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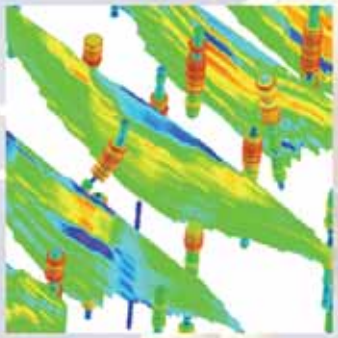

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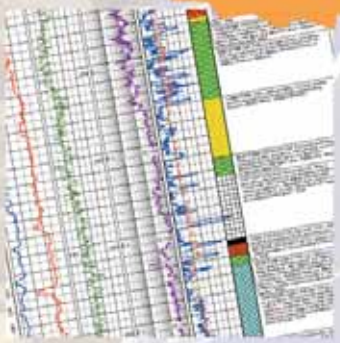

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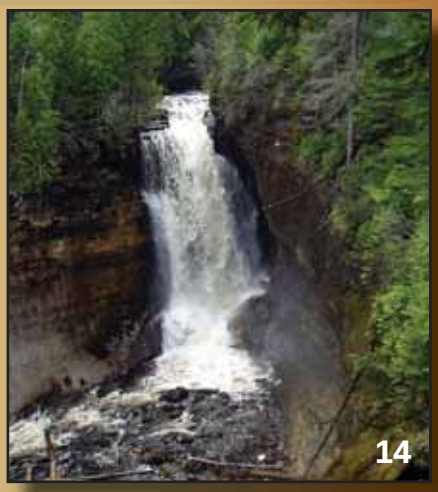

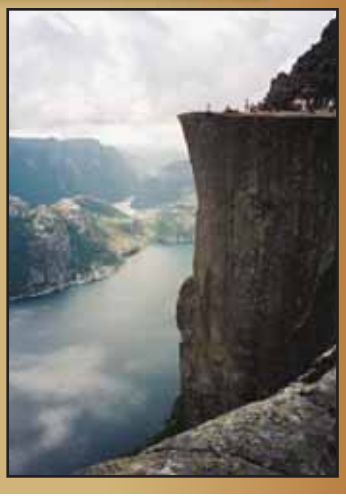

FEATURES

PEER REVIEWED ARTICLE

DEPARTMENTS

ON THE COVER - Preikestolen, Norway (58-59-17.03 N, 006-12-09.62E). Fractures formed after retreat of the regional ice sheet and rebound of the land surface served to sharpen the splinter of granite whose name translates to Pulpit Rock. Preikestolen gives hikers a breathtaking view of the fjord country of southwestern Norway and Lysefjorden nearly 2000 feet below. Photo by Carla Fisher.

The Professional Geologist (USPS 590-810 and ISSN 0279-0521) is published bi-monthy by the American Institute of Professional Geologists, 1400 W. 122nd Ave., Suite 250, Westminster, CO 80234-3499. Periodicals Postage Paid at Denver, Colorado and additional mailing offices.

POSTMASTER: *The Professional Geologist,* AIPG, 1400 W. 122nd Ave., Suite 250, Westminster, CO 80234.

Subscriptions for all Members and Adjuncts in good standing are included in annual membership dues. Subscription prices are $35.00 a year for Members' additional subscriptions and $45.00 a year for non-members for 6 issues (for postage outside of the U.S. add $10.00). Single copy price is $4.00 for Members and $6.00 for non-members. Claims for nonreceipt or for damaged copies are honored for three months.

Printed in U.S.A. by The Ovid Bell Press, Inc. in Fulton, Missouri.

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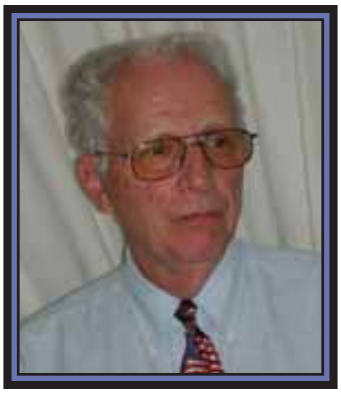
EDITOR'S CORNER



Are You Prepared to Answer a Client's Questions About Global Warming?

Gail G. Gibson, CPG-09993,
Florida Community College at Jacksonville
1154 Morgan Circle E.
Orange Park, FL 32073
ggibson@fccj.edu

In early March, I was talking with a friend about storm water runoff. This was an unusual discussion, since storm water runoff problems are normally of no real concern until there is a significant rainfall event. In northeast Florida, rain is a scarce commodity this time of year, but then it is the dry season.

My friend commented that his workdays mimic rainfall events – he installs gutters and downspouts after heavy rainfall events. So, right now he is at loose ends without rainfall events to prod potential customers to seek quotations on guttering and downspouts, and has been 'talking my ear off" whenever I am visible in the yard.

My friend finally got around to asking the question that was bothering him. "What will be the impact of global warming to my business and my customers?" This query stemmed from a question apparently raised by one of his customers as to whether he installed guttering larger than six inches wide. This lady "just knew" that there would be a lot more rainfall associated with global warming. She was convinced that last summer's hotter that usual weather was the start of global warming.

My friend went on to ask me how he should answer the customer. "After all", he said, "…you have all those letters behind your name." My friend then got serious, saying that since he installed guttering and downspouts for a living, and made sure that the downspouts were installed so as to direct rainwater away from the house, a number of his clients had voiced concern about climate change and rainfall. They expected the "gutter man," who spoke to them about "runoff" and "directing water away from the house," to know all about global warming problems.

We are professionals with "all those letters behind our names," practicing our geological science. We are often expected to have an answer, or to know something about the ramifications of global warming.

How would you address the client (above) on global warming? Whether the question is raised by an environmentally concerned citizen, a client, a member of your town council, your son's or daughter's teacher who has asked you to speak to the fifth grade science class, we do need to think beyond our day-to-day professional responsibilities and knowledgeably provide pertinent information. Although our jobs may relate to more immediate concerns like; continued lowering of water tables, or loss of wetlands, or locating sites for new solid waste landfills, or contaminated site cleanup, or performing pump tests and drawdown analyses for large agricultural enterprises or golf courses, or perhaps beach re-nourishment projects, we should be aware of what will be occurring in the not too distant future. We are often asked to translate the snippets of reports, presented by the news media, from groups like the Union of Concerned Scientists to others, not as part of our jobs, but as knowledgeable professionals in the earth sciences.

What shall we say?

American Institute of Professional Geologists (AIPG) is the only national organization that certifies the competence and ethical conduct of geological scientists in all branches of the science. It adheres to the principles of professional responsibility and public service, and is the ombudsman for the geological profession. It was founded in 1963 to promote the profession of geology and to provide certification for geologists to establish a standard of excellence for the profession. Since then, more than 10,000 individuals have demonstrated their commitment to the highest levels of competence and ethical conduct and been certified by AIPG.

The mission of the American Institute of Professional Geologists (AIPG) is to be the superior advocate for geology and geologists, to promote high standards of ethical conduct, and to support geologists in their continuing professional development.

Welcome to the 44th Annual Meeting of AIPG!

Hosted by the Michigan Section
Traverse City, Michigan
October 7-11, 2007

On behalf of the Michigan Section of AIPG and the 2007 Annual Meeting Planning Committee, I invite you to join us at one of Michigan's top travel destinations for this year's Annual Meeting. Traverse City offers many opportunities for fun and relaxation in addition to business. The newly renovated Park Place Hotel in Traverse City will provide a venue for a meeting that we hope will be long remembered. The Park Place Hotel has free, high-speed wireless internet available.

Traverse City is Michigan's cherry capital, and has something for everyone. The downtown area contains numerous specialty shops and restaurants within walking distance of the Park Place Hotel. The Dennos Museum, which will be the location of one of the evening events, houses one of the largest and most historically complete collections of Inuit art of the Canadian Arctic in the United States. Numerous casinos and wineries are within a short drive of Traverse City. Interlochen Center for the Arts and Sleeping Bear Dunes National Lakeshore are also nearby. Miles of hiking and biking trails and three trout streams are also in the area. Golf Digest rated Traverse City as #12 in its list of the world's top 50 golf destinations!

The theme for this year's meeting, Geology: The Foundation for the Environment and Resources, will underscore the role of geology in our everyday lives. The program includes field trips to Northern Michigan's Marquette Iron District, Mackinac Island, Sleeping Bear Sand Dunes, and local quarries. Several short courses will be offered, including the Geology of Michigan, Low-Flow Groundwater Sampling Techniques, Mining Issues in Northern Michigan, and Ethics in Geology. Social events include trips to several wineries near Traverse City, an evening at the Dennos Museum, the awards reception, and a golf outing.

The meeting will be held during the peak of the fall color season in Traverse City, and the field trips and social events will provide plenty of opportunity to see the incredible color of northern Lower Michigan. I hope that you plan to join us in Traverse City in October for a great meeting.

Adam Heft, CPG-10265
Chair, AIPG 44th Annual Meeting

Where In Michigan? Contest

Photo courtesy of David A. Baxter. Photograph #5.

To help promote the 2007 Annual Meeting, the Michigan Section is sponsoring a contest. 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. We have also decided to hold a drawing for a free registration for the 2007 annual meeting. Each time an individual correctly identifies one of the six photographs, this will give him or her one entry in a random drawing that will determine the winner. So, if someone correctly identifies four out of the six photographs, they will be entered four times. The drawing will be held at the end of August 2007; the winner will be randomly drawn from the list of names of those that have correctly identified one or more of the photographs. The winner will receive a free meeting registration (or refund of the registration fee if they are already registered).

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 'Where In Michigan?' photograph in the last issue of TPG (Photograph 4) was of Arch Rock on Mackinac Island. Arch Rock is a sea stack located on the east side of Mackinac Island between Michigan's Upper and Lower Peninsulas. It is composed of Silurian age limestone that collapsed due to dissolution of evaporite deposits during the Devonian Age. Ground/formation water migration carried minerals which precipitated along the flow path and cemented the breccia fragments together. This unique geomorphic feature was exposed by glaciation and lake erosion within the last 9,000 years.

Congratulations to Steve Mouton, MEM-0962, for correctly identifying the photo.

California Section

The 8th Annual CCGO Sacramento Drive-in a Success

The Eighth Annual California Council of Geoscience Organizations (CCGO) Sacramento Drive-In was held on March 15, 2007. CCGO is a nonprofit mutual benefit corporation formed in 1997 to advocate the use of sound geologic knowledge and practice by proposing, reviewing, and monitoring statutes, regulations and public policies. CCGO is a leader of recognized integrity in advancing programs and legislation that take into consideration California's diverse geologic conditions, advocating knowledgeable use of resources, and working to reduce the impact of geologic hazards.

The CCGO delegates included current CCGO President, Charles Nestle, CPG-09807, (AEG, Southern California Section), Marcia Kiesse (AEG, Sacramento), Betsy Mathieson (AEG, San Francisco) and Jim Jacobs, CPG-07760, (AIPG, California Section). The first meeting was with David Beeby, representing the State Mining and Geology Board (SMGB). Of interest was the fact that many urban areas in California, including the Bay Area and Los Angeles, Fresno and other cities have only about a decade or so of aggregate left available, and permitting new gravel quarries takes 5 to 10 years. As the supplies are depleted, significant increases in the cost of cement and aggregate-related raw materials will occur as transportation costs increase. We discussed that these costs will not only increase the base price of residential construction, but the Governor's approved major infrastructure improvement projects (bridges and highways) will likely see an escalation of costs that were not planned in the original budget items.

The CCGO delegation later met with Dr. John Parrish, CPG-03326, State Geologist with the California Geological Survey (CGS). He showed the delegation some recently produced maps, mostly related to hazard mapping projects. He noted that although the CGS is known throughout the world for its state-of-the-art hazard mapping staff, facilities and projects, the state funding has not kept up with the needs of the CGS to provide this important information to the people of California.

Later the CCGO delegates met with George Dunfield and Rick Rempel (recently elected Executive Officer) of the Board for Geologists and Geophysicists (BGG). The delegates heard of the improvements and updates that are occurring at the BGG to make the agency more efficient and modern.

After lunch the CCGO delegation met with Andrew Medina (legislative aide to Assembly member Mike Eng) regarding professional and business issues for geologists and the upcoming BGG Sunset Review. We met with consultant Caroll Mortensen, chief consultant for the Assembly Committee on Environmental Safety and Toxic Materials under Assembly member Jared Huffman. As Mr. Huffman is proposing carbon sequestration, we discussed some potential side effects that should be evaluated prior to injecting large volumes of carbon dioxide into the ground. G.V. Ayers and Bill Gage of the Business & Professions Committee (Senator Mark Ridley-Thomas) discussed the upcoming Sunset Review Process for the BGG.

The CCGO delegation met briefly with Christine Robertson, an aide for Assembly member Sam Blakeslee (former geoscientist – PhD - Geophysics), to discuss BGG status, and funding for the SMGB and CGS; and then with Sonia Diaz, an assistant with Senator Sheila Kuehl to discuss SB 68, the Senator's proposal to clean up language governing the SMGB. Later in the day, we met with Antonette Sorrick, Governor's Appointments Secretary (Deputy Director of Board Relations) to discuss the recent and future appointments to the BGG. The Governor appoints geologists to various state boards, including the SMGB, BGG and the Hospital Building Safety Board.

In all, the 8th Annual CCGO Sacramento Drive-In was a great success. We established and renewed our contacts with key legislators associated with the professional and business committees (BGG issues), as well as environmental and funding issues (CGS and SMGB issues). We listened to their concerns and in turn explained what geologists do and how our profession helps with a variety of important aspects to modern life, including human health & safety, natural resources, environmental protection, infrastructure, and teaching.

Jim Jacobs, CPG-07760

Colorado Section

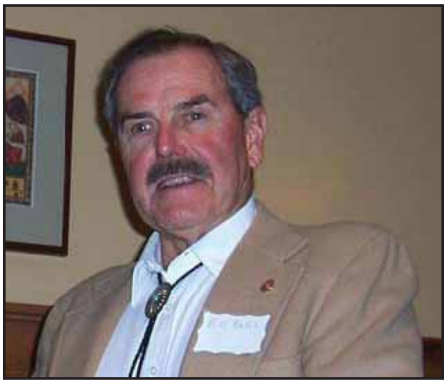
John C. Frye Memorial Award

AIPG members Ralf Topper, CPG-08965, Peter Barkmann, CPG-09524, William Bellis, CPG-03982, and co-authors Karen Spray and Judith Hamilton were recipients of the 2006 John C. Frye Memorial Award in Environmental Geology for their efforts in producing the *Ground Water Atlas of Colorado*, Colorado Geological Survey, Special Publication 53, 2003. "Environmental Geology" (as defined by John Frye) means an attitude of mind, an orientation, the application of the best and most sophisticated scientific work we are capable of doing to the problem of accommodating a rapidly shrinking living space and resource base to the needs of man.

The Frye Award is sponsored by the Geological Society of America (GSA) and the Association of American State Geologists for the best publication in the field of environmental geology published by a state geological survey or by GSA during the past three years. The award was presented to the authors at the GSA Annual Meeting that was held in Philadelphia in October 2006.

In his reply, Ralf Topper noted that "We are fortunate that this publication has received national recognition, and that it is fulfilling its intended purpose of educating the general public, water managers, and the scientific community in the groundwater resources of Colorado. The Ground Water Atlas of Colorado is one of the recommended reference and information sources identified for use by the nine separate water basin roundtables created under the Colorado Water for the 21st Century Act as a framework that provides a permanent forum for broad-based water discussions in the state."

Distinguished Service Award Presented to Bill Bellis



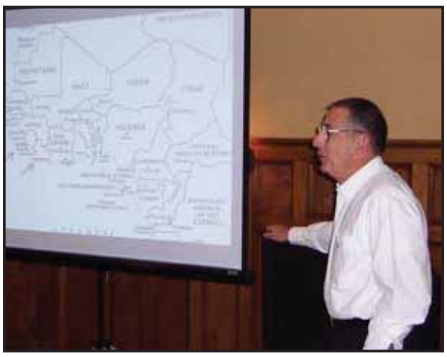
Long-time CO-AIPG member Bill Bellis, CPG-03982, was awarded the Distinguished Service Award in recognition of his long and instrumental contributions of time, energy, and dedi-

cation to the Colorado Section of AIPG on February 20, 2007.

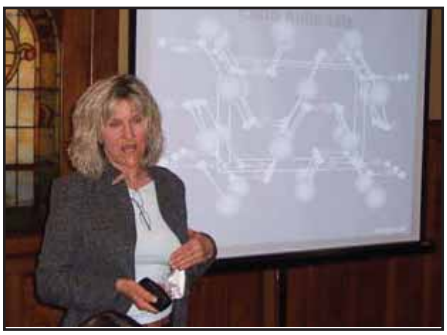
Bill announced to the section board that he will be moving to Wyoming where his wife Janet will be taking on a position with the Bureau of Land Management. Bill has been very active in Colorado Section activities and offices with his most recent post as the 2006 Section President. His inspiring presence will be missed at the section's regular activities and the 2007 Board wishes Bill and Janet the best of luck in the state to the north.

Colorado Monthly Meetings

Dr. Karin Hoal of the Colorado School of Mines discussed diamond mining in West Africa at the CO-AIPG January Luncheon. Photo by Doug Peters.



Dr. Charles Thorman of the CTGS, International joined Dr. Hoal in their lively talk on *Blood/Conflict Diamonds in West Africa* at the CO-AIPG January Luncheon. Photo by Doug Peters.



The many-talented and articulate Ulli Limpitlaw shares her findings on Earth Materials in Medicine at the CO-AIPG February Luncheon. Photo by Doug Peters.

CO-AIPG members and guests enjoying each other's company at the CO-AIPG January Luncheon. Photo by Doug Peters.

Georgia Section

The Geology Club, AIPG Student Chapter, and Sigma Gamma Epsilon met on February 7, 2007. Mark Shaffer made a short presentation on why students should join AIPG and the many advantages they can get from their membership. The guest speaker was Allison Keefer, with the Georgia Environmental Protection Division. She spoke on her geology career.

Mark Shaffer, SA-1171
GSU AIPG Student Chapter President

We had a great turn out of students and members at our February 16, 2007, visit to a remediation system on Camp Creek Parkway. The system was up and running and we had discussions on the history of the site, the type of remediation, and the installation of the system. The weather turned out to be a little cold but clear skies. I would like to thank Dean McCartney with Pangean-CMD Associates for the handouts he prepared and his discussion.

Dean McCartney explaining history of the site.

We also had a great turn out of students and members at our March 14, 2007, visit to a remediation system on Pleasantdale Road. We had an opportunity to see a new type of remediation and ask lots of questions. I would like to thank Mark Mitchell and Matt McDuffie with Genesis Project for their display and discussion.

We also had a joint meeting with the Southeastern Section of AEG on March 20, 2007, with Dr. Terry West, the national president of AEG. His presentation was titled "Rock Slide Stability, Description and Analysis". There was a great mix of AEG and AIPG members so I appreciate everyone coming out. Special thanks go to Martha Carr, who organized everything. It was short notice and she had to scramble but it turned out great.

We would also like to congratulate three Georgia members, who in the past year, have advanced to Certified Professional Geologists. Robert White, Russ Griebel, and Hayne Palmer, congratulations.

Ronald J. Wallace, CPG-08153

Kentucky Section

The Kentucky section would like to acknowledge Gil Cumbee, CPG-00226 and Greg Cornett, CPG-09452, who were two additional authors on the Kentucky fall field trip article that appeared in the March/April 2007 issue of *TPG*.

Michigan Section

Mark Myers, Director of the USGS, will be the Keynote Speaker for the AIPG 2007 Annual Meeting.

USGS Director Mark Myers, CPG-09697, is an internationally recognized geologist, former State Geologist and head of Alaska's Geological Survey.

Mark, an expert on North Slope sedimentary and petroleum geology, served as survey chief for field programs in the MacKenzie Delta (ARCO, 1985), Cook Inlet (State of Alaska/U.S. Geological Survey, 1997), and North Slope (ARCO, 1999). He also served as sedimentologist for 13 other North Slope field programs.

Mark is a past president and board member of the Alaska Geological Society; a certified professional geologist with the American Institute of Professional Geologists; a certified petroleum geologist with the American Association of Petroleum Geologists; and a licensed geologist with the State of Alaska.

He served as an officer in the U.S. Air Force Reserve from 1977 to 2003, retiring as a Lt. Colonel.

Mark received his doctorate in geology from the University of Alaska-Fairbanks in 1994, specializing in sedimentology, clastic depositional environments, surface and subsurface sequence analysis, and sandstone petrography. He earned his B.S. and M.S. degrees in geology from the University of Wisconsin-Madison.

Michigan Section Theme

This years theme for the Michigan Section is "Geologist's Role in Protecting and Preserving the Public Welfare and the Environment". This theme tie bars well with our ongoing mission to educate our legislators and the public on the importance of the geologist's role in making sound scientific decisions regarding the public's welfare and the environment.

When someone asks me what a geologist does for a living, I usually tell them "we don't do windows", meaning we do a little of everything. It is apparent that we all need to do a better job in educating people on what we do as geologists. Some examples of what we do include; management of the air, soils, and ground waters of the state; surface water and wetlands; mining of aggregates, rock, and precious metals/minerals; exploration of oil/gas, environmental remediation; industrial compliance, and Brownfield redevelopment. We also protect the public from physical hazards such as floods, slope failures, sinkholes, rockfalls, and erosion, to name a few. Let's work together and get the word out.

One of our primary objectives, of course, is to support and promote the passage of State licensure for geologists. Our Legislative Committee is making great strides with this initiative, currently working on bipartisan support. Bravo to all of those involved! Keep up the good work.

Scott A. Cesarz, CPG-10600

The 1st quarter AIPG section meeting was held on March 1, 2007, in Lansing, Michigan. The distinguished speakers were Patty Brandt, Michael Wilczynski and Steven Hoin of the MDEQ, whose presentation was titled "Proposed RRD Operational Memorandum No. 4 (Attachment 10) - Groundwater Not in an Aquifer (GWNIAA).

Op Memo No. 4 will replace STD Op Memo No. 11, dated August 25, 1997.

The presentation included an explanation of the new verses old guidance and case studies on when GWNIAA was and was not appropriate. The MDEQ will be accepting comments to the memorandum for a period of 90 days. This was an excellent presentation and a timely topic.

Educational Advancement Award

The AIPG Michigan section presented the 2006 Educational Advancement Award worth $1,000 to the Forest Hills Central Middle School, Ada, Michigan at the March Section meeting. Forest Hills Central Middle School will be using the award to purchase educational supplies for their earth science classes. Accepting on behalf of Forest Hills was Ms. Susan Tolbert.

Tyrone J. Black, CPG-06103

Minnesota Section

The Minnesota section has been holding monthly meetings. Topics include "Reserve Mining Scrapyard Cleanup Silver Bay, Minnesota", presented by Barb Gnabasik, MPCA. "Paleoecology of Shallow Lakes in the Prairie Pothole Region of Minnesota: Preliminary Geochemical Results", presented by Kevin Theissen, University of St. Thomas. "MPCA's Ambient Ground Water Sampling Activities", presented by Dr. Mindy Erickson, MPCA.

Northeast Section

This year's spring meeting will celebrate the 20th anniversary of the Northeast Section's Angelo Tagliacozzo, CPG-02630, Memorial Geological Scholarship program, which since 1986, has awarded over $60,000 to 100 students from colleges throughout the Northeast Section. The meeting will be held on May 16, 2007, at the Chart House Restaurant in Weehawken, NJ.

South Dakota Section

Fred Steece Receives 2007 J. P. Gries Geologist of the Year Award

The South Dakota Section of the AIPG announced that Fred Steece has been named the 2007 J. P. Gries Geologist of the Year. The award is given each year by the Section in memory of Dr. John Paul Gries, a long-time professor of Geology at the South Dakota School of Mines and Technology (SDSM&T). On March 20, 2007, the award was presented to Fred Steece for his many contributions to furthering the understanding of the state's geology and development of its natural resources.

Fred Steece is shown pictured here receiving a certificate commemorating the award from Tom Durkin of SDSM&T, Past President of the South Dakota Section of AIPG.

Fred Steece began his professional career as a geologist by obtaining both Bachelors and Masters Degrees in geology from the University of South Dakota. He started working for the South Dakota Geological Survey in Vermillion as a field assistant in 1951. He was hired as

a full time geologist in 1957 and worked his way up to Assistant State Geologist in 1972. During his years with the SD Geological Survey, he conducted numerous investigations and authored many papers on the state's geology. Fred moved to Rapid City in the late 1960s to work on geologic issues in western South Dakota and to carry out the State Geologist's responsibilities under state law for oil and gas regulation. He also served as an adjunct professor at SDSM&T where he taught and mentored many young prospective geologists. Fred has been the Oil and Gas Supervisor with the South Dakota Department of Environment and Natural Resources (DENR) for over twenty years. Since 1982, he has been the Governor's official representative to the Interstate Oil and Gas Compact Commission. He has played an instrumental role in promoting the development of the state's oil and gas resources while balancing development with environmental values. Fred Steece has been a public servant of the State of South Dakota for over 55 years and continues to be a resource of geologic information to the public, to industry, and to government.

Members in attendance at the March 14, 2007 Annual Luncheon Meeting in Pierre, South Dakota.

IOGCC Report: U.S. Petroleum Industry Sees Increase in Qualified Professionals

Oklahoma City – North Dakota Gov. John Hoeven reported an encouraging increase in the number of qualified petroleum professionals in a recent report published by the Interstate Oil and Gas Compact Commission (IOGCC). "Blue Ribbon Task Force: A Follow Up Report" updates the results of a task force created by Hoeven in 2001 to investigate the shrinking numbers of domestic petroleum professional (geologists, engineers and geophysicists). Following their analysis, the task force provided recommendations for the federal government, state governments, academia, industry and non-governmental organizations to collaborate on an unprecedented scale to combat the problem. "This report seeks to shine a light on the current state of the recommendations toward a more robust public and private partnership, and the work that must still be addressed to sustain and strengthen the domestic industry," said Hoeven, IOGCC's current chairman. "The progress is encouraging."

Enrollments in petroleum-related majors at America's colleges and universities that had been shrinking for many years have increased. According to the updated report, the number of bachelor's degrees awarded in petroleum engineering has grown from 260 in 2000 to 322 in 2005, while the number of geology degrees awarded has fallen slightly from nearly 3,500 in 2000 to 3,300 in 2004. In addition, the task force recommendations for establishing internships, scholarships and other programs designed to attract young people to petroleum careers have taken root in all sectors. "Oil and gas resources found domestically continue to be the key to the nation's energy and national security," said Christine Hansen, IOGCC executive director. "Without qualified petroleum professionals to fill open positions, these valuable resources may not be fully maximized." (This article is a release from the Interstate Oil & Gas Compact Commission.)

In Memory

A highly respected and internationally recognized ground water expert, **Kenneth A. Lovelace, Jr.**, CPG-06289, died suddenly at the age of 56.

Ken grew up in Mountain View California. He attended Foothills Community College where he developed his life-changing, life-long love of geology. In 1973 he earned his B.S. in Geology from the University of California Davis. After a semester at UC San Diego, he began his career at Bechtel San Francisco working as Field Geotechnical Engineer on the construction of the Trans-Alaska Pipeline. After completing his Masters at Colorado State University in 1980, he worked briefly for Converse Consultants in Seattle before returning to Alaska as Sr. Civil Engineer for Alyeska Pipeline Service Company where he was responsible for geotechnical, geologic, and hydrologic investigations and designs. In 1989 he made the life changing decision to serve in the Peace Corps Morocco village water program. Upon his return to the United States in 1991, he began working for the US Environmental Protection Agency Superfund Program writing national ground water cleanup policy. For the past fifteen years he had been The National Expert on Cleanup of Contaminated Ground Water.

Ken was a Certified Professional Geological Scientist and Professional Engineer. He was a member of the American Institute of Professional Geologists, the Association of Engineering Geologists, the American Society of Civil Engineers, the Association of Ground Water Well Association, and the National Ground Water Association.

This very fine man made and kept friends from every period of his life. He labored to heal the earth.

Surviving are his wife of 22 years, Patricia Corbett of Fredericksburg and his mother and brothers of Santa Clara, California.

IN MEMORY

Robert H. Barnes
CPG-06565
Member Since 1984
April, 2007
Nashville, Tennessee

Richard N. Foster
MEM-0285
Member Since 2003
Westborough, Massachusetts

Kenneth A. Lovelace
CPG-06289
Member Since 1983
August 10, 2006
Fredericksburg, Virginia

Charles J. Worrel
CPG-01825
Member Since 1968
September 4, 2006
San Antonio, Texas

Scientists Analyze Corn to Map North American Carbon Dioxide

WASHINGTON - Scientists have developed a novel way of mapping carbon dioxide levels in various parts of North America, by analyzing corn grown in those regions. Diana Hsueh at the University of California, Irvine, and colleagues collected corn from nearly 70 locations in the United States and Canada. They found that the Ohio Valley and California had the most fossil-fuel-emitted carbon dioxide, while the Colorado region had the least.

This method of measuring carbon dioxide produced by burning fossil fuels, such as coal, oil, and natural gas, can help atmospheric scientists better understand where carbon dioxide, a greenhouse gas, is located and how it mixes and moves in the air. Plants, the researchers say, provide a cost-effective way to record average daytime conditions over several months, as they take in carbon dioxide gas during photosynthesis, and it becomes part of the plant tissue. Their report will be published 23 January in Geophysical Research Letters, a journal of the American Geophysical Union.

The scientists chose corn, because it is widely grown and, as an annual plant, all of its carbon is derived from a single growing season.

They avoided pollution point sources, such as highways and power plants, to allow for mapping of regional patterns across various states and provinces.

In the laboratory, they dried samples of corn leaves and husks and chemically converted them into graphite. They then analyzed the graphite in a mass spectrometer, which measured levels of radiocarbon, a rare isotope of carbon.

Carbon dioxide derived from fossil fuels contains no radiocarbon, so it is easily distinguishable from other sources. With measurements from the mass spectrometer, the scientists calculated overall levels of carbon dioxide produced by fossil fuels at the locations where the corn samples were collected.

The scientists had expected carbon dioxide from California and other western coastal states to drift eastward, but they found that the Rocky Mountains appeared to provide a barrier. Air in the Mountain West, including Colorado, Idaho, and New Mexico, had the lowest carbon dioxide, about 370 parts per million. Air in the Eastern United States, which includes Massachusetts, New Hampshire, and New York, contained an additional 2.7 parts per million of carbon dioxide from fossil fuel sources. Air in Maryland, Ohio, Pennsylvania, and West Virginia had nearly twice as much additional carbon dioxide from fossil fuels, 4.3 parts per million.

"Many nations are facing increasing pressure to monitor and regulate the release of carbon dioxide from fossil fuel sources to limit greenhouse gas warming," said James Randerson, a co-author of the study. "This method can help determine how much fossil fuel carbon dioxide is coming from different regions."

"We have to better understand emission patterns and changes in the atmosphere in order to better regulate fossil fuels," said Susan Trumbore, another co-author of the study. "This is a direct way to measure the release of carbon dioxide emissions that are contributing to climate warming."

The research was funded by the National Science Foundation and NASA.

American Geophysical Union
University of California, Irvine
AGU Release No. 07-02
(202) 777-7507

AIPG 2007 Annual Meeting October 8-11
Geology: The Foundation for the Environment and Resources

Yes, M!ch!gan!

Program

Saturday, October 6, 2007	
7:00 am - 6:00 pm	Registration Booth Open
7:30 am - 5:30 pm	Mackinac Island Field Trip
3:00 pm - 6:00 pm	Hospitality Suite Open
Sunday, October 7, 2007	
7:00 am - 6:00 pm	Registration Booth Open
7:00 am - 6:00 pm	Hospitality Suite Open
9:00 am - 4:00 pm	AIPG Executive Committee Meeting
12:30 pm - 4:30 pm	GTR Spa Package
5:00 pm - 9:00 pm	Icebreaker - Exhibit Area Open
Monday, October 8, 2007	
7:00 am - 6:00 pm	Registration Booth Open
7:00 am - 6:00 pm	Hospitality Suite Open
7:00 am - 8:00 am	Speakers Breakfast
7:00 am - 8:00 am	Women in AIPG Breakfast
8:00 am - 9:30 am	Past Presidents Breakfast
8:00 am - 12:00 pm	Advisory Board Meeting
8:00 am - 5:00 pm	Exhibits Open
9:00 am - 4:00 pm	Geology and Geologic Resources of the Michigan Basin Short Course
10:00 am - 12:00 pm	Keynote Address and Morning Technical Sessions
10:00 am - 4:30 pm	Old Mission Lighthouse and Winery Tour
12:00 pm - 1:30 pm	Foundation Lunch
1:00 pm - 4:00 pm	Joint Executive Committee Meeting
1:00 pm - 4:00 pm	Monitoring Groundwater Quality Using Low-Flow Sampling Techniques Short Course
1:00 pm - 5:00 pm	Student Interviews
6:00 pm - 9:00 pm	Evening at the Dennos Museum
Tuesday, October 9, 2007	
7:00 am - 6:00 pm	Registration Booth Open
7:00 am - 6:00 pm	Hospitality Suite Open
7:00 am - 8:00 am	Speakers Breakfast
7:00 am - 8:30 am	Business Breakfast
7:30 am - 5:30 pm	Limestone Quarries and Fossil Collecting Field Trip
8:00 am - 12:00 pm	Exhibits Open
9:00 am - 12:00 pm	Morning Technical Sessions
9:00 am - 4:00 pm	Glacial Geology of Michigan Short Course
9:00 am - 4:00 pm	Leelanau Club Golf Scramble
10:00 am - 4:00 pm	Grass River Natural Area Tour
1:00 pm - 5:00 pm	Student Interviews
6:00 pm - 9:00 pm	Awards Reception and Banquet
Wednesday, October 10, 2007	
7:00 am - 6:00 pm	Registration Booth Open
7:00 am - 6:00 pm	Hospitality Suite Open
7:00 am - 8:00 am	Speakers Breakfast
7:30 am - 5:30 pm	Glacial Geology/Sleeping Bear Sand Dunes Field Trip
8:00 am - 5:00 pm	Practical Professional Ethics Short Course
8:00 am - 5:00 pm	Exploration for and Mining of Metals with Emphasis on Michigan's Upper Peninsula Short Course
9:00 am - 12:00 pm	Morning Technical Sessions
10:00 am - 5:30 pm	Leelanau Peninsula Winery Tour
Thursday, October 11, 2007	
7:00 am - 6:00 pm	Hospitality Suite Open
7:00 am Thursday - 5:30 pm Friday	Tilden/Empire Mine Two Day Field Trip

AIPG 2007 Annual Meeting
Traverse City, Michigan
October 7-11, 2007

Visit Michigan's website at http://mi.aipg.org/ for the latest information on the Annual Meeting and to view a listing of Sponsors and Exhibitors.

2007 NATIONAL AIPG MEETING REGISTRATION FORM

NAME (Last) (First) (Middle Initial)	NAME FOR BADGE	Meeting Status	
		Speaker	
COMPANY/INSTITUTION	CPG or MEMBERSHIP NO.	Exhibitor	
		Session Chair	
ADDRESS		Exec. Comm.	
		Membership	
		CPG	
CITY, STATE, ZIP CODE	COUNTRY	Member	
		Student	
PHONE	E-MAIL ADDRESS	Past President	
***SPOUSE/GUEST NAME	NAME FOR BADGE		

Spouse/Guest Registration includes admission to Icebreaker and Exhibits

FEES AND PAYMENT INFORMATION

ANNUAL MEETING REGISTRATION	On or Before - 08/01/07	After 8/01/07	Amount
Full Registration (Member*)	$250.00	$300.00	
Full Registration (Non-Member)	$275.00	$325.00	
Daily Registration (Member*) ❑Sat ❑Sun ❑Mon ❑Tues ❑Wed	$75.00	$100.00	
Daily Registration (Non-Member) ❑Sat ❑Sun ❑Mon ❑Tues ❑Wed	$100.00	$125.00	
Spouse/Guest	$35.00	$35.00	
Student** (Full Registration)	$10.00	$20.00	
Daily Student Registration** Spec. Day(s)_____	$10.00	$20.00	

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

FIELD TRIPS	Before 8-1/After	No. Attending	Amount
Mackinac Island (Saturday, October 6, 7:30 AM – 5:30 PM)	$100.00/$110.00		
Limestone/Fossil Quarries, Charlevoix (Tuesday, October 9, 7:30 AM-5:30 PM)	$60.00/$70.00		
Sleeping Bear Dunes (Wednesday, October, 10, 7:30 AM-5:30 PM)	$60.00/$70.00		
Tilden/Empire Mine, Palmer (Thurs. & Fri., October 11 and 12)	$200.00/$225.00		
SHORT COURSES	Before 8-1/After	No. Attending	Amount
Geology and Natural Resources in MI Basin (Monday, October 8, 9:00 AM to 4:00 PM)	$75.00/$95.00		
Low-Flow Purging and Sampling (Monday, October 8, 1:00 PM to 4:00 PM)	$70.00/$85.00		
Glacial Geology Michigan: New Insights and Interpretations (Tuesday, October 9, 9:00AM to 4:00 PM)	$75.00/$95.00		
Practical Professional Ethics (Wednesday, October 10, 8:00 AM to 5:00 PM)	$150.00/$175.00		
Exploring/mining metals in MI Upper Peninsula (Wednesday, October 10, 8:00 AM to 5:00 PM)	$125.00/$140.00		
SOCIAL EVENTS	Unit Cost	No. Attending	Amount
Spa Package at Grand Traverse (Sunday, October 7)	$225.00/$250.00		
Women in AIPG Breakfast (Monday, October 8)	$20.00/$25.00		
Old Mission Lighthouse and Winery Tour (Monday, October 8)	$50.00/$60.00		
Social Banquet at Dennos Museum (Monday, October 8)	$65.00/$75.00		

Leelanau Golf Scramble (Tuesday, October 9)	**$45.00/$55.00**		
Grass River Natural Area and Fall Color Viewing (Tues., Oct. 9)	**$25.00/$35.00**		
Awards Reception and Banquet (Tuesday, October 9)	**$60.00/$70.00**		
Leelanau Peninsula Winery Tour (Wednesday, October 10)	**$50.00/$60.00**		
Take a Student to Dinner	**$60.00/$60.00**		
Ice Breaker (Sunday, October 7) **(Must Show Badge)**	**Complimentary**		
Speakers/Moderators Breakfast (Monday, Tuesday, or Wednesday, please specify)	**Complimentary**		
Business Breakfast (Tuesday, October 9)	**Complimentary**		
Foundation Trustees Lunch (Monday, October 8)	**Invitation Only**		
Past-Presidents Breakfast (Monday, October 8)	**Invitation Only**		
		TOTAL AMOUNT DUE	

National and Sectional Meetings	Attending
National Executive Committee Meeting (Sunday, Oct. 7)	yes / no
2007 Advisory Board Meeting (Monday, Oct. 8)	yes / no
2007/2008 Advisory Board Meeting (Monday, Oct. 8)	yes / no
2007-2008 Joint Executive Committee Meeting (Monday, Oct. 8)	yes / no

Notes

- The Field Trips and Short Courses are subject to cancellation due to lack of participation. Minimum numbers of participants must be reached by August 31, 2007.
- Registration fees for cancelled events will be refunded to registered attendees.
- Full Registration includes Ice Breaker, Technical Sessions, Exhibits, Business Breakfast 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

Wide Range of Geology Career Opportunities on Display at the Southeastern Section Meeting

In the world of science, it's usually pretty easy to identify geologists.

More often than not, they're the ones with the dirtiest hands.

Whether they're sifting through sand to measure the likelihood of saltwater intrusion into a coastal aquifer, or studying a mineral deposit to determine the possible location of a petroleum reservoir, geologists are not just of the earth – they're in it, too.

However, the ever-changing world and its endless parade of technological advances have forced these scientists to develop an even wider variety of skills.

Consequently, they have more career options than ever before.

The numerous job opportunities that exist for geology majors was one of the topics of discussion at the 56th Annual Meeting of the Southeastern Section of the Geological Society of America (GSA), which was hosted by Georgia Southern University on March 29th and 30th at the Hyatt Regency in Savannah.

"The career options for a geology major are as varied as the person's imagination," said Dallas Rhodes, the chair of the Department of Geology and Geography at Georgia Southern.

More than 700 scientists attended the Southeastern Section meeting providing an excellent sampling of the many job opportunities that are available to geology majors.

Representing eight states, they come from higher education, federal and state governmental agencies, and private business and industry. Their areas of expertise range from saltwater intrusion and industrial mineral resources, to meteorites and digital mapping.

According to Rhodes, most of today's geology graduates find work with environmental and engineering consulting businesses, oil and gas companies, the mining industry, local and state planning industries, the U.S. Geological Survey, and state geological surveys.

However, as Rhodes noted, the opportunities don't end there.

"Geologists are astronauts and park service rangers, and they work in law enforcement as forensic geologists, and in medicine linking environmental problems to health," he said. "I've even had students who took their undergraduate geology degrees and became environmental lawyers."

The Southeastern Section meeting was hosted by the University's Department of Geology and Geography and the Applied Coastal Research Laboratory at Georgia Southern.

One session at the meeting was devoted to the myriad job opportunities that exist for recent and future geology graduates. The session included individual papers that focused on:

- Complementary skills geology students can develop that will lead to a successful career
- Geology in environmental consulting - the Phase I environmental site assessment
- Geology employment opportunities with environmental and engineering consulting firms
- Geology employment opportunities with geotechnical consultants
- The role of the geologist in the lifecycle of a landfill
- Petroleum industry positions for geologists
- Geologic mapping: why and by whom

- The geologist's role in underground storage tank cleanups with a focus on site characterization and remediation
- Geology and the U.S. Army Corps of Engineers regulatory program
- Geology employment opportunities within state agencies
- Geologists and employment opportunities within the federal government
- Making geologists' skills more relevant in the workplace

The session was co-hosted by Ron Wallace, CPG-08153, who works for the Georgia Department of Natural Resources (DNR). He has been a geologist for three decades, and his job has taken him from the oil fields of Texas, to the waters of Alaska, to the shores of coastal Georgia.

Currently, Wallace works in the underground storage tank program for the Environmental Protection Division of the state DNR. With experience in both the public and private sectors, he knows that geologists have never been in greater demand.

"The employment outlook for future geology grads is very good," Wallace said. "My generation will be retiring in the near future, and all the numbers I have seen show that we do not have enough geology majors to replace us."

The favorable job market is a big selling point for geology programs like the one at Georgia Southern.

"No student who has graduated from our program in the last nine years has failed to find employment or opportunities for graduate education," Rhodes said.

To prepare them for rewarding careers, Georgia Southern's geology program gives students a chance to develop many of the field's most sought-after skills. Students can work with Geographical Information Systems (GIS), improve their computer skills and software knowledge, and gain experience in writing reports and making oral presentations.

Along the way, geology students at Georgia Southern can gain field experience that ranges from conducting research in the coastal plains of southeast Georgia to going on expeditions as far away as California, Hawaii and Ecuador.

"We have a faculty of fine scientists and gifted teachers," Rhodes said. "Our students are drilled in critical thinking, problem-solving and communicating their findings, and they have plenty of opportunities to become involved with our faculty's research projects.

"After graduating from such a thorough program, the career options for our students depend entirely on the individual's interests."

For more information on the Southeastern Section meeting, visit http://www.geosociety.org/sectdiv/southe/07semtg.htm or call Georgia Southern's Department of Geology and Geography at (912) 681-5361.

SCIENCE IN THE NEWS

from Sigma Xi, The Scientific Research Society

Icy Map to Probe Europa's Secrets from BBC News Online

Scientists have produced a global geological map of Jupiter's moon Europa, which has been proposed as a destination for a future space mission.

Interest in Europa has been fuelled by indications that a liquid water ocean lurks beneath its outer shell of ice.

The mapping effort will help build a geological history of the enigmatic moon and target future explorations. A team at Arizona State University compiled the maps from data sent back by the US-European Galileo probe.

Galileo explored the Jupiter system from 1995 to 2003. The work was presented here at the Lunar and Planetary Science Conference in Houston.

The maps have allowed the scientists to identify several distinct geological units on Europa. Understanding the distribution and age relationships of these units can assist the reconstruction of a geological history for the moon.

To read more: http://news.bbc.co.uk/2/hi/science/nature/6454039.stm Or: http://tinyurl.com/38qzq7

World's Longest Underground River Discovered in Mexico

Divers exploring a maze of underwater caves on Mexico's Yucatan Peninsula have identified what may be the longest underground river in the world.

The waterway twists and turns for 95 miles (153 kilometers) through the region's limestone caverns, said British diver Stephen Bogaerts, who made the discovery with German colleague Robbie Schmittner.

In a straight line, the system would span about six miles (ten kilometers) of land. Bogaerts and Schmittner spent four years exploring using underwater scooters and specially rigged gas tanks to find a connection between the Yucatan region's second and third longest cave systems, known respectively as Sac Actun and Nohoch Nah Chich.

To read more: http://news.nationalgeographic.com/news/2007/03/070305-cave-river.html Or: http://tinyurl.com/266qlb

Kilimanjaro's Ice Set to Linger

A fresh assessment suggests the famous ice fields on Africa's tallest mountain will be around for decades yet. Recent concerns that climate warming would rob Mount Kilimanjaro of all its glaciers within 20 years are overly pessimistic, say Austrian scientists.

Their weather station data and modelling work indicate the tropical ice should last well beyond 2040. Precipitation and not temperature is the key to the white peak's future, the University of Innsbruck-led team says.

"About five years ago Kilimanjaro was being used as an icon for global warming. We know now that this was far too simplistic a view," said Thomas Moelg. "We have done different kinds of modelling and we expect the plateau glaciers to be gone roughly within 30 or 40 years from now, but we have a certain expectation that the slope glaciers may last longer," added colleague Georg Kaser.

To read more: http://news.bbc.co.uk/2/hi/science/nature/6561527.stm Or: http://tinyurl.com/3cgsf2

AGI Announces P. Patrick Leahy as New Executive Director

The American Geological Institute (AGI) is pleased to announce the appointment of **Dr. P. Patrick Leahy,** CPG-10507, as Executive Director.

Dr. Leahy has been with the U.S. Geological Survey (USGS) since 1974 and is currently Associate Director for Geology. In his role at the USGS, he gained a broad perspective of the geosciences, ranging from hydrology, geologic mapping, natural hazards, land use, climate change and energy and mineral resource assessment. He was responsible for Federal basic earth science programs, which include worldwide earthquake hazards monitoring and research, geologic mapping of land and seafloor resources, volcano and landslide hazards. He also coordinated all international activities conducted by the U.S. Geological Survey. Dr. Leahy also served as USGS Acting Director and the Chair of the Interagency Civil Applications Committee from June 2005 to October 2006.

Dr. Leahy is a native of Troy, New York and has undergraduate and graduate degrees in geology (1968) and geophysics (1970) from Boston College. He received his doctorate in geology (1979) from Rensselaer Polytechnic Institute where he specialized in regional groundwater studies and hydraulics.

Dr. Leahy is active in a number of AGI member societies, including as a Fellow in the Geological Society of America, former President of the American Institute of Hydrology, a member of the American Geophysical Union and former President of the U.S. National Chapter of the International Association of Hydrogeologists. He has also been active in other scientific organizations such as Sigma XI, American Association for the Advancement of Science, a member of the AGI Member Society Council, and the Geological Society of Washington.

AGI President Gail Ashley said that the Executive Committee unanimously approved the appointment of Dr. Leahy and that "we are very pleased to have Dr. Leahy lead AGI into the future. Pat brings his broad geologic perspective to AGI gained over the years working with government agencies, state geologists and the private sector. He is a well-respected member of the profession and his strong leadership experience complements the healthy and vigorous state AGI is in today. We have high hopes for his and AGI's continued success in his new position."

Dr. Leahy will assume his new position on May 2, 2007. Dr. Leahy and his wife Cathy reside in Reston, Virginia and have 3 grown children. A brief biography and press photo are available at http://www.agiweb.org/news/leahy.html. He succeeds Dr. Marcus E. Milling as Executive Director, who passed away on October 17, 2006.

Dr. William L. Fisher to Receive Marcus Milling Legendary Geoscientist Medal

The American Geological Institute (AGI) is pleased to announce **Dr. William L. Fisher,** CPG-02398, as the recipient of the 2007 Marcus Milling Legendary Geoscientist Medal. Established in 1999, the award is presented to a geoscientist who has demonstrated a long history of scientific achievement and exceptional service to the geoscience profession.

Dr. Fisher received his B.S. in geology from Southern Illinois University in 1954 and both his M.A. and Ph.D. in geology from the University of Kansas in 1958 and 1961 respectively. He has been the recipient of Honorary Doctorates from Southern Illinois University and the Colorado School of Mines.

Since earning his degrees, Dr. Fisher has contributed greatly to the geoscience community. He is the Leonidas T. Barrow Chair and Professor in the Department of Geological Sciences of the Jackson School of Geosciences at the University of Texas at Austin. Previously, he served as the Inaugural Dean and the first Director of the John A. and Katherine G. Jackson School of Geosciences, a school he was instrumental in founding as well as securing its substantial endowment. He is a former long-time director of the Bureau of Economic Geology, former chairman of the Department of Geological Sciences and former director of the Geology Foundation. He has published more than 340 articles, reports, and books and during his tenure has supervised or co-supervised more than 100 graduate students.

Furthermore, he has held many leadership roles including serving as president of the American Association of Petroleum Geologists (1985-1986), the American Geological Institute (1990-1991), the American Institute of Professional Geologists (1993), and the Association of American State Geologists (1981-1982). Dr. Fisher has an exceptional record of public service, including as an advisor to many local and federal officials as he is a member of the National Petroleum Council a former member the Commission on Geoscience, Environment, and Resources of the National Research Council, Assistant Secretary of Energy and Minerals in Interior, and was a member of the White House Science Council. He is also a member of the National Academy of Engineering and a founding member of the Academy of Medicine, Engineering and Science of Texas.

Apart from the Marcus Milling Legendary Geoscientist Medal, Dr. Fisher has previously received a Presidential Citation from the University of Texas (2002), the Don R. Boyd Medal (2002) from the Gulf Coast Association of Geological Societies, the William H. Twenhofel Medal (2001) from SEPM, the Sidney Powers Medal (1994) from AAPG, the Ben F. Parker Medal (1996) from AIPG, the Ian Campbell Medal (1991) from AGI, and the Hollis D. Hedberg Medal (1991) from the Institute for the Study of Earth and Man.

Dr. Fisher's constant commitment and dedication to promoting the earth sciences through his work have made him extremely deserving of the Marcus Milling Legendary Geoscientist Medal.

Professional Announcement

Dave Palmerton, CPG-08173, of The Palmerton Group, LLC, has opened an office in Buffalo, New York at 595 Commerce Drive. Company president, David Palmerton reports that the Buffalo office will support site assessment work being performed for several clients in the Buffalo area. James R. Fitch and Matthew H. Hoskins were recently hired as Senior Geologist and Geologist for Palmerton Group's Syracuse, New York office. Mr. Fitch will be managing the closure of oil wells and abandoned oil pipelines for Shell Oil Company and Mr. Hoskins will be managing environmental assessments for clients in the Central New York region.

Professional Announcement

Barney P. Popkin, CPG-06547, Cal PG & REA, CHMM, CPSSc, EFG, for the past 2 ½ years has been providing environmental procedures and environmentally sound design training and project monitoring and evaluation services to Missions in over 20 countries in Asia and the Near East since his return from managing environmental issues under the Restore Iraqi Oil program and restarting halophyte farming and mangrove forests in coastal Sonora, Mexico. During this time, he evaluated over 600 projects worth over $30 billion in life-of-project funding under the U.S. Foreign Assistance Act's environmental procedures (22 CFR 216). Barney plans to conduct invited seminars on Water-Resources Challenges in Developing Countries at the University of Arizona/Tucson in April and the State University of New York/Albany in May. He has also started a film festival for films of international development interest at the Ronald Reagan Building in Washington, DC, including such films as *The Beauty Academy of Kabul, The World According to Sesame Street, Jordan's Water Crisis: A Race Against Time,* and *Kakenya's Against All Odds.*

CALL FOR PAPERS

The American Institute of Professional Geologists
Michigan Section

AIPG 44th ANNUAL MEETING
TRAVERSE CITY, MICHIGAN
OCTOBER 7 - 11, 2007

You are cordially invited to attend the 44th Annual Meeting of the American Institute of Professional Geologists hosted by the Michigan Section of AIPG in Traverse City, Michigan, October 7 - 11, 2007. The theme of this year's meeting is "**Geology: The Foundation for the Environment and Resources**."

The 2007 meeting not only incorporates our goal of highlighting the role of geology in defining, protecting, and sustaining our environment and its resources, but also offers a forum to provide opportunities for reporting on regional geologic studies pertaining to a variety of topics. Such topics include energy and mineral resources, stratigraphy, sedimentology, paleontology, structural geology, basin analysis, and geophysics in any of the diverse geologic regions of North America. The Michigan Basin is famous for the Great Lakes, a rich mining history, unique minerals, petroleum resources, Paleozoic fossils, Quaternary glacial deposits, sensitive dune and aquatic environments, and some of the oldest macroscopic fossils in the world. All of these areas provide many opportunities for thoroughly interesting study.

In addition to technical presentations, there will be a forum for AIPG's core issues concerning ethics, public policy, licensure, and legislation. The Technical Program Committee encourages you to participate in this informative meeting by contributing a written abstract for an oral or poster presentation.

We will consider abstracts of up to 250 words for all papers related to the general meeting theme, to an area of geologic study, or to AIPG's core issues. The deadline for submitting an abstract is **July 30, 2007**.

To submit or discuss abstracts, contact:
Eric E. Wallis, CPG - Technical Program Chair
Ewallis@Comcast.net

Robert G. Font, CPG-03953

Questions:

1. The maximum size particle a stream can carry defines its:
   a) capacity
   b) competence
   c) base level

2. This igneous rock has an aphanitic texture and contains more than 10% quartz. Plagioclase feldspar is dominant over potassium feldspar. Ferromagnesians such as hornblende and pyroxene are also present. What is it?
   a) Syenite
   b) Dunite
   c) Dacite

3. As you walk an outcrop you discover plentiful specimens of "Eurypterids." What can you say about the age of these rocks?
   a) Devonian – Triassic
   b) Cambrian-Permian
   c) Silurian-Jurassic

4. A strength test is conducted on a clay sample in the lab until it fails along a shear fracture. The major principal stress P_1 = 4.8 kg/cm^2, the minor principal stress P_3 = 2.0 kg/cm^2, the angle θ between the fracture plane and the P_3 direction is θ = 57°, the cohesive strength "C" is determined to be C = 0.80 kg/cm^2, the angle of internal friction Ø is recorded as Ø = 24° and the pore water pressure μ = 1.80 kg/cm^2. What then is the effective normal stress (P_n') that acts along the failure plane?
   a) 6.05 kg/cm^2
   b) 0.44 kg/cm^2
   c) 1.03 kg/cm^2

5. In reference to the geologic time scale, the term "Aptian" refers to a:
   a) stage
   b) epoch
   c) period

Answers on Page 44

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
Founded 2005
Chapter Sponsor:
Ronald Wallace, CPG-08153

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SCIENCE IN THE NEWS

from Sigma Xi, The Scientific Research Society

St. Helens an 'Open System' from the Boston Globe (Registration Required)

VANCOUVER, Washington—Mount St. Helens may be following the example of Kilauea in Hawaii with magma being replaced from a reservoir beneath the volcano as fast as it emerges as lava at the surface, scientists say.

While the two volcanoes are different in many respects, St. Helens appears to have become an "open system" as its domebuilding eruption that began in the fall of 2004 continues at a pace that has been unchanged for the past year, said Daniel Dzurisin, a geologist at the U.S. Geological Survey's Cascades Volcano Observatory.

Analyzing of digital elevation models made from high-resolution aerial photographs, scientists have kept close tabs on the rate at which lava has been pushing into the crater. At first it was about a dumptruck load, roughly 8 cubic yards, per second.

To read more: http://www.boston.com/news/science/articles/2007/03/26/geologist_st_helens_an_open_system/

Or: http://tinyurl.com/3cs44h

Dinosaur Den Diggers Discovered from BBC News Online

The fossil remains of small dinosaurs that burrowed into the ground have been found by scientists in Montana, US. The 95-million-year-old bones are from an adult and two juveniles and were unearthed in a chamber at the end of a 2.1m-long sediment-filled tunnel.

The researchers say the discovery is the first definitive evidence that some dinosaurs dug dens and cared for their young in such structures.

Details are reported in the journal Proceedings of the Royal Society B.

"Burrowing also represents a mechanism by which small dinosaurs may have exploited the extreme environments of polar latitudes, deserts and high mountain areas," Dr David Varricchio and colleagues tell the publication.

To read more: http://news.bbc.co.uk/2/hi/sc ience/nature/6472579.stm

Or: http://tinyurl.com/2ktu8b

AGI Announces Earth Science Week 2007 Theme

Alexandria, VA - The American Geological Institute (AGI) is pleased to announce the Earth Science Week 2007 theme: "The Pulse of Earth Science."

Being held October 14-20, Earth Science Week 2007 will promote public and professional awareness of the status of earth science in education and society.

This year marks the tenth annual Earth Science Week. Ann E. Benbow, Ph.D., AGI Director of Education and Outreach, says: "After a decade of promoting awareness of the geosciences, now is the perfect time to 'take the pulse' of earth science. We'll take stock of recent advances and declines in earth science education nationwide, and provide the tools for the professional geoscience community to participate in state-by-state data collection. We will also be highlighting several international research and outreach efforts in the geosciences."

This year also marks the start of the International Polar Year (IPY) and the International Year of Planet Earth (IYPE), of which AGI is a Founding Partner. These two major initiatives will generate geoscience research and awareness integral to earth science's impact on society, making it central to this year's Earth Science Week. In addition to IPY and IYPE, Earth Science Week will coincide with the International Heliophysical Year (IHY) and the International Electronic Geophysical Year (eGY).

AGI hosts Earth Science Week annually in cooperation with its sponsors as a service to the public and the geoscience community. Each year, local groups, educators, and interested individuals organize celebratory events.

Earth Science Week offers the public opportunities to discover the earth sciences and engage in responsible stewardship of the Earth. Earth Science Week is supported by the U.S. Geological Survey, the AAPG Foundation, and other geoscience organizations.

To learn more about this week, ways to become involved, and to link to related international science years, please go to the Earth Science Week website at http://www.earthsciweek.org.

What Has AIPG Done for Me?

John L. Bognar, CPG-08341, Saint Louis, Missouri

In my 28th year as a professional geologist, I reflect back on my personal involvement with AIPG and the high honor it has brought to me; the opportunity as a candidate for President-Elect. I became a CPG some 15 years ago after I shifted my profession from a gulf coast offshore petroleum geologist to the environmental industry. Wow, was that a shock and a rude awakening. I found myself in the exigent place of being supervised regarding my duties as a geologist by people who were not geologists and further, most of whom knew nothing of geology. Dumbfounded and realizing this was not at all a good situation, I felt as though becoming credentialed would provide a basis for respect of my profession in this new industry. In my research for credentials, I found the AIPG. I received the certification "CPG" in 1991 and since I have learned what it symbolizes.

To me personally, the CPG title indeed provided a basis for renewed respect for my profession and my place within our geologic community. Frankly, I admit that I only selfishly stumbled upon this community of stalwart professional geologists, enthusiastic to provide what we need as professionals. In AIPG, I found professional geologist role models, I found advice and direction from impromptu mentors, I found others willing to do battle for our profession, I found geologists who are accustomed to giving their personal time and financial resources for the betterment of our profession and most of all, I found fellowship in the population of AIPG. While making contacts in AIPG, I also found my day job of managing a profit center for the nation's first and most senior groundwater consulting firm. AIPG has done quite a bit for me.

From the moment of my dubious entry into AIPG I found interaction with other CPGs was a catalyst to set myself in motion. In a very short period, I became the President-Elect of the Missouri Section at a time when Missouri geologists were preparing a geologist registration act. As an AIPG local section officer, I along with many other CPGs engaged myself into that endeavor. Fortunately, the Geologist Registration Act was passed and signed, first time through. Talk about fun; the AIPG Missouri Section was a vehicle for this rather enormous political success. Since then, I have had many wonderful opportunities to remain involved in the Missouri Section, serving as the President for a term, on various committees, helping a bit with the AIPG annual national meeting in St. Louis, and dealing in a variety of state level legislative matters. Two years ago, I was appointed by Governor Matt Blunt to the Missouri Board of Registered Geologists where I now serve as Chairman. My AIPG experiences prepared me for that role. AIPG has done quite a bit for me.

I was presented with the occasion to serve AIPG at the national level when elected to the Secretary position in 1998 and 1999, and again in 2005 and 2006 it was my honor to serve as the Treasurer. Those four years on the National Executive Committee gave to me through the vehicles of observation and osmosis, skills I deem valuable to my career. AIPG gave to me, the opportunity to work among robust professionals, to learn how to build harmony in an executive board setting and how to participate in debate among geologists of varied geographical, industry and academic backgrounds, where diverse opinions abound. AIPG has done quite a bit for me.

As always the profession of geology has many issues to face. That is precisely why AIPG is a much needed and important institution. Even so, some believe the AIPG is not relevant in the wake of state licensure. That opinion is abominable, but understandable. Why understandable? — It takes a conscious effort on the part of the individual member to see what AIPG does for that member. While the Institute has done an OK job of preaching to the choir about the benefits of AIPG, that effort does not seem to sway our way many fence-sitters considering resignation in the wake of licensure. If our membership generally speaking, does not fully realize what AIPG does, how can we expect other geologists to join our ranks? If elected, one contribution I would bring to AIPG in addition to presiding over the already busy agenda, is a plan to send the message clearly—This is what AIPG does for you. I believe we must promulgate the message to our own members and members yet to be. Our message would be part of a campaign to maintain the roles and augment our numbers by proselytizing.

A great tool to look out for the Institute's future is the 5 year strategic plan. Most recent Past President Larry Weber worked hard during his tenure to update the strategic plan which had not been revised in some time. Larry's vigorous work on the strategic plan provided the Executive Committee and the membership a looking glass from which to see ourselves. I would like to build on the legacy of Past President Weber by creating a team to look at our 5 year strategic plan, each and every year, with a revision draft presented at the annual meeting.

Current President-Elect Daniel St. Germain has developed a mantra to which we all should pay heed. "What are we going to be when we grow up?" I believe President-Elect St. Germain's efforts this year and during the year of his presidency will require follow-up. It is my desire to continue on with Dan's important work to look at the value of the CPG certification, core academic requirements and whether or not to test, to mention a few.

I am humbled by this opportunity presented to me by the AIPG. If elected, you have my assurance that my efforts will be complete and I ask you for your vote.

Candidate for AIPG National President-Elect

Mark W. Rogers, CPG-08926, Mililani, Hawaii

I am honored to be nominated for the position of National President for 2008. I have served the AIPG at both the National and State levels for the past 10 years. From 2006-2007, I served on the National Executive Committee as Secretary. I also served on several AIPG committees from 2004-2005, which included the CPG Practicality Committee. From 1997 to 2003, I kept in close contact with the Executive Committee through my involvement as Section President for Alaska and Hawaii. This year, I lead a group of dedicated CPG's and Hawaii State Representatives in preparing legislative resolutions for re-establishing the State Geological Survey and State geological registration.

It would be an honor and privilege to continue serving AIPG on the National Executive Committee as President, and if elected, intend to promote continuing efforts in the following programs.

Promote increased CPG value and practicality: I have worked with the CPG Practicality Committee to prepare a questionnaire for distribution to the general membership. My goal would be to help the National Executive Committee bring value to the CPG title as measure of high competence, integrity and ethical conduct. To this end, I support promoting the profession of geology and the critical roles geologist play in the society by increasing public awareness in environmental hazards, educated land planning and development, construction materials, exploration and mining activities, and the responsible development of earth resources for alternative and /or renewable energy. Continuing efforts I started in Alaska, currently working with the Hawaii State Legislature to establish geology registration for geologists and hydrologists in all arenas (i.e., private and commercial, public, and other government agencies). This work will continue to the local government agencies towards establishing mutually acceptable terms for all entities to recognize the CPG designation as valid as any other PG / RG designation provided by various regulatory (EPA, Hawaii Department of Health) and DoD agencies (US Navy, US Army Corps of Engineers, US Air Force) and build a "bridge" for reciprocation between states.

Promote increased participation in the CPD program: I support increased participation in the CPD program by working to make the process more "user friendly" and providing more available resources to the membership (i.e., college out-reach, and on-line seminars / short courses for CEUs). I am working with the National Executive Committee and local universities (i.e., University of Hawaii-Manoa) to bring local membership more CPD programs that were once only available on the US west coast and other states.

Increased membership: I support the continued use of the member and student categories as a means to bring in new members to AIPG. The member category is an excellent way for those geoscientists to continue their professional development until such time that they qualify for CPG status. Additionally, I encourage continued development of student sections at the university level and promotion of earth science / geologic hazards awareness at the lower age groups (middle / high school levels). As CPGs, we provide a very valuable network resource for university students as interns or for those venturing out into the job market. The National Executive Committee has performed well on the programs noted above and my goal is to continue the momentum. As president, I will strive to preside at all meetings of the Institute and of the Executive Committee, and shall perform the duties customary to the office. As President, I would be honored to act as the official spokesperson for and of the Institute, and may authorize others to speak on behalf of the Institute. To fulfill my duties as President, I will appoint all committees and boards of any type and their chairs. Additionally, I will continue to be an active member of the Executive Committee, promote membership, and participate in AIPG activities. I would appreciate your support and vote to assist in accomplishing my stated goals.

Thank you.

START AN AIPG STUDENT CHAPTER TODAY!

AIPG STUDENT CHAPTER MANUAL
www.aipg.org

The AIPG Student Chapter Manual is available on the AIPG National Website at www.aipg.org or contact National Headquarters at (303) 412-6205.

Candidate for AIPG National Vice President

John W. Hofer, CPG-10341, Oak Ridge, Tennessee

I feel very honored to be nominated for the office of National Vice President for 2008. Relatively few individuals have the chance to participate in a leadership role of a national organization, and I am truly appreciative of this opportunity. The role of the National Vice President is to be the liaison between the National Executive Committee and the Sections. If elected, I will do my best to keep open the lines of communication between the Sections and Headquarters and try new ideas to facilitate that communication.

My involvement at the national level has included participation on Past President Robert Font's CPG Practicality Committee in 2004–2005 and attending the advisory board meetings as the Tennessee representative at the 2004 and 2006 Annual Meetings. Attending the advisory board gave me a glimpse of the inner workings of the Institute. Participation on the CPG Practicality Committee gave me a picture of where the membership stands in regards to the certification program. These opportunities have afforded me the chance to meet and work with some of the most enthusiastic and energetic members of our organization. These members have inspired and encouraged me to become more involved, and my goal is to pass that inspiration on to others.

When I first joined AIPG as a Candidate-for-Certification in 1995, I viewed it simply as a resume-builder, but it has turned out to be much more than that. Participation in AIPG has allowed me to meet geologists from all the disciplines of our field from all over the country, provided me the opportunities for leadership experience I couldn't have gotten elsewhere, as well as numerous chances to keep up-to-date on the latest methods and technologies through our meetings and field trips.

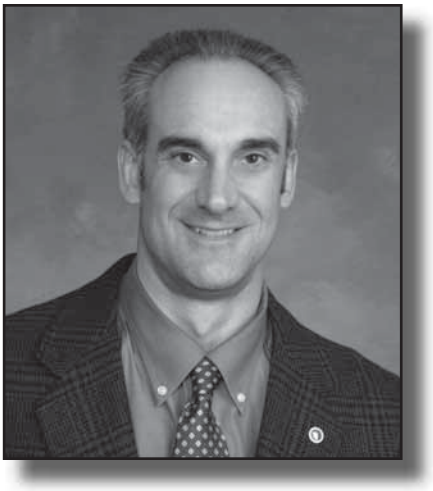
My first real involvement with AIPG came as the liaison between the Tennessee Section and the local geological society [East Tennessee Geological Society (ETGS)] in 2001. At the time, the TN Section of AIPG was pretty much dormant with the only officer being that of the Section President Chris Maner. Unfortunately, Mr. Maner became discouraged after trying unsuccessfully for 2 or 3 years to recruit new officers and gave up at the end of 2001. The Section was in danger of becoming defunct at this point. Then in 2003, Larry Weber (2006 National President) came to the February ETGS meeting in Knoxville as part of a campaign to revive the AIPG TN Section. A group of 6 Section members, including Larry Weber and myself met in Cookeville, TN for lunch in July 2003. Since that Cookeville meeting, we have re-established the TN Section of AIPG as a viable entity within the Institute with regular quarterly meetings held in Nashville that attract a modest attendance. Our officers and the core group of active members consist of a good mix of young, energetic members only 5 or 6 years into their professional careers, mid-career professionals, and seasoned veterans with more than 30 years of geologic experience behind them.

I have provided this recent history of the Tennessee Section to give you the perspective from which I will approach the office of National Vice President. AIPG currently has at least 10 sections that are close to, or in, the same condition the Tennessee Section was a few years ago with only one or maybe two office holders. I recently scrolled through the list of Section officers on the AIPG website and noticed there are several instances where a Section lists two or three offices but it's one person taking on all those positions. This is precisely what happened here in Tennessee. I believe I can use our experiences with rebuilding the TN Section to help others re-ignite interest in theirs.

We need a two pronged approach to reinvigorating low activity sections. One approach is to follow the TN Section model where a special someone that doesn't want to see the organization fold starts beating the bushes until he finds a few people that are willing to step up. The word is sent out that there really is a Section that has its own funds and can organize regular meetings and field trips. I know this sounds pretty basic, but as is often repeated in the sports world, sometimes you have to return to the basics in order to succeed.

The second approach is demonstrated by the recent merger of the Florida Association of Professional Geologists (FAPG) and the Florida Section of AIPG. This is an instance where the weaker of the two organizations (the FL Section) recognized the value of combining forces. These arrangements look to me to be a win-win situation where a strong local group gains the backing of a national organization, and the Section gains membership and active participants.

If elected as your Vice President, I promise to work with President-Elect St. Germain to help our Sections, and thereby the AIPG organization as a whole, become the organization that geologists can depend on to promote the geologic profession.



Candidate for AIPG National Vice President

Michael D. Lawless, CPG-09224, Blacksburg, Virginia

I am honored to be nominated for National Vice President and am excited about the opportunity to serve AIPG if elected. Each Vice President has the key responsibility of maintaining a liaison between the Sections and the National Executive Committee. The importance of this role cannot be overemphasized since the vitality of the Sections is critical to the vitality of the organization as a whole. Maintaining, and in many cases increasing, that vitality will be achieved by attracting energetic and enthusiastic new members to AIPG to support the core groups of individuals that have tirelessly supported their Sections and National.

One of AIPG's primary functions is to advocate for the profession of geology. To paraphrase ideas presented by James Howard, CPG at a joint meeting last year between the Kentucky and Virginias Sections, advocacy is much more effective when accompanied by shameless self-promotion. The more people we educate on the importance of geology to the global society, including nonmember geologists as well as our political representatives and the general public, the better we will be able to represent our profession and our members. Such promotion and public relations does not necessarily come naturally to many geologists. We should develop standard promotional practices like announcing AIPG officer election results and award recipients in the appropriate local newspapers, standard practices that can be instituted easily by the Sections. Through public relations actions such as these we will raise our profile thereby increasing peoples' awareness of AIPG and geology, thereby increasing the effectiveness of our advocacy.

Another benefit of increased promotion and public relations is a greater potential for increasing our membership, including the continued increase of the participation of students. The efforts at the National and Section levels over the past several years have yielded significant tangible results. I support continuing those efforts. By increasing student membership and establishing student chapters at colleges and universities we are involving future members of the profession in our advocacy activities and illustrating the importance of networking and continuing professional development in building a successful career. Geologists who are involved with AIPG as students are more likely to be members of, and active participants in, AIPG during their careers.

Continuing education (i.e., continuing professional development) is an important part of a successful career. In fact, several state licensing programs require evidence of continuing education. AIPG is in a prime position to provide such opportunities to the profession. The Vice President, through communications with the Sections, is in a prime position to solicit feedback from the Sections on what types of continuing education programs would be most beneficial and therefore most likely to be used. If elected I will support the ongoing efforts of National to develop such a program, and will gather input from the Sections to develop a usable program. A successful continuing education program can also be a significant revenue generator for AIPG.

Through membership development, promotion and public relations activities, as well as a successful continuing professional development program, we can ensure AIPG's vitality and relevance for years to come. Certainly, the profession of geology is as relevant today as it has ever been. Current events and policy issues have demonstrated the importance of geology and a geologic perspective to addressing global challenges ranging from living with natural hazards to developing and diversifying energy sources to sustaining and delivering potable water supplies. The focus of the media and general public on these issues provides us with an opportunity to increase our advocacy role (through shameless self-promotion) at the local, state, national, and international levels. The universal nature of these issues and the importance of geology in maintaining our current standard of living, as well as improving that standard across other areas of the globe, allow us to relate the profession of geology to the average citizen on a very personal and real level. I look forward to the opportunity to continue to serve AIPG.

Candidate for AIPG National Secretary

David P. Palmer, CPG-09960, Gilbert, Arizona

It was an honor to be called by the Institute requesting that I consider a nomination for National Secretary. I quickly accepted knowing that this was an opportunity to continue working with the finest professional geologists in the world. Working for what? AIPG officers are not paid, so it is not working for monetary compensation. Instead it is a labor of commitment rewarded by greater value and strength to AIPG membership, improving the professional careers of geologists through advanced education and training, and familiarizing the public with the benefits of developing geologic resources and the potential dangers associated with geologic hazards. The mission of AIPG continues to evolve as new goals and directions are advanced by the Executive Committee, and new committee members bring new ideas and energy to the Institute. I will work with fellow members to achieve that commitment.

As a professional geologist and candidate for AIPG National Secretary, these are my goals and I encourage you to make them your goals as well:

1. Get the word out to the public about geology as a valuable scientific tool for improving our lives and livelihoods. To support the mandate of our current AIPG President, I plan to give talks at schools, libraries, social or business meetings, and other community functions on geologic topics with a timely local or national relevance or interest that would draw in the general public. These talks will promote the value of geologic information and inform the public that professional geologists obtain and interpret that information. One of my rewarding experiences was teaching geology at science camp for middle school students. They were fascinated by the mineral specimens on display and excited that a geologist got paid to look at rocks.
2. Get the word out to college students about the value and need for an organization of professional geologists. This year the Arizona Section Executive Committee is taking the initiative to visit state universities and community colleges to set up a dialogue with young geology students and explain the purpose of AIPG, the differences between professional registration and AIPG certification and/or membership, and the value of membership in our organization: networking with professionals employed in the field they are training to enter, unique field trips led by professional geologists with practical knowledge of the location, on-line continuing education that will keep them current in geologic topics after they leave the university, and meetings where they can present their research or innovative work results. We also will be distributing the TPG Student Issue to students who meet with us.
3. Get the word out to geologists that AIPG is an organization that offers opportunities for geologists who want to (or are required to) improve themselves as professionals through continuing education courses, meetings, field trips, and publications. Many of us work with non-member geologists who we can encourage to join. Do as I do: invite them to a meeting or a field trip; loan them an issue of TPG that has an article of interest to them; and offer to sponsor their membership.
4. Get the word out to you, our fellow AIPG members, to increase your commitment to the organization. As your secretary, that will be my primary goal, and I need your help to complete that goal. The Executive Committee needs your input on ways to strengthen and improve our organization. At the local level, you can talk to fellow geologists and coworkers and convince them to join AIPG. We have more power as a larger group. We also need your support and participation. Not enough members are active in the functions of the Institute. For example, the Arizona Section has 120 members, but only about 15 to 20 are active participants in our meetings and field trips. Volunteer for a committee or officer position in your section. Offer to lead a field trip for your Section or other organization where geologists might congregate around an unusual outcrop for a fascinating discussion on depositional environment or economic value.

At the Section level, get the word out through mailings, electronic mail and meeting announcements. For example, I obtained a list of registered geologists in Arizona, cross-referenced that list with the Section list of AIPG members, then got the word out in the form of a letter of introduction to AIPG and subsidized applications for membership. We got 15 new members! Your Section can increase membership through similar means. Do you have any ideas for recruiting new members? If so, let me know; and spread the word by describing your recruitment ideas to other Sections via an article in TPG that outlines your plan, how it is implemented, and how to measure its effectiveness. As your National Secretary, I will continue to get the word out for you and the Institute.

Candidate for AIPG National Secretary

Andrew J. Sokol, CPG-09738, Downingtown, Pennsylvania

My first knowledge of AIPG and the term Certified Professional Geologist (CPG) came during one of my initial job interviews out of college back in 1989. The geologist with whom I was interviewing at the time proudly displayed the AIPG plaque in his office and had the CPG designation clearly embossed on his business card. After discussing the particulars of the job opportunity and also learning that AIPG offered the only professional certification available at the time for practicing geologists, I left the interview with two defined goals, 1) get a job with this great company and 2) do everything it takes professionally to gain certification as a CPG. Well, I landed the job and immediately joined AIPG. I received my candidate for CPG certification after gaining two years of professional experience with the firm and eventually obtained my CPG immediately after meeting all of the remaining requirements set forth by AIPG. Gaining CPG status was an important milestone in my career.

I have since become actively involved at the Section level in Pennsylvania and over the past ten years I have assisted some great CPGs and AIPG members in keeping the section moving forward. The biggest change that has occurred since I first became a CPG is that many states (including Pennsylvania) have passed professional licensure laws for geologists. As we all know, state licensure has certainly lessened the need for the CPG designation, but state licensure has not lessened the need for AIPG. At the section level we were cognizant of this and attempted to gear section activities toward network building between members and providing opportunities for outdoor activities and geology field trips rather than focusing on the need for bolstering professional certification.

As professional geologists, it is in our own best interest to maintain strong professional organizations made up of our peers. These organizations are needed to provide advocacy for the profession as a whole and also to provide technical and leadership training. Above all, these organizations must also provide a measure of professionalism that can be used as an example for all members of the profession.

Since its inception back in 1963, AIPG has continuously provided advocacy on behalf of the profession and has also defined the standard for professionalism in the geoscience field by providing the CPG certification. Because of the state licensure laws, however, it is clear now more than ever that AIPG must evolve away from being known primarily as a certifying organization and become one that can provide strong technical and professional support to the members and others in the profession.

Recent AIPG executive committees have recognized this and have begun to move AIPG toward providing much needed career development support to its members and the profession. Furthering the development of continuing education programs that can be offer through AIPG to serve the needs of licensed geologists is paramount to the future of AIPG.

I strongly support this move and as Secretary for the National Executive Committee I will work with the committee to continue moving AIPG in this direction. I have great enthusiasm about serving AIPG at the national level as Secretary and will strive hard to keep AIPG at the forefront of representing the geologic profession. I believe that my more than ten years of experience working at the section level have prepared me well to work at the national level and I am anxious to give back to the profession and organization that have served me well.

CANDIDATES FOR AIPG NATIONAL PRESIDENT-ELECT 2008

John L. Bognar

CPG-08341
Saint Louis, Missouri

Statement of purpose or goals you have for AIPG:
As always issues and conditions are lining up to effect our profession. Geologists are graying; some degrees are granted with less than classic geologic course curriculum; geologist licensure laws continue to pass; the politics of petroleum has renewed the call for alternate energy; climate change opinions call for sequestration of carbon emissions; demand thus metals prices are on a rise, and ground-water resources in some domestic population centers are being depleted. AIPG takes seriously its responsibility to consider these items and many more when looking to the current and future AIPG. My goal is to continue the work of AIPG; to establish paths forward that not only serves members, but our paths forward should ultimately serve recipients of commercial, academic and government services provided by our members.

Universities Attended	Degrees Granted	Dates
Missouri State University	B.S., Geology-Stratigraphy	1979

Company	Title	Dates
Eason Oil Company	Petroleum Exploration Geologist - Gulf Coast	1979-81
Texoma Production Company	Petroleum Exploration Geologist - Gulf Coast	1981-85
Kerr-McGee Corporation	Petroleum Exploration Geologist - Gulf Coast	1985-87
Jacobs Engineering Group	Environmental Geologist-DOE Nuclear Disp. Facility	1988-93
Foth and Van Dyke	Hydrogeologist-Manager-Solid Waste Mgmt.	1993-94
Gateway Environmental	President/Owner-Envir. Geologist/Hydrogeologist	1994-98
Leggette Brashears & Graham	Senior Associate-Profit Ctr. Mgr./Hydrogeologist	1998-Present

AIPG Activities	Title	Dates
Missouri Section	President-Elect	1994
Missouri Section	President	1995
Missouri Section	Legislative Action	1994-2007
Missouri Section	Various Committees	1994-2007
AIPG National	Secretary	1998-1999
AIPG National	Treasurer	2005-06
Presidential Certificate of Merit Award-for Missouri Geologist Registration Act		1994
AIPG National	Ad-Hoc Committee on Financial Investment	2005-06
AIPG National	Task Force on Geologist Practice and Body of Knowledge	2006-Present
AIPG National	Ad-Hoc Committee on CPG Requirements	2006-Present

CANDIDATE FOR AIPG NATIONAL SECRETARY

David P. Palmer

CPG-09960
Gilbert, Arizona

Statement of purpose or goals you have for AIPG:
Promote the geological sciences to the at-large public through applied education and the media so people will better understand the value of geological resources on their lives.

Universities Attended	Degrees Granted	Dates
San Diego State University	B.S., Geology-Geophysics	1978
University of Texas at Austin	M.A. Geology	1981

Company	Title	Dates
TX Bureau of Economic Geology	Research Assistant	1979-81
Marathon Oil Company	Development Geologist	1981-94
Basin & Range Hydrogeologists	Associate	1994-97
Dames & Moore	Geologist	1997-2000
URS Corporation	Senior Geologist	2000-Present

AIPG Activities	Title	Dates
Arizona Section	Secretary	2001-2003, 2007
Arizona Section	President-Elect	2004
AIPG National	Advisory Board Member	2004
Arizona Section	Organized and led Arizona Section Field Trips	2005
Arizona Section	President	2005
Arizona Section	Past-President	2006
AIPG National	Honors and Awards Committee, Member	2006

Mark W. Rogers

CPG-08926
Mililani, Hawaii

Statement of purpose or goals you have for AIPG:
I will strive to preside at all meetings of the Institute and of the Executive Committee, and shall perform the duties customary to the office. As President, I would be honored to act as the official spokesperson for and of the Institute, and may authorize others to speak on behalf of the Institute. To fulfill my duties as President, I will appoint all committees and boards of any type and their chairs.

Universities Attended	Degrees Granted	Dates
University of Idaho	B.S. Geology	1983
University of Alaska	Graduate Studies in Environmental Science	1997-99

Employment History	Title	Dates
Alaska Gold Company	Engineering/Exploration Geologist	1981-86
Smith-Emery Company	Environmental/Engineering Geologist	1987
WestGold Explor. and Mining, Ltd.	Project/Exploration Geologist	1987-88
WGM Mining Consultants	Project/Exploration Geologist	1988-91
Dames & Moore Consultants	Engineering Geologist	1991
RZA AGRA Alaska, Inc.	Project Geologist	1991-93
GeoEngineers, Inc.	Project Geologist	1993-2001
Dawson Group, Inc.	Office Mgr./Sr. Project Mgr.	2001-02
Masa Fujioka & Assoc.	Senior Project Manager	2002-03
Innovative Tech. Solutions, Inc.	Office Manager	2003
Parsons Infrastructure & Tech.	Senior Project Manager	2003-04
Environmental Chemical Corp.	Project Manager/Senior Hydrogeologist	2004-Present

AIPG Activities		Dates
Alaska Section	Chair, Technical Programs for 36th Ann. Mtg.	1997-99
Alaska Section	Executive Committee	1997-01
Alaska Section	State Geology Registration Chairman	1999-01
Alaska Section	President-Elect	2000-01
Hawaii Section	President	2003-05
Hawaii Section	State Geology Registration Committee	2003-Present
Hawaii Section	Screening Committee Chairman	2004-Present
AIPG National	Technical Presenter at 41st Annual Meeting	2004
AIPG National	Presidential Certificate of Merit	2004
AIPG National	Certificate of Appreciation, CPG Practicality Committee	2005
AIPG National	Secretary	2006-07
AIPG National	CPG Practicality Committee	2004-Present

CANDIDATE FOR AIPG NATIONAL SECRETARY

Andrew J. Sokol

CPG-09738
Downingtown, Pennsylvania

Statement of purpose or goals you have for AIPG:
Help define the future role of AIPG as a professional organization such that current and future members can more clearly understand the direct benefits they gain through membership.

Universities Attended	Degrees Granted	Dates
The Pennsylvania State Univ	B.S. Earth Science/Geology	1985-89
Drexel University	MS Graduate Coursework	1995-96

Company	Title	Dates
Blazosky Associates, Inc.	Geologist	1990-94
Unisys, Lockheed Martin	Project Manager	1994-96
Blazosky Associates, Inc.	Director, Tech. Services	1996-2004
Taylor GeoServices, Inc.	Partner	2004-Present

AIPG Activities	Title	Dates
Pennsylvania Section	Executive Committee	1996, 1998
Pennsylvania Section	Vice President	1997
Pennsylvania Section	President	1999, 2004-2006
Pennsylvania Section	Section Screening Board Chairman	2000-Present

John W. Hofer

CPG-10341
Oak Ridge, Tennessee

Statement of purpose or goals you have for AIPG:
The role of the Vice President is to be a liaison between the National Executive Committee and the individual Sections. As Vice President I intend to work to bring about the kind of reinvigoration to currently inactive Sections that my Section (TN) experienced a few years ago.

Universities Attended	Degrees Granted	Dates
Ashland University	B.S. Earth Science	1986
University of Akron	M.S. Environmental Geology	1992

Company	Title	Dates
MAECORP, Inc.	Geologist	1992
GeoMarine, Inc.	Contract Geologist	1993
Brown & Root Environ/Tetra Tech NUS	Project Geologist	1993-99
IT Corp./Shaw Environ & Infrastructure	Project Geologist	1999-2003
CDM	Project Geologist/Technical Lead	2003-Present

AIPG Activities	Title	Dates
Tennessee Section	E. Tennessee Geological Society Liaison	2001-Present
Tennessee Section	President-Elect	2003, 2005, 2007
Tennessee Section	President	2004, 2006
AIPG National	CPG Practicality Committee	2004-05
AIPG National	Certificate of Achievement	2005
AIPG National	Presidential Award of Merit	2006
Tennessee Section	Registration Law Committee	2006-Present

Michael D. Lawless

CPG-09224
Blacksburg, Virginia

Statement of purpose or goals you have for AIPG:
To continue to strengthen the Institute by expanding our role as advocate for the profession of geology, supporting professional development and the careers of geologists, and promoting cooperation between the Sections and National.

Universities Attended	Degrees Granted	Dates
Bates College	B.S. Geology	1986
Old Dominion University	M.S. Geology	1989

Company	Title	Dates
Froehling & Robertson	Soils Technician	1986-87
Old Dominion University	Research Technician	1987-88
Environmental Tech. Engineering	Hydrogeologist	1988-90
IMS Environmental	Senior Hydrogeologist	1990-93
Enviro Tech Mid-Atlantic	Director of Environmental Services	1993-95
Dewberry & Davis	Senior Geologist	1995-96
Draper Aden Associates	Environmental Program Manager/Associate	1996-Present
Draper Aden Associates	Member of Board of Directors	2002-03

AIPG Activities	Title	Dates
Virginia Section	Secretary/Treasurer	1996
Virginia Section	President-Elect	1997
Virginia Section	President	1998
Virginia Section	Advisory Board Representative	1998
Virginias Section	State Reg/Leg Committee, Chair	1998-Present
Virginias Section	Bylaws Committee, Chair	2001-05
Virginias Section	President	2007
AIPG National	Wetlands Policy Committee, Chair	1998-2000
AIPG National	State Affairs Committee, Member	1998-99
AIPG National	Subcommittee for Professional Practice, Chair	1999
AIPG National	Secretary	2000-01
AIPG National	Membership Committee, Chair	2002
AIPG National	Honors & Awards Committee, Member	2005-2006

AIPG 2007 National Award Recipients

Ben H. Parker Memorial Medal
Madhurendu B. Kumar, CPG-03106
Baton Rouge, Louisiana

Martin Van Couvering Award
Robert G. Corbett, CPG-04502
Normal, Illinois

John T. Galey Sr. Memorial Public Service Award
Ivan K. "Tex" Gilmore, CPG-06039
Washington, North Carolina

Honorary Membership
Robert H. Fakundiny, CPG-04977
Rensselaer, New York

VOTE!

AIPG Members eligible to vote for AIPG National Officers are encouraged to fill out and mail the enclosed ballot or vote electronically on the AIPG National Website — www.aipg.org. All paper ballots must include the voters name and AIPG number to be valid. To vote electronically members must login to the member portion of the website and include their name and AIPG number to be valid. If you do not know your login and password contact the AIPG National Headquarters office by phone (303) 412-6205 or e-mail (aipg@aipg.org).

Climate Change, The Club of Rome and the I.P.C.C.

Kelvin J. Buchanan, CPG-06058

If you are old enough to remember waiting in long gas lines during the 1973 oil crisis, you might recall a then-popular book, entitled "Limits to Growth, the Second Report to the Club of Rome," which predicted worldwide catastrophic oil shortages and a depletion of known reserves by the year 2000. Authored by a group of M.I.T. scientists in 1972, the book was still the best selling book on environmental issues by the early 1980s, with about four million copies sold. Another popular book of the time was the book "Future Shock". Both were similar in their "doom and gloom" forecasts for our future.

But the scary neo-Malthusian philosophy in "Limits to Growth" was fatally flawed because it predicted the world would soon run out of every "known" mineral and natural resource. Note the emphasis on the word "known." As a professional geologist working in the extractive industries in Nevada, I knew from personal experience that we were finding and replacing natural resources faster than we were using them. So it was no surprise that the M.I.T. model in "Limits to Growth" was eventually discounted as "junk science," especially after the world reserves of petroleum increased and the price of oil dropped to $10 a barrel by 1988.

Despite the lack of success in predicting the future, the Club of Rome did not go the way of the dinosaurs in the 1990s. The Club is actually very much alive, most recently requesting reports from scientists on such diverse topics as world over-population and education. Hoping to hit another attention-grabbing home run, this time on the world debate on global warming, the Club is once again the topic of conversation among geologists and other scientists. Indeed, I was surprised to hear the Club of Rome mentioned at a recent professional meeting in Denver.

Just what is this intriguing organization? Incorporated as a Non Governmental Organization (NGO) in 1968 with 30 members, the current membership list is impressive, showing its close ties with various government agencies in Europe and the U.S. Some of the notables include Queen Beatrix of Holland; Javier Solana, former head of the International Olympic Committee; and former Soviet Union President Mikhail Gorbachev. The current president, Prince El Haasan bin Talal of Jordan, is one of seven nominees for the 2007 United Nations Environmental Protection (UNEP) award. Another of the nominees is former U.S. Vice President Al Gore, who is championing the cause of global warming with his recent documentary on the subject.

In addition, the Club of Rome is by no means a "secret" organization, as shown by worldwide websites in several languages. Its goal is clearly stated: a new world order is necessary in order to save the planet. Its members hope that their combined efforts will bypass the slow progress being made on the environmental front. They want action, and they want it now.

Indeed, increased environmental awareness beginning in the 1980s resulted in the creation of the Intergovernmental Panel on Climate Change (I.P.C.C.) in 1988 and the Kyoto treaty, which was signed by most countries in 1997. Consequently, the "Limits to Growth" book is undergoing intense renewed interest, with over 30 million copies sold since its initial popularity in the early 1980s. Furthermore, the Club of Rome has targeted the policy and analysis work of the I.P.C.C., apparently in an effort to join forces.

At the time of this writing, in a week where our Supreme Court has determined that carbon dioxide is indeed a greenhouse gas pollutant (the Court's counterpart court in Australia decided just the opposite) and the I.P.C.C. released their second 2007 report on Climate Change Impacts, Adaptation and Vulnerability, we professionals should ask ourselves why it is that only authors (science fiction writer Dr. Michael Crichton, "State of Fear") and film makers (Al Gore, "An Inconvenient Truth") get the attention of Congress.

As your president and as a practicing geologist, I feel compelled to ask a blunt question of our profession: Where are the geologists who can furnish facts and scientific analysis of the data that has been collected in the past 30 years? Geologists, who represent the one science with a truly long-term view of the planet, should be able to make some meaningful contributions to this discussion, but very few do. The periodic glaciations interspersed with global warming over the last 100,000 years are known to each and every one of us in this profession. This is basic knowledge that should not be outside the scope of geologic science, but the documented geologic record is being drowned in a sea of panic as far as the general public and the national media are concerned. Why is it that public debates rarely involve scientists, focusing instead on politicians and journalists?

True, we as a group have very diverse opinions as to the cause(s) of global warming. Although no one disputes

that global warming in the 21st century is real, there are extremes of opinion as to what the consequences will be. In a recent example, one geologist told me he predicted the demise of the Greenland ice sheet by 2015, a decidedly catastrophic view of the phenomenon. Others are engaged in an intense debate about whether carbon dioxide is a leading indicator of global warming (a cause) or a trailing indicator (an effect). Amazingly, some consider that subject to be outside the scope of geological science.

There is general agreement on one thing, which should definitely be of concern to us as professionals: The debate is no longer in the scientific arena (if it ever really was), and will probably stay permanently in the political arena for the foreseeable future. In fact, the political rhetoric is escalating rapidly. When author Bjorn Lomborg's "The Reluctant Environmentalist" was published last year, the head of the I.P.C.C., Rajendra K. Pachauri, compared some of the conclusions of the author to Nazism. In addition, the threat of carbon taxes, first raised as an issue by France, could conceivably become as common as real estate taxes, with only the rich being able to buy carbon off-sets for their own excessive use of electricity, gasoline, and other energy sources.

The future could have heavy polluters such as China appeasing the world by planting forests of new trees in South America. In this new world, the term "common good" might well acquire a new meaning. Freedom may come to mean neither free will nor free expression, but rather a freedom from pollution caused by freedom of choice.

What should we as professionals do about all this? Is this current panic over global warming just an over-reaction to information overload? Do we accept anecdotal information instead of scientific data, just because it's easier to portray graphically (such as stranded polar bears on Atlantic ice floes)? Worse, will the populace come to accept stringent curbs on some personal freedoms that we now enjoy as a reasonable price to pay for climate stability? Clearly there are those in the activist environmental movement who wish this to be the case. Where do we stand on these issues?

Who among us is willing to advise citizens that fear of the unknown is worse than the actual consequences of that unknown event? When will it be necessary to remind ourselves that fear-mongers and extrapolators of perceived disasters do us nothing but harm? We need to remember that President Roosevelt in the Second World War worried more about the effect of fear on the American public than that of the war itself: "We have nothing to fear but fear itself."

The normal state of the climate of the planet is a mode of either warming or cooling. Almost every scientist would agree that static climate conditions are truly abnormal. Is it not time for enlightened leaders to confront the reality of a changing global climate and figure out how to deal with it, rather than attempting to stop it (a super-human, probably impossible task)? Our profession should be in the forefront of the movement to accept the inevitability of this change, and to begin to fortify shorelines, conserve water resources, and find alternative sources of energy. We can all be valuable experts in this ever-changing evolution of the globe, able to help others understand the immensity and complexity of the climate change issues, so that they can make non-emotional choices about how best to handle it.

AIPG BYLAWS UPDATE

(February 9, 2007)

2.2. Categories of Members and Adjuncts

The categories of Members shall be: Certified Professional Geologist (CPG), Member, Non-Practicing Member, Emeritus Member, and Honorary Member. Certified Professional Geologists and Members shall all have voting rights. Unless otherwise defined, reference to Members within these Bylaws includes the said categories. In addition to the Member categories, there shall be two categories of Adjuncts, namely Students and Associates. Neither Students nor Associates shall have voting rights within the Institute, except that Students shall have voting rights within their respective Student Chapters. There shall also be a Corporate Member category. Beginning on February 14, 2003, each person who, on the previous day, was categorized as a Certified Professional Geologist shall continue in that category; each person who on the previous day was categorized as a Registered Member shall be categorized as a Member; each person who was categorized as a Candidate for Certification shall be categorized as a Member; and all Certified Professional Geologists, and Members shall be Members of the Institute. Beginning on the same day, requirements for each category of Member shall be as defined herein in Articles 2.3 through 2.3.3, inclusive.

2.2.6. Non-Practicing Member

A Member may be designated "Non-Practicing" upon request at the age of 60 or older, provided that the Member is no longer actively engaged in the practice of geology for financial gain. The Executive Committee shall have the authority to reduce or waive dues payments for Non-Practicing Members, individually or as a category.

AIPG and AGI

William J. Siok, CPG-04773

During a recent meeting with members of the AGI staff and the AGI Executive Committee, it transpired that there was a great deal of discussion about AGI and its relationship to all the other geological organizations. Some of the discussion dealt with the question of whether the typical members of the various natural US geologic organizations are cognizant of AGI, its mission, or its relationship to their respective societies.

The AGI (American Geological Institute) was created in 1948 to serve as an umbrella, or representative organization for all US professional geologic organizations. Details of AGI history are not especially pertinent here and now, suffice it to say that AGI under the superb leadership of the late Dr. Marcus Milling was an effective public voice for all practitioners of geology. AGI served the professional geologic community by working to bring the disparate member societies together in cooperative ventures.

AGI presently consists of forty-four member societies, of which AIPG is one. Perhaps, now that a successor to Dr. Milling has been appointed, allow me to emphasize my endorsement of AGI, its mission, its importance to AIPG, and to commend its capable staff.

AGI is headquartered in Alexandria, Virginia to provide access to the US Capitol and federal agencies. Its mission, in addition to critical K-12 educational programs, includes serving the broad geological community through engagement of agency and legislative staff; vocalizing the critical role of geoscience in formulation of national policy; and providing current news of developments originating in Washington which have the potential to affect the professional life of practitioners of geology.

AGI member societies are each assessed an annual fee, the sum of which contributes modestly to the overall AGI operational budget. It is important to point out that AIPG is more than compensated for its contribution through AGI support for AIPG outreach programs as well as operational support.

Most AGI projects, and a significant portion of its total operating funds, are procured from grants, both federal and corporate. Projects developed through these grants are designed to produce revenue to sustain AGI and its mission in the long-term.

The relationship of AGI to AIPG is more important to AIPG than the reverse. AGI would in all likelihood not suffer the loss of AIPG as a member society, but AIPG would be significantly effected, negatively, without its ties to AGI.

Because of its well established place in the pantheon of Washington based organizations, AGI bolsters AIPG credibility through our affiliation. AGI never fails to provide professional as well as material support for AIPG advocacy efforts. This is support which AIPG cannot afford on its own, due very simply to limited financial and staffing resources coupled with the fact that active AIPG members are volunteers who have obligations outside AIPG.

All AIPG members are encouraged to visit the AGI website for a thorough look at the myriad projects and efforts put forth by AGI in support of our profession. Also, please be aware of the fact that numerous AIPG CPGs have served in various capacities over the years on the AGI Executive Committee, including as President.

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Protecting the Public's Health, Safety and Welfare—but does the public want protection? (Column 104, July/August '06)

In column 104, **Rob Blair**, CPG, suggested that there should be mandatory, appropriate geohazard insurance as at least a partial motivator to encourage people to move out of (and not move into) areas subject to significant geohazards. The column also quoted a *Wall Street Journal* article on insurance companies that were dropping coverage or raising rates for hurricane coverage along the Gulf and Atlantic coasts. The article also noted that some states were becoming insurers of last resort for this type of coverage. I also quoted from an article in the *Financial Times* by John Gapper prompted by the centennial of the 1906 San Francisco earthquake. I noted that, "Gapper argues that these cost limits do not provide the incentive required to encourage people to move out of hazardous areas. He pointed out, 'The best argument for state-backed insurance is that, faced with the true market cost of insuring expensive homes in hazardous areas, people will cross their fingers instead. That has happened in California, where only 13 percent of people have earthquake insurance. Since the 1994 Northridge earthquake, policies have been expensive and require holders to pay about 15 percent of any claim. Were the 1906 earthquake to be repeated, many Californians hope that the federal government would come to their rescue, just as New Orleans got aid after Katrina.'"

I was reminded of the earlier discussion of this subject in column 104 by recent news stories about backlash against rising insurance rates for hurricane coverage in Florida and other coastal states and similar rate increases for other types of hazards such as wild fire coverage in California. A January 23, 2007 article in the *Wall Street Journal*, "States Seek to Rein In Home Insurance," summarized state actions in Florida, California, Connecticut, and Georgia to roll back or block insurance premium hikes. The clear political reality is that most people would rather be bailed out by the government, if no one else, from the consequences of living in areas subject to geo and other types of hazards, rather than avoid or mitigate the hazard, particularly at the hazard's true cost. We are rebuilding southern Louisiana despite geoscientists' understanding of the dynamics of the Mississippi Delta. Geoscientists are increasingly documenting subsidence along much of the Gulf Coast, for example in the Houston area, due to compaction and down-to-the-coast fault slippage.

Given both political reality and geoscientists' knowledge of geohazards, what can we, as a profession, do to protect the public's health, safety, and welfare? Public outreach education is part of the answer. This can improve the effectiveness of those mitigation efforts that the public will support. However, as pointed out in column 108 in the March/April 2007 *TPG* in my review of *Science and Ethics*, we face a public with a high skepticism of science. The flip-flopping conclusions on recommended diet provide an ample basis for the public's continuing skepticism. Within the geosciences, experts can and do disagree on the interpretation of data, particularly when we are attempting to predict future events (see my review, "An examination of professional judgment and degree-of-belief probability," in the November/December 2005 *TPG*). Again the question, what can we do to protect the public's health, safety, and welfare? Doing nothing while we stew over the difficulties of doing something is not a solution. Your suggestions and summaries of successful efforts are welcomed, either as contributions to this column or as separate articles for the *TPG*.

Who Owns the Data on Old Projects?

Arnold Cunningham, CPG, and I had an interesting conversation about those who were in the uranium business in the 1970s and are now, with the resurgence in uranium activity, being sought out to sell old data that they have in their possession. The questions addressed issues previously addressed in "Conflicts of Interest: Data Ownership and Personal Files," in columns 33 (August 1998) and 36 (November 1998) and in "Conflicts of Interest—Data Confidentiality Can Last Forever" column 66 (July 2001).[1] These columns raised the question and posed questions about various situations, but the final answers to the questions raised are largely pending. Let's review the pertinent parts of these columns.

Ted Wilton, CPG, initiated the topic in column 33 when he "asked for a discussion of 'personal files' and the ownership of the data. Many of us know of others (or we ourselves) who have files containing information that was developed as a result of either a contract assignment or as part of our ongoing obligation as an employee of a firm. Do we have the right

1. A closely related legal point was addressed in **"Client Reports and Subpoenas," in column 81 (January/February 2003) and in "Ownership of Reports: Client Reports and Subpoenas," in column 83 (April 2003).**

to (1) keep a copy of the information, or (2) use it at some later time to develop exploration targets. I would say that if the work was paid for by a client, that the client's permission would be required before the data could be used for another purpose. What if the client is no longer in business? Or, more fundamentally, do we even have the right to keep copies of reports that we generate? What do you do if you have either an employee or a consultant working for your firm, who may be using information developed for so-called personal files? How do you handle a situation where this may be going on, but you do not have direct involvement (you are not supervising this particular project)?"

Peter K.M. Megaw, CPG, responded to **Ted Wilton's** questions in column 36, "It seems to me patently obvious that we not only have the right to keep a copy of everything we generate, but we have an *obligation* to ourselves to do so. Only by keeping a copy of what we produce can we protect ourselves from someone lifting items out of context, deleting data that don't fit the client's objectives, or outright rewriting of our work (easier to do with sophisticated computer gear than we'd like to believe). Knowing that you have an original copy often obviates this problem as potential 'editors' know the true version is out there.

"Fundamentally, geologic exploration is a data-based enterprise, with properties attracting attention for different reasons at different times, often decades apart and with the property in varying conditions. Historic data can be tremendously useful and may even save lives if now-concealed hazards exist. It seems extreme to suggest that one eschew use of 'personal-file' data generated 50 years ago when a now-inaccessible mine was last in production—but what about 25 years ago, 10, or 5?—where do we draw the line? Is there a legal statute of limitations that can be applied? It is of course best to establish 'use of data' questions before commencing work. Clients frequently present Work Service Contracts with nebulous Confidentiality language, and it is in our best interests to clarify this as much as possible, in order to limit our liability over time. Data inevitably will leak out, and it is often tempting for the client to believe the worst of an outsider rather than a former employee now working for another company. It also protects us somewhat should one of our own employees depart, illegally taking copies of files with him/her. It thus makes sense to establish a specific time limit. But even when this has elapsed, it is courteous to ask the former client's permission to use the data—if the client still exists.

"The question of whether data developed for a particular client is reusable if the client company has disappeared is likely to become an issue for many as the latest downturn in exploration and mining takes its inevitable toll. If there truly is no successor in interest, I would argue that one is free to use the data as one sees fit—although allowing a suitable 'mourning' period might be proper. Unfortunately, this still leaves open the question of how you prove that no successor in interest exists.

"Corollary questions:

"1) Do you have the right to use data if the client left you partially unpaid for a job, prior to disappearing or being absorbed into a new company that refuses to acknowledge your invoice?

"2) Is it ethical to use data generated for an existing mining company that has been made public by donation of personal files to a manuscript library—if the company involved was not consulted regarding the donation? The question boils down to inheritance of Confidentiality—are we required to have our heirs return our personal files to the companies that paid for them? This would seem both impractical and unlikely to happen—perhaps another reason to back a 'statute of limitations'?

"3) What about data in personal files reflecting potentially serious environmental hazards that may have significant public health implications? At what point do these pass from recognition and recommendations made to the client, to matters of public concern if the client has ceased to exist or has clearly chosen not to address the problem?"

Megaw makes some very good points. As the generators of the information in a report, that is the conversion of data into an interpretation, we acquire an ownership interest. **Peter H. Dohms**, CPG, addressed this issue and made reference to the *ASFE Contract Reference Guide*, 3rd ed., in column 23 (October 1997). Dohms even included a suggested contract paragraph. As for a "legal" statute of limitations when specific contract provisions do not exist, this is a good question for a lawyer. As with most legal questions, the answer probably depends on a number of things, like your legal address and your client's.

The legal questions have been, in part, answered. Quoting from column 66, "**L. Graham Closs**, CPG, sent me an article from the Toronto *Globe and Mail* describing an Ontario Court of Appeals case that held that some corporate secrets are to be kept secret forever. The case involved three members of a consulting firm who left to form a competing firm and used confidential information obtained from the previous employer to compete with that employer. The Court found that "stealth and deceit" was used to grab clients from the former employer. Among other things, the three men secretly solicited contracts from their former employer's clients while still working for the former employer. In soliciting business for their new firm, the three men used their inside knowledge of previous contract discussions, plans, and design changes obtained while employed by the former employer. 'Based on the respondents' use of confidential information obtained during the course of their employment—as well as their solicitation of some of the appellant's clientele before their departure—no length of post-departure grace period would have protected the appellant from the consequences of the misconduct of these employees,' the Court held.[2]"

My sense of the Ontario case is that it addressed the situation where the former employer (or client) was still in business and asserting its rights to the data. This doesn't answer the question, now common for the uranium data Cunningham and I discussed, what happens when the original employer or client is no longer in business and hasn't been for some time. Or in the case of some still existing companies, constructive abandonment of the project can be determined by the abandonment of the lease or claims that gave the employer or client the right to explore and extract from the property in question.

2. An Ontario case merits citation because Canadian law, like US law, is grounded in English common law, which is particularly applicable in issues involving fairness. In such cases US and Canadian courts can and sometimes do cite each other. I'm not a lawyer and I'm not providing legal advice; my observations are based on both reported cases and law review articles.

The other fundamental question is whether the data in question was part of a report we wrote (as an appendix or otherwise) or is part of a separate set files (paper or electronic) that were examined but were not included in the report. If the data were included in the report, then the author's retention of the report is one thing. As authors of the report and legally responsible for the interpretations therein, retention of the report is common practice, at least for consultants. As Dohms noted in column 83, "our professional reports are prepared on behalf of and are paid for by our clients. But they are not owned by our clients, they are instead 'instruments of professional service.' To state that they are 'owned by our clients' implies, for instance, that our reports are 'products' and are therefore subject to 'product liability' tort law. In addition, failure to retain ownership of an instrument of professional service leads to unauthorized reuse of that document, sometimes with devastating results."

If the data were not included in the report, then the situation can be viewed differently. Do the data, even if not included in the report, provide an important basis for the conclusions reached? Or are the data simply information acquired in the course of the assignment but not used as the basis for some conclusion?

Does Professional Practice Lead to Ethical Practice? (Column 107, January/February 2007)

Marty Andrejko, CPG, in his "Professional Liability and Risk Management" column 18, provides a further look at the questions I posed in column 107. Andrejko argues that "ethical practice is the basis of and leads to professional practice." Andrejko goes on to provide more information about and discussion of one of the cases I summarized in column 107, namely the case in which a city government and a building owner knew of a structural problem with the building but the building's occupants and neighbors were not informed of the problems. The structural problem was corrected without informing either the occupants or the neighbors. Andrejko notes that the National Society of Professional Engineers' (NSPE) Board of Ethical Review (BER) case 98-9 is apparently the same case I summarized as the facts appear to be the same. Andrejko reports that "The NSPE BER stated that it was not ethical for either of the engineers to maintain the secrecy requested by the building owner and the architect." While Andrejko comments that recognizing and correcting the design error prior to catastrophe was good, "[w]here the engineer went wrong was maintaining the secrecy. Those actions could lead beyond the negligence claims to claims of willful misconduct in the event that something had gone wrong during the remediation phase of the project."

Practicing Within One's Area of Professional Competence and Whistleblowing

Marty Andrejko, CPG, in his "Professional Liability and Risk Management" column 18, describes NSPE BER 94-8 in which a chemical engineer was hired to design structural footing. The chemical engineer apparently had no qualifications for this type of engineering work and the situation was reported by an engineer working for the construction contractor. This appears to be an excellent example of someone practicing outside the scope of his professional competence.

Andrejko notes that the engineer who reported the problem could potentially face a personal injury lawsuit from the chemical engineer as a result of the "injury" to the chemical engineer's professional standing. In our litigious society, the unfortunate potential for such an action exists. I pointed out in column 105 (September/October 2006) that Colorado has a liability safe harbor statute that applies to such situations and that apparently would protect the complaining engineer from such an action. I don't know whether other states have similar statutes.

Should a County Employee Write a "Remoteness" Letter? (Column 106, Nov/Dec '06 and 108, Mar/Apr '07)

Chris Dail, CPG, wrote, "I enjoyed your response (#108, March/April '07) to my comments on your "County Employee Ethics" Column #106 (Nov/Dec '06). I'd like to clarify a point made in your response. I did not mean, in my second point, to infer that the county should hire a Certified Mineral Examiner (CME) to conduct an evaluation of the property. As Matt Shumaker from the BLM pointed out, a CME is an individual holding a regulatory certification required for certain kinds of minerals-related work specifically on Federal lands.

"However, what I was trying to point out is the importance of an accurate assessment of the mineral estate and, if necessary, a formal appraisal of the

mineral estate of the subject property should be a mandatory requirement for *any* management decision involving the tract. This policy should apply to all land use planning whether those lands are private property, public lands under Federal jurisdiction or as in this case a severed estate property under a local jurisdiction. Without an assessment, by a qualified specialist, the value of the tract's mineral estate and any tax implications related to conservation easements or other policy actions related to disposal, restrictions, easements or zoning of the tract are incomplete. The failure to examine all reasonable and foreseeable uses of a tract of land are inconsistent with generally accepted land use planning guidelines (Multiple Land Use Act of 1964 and the National Environmental Policy Act of 1969) nor would such a failure be consistent with AIPG policies as expressed in AIPG policy statements regarding *Appraisals of Mineral and Related Interests* (January 12, 1991) and *Aggregate Resources and Land-Use Planning* (February 14, 2003).

"Since the original column did not discuss whether or not the county worker was qualified to perform the assessment I took the opportunity to raise the point about the qualifications of the employee to perform mineral assessments even though the ethics issue raised in the original column related to disclosure. I raised the point since just disclosing the potential conflict of interest would be insufficient if the county employee was not qualified to perform the assessment as required under AIPG Rules 3.3.1 and 3.3.2 (performing work in a member's area of expertise).

"In the case of the Federal government, when land management decisions involve any kind of mineral assessment or potential valuation of a mineral estate, regulations require that the studies be conducted by CME's because these individuals have the appropriate educational credentials and have undergone rigorous training to insure they can perform these types of assessments. Since local jurisdictions typically would not have the required expertise 'in-house,' my recommendation was to bring in an independent consultant with specific skills related to the task at hand—a determination as to whether there was a reasonable likelihood of any future mineral development of the remote tract."

Dail's comments are apt and should be considered by anyone undertaking a "remoteness letter" assignment or other type of mineral property valuation.

Topical Index-Table of Contents to the Professional Ethics and Practices Columns

A topically based Index-Table of Contents, "pe&p index.xls" covering columns, articles, and letters to the editor that have been referred to in the PE&P columns in Excel format is on the AIPG web site in the Ethics section. This Index-Table of Contents is updated as each issue of the TPG is published. You can use it to find those items addressing a particular area of concern. Suggestions for improvements should be sent to David Abbott, dmageol@msn.com

Written Contracts and Subcontractor Selection

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This month's column hits on some items that have popped up with some of my insured's over the past few months. The first is the use of contracts. I have done several columns where contracts were discussed. The latest issue is I have had insureds have claims on fairly significant projects where there was no signed written contract in place. For many years, my gut feeling towards contracts and contract language was that while I would prefer an insured to have a contract in place and have a contract with fair language, I was more worried about how their client and project selection and project management procedures impact the project. My thought process here is that if you do those correctly, then you don't have to worry about the contract because you shouldn't have a claim. I still believe that to some degree but having that written contract is also very important. When I review an account and find that they have some percentage of verbal contracts I look at several things including:

1. **What State are they in?** — I am less concerned about verbal contracts in Vermont than if someone is working in New York City.
2. **What type of services are provided?** — It is expected that small land surveying jobs or small construction materials testing projects are going to be done on verbals. It's the nature of the work. The concern arises when I have an architect designing a school and there is no contract in place.
3. **Who are the clients?** — in most cases the verbals are with long time clients.
4. **How big is the insured?** — typically I see smaller firms using verbals but when I see a larger firm using them I have concerns.

These don't excuse the practice but depending on the answer it can help alleviate my concerns to some degree. If the verbals are with long time clients with many repeat jobs then developing some sort of master services agreement (MSA) would be prudent. The MSA would set up the parameters that future work will be performed under including such things as indemnification, payment, etc. Work orders or purchase orders could be issued for a specific job that would refer back to the MSA.

Negotiating contracts can be time consuming and in some cases expensive when outside counsel is needed to review the sometimes convoluted legalese. But contracts should be looked at as a relationship management tool as well as a risk management tool. You and the client are setting the ground rules of how the relationship is going to work. You are also setting the ground rules of how things will be handled when the relationship stops working. You can almost think of a client contract as pre-nuptial agreement for your project. The ground rules get laid out and if things go south, you know up front that the spouse is getting the house in the Hamptons.

What triggered my hitting on this topic was one of my larger architectural insured's is in a claim situation and never executed a signed contract for the project. This is putting our claims department at a disadvantage as it is not clear what the intent of the parties were when they started the project. This leaves a lot of loose ends.

One last thing about contracts, some year back I had looked at a large design firm in California and a significant amount of their work was for the California State University system. In reviewing a copy of a contract with the client, I encountered what I felt was a truly unbalanced contract that was heavily weighted toward the client. As with most governmental contracts, you typically have no negotiation room. One of my loss control colleagues who had also looked at the contract, had suggested that I not provide an insurance quote on this firm because of the contract language that they were being forced to accept. However, this firm had been working for the University system for 15 years and had never had a claim with them. I went ahead and provided a quotation because it was obvious that the insured had a good relationship with the client and while some parts of the contract were problematic, it did provide the framework for a good client relationship.

Subcontractors

This seems to be an area that does not get enough attention. You need to be careful about the firms you select to work on your projects. Your client contracted your firm for the job and if something goes wrong on the job they will look to your firm as the problem. The

client really doesn't care that it was your subcontractor that caused the problem. I remember working on projects where the drilling firm that we hired did not perform well either due the constant equipment breakdown or inexperience in drilling in a specific geology. This usually delays the project and brings down the wrath of the client. None of these resulted in a claim. What I have seen recently is one of my architectural insured's who for the past 20 years had a pretty clean claims record until recently when they have been hit with several significant claims. In looking for a common thread, the claims appear to be due to the same engineering subconsultant. Interestingly enough, this engineering subconsultant has been causing issues on projects all across the country. While I can't come out and broadcast to the world that this specific subconsultant should be blackballed (for a number of legal and ethical reasons), I can recommend to the general design community that they review the qualifications and past project performance of their potential subs. Usually when projects go bad, there is something in the local media. Keep an eye for those reports. One bad project does not mean that a firm is bad. There are many things that could have caused the issue that might not be related to a firm's technical competence. But when several projects go bad and it can be tied to technical competence then maybe it is time to find a different subcontractor/subconsultant.

So what can you do to protect your firm from the vicarious liability exposure from your subs? I would suggest the following:

1. **Use a written subcontract agreement** — just as I stated above in regard to your client agreements, a written subcontract agreement can be used to clearly spell out what is expected. If it is a sub that you will be using on several jobs, then an MSA might make sense so all you would need to do is issue purchase orders as additional projects come about.
2. **Check their insurance** — usually your client is going to include specific insurance requirements in order for your firm to do the job. Make sure that you pass those requirements down to your subs. If you are using other professionals make sure they have professional liability insurance. If the subs services are environmental in nature make sure that they have environmental coverage. This is especially important with drillers for you to make sure that they have Contractors Pollution Liability coverage so that your firm isn't the only one on the hook when something goes wrong.
3. **Screen new subs** — check on the proposed subcontractor to see that they have the appropriate experience and/or equipment to do the work. Request information from Dun & Bradstreet (D&B) to make sure that they are financially sound. You don't need your sub to be taking shortcuts during a project because of their financial distress and even worse, you don't want them to go bankrupt in the middle of your job. A word of caution about D&B reports. They are not a panacea and sometimes the accuracy of the information may be limited but at least it gives you something.
4. **Track existing subs** — implement a process where you can track the performance of your subs. Many subs have a number of branch offices and it may be only a single office that is the problem and not the entire firm. Having a tracking system may allow you to uncover this issue.

Send comments to: Martin Andrejko, CPG-08512, Assistant Vice President, XL Design Professional, 520 Eagleview Blvd., Exton, PA 19341, (610) 321-9227, Fax (610) 458-8667, e-mail: martin.andrejko@xlgroup.com.

Give the People What They Want

Duane A. Carey, CPG-10305

Raise your hand if you like blueberry juice. What, never heard of it? Apparently neither had our three-year old son, Jack.

Jack's big sister, Olivia, works him over on a regular basis, getting her way through some combination of manipulation, bribery, stealth, and sometimes even subterfuge. In other words, she's a born marketer (or lawyer, God forbid). So we knew she was really off her game recently, when early one morning she was not getting her way. When she bribed Jack with "blueberry juice" – whatever that is - and was then silenced by his blank stare, it was Jack 1, Olivia 0. The tables had turned. She reached for an incentive that just didn't work.

Aside from the cheap excuse to write about two of my kids, there really is a point here: you have to give people (clients) what they actually want, not what you think they want. And no one is going to want blueberry juice….

Consider the example of Coca-Cola. At the time of the introduction of New Coke in the late 1980s, the flagship cola had been beaten up in the marketplace, partly by Pepsi and partly by its own siblings Diet Coke, Sprite, and the many other sugary soft drink options. Its market share was steadily declining and Pepsi was poised to take over the vaunted position of Number 1. Coca-Cola executives were already aware, based on empirical data from blind taste tests, that people preferred the taste of Pepsi to Coke. It was smoother and a bit sweeter. So in the spirit of giving people what (they thought) they wanted, they introduced New Coke, replacing the old standard. The uproar was swift and severe. The same people who conclusively demonstrated in blind taste tests that they preferred a sweeter, smoother formulation, refused to buy the sweeter, smoother drink. They had deep, emotional resistance to the change. They had grown up with Coke – and been bombarded for decades with marketing that was specifically crafted to create that deep connection. In a matter of months, "old" Coke was back, rebranded as Coke Classic, and New Coke drifted away into obscurity.

Coca-Cola was in a particularly tough spot. They knew that they had to make changes and that people really did prefer the taste of Pepsi to Coke, but they could not go that extra step and actually ask the customers if they wanted a change. If they had asked the public, word would have gotten out and Pepsi would have jumped all over that, shouting from the rooftops that Coke was considering a drastic change because they were losing market share. So Coke had to make the decision based only on the data, not on the "wants" of its customer base. When that change was ultimately forced upon the customers, their reactions were decidedly negative.

This phenomenon is seen in all types of businesses; people want to feel that they are in control and that their wants and needs are being met. It's often tough to walk the fine line between giving them what they think they want and what you know they need. But as is often the case, it's simply a matter of communication. There's nothing wrong with simply asking your clients what they really want. Good ways to facilitate this communi-

cation include asking several leading questions, such as:

- What, specifically, do you want to accomplish?
- What criteria will you use to define whether this has been a success or failure?
- How do you prefer to communicate - email, office phone, cell phone? How often do you want to hear from me as we work on your project?

You might find that many of your clients have never thought about these things. But the exercise is almost always fruitful, because it forces them to consider these issues and improves the chances that they will be happy with the outcome.

In my own business, I have been very surprised to find that one of the most valued parts of my service is one that seems very simple, and frankly, I don't enjoy very much. Many of my clients get bombarded by sales people selling advertisements. These folks are typically good at sales and very assertive, and my clients often don't know how to politely tell them to hit the road. This is particularly true in the case of retail businesses who really need to be careful about how they treat the public. So most of them simply hand these cold-callers my card and tell them to call me, absolving themselves of the decision-making process. Now, I dislike dealing with the sales people as much as anyone else, but I can serve as a go-between, shielding my clients from them. It's a job that anyone can do and requires very little of my marketing expertise, but the value it brings to the clients is enormous. It frees them from wasting their time and energy. I never would have realized on my own that this part of the service would be of such value – I'm much more focused on the strategic marketing aspects – but my clients have spoken and I've had to listen. So the take-home message is this: Ask your clients what they want - the answer may really surprise you.

Update

In the last issue, I put some pressure on myself to complete the major upgrades to our website. If any of you have gone there, you've seen that it's not done yet. With any luck, it will be done by the time you receive this issue. That is, of course, unless those darn sales people keep bugging me….

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

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Making Women a Part of Geology's Future

Nancy Price, SA-0382

Ever since women have actively sought careers as professional scientists, either in industry or academia, equality has been an issue. Outright discrimination initially kept women out of higher education and quality jobs. Discrimination eventually gave way to the glass ceiling and an unwelcoming work environment. Women in the field today have a much easier time advancing in their careers than the women that preceded them.

There has been much renewed discussion on the issue of equality since the release of last year's report from the National Academy of Sciences titled: "Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering". The most surprising conclusion about this report was not that blatant discrimination continues to keep women out of science, although in some places it still plays a role, but that the way science as an institution functions is what is keeping women from advancing. The big issue was the incorporation of family into the work place. A common held belief, particularly with women in academia, is that family and success don't mix. Pauses in a career to have children or to wait for a newly found husband to finish his degree are a blemish on your record. Once you get off the train of success, it is very hard to get back on and be taken seriously. Many women, therefore, end up leaving science to have a family and never go back. Those women that manage to get a family started while working towards a career have trouble maintaining both over time. Childcare is an issue when both parents work. If both parents are scientific professionals, securing quality childcare is even more important because neither parent can afford to take significant amounts of time off to stay home with the children. The current system just cannot accommodate such issues.

Among the various reactions to the report were changes made in many places to the way they promote women and an increase in flexibility toward women with families. More academic institutions are allowing pregnant faculty members to postpone tenure review one year so that they don't have to choose between their family and scientific productivity for that year. Some employers are also providing better childcare facilities for their employees. In places where quality childcare is hard to secure, having a facility close by and available through the employer makes it easier for a parent to focus on their job. These changes help to make a career compatible with family.

Of course, all of these career-related implications are important issues to be addressed, but I don't think that this is the only reason that women are not as well represented in the sciences. There are prohibitive challenges throughout the educational path that discourage women from continuing with science. These challenges do not stem from blatant discrimination on the part of educators, but rather are an effect of a professional society that still very much male dominated. It's the "old boy's club syndrome" where men will act as they always have, whether or not women are included. Women then have to find a way to fit into the mold making them feel isolated or put off by the typical behaviors of men. This includes the way men joke around and the comments they may make. If a male geologist makes a degrading comment about his girlfriend's role in the home, what could this say about his attitude towards female colleagues? If a male professor does not take a female faculty member seriously, then a female student is going to notice and perhaps conclude that she would not be taken seriously as well. Women pay attention to the comments and actions of the people around them whether they complain about them or not.

Addressing the "old boy's club syndrome" can also be a problem within the context of classes, particularly field courses. When male students are concentrated, their discussions and behavior can very quickly become crude, even bordering on sexual harassment. This doesn't happen everywhere, but it does happen. Very rarely do professors address it, if it is noticed in the first place. The handful of female students present may not feel comfortable reporting such behavior, especially if the professors are male. Some female students are under the impression that to be a geologist you have to "suck it up and deal with it". Other female students just chose not to take these classes because of it. On long trips and during field classes, differences in personal needs can also be a problem. I personally have had experiences where I was left behind after trying to find a secluded bathroom spot or when I had to beg a professor to stop for a bathroom break. Then there is the practice of taking drugs to put off a natural female

process during the 6 weeks of a typical field camp. I am not sure if these issues can be remedied given the conditions under which some courses are taught, but problems can be dealt with through a little understanding and control from the professors.

Until geology is truly equal in numbers, the "old boy's club syndrome" will continue to be an issue. The best way to deal with this is by promoting understanding by male professors and male students. Make female students more comfortable by respecting them and being mindful of poor behavior that may drive them from the field altogether. Consider the world from a female point of view and learn that sometimes traditional practices may actually be prohibitive to some women. If you are female, the best way to deal with a male dominated field is find other women you can talk to. This could mean talking with other female students in your program. Camaraderie lets you know that you are not alone and that, if needed, you can address problems with a united front. The ideal situation is to find a female mentor in or near your field. A mentor is someone that can serve as a role model, someone who has been through similar experiences, someone who can give you some advice, or even just someone to complain to. Having another female in your life that was successful in establishing her career can be the best supporter and motivator of your own.

Like the National Academy of Sciences report stated, we are still on our way to truly equal opportunities for females in the sciences. The field of geology is no exception. If we want to attract intelligent, capable, and competitive female professionals, we have to be sure not to scare them away at the beginning stages just as much as we need to accommodate them later in their careers.

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

AIPG Section Websites

AIPG Section Website links are on the AIPG National Website at www.aipg.org. Click on the top right drop down menu and click on Section Websites.

If your section does not have a website contact AIPG Headquarters to get one setup (wjd@aipg.org). AIPG Headquarters will maintain a website for your section. Several sections (AZ, CA, CO, GA, HI, IL Chapter, MI, MO, NM, OK, PA, and TN) are examples of websites hosted by AIPG National.

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College/University: Geological Degree: ☐ BA ☐ BS ☐ MA ☐ MS ☐ PhD ☐ None Year:_____

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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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Sponsor: Signature: Date

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CO-Paul J. Bartos
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MI-Gregory H. Fox
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CA-David E. Houghton
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TOTALS	4,840	5,621

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TX-Adam M. Horbaczewski SA-1184
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NV-Laura Garchar SA-1187
5584 Tappan Drive, Reno, NV 89523
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ANSWERS TO QUESTIONS ON PAGE 18

Answers

1. The answer is "b" or "competence."

   The "capacity" of a stream is the maximum quantity of sediment that a stream can carry.

   "Base level" is the deepest level to which a stream can erode its bed. The ultimate base level is sea level.

2. The answer is "c" or dacite.

   Syenite is the plutonic counterpart of trachyte and its texture is typically phaneritic. The dominant feldspar is potassium-rich (orthoclase) and its quartz content is poor. Biotite, hornblende and pyroxene are also common constituents.

   Dunite is a plutonic ultramafic rock that lacks quartz and exhibits ferromagnesian minerals like olivine and pyroxene.

3. The answer is "b" or Cambrian-Permian.

   Eurypterids (sea scorpion) were among the largest known arthropods that ever lived. They are members of the extinct class Eurypterida and predate the earliest fishes. The largest reached two meters or more in length, but most specimens were less than twenty centimeters long. These fearsome swimming predators thrived in warm shallow water in the Cambrian to Permian periods of the Paleozoic Era. They were most common in the Silurian and Devonian periods. Early specimens were marine but later adapted to life in brackish or fresh water. The move from the sea to fresher water appears to have occurred around the latter part of the Carboniferous Period.

4. The answer is "c" or $P_n' = 1.03$ kg/cm^2. The proof follows.

   Given:

   $P_1 = 4.8$ kg/cm^2

   $P_3 = 2.0$ kg/cm^2

   $\theta = 57°$

   $C = 0.80$ kg/cm^2

   $Ø = 24°$

   $\mu = 1.80$ kg/cm^2

   Then, from the Coulomb-Mohr criterion we know that:

   $S = C + P_n \tan Ø$ (where P_n is the normal stress acting on the failure plane).

   $P_n = (P_1 + P_3)/2 + [(P_1 - P_3)/2][\cos 2\theta]$

   $P_n = (4.8\text{-}2.0)/2 + [(4.8\text{-}2.0)/2][\cos 114°]$

   $P_n = 2.83$ kg/cm^2

   But in terms of effective stress:

   $P_n' = P_n - \mu$

   $P_n' = 2.83\text{-}1.80 = 1.03$ kg/cm^2.

5. The answer is "a" or "stage." The "Aptian" is the oldest stage of the "Gallic" epoch of the Cretaceous period.

Dig Deeply to Seek Life on Mars

WASHINGTON - Probes seeking life on Mars must dig deeply into young craters, gullies, or recently exposed ice to have a chance of finding any living cells that were not annihilated by radiation, researchers report in a new study. One promising place to look for them is within the ice at Elysium, site of a recently discovered frozen sea, they say.

Current probes designed to find life on Mars cannot drill deeply enough to find living cells that may exist well below the surface, according to the study. Although these drills may yet find signs that life once existed on Mars, the researchers say, cellular life could not survive incoming radiation within several meters [yards] of the surface. This puts any living cells beyond the reach of today's best drills.

The study, published 30 January in the journal *Geophysical Research Letters*, maps cosmic radiation levels at various depths, taking into account surface conditions in various areas of Mars.

The lead author, Lewis Dartnell of University College London, said: "Finding hints that life once existed—proteins, DNA fragments, or fossils—would be a major discovery in itself, but the Holy Grail for astrobiologists is finding a living cell that we can warm up, feed nutrients, and reawaken for studying."

"Finding life on Mars depends on liquid water surfacing on Mars,"

Dartnell added, "but the last time liquid water was widespread on Mars was billions of years ago. Even the hardiest cells we know of could not possibly survive the cosmic radiation levels near the surface of Mars for that long."

Unlike Earth, Mars is not protected by a global magnetic field or thick atmosphere, and for billions of years it has been open to radiation from space. The researchers developed a radiation dose model and quantified variations in solar and galactic radiation that penetrates the thin Martian atmosphere down to the surface and underground. They tested three surface soil scenarios and calculated particle energies and radiation doses both on the surface and at various depths underground, allowing them to estimate the survival times of any cells.

The team found that the best places to look for living cells on Mars would be within the ice at Elysium, because the frozen sea is relatively recent—it is thought to have surfaced in the last five million years—and so has been exposed to radiation for a relatively short period of time. Even here, though, any surviving cells would be out of the reach of current drills. Other ideal sites include young craters, because the recently impacted surface has been exposed to less radiation, and gullies recently discovered in the sides of craters. Those channels may have flowed with water in the last five years and brought cells to the surface from deep underground.

The study was funded by the United Kingdom's Engineering and Physical Sciences Research Council (EPSRC), the Swiss National Science Foundation, and the Swiss State Secretariat for Education and Research.

American Geophysical Union
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AGU Release No. 07-03
(202) 777-7507

Defining Sustainability and Evolving Metrics in the Mining and Metals Sector—Part 1

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Abstract

During the past decade, efforts to formulate, assess, report and verify sustainable development efforts in the mining and metals sector have progressed at a remarkable rate. The drivers for these actions are many and often have the benefit of improving public relations and supporting the social license needed for firms to operate. The International Council on Mining and Metals (ICMM), a consortium of 14 of the world's largest mining and metal interests and 24 mining and global commodities associations, has supplied key leadership in this area.

Since 2000, the ICMM has analyzed sustainability issues affecting the sector, formulated and adopted 10 Principles to serve as overarching objectives, instituted a comprehensive sustainability public reporting system, devised internal and external sustainability auditing protocols and developed a publicly available best practices database to share ideas for improvement. While these efforts are laudable not only for their comprehensive nature and their speed of implementation, reporting gaps remain and areas for further improvement have been noted.

In Part 1 of this report, the methods and difficulties of applying standard sustainability definitions and approaches to the mining and minerals sector are discussed. Also provided is a discussion of the social and economic drivers that have lead companies to adopt sustainable practices. In Part 2, current practices are described and suggestions for improvements are offered. Key among these suggestions is a more streamlined and quantitative analysis to gauge the sustainability performance of parties within the sector. Such a program would have the benefit of allowing members of the general public to evaluate the position of a mining and metals sector enterprise with respect to other members within its peer group. To assist in this regard, this paper outlines a basic framework of a conceptual model herein referenced as the 3PSI Evaluation. While it is acknowledged that the model is far from complete and efficient in its present form, it is hoped that with further effort it can be refined and amended with currently adopted sustainability reporting systems to allow evaluation of results in a more readily digestible format.

1.0 Introduction

Although a scholarly discussion of the human prospect has existed for over two centuries (Malthus, 1798), the concept of defining and pursuing "sustainability" has largely been limited to the past half century. During this time, its definition has been debated and varied in many forums. Those that are most commonly cited in prominent literature include:

- *"The ability of humanity to meet the needs of the present without compromising the ability of future generations to meet their needs." (Our Common Future,* 1987)
- *"The reconciliation of society's developmental goals with the planet's environmental limits over the long term." (Our Common Journey –A Transition Toward Sustainability,* 2002) and,
- *"…mutually reinforcing goals of economic growth, environmental protection, and social equity." (Sustainable America: a New Consensus for Prosperity, Opportunity, and a Healthy Environment for the Future*, 1996)

In recent years, a multitude of moral and economic drivers have led industry leaders to seek out areas where sustainable practices can be developed and improved. The mining and metals sector has not been immune to these pressures. Indeed, given the industry's inherent potential for substantial environmental harm and conflicts with indigenous peoples, the mining and metals sector of the economy represents one of the areas where the greatest potential for improvement can and is being realized through the identification and adoption of sustainable principles. It is hoped that the discussion presented herein can serve to further expand and improve these efforts.

To accomplish this broader goal, this report has four specific objectives. The first is to define and defend a suitable definition of sustainability as it applies to the mining and mineral sector. The second is to report on the current status of sustainability efforts within the industry. The third is to highlight current areas of improvement and the final objective is to suggest a conceptual means of quantifying sustainability progress.

2.0 Sustainability, —a Definition for the Mining and Metals Sector

When I have asked several friends of mine who represent common and well-educated members of the general public *"How can a mining company become a sustainable enterprise?"* the near universal response has been a variant of, —*"It is simply not possible, —mining operations extract a finite resource and then end. They are inherently* ***not*** *sustainable"*. At a very basic level, this conclusion is not one based on flawed logic or an error in analysis. Nearly all mines *do* extract and exploit an ore body for a fairly limited period of time and, eventually these operations *are* suspended once the resource has been removed.

It is interesting to note that many publications that discuss mining and sustainability do not question or debate the premise or conclusions drawn above. Instead, they often spend considerable text defending the need for mining in order to produce goods that improve society's quality of life. They also often argue that if environmental or societal impacts are properly managed or controlled, impacts can be significantly minimized. *(Breaking New Ground: Mining, Minerals, and Sustainable Development,* 2002; Natural Resources Canada, 2001)

While I do not disagree with these authors' arguments, they appear, when used as the sole response to the question, to be only defeatist justifications for current operations rather than a direct answer. It is argued that a better reply is "*By ensuring that the effects of mining, beneficiation, and processing minimize environmental impacts when they are in effect, restore environmental* conditions (i.e. the quality of groundwater and ecological habitat) *once they are completed and enhance and sustain societal conditions once they are started."*

Why is this latter response not commonly offered? The first may be that it may present a goal beyond the reach or imagination of those currently employed in the mining and metals sector. This should not be a concern. Leading authorities have described the journey toward sustainability as a process resembling that of a canoeist traveling on uncharted waters (Clark, 1999). Progress can and should be made regardless if we presently do not have a well-defined course and foreknowledge of every future obstacle. A second possibility is that a means of defining and measuring "societal or environmental conditions" remains both ambiguous and elusive. A definition specific to the mining and metals sectors can help in this regard.

The most comprehensive study of sustainability in the mining and mineral sector is the Mining, Minerals and Sustainable Development (MMSD) project's report *Breaking New Ground* (2002). This 439-page analysis represents the final product of a two year effort that an independent agency, the World Business Council for Sustainable Development (WBCSD), managed. Funding and support for the MMSD was provided by the International Council on Mining and Metals (ICMM), a consortium of 14 of the world's largest mining and metal interests and 24 mining and global commodities associations. The WBCSD then commissioned the International Institute for Environment and Development (IIED) to complete the work.

The MMSD project defined mining and mineral sector sustainability as *"...to maximize the contribution to the well-being of the current generation in a way that ensures and equitable distribution of its costs and benefits, without reducing the potential for future generations to meet their own needs."* This definition is somewhat unique in that it only refers to environmental and societal concerns only through an indirect "costs and benefits" catchphrase. However, in fairness to the report, the bulk of the analysis specifically relates to aspects of these issues, and the report also refers to 'sustainable development' as the goal of integrating economic activity with environmental integrity, social concerns, and effective governance systems.

Natural Resources Canada (2001) defined sustainability as "*the integration of environmental, economic and social considerations —as key to ensuring we maintain our quality of life and continue to create jobs, without compromising the integrity of the natural environment or ability of future generations to meet their own needs*." Publications in by the Society of Economic Geologists supported that mining sustainability rests on three legs, economic, environmental, and social license. (Richards, 2002)

This latter definition has often been transcribed as the Three P's of *profit, people, and planet*. Fourth and Fifth P's, *policy* and *policing*, are also often included in prior studies under the descriptor "governance", but they have been omitted from the definition used in this paper. While it is acknowledged that proper governance is the ideal means of addressing many of the conflicts between economic, environmental and social drivers for a given operation, many of the sovereign states housing such operations lack the educated body politic or the democratic institutions for its existence. Therefore, a reliance or inclusion of these elements can allow a company to externalize responsibilities to a non-entity. Because of this dynamic, it is argued that policy and policing are best viewed as tools to achieve the Three P's rather than equal weight-bearing supports. This strategy also implies that where governance is found lacking, other internal mechanisms need to be utilized to achieve sustainable principles.

A reader may voice concern that the desideratum "profit" is inappropriate and perhaps counterproductive. However, this mindset fails to recognize that all traditional businesses in free market economies must achieve a profit in order to sustain *themselves*. Therefore, if a business is to provide a service in moving an industry toward sustainability, maintenance of the health of the business itself is a necessary prerequisite. Thus, it is evident that profit is necessary to achieving environmental protection and social equity.

A more complete definition of the three P's used to evaluate sustainability is as follows:

- **Profit** —the performance of a mining and metal sector operation in obtaining payment for its products in excess of its production costs and reclamation expenses. In the mining and metals sector this item also includes the ability to obtain and maintain adequate financial assurance for reclamation work and secure insurance for potential catastrophic releases.
- **People** —the performance of a mining and metal sector operation in aiding social equity and development. Social equity and development are exhibited by: the inclusion of the local populace in the decision making process, adequate safeguards for worker health and safety, housing, fair wages, just working hours, an absence of employee discrimination, decent employee housing, and non-support of political corruption or coercive political institutions. Social equity and development also include appropriate compensation for the resettlement of indigenous parties,

planning for post-mining economic transitions, and other more general efforts to improve quality of life within the community that houses the operation.

- **Planet**—the performance of a mining and metal sector operation in minimizing the size of its environmental footprint. This ability is expressed by: compliance with environmental laws and industry best practices, adequate safeguards to reduce the potential of catastrophic releases of harmful materials, and reclamation practices that re-establish the affected land's groundwater quality and biodiversity or agricultural production capacity to its pre-mining performance. The minimization of the environmental footprint also incorporates adherence to "green" business practices such as energy conservation, recycling, waste reduction/elimination (as measured in the products' life cycle analysis), and any applicable efforts to address legacy impacts from past operations.

In summary, sustainable development is defined in this report as *"Ensuring that the effects of mining, beneficiation, and processing minimize environmental impacts when they are in effect, restore environmental conditions once they are completed, and enhance and sustain societal conditions once they are started."* This definition aligns itself with the Three Ps as previously described.

3.0 Sustainability — a Status Report of the Mining and Metals Sector

The move to sustainability in any industrial sector is an evolutionary process. It begins with an acknowledgement of relevancy and progresses to a state whereby continuous improvements are identified and implemented. The steps of the ascent are depicted in Figure 1.

As the sector exists today, many of the major mining firms have achieved a state where they have now begun to conduct internal reporting based on guidance procedures developed by interests within and outside of the mining and metals sector. For the world's largest firms that are part of the International Council on Mining and Metal (ICMM) consortium, this evolution has been developing with remarkable speed. As recently as May of 2003, sustainable development principles were yet to be adopted. As of May 2006, the ICMM has approved an independent assurance pilot procedure to gauge member performance. The performance of non-ICMM members is far more limited in breadth and disclosure.

What drove this action? Cynical and holistic motives are both present. If we focus on the former, and assume that the actions were taken only to achieve a means of increasing profits, the following supportive observations and arguments can be made:

- The public reputation of mining has been one of the poorest of any industry. In 1994, a US opinion survey conducted by Roper Research ranked the mining industry in 24th place in terms of public popularity, below the tobacco industry (Prager, 1997). Efforts to secure agreements with governments and indigenous peoples to engage in new operations were severely hampered by this condition, and have even caused the suspension of projects. A couple of examples include the proposed Esquel Mine in Argentina and the Las Crucitas mine in Costa Rica (Daneilson, 2004). In Wisconsin, opposition over the potential development of the Crandon Mine led to the enactment of a statewide moratorium. The moratorium applies for all metallic mining permits. It will remain effective until it can be legally established that other representative example mines have been both oper-

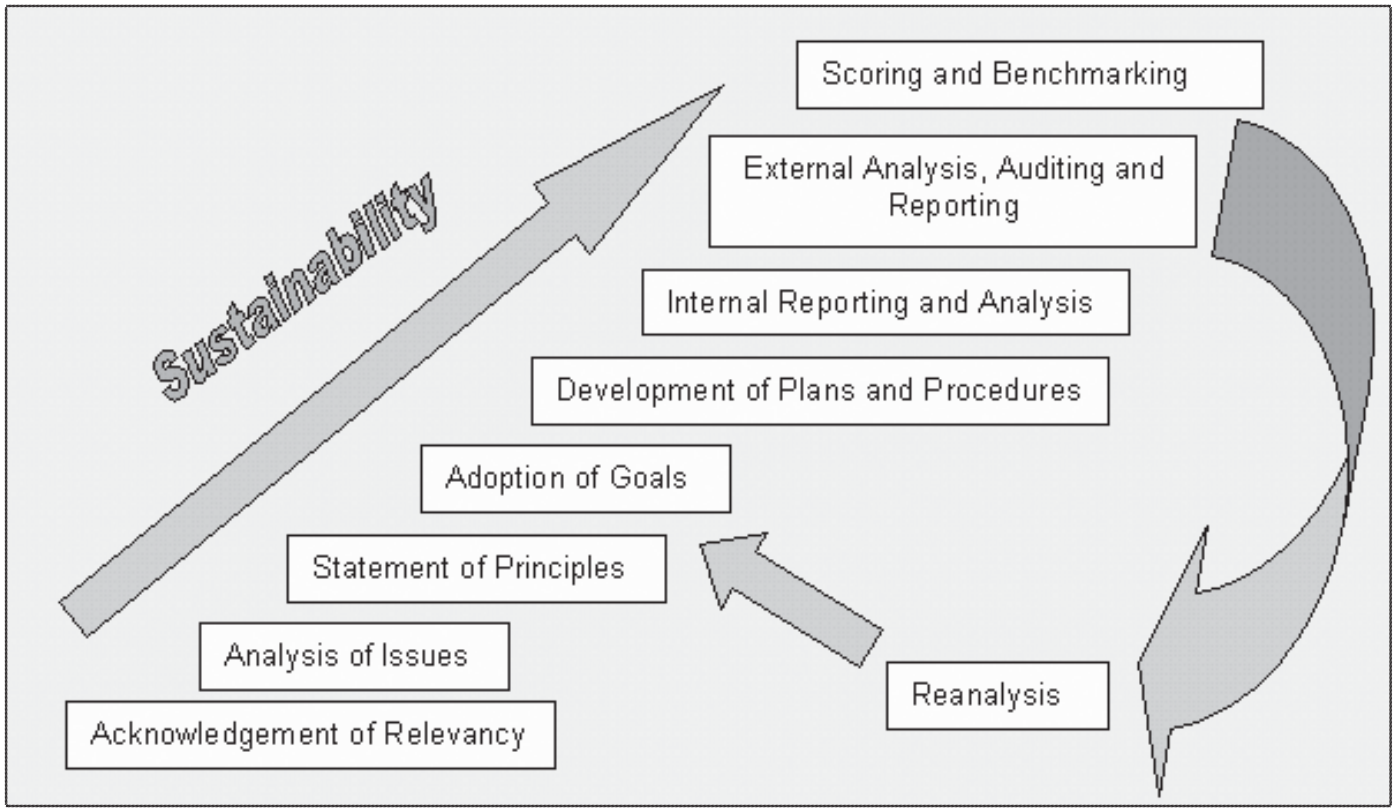

Figure 1. The Evolution of Sustainable Practices in Industrial Operations.

ated and closed for 10 year periods without pollution of groundwater or surface water (1997 Act 171: Mining Moratorium Law). These examples illustrate that only through an honest progression to sound social and environmental practices could public perception be improved. **Sustainable practices are therefore being conducted to enable access to new deposits be garnered.**

- Investment houses such as The World Bank and other major financial institutions are increasingly requiring set standards of care and the adoption of good business practices as a condition of loan agreements. An analysis conducted by Dealogic for the year 2003 determined that banks that have adopted a set of protective environmental and social standards (commonly known as the Equator Principles) issued approximately 3/4ths of all mining project loans (Equator Principles, 2006). Forty of the world's largest banking and financial firms have adopted these principles. **Sustainable practices are therefore being conducted to secure project funding.**
- In the past two decades socially responsible investment (SRI) funds have gained market share and a stronger position in the marketplace. Total socially responsible investment assets rose more than 258% from $639 billion in 1995 to $2.29 trillion in 2005, while the broader universe of assets under professional management increased less than 249% from $7 trillion to $24.4 trillion over the same period (Social Investment Forum, 2006). In order to attract their investment, or at least avoid blacklisting by these funds, improvements in sustainability were necessary. In some cases, mining enterprises have even used their results to attract SRI funding. (Corporate Social Responsibility Newswire Service, 2005). **Sustainable practices are therefore being conducted to increase investor interest.**
- Legal costs associated with gaining access, avoiding prohibitive taxes or royalty agreements, securing financial assurance instruments are becoming a greater drain on the industry. Between 1985 and 2003 over 110 countries adopted new mineral sector laws, were revising existing laws, or were working on draft legislation (Otto, 2003). If corruptive practices or political paybacks were needed to garner agreements, these expenses would also be expected to become more onerous. In order to curb these developments, mining firms need to work with broader international authorities such as the UN or the World Bank. These entities could use trade sanctions or other enforcement means to push for better governance in the sector. Ultimately it is envisioned that this relationship will help establish a free and fair business environment and create a level playing field for all operations. **Sustainable practices are therefore being conducted to lower legal and start-up expenses.**
- Customers and end consumers have increasingly expressed concerns and requested assurance that materials purchased have not been derived from practices that caused undue social or environmental harm. In the past decade many manufactures have embraced Design for the Environment (DfE) principles and completed Life Cycle Analyses (LCAs) on their products. These investigations seek to quantify and improve on the ecological footprint imposed by their manufacture, distribution, use and disposal. Decisions to use a metal or non-metal component are therefore not only driven by cost but also its environmental legacy. An improvement in energy efficiency or management practices employed by extractive minerals sector can represent a tide that lifts all boats with respect to LCA scores of end products. Improvements can also influence a decision to use a recyclable metal component versus a non-recyclable or "less green" plastic or other material. For example, past studies have compared the LCA results between the use of plastic and steel fuel storage systems in automobiles (Joshi, 1999). **Sustainable practices are therefore being conducted to boost mineral sales over potential alternative products.**
- Either through investor pressure or public regulation, mining operations are often required hold adequate insurance coverage to address potential catastrophic releases or reclamation responsibilities. The insurance premium quoted for a given operation is based on a risk analysis conducted as part of an underwriting process. Improvements or high marks in sustainability efforts typically serve to lower these potential exposures and improve the rating applied to the given operation. **Sustainable practices are therefore being conducted to lower insurance costs.**
- Mineral production often occurs were existing indigenous artisanal production is already taking place (*Breaking New Ground*, 2002). If local compensation or satisfactory arrangements are not made with these parties, their disenfranchisement can lead to violent actions. In March of 2006, this outcome borne true for the US-owned Freeport gold mine in West Papua where five Indonesian security forces were killed by rioters (The Age, 2006). The number of deaths among students and other demonstrators was not reported. In July, riots erupted at China's Chambishi Copper Mine in Zambia over wage rates. During the conflict a total of six employees were shot and wounded (Rueters News Service, 2006). Production was suspended for two days. In August, protesters laid in front of mining roads at Newmont's Yanacocha Gold Mine in northern Peru (Denver Post, 2006). Mine officials suspended operations and were having difficulties discerning the objectives of the protesters. After a week of negotiations the roadblocks were removed. It is obviously in the best business interest of all parties to avoid such bloodshed, destruction and disruption. **Sustainable practices are therefore being conducted to avoid costly suspensions in production.**
- As well evidenced by the US passage of the Comprehensive Environmental Restoration and Liability Act (CERCLA, or more commonly, "superfund") in 1980, environmental practices once considered standard practice are often outlawed at a later date. As also evidenced by CERCLA, the cost to address such environmental legacy concerns can be retroactively assigned to mining operations if they are still viable enterprises. These financial impacts can prove too overwhelming to address through future operations. Currently, over 60 active and former mines are on the USEPA's National Priorities List (NPL) and most of these sites are posted due to acid mine drainage. Their projected remedial costs are $20 billion (USEPA Office on Solid Waste, 1997). This figure does not include non-superfund clean-ups addressed through state issued

administrative orders or voluntary cleanup programs. These costs also do not encompass potential third party lawsuits or requests for compensation for natural resource damages, bodily injury (toxic tort) claims, or the pollution of neighboring privately held land. **Sustainable practices are therefore being conducted to reduce potential future liabilities.**

- At the end of the mining life cycle, the mining firm is often left with the title or patent of the worked property. In many cases the property can represent a significant asset for residential or commercial development if it is not impaired by environmental conditions. In one notable case (BHP's Island Copper Mine in Vancouver, Canada), a former 530 acre, 1,320 foot deep pit has been used for the production of Atlantic Salmon smolt (Veige, M.M., and others, 2001). **Sustainable practices are therefore being completed to maximize the future residential or commercial value of the mined property.**
- National and local governments have the ability to influence or designate parties that will engage in the exploitation of a given mineral deposit. These influences take many forms for varied reasons. In South Africa, legislation is focused on transitioning ownership to minority owned firms (Bailey, 2002). In the Philippines, legislation is in place to ensure that domestic sources own a majority stake in the enterprise (Agcaoili, 2004). Where the means of measuring such criteria involves ambiguity, comfort or hesitation is in achieving an agreement often effected by the mining company's prior performance on environmental and social issues.

It has also been noted that firm's have adopted internal codes of conduct to ensure that their suppliers adhere to sustainable principles. An example with a direct impact upon the mining industry is customer concerns over potential links between the source of columbite-tantalum (coltan) products tied to forced or child labor in the Democratic Republic of Congo (Hayes and Burge, 2003). As discussed in a company press release, *"Internationally, 'blood tantalite' has received such international press that buyers from Europe and the US have requested a certificate of origin on the product they do buy."* (Pinnacle, 2005) **Sustainable practices are therefore being conducted to gain an advantage over the competition.** With the growing disparity between those firms who have adopted sustainable practices with others whose philosophy is focused upon "flying below the radar", the importance of this driver is expected to grow considerably in the coming decade.

Conclusions

As discussed above, standard definitions of sustainability do not effectively translate to the mining and metals sector. To address this shortcoming, a coherent and workable definition has been developed for consideration. As a prelude to Part 2 of this report, a listing of ten separate economic drivers to encourage sustainable practices in the sector has been made and defended. In Part 2 of this series, the current status of these efforts will be presented in greater detail, and suggestions for improvement will be proposed.

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Reviewed by AIPG Associate Editors: Edward M. Baltzer, CPG-08861, Solomon A. Isiorho, CPG-07788 and Dale H. Rezabek, CPG-09285.

Perspective From Over the Hill and the Journey to Get There

Charles R. Barnett, CPG-02107

I am now in my so-called "Golden Years." The euphemism is debatable but as song-and-dance-man, *Maurice Chevalier*, used to say, "It's better than the alternative."

In my youth no one seemed interested in listening to anything I had to say. In my mid-years, especially during a stint as a groundwater consultant, they listened and paid for the privilege. I don't think I knew much more than I did earlier, but I had achieved a certain aura of *gravitas*.

Now, in my seventies, I continue to maintain the *gravitas*, but am also suspected of illogical bumbling unless I parrot what those around me consider to be the consensus.

Mine has been a varied and unique, professional life-experience. Early on, I worked for the USGS in its Trenton, New Jersey groundwater office. From there I went on active duty in the US Army in Stuttgart, Germany as a *Terrain Intelligence Analyst*. After an *honorable discharge*, I went to work as a *research scientist* (my actual title) for a company called *Isotopes Incorporated*. It was a "for-profit" step-child of the Lamont-Doherty Geological Observatory (now *LDEO*), designed to capture government and industrial research contracts. There, I made measurements of radiotracers in high altitude air samples in a study of atmospheric pollutant behavior. The famed, but at that time secret, *U-2 aircraft* collected the samples for our analyses. I also worked to develop environmental radiotracer techniques for groundwater and natural gas research under contract to the *Atomic Energy Commission*.

With that experience under my belt, I was hired by the University of California to work at *Los Alamos National Laboratory* as an *Environmental Health Physicist*. Again, the work was related to studies of radioisotope movement in the environment. Somewhere in there, I was invited to join the now famous *International Atomic Energy Agency* in Vienna. The appointment required a two year commitment and my Los Alamos team leader said he couldn't spare me that long. I've always wondered about that since mostly we did a lot of journal reading and conference attending. Of course we were on hand with our environmental expertise when, in 1966, two military planes collided over the Mediterranean near *Palomares, Spain*. Of the four H-bombs aboard the B-52, the conventional explosives in three detonated upon impact with dry land and spread nuclear material across the landscape. The fourth fell into the sea and was later recovered.

After ten years at Los Alamos, my career took a wild turn. A childhood friend had founded a motion picture, post-production company in New York and begged me to join him as his vice president and general manager. I can't imagine today what gave me the courage to do so, but I said yes.

I couldn't quite deal with the fact that I was a geologist running a movie company, but my friend was very accommodating and allowed me to bounce back and forth between his company and a part-time career as a groundwater consultant, working primarily in Florida and the Bahamas.

After five years as a New York movie mogul, my perfect, professional niche fell into my lap. I received an offer from *Los Alamos* to head their motion picture and television production unit. My two careers became one and I found that I could make science films of exceptional quality due to my hybrid background.

I learned something then that few people have reason to think about. People don't make films about day-to-day research operations. They are made about cutting edge science and exceptional people. Los Alamos had handed me the key to the inner sanctum. I worked with people who had risen to the apex of scientific achievement and recognition—mathematician Stanislaw Ulam, physicists Hans Bethe and Edward Teller—astronomers, chemists, rocket scientists—on and on *ad infinitum*. During one social event, I actually shared a small lunch table with another nobody like myself and three Nobel laureates. I got to write for *Smithsonian Magazine* and live for a bit above the Arctic Circle at a *Cold War* missile warning site. I also got to interview the highest level Soviet scientists at the *Nevada Test Site* about seismic detection of nuclear detonations—an integral part of the disarmament treaty efforts being drafted at the time.

Perhaps this enumeration of experiences sounds more like an Oscar acceptance speech than an article intended for members of a professional geology organization. But there is a point, if you'll allow me a few more words. As the title of this piece states, this is a view from over the hill. I'm the old guy who is over the hill and here's the message—

Geology is a discipline that prepares one to take on a variety of fascinating professional activities should one maintain a broad vision of life's opportunities. If I look back, every turn in my career seems a logical progression toward the spot I would have chosen in the first place. However, were I to be suddenly transported backwards in time to the point at which I started, I could never have envisioned or planned the professional career that evolved.

I began my study of geology at Columbia University under such notables as *Arthur Strahler*, from whom I learned to say *epieugeosyncline*; and romantic geomorphologist, *Armin K. Lobeck*, from whom I learned to love the shape of our planet; and structural geologist, *Walter Bucher*, from whom I learned the value of shoemaker's wax

in modeling the behavior of the earth's crust under stress.

But perhaps there was a bit of the budding filmmaker in me even then. I tended to focus on the quirks of humanity about me. *Arthur Strahler*, for example, always held his head cocked to one side. I noted that his teaching assistants all seemed to develop the same peculiarity, but with a cant to the opposite side. I decided it was expressive of an urge on the part of these underlings to talk face to face with the grand *stratigrapher*.

I've made observations about other notables along the way. Many are not fit for prime time airing.

Finally, with the weight of *gravitas* lending just a smidgen of authority to my words, let me wade into a present controversy—*humanity-induced global warming*. I have no carefully assembled volumes of objective research or anecdotal accounts to bolster my position —only questions. For example—

- What led to the ice ages before the rise of human industrial technology —and to the intervening warming periods ?
- Why are there aboriginal paintings of amphibians in caves in the middle of the Sahara?
- How did the *dust bowl* come into being and why did it go away?
- Why didn't we accept the concept of *continental drift* until relatively recently? At Columbia in the 1950's we were divided into the *Drifters* and the *Non-Drifters*.
- Why didn't geologists recognize the reality of *plate tectonics* until recently.
- Why are the Martian ice caps shrinking?
- Why are theories of thermal regulation via precipitation mechanics ignored and CO_2 elevated to a gargantuan role ?
- When is the Earth due for a change in magnetic polarity? Soon, some say, and present changes in our magnetosphere may well be allowing solar influences to affect changes in our atmosphere. Evidence of past polar flips can be seen in the lithosphere. That sounds like a lot bigger force at work than SUV exhausts.
- And what about *planetary* (gravity) wave activity? Dowdy *et al.*, in the August 2004 AGU Journal, said, "Increased planetary wave activity during the Antarctic winter of 2002 was the likely source of weak mid-level atmospheric winds that caused unprecedented warming in the Southern Polar stratosphere."

These are just a few of the questions that tumble through this old geologist's head. I won't bother you with more. Most don't seem to occur to the public and the politicians because of a hysterical public's inability to grasp the concept of appropriate modeling and the complexity of flow dynamics — geologic time, earth size and mass and of course, the fluidity of virtually everything. I read once, that were the earth modeled properly in the size of a baseball, it would have the consistency of mud and the summit of Mt. Everest would be no higher than a coat of paint on that mud ball (Figure 1).

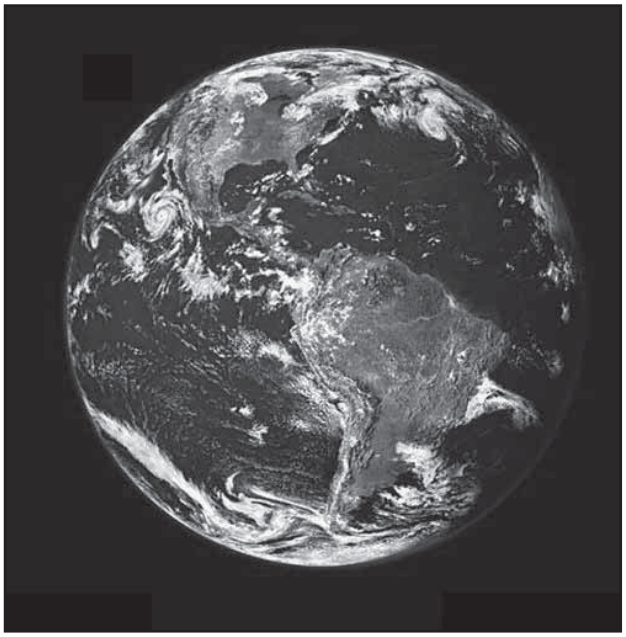


Figure 1. Our Beautiful Mud Ball. Termites, SUV's, cow's and politicians — all look about the same from here.

Professor Bucher taught us the concept of geologic modeling. Life has taught me the transience and fragility of widely held "truths." We are told there is a 90 percent consensus among scientists that man-induced global warming is a fact. But scientific facts are not determined by polls. What about that 10 percent (if that's all there is) who don't agree? What if the *College of Cardinals* had told *Galileo*, "Scientists have reached a 90 percent consensus that the earth is in the middle, not the sun, so shut up and sit down". Essentially, that **is** what they said—and they were wrong.

It seems to me as a geologist who has lived through the ebb and flow of "facts" regarding our planet, one thing is certain— things are in motion. Often it is on a scale difficult for us to visualize. Things have always been changing and presumably they always will. It was so before humanity came along and it has been so throughout humanity's short rise to technological complexity. Before and after the *Industrial Revolution* the atmosphere has been subject to natural influences on a grand scale. Carbon dioxide has come hurtling from the mouths of volcanoes. Rain forests gobble it up and so do the surfaces of the oceans. Termites expel colossal amounts of "pollutants" into the atmosphere as do the inefficient digestive processes of cattle and some of us older folks.

I think it is time for geologists to be heard regarding earth history and behavior rather than TV meteorologists and politicians. It is time for plasma physicists to be heard regarding solar activity and its affect upon the Earth, its atmosphere, and the other planets. It is time for climatologists to address atmospheric processes in light of models that suggest precipitation is the primary factor regulating global temperature, not the *greenhouse effect*.

I'd be a vulnerable black pot should I point out the black kettle pronouncements of another who has left his profession, this one a politician (and former divinity student) in favor of a recent foray into film making —but, I think there is more than a single "inconvenient truth" to be faced as galaxies collide, plates slide, magnetic poles poise to flip, gravity waves oscillate—and lay aficionados demand we join in a quasi-scientific, semi-religious consensus.

William Shakespeare said, "All the world's a stage…" Of course he did. He was a playwright. That's where he lived. Some men, particularly politicians, wield great influence over human affairs. That is the stage upon which they perform. But Earth is not a stage and is far too grand in scale to be subject to their strutting and agenda driven proclamations. As we geologists know, even ones like me who make films, all the world's not a stage but a mud ball and politi-

cians, mere microbes who strut about on its constantly changing surface like mosquitoes on an elephant's back suggesting it is they who direct its progress.

Is the Earth changing? Yes! Is the sun changing? That's a yes, too. Is climate changing? Always. Is mankind causing the changes? Possibly to a degree, but humanity's effect on the Earth within a multitude of giant environmental forces is complex, and its importance, within an accurate model, unproven in this old geologist's opinion.

But who can say no to the very conspicuous pundits? The *High Priests of Global Warming*, like another preacher I heard years ago, can never be proven wrong. He said, "Your prayers are **always** answered. When you pray, whatever happens next is the answer." Global Warming seems the answer to the anti-industrial activist's prayer. All change we see in our climate, whether shift to hot or cold, wet or dry, it's all due to human contributions to greenhouse gases. Lots of storms? Human activity! No storms? Human activity! —ad nauseam. Like that preacher's message, we can't say it's not true nor can we say for sure that *Pelée* isn't alive within the shield volcanoes of Hawaii. A statistically significant sample of native born Hawaiians might well form a 90% consensus to the contrary.

The systems we are discussing seem most closely addressed by *chaos theory*. And yet, theoreticians within that discipline (or un-discipline) do not pretend to be able to predict behavior in a specific instance or within a short time frame. Geologic and astral times work. Models can predict the death of the Sun and the end of our planet. They cannot tell if it will rain tomorrow—even in the desert Southwest where I live and it rarely rains. They *can* predict how much it will rain here over a ten year period ..... maybe.

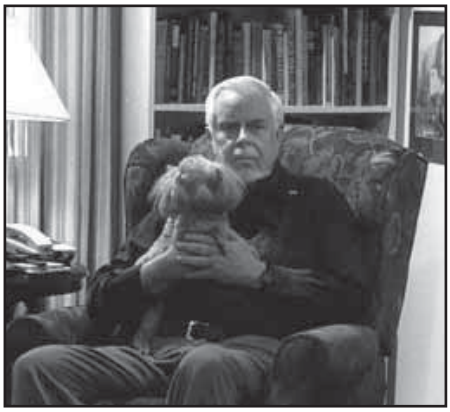
Is global warming a vector or a wave? Is human activity causal? If it's a vector, you might make a case for it. If it's a wave, forget it. The wave may be huge and beyond our limited vision to perceive, given the data available. The earth looks flat but few geologists believe that it is. The curve is just too big to see. Just sit back and hope for the best. Good times come and go. *Gaia* may know. TV weather people and politicians don't.

One more personal anecdote before you turn the page to seek the words of someone wiser and more technically qualified than I—

Edward Teller (Figure 2), dubbed *Father of the H Bomb* and unsympathetically depicted as *Dr. Strangelove* by filmmaker *Stanley Kubrick*, lost his right foot in a freak accident as a young man. In old age he walked with a plodding, noisy gait and the help of a huge, wooden staff.

Figure 2. Edward Teller—Life Mask.

In his lifetime, Edward Teller did more to affect the world in which we live than did a billion others. Many might wish he hadn't. But he did little to affect our climate. On the other hand, we all make contributions to atmospheric change. Dr. Teller did so from the stall next to mine. Human contributions to the mechanisms of Mother Earth are rarely of great or lasting consequence—and that's my perspective and the journey that led to it, from over the hill.



Charles Barnett is a geologist turned science film writer/producer. He has written for both technical and popular journals but has concentrated on filmmaking, with over 100 national and international awards, including 19 CINE Golden Eagles. He is presently retired but creates videos and writes on subjects that pique his interest. His biography has been selected for inclusion in "Who's Who in the World" and "Who's Who in the West." He lives with a small, belligerent poodle named, Gnuf-Gnuf, and struggles valiantly each day with the technology that has invaded his craft and threatens to push him to the edge of lunacy. He is a Fellow (Emeritus) of the Explorers Club (New York), a long time member of AIPG, and past member of many technical and artistic societies including the American Health Physics Society, the National Speleological Society and the Society of University Film Makers.

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*.

WorldTrek: A Matter of Time

Russell A. Fisher, CPG-05183

Abstract

In June of 2001 Russell and Carla Fisher along with their two daughters set out on a yearlong trip around the world. During the course of the year they visited twenty countries and traveled more than 50,000 miles. Along the way they home schooled their girls in math and language along with a good dose of geology.

WorldTrek: A Matter of Time

I don't know of any other group of people that has an awareness of time and proportion in any way comparable to that shared by geologists. Traveling, as we are, through the cluttered vacuum of space at 18,500 miles per second, we have unwittingly booked passage on a four point five billion year old ball of dirt; the one we geologists devote our careers to studying. A mere two million years ago the genus homo emerged from a 600 million year struggle and stepped out on to the grasslands of east central Africa. Self awareness kicked in about 30,000 years ago and it took another 25,000 years to develop a means of communicating abstractly across the expanse of time.

Sitting up in bed I read a timeless story, the words of Cicero in a letter to his son Marcus, written in October of 44 BC. He had sent Marcus to Athens to study the classics and it seems the good life in Greece had taken its toll on Marcus's grades. Cicero knew the value of education abroad, but like any father he was concerned. The lessons he had imparted to Marcus thus far would have to carry him forward. Cicero's time on earth came to an end. Father and son would never again share the pleasure of each other's company.

All this was processing in background mode as my wife Carla and I were sipping our cups of coffee one cold and drizzly Sunday morning. Our pillows pushed up behind us we shared a companionable silence, savoring that first cup of coffee. I put Cicero down on the night stand and wrapped my hands around the coffee mug to absorb the escaping warmth … and that was where it all started.

"Ya' know Carla I've been doing some thinking lately. We've often talked about taking a big trip some day, something truly memorable, truly life changing, something we as a family and the girls in particular will carry with us for the rest of our lives."

Carla sipped her coffee and waited for me to continue. She could tell that the caffeine had begun to take effect and that my more animated demeanor meant I was about to hatch some scheme. I went on, as I often do, to make my case.

"Do you remember when we were college students back in Socorro? We were determined to do something different with our lives? Well, I've been thinking about doing a truly big trip, like going around the world. And honestly, Carla, I can't come up with a good reason not to. Besides the girls are at the perfect age"

Our two daughters Andrea and Lesley separated by only fifteen months in age were eleven and twelve at the time. I paused for a minute, thinking I would make my last point, then let the subject drop for a week or two.

"It doesn't seem logical to wait until we're older. Once the girls are out of school they'll have their own commitments. Besides," I concluded, "I can't imagine who I would rather share a truly great adventure with than you and the girls."

Over the period of the next sixteen months our family odyssey took shape. Arranging to put our conventional lives

Delphi, Greece

on hold for a year involved working out countless details; besides planning the trip, there was moving out of our house and arranging to lease it, gathering the resources for home schooling, putting our finances in order, getting the proper immunizations and having a lawyer draw up our wills.

Among the administrative details were the big steps like selling my car and quitting my job. I had been with the same company for sixteen years and a change of pace would be welcome. They were gracious in my departure and kind enough to keep their thoughts to themselves.

Looking back, I could give all sorts of high minded reasons to do what we did but at the root of it all, this was an adventure, plain and simple. A year traveling the world with our girls would expose them to diverse and contrasting cultures, ways of life, customs of worship, things to eat and a little geology along the way. As populations expand and resources seem to contract, conflicts sometimes arise from a lack of understanding of other people's frames of reference. Geologists often are forced to confront those issues in ways many other professional are not. Those are also things that a person can't learn in school. A major trip would give Carla and I the opportunity to genuinely participate in our daughters' education, even if it was only for a year.

With a generalized map of where we hoped to travel plus a few reservations for airline tickets and cottages along the way, we set out from Houston on a balmy day in June. Entering the European Union at London's Heathrow Airport we were on our way. Through England, Wales and on west to Ireland we paused to renew family ties. Back across England and the Yorkshire Dales we rambled along the trace of Hadrian's Wall, the northern most boundary of Rome back in AD 140.

A stop for coffee in Newcastle upon Tyne and we set sail for Kristiansand, on the southwest coast of Norway. Urged on by Carla's goal to cross the Arctic Circle we followed the rugged coast by train, bus, ferry boat and foot on north to Narvik. Crossing the backbone of the peninsula at the little copper mining town of Gallivare we headed east into Sweden and worked our way to Stockholm to stroll the wide avenues and lively street markets.

By mid August we were boarding a train in the delightful city of Tallinn, Estonia bound for St. Petersburg, Russia birthplace of the northern empire of Peter the Great. Shedding our cold war baggage we warmed to the lively streets of Moscow and thought ruefully about the great and cruel experiment perpetrate upon the proud people of Russia by Lenin and his followers.

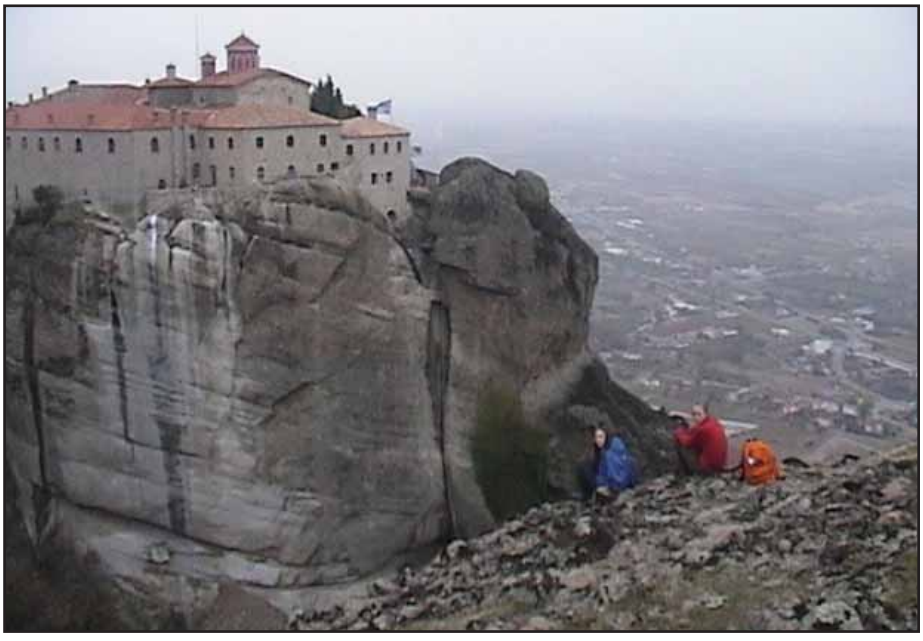
As the change of the seasons drove us on, our travels carried us into the Czech Republic, then Germany, France and Italy. Lesley and Andrea's young eyes gazed out from the snowy peaks of Zugspitze across Germany and Austria and they danced through the verdant limestone Gorges du Tarn in southern France. In Rome we rose early in the mornings to jog through the abandoned streets, down past the forum to make a loop around the Coliseum. Arriving back at our flat near Stazione Termini I brewed up a cup of strong black coffee and we settled in for a morning of math and language lessons. Things like home schooling and writing in our journals became important connecting threads from one day to the next, giving our lives structure as everything around us changed.

Snowbound in northern Greece on Mt. Pelion, we were afforded a respite from the constant press of travel and an opportunity to catch up on home schooling. Carla's family joined us in Athens for Christmas where we reaffirmed our resolve to carry on around the globe. From Athens we heading north to Thessaloniki through yet another blizzard, dropped our car and purchased tickets for the bus to Istanbul.

The Needle Rarotonga

The intricate Persian carpets spread on the floor of the great mosque of Sultan Ahmet I were no match for the frigid northern air that had descended upon Istanbul in January. The Side Pension was a welcome redoubt as the temperatures gradually climbed above freezing. The most inspiring city in the world, Istanbul is where east meets west.

On we journeyed into Egypt, down the Nile to Aswan and back to the great learning center of Alexandria. A casual walk through the friendly street market brought us to the west bay where the boat builders of Alexandria still ply their trade as they did at the time of Mark Anthony when Roman galleys



Meteora, Greece

brought timber in exchange for Egyptian wheat.

The first of February found us on a plane bound for India. The sultry atmosphere in Mumbai (Bombay) was a stark contrast from the chillier temperatures of the Mediterranean. Catching a train for the far southern state of Kerela we set off to explore the Malabar Coast and Cardamom Hills. Back through the heart of India and north to visit the Palace of Amba Mata dating from the time of Akbar the Great, 16th century ruler of the Mughal Empire. Five weeks in India afforded us time only for the highlights, but no trip to India would be complete without a visit to the Taj Mahal.

Ampitheater in Pompeii

The steamy tropical warmth of Bankok enveloped us as we stepped from the plane and began our love affair with the ancient kingdom of Siam that we now know as Thailand. On rented bicycles we peddled through the streets of Ayutthaya to wander among the vast almost mythical Buddhist temples dating from the 14th century. As the time to move on drew near, we laughed and shared stories of the day's adventures at a tiny open air restaurant overlooking the meandering Chao-Phraya river. Another perfect day came to a perfect ending.

Carla and I watched as the days turned to night and the miles melted away, sometimes saddened by the relentless passage of time, knowing the dream would come to an end. We dug our warm clothes from the depths of our packs as we headed for the palace of the Grand Khan near the City of Khanbalu or at least that's how Marco Polo described his visit to Beijing in around AD 1290. Today the strangely benevolent looking face of Mao Zedong gazes out from the walls of the Khans Forbidden City onto the expanse of the People's Square and further on to a pair of golden arches, an internet cafe and an occasional Starbucks. Time moves on, nothing stays the same.

On our way to Chongqing to catch a boat down the Yangtze we spent a few days wandering the streets of the 11th century BC dynastic capital of Xian. Xian marked the stating point of the historic silk road that brought the diaphanous textile to the notice of Romans and Greeks. Scandalized by its luster and revealing translucency silk was reviled as the height of decadence and licentiousness. Its popularity unabated, trade continued along the route until well after the time of Marco Polo. Xian still retains it medieval city walls.

The Yangtze flowing from Chongqing to Shanghai has cut its dramatic course through the low mountain ranges east of the Sichuan Basin with jutting and plunging sediments that rival those of the Colorado Plateau. Along with the river's silty brown cargo we settled for a few days in the city of Shanghai.

By late May we had enjoyed a couple of weeks in Japan and were headed across the equator to Cairns, located on Australia's tropical northeastern coast. The girls had completed their language course work, with algebra and geometry almost at an end. We had accomplished our goal of maintaining some level of educational rigor while we traveled. A highlight of our Australian visit was a scuba trip out on the Great Barrier Reef. From Cairns we headed south in a rented caravan camper for three weeks past the Undara lava tubes and across the upland prairies and grass lands on the western slopes of the Great Dividing Range. Joining both ends of the loop we made contact with a branch of the family that had emigrated from Ireland at about the same time our branch landed in America.

St. Petersburg Canal

We celebrated our success as it became clear that our confederation of four would realize the goal of making it all the way around the globe, but we each had to admit we were humbled by the experience. Our final stop before returning the US was on the tiny island of Rarotonga in the Cook Islands, a week to reflect and contemplate what the future might bring.

Over the course of a year in close proximity, we had grown together in ways we would only begin to understand as time passed and detailed recollections of the trip slipped into the haze of memory. We had become travelers. Houston seemed like just another stopping point along the way. There was no feeling of anticipation or sense of excitement. Our home had come to exist among us, not in a house

HayStak Karst near YongShuo China

and certainly not in those boxes of things that now seemed to belong to some other existence.

Christmas was approaching, the girls were back in school. I was doing some consulting and began working on the book that would become WorldTrek, while Carla was busy sending out resumes. The cat had re-established his domain and his food bowl was back where it had always been. Most things had just picked up where they left off.

Turning on to the familiar thoroughfare Andrea sat next to me in the passenger seat, tucking her shin guards into her long socks. She looked good in her crisp new soccer uniform. She had probably grown four inches on the trip. She was almost a woman.

"Andrea," I said, "you know, Christmas is coming up here pretty soon, and we haven't talked about it at all."

"About what?" she said bending down to tie her shoelaces.

"Well, it's common for kids your age to start laying the ground work for the items on their Christmas wish list. What's on your list this year? You haven't even brought it up, and I'm kind of curious."

"Yeah, I know. Everyone at school is getting all excited about it. But after the trip, it just doesn't seem to matter. You can get me something if you want." And she left it at that.

Maybe she was just conscious of the fact that our income hadn't rebounded to the pre-trip levels yet and then maybe she had actually begun to test the balance between things and experience in her own life. Only time would tell.

If you would like to learn more, the full story is in WorldTrek: A Family Odyssey, Rainbow Books, 2007. You can find more photos and text excerpts at www.WorldTrekOnline.com.

Russ Fisher, CPG-05183, Texas CPG 4549 is an economic geologist who graduated from New Mexico Institute of Mining and Technology, '72 BS Geology, '79 MS Geochemistry.

Carla (Houston) Fisher Graduated from New Mexico Institute of Mining and Technology, '73 BS Biology and University of Arizona, '79 MS Fisheries Science.

The Fishers are twenty year residents of The Woodlands, Texas.

Arizona Section Annual Meeting

David Kirchner and Larry Fellows

The Arizona Section held their Annual Meeting on February 9th-10th, in Tucson. The AIPG Executive Committee attended both the Friday night evening dinner as well as the Saturday Section meeting. Both events were a great success.

Bill Siok, Barbara Murphy and Michael Geddis

Michael Geddis addressing the group.

Virginia McLemore, Will Cox and Terry West

Lee Allison and Mark Rogers

AIPG Booth at the Tucson Gem and Mineral Show

AIPG would like to Thank all of the Volunteers who helped at the booth this year.

Alejandra Bonilla, Kendall Cole-Rae, Gary Hix, David Kirchner Dean Kleinkopf, Jack Light, Steve Maslansky, Keith Rodgers, John Sweet.

Thank You!

AIPG National Executive Committee Meeting

Tucson, Arizona

February 9, 2007

R. Todd Church, CPG-10436

The first National Executive Committee meeting for 2007 was held February 9th, at the Hotel Arizona in Tucson, Arizona. The 2007 National Executive Committee members in attendance included President Kel Buchanan, Past-President Larry Weber, President-Elect Dan St. Germain, Vice President Ginger McLemore, Treasurer Ron Wallace, Secretary Mark Rogers, Editor Gail Gibson and Advisory Board members Todd Church, Dennis Pennington, Barbara Murphy, and Chuck Drake. Also in attendance were AIPG Executive Director Bill Siok, AIPG Assistant Director Wendy Davidson, and Membership Services Manager Cathy Duran. Guests included Arizona Section President David Kirchner, Arizona State Geologist Dr. Lee Allison, Randy Orndorff and Lydia Quintana of the USGS, and Dr. Terry West and Becky Roland of AEG.

Officer Reports

The elected officers in attendance gave their respective reports.

Executive Committee meeting, February 9, 2007.

Secretary Rogers presented an action item to adopt the updated Education for Professional Practice. Discussions centered on the six core geology courses listed in the document. Committee members had issues with relegating only physical geology, historical geology, earth materials, structural geology, stratigraphy, and field geology to the list. Suggestions included expanding the list to include a greater number of different courses to provide more flexibility. An expanded list would also allow for a "pick-list" of core courses. Other editorial comments and issues with the document were also discussed at the meeting. President Buchanan motioned to send the Education for Professional Practice document back to the Professional Practice Committee with comments from the National Executive Committee.

Treasurer Wallace presented the following:

- A discussion regarding the Institute's Accountants Review Report.
- A review of the Institute's financial balance sheets; and,
- A review of the Institute's Statement of Activities.

President-Elect St. Germain reported on the following:

- The CPG Requirement Committee meeting at the St. Paul meeting in September 2006. The CPG Requirement Committee looked at three options for inclusion of the ASBOG exam as a requirement for future CPGs. As reported by President-Elect St. Germain, the CPG Requirement Committee has very differing opinions on this topic and the committee is not prepared at this time to make any changes to the AIPG bylaws. Strengthening the CPG title, however, should continue to be a work-in-progress by continuing to explore the potential requirement of the ASBOG exam and by marketing other non-AIPG professional geologists with marketing materials similar to other organizations.
- Possible amendments to the language in the AIPG Policy Regarding State Registration/Licensing of Geologists to clearly demonstrate AIPG unequivocal support for Professional Registration. It was agreed that an electronic document of the amended language would be sent to the National Executive Committee for further input and an electronic vote would take place in the future to approve the amendment.
- President-Elect St. Germain also challenged the rest of the National Executive Committee to complete the on-line CPD form as a means to lead the AIPG by example and to promote CPD through all of AIPG.

Past President Weber reported on the following:

- His attendance as a representative of AIPG at a December 2006 NGWA meeting where the institute and Bill Siok were recognized for achievements in the advancement of professional geology;
- His continued service on the National Executive Committee and continued work with his Strategic Plan for AIPG that he drafted last year.

President Buchanan reported on his recent meeting with Newmont Mining Company in their Nevada offices. The goal of this meeting was to discuss the benefits of AIPG membership at the CPG

level. President Buchanan reported that in his meeting with geologists from this firm, the more experienced geologists believed that becoming a CPG through rigorous review of your experience and ethics by peers is more important than taking an exam. President Buchanan has a similar meeting scheduled with Stillwater Mining Company in Montana.

President Buchanan also reported that it is time to increase our efforts in marketing AIPG. President Buchanan requested that the National Executive Committee implement this by increasing our face to face time with non-AIPG geologists in industries such as environmental, hydrology, oil, and coal. Wendy Davidson will supply a Powerpoint presentation to all of the Committee members to use as visual aids to discuss and promote AIPG to these geologists. The goal is for all National Executive Committee members to visit at least three companies by the Traverse City meeting in October.

Executive Director Siok reported on National Headquarters activities which included:

- Financial status of AIPG at the end of 2006 and the beginning of 2007;
- Assets held by the various AIPG Sections;
- Membership;
- Cooperative efforts with sister geological societies; and,
- Key events coming up in 2007.

Executive Committee Actions

The Executive Committee took the following actions:

- Approved the minutes from the September 25 and 26 Executive Committee Meetings in St. Paul, Minnesota;
- Approved a change in the AIPG bylaws to revise the term "Retired" to "Non-practicing" in bylaw sections 2.2 and 2.2.6;
- Approved a bank account resolution that allows the new president and treasurer to sign and endorse checks and other bank notes;
- Approved an increase in CPG dues to $130 effective January 1, 2008;
- Approved an increase in section dues for the Oklahoma Section from $15 to $25 effective January 1, 2008;
- Approved four Special Case Applications for CPG membership;
- Approved revised Colorado Section bylaws;
- Reviewed and approved Executive Committee nominees for 2008;

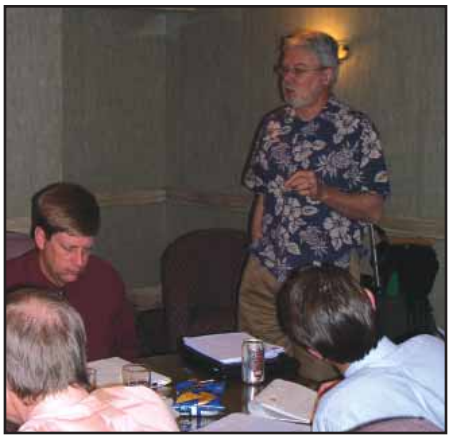
Other Business

Dr. Terry West and Becky Roland of AEG gave a talk on the status of AEG. Highlights Overall, the AEG is in a growth cycle with active student chapters and an improved web page. Similar to AIPG, the AEG has state sections as well as an international section and they are working on a strategic plan. Becky Roland suggested holding joint AIPG/AEG sectional meetings and field trips as a means to maintain communication and cooperation between the two organizations.

Dr. Lee Allison of the Arizona Geologic Survey presented a report on upcoming state programs. Dr. Allison commended AIPG for playing a key role in the strategic plan for the Arizona Geologic Survey. Additionally, Dr. Allison asked AIPG to consider joining the COPUS network. COPUS is the Coalition on the Public Understanding of Science. This organization is an educational campaign to teach the public about the role and value of true science in order to keep science education and advancement in the forefront in the United States.

Additional discussions were held on the planning and preparation for The Third International Professional Geology Conference (IPGC) to be held in Flagstaff in September 2008. Tasks that need further work in the conference planning were identified. These tasks include obtaining more sponsors, coordination with the Arizona Hydrologic Society (AHS) annual meeting, and more student participation. Options were discussed in the organization and planning of the conference so as to attract the most diversified group and greatest number of people. David Kirchner suggested that we avoid competing with the AHS and we should strive to cooperate with this organization so as make it desirable for AHS members to stick around and stay for the Third IPGC.

Randy Orndorff gives USGS National Cooperative Geologic Mapping Program presentation.



Dr. Lee Allison of the Arizona Geologic Survey.

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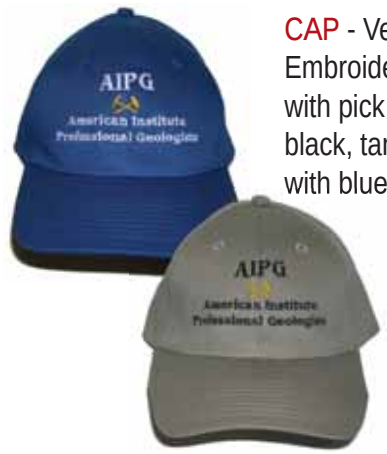

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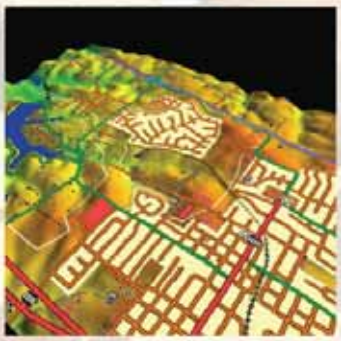

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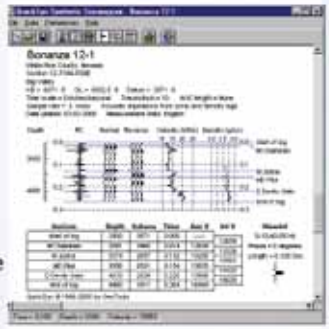

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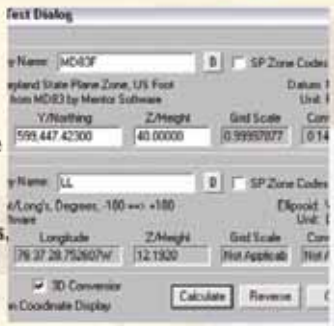

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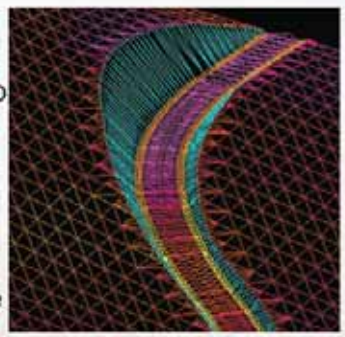

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