and more perplexing concerns of AIPG for well over a decade. Perhaps my frustration with the apparent lack of a solution was evident by the charge I made against the entire existing membership in not addressing this concern at a personal level. And, really, that is where the solution lies, because it is the personal, one-on-one contacts that are important and most effective in attracting new members. So I ask: why do we struggle with inviting and encouraging our colleagues, associates and fellow geologists to join our organization. Now, before you respond that we do not struggle, please consider when was the last time you asked a colleague to join AIPG. Have you missed those opportunities? Do you know of a geologist or an associate that could, and should, be an AIPG member but you have not yet discussed the subject with them? My guess is that many of you will have to admit to these omissions just as I will have to admit to many missed opportunities. Now, here I am as president, and I still miss opportunities. So, my purpose is not to scold or talk down to anyone, it is just a reminder that membership is important and that the most effective program for building membership is to have all existing members working as recruiters.

Here are some thoughts that might make recruiting a bit easier.
- First, know why you are a member of AIPG. Be convinced that your membership in AIPG is important to you and be personally committed to the concept that the ideals of the institute serve the profession and society and that each member has a part to play in carrying out the mission of AIPG.

You have to believe it before you can preach it!
- Develop and practice an “elevator speech” – a short and simple explanation of what AIPG is, what it means to you personally and how it serves you as a professional and the profession as a whole. An elevator speech is something that is concise, to the point, positive in tone, and can be delivered effortlessly in the time of an elevator ride.
- Read TPG and be aware of the things that are happening in our institute, as well as current issues affecting the profession.
- Prepare in advance before going to meetings, conferences, etc. where you are likely to meet other geologists. Set a goal for talking to a number of other geologists about AIPG.
- Obtain supporting information from headquarters or from TPG regarding the benefits, programs, and activities of AIPG. We have on many occasions listed the benefits of AIPG membership and certification.
- Be active in your section; take as active a role as permissible with your other commitments, and help build a local membership that becomes a social, professional, and career encouragement for yourself and others that you will invite to join.

Looking back, there was a time when joining AIPG was an arduous process. The rigor of reviewing credentials and sponsors was time consuming and required an extensive application and acceptance procedure. Such extensive review was, and remains, necessary for the institute to confer certification and grant the title and number for a CPG. However, recognizing that this membership process was a limiting factor in the growth of the institute and that certification may not be necessary for all geologists, the new category of Member was created about 10 years ago. This new category was to be the answer for membership growth, and I think it still is. Then about 3 years ago, we simplified the membership application to a postcard. There was an immediate, positive response to this new and simple process; but still, the success did not carry to the extent hoped for. Today the application process is simple and AIPG is a healthy organization, but we still lack the resources and the effectiveness that would come from substantial and sustained growth. For many years, we have hovered around 5,000 members. We should double that number, and we can if we apply the right effort and set it as a goal for the next couple of years.

I hope that each of you has had an enjoyable and rewarding summer. As fall approaches, let us be reminded of the passing of time, the fading away of things that have served their season and the need to prepare for a new day. Put AIPG on your list of things that will require some of your time and attention. If you hold the CPG title, know that it is a testament to your professionalism and a mark of distinction among professionals. If you are a Member, know that you are accepted into an organization that stands for sustaining and improving the geological professions, and that your membership carries responsibilities for conducting your practice with the highest ideals of professionalism. If you get this in time to still make plans for our annual meeting in St. Paul, please try to get there. I will look forward to seeing you and many friends made through this great organization.

Thank you for your efforts on behalf of AIPG.

Larry
AIPG, like any vibrant organization, is undergoing a continuous process of subtle, yet significant change. The change is necessary for AIPG to remain relevant for existing members and to provide a lure to prospective members.

Leave aside for now the very significant debate about the relevancy of the CPG credential and of state-level registration. On the subject of professional development, the Executive Committee has been working to improve the AIPG continuing education program. Participation in the Continuing Professional Development (CPD) program is voluntary for existing CPGs. The CPD program is, however, mandatory for all applicants for AIPG CPG as of July 1, 2006. This is a significant step taken to strengthen the significance of the CPG credential, with the ultimate objective of also requiring a written examination for the credential.

Concomitant with the AIPG CPD program for members, the Executive Committee intends to offer a record-keeping service to the geologic community at large. At present, the AIPG website has a user-friendly CPD activity recording system for all members who choose to use it. (Log on to the AIPG website, and follow the links to the AIPG CPD program. The rest is intuitive and is a remarkably effective means of creating a permanent record of your continuing education activities. Please give it a try and advise us at headquarters with your perspectives.)

Eventually, the record keeping system will be marketed to the entire geologic community. The user is able to modify the individual record at any time, print a copy of the record at will, and request that an official certified copy be sent by AIPG to a third party at the users request.

Help AIPG to create a superior system by using it, contributing your constructive recommendations, and advising fellow members of its availability. The system has been created for you and it is an appropriate place to keep your long-term professional development record.

Implementing a new service is always a challenge. Your use of the system and candid appraisal is important. Please take a few minutes to begin creating your record.

Personal note. On behalf of the Executive Committee and headquarters staff, sincerest condolences are extended to longtime active member and 1994 AIPG President Russ Slayback on the loss of his beautiful wife Judy on August 8th.
Price addressed these standards from the perspective of complying with the broader impacts criterion of NSF grants. The NSF is thus making at least a partial requirement of an aspirational ethics statement. Aspirational statements are those expressing an intent to do something that we can strive for, an ethical ideal.

Ethical ideals express morally desirable activities that we are encouraged to undertake but which no one can pursue full time, nor can one pursue them equally with all people. For example, improving one’s professional knowledge is an ethical ideal expected of geoscientists (AIPG Code of Ethics Standard 5.1). We could easily spend more than 40 hours per week on such activities. But we do not. Reality requires a balance between doing our professional work and keeping up with progress in our profession. What the NSF broader impact grant requirement and AIPG’s and others’ CPD programs do is require some demonstration that these aspirations or ideals are being achieved in specific, albeit limited, ways.

I encourage you to dig out the July/August 2006 TPG issue and read Price’s article and then think about how you can create a broader impact in the dissemination of geologic knowledge to your community. Can you develop and lead a field trip for the public? Have you volunteered to help a teacher at a local school teach earth science? Have you contributed your geologic knowledge to the debate over a relevant issue? These are just a few of many ways you can contribute.

Client Confidentiality, Reporting Illegal Activities, and Colorado’s Liability Safe Harbor

I try to attend the Rocky Mountain Securities Conference every year in order to keep up with what is happening in the world of securities regulation and enforcement proceedings. For me, this is like to MSHA, EPA, or similar update training many geoscientists take on an annual basis in order to maintain the requirements for their professional practice. One of the topics covered every year is some aspect of professional ethics—lawyers have to receive a minimum amount of ethics training as part of their continuing education requirements. While legal professional ethics differ in some important ways from geologic professional ethics, most of the basic issues such as conflicts of interest and client confidentiality are similar.

This year the discussion focused on when a lawyer may or should breach client confidentiality in situations where the client is planning to commit a crime. The rules on client confidentiality are very different for lawyers and geoscientists. Generally, lawyers, doctors, and the clergy are not required to disclose confidential communications with clients even though directed to do so by authorized law enforcement or regulatory personnel, the client confidentiality privilege. Geoscientists have no such privilege and so must comply with subpoenas for records and testimony when received. However, regulatory agencies like the Securities and Exchange Commission are increasingly looking to lawyers whose clients are corporations as “gatekeepers” who should seek to correct illegal activities engaged in by their client corporations and to report these activities to the regulatory agencies. This is creating a good deal of controversy in the legal profession.

But since geoscientists are not lawyers and have no legally recognized client confidentiality privilege, just what are the applicable confidentiality rules? The appropriate parts of the AIPG Code of Ethics are:

**Standard 2.1:** “Members should observe and comply with the requirements and intent of all applicable laws, codes, and regulations.”

**Rule 2.1.3:** “If a Member becomes aware of a decision or action by an employer, client, or colleague which vio-

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1. This is a good place to publicly thank I.K. “Tex” Gilmore, CPG-6039, and his employer, PCS Phosphate in Aurora, NC for shipping me a 5-gallon bucket of material from their phosphate mine containing a variety of fossils, including shark teeth, which I passed on to a local middle school science teacher for use in her class. This is another means of community outreach.

2. Remember that such training does count as part of your CPD, so remember to report it.
lates any law or regulation, the Member shall advise against such action, and when such violation appears to materially affect the public health, safety, or welfare, shall advise the appropriate public officials responsible for the enforcement of such law or regulation.

**Standard 3.2:** “Members should protect, to the fullest possible extent, the interest of an employer or client so far as is consistent with the public health, safety, and welfare and the Member’s legal, professional, and ethical obligations.”

**Rule 3.2.1:** “A Member shall not use, directly or indirectly, any confidential information obtained from or in the course of performing services for an employer or client in any way which is adverse or detrimental to the interests of the employer or client, except with the prior consent of the employer or client or when disclosure is required by law.”

Standard 3.2 and Rule 3.2.1 are the basic statements regarding client confidentiality. We are to protect a client’s or employer’s confidential information to the fullest extent possible. However, as noted in both Standard 3.2 and Rule 3.2.1 and in Standard 2.1 and Rule 2.1.3, protection of the public health, safety, and welfare and legally required disclosures are exceptions to the general confidentiality rule.

Dean Salter of Holme Roberts & Owen LLP in Denver, who prepared the notes on legal ethics for this year’s securities conference, pointed out a little known Colorado statute, “Duty to report a crime – liability for disclosure,” Colorado Revised Statutes 18-8-115: “It is the duty of every corporation or person who has reasonable grounds to believe that a crime has been committed to report promptly the suspected crime to law enforcement authorities. Notwithstanding any other provision of the law to the contrary, a corporation or person may disclose information concerning the suspected crime to other persons or corporations for the purpose of giving notice of the possibility that such criminal conduct may be attempted which may affect the persons or corporations notified. When acting in good faith, such corporation or person shall be immune from any civil liability for such reporting or disclosure. This duty shall exist notwithstanding any other provision of the law to the contrary; except that this section shall not require disclosure of any communication privileged by law.”

Thus Coloradans have a duty to report crimes. As geoscientists, we may be aware of various activities like oil and gas or mining frauds or violations of environmental or other laws that others may not perceive. Mining and oil and gas frauds usually involve violations of state and federal securities laws, which provide for both civil and criminal penalties. Other laws also have criminal penalties. Reporting of a problem to the appropriate law enforcement authority so that the appropriate action can be taken is clearly a duty, and when done in good faith, immunity from civil liability is granted in Colorado. It will be interesting to learn if other states have similar statutes. Please let me know.

**Competence…Integrity… Ethics: Defining the P in AIPG**

Fred L. Fox’s (CPG) article by this title appears elsewhere in this issue of TPG. Fred Fox and I have been friends via e-mails and occasional meetings for a good number of years now. Fox has been a member of the Ethics Committee for a long time as well, and he has been very helpful and supportive when I have asked for his advice and counsel on specific ethics cases.

Fox’s view of ethics as universal and unchanging, as expressed in a variety of articles over the years (including the one in this issue3) and his book, is where we part philosophical company. I think Fox is wrong and he thinks I am wrong in my approach. We agree to disagree. For example, to Fox’s assertion that ethics are universal and unchanging, I would point out that slavery was viewed as a normal and appropriate activity in a good many societies and is not condemned per se in the Bible. This is not to say that everyone agreed with this view of slavery when it was legal, and it is certainly not an acceptable view in the world now. People for the Ethical Treatment of Animals would have all animals included within the group covered by the “Do not murder” and “Do not harm” rules, a position not generally adopted by most people, including those of us who like our steaks and chops.

Fox asserts that there is no difference between professional and non-professional ethics. I believe that there is a difference. Our status as professional geologists (or any other profession) is granted by society in recognition of our specialized knowledge, skills, and experience and allows us to be granted more authority or weight when speaking on matters within our area of professional expertise. With this special status comes special responsibilities and these are expressed in AIPG’s Code of Ethics. For example, our obligation to place protection of the public’s health, safety, and welfare before any other obligation (Canon 2 and Rule 2.1.3), our obligations to our employers or clients (Canon 3 and the Standards and Rules thereunder), and our obligations to our fellow professionals (Canon 4 and the Standards and Rules thereunder). Likewise, there are obligations placed on those who are faithful members of particular religions that are not obligatory on those who are not followers of those faiths. The dietary laws observed by Jews and Muslims are an example.4

My intent here is not to provide a thorough discussion of the philosophical points on which Fox and I differ, it is to acknowledge that those differences exist. Over the years Fox’s comments on various topics in this column have forced me to think harder about the bases for my positions, and they have thus been a valuable contribution. Read Fox’s article and reflect on where you agree and disagree with him. And add your perspective in the written discussion of these important issues.

**Honesty, Responsibility, Personal Opinions, and Ward Churchill**

In column 99 (Sept ’05) I noted the keruffle generated at the University of Colorado-Boulder by what can be called the “Ward Churchill affair.” Mr. Churchill is a tenured ethnic studies professor at CU. As I reported then, “The evidence uncovered to date [July

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3. Those interested in pursuing some of the debates Fox and I have had over the years are referred to Columns 38, 40, and 42 (January, March, and May 1999), which are available to members in electronic form on the AIPG website.

4. I recognize that there are differences between Jewish and Muslim dietary laws. My point is simply that both faiths have such laws, not to imply that they are the same.
2005] suggests that Mr. Churchill (he does not have a PhD) has played very fast and loose with the ‘facts’ reported in his research and does not appear to have a good idea of what constitutes plagiarism and proper attribution.” Over the past year, a detailed investigation substantiated the charges. These findings were turned over to an academic panel composed of 9 professors, a staff member, and a graduate student that “agreed unanimously with an investigative committee’s earlier findings that Churchill has committed serious, repeated, and deliberate research misconduct including plagiarism and fabrication of material” (Rocky Mountain News, June 14, 2006, p. 13A). Six of the 9 voting members of the panel cast secret ballots to fire Churchill, 2 cast ballots for a 5-year suspension without pay, and 1 opted for a 2-year suspension without pay. The panel reported, “We are drawn to the irresistible conclusion that Professor Churchill is unable, or at least unwilling, to acknowledge legitimate critique” (ibid). Churchill, through his lawyer, has promised to sue CU in federal court as soon as a disciplinary sanction is issued, claiming the whole issue stems from a political backlash against Churchill’s opinions stated in public speeches and essays, particularly his characterization of some of the 9/11 victims as “little Eichmans.”

Churchill’s case illustrates several points of professional practice and discipline. First of all, professional stature carries with it responsibility. In the academic world, one is supposed to differentiate between fact and opinion, to give proper citations to others’ work, and to avoid fabrication of material—to be scrupulously honest. Those investigating Churchill have found that he has failed to meet this responsibility.

The fact that the inquiry into Churchill’s academic work was prompted by disclosures of his unpopular opinions—Churchill’s primary defense—is irrelevant. Allegations of misconduct are frequently brought by those with some sort of ax to grind against the accused individual. In Churchill’s case, his unpopular opinions did focus attention on him and resulted in the allegations of academic misconduct. But that fact has no relevance to whether academic misconduct occurred. The question for those responsible for investigations and prosecutions is not whether those bringing the allegations were biased but is, do the allegations and other evidence support charges of misconduct or not. If the evidence supports charges of misconduct, they are properly brought. If not the allegations should be dismissed. This is what happens in AIPG Disciplinary Proceedings, which I, as Chairman of the Ethics Committee, am responsible for administering. Assuming that misconduct charges are warranted by the evidence, the next issue is deciding what an appropriate sanction should be. In Churchill’s case, 6 of 9 members of a panel of academic peers voted for kicking Churchill out of the academy.

The academic panel’s observation of Churchill’s unwillingness to acknowledge legitimate criticism of his academic work does not surprise me, not because I know Churchill (I do not), but because I have seen similar behavior during the investigations of natural resource frauds that have been important parts of my career. The most effective promoters of the fraudulent schemes believed that what they were telling prospective investors was absolutely true. There was something missing in their makeup that prevented them from seeing what others saw. There is no question in my mind that these individuals would pass lie-detector tests with flying colors because they did not recognize the lies. Such people are truly frightening because they are so convincing.

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Beginning immediately, we will hold a contest for the design of a T-shirt for the meeting. It should have the meeting information and theme. We may include a sponsor logo on the sleeve or back. The best design will win a free registration to the 2007 National Meeting. The deadline for submittals for the T-shirt will be February 15, 2007. The winner will be acknowledged in the program book. Entries should be sent to Adam Heft at hefta@fitzhenne.com or faxed to (517) 887-6335. For more 2007 meeting details see page 49.

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COMPETENCE...INTEGRITY...

ETHICS:
Defining the P in AIPG

Fred L. Fox, CPG-01273


What do these words mean to you? And to others?

In the first place, they are all personal attributes. They do not require an organization to apply, or approve. Competence is easy: the state or quality of being adequately qualified to perform an act. Integrity is more nebulous, but still relatively straightforward: unwavering adherence to a strict? moral or ethical code; soundness, completeness.

Ethics, however, is even more nebulous (it is not the plural of ethic). “A branch of philosophy...” does not help much, nor does the ambiguous “the study of the nature(?) of morals(?) and of specific(?) moral choices...” Even such a reasonable-sounding definition as “rules of conduct” of a particular group falls short, because any group may define its own rules according to its own standards, all of which would be “ethical” by this definition. If this were true, then ethical would have no stable foundation and would not be the wholly positive term that we intuitively know it to be.

Intuitively? Yes. Principled behavior is, in fact, integral to us, being vital to humanity. We know it when we see it. Acknowledging it is something else.

Ethics can be comprehended only in terms of our intellect. And while it can be studied, debated, explained, disputed, and certainly misunderstood, ethics cannot be changed.

Ethics is universal—both vital and inviolate. Ethics is, in fact, the standard by which any ethic can be measured. Ethics is not right, true or good as defined by any group. Being ethical is universally understood as wholly positive. Being unethical is universally understood as undesirable. Ethics is universally right as opposed to wrong, universally good as opposed to bad, universally true as opposed to false. It is, in fact, right being.

But stripped to its bare bones, the root of ethics is truth. I submit the following definition:

the system of UNIVERSAL moral principle.

Furthermore, ethics is consistent across time. What was ethical then is ethical now, and will be ethical subsequently. Being both founded in truth and universal, it can only be thus.

And ethics is all-inclusive. Professional ethics is no different from business ethics or biomedical ethics or legal ethics, etc. Nor can we separate professional ethics from non-professional ethics. Ethics is ethics. An ethical geologist adheres to a similar basic “code of ethics” as an ethical surgeon, an ethical accountant, or an ethical boilermaker. A code of ethics is a code of ethics.

Ethics cannot be approached scientifically or sociologically, certainly not legally (more than one attorney has told me that the last place to look for truth is in a court of law). It can only be approached philosophically. Now we are really talking nebulous.

And in spite of the widespread tendency to consider philosophy in terms of Socratic discourse, logic is not the key to philosophy or ethics. The stuff of philosophy is knowledge, and the stuff of ethics is truth. Not word games, not clever manipulation of disparate facts. You cannot know something that is not true. This is a fundamental and inescapable verity.

And regarding morality: While the words may look and even sound alike, there are significant differences in meaning between moral, morals and morality (and we can throw in mores for good measure). Morals (not the plural of moral, the adjective) and mores are both nouns with their roots firmly planted in society; they are described in cultural terms. Moral, the singular noun, is an ambiguous term that can mean anything from lesson to platitude to principle. But morality, and its adjective moral, are concepts founded in that old absolute, truth. (If this were not so, morality would have no basis at all.

And if ethics defines right being (and that is exactly what it does), then morality (and moral, the adjective) defines right doing. And if ethics is unchangeable (and givens are, if nothing else, absolute), so too is morality. It has to be thus. Otherwise there could be no real standard. And there is a real standard, the red herring of “moral relativity” notwithstanding.

The concepts of ethics and morality can be reduced to absolute truth and honesty. These first principles apply everywhere and to everyone. They are universal. There are no man-made standards for ethics or moral conduct. They simply are. They are absolute. Like it or not, they are perfect. And therein lies the problem, because we are not.

Our ethical challenge is having to deal with perfection. We can not address it by ignoring or redefining it or changing it according to our whims (which would lead to moral relativity, moral ambiguity, moral “equivalency” and ultimately moral failure). We are stuck with the fact that ethics is ethics.

And while mankind as a whole is an ethical whole, the cultures, societies and other groups within it may not be. Groups organize to get things done, making their own rules and laws along the way to accomplish their goals. These
may or may not be ethical. All too often they are not.

The rapid growth of knowledge and technology has encouraged us to delegate the responsibility for progress to those who seem better prepared to handle the task of moving us forward in the giant steps to which we have become accustomed. As individuals we’ve effectively signed over our individual creativity, imagination and ingenuity to the groups to which we belong (governments, churches, associations, etc.). We have given them permission to tell us what to think. We accept what they tell us as the way it ought to be. This may be convenient, but it is irresponsible.

One problem is our willingness to be viewed less and less as the individuals we are, and more and more in the context of groups to which we “belong.” But every group has its own agenda (agenda is characteristic of any group), which may not match yours or mine (or another group’s) exactly, so we compromise ourselves by allowing personal relationships to be displaced by institutional ones.

The fact is that our complex super-developed culture has slowly but inexorably been redefining the system (and its ethic) in its own image, leaving us individuals at the mercy of its technology and ever-accelerating “social progress.” The tail wags the dog; what we have built and ever-accelerating “social progress.” These are true! They are gifts, free, and you know them. Just accept them and use them! Begin at black and white, not gray.

But What About The Law?

Positive law is the term given to the system of laws by which our society is governed. Society devised it for the purpose of regulating behavior in and of this group. Positive law is a product of society, it serves the purposes of society and it may be modified as society wishes.

Positive law ensures due process. This means only that it must follow the rule of law, which may be anything the society that makes it, wishes. Positive law makes concessions in order to accomplish what it claims to seek—“the greatest good for the most people.” Even at its best, positive law would fail at least some individuals, and therefore humanity. Ethics will never—cannot—fail either individual or humanity. If it should fail a group, the problem lies within the group.

The Alternative – Natural Law

There is a universal standard that must be upheld by each and every one of us because we are an integral part of humanity. This standard applies to humanity as well as to all groups whether or not they acknowledge, endorse or even know about it. Like our lives and gravity, it is a given. It is the foundation of ethics, the system of universal moral principle, and of positive law. As such, it is necessarily implicit in our legal system. Natural Law puts the law on your side.

It is this primal law that provides our first line of (ethical) offense.

It provides the means by which any individual, including you, can speak for humanity itself, and can ethically and legally resolve any problem.

Natural law provides individuals with certain rights, integral with our humanity, ours simply by virtue of our being. The right to open access to sunlight, air, gravity and other natural phenomena is available to us all. We have the right to use our individual senses and motor skills, the right to employ our own intellect, make choices, and the right to be the unique and private individuals that we are. But these rights (and others), being universal, are equivalent. While you own yours, so does everyone else own theirs, so you have the responsibility (merely the flip side of rights) to regard them as the unique individuals they are and not infringe on their rights which, being universal, are the same as—equal to—yours.

So you also have the right (are obliged) to honor humanity, to accept full responsibility for the consequences of your choices and actions, and to permit others to do the same. These responsibilities are as much yours as your breathing and your heartbeat.

And by discharging those rights and obligations morally (in relation to others), individuals would automatically enable and expand the free society that we all seek. Humanity is, in effect, an entity that exists in spite of any one of us. The world (indeed, the universe) is, after all, an ethical whole from which it is impossible to entirely banish morality. No government or its laws can prevail against it in the long run.

Groups (society, government) grant privileges, which are not the same as rights. But sometimes they overstep their bounds. For instance, the law tells us that we have “the right to remain silent.” But we already own that right (to speak or not to speak is a matter of individual choice) and certain others as well, independent of society and before its law. Our rights as human beings are absolute—givens. Privileges, like any group rules, may be changed, deleted, or added at the pleasure of the group. But when society tampers with our rights (or definitions thereof) either deliberately or accidentally, it risks fouling the system. And it has done exactly that.

The confusion of privileges with rights is a function of a widespread misunder-
Understanding of the relationship between ethics and values.

Values, like privileges but unlike ethics, are not absolute. They are relative. Values are defined as ideals, customs, mores and morals. Values may be described, delimited, designated or interpreted by an individual, community or society. They may be either positive or negative. But whatever they may or may not be, values, like morals, are not necessarily universal.

If a society’s morals (values) are not universal, the ethical individual may have difficulty trying to work within them. Society does not persuade us to be perfect, only to “go along to get along” for the good of the many. (In fact, society persuades us to be alike, not unique, because it is easier to deal with, and regulate, similar entities.) It is within this framework that society’s rules and laws are written. Positive law is not equivalent to natural law. Which leads us back to reality.

Because you are not perfect and cannot be perfect in an imperfect society, there may be times when you may have to “go along to get along.” You may have to be unethical, if only just to survive, save a friend or hew to the letter of positive law, even if fundamentally wrong (you can think of examples). What to do in a case like this? Basically, if you must be unethical, be honest about it. Do not make excuses or change the rules to accommodate societal errors. Ethics is ethics, no matter the situation.

Stay with the truth, exercise your rights and fulfill your obligations honestly, and accept responsibility for the consequences of your choices and actions. That is what it means to be ethical. Couple that with competence and integrity, and you will truly be a professional.

Fred Fox is a retired engineering geologist living in Tucson and consulting sporadically in both geology and management. His interest in ethics dates back to the late 60s, when situational ethics and moral relativity began to replace the real thing.
“Landslides” — May We Not Forget The Fundamental Works Of C.F. Stewart Sharpe And David J. Varnes

Allen W. Hatheway, Consulting Geological Engineer, Rolla, Missouri & Big Arm, Montana, Allen@Hatheway.net

Until the 1970s, “landslides” as a blanket term for “slope movements” were treated largely in response, rather than by prediction and mitigation. People died, property was damaged, and societal activities were interrupted; then the engineers arrived and tried to remediate that situation.

“Landslides” Gain Engineering Geological Appreciation

While all of this was going on, two fundamental geological workers had been struck by historic observations of a systematic physical processes involved in these failures, running the gamut from inconvenience to disaster. In fact, C.F. Stewart Sharpe (1907-1994) got the sense first, likely based on earlier observations made by George Ferdinand Becker (1847-1919) and of Donald F. McDonald (1875-1921), of the giant landslide movements triggered by the massive weak-rock excavation of the Panama Canal by the Corps of Engineers, prior to its dedication in 1914.

North American Attention To Slope Instability

It is well established that Engineering Geology truly emerged with the heavy construction associated with the burgeoning of the American “New Deal” of politics. This development was in the form of public works projects directed toward hiring construction workers and meeting the expanded needs of agricultural irrigation and to thwart the effects of perennial flooding.

The geologists who came to be in supervisory charge of engineering geological field work for the main agencies (Corps of Engineers, Bureau of Reclamation, Soil Conservation Service, and the Tennessee Valley Authority) had nearly all received academic training before World War I and were seasoned practitioners when appointed to their positions in the 1930s. Yet there was no single one-source manual of practice with which an engineering geologist or a concerned civil engineer could turn. At the universities there were only a handful of faculty who had the experience and training to lecture; they were Terzaghi at Harvard, Reiss at Cornell, Berkey at Columbia University and Warren J. Mead, first at the University of Wisconsin (1916) at later at MIT (retired in 1954).

Enter Stewart Sharpe

Sharpe was a student of Charles Peter Berkey’s at Columbia University. In that time and place (late 1930s) Berkey was promoting all manner of research and publications attacking basic engineering geologic problems, and Sharpe was directed toward the general aspect of applying scientific deduction and reasoning toward examining the occurrence of “landslides.” Sharpe was successful in developing his findings as a geological doctoral dissertation at Columbia University, in New York City. No doubt Sharpe again was influenced by Professor (Dr.) Charles Peter Berkey, the leading American engineering geologist of that time. Sharpe’s dissertation presented the first-ever physical classification of earth movement processes and the work subsequently was published and generally available by 1938.

War then came and Sharpe disappeared into the OSS (War Department Office of Strategic Services) as a geological analyst and reappeared only years later, after a career rich in discoveries that could never be published. Many of us remember Stewart and wife Lois Kremer Sharpe, another doctoral level government geologist, as pleasant and faithful attendees of GSA’s engineering geological field trips.

David J. Varnes Appears

Varnes (1919-2002), on the other hand, an Iowa boy raised in Los Angeles, completed a MSc in Geology at Cal Tech, and was always intrigued with sorting out earth-material physical deformation processes, with the application of as much mathematical theory as could honestly support his observations. Dave was attracted to mineral resource exploration and did that work during the World War II years. This work continued into the post-war years when many Geological Survey Geologists were assigned to foreign aid missions. David once imparted to the author that his was the last American aircraft (a C-47) to leave Kimpo Airfield, and under fire as it was, from the advancing invaders of the North Korean Peoples Army in 1950.

Back safely at Denver, David continued to be impressed with the geological work of his first wife, Engineering Geologist Helen, who had become a
“landslide” specialist. Helen passed away and left David with her legacy of interest and accomplishments. By 1958, David’s interests had flourished to the point that his was the key paper in Edwin B. Eckel’s benchmark editing of the first comprehensive engineering geological treatment of mass wastage of engineering geological wisdom dealing with the landslide threat.

David possessed the unusual capacity of being capable of outstanding field geological mapping and observation, coupled with a consuming interest in the useful application of mathematics toward analysis and prediction of dynamic and quasi-dynamically destructive geological phenomena. Varnes’ work today is admired by both of these camps. David was yet working on his grand project, instrumentation and analysis of the slow-moving Slumgullion “Slide” near Lake City, Hinsdale County, Colorado, at the time of his death in 2002. In the following year the International Consortium on Landslides created the David J. Varnes Medal “for outstanding international work in the field of landslides.”

Sum Total Of The Works Of Sharpe And Of Varnes

Stated simplistically, it was Stewart Sharpe who “woke up” the profession and handed us the means of classifying mass wastage of all types. That having been accomplished, Sharpe faded from the scene while serving his nation in security classified geological analyses applied to national defense. Varnes trailed Sharpe at about a decade and-a-half lag and then carried the Sharpe concepts well forward (from about 1954) until his own passing.

The sum total of what Sharpe and Varnes left the North American and international applied geologic community was everything we need to conduct basic consulting or oversight geologic work dealing with unstable slopes.

A wealth of useful developments have since been reported and there remains a brisk interest in conferences and the oral and written literature on the general subject. Tables 1 and 2 define these two levels of knowledge.

The General Decades Of Awareness Of Slope Instability

The 20th century constituted an approximate one hundred years in which our technical awareness was born, developed and matured:

- 1900-1930: Slope instability was dealt with on discovery, more often after the fact than predicted;
- 1930-1970: Fundamental descriptive, predictive and mitigative technologies were established; and
- 1970-2000: A great era of refinement in the means by which we predict, detect, define, and avoid, correct or mitigate slope instability.

Body Of Post-Sharpe/Post-Varnes Mass Wastage Knowledge

Mass wastage remains as popular a teaching and research topic as its annual negative impact registers on literally every national economy. Experts in the economic impact of such failures impress us yearly of the literally huge, recurring losses not only directly in human life and suffering, but in the destruction of infrastructure. There is no denying
**Type** | **Recognizes** | **Attempts Following Result**
--- | --- | ---
Basic Physics | Gravity as the driving force | Guides exploration to search for predictable evidence of shear deformation surfaces
Pore and Cleft Water | Agents in reduction of shear resistance | Teaches the practitioner to search for sources and presence of water within the deforming mass
Failure Mechanics | The physical elements of stress imposition and juxtaposition causing strain and subsequent shear displacement | Impresses the practitioner of the distribution of loads making up driving forces and of conditions leading to reduction of shear resistance
Geometry | Simplistic classification system of spatial characteristics of failed slope masses of a variety of types | Practitioners were trained to observe and detect suspect terrane
Earth Materials | Traditionally susceptible lithologies | Identified typical lithologic associations with slope instability, particularly those of weak rock stratigraphic units or of zones associated with geochemical alteration
Geomorphology | Diagnostic landforms | Produced a literal landform identification key for detection of failed or susceptible landform indicators
Regional Geology | Identified terranes susceptible to mass wastage | Went on published record of identifying problem-oriented stratigraphic units and susceptible landform conditions
General Climatic Factors | Clearly associate climatic regimes typical of unstable terranes | Established the general relationship between areas of high rainfall and resulting incidences of inherent slope instability as well as such effects expected as a result of prolonged precipitation events
Anthropogenic Factors | Typical human action that alter the slope mass geometry and/or impose additional loading | Guides the practitioner to inspect the actual or potential slope failure area in search of human factors that tend to exacerbate stability or which promote or trigger instability

**Table 1**

**Basic Mass Wastage Knowledge from Sharpe and Varnes**

---

**Rock Solid**

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The New Body Of Knowledge Relating To Slope Instability

Table 2
Typical Post-Sharpe & Varnes Geologic Knowledge Advances in Mass Wastage

<table>
<thead>
<tr>
<th>Type</th>
<th>Recognizes</th>
<th>Attempts Following Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth Material Properties</td>
<td>Both geologic and geotechnical in nature</td>
<td>Provides sensitivity toward general prediction of the presence of generic slope instability by States, Provinces, and physiographic regionalization</td>
</tr>
<tr>
<td></td>
<td>Enhanced sensitivity concerning subtle-but-overriding controls and effects on nature of instability</td>
<td></td>
</tr>
<tr>
<td>Regionally-Important Geologic Materials (RIGMs)</td>
<td>Individual physiographic regions exist because of the combination of their geologic and climatic history</td>
<td>The geomorphology of each physiographic region contains the key ingredients to prediction of future slope instability, within each physiographic region, certain RIGMs are most susceptible to mass wastage damage</td>
</tr>
<tr>
<td>Remote Imagery; now known as GIS (Geographic Information Systems)</td>
<td>Enhanced means of defining and delimiting component bodies, Morphology, and differential positions and rates</td>
<td>An essential “must use” product, existing or performed on contract surveillance missions based on need-to-know, against demonstrated needs to protect the public or infrastructure investments</td>
</tr>
<tr>
<td>Geographic Positioning Systems (GPS)</td>
<td>General precision in locating and defining bodies and areas of incipient or potential slope instability short of field geologic explorations</td>
<td>Has become an essential non-geologic technical tool/service applied to the positioning and recording of geologic and geotechnical details</td>
</tr>
<tr>
<td></td>
<td>Ability to detect: Loci of deformation</td>
<td>Interpretation of gathered results is a skill of professional geologists</td>
</tr>
<tr>
<td></td>
<td>Vectors of deformation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Magnitudes of deformation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nature and magnitude of driving forces and of resisting forces</td>
<td></td>
</tr>
<tr>
<td>Geotechnical Instrumentation</td>
<td></td>
<td>Applicable essentially only after the fact of slope instability is known and has become the concern of authorities or organizations capable of affording the extensive monetary costs of installation, monitoring, interpretation, evaluation and conversion to engineered mitigation</td>
</tr>
<tr>
<td>Techniques for Mitigation of Mass Wastage Threats</td>
<td>Generally consists of preservation or creation of favorable geometry along with isolation or removal of pore or cleft water and of many forms of retention, restraint or diversion</td>
<td>Geologic input is essential to selection of placement positions and conditions; interpretation is mainly a skill of professional engineers</td>
</tr>
</tbody>
</table>

The New Body Of Knowledge Relating To Slope Instability

As a “bottom-line” person, this whole matter of slope instability is represented to me by an evolving body of knowledge (BoK) for application in the applied geosciences. There are two gross levels of this BoK; 1) the rudimentary ability to recognize/detect actual or potential slope instability and; 2) the capability of performing prediction, mitigation, and correction of such situations. Clearly, Level 1 should be the general skill level of all current graduates of competent, accredited undergraduate geological curricula. Level 2 represents a complicated blend of geological and engineering expertise and it is the BoK of the competent specialists in Engineering Geology, Geological Engineering and Geotechnical Engineering, to the degree that each individual can demonstrate such capabilities. BoK 1 represents the works of Sharpe and Varnes and BoK 2 is a mix of BoK 1 and 2.

We should endorse the continuing interests of faculty and students, certainly in the practically-oriented geology departments that deserve the attention of AIPG. The new essentials of the Post-Sharpe-&-Varnes era are listed as Table 2.

Summary

Of all the widely variant problem assignments facing the average applied geologist, those dealing with slopes are both the most pervasive and the most wide-spread in terms of regions of practice. It is safe to say that literally every practicing applied geologist will some day face some aspect of incipient slope failure or have to deal with its actual consequences in the course of a career. Some practitioners are fortunate to have the circumstances and reputations significant to command frequent or continual “opportunities” to match their geological observational and deductive skills to these challenges, but odds are, that we will all be impacted at some time or other. To be prepared to is to have awareness of the skills that were brought forward by Sharpe and by Varnes and then to apply those principles.

References Cited:
Allen Hatheway (allen@hatheway.net) is an early-retired Professor of Geological Engineering who has practiced for 44 years, in his native Los Angeles, and at San Francisco, Boston, and in Missouri. He has served his profession as a teacher, soldier, public servant, and consulting firm staff and partner. He is professionally licensed as a Geologist and/or Engineer in several states (AZ, CA, MA, ME, and MO), but swears that his formal education has been strongly tempered in the School of Hard Knocks. He serves as one of AEG’s ambassadors to AIPG, as an Honorary member (2002) and past president of the former (1985). He and wife Dina split their time between Big Arm, Montana and Rolla, Missouri.

SCIENCE IN THE NEWS
from Sigma Xi,

Senate OK of Gulf Drilling Expected from the Chicago Tribune

WASHINGTON -- The Senate moved closer Monday to approving legislation that would make 8.3 million acres in the Gulf of Mexico available for oil and natural gas drilling and end a quarter-century ban against tapping energy resources in most coastal waters.

With increasing prices for crude oil and natural gas, which have left Americans paying more for gasoline and to heat and cool their homes, the bill’s proponents say this represents an opportunity for the U.S. to increase domestic supplies of energy.

And with oil-producing regions overseas politically unstable and higher energy demands in China and India pushing up costs, supporters said it is important for the U.S. to take steps to meet its own energy needs. The bill’s backers say the area under consideration contains enough natural gas to heat and cool about 6 million homes for 15 years. http://www.chicagotribune.com/news/nationworld/ch-0608101439aug01,1,5787807.story?coll=chi-newsnationworld-hed or http://tinyurl.com/jxb2d

AIPG 44th Annual Meeting in Traverse City, Michigan

Design the 2007 National Meeting Program Cover

Beginning immediately, we will hold a contest for the cover design of the program book. The best design will win a free registration to the 2007 National Meeting. The only guidelines will be that there will be only one entry per individual, it will be full color, and it must include the following information: MEETING ID 44th Annual Meeting of the American Institute of Professional Geologists, LOCATION Traverse City, Michigan, THEME "Geology: The Foundation for the Environment and Resources". It should also include the AIPG color logo. The deadline for submittals of cover designs will be December 31, 2006. The winner will be acknowledged in the program book. Entries should be sent to Adam Heft at hefta@fitzhenne.com or faxed to (517) 887-6335. For more 2007 meeting details see page 51.

AIPG Membership Totals

<table>
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I recently had the opportunity to review a contract that one of my insureds had with a State Government in the northeastern US. As is typical with government contracts, there were clauses that present liability concerns for the design professional.

**Time is of the Essence**

The section of the contract dealing with staffing and schedule includes the statement “Time is of the essence of this Contract.” This seems like relatively innocuous language but what it does is it requires you to absolutely adhere to the project schedule. It does not allow you the opportunity to argue reasons why the schedule was not able to be kept. Without that sentence you at least have the opportunity to present arguments why the schedule could not be kept such as labor shortages/strikes, delays in building materials arriving on the site, inclement weather, etc.

**Standard of Care**

The contract included the following sentence: “The Consultant agrees that the services provided hereunder shall conform to the highest standard of care and practice exercised by design professionals or consultants engaged in performing comparable services”. The first issue is the use of the word “highest”. As a professional you are held to the standard of care of your profession. The use of the word highest sets your firm above your peers in terms of the services provided. This highest level is really indefinable although your client reads/intends it as “you will be perfect”.

Also a concern is that the standard of care language does not address geographical differences in the standard of care nor does the language address changes in the standard of care over time.

**Insurance – Notice to Client**

The contract includes the following “Termination, cancellation, or material modification of any insurance required by this Contract, whether by the insurer or the insured, shall not be valid unless written notice is given to the Awarding Authority at least thirty days prior to the effective date thereof, which shall be expressed in said notice”. The issue here is what is the definition of “material modification”? It could be something as simply as the insured requesting lower limits. But it could also mean that the insurer would have to give 30 days notice prior to posting a claim reserve or making a claim payment on the policy because that would impact the available limits. Some might consider this a material modification. It could be something as simply as the insured requesting lower limits. But it could also mean that the insurer would have to give 30 days notice prior to posting a claim reserve or making a claim payment on the policy because that would impact the available limits. Some might consider this a material modification. I have usually been successful in presenting arguments that the wording “material modification” should be removed from the contract. I had one case where for the purposes of a project policy we actually defined “material modification” on the notice endorsement so that it was clear to all parties.

**Insurance – Covered Acts**

The contract includes the following: “The Designer shall maintain professional liability insurance covering errors and omissions and negligent acts of the Designer…” The problem with this clause is that “negligent” should also be modifying errors and omissions. The clause implies that the policy would cover intentional omissions. Your professional liability policy is only intended to cover your negligent acts, errors or omissions. So in theory this client is asking for something that is really not possible. It may seem like splitting hairs but once attorneys get involved all bets are off.

The contract also includes “If the policy is a “claims made” policy, it shall include a retroactive date that is no later than the effective date of this Contract, and an extended reporting period of at least six years after the earlier of...” Professional liability policies are typically only available as a “claims made” form which means the claim must come in during the active period of the policy. Occurrence policies, like most general liability policies, require that the event that led to the occurrence happened during the policy. The issue of the six year extended reporting period reflects a lack of understanding of available coverage on the part of the client. In the current professional liability market the longest extended reporting period available is three years. Due to potential changes in the insurance market, even a three year extension might not available at some point in the future.
Insurance – Indemnification

The contract reads as follows: “The Designer shall indemnify, defend, and hold harmless the Public Entity, the User Agency, the Awarding Authority and all of their agents and employees from and against all suits and claims of liability of every name and nature, for or on account of any injuries to persons or damage to property to the extent that the same is the result of the acts or omissions of the Design in performance of the services covered by this Contract.” The first issue is the word “defend”. Your professional liability policy does not provide defense for your client so the defense requirement is uninsurable. The usage of the words “all” and “every” in this clause should give concern because the client is trying to place the liability burden entirely on the designer. The other concern is that the indemnity is not negligence based. You are being required to indemnify the client for anything arising out of the performance of the work. Your professional liability policy only covers your negligence. The potential exists for the client being sued by a third party for damages resulting from the project where you were not negligent. The client would expect you to be responsible for defending them. That is going to be an out-of-pocket expense on your part not your insurer.

I am sure that many of you have seen similar contract wording. Many times it comes down to a business decision on your part as to whether or not you want to take on such a project. It is difficult to negotiate with governmental agencies or Fortune 500 companies but it is critical that you know the risks that you are taking on before you sign the contract. Your insurance broker can be a great resource. But remember not all brokers have expertise in professional liability. It is in your interest to place that coverage with a broker with that expertise. That broker that is a relative or acquaintance from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. You would not take your Porsche from the Country Club may not be that person. 

The presence of a planet orbiting the foreground star causes the distant star’s light to flare momentarily.

http://www.usatoday.com/tech/science/space/2006-08-08-distant-planet-star_x.htm

http://tinyurl.com/e6333

Leak is Latest of Alaska’s Pipeline Woes from the Christian Science Monitor

When oil began flowing south from Alaska’s North Slope to the port at Valdez nearly 30 years ago, it was a new era for US energy production and distribution. From the start, it was a technologically daring and politically controversial project. As evidenced by this week’s shutdown of a portion of pipeline in the Prudhoe Bay oil field due to a spill, it remains so today.

Despite what industry supporters say are more environmentally friendly ways of detecting and extracting oil from the North Slope today, the means of transporting the liquid gold south is old and - critics say - becoming dangerously decrepit. In some places pipeline walls have lost as much as 80 percent of their thickness as a result of corrosion, industry officials say.

Meanwhile, environmental, economic, and legal fallout continues from the 1989 oil spill, which dumped at least 11 million gallons of oil onto 1,200 miles of shoreline in Prince William Sound after the tanker Exxon Valdez had filled up at the pipeline’s southern terminal. All of this adds urgency to the long-running debate over whether to allow drilling in the Arctic National Wildlife Refuge.

http://www.csmonitor.com/2006/0809/p02s01-usgn.html

http://tinyurl.com/kcb8a

Volcanic Eruptions Score Melodies from BBC News Online

The low-frequency, seismic rumblings of volcanoes are being transformed into delicate musical scores in an effort to predict when they will erupt.

Researchers in Italy have already created a concerto from the underground movements of Mount Etna on Sicily.

They are now creating melodies from Ecuador’s recently erupted Tungurahua.

By correlating the music with precise stages of volcanic activity on both volcanoes the team hope to learn the signature tune of an imminent eruption.

“If you can identify the musical patterns that warn of an eruption then you can implement civil protection measures, days or even hours before the event,” said Professor Roberto Barbera of the University of Catania.

http://news.bbc.co.uk/2/hi/science/nature/4777565.stm

http://tinyurl.com/zzbpl

Hidden Star of Known Planet Found from USA Today

In 2003, astronomers discovered a planet outside our solar system by measuring the way light from a distant star warped around the new world’s host star.

But it took two more years of telescope observations to actually see the host star. Using NASA’s Hubble Space Telescope, astronomers have for the first time identified the parent star of distant planet discovered through gravitational microlensing.

The new finding is expected to appear later this month in Astrophysical Journal Letters. Microlensing is a natural phenomenon that occurs when light from a distant star is bent and magnified by the gravitational field of a foreground star.

The presence of a planet orbiting the foreground star causes the distant star’s light to flare momentarily.

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If you raise your prices, you might lose some clients. If you do not raise your prices, you might lose your business.

When was the last time you increased your consulting rates? If you are a contractor, have you recently increased your mobilization fee or your footage charge for drilling? If you have not raised your prices, your profit margin is undoubtedly falling as external costs continue to rise. If your rates are static, every added dollar of cost takes a dollar of profit off your bottom line. Allow that profit erosion to continue too long, and soon there will be no profit remaining and your business will fold.

Of the many pricing models in use throughout the business world, most consulting and contracting firms use some amalgam of markup pricing and going-rate pricing. In markup pricing, you add a standard markup to your fixed and variable costs. For a consultant, the markup will typically be some percentage of the total costs, including salary, benefits, personnel taxes, and some allowance for overhead. The going-rate approach is purely market-based, reflecting the realities of competition; if all other things are equal, your pricing must be in line with the competition. So most firms start from a markup basis and then adjust up or down based on what the competition is doing. But very rarely are “all other things equal”.

**What Type of Company Are You?**

Are you a Wal-Mart or a Saks Fifth Avenue? Are you catering to clients with a low-bid mentality or those who appreciate quality work and good customer service? Chances are you are somewhere in between, feeling the squeeze of demanding clients who expect great service and low prices. If you are an upstart, perhaps you aspire to be a Saks, but must be more of a Wal-Mart as you build your business and reputation. Either way, you must find a way to effectively recover all of your costs and make a profit.

If you go the Wal-Mart route, you have to steadily minimize or eliminate every cost that you can. You will make a thinner profit margin, but make up for it in volume. If you go the Saks route, you will have much higher costs of goods and services, higher prices, and fatter profit margins, but probably fewer clients. In both cases, however, if you fail to pass along the increases in the external costs that you cannot eliminate or minimize, your profit margin will erode and put your business at risk.

**Small, Regular Price Increases**

My wife and I recently received a mass email from one of the babysitters that we occasionally use. She was notifying all of her clients of a rate increase. For several years, she had charged $10/hr and suddenly realized that she should be charging much more and was raising her rate to $12/hr. I am sure that a contributing factor was her 20-mile commute and the mounting gasoline bills that come with it. What would happen to your business if you suddenly told all your clients that their costs were going up 20%? It is safe to say you would be looking for a lot of new clients. But for our babysitter, it was not a risky move: she is a very responsible college student who is in tremendous demand, and for most people, her price increase amounts to an extra $8 on a Friday night. It is not that big of a deal – especially when you are talking about the caretaker of your children.

If you are a consulting geologist who suddenly raises rates by 20%, however, that might mean thousands of dollars in additional expenses to your clients, creating a significant marketing opportunity for your competitors. So it makes sense to enact regular, small prices increases that are grounded in reality and easier for your clients to absorb. Even if you do not want to increase the bottom-line price to your client, I suggest that you at least increase your billing rates periodically – you can always charge fewer hours to keep the price static.

**Communicate**

As with most things in business, good communication is an absolute necessity. Most clients are just like you – they are real people and they are mostly reasonable. If you explain to them the reason for the increase, what you are doing to alleviate the increase and minimize future price changes, they will understand and stick with you as long as you continue to focus on good service and not take them for granted.

A recent example of the importance of communicating the reasons for price increases affected the oldest gas utility in the country. At the risk of getting on a bit of a soapbox, let me give you the details from my home state. Baltimore Gas & Electric (BGE) was “deregulated” in 1999 to allow competitors to enter the Maryland market and drive down energy costs. However, deregulation is a misnomer, because the state imposed a rate cap that held electric rates artificially low at 1993 levels (price controls are hardly a hallmark of deregulation). Not surprisingly, competitors failed to enter the market, because no reasonable company would want to compete for the opportunity to charge customers less than the market price for something!

Effective July 2006, the rate caps expired and rate payers were hit with tremendous increases on the order of 72%. BGE took an absolute beating in the press. In my opinion, that beating was completely unjustified. The price increases, as most geologists can understand, are the result of market
forces and the demand pressures on world energy supplies. China and India are consuming energy at exponentially-increasing rates, and supply is further limited by geopolitical disruptions in the Middle East, environmental restrictions, damaged production and refining capacity in the United States following the hurricanes of 2005, among others. For years, the utility was mandated by law to absorb these costs. Regardless of the price of energy on the open market, BGE was forced to sell electricity at the 1993 levels.

BGE’s problem was exacerbated by a heated political season and a state legislature nationally regarded as unfriendly to business; indeed, in the last couple of months, the utility’s bond rating has been lowered twice because of the political uncertainty in Maryland. The utility shouldered much of the blame for the price increases and was widely skewered in the press as greedy—even though they do not profit on price increases! BGE makes its money on the delivery of the commodity, not the supply. The costs of purchase are simply passed along to the consumer when the utility buys energy from the lowest bidder at a state-regulated auction. In fact, one could argue that the higher prices will actually hurt BGE’s profitability, because it is reasonable to assume that customers will cut back on consumption to reduce their overall bill (i.e., BGE will be delivering less energy on which it can profit).

The moral of this story is that the 72% increase was so large and shocking, that consumers were not willing to listen to the very reasonable explanations, and the politicians seized an opportunity to exploit the issue rather than help the populace understand the facts. Imagine that the state had not muddied the waters in 1999 by trying to control the market. If this large increase were annualized over the 13 years of frozen prices, the annual increases would be just 3.5%. Most people would hardly notice such an increase and this 200-year old company would not suddenly have experienced two drops in its bond rating.

If you continue to “eat” the costs when your expenses rise, you run the risk of hitting your clients with a whopping increase just like BGE. At that point, they might not be willing to listen to your explanations. At best, they might think you were a bad business owner for letting things get so far out of control. At worst, they might penalize you in the most extreme way by ceasing the business relationship. But if you take baby steps and enact reasonable price increases at reasonable times, such as when gasoline prices are skyrocketing, your clients will understand.

Now it is time to call that babysitter and have a little chat about price increases....

Duane Carey is President of IMPACT Marketing & Public Relations in Columbia, Maryland. He was a consulting hydrogeologist for 11 years prior to launching a marketing consulting firm in 2003. He earned his MBA at Johns Hopkins University (JHU), and is a Certified Professional Geologist (#10305) and past President of the Capitol Section of AIPG. In late 2005, he took over the helm of IMPACT, which was founded in 1990 by one of his professors at JHU. He can be reached at 410-312-0081 or duane@MilkYourMarketing.com

HAVE YOU SIGNED UP A MEMBER LATERLY?

REQUIREMENTS FOR GENERAL MEMBERSHIP
(Postcard size application on page 37.)

EDUCATION: 30 semester or 45 quarter hours in geological sciences* with a baccalaureate or higher degree

SPONSORS: 1 required from a CPG or Member

SIGN-UP FEE (prorated): Jan-Mar = $60; Apr-Jun = $45; Jul-Sept = $30; Oct-Dec = $15

ANNUAL DUES: $60 plus Section dues

APPLICATION: Available on website www.aipg.org

*As defined by the American Geological Institute, a geological science is any of the subdisciplinary specialities that are part of the science of geology, e.g., geophysics, geochemistry, paleontology, petrology, etc.
Keys to Creating an Effective Poster

Nancy Price, SA-0382

In science, it is important to communicate your results to colleagues and the rest of the research community. Publication in a peer-reviewed journal is the best and most professional way of getting your results out there, but the process can be long and arduous. Conferences also serve as a highly effective way of sharing your findings and are quicker and more informal. Choosing a method of presentation is an important decision to make when participating in conferences. Although giving a comprehensive talk may be the best way to go for those with a tightly organized and complete story (such as a student finishing his or her graduate degree), the poster session is becoming increasingly popular for the opportunity to get feedback, whether it is complimentary or critical. Poster sessions give people the chance to browse around and only read about the research that interests them. Any discussion over a poster topic is done on a personal, one on one basis, whereas the time allowed for talks does not leave much room for questions and comments, if at all.

Deciding on a poster session is an easy first step. As time until the conference dwindles, actually creating the poster becomes a looming task. If you have never created a poster before, it is easy to get stuck on a blank screen with no real confidence on how to proceed. The two things that you should start with is the knowledge of your project and an understanding of your audience. Think about what is was that you did and what would be the best way to convey that. It is really easy to know what you did for your project because you are the one working on it, but are you sure that the way you may explain your project will be understandable to people that have no prior knowledge of your project. Be organized and start with a poster outline based on your own ideas of the project and then show that outline to someone else. If they do not understand the ideas you are trying to convey, then you need to go back and explain things better. It is ok not to say absolutely everything in your poster. The key is to have a poster that flows well from one idea to another without any large gaps or ambiguities.

Your outline should include the usual parts: abstract, introduction, background, methods, discussion/results, conclusions, acknowledgements, and/or references cited. It does not necessarily have to have every part mentioned above or it may include additional parts. Just know what you are trying to say and use the parts as tools for your storytelling. Do not just stick in a section because you think it should be in there if it has no real use to the continuity of the poster. Yet, also be mindful that we as scientists are creatures of habit and expect to find certain parts on a poster. For example, some people go straight for the abstract when first approaching a poster, so it would be a good idea to be sure to include yours on yours. Organization is the most important part of the formation of a poster!

The next step is to create and arrange your figures. Posters are a very visual form of presentation and a good figure is better than a whole bunch of words. Be sure to take care in creating and editing your figures for your poster. Figures need to be able to be seen from a couple of feet away from the poster. That translates into larger fonts and large clear lines. Be careful to make figures large enough when you create them and not just enlarge them in the drafting program (PowerPoint or Adobe Illustrator), which can leave them pixilated and virtually unreadable. Once you know what figures you want to feature in your paper, arrange your poster layout around those figures. Text can go anywhere, but figures need to be arranged so that they all fit onto the poster in a reasonable, organized way. I often print out my figures to a model scale to fit onto a “poster” of 8.5 by 11 inch or 11 by 17 paper and literally move cutouts of those figures around on a blank sheet of paper until I am satisfied with how they are arranged.

When filling in the rest of the poster around your figures, the rule is the less text there is, the better. People are lazy and often times they do not want to read large swaths of text. If you do not like to see large paragraphs in a professor’s PowerPoint lecture, why would you think people visiting your poster would
want to see that either. It is exhausting. If you can make a figure to illustrate a concept, do it. Otherwise, it is best to cut down on the unnecessary wording and just put the most important points in a bulleted list form or even flowchart form if it works. If anyone is that interested in all the little details that you may have left out, then they can ask you.

Putting it all together on the poster is the fun part. This is where a person's artistic side can come out. Creativity is a great thing when making posters, but be careful not to go too crazy because your creativity can just as easily detract from the message you are trying to send. However you arrange it, your poster should be clear and easy to follow. Have a method of organization with heading for all the parts and a logical flow of thoughts. Make your headings bold and clear, your lines straight, and your text and parts should all have some semblance of symmetry. What I have learned by doing posters is that people can be just as lazy and disorganized as the most delinquent college student. The first thing they will do when they come to your poster is read the title and abstract and/or go right to the largest, most interesting figure no matter how hard your try to organize it. Some will go through the typical sequence (intro, background, etc.) if they are interested enough, but the majority of the people do not have time for that. Keep that in mind when you are organizing and work that to your advantage if you can. Be sure also to have good figure captions as well. If a person starts on the flashiest figure, they want to know what is going on with it before they read anything else and that is where the caption comes in.

A final pivotal point to creating an effective poster is to know your audience. Different conferences and research fields tend to have different poster styles with different emphases. Depending on what it is that you are presenting, you may arrange a poster differently than if you had been presenting something with completely topic. For example, the presentation of a geologic mapping project would focus on the map and less on material and methods versus a typical methods project where that section is most important. Ask your advisor or other colleagues to see a poster that they have done to get some ideas. It is ok to mimic layout ideas from other people's posters until you develop a design and layout style of your own.

Finally, when it comes time to presenting the poster at the conference, be sure to be available next to your poster to answer any questions people may have. Be helpful, but be sure not to hover. Stand back a little and wait for people to approach you. No one likes to have someone nervously looking over their shoulder as they are trying to read. Be sure to have a couple of copies of your poster on regular sized paper for distribution. There is always someone that would like to have a copy. Also have your contact information or card available for anyone who is interested in you. Poster sessions are a great networking opportunity so take advantage of it.

In the end, if you break down the poster construction into an organized outline and strong, clear figures, the looming specter of creating your poster becomes less scary. It is easy to create a successful poster on your very first try. So, good luck and have fun!

If you have any ideas, questions, or comments about this article or any other issues, please feel free to contact me via email at: nancyaprice@yahoo.com.

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| Application for Affiliation as a Student Adjunct |

Complete ALL sections. Read the Bylaws and Code of Ethics. If applying between November 1 and June 30, the application fee is $20; if applying after June 30, the fee is $10. Please PRINT or TYPE.

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ATTESTATION: I attest that I meet the requirements for AIPG Student Adjunct (currently enrolled in a geological science degree program) and agree to abide by AIPG Bylaws and Code of Ethics.

Have your faculty sponsor complete the statement below before submitting OR AIPG will contact your sponsor (complete name & ph. #)

**Faculty Sponsor’s Statement**

I certify that I am a member of the faculty of the _______________________________ department at _______________________________, with the rank of _______________________________, and that the statements made by the applicant in this application are true to the best of my knowledge or belief. I am ___ am not ___ the applicant's faculty advisor.

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Applicants for certification must meet AIPG’s standards as set forth in its Bylaws on education, experience, competence, and personal integrity. If any Member or board has any factual information as to any applicant’s qualifications in regard to these standards, whether that information might be positive or negative, please mail that information to Headquarters within thirty (30) days. This information will be circulated only so far as necessary to process and make decisions on the applications. Negative information regarding an applicant’s qualifications must be specific and supportable; persons who provide information that leads to an applicant’s rejection may be called as a witness in any resulting appeal action.

Application for Certified Professional Geologist

NV Howard J. Adams
14756 Pine Knolls Lane, Reno, NV 89521
Quebec Jared S. Beebe
102 Avenue Des Iles, Rouyn Noranda, Quebec J9X 5A3 Canada
AK Michael A. Belowich
1125 Snowhill Avenue, Wasilla, AK 99654
OH Christopher D. Bodie
837 Valleywood Heights, Howard, OH 43028
OR William D. Burstow
502 N. Fairview Avenue, Burns, OR 97720
NJ Paul J. Heslop
10 Avenue Des Iles, Rouyn Noranda, Quebec J9X 5A3 Canada

Applicants Upgrading to CPG

ME Henry P. Clauson MEM 0046
34 Plains Road, Readfield, ME 04355
CO Steven D. Craig MEM 0862
12201 West 2nd Pl., Apt. #3-101, Lakewood, CO 80227
MI Ryan D. Dunning MEM 0117
2685 Patterson Lake Rd., Pinckney, MI 48169
MT Rene L. Foehl MEM 0792
P.O. Box 4801, Butte, MT 59702
CO Dean D. Turner MEM 0608
Global Geotechnologies, LLC, P.O. Box 270011, Littleton, CO 80127

VA - AMERICAS PO BOX 7195, HELena, MT 59604
ID Bruce R. Otto CPG 10970
333 Provident Dr., Boise, ID 83706
Rodrigo Alves Marinho CPG 10971
Av. America Vespucio Sul, 100 Oficina 203 Las Condes, Santiago, 758 0154 Chile
CO Kenneth J. Balsewec CPG 10972
309 Iowa Dr., Golden, CO 80403 1335
NV Steven R. Grusing CPG 10973
102 Rolling Hills Dr., Elko, NV 89801
NV Frederick P. Schwartz, Jr. CPG 10974
1550 Zolelli Ln., Reno, NV 89511
CO Susan M. Hall CPG 10975
P.O. Box 26, Morrison, CO 80465
NV Kevin M. Conway CPG 10976
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HI Troy N. Rosenbush CPG 10977
95 1061 Puu li St., Mililani, HI 96789
CA Edward P. L ump CPG 10978
Envir. Equalizers, Inc., 5845 Avenida Encinas, Ste. 128, Carlsbad, CA 92008
MT Alan D. Branhm CPG 10979
2778 Spokane Creek Road, East Helena, MT 59635
Ont Ian Atkinson CPG 10980
23 Glen Manor Dr., Toronto, Ont M4E 2X3 Canada
OH Tim J. Agnello CPG 10981
3869 Kilbourne Ave., Cincinnati, OH 45209
NV Sanjay P. Sharma CPG 10982
2601 Townhouse Dr., Coram, NY 11727 USA
NV Thomas R. Kibey CPG 10984
485 Tuna Ct., Sparks, NV 89436

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New Associate Members

TN Michael L. Coffey AS 0036
100 Old Forest Trail, Oak Ridge, TN 37830
CA Erwin C. Winterhalder AS 0037
45 Eagle Gap Court, Novato, CA 94949
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AIPG MEMBER APPLICATION

American Institute of Professional Geologists Membership Application

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If you apply Jan-Mar = $50 Apr-June = $45 Jul-Sept = $50 Oct-Dec = $15

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ATTESTATION: I attest that I meet the requirements for AIPG Member (30 semester hours/45 quarter hours for Member) and agree to abide by AIPG Bylaws and Code of Ethics.

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TPG 39
1. The answer is (b) or $T = 4x - (10/3)y$.
The proof follows:

“Cauchy’s formula” tells us that the stress vector $(T)$ acting on a plane through a given point is equal to the product of the unit normal vector $(V)$ that acts on such plane times the stress tensor $(t)$ at such point.

Thus: $T = v \times t$

Then:

$$
T = (2/3, -2/3, 1/3) \times \begin{pmatrix} 7 & 0 & -2 \\ 0 & 5 & 0 \\ -2 & 0 & 4 \end{pmatrix}
$$

$$
= [(2/3 * 7) + (-2/3 * 0) + (1/3 * -2)]x = 4x
$$

$$
= [(2/3 * 0) + (-2/3 * 5) + (1/3 * 0)]y = -(10/3)y
$$

$$
= [(2/3 * -2) + (-2/3 * 0) + (1/3 * 4)]z = 0z
$$

Thus,

$$
T = 4x - (10/3)y
$$

2. The answer is (b) or $T_{11}, T_{22}, T_{33}$.
In the stress tensor, the normal stresses occur along the principal diagonal. Other positions in the tensor represent shear stresses.

3. The answer is (a) or the dissolution of calcite, $\text{CaCO}_3$, through chemical weathering and the action of carbonic acid, $\text{H}_2\text{CO}_3$. Calcite reacts with hydrogen cations and bicarbonate anions to yield soluble calcium cations and bicarbonate anions:

$$
\text{CaCO}_3 + \text{H}^+ + \text{HCO}_3^- \text{ yield Ca}^{2+} + 2\text{HCO}_3^-.
$$

Dolomite, $\text{CaMg}(\text{CO}_3)_2$ differs from calcite in its content of magnesium and in a variety of additional properties. Orthoclase is a potassium-rich feldspar, $\text{KAlSi}_3\text{O}_8$, that weathers chemically into clay minerals.

4. The answer is (c) or glacial terrain depositional processes. Drumlins are elongated, asymmetrical hills or mounds of mainly glacial till which form when glaciers flow over a mound of sediment. The streamlined shape is elongated in the same direction as the glacial flow. Eskers are long and sinuous ridges of glacial till that form as channel deposits of a stream that flowed beneath or within a melting glacier.

Coastal depositional processes result in the formation of spits, barrier and bay-mouth bars, barrier islands, and tombolos.

Fluvial depositional processes result in the formation of point bars, midchannel bars, alluvial fans, and deltas.

5. The answer is (b) or andesite. Andesite lacks quartz and is dominated by the content of sodium-rich plagioclase feldspar, such as albite, $\text{NaAlSi}_3\text{O}_8$.

Rhyolite and trachyte are dominated by potassium-rich feldspar such as orthoclase, $\text{KAlSi}_3\text{O}_8$. Rhyolite has a high quartz content, whereas trachyte has little quartz.

**ANSWERS TO QUESTIONS ON PAGE 12**

**St. Paul Hotel**

AIPG has reserved a limited number of rooms at $109.00 for single occupancy on a first come first served basis. Additional rooms may be reserved at a significantly higher rate. A limited number of suites are also available at a discount. Please make your reservations through the St. Paul Hotel by calling (651) 292-9292 or 1-800-292-9292. The hotel reservation code is 86045. You can find additional information about the hotel at www.stpaulhotel.com.

**Maps and Directions to The Saint Paul Hotel**

The Saint Paul Hotel is conveniently located in the beautiful Rice Park District of downtown Saint Paul, Minnesota, on 350 Market St. near the Ordway, Xcel Energy Center and RiverCentre complex, and across the street from Lawson Software and St. Paul Travelers.

For getting around the city, we suggest you inquire with the Concierge for directions on where you need to go. You can also pick up a taxi from the airport or downtown. A taxi from the airport costs approximately $20 one way.

**Conveniences**

- 15 minutes from the Minneapolis/Saint Paul International Airport
- 15 minutes from the Mall of America and Bloomington
- 15 minutes from the Metrodome and Target Center
- 15 minutes from Minneapolis
- Walking distance from Saint Paul’s RiverCentre, Ordway Center, and Xcel Energy Center

**Airport Transportation**

Transportation to and from the Minneapolis/St. Paul International Airport is available via taxi (approximate cost $20 each way) or via Super Shuttle 1-800-258-3826 (shared van, multiple stops, $12 per person one way or $20 round trip).

The hotel van is also available to the airport for $15 per person, booked based upon availability through the Concierge. We are not able to pick up passengers from the airport at this time.
## 2006 NATIONAL AIPG MEETING REGISTRATION FORM

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<th>NAME (Last)</th>
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<th>(Middle Initial)</th>
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### Spouse/Guest Registration includes admission to Icebreaker and Exhibits

#### FEES AND PAYMENT INFORMATION

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* AIPG Members Only  ** Student Confirmation Required  *** Registration Required

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<td>No. 3 Glacial Lake Agassiz (9/28)</td>
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<td>No. 4 Twin Cities Aggregates (9/26)</td>
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<td>No. 5 Pine County Karst (9/26)</td>
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<td>Social Banquet @ Science Museum (Wed 9/27)</td>
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<td>Downtown St. Paul Geology &amp; Architecture and/or Historic Summit Ave (at your leisure)</td>
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<td>Social Trip 1 – Welcome to the Mississippi River Brunch Cruise (Sun 9/24)</td>
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<td>Social Trip 2 – St. Paul Historic Tunnels, Waterfalls, Bluffs, and Fossils Tour (Mon 9/25)</td>
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<td>Past-Presidents Breakfast (9/26)</td>
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TOTAL AMOUNT DUE

National and Sectional Meetings
National Executive Committee Meeting (9/25)   yes / no
2006 Advisory Board Meeting (9/26)           yes / no
2006/2007 Advisory Board Meeting (9/26)      yes / no
2006-2007 Joint Executive Committee Meeting (9/26) yes / no

Notes
- The Field Trips and Short Courses are subject to cancellation due to lack of participation.
- Registration fees for canceled events will be refunded to registered attendees.
- Full Registration Includes Ice Breaker, Technical Sessions, Exhibits, Business Meeting, Student Posters, Coffee Breaks, and Registration Package.
- CEU Credits Available.
- Please indicate if you have any special dietary requirements.

SPECIAL NEEDS/REQUESTS: ____________________________

METHOD OF PAYMENT

TOTAL AMOUNT DUE $_______

PLEASE CHECK METHOD OF PAYMENT
☐ Check No.________________ Enclosed (drawn in U.S. Dollars on a bank located in the US or Canada.)
☐ International Postal Money Order
☐ VISA ☐ MasterCard ☐ American Express (Credit cards are processed in US dollar amounts only.)

Card No.________________________________________ Expiration Date________

Print name of cardholder:________________________________________________________

REQUIRED: Credit Card Billing Address (street, city, state, and zip):

________________________________________________________

________________________________________________________

Authorized Signature________________________________________

Mail to:
American Institute of Professional Geologists
1400 W. 122nd Avenue, Suite 250
Westminster, CO 80234
or fax to (303) 253-9220 or register on-line at www.aipg.org
National AIPG Phone Number is (303)412-6205

Refund Policy: Refunds of 100% will be given upon receipt of a written request until August 23, 2006. Notification and full refund for field trips or social activities will be given in case of required cancellations. Cancellations for full convention registration made between August 24, 2006 and September 18, 2006, will be assessed a charge of 10% of the registration fee (to cover administration costs). NO refunds will be given for cancellations received after September 18, 2006, or for no-shows after the meeting.

I understand that submission of this registration form gives AIPG the authority to utilize any photograph taken of me at the conference for conference related publicity (e.g., photo gallery on cd, web site, TPG...). AIPG agrees not to use my likeness for any other purpose. Please contact Catherine O’Keefe if you DO NOT wish to have your image used.
## SATURDAY, SEPTEMBER 23, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>9:30 am</td>
<td>FIELD TRIP 1 - North Shore/Mesabi Range (9/23 - 9/25)</td>
</tr>
<tr>
<td>9:00 am - 5:00 pm</td>
<td>Registration</td>
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## SUNDAY, SEPTEMBER 24, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>9:00 am - 8:00 pm</td>
<td>Registration</td>
</tr>
<tr>
<td>10:00 am - 2:00 pm</td>
<td>SOCIAL TRIP 1 - Welcome to the Mississippi River Brunch Cruise</td>
</tr>
</tbody>
</table>

## MONDAY, SEPTEMBER 25, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
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<tbody>
<tr>
<td>8:30 am - 9:00 am</td>
<td>Executive Committee Continental breakfast</td>
</tr>
<tr>
<td>9:00 am - 3:00 pm</td>
<td>Executive Committee Meeting</td>
</tr>
<tr>
<td>9:00 am - 9:00 pm</td>
<td>Registration</td>
</tr>
<tr>
<td>10:00 am - 9:00 pm</td>
<td>Exhibits</td>
</tr>
<tr>
<td>9:00 am - 12:30 pm</td>
<td>SHORT COURSE 4 - What is All Appropriate Inquiry (AAI)?</td>
</tr>
<tr>
<td>11:30 am - 4:30 pm</td>
<td>SOCIAL TRIP 2 - St. Paul Historic Tunnels, Waterfalls, Bluffs, and Fossils Tour</td>
</tr>
<tr>
<td>12:30 pm - 4:00 pm</td>
<td>SHORT COURSE 1 - Tune up for PG and FG Exams</td>
</tr>
<tr>
<td>6:00 pm - 8:00 pm</td>
<td>Glacial Icebreaker, cash bar</td>
</tr>
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## TUESDAY, SEPTEMBER 26, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 am - 8:00 am</td>
<td>Past Presidents Breakfast Meeting</td>
</tr>
<tr>
<td>7:00 am - 7:00 pm</td>
<td>Women in AIPG Breakfast Meeting</td>
</tr>
<tr>
<td>7:30 am - 9:30 am</td>
<td>2006 Advisory Board Meeting</td>
</tr>
<tr>
<td>8:00 am - 5:30 pm</td>
<td>FIELD TRIP 4 - Twin Cities Aggregates</td>
</tr>
<tr>
<td>7:30 am - 5:30 pm</td>
<td>FIELD TRIP 5 - Pine County Karst</td>
</tr>
<tr>
<td>8:30 am - 3:30 pm</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>9:00 am - 9:00 pm</td>
<td>Registration</td>
</tr>
<tr>
<td>9:00 am - 4:00 pm</td>
<td>SOCIAL TRIP 3 - Wisconsin Amish Country and Crystal Cave Tour</td>
</tr>
<tr>
<td>9:45 am - 11:45 am</td>
<td>2006/2007 Advisory Board Meeting</td>
</tr>
<tr>
<td>10:00 am - 7:00 pm</td>
<td>Exhibits</td>
</tr>
<tr>
<td>10:00 am - 4:00 pm</td>
<td>Student posters</td>
</tr>
<tr>
<td>11:30 am - 1:00 pm</td>
<td>Annual Business meeting/lunch Harvey Thorleifson, Director of the Minnesota Geological Survey: Keynote Speaker</td>
</tr>
<tr>
<td>1:30 pm - 3:30 pm</td>
<td>2006/2007 Executive Committee Meeting</td>
</tr>
<tr>
<td>7:00 pm - 9:00 pm</td>
<td>Awards Banquet</td>
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## WEDNESDAY, SEPTEMBER 27, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 am - 8:00 am</td>
<td>Foundation Trustees Breakfast</td>
</tr>
<tr>
<td>7:30 am - 5:30 pm</td>
<td>FIELD TRIP 2 - St. Croix River</td>
</tr>
<tr>
<td>8:00 am - 5:30 pm</td>
<td>FIELD TRIP 6 - Karst Geology of Southeastern Minnesota</td>
</tr>
<tr>
<td>8:30 am - 3:30 pm</td>
<td>Technical Sessions</td>
</tr>
<tr>
<td>9:00 am - 5:00 pm</td>
<td>Registration</td>
</tr>
<tr>
<td>10:00 am - 5:00 pm</td>
<td>Exhibits</td>
</tr>
<tr>
<td>10:30 am - 2:30 pm</td>
<td>SOCIAL TRIP 4 - Wabasha Street Caves and St Paul Gangsters Tour</td>
</tr>
<tr>
<td>3:30 pm - 4:30 pm</td>
<td>Roundtable Session on Sustainability</td>
</tr>
<tr>
<td>6:00 pm - 10:00 pm</td>
<td>Social Banquet at the Science Museum</td>
</tr>
</tbody>
</table>

## THURSDAY, SEPTEMBER 28, 2006

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>7:00 am - 7:00 pm</td>
<td>FIELD TRIP 3 - Glacial Lake Agassiz</td>
</tr>
<tr>
<td>9:00 am - 12:30 pm</td>
<td>SHORT COURSE 2 - Forensic Geology</td>
</tr>
<tr>
<td>12:30 pm - 4:00 pm</td>
<td>SHORT COURSE 3 - Intro to Phase I Environmental Site Assessment</td>
</tr>
</tbody>
</table>

Fractures in cross bedded pre-Cambrian age Hinckley sandstone, Sandstone, Minnesota (see Field Trip 5).
As a part of my duties as Vice President, I recently conducted a survey to determine the current state of the AIPG Sections. A review of the survey results and available related information indicate the following:

A. Twenty-two Sections have less than 100 members. Sixteen Sections have more than 100 members. The largest Section is Northeast (652 members). The next four largest Sections are Texas (488 members), Colorado (442 members), Ohio (324 members) and Michigan (317 members). All other Sections have less than 200 members. The majority (approximately 60%) of the members work in the fields of Environmental Geology, Engineering Geology and Hydrogeology. The Petroleum and Mining Geologists constitute a minority.

B. Twenty Sections are active to very active and vibrant, five Sections are minimally or barely active, and nine Sections are inactive (dormant or defunct).

C. There is a wide range of activities in which Sections engage. The noteworthy of the activities are enumerated as follows:

• Regular meetings of section officers;
• Meetings of section members;
• Inter-society meetings;
• Holding meetings selectively in different parts of the State, facilitating more members’ participation;
• Camp activities;
• Field trips;
• Seminars or short courses of professional interest;
• Observance of “Geology Day at the Capitol”;
• Reception for or communication with State Legislators;
• Awards or scholarships to promote geology or geological profession;
• Student Chapter activities at a University;
• Presentations at high schools highlighting the importance of geology and geologists in the modern world; and
• Newsletters/Email announcements of Section activities.

D. The level of activity significantly varies from Section to Section. The low level of activity or inactivity of Sections is attributed to some of the following factors:

• Members’ apathy toward Section activities;
• Lack of time for professionally busy members;
• Lack of new members and the aging of current (senior) members;
• Difficulty in convincing a University to start an AIPG Student Chapter or even maintain an existing Student Chapter;
• PG Licensure requiring no CEU in some states;
• State registration requirements overshadowing the value of CPG;
• Diversity of professional interests of members; and
• Geographical remoteness or physically scattered membership across a state.

Helpful suggestions to address certain issues and concerns of Sections follow.

• Some Sections are inactive or barely active due to members’ apathy (or lack of enthusiasm). When I was President of the Louisiana Section, I virtually eliminated the problem of apathy by organizing interesting programs and involving many members in the related activities which invariably resulted in well attended events (meetings, presentations and field trips). Members’ apathy can be overcome by providing inspiration or encouragement for active participation.

• Professionally busy members have no time for Section activities. Somehow such members should be reminded that what they should do for the profession is as important as what the profession has done for them. When even a small group of enthusiastic members initiates some program of activities, it will not be difficult for those busy members to join in there.

• ‘Young blood’ has to be infused into the membership on a regular basis. Some of the old members can and should serve as mentors of Section activities in which the young members should be invited and inspired to participate.

• Activities of ‘Student’s Day’ on a University campus, scholarships for geology majors, and brown-bag sessions with them are some of the ways that can go far toward convincing the University to start and sustain an AIPG Student Chapter. The Student Chapter Manual provided on the AIPG website can be beneficial.

• Some registry states require no CEU, therefore, the PGs of those states need not attend professional development program that negates the purpose of Section activities. Such PGs should be...
made aware of the fact that the registration or licensure of geologists protects the interest of the public, but AIPG protects and strengthens the geologists and geological profession by various ways.

- PGs consider the CPG title superfluous, but this does not under-rate the title, because CPG is indispensable for operating in the mining industry as well as the international arena. Additional benefits associated with the CPG title are significant, which are highlighted on the AIPG website and in articles published in TPG.

- The diversity of professional interest is mentioned as another cause for inactivity of some Sections. In fact, such diversity can be utilized as positives for those Sections where a variety of programs to suit the diverse specialists can be organized and presented on different occasions. For example, the environmental, engineering, hydrogeology and mining/ petroleum geology groups in a Section can have their programs successively in the first quarter, second quarter, third quarter and fourth quarter of each year thus keeping the Section active throughout the year.

- Inactivity or low level of activity in some Sections is attributed to geographical factors. If the geographical area and membership of the Section are very large, it can have multiple Chapters located in different parts of the state. Alternatively, periodical meetings can be moved around the state and held in different places throughout the region.

- “Leadership” is the key to the strength and effectiveness of a Section. A single enthusiastic member can provide an inspiring leadership and revitalize an inactive or dormant Section and make it very vibrant. In this regard, the AIPG Manual should be consulted and a great deal of useful information can be obtained by visiting the national website of AIPG. Frequent visits to the website are strongly recommended.

New Publications from the USGS...


USGS Toll-Free Information:
1-888-ASK-USGS (1-888-275-8747)
or http://www.usgs.gov
Natural Hazards – A National Threat

By P. Patrick Leahy, Acting Director, USGS

USGS Science Helps Build Safer Communities

In the United States each year, natural hazards cause hundreds of deaths, inflict human suffering, and cost billions of dollars in disaster aid, disruption of commerce, and destruction of homes and critical infrastructure. Although the number of lives lost to natural hazards each year has declined, the economic cost of major disaster response and recovery continues to rise. Each decade, property damage from natural hazards doubles or triples. Current estimates suggest that natural disasters cost the United States about $20 billion per year. The United States is second only to Japan in economic damages resulting from natural disasters.

The USGS Role in Reducing Disaster Losses

The goal of U.S. Geological Survey (USGS) hazards program is to reduce the vulnerability of people most at risk from having their lives and livelihood endangered by natural hazards. USGS has both statutory and mission responsibilities for using the best science available to help policy makers, emergency managers, and citizens respond to natural hazards and plan for a safer, more resilient society. USGS has the lead Federal responsibility to provide notifications to the public for earthquakes, volcanoes, and landslides. These notifications enhance public safety and reduce losses through effective forecasts and warnings based on the best possible scientific information. The USGS plays a supportive role for other Federal agencies that have the lead responsibility for flooding, wildfires, hurricanes and coastal storms.

How Others Use USGS Science

The National Oceanic & Atmospheric Administration’s (NOAA) National Weather Service (NWS) considers USGS real-time streamflow information essential for developing its forecasts and carrying out its statutory responsibility to issue flood watches and warnings. NOAA also relies on data from USGS-supported seismic networks as a primary input for tsunami warnings.

As well, the products from USGS seismic networks provide critical support to emergency managers trying to determine the extent of damage after large earthquakes. USGS National Earthquake Hazard Maps provide information essential to building codes nationwide.

USGS also produces coastal-change vulnerability products to provide pre-hurricane forecasts of impacts to infrastructure that are essential for evacuation and post-storm recovery efforts.

In the case of wildfires, USGS and its Federal partners monitor seasonal fire damage conditions; provide firefighters with maps of current fire locations, perimeters, and potential spread; and support mitigation efforts to reduce fuel loads for areas of high risk to wildfires.

Regarding volcanoes, the USGS is responsible for issuing timely warnings of potential volcanic disasters to emergency response agencies.

Multi-Hazards Demonstration Project in Southern California

The U.S. Geological Survey is initiating a new collaboration to address natural hazards in Southern California. The goal of the project will be to reduce losses from natural hazards by developing better hazards science and facilitating its application to decision making in Southern California communities. Natural hazards to be investigated in this project include earthquakes, floods, wildfires, landslides and tsunamis. USGS is working with collaborators to guide the direction of future research and to apply the results of scientific research to loss reduction. Partners include state, county, city, and public lands government agencies, public and private utility companies, companies with a significant impact and presence in Southern California, academic researchers, FEMA, NOAA, and local emergency response agencies.

Southern California has one of the Nation’s highest potentials for extreme catastrophic losses due to natural hazards. Estimates of expected losses from all hazards in the eight counties of Southern California exceed $3 billion per year. These numbers are expected to increase as the present 20 million population grows at more than 10 percent per year.

These losses can only be reduced through actions of the Southern California community itself. But to be effective, these actions must be guided by the best information about hazard, risk, and cost-effectiveness of mitigation technologies. Long-term sustainable solutions require broad perspectives that recognize the interconnectedness of urban and natural resources. Thus, USGS will develop a public/private partnership where local partners and other government collaborators in Southern California will work together to develop and apply the best research assessments and monitoring efforts available to...
affected communities, civil authorities, and the aviation industry. NOAA and the Federal Aviation Administration rely on USGS to monitor volcanic hazards and provide rapid hazard analysis and real-time eruption reporting. This demand is exemplified by the aviation sector’s stated need that air traffic control centers be notified by a volcano observatory of an ash-producing eruption within five minutes of the start of the eruptive event.

USGS is able to bring a unique combination of disciplines—biology, geology, hydrology, geography, and geospatial information technology—to bear on all these hazards.

**USGS Priorities for Natural Hazard Science**

The USGS is at a new stage in its ability to assess, monitor, and predict natural hazards. The challenge is to turn the technical ability into operational capability.

The USGS is focusing and strengthening its science programs for those natural hazards that typically have a sudden onset and can result in catastrophic consequences in terms of loss of life and destruction of property—earthquakes, floods, hurricanes, landslides, tsunamis, volcanoes, and wildfires. The USGS, in collaboration with its partners, is helping reduce disaster losses from these hazards by:

- providing better forecasts and predictions of impending hazards;
- issuing more timely and accurate warnings of the severity and locations of hazards when they occur;
- ensuring hazard predictions and warnings are available and received by all those potentially impacted by a natural hazard;
- developing products in formats useful to a wide range of users and that can be quickly put in the hands of emergency management personnel to guide their rescue and recovery efforts; and
- characterizing natural hazards and their risk, and increasing the understanding of why, where, how, and when natural disasters occur and communicating that understanding to affected communities and the Nation in a useful manner.

It is the USGS’s goal to provide scientific research and analysis to help citizens, emergency managers, and policy makers decide how to react to each hazard and how to safeguard society.

**A Vision for the Future**

In order to provide science that safeguards society from natural disasters, the USGS must collect accurate and timely information from modern earth observation networks, assess areas at risk from natural hazards, and conduct research targeted at improving hazard predictions. But it is not enough to simply provide the information—USGS must work actively with the Nation’s communities to ensure that the science is effectively applied to reduce losses.

**Collect Information from Earth Observation Hazard Networks**

Robust monitoring networks provide the fundamental information for accurate predictions and characterizations.

Activities of the collaboration will include assessments and warnings before the events, real-time monitoring and interpretation to support response during the event and data analysis to support recovery after the event. Collaborations will be established with the community for hazard preparation through the use of research to better predict and assess the impact, and for appropriate mitigation. The key activity that ties together the scientists with the Southern California community will be the development of the partnerships with local emergency and land-use managers who together will implement research results in the community to actually reduce the losses from natural disasters. The President’s budget for FY07 proposes new funding of $2.18M for this effort.

**Do You Know the Hazards in Your Backyard?**

USGS Launches Web Site and Facts Sheets on Earthquakes, Floods, Hurricanes, Landslides, Tsunamis, Volcanoes, and Wildfires --

Every year, natural hazards that occur in the United States can result in hundreds of lives lost and cost billions of dollars in the form of disaster aid, disrupted commerce and destroyed public and private properties.

To help educate the public about the threat of natural hazards, the U.S. Geological Survey (USGS) has launched a new Web site and seven easy-to-understand fact sheets on earthquakes, floods, hurricanes, landslides, tsunamis, volcanoes and wildfires. The hazards Web site highlights resources and information available from the USGS and provides links to the individual hazards Web pages for more detailed information. The Web site and fact sheets can be accessed at http://www.usgs.gov/hazards.

“At the USGS, it is our goal to provide scientific research and analysis that help the public make informed decisions on where natural hazards occur, how severe they may be, how to react to each hazard and how to safeguard people and communities,” said USGS Acting Director P. Patrick Leahy. “If we can use our science
of hazards, as well as information critical to response and recovery efforts. Modernization of earthquake, volcano, and flood monitoring networks, in particular, are critical to help communities prepare for, respond to, and recover from natural hazard events.

- Create urban hazard maps for earthquakes and landslides;
- Enhance LANDFIRE – an interagency cooperative assessment of wildfire factors—to project changes in vegetation, fire fuels, and fire characteristics over time;
- Develop streamflow characteristics for all locations in the Nation, including areas without streamgages;
- Assess vulnerability of hurricane-threatened U.S. coasts to different hurricane types and intensities;
- Determine potential for tsunami generation in U.S. offshore waters; and
- Provide high-resolution digital imagery to more accurately characterize hazard susceptibility.

**Target Research on Hazard Processes and Prediction**

Accurate forecasts and predictions are dependent on a thorough understanding of the physical processes controlling a hazard's occurrence, distribution, timing, and severity. Additional targeted research needed to make significant advances in hazard prediction includes:

- Time-dependant hazard maps as an important step toward the elusive goal of short-term earthquake prediction;
- Forecasting the style and magnitude of volcanic eruptions;
- A better understanding of landslide processes as the basis for a real-time landslide and debris-flow warning system;
- Research on tsunami-generating processes to improve assessments of tsunami hazard potential;
- Improved flood estimates through advancements in non-contact and real-time estimates of flow and stage measurements; and
- Improve hurricane risk assessment by better understanding the role of wetlands and barrier islands in protecting coastal communities from the ravaging impacts of hurricanes.

**Early Warning of Hazards**

- Earthquakes: Develop new methodologies that use seismic data telemetry to reduce the response time for earthquake notification to the point where such notifications can reach some vulnerable areas ahead of strong shaking.
- Volcanoes: Provide a five-minute notification of ash-producing volcanic eruptions so that air traffic control centers can provide airline pilots enough lead time to alter flight plans.
- Landslides and Debris Flows: Develop and fully deploy a debris-flow early warning system in partnership with the National Weather Service (NWS) in Southern California.
- Floods: Provide real-time information from all USGS streamgages which is critical for flood forecasts and warnings.
- Coastal Change Resulting from Hurricanes: Forecast the expected locations and relative impacts of extreme coastal changes 48 hours prior to hurricane landfall by using hurricane track and intensity forecasts supplied by the National Hurricane Center.

Natural hazards will always be with us. They can happen at any time and can have tragic consequences. With USGS science and technology, we are striving to prevent these natural hazards from becoming disasters. This is not just a scientific endeavor—it is a matter of worldwide public safety.
The 44th Annual AIPG Meeting will be held in Traverse City, Michigan. Traverse City is located on Grand Traverse Bay, along the northern part of Lake Michigan. The meeting headquarters will be the newly remodeled Park Place Hotel.

Although the 44th Annual Meeting is still a year away, the planning committee has been working hard to finalize the meeting events. With this in mind, the planning committee is pleased to be able to open the registration for the 44th Annual Meeting during the 2006 meeting in Minnesota. Stop by the Michigan Section exhibit booth for registration details, and to take advantage of “very early” registration prices.

For More Information
Contact Adam Heft
General Chairman
hefta@fitzhenne.com
Where In Michigan? Contest

To help promote the 2007 Annual Meeting, the Michigan Section is sponsoring a contest similar to that held by the Colorado Section several years ago (Thanks for the idea!). The rules of the “Where in Michigan?” contest are simple. The first individual to correctly identify the photograph location, geologic formation depicted, and formation age wins a Michigan geologic memento. If anyone correctly identifies all six photographs, they will win a free registration to the 2007 annual meeting (please note that if the winner has already registered, the registration fee will be refunded, so do not wait to register). In the event that more than one individual correctly identifies all six photographs, a random drawing will determine the winner.

Photo courtesy of the Traverse City Convention & Visitors Bureau. Photograph #1

Only one entry per individual per photograph, please.
Entries should be sent to Adam Heft via email (hefta@fitzhenne.com) or fax (517) 887-6335.)
The second National Executive Committee meeting for 2006 was held June 17 at the Westin Hotel in Westminster, Colorado. The 2006 National Executive Committee members in attendance included President Larry Weber, Past-President Robert Font, President-elect Kel Buchanan, Vice President MB Kumar, Treasurer John Bognar, Secretary Mark Rogers, Editor Ray Talkington and Advisory Board members Todd Church, Dennis Pennington, and Rick Wymer. Also in attendance were AIPG Executive Director Bill Siok and AIPG Assistant Director Wendy Davidson. Guests included Ethics Committee Chairman David Abbott, Rich Harter of Harter Marketing Solutions of Fort Collins, Colorado, and Alicia Bryan of CapTrust Financial Advisors.

**Officer Reports**

The elected officers in attendance gave their respective reports.

**Treasurer Bognar** presented the following:
- A discussion regarding the Institute’s Accountants’ Review Report. Highlights of the discussion included;
- Advertising income associated with TPG increased from 2004 to 2005, but this increase was offset by a greater increase in the cost of TPG publication. The increased publication costs were probably a result of TPG becoming larger. The Executive Committee will look into ways to reverse this trend;
- Administrative operating costs for the Institute decreased from 2004 to 2005 by $21,400;
- A review of the Institute’s financial balance sheets;
- A review of the Institute’s Statement of Activities; and
- Alicia Bryan of CapTrust Financial Advisors presented a report on AIPG Investments.

**President-Elect Buchanan** reported on the following:
- Use of the term “Qualified Person” and how it relates to resource geologists and AIPG;
- The demographics of specialties within the geology profession and promoting membership to AIPG to these specialties; and
- Should the name “American Institute of Professional Geologists” be changed to “American Institute of Professional Geoscientists”? This was brought up for consideration due to changes in geology and geoscience curricula that have been evident the past few years on for CPG applications.

**Past President Font** reported on the following:
- Establishment of a possible Student Chapter at Baylor University in Waco, Texas;
- His participation with the AIPG delegation at the annual European Federation of Geologists (EFG) meeting in Porto, Portugal and his presentation promoting The Third International Professional Geology Conference;
- Our first official “graduate” of our online “landslides” course. Mr. James Bain successfully completed all course requirements and exams. National will issue him an official AIPG Certificate.

**Vice President Kumar** reported on the level of activity of various AIPG Sections.
Vice President Kumar categorized the various sections as “Very Active”, “Minimally Active”, or “Inactive”.

He discussed some typical activities that active sections conduct such as:

- Regular meetings and field trips;
- Scholarship awards;
- Newsletters; and
- Active student chapters.

Some factors that contribute to inactive sections were found to include:

- Member apathy;
- Geographical remoteness of sections;
- Lack of new members; and
- State registration requirements overshadowing the value of CPG.

A discussion was also led regarding constructive suggestions to enhance participation and activity in dormant AIPG Sections.

President Weber reported on his activities over the past months since the last National Executive Committee Meeting. Some of which included:

- His participation at a Georgia Section meeting in Atlanta;
- His participation with the AIPG delegation at the annual EFG meeting in Porto, Portugal; and
- His participation at a meeting with the American Geological Institute to discuss and agree upon ways in which various geologic organizations could work together to strengthen and improve our profession.

President Weber also outlined various opportunities he sees for AIPG in the near future. Some of these opportunities include:

- Continuing to promote AIPG;
- Continuing to grow AIPG membership through merging with smaller professional groups; and
- Continuing growth of the online education and CPD programs.

President Weber’s report will appear in the July/August 2006 TPG.

Executive Director Siok reported on National Headquarters activities which included:

- Financial status of AIPG;
- Membership;
- The new AIPG Autumn seminar program, which includes:
  - November 9 & 10 in Denver – Energy and Its Interface with Environmental Requirements and Concerns
  - February 12 and 13 in Tucson – Earth Fissures and Impact on Development in Urban Areas; and
- Rich Harter is under retainer to AIPG to help promote and organize The Third International Professional Geology Conference in 2008.

Executive Committee Actions

- Approved the bylaws for AIPG Student Chapters from Eastern Michigan University and Temple University;
- Approved an increased in dues for the Member Category of AIPG to $80 effective January 1, 2007;
- Approved an increased in section dues for the Colorado Section from $25 to $30 and for the Illinois/Indiana Section from $5 to $10;
- Disapproved a Special Case Application for CPG membership;
- Approved the Academic Education Committee recommendation to award four $1,000 scholarships;

Other Business

- A report on the AIPG prepared by Advisory Board member Dan St. Germain was presented and discussed at the meeting. This report was prepared by Dan as a requirement for his graduate class.
- David Abbott presented his Ethics Committee Report. His report will appear in the July/August 2006 TPG.
- A PowerPoint slide presentation prepared by the Wright State University Student Chapter was shown at the meeting. The presentation is used by the student chapter members to highlight to other students the benefits of becoming an AIPG student member.
- Additional discussions were held on the planning and preparation for The Third International Professional Geology Conference to be held in Flagstaff in September 2008.
NEW! **POLO SHIRTS** - Port Authority, 7-ounce heavyweight pique, 100% cotton, garment washed, welt collar and cuff, double needle stitched, side vents, and horn tone buttons. Colors: Seafoam Green and Black with AIPG lettering with pick and gavel. Sizes: XS-6XL. Prices: $29.00 (XS-XL) / $31.00 (2XL) / $32.50 (3XL) / $34.00 (4XL) / $35.50 (5XL) / $37.00 (6XL) (Other colors available online.)

NEW! **DENIM OR KHAKI LONG-SLEEVE SHIRTS** - A 6.5 oz. fabric, 100% cotton, garment washed, generous cut, double needle stitched, tuck-in tail, button-down collar, horn tone buttons, patch pocket, and adjustable cuffs. Embroidered AIPG spelled out with pick and gavel. Sizes: XS-4XL. Prices: $29.00 (XS-XL) / $31.00 (2XL) / $32.50 (3XL) / $34.00 (4XL)


NEW! **T-SHIRT** - Hanes 100% Cotton Adult Beefy-T Preshrunk to keep its shape and drafted from 6.1 oz., 100% ring-spun cotton for a soft hand with excellent durability. Color: Navy with white and gold embroidery. Sizes: S-XXXL. Price: $16.50 (S-XL), $18.00 (2XL), $19.50 (3XL)

**MARBLE MUG** - 11 oz., blue with matte gold lettering on both sides. Price: $8.95

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