WANTED - TPG ARTICLES
Instructions to Authors

The TPG accepts articles of modest length for publication. Submittals should be no more than approximately 1600 words, or six typed pages, double spaced. Longer articles may be divided into parts (e.g. part 1 and part II), but this is not encouraged. Articles may be technical or professional in nature. General topics are listed below. Articles containing news of importance to professional geologists will also be considered. Except for news articles, or articles containing dated materials, submittals should be sent to AIPG headquarters twelve weeks in advance of expected publication. Some technical topic issues are planned up to one year before printing, therefore early submittals will be preferred.

Manuscripts should have the following section:

Title
Author(s) with CPG number and address
Text
Tables if included
Figures with captions if included
Appendix(es) if included
Acknowledgements
References Cited

One original and two copies of each manuscript should be submitted. Whenever possible, text should also be submitted on diskette. Headquarters uses WordPerfect 7 for Windows ’95, which is preferred, but Word, ASCII, RTF, or translatable files are acceptable. The program or format of the text should be clearly marked on the diskette. Articles can also be transmitted by e-mail.

Graphics should be clear, camera-ready, line drawings whenever possible. Photographs (color or black and white) are also encouraged. Whenever possible, drawings may be submitted on diskette in .pcx, .bmp, tiff, gif, or other standard formats. TPG wants color slides and photographs. Slides and photographs alone may be submitted for the cover. They should have a geologic theme and an informational caption.

General Topics:

Technical
Mining (January)
Petroleum Geology (March)
Hydrogeology (July)
Environmental Geology (September)
Geophysical/Engineering (November)

Professional (any issue)
Government and the Geologist
Ethics and Standards of Practice
Public Perception of Geology and Geologists
Definition, Certification, and Licensing
Practicing Geology Internationally

Other suggestions: Forensic Geology, History of Practice in a given field, Book Reviews, and Geology and the Military, Unusual Applications of Geology.

Authors are encouraged to communicate with Headquarters via mail, fax, or Internet. Send your article and/or photographs, or communicate questions to:

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The Professional Geologist

PEER REVIEWED PAPER
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FRONT COVER - View of Guadalupe Peak (8,749 ft) and El Capitan (8,078 ft high), part of the 350-mile long fossil reef complex that encircled the Delaware Basin throughout Permian time, in Guadalupe Mountains National Park, West Texas. A fault scarp on the west flank of the mountains exposes the prominent Capitan Limestone reef sediments that prograded over slope and basin deposits. The Guadalupe Mountains played a crucial role in the interpretation and subsequent discovery of the productive oil and gas fields in the Permian Basin. Photograph by John W. Jengo, CPG-8139.

BACK COVER - A skyline of Baton Rouge with a rainbow by the Mississippi River. Courtesy of the Baton Rouge Convention and Visitors Bureau.

DEPARTMENTS

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If you have been following some of the discussions regarding the future of AIPG over the past few years, there has been much concern, and rightfully so, over the decline in membership of the Institute last year, the preponderance of elderly members (average age being well over 50 years in age), and lack of growth and recruitment of young professionals. The slow growth of members can be primarily attributed to low geology enrollment the last 15 years, retirement of older members, an attitude of “who needs AIPG” in lieu of State registration, and the worst of all - apathy. Regardless of these factors, AIPG has in the past developed several strategies to increase membership and improve its members understanding in response to “why AIPG”. The emphasis in these strategies have included the rallying of each and every existing member to attract one new member, thus, if everyone did their part, we could essentially double our membership in no time and relieve the Institute of some of its financial woes. In addition, the categories and requirements for membership were modified to allow participation of interested individuals without their need to qualify for certification. In addition, AIPG has continued over the past decade to increase its overall services to the membership at large, and the Membership Development Committee, under the chairmanship of Larry Weber, has been significantly restructured and expanded.

These have been perceived by most as very favorable programs and actions to have been taken. It is clearly understood that programs and actions such as these all take time to gear up before their effects can be truly assessed. However, they have produced only modest results to date. In fact, one could effectively argue that what increase in new membership that has been experienced, has not kept up with the number of members that have retired and/or discontinued their membership with AIPG for whatever reason.

In assessing this situation, I personally view it analogous to the current tobacco issue. It seems that the government has focused its attention not on those individuals who have been smoking for 10-years plus, but rather attempting to stop or at least minimize the number of our young people from becoming career smokers, and thus in the long run relieving some of the burden on our health care system. In other words, maybe in lieu of trying to convince seasoned professionals who should know better about the importance and the role an organization like AIPG plays, maybe the federal government is right in this case and we should be focusing much more time than we currently do on the professional development and recruitment of geology students before they graduate and enter the job market.

How can this be accomplished? Many fine programs come to mind which I believe can easily be developed and implemented at the Section level. One of these programs, which some Sections such as Colorado, Illinois-Indiana, and Nevada have already successfully implemented, include conducting an annual career days for students. Other actions could include development of a “mentor” program, and/or establishment of a “brown-bag” session annually or once a semester at the various geology departments throughout your respective States, which would allow students the opportunity to interact with a distinguished professional geologist to discuss career opportunities and professional-related matters. Another thought is to develop and promote annual symposia (AIPG could either sponsor or co-sponsor such events) on such topics such as ethics, government and public policy in the geological sciences, professional issues, etc., at some of the larger conferences such as the Geological Society of America (of which AIPG is an affiliate) and the American Association of Petroleum Geologists, both of which are attended by large numbers of students, among others. All these programs have merit in my view, and should be seriously considered.

I have had the opportunity to manage many young professionals (and older ones that acted much younger) for many years, and have found this general experience analogous to raising kids. They may not appreciate what you have to say, and at times not necessarily follow through in the appropriate manner, but as time goes by the guidance provided proves to be a very good investment in their future welfare and overall well-being. In other words, we as professionals have an obligation to our young budding geologists, who have decided to enter what I consider one of the most exciting and finest of professions, to prepare and provide them with the appropriate guidance and direction to assure their professional success. I am confident that the investment of our time and energy in these types of programs and endeavors will eventually not only ensure the future of our profession, but as with the raising of kids, we are soon to forget the work required and simply be proud of the fact that we as individuals and as an organization have played a very important role in the professional development of our young, and in the securing of a better future for our profession and science.
Use of Seismic Tomography to Identify Geologic Hazards in Underground Mines

D. F. Scott, CPG-09852, T. J. Williams, and D. K. Denton

Currently, no adequate method exists to determine the amount of relative stress in large rock pillars in deep underground mines. The greater the stress, the greater the chance of violent ground failure, which is a safety hazard to miners. Existing methods involving the installation of extensometers in drilled boreholes to determine stress are time consuming and expensive and can only be used in localized areas. Also, the measurements collected are often of limited quality.

Seismic tomography offers the opportunity to identify high stress in deep underground pillars reliably and efficiently. Engineers can evaluate stresses in large rock masses, as well as monitor pillars during the mining cycle. Seismic tomography, as used to determine stress, is based on the principle that primary (P) wave velocities in highly stressed rock will be relatively higher than P-wave velocities in rock under less stress. In this technique, seismic waves are generated that penetrate a rock mass and, based on measurements of apparent velocities, used to develop stress gradient contours (tomograms).

This method requires striking a source location with a 4.5-kg sledgehammer fitted with a trigger connected to a seismograph and then recording the first arrival of the seismic wave at stations where receivers (geophones) have been installed. Geophones are mounted to the mine wall on rock bolt plates that have been drilled, tapped, and surveyed according to the mine's coordinate system. Each geophone is hooked to a seismic cable connected to the seismograph, and a two-pair shielded cable is used both for communication and as a trigger for the seismograph. A signal-stacking seismograph is used to record P-wave arrivals, and all seismic data are transferred from the seismograph to a personal computer (PC). The travel times (first arrivals) are “picked” from the seismic records. All receiver and source location coordinates (x, y, z) are input into a spreadsheet, and travel times are entered into a software program called 3DTOM for reconstruction. Finally, contouring software is used to smooth the tomograms and add text and mine openings for final presentation and interpretation (see figure 1).

Personnel from the Spokane Research Laboratory (a division of the National Institute for Occupational Safety and Health) conducted six seismic tomography surveys at three deep underground mines (Lucky Friday Mine, Mullan, ID; Sunshine Mine, Kellogg, ID; and Homestake Mine, Lead, SD). These mines are some of the deepest in North America, extending to 1,800, 1,525, and 2,470 m, respectively. The tectonic forces acting at such depths and the brittle nature of the host formations (quartzites interbedded with argillite at the Lucky Friday and Sunshine mines and quartzites, schists, and phyllites at the Homestake Mine) may result in unexpected and violent releases of energy (rock bursts) when an area is mined.1

During the six surveys in the three mines, pillar volumes ranged from 1.2 to 2 million cubic meters of rock, and apparent mean velocities ranged from 3.82 to 5.24 km/s. Wavelengths ranged from 6.19 to 7.46 m at a frequency of 720 Hz. The surveys were conducted between 1,550 and 2,270 m below the surface.

1Specifically, the Homestake Mine lies in intensely folded, Precambrian rocks of the Poorman, Homestake, and Ellison formations. The oldest, the Poorman, consists primarily of schist with syngenetic pyrrhotite along bedding planes. The Homestake is the ore-bearing formation and consists of chlorite and cummingtonite veined with quartz, carbonates, arsenopyrite, and gold. The Ellison Formation, which is the youngest, consists of quartzite. In northern Idaho, both the Lucky Friday and the Sunshine mines lie primarily in the quartzite-argillite rocks of the Precambrian Revette Formation. The Lucky Friday vein (Lucky Friday Mine) is a near-vertical vein of lead, silver, carbonates, and quartz that ranges from a few to 10 m thick. The ore-bearing rock of the Sunshine Mine is primarily sericitic quartzite and argillite containing numerous veins of quartz, tetrahedrite, and carbonate.
Figure 1. Tomograms from four levels of the Homestake Mine showing areas of high and low stress. X and y axes are mine coordinate numbers.

Figure 1 is a tomogram showing horizontal slices taken from -2,256 to -2,271 m below the surface at the Homestake Mine, Lead, SD. These images are based on apparent velocities from a seismic survey conducted around a pillar. Low-velocity areas (dark blue/dark-colored areas) correspond with fractured rock and mine openings, and high-velocity areas (red/light-colored areas) correspond with unmined pillars above stopes and corners of pillars.

In all three mines, high stresses in the mapped rock masses have corresponded with later major ground falls and seismic activity, such as rock bursts. At the Lucky Friday Mine, a numerical model identified an area of high stress in a pillar that was also identified as a high stress area by the tomographic survey; after the first of two surveys, a large rock burst occurred near the pillar. At the Sunshine Mine, excavation of an area at the top of a pillar where a high-velocity gradient had been identified during the tomographic survey revealed a previously unknown fault. This area had been the site of an injury and fatality prior to the survey. In the Homestake Mine, the tomographic survey showed a high-velocity zone in the area of a shop. Shortly after the survey, a large fall of ground near the shop resulted in closing portions of the area. Conversely, all mine openings, backfilled areas, and the fractured areas around mine openings were identified as low-velocity areas during the tomographic surveys. Thus, we feel that the identification of both high- and low-velocity areas confirm the hypothesis that seismic tomography is a useful tool for distinguishing relative stress in underground mines.

If a mine embarked on a tomographic surveying program, start-up costs would be about $60,000, which includes purchase of a 24-channel seismograph, 24 geophones, seismic cables, a laptop computer, and software. The time needed for one survey of a pillar 230 m long, 138 m wide, and 50 m high is about 150 hours, which includes 48 hours for site preparation, 30 hours for the actual survey (with a crew of three), 52 hours of data analysis, and 20 hours for graphic presentation of the data. Subsequent surveys would be far less expensive, since the equipment would have already been purchased, and as a crew became familiar with the procedure, labor costs would drop.

The benefits of a tomographic survey program are that (1) the technology is noninvasive, (2) it is reliable, (3) it allows a series of surveys to be conducted and compared over time, (4) it is less expensive than conventional methods of monitoring stress, (5) it is time efficient, and (6) it allows researchers or mine planners to evaluate and monitor a large rock mass (as much as 2 million cubic meters of rock). By mapping and monitoring stress concentration and movement in large rock
masses, high-stress conditions that may result in ground failure and affect the safety of miners can be identified. Additional supports can then be installed based on more informed judgments as to where they are actually needed.

**Bibliography**


Opportunity 2000

Lawrence M. Austin, CPG-5181, Grand Rapids, Michigan

The term "opportunity" has been severely overworked of late and is likely to be in even greater use over the next couple of years. Yet it's the most appropriate term I can apply to my vision of our future. Here it conveys that we have a decision to make as to whether we take advantage of a situation or we lose the chance through indecision. We have a clear need to take action and a clear situation in which action can lead to a positive result for AIPG. Let's not lose by default!

The need arises from our continuing dependence on dues to maintain our infrastructure. A review of recent TPG's clearly describes the situation. AIPG, like a small but stable business, is at the point where with membership, and therefore revenues, have been relatively unchanged for the last decade. Our major services (and expenses) include our "plant" costs (to maintain the institute offices), printing and mailing costs for TPG, and travel costs for the Officers, Executive Committee and Executive Director. And, while we've become very efficient, there's a limit to how far costs can be reduced and still maintain an acceptable level of service. As a result, inflation, though low, has begun to drive costs above our resources. Without a major increase in sales of Institute insignia and/or advertising, or a significant increase in membership, our dues must track the cost of living relative to those services or we risk running a deficit budget. Increasing membership is the fastest and easiest approach to easing this situation as the economies of scale will quickly ease the crisis.

Fortunately, recent changes to the membership structure and requirements provide a mechanism to significantly increase our membership. We have an opportunity with these changes to seriously recruit geologists whose past focus has been on activities within those states where they are registered or certified. These are the individuals who have consistently supported professional activities at the state level yet have not participated at the national level. They've stopped short of joining AIPG with comments that because they're already registered, why do they need national certification?

Now AIPG offers participation without the requirement for certification. Membership in an Institute that looks after an individual's interests on the national (and international) level comes at a lower annual fee than before, yet encourages the individual to participate in all but the highest levels of its governance. This is a chance for AIPG to consolidate forces at the state level and bring new opportunity to participate at the national level. How best can we show these potential members how to take advantage of this opportunity?

The Michigan Experience:

In Michigan we were fortunate in that, through the efforts of our members, certification by AIPG was deemed worthy of special consideration in Michigan's "Certified Underground Storage Tank Professional" program. Registration is not a requirement in Michigan and was not under consideration. Three specific pre-certifications were listed (PE, CPG, CGWP) and registration in another state. Failing these, ten rather than three years of Michigan-specific underground storage tank experience was required to gain CUSTP status. It wasn't a tough battle for the section to get AIPG membership included but it did require getting involved with the legislature and being there when the questions arose.

As a result, the Michigan section quadrupled in "Certified" membership in two short years. More importantly, the section now has sufficient resources to pursue more active participation at the national level. The success of the program has led Michigan section leadership into a variety of partnering arrangements with other organizations in Michigan. These include joint sponsorship of the annual "Consultant's Day" - a day long meeting in which the consultants and Michigan Department of Environmental Quality meet to discuss changes in regulations, procedures and requirements. Other joint events include periodic meetings with the Michigan Basin Geologic Society, Michigan Association of Environmental Professionals and Michigan Chapter, Association of Engineering Geologists. The synergy developed as a result of these joint efforts is incredible.

Beyond These Beginnings:

It may not be as easy to propagate this success elsewhere as the opportunity was somewhat legislatively unique. However, I would suggest that it's worth pursuing if such an opportunity either exists or can be brought into existence with the efforts of the local section. Can AIPG certification be used at the state level either as an equivalency to registration or proof of qualification if registration is implemented as a specialty certification was done in Michigan? Can state or regional sections promote this approach in the appropriate legislature? Can they join with other local geologists and organizations to make this happen? How can we assist from the national level?

At the same time, can we work to join with existing organizations within registration states to bring their membership under our umbrella? I would suggest we begin with joint meetings and dual participation to foster that same synergy. Typically our goals are similar if not identical and often our joint efforts will bring a greater probability of success with the larger participation.

Let's identify the leadership of state level organizations involving the practice of geology in all specialty areas. Then seek to find opportunities for joint membership events such as meetings, field trips, symposia, etc. Where necessary, can our section leadership arrange a liaison person or committee to facilitate this work? This may be appropriate in areas where the section includes several states such as the Northeast Section. In other sections it certainly is an opportunity to increase participation within the section by involving additional members. Can we coordinate a joint meeting when a member of our National leadership is available? Co-sponsor a poster session? Conduct a joint field trip? Any and every good excuse for members of each group to interact is valuable.

The need is evident and the opportunity is here. Together we can make this a success. But most importantly, it's time for all of us to get involved to a greater degree.
The New Millenium
Dennis Pennington, CPG-4401, Telford, Pennsylvania

Although my title sounds like a new TV show, this new century poses critical times for issues left over from this existing century and certainly AIPG issues left over from the 1990's. AIPG has made great progress in the issues before it. We have a strong base left to us by past leadership. At the same time, we have changes coming too! A new Executive Director — financial issues which can affect our effectiveness in promoting AIPG concerns — technology advances which, as geologists, we must take advantage of — and new strategies for membership to keep our organization vital and growing.

Our Institute is dependent on us for its energy and for a strong aggressive agenda. Pressures on each of us from our families, jobs and duties within our local communities compete with our time to help AIPG and our profession. But volunteers and time are needed for our profession to survive in the next 100 years. For example, geologists are still being pressured by competition for funds evidenced by lack of support by the public for both USGS programs and data needed by our profession to help the public health and public resource issues confronted by our society. As restructuring and downsizing of industry continues, more competition of our work will come from other technical fields and maybe not-so-technical fields.

We, as a profession, cannot afford to mark time. Our leaders need to be aggressive but diplomatic with strong communication skills. In turn, AIPG must provide services to members through advocacy, support for professional development, networking opportunities and outreach programs. Members, in turn, will actively help the Institute meet its goals. Involvement is key to our vitality.

As one of a few national organizations with a strong state organizational structure, National and States issues and goals have the potential to be coordinated well and thereby get more goals accomplished. Our structure should be taken advantage of by developing alliances with other organizations who can help us have more influence.

AIPG is lucky to have many leaders at the National and State levels who understand the importance of advocacy. My intention is to work with them and expand their goals and work. Expanding involvement in government affairs, including political lobbying, developing issue papers to give to both national and State Legislators and coordinating with like-minded organizations is key to pushing sensible policies and keeping geological issues in front of the public. Recent programs of AIPG have been helpful and should continue to be expanded to help State sections develop strong advocacy programs.

It is imperative that the National organization help the State sections in many program areas in addition to government affairs. After speaking with many State section leaders as Vice President, it was and is clear that the National organization needs to expand support services and other help to restore vitality and growth when State sections don't have the resources (personnel and money). Also, development of young leaders and members require AIPG to actively promote membership drives through the State sections as well as National campaigns. Student chapters mentored by the State sections should be a good source of new members, and, at the same time, create outreach to colleges and universities.

AIPG coordination with AGI and other national organizations has strong benefits of getting more goals accomplished through strength of resources. Our image and impact, therefore, can be enhanced. AIPG has a great potential to helping and protecting our profession and our society.

AIPG needs to continue to provide a clear and professional choice to the alternative of the emotional misuse of facts which some scientists use to rationalize their political beliefs.

Ethics, competence and integrity are ingredients for a strong profession, but are also key to a strong AIPG. Politicization of scientific issues should not be tolerated. We live in a time where ethics and character are under attack. AIPG can be a leader to ensure our future generations that sound scientific data is available to make many hard decisions in the next century.

Outreach programs of AIPG can involve job information exchanges and career trends which will directly help members. There is no question AIPG can help and continue to support professional development through continuing education, networking and use of new technology.

To accomplish the many goals and programs of AIPG and to confront the problems of our profession, financial resources are imperative. Strengthening the financial base of AIPG will need creativity and hard work. Alternative sources of funding through sponsorship programs, advertising, publishing and other sources can provide the money needed to hire more National staff, to expand support to State sections, to help lobby National and State legislations, coordinate with other organizations and expand professional development services including networking opportunities. Our National leaders, together with the Executive Director and staff, will need to develop an innovative financial base to help our Institute perform. Financial resources can be used to ensure that AIPG does not become a casualty of the next century. A good organization does not run without good planning and strategy as well as broad appeal. AIPG does not need to be a short-lived TV show canceled due to better ratings of...well, you fill in the blank.
I have a vision concerning the future of the AIPG. In that vision, I see our Institute growing stronger through an increase in membership; through a growing recognition of the expertise which we are uniquely qualified to offer to legislators, politicians and the citizenry of our great country; and through the strengthening and expansion of our international ties. All of these factors are essential to our future; a future that I consider to be full of promise and excitement.

Membership growth is essential to strengthen the positive influence we must be able to exert as an organization of specialized professional. Important steps have already been taken in this direction through the establishment of the new membership categories recently approved by our Institute. However, more must be accomplished. In my vision, I see membership growth being realized through the establishment of strategic alliances with other professional and technical societies, such as the American Geological Institute, the Division of Professional Affairs of the AAPG, the Society of Independent Earth Scientists, the Association of Engineering Geologists, the Geological Society of America and the National Association of State Boards of Geology, to mention a few. I visualize further expansion as we assume the lead in the careful analysis of our needs and in the implementation of feasible solutions concerning continuing education requirements. I see even greater growth as we help define and implement sensible and scientifically-sound policies which are "truly" beneficial to our country and the environment. I also foresee additional expansion as we strengthen the credential of our certification across global frontiers.

One of our foremost priorities must be the establishment of our Institute as a main source of valuable advice concerning problems "and solutions" related to the earth sciences. With the expertise we possess, we have the responsibility to ensure that our voice will be heard and that our counsel will be followed. In my vision, I see the officers and members of AIPG becoming more visible and accessible to our representatives in government, and the ensuing development of a relationship of trust based on the attributes of competency, integrity and ethics which portray the foundation of our Institute. I see the outgrowth of new publications and seminars targeting our legislators and fellow citizens. I distinctly see a high degree of involvement on our part that translates into public recognition and confidence of our knowledge and abilities.

Augmenting the value of our certification must be another of our chief concerns. To that extent, we must carefully assess what we may have to accomplish to achieve this goal. Questions concerning potential requirements of continuing education are presently being considered by our board. In my vision, I see the AIPG continuing at the vanguard of these efforts, working with other professional groups to define and implement reasonable and innovative solutions to the problem. Furthermore, I see the AIPG working to establish our certification as a respected and accepted credential worldwide. As many of us can attest from a business point of view, the world has become a smaller place as we sometimes find ourselves working in various countries. Establishing the "CPG"
Get Involved!

Madhurendu B. Kumar, CPG-3106, Baton Rouge, Louisiana

Over the past three decades I have benefited in various ways from the geological profession. Therefore, I feel obligated to give something back to the profession. As I see it, what I can do for the profession is as important as what the profession can do for me. If appropriate opportunities are available, I would like to contribute to the profession. To this end, I considered several organizations of which I am a member. AIPG is unique in providing a very effective mechanism through which I can contribute to the profession. My present perspective is based on the philosophy of the Institute as reflected in its Bylaws. It is instructive to review briefly the professional mission of the Institute and the evolutionary changes it has undergone over the years.

When AIPG was founded in 1963, its stated primary purposes were: "to take the actions necessary to strengthen the profession of geology, to enhance and preserve the standing of the geological profession in the public community and to establish standards to insure the protection of the public welfare and of the profession from non-professional practice of Geology." These purposes were compatible with the time when resource geology was the main professional focus. Most geologists were involved in the exploration and exploitation of petroleum and other minerals in support of industrial development and national security, with a majority of CPG's employed by major companies. Since that time the landscape of the geological profession has changed dramatically in response to changes in the social, economic and political environments. Society is increasingly conscious of quality-of-life issues, the finite nature of mineral resources and potentially adverse impacts of industrial activities on the environment. An impressive number of CPG's are currently active in the fields of geohydrology, engineering and environmental geology and work as consultants or for small companies. Geologist's functions now include the discovery, exploitation and conservation of minerals and petroleum, groundwater resources and contamination, superfund site remediation and research into the causes of climatic change. We are linked to politically sensitive issues which often trigger public and legal misunderstandings and debates. Additionally, an aesthetic dimension was added to our profession when society recognized geologists' contributions in the development and management of national parks, fossil hunting and increased interest in dinosaurs exemplified by the success of the movie "Jurassic Park." As our profession underwent distinct transformation, geologists have had to grapple with an increasing number of problems within the profession and without. Most noteworthy of them are: encroachment of non-geologists into the geological profession, exemplified by engineers practicing geology; ethic problems affecting some geologists as highlighted in TPG over the last two years; drastically changing availability of job opportunities resulting from shifting emphasis from one specialty to another; poor public perception of the geologic profession with no due recognition of the geologist's role in serving society.

In order to address change and ongoing problems of our profession, AIPG has modified its stated professional mission, effective September 1, 1997. This indeed brings "ethics and advocacy" into sharper focus and greater prominence than before.

As President-Elect Tom Fails observed in June 1997 TPG, "the 1963 concept of professionalism is no longer adequate." It needs to be broadened and enhanced to a significant extent. In this regard, the AIPG Washington, D.C. Fly-In Program has been reimplemented and holds great promise. A newly-formed Task Force for Continuing Professional Development will consider ways to strengthen and raise the status of certification, thereby enhancing our professional image.

The Institute derives its reputation, power, and effectiveness from the strength of its membership, which in turn depends primarily on two factors: the number of members and the extent of their involvement in the activities of the Institute. Thus, these two factors must be increased enough in magnitude to achieve the greater necessary effectiveness of the Institute. The necessary expansion of membership is facilitated through the recently broadened classes of AIPG membership. 1997 President Jon Price has appropriately urged "each of us to recruit one, two or three new members." Such a momentum for our membership drive must first be obtained and then maintained. Furthermore, in light of the experience I have gained while serving as Louisiana Section President, Chairman of the 1998 Annual Meeting and as a member of the 1995 and 1996 National Executive Committee, I feel strongly that AIPG National should provide greater encouragement and guidance to the Sections for: meeting with State representatives and adoption of responsible legislative programs; implementation of a "career-day" program for geology students, and annual brown-bag seminars in the local geology departments; participation in local societies and public activities; active participation in teacher training; and continuing education activities.

I strongly believe in the mission of AIPG and am personally committed to contributing to the geologic profession through the Institute. Its current mission is achievable with increased active participation of its members on the National and State levels. Now, more than ever, it is critical to expand the membership and involve an increasing number of members in our goal-oriented activities. The keys to our future success are more members and broader participation!
As geologists who are members of the American Institute of Professional Geologists, we should be proud of the fact that the membership level in our organization has remained constant over the past ten years, despite downturns in all fields of geology. This cannot be said of some of the 60-60 organizations who represent various facets of the geologic sciences. However, there are fewer university students enrolling in geology and if AIPG is to attract and keep those future professionals as members, the organization must clearly stand out above the crowd.

My use of Mark Twain's quote is to illustrate a point that I really hadn't considered, prior to attending a hearing on pending legislation on geologic registration in a neighboring state. I had always considered hydrologists and hydrogeologists to be competent in surface and ground water matters, and it gave me pause to hear the State Engineer comment that he didn't care how many states a geologist was registered in, if he wasn't registered as an engineer in his state, he wouldn't practice on water issues at all. I was surprised at the lack of respect given to our profession by this individual and while it represented only one opinion, it was an opinion rendered by an individual with some influence. I think Mark Twain was right. Water and the other elements which make up the science of our profession are worth fighting over.

There may be some aspect of restraint of trade in these issues, or a question of protecting one's own turf. It is always possible that there is, imbedded in these opinions, a lack of respect for or even knowledge of, what our profession does.

How then, by being a member of AIPG, can one address these attitudes? How and what does AIPG have to do in its corporate makeup to become a stronger voice for its members. There are two items that immediately leap out. The first is the membership size of AIPG; the second is source of income. Susan Landon wrote, as part of her 1990 President's Message, that in 1989, over 90% of the income of the Institute was provided by dues. Not much as changed since then.

The threshold size of an organization which wishes to have some clout, wishes to be taken seriously by politicians and wishes to be taken seriously by the public, is ten thousand members. This threshold size is generally considered attractive for national advertisers as well. So if we plan to double our size, we may be able to partially address both issues. The issue of growth, unfortunately, is not a new one. It has been a constant theme for years and has resulted in a change of our bylaws so that other professionals may become members in a multi-tiered system. Our student membership is also growing. Unfortunately, I doubt whether these measures will result in a doubling of our membership.

Our organization is not the largest geological organization, but it is not the smallest either. If we are having problems attracting new members, there are probably sister organizations, smaller than AIPG, which are equally concerned about the direction their organizations are taking. Many geologists are qualified in both geochemistry and geophysics, for instance, and while I am not saying that organizations that represent these disciplines would be overjoyed at the prospect of coming under the AIPG umbrella, there may mutual advantages to all.

Let's say, for the sake of argument, that two organizations with membership of 2,000 and 3,000 were united under the AIPG banner. Membership services, which include the TPG, directory, and mailing, cost about $48 per member per year. We can assume that these costs are equivalent or higher in smaller organizations. How much more efficient then, if instead of three directories, we had one; instead of three publications from different sources, there was one; instead of three facilities, there was one facility.

Another area of savings would be human resources. It is certainly reasonable to assume that personnel would be reduced by 25%, and much more, if one executive director took the place of three.

Advertising revenues have already been discussed, but not only would members benefit by advertising in a periodical with high circulation, national advertisers would also be attracted by the diversity of membership.

While the financial benefits of the increased size of the organization would be substantial, it is in the political arena that the organization would realize the greatest impact and it is in the political arena where the future of this organization lies. Having an improved fiscal position will allow the Institute to lobby more effectively, to consider the possibility of having staff in D.C., and possible even moving the facilities to Washington, D.C. The ripple effect will not only allow the Institute to stay in touch with other organizations headquartered in the area, but it will give to all members influence far greater than they now have in promoting geologic science issues, the workplace, regulatory red tape and other items of concern.
It is the interest of every individual to improve, whether it be the first attempt or many attempts towards a specific goal. In order to achieve a goal, long range planning is a necessity.

In 1963, a group of hard working, focused geologists accomplished a significant goal; AIPG was chartered. Thirty-five years later, AIPG has set a path with represents geologist interests in the State Sections and has created a strong voice nationally and internationally, thanks to many dedicated member geologists.

It has also established a network which has the potential to create employment opportunities for many young and experience geologists. I have witnessed, throughout my employment history, that many business owners are themselves AIPG members, recognizing the importance of the Institute which establishes and promotes 1) the advancement of geological sciences and the profession of geology; 2) qualifications for professional geologists; 3) certifying the qualifications of individual member geologists to the public; 4) high standards of ethical conduct among its members, affiliates and within the profession of geology; and 5) the geological profession before government and the general public (AIPG Bylaws, Article 1.2).

In order to uphold the mission of AIPG, AIPG established a long range planning committee in 1991 by then President Haydn Murray. The committee was to evaluate the long-term purpose and goals of the Institute. The committee recognized the great strength of the Institute is its geographic and professional diversity, representing all segments of the geographic profession in every state.

AIPG's goals to meet the Institute's mission must include actions that can be taken by the Institute to meet the needs of the public, profession, and AIPG members. One such goal includes increasing the Institute's involvement in the political arena at the national level through adoption and pursuit of a well-defined legislative program. AIPG has met this goal by organizing the annual Washing, D.C. Fly-In which meets with numerous agencies, U.S. Senators and Congressmen. This program comes at an important time given the fact many AIPG members and potential members live in states where professional certification, registration and/or licensing of geologists is required. "The Institute supports its members and other professional geologists in those states where the State Section favors registration."

However, it is all too common to hear "Why AIPG?" among potential members and current members, especially within states where professional registration and licensing is required. The answer is simple, being registered in a state does not represent your profession. The State Board of Registration does not represent the interests of the licensed individual, it merely represents the state interests in government regulation to protect the public health and welfare, and that the licensed professional is responsible for their actions. Since many individual members are licensed in more than one state, AIPG is now even more important as an institute to assist in monitoring individual states to make its mem-
CANDIDATES FOR AIPG NATIONAL PRESIDENT-ELECT

LAURENCE M. AUSTIN  
CPG-5181  
Grand Rapids, Michigan  
Statement of purpose or goals you have for AIPG: My goal for the Institute is to enhance our role in representing the professional geologist at the State level via the Institute's sections. I would like to direct AIPG's national leadership as we further implement the recommendations of the Long Range Planning Committee relating to increased section involvement at the State and local levels.

This would include the political, educational and professional activities of the sections. The national leadership would assist the sections in re-evaluating their mission, resource needs and activities planned to achieve their goals. In my vision, the Institute's national leadership would also assist the sections as they seek to increase membership, particularly in States where registration presses the need for enhanced professional activity.

Universities Attended:  
Grand Valley State University  
Wayne State University  
Grand Rapids Community College  

Degrees Granted:  
B.S., Geology  
M.S., Geochemistry  

Employment History:  
National Enr. Tech. Corp.  
Westhouse Envr. Serv.  
S.A.I.C.  
SMC Marin  
International Exploration (Geophys)  
Cowan Associates  
Jack McCormick & Associates  
Sanders & Thomas, Inc.  

AIPG Activities:  
AIPG National  
AIPG National  
AIPG National  
AIPG National  
AIPG National  
AIPG National  
AIPG National  


CANDIDATES FOR AIPG NATIONAL TREASURER

KELVIN J. BUCHANAN  
CPG-6058  
Reno, Nevada  
Statement of purpose or goals you have for AIPG: Consider bringing sister organizations under the AIPG umbrella, thereby solving the fiscal and membership problems.

Universities Attended:  
University of British Columbia  
Pepperdine University  

Degrees Granted:  
B.S., Geology  
MBA, Management  

Employment History:  
HB Engineering Group  
Hoke-Buchanan Group  
Viking Minerals, Inc.  
CF&A, Inc.  
Watts, Griffis & McQuat, Inc.  
Bethlehem Copper Corp.  
Allied Exploration  
Hecla Mining Co.  

AIPG Activities:  
Nevada Section  
Nevada Section  
AIPG Foundation, Inc.  
Nevada Section  
AIPG Foundation, Inc.  
Nevada Section  
Nevada Section  
Nevada Section  

GARY E. VAN GUILDER  
CPG-9659  
Lakeville, Minnesota  
Statement of purpose or goals you have for AIPG: To strengthen active membership and state sections awareness of AIPG National's numerous activities and how AIPG directly represents the interests of our members in the public sector, at the state and federal levels of government in order to increase public awareness of the contribution of geology to society.

Universities Attended:  
Carleton College, MN  

Degrees Granted:  
B.A., Geology  

Employment History:  
St. Project Manager/Hydrogeol.  
Dahl and Associates  
Chevron Resources Co.  
E.K. Lehmann & Assoc. Geol.  
Boise Cascade Minerals  
MIN DNR Minerals Div.  
MIN DNR Waters Div.  

AIPG Activities:  
AIPG National  
AIPG National  
AIPG National  
AIPG National  
AIPG National  
AIPG National  
AIPG National  


CANDIDATES FOR AIPG NATIONAL VICE PRESIDENT

ROBERT G. FONT
CPG-3953
Dallas, Texas

Statement of purpose or goals you have for AIPG: Strengthening and advancing professionalism in the practice of the geosciences, as well as informing the general public of the importance and value of a sound geological understanding.

Universities Attended:
Baylor University
Baylor University
Texas A&M University

Degrees Granted:
B.S. 1967
M.S. 1969
Ph.D. 1973

Employment History:
Cryx Energy Company
Strategic Petroleum
Conoco, Inc.
Conoco, Inc.
Baylor University
Conoco, Inc.

President 1991-Present
Consultant and Project Manager 1990-91
Executive Vice President 1987-89
Area Geologist 1985-87
Project Supervisor 1982-85
Sr. Staff Geologist 1981-82
Associate Professor of Geology 1977-82
Assistant Professor of Geology 1973-77
Exploration Geologist 1969-70

AIPG Activities:
AIPG National 1998-Present
Representerative at EFG Meetings 1997
Advocacy Board Representative 1996-Present
President 1995
President-Elect 1994-96

MADHURENDU B. KUMAR
CPG-3106
Baton Rouge, Louisiana

Statement of purpose or goals you have for AIPG: To maintain a strong drive to increase AIPG membership; to enhance the value of certification; to broaden AIPG's participation in political advocacy for the profession at the local, state and national level.

Universities Attended:
Ranchi University, Indian
Louisiana State University

Degrees Granted:
M.S., Applied Geology 1962
Ph.D., Geology 1972

Employment History:
Louisiana Office of Conservation
Institute for Environmental Studies, L.S.U.
City University of New York
R.A. Campbell Oil Co., Louisiana
Louisiana State University
Oil Indian Limited, India
Indian School of Mines, India

Geologist Supervisor 1962-Present
Senior Associate 1977-82
Instructor 1974-77
Exploration Geologist 1973-74
Graduate Assistant 1969-72
Senior Geologist 1963-69
Instructor 1966-63

AIPG Activities:
AIPG National 1996
AIPG National 1995
AIPG National 1994
AIPG National 1993
AIPG National 1992
AIPG National 1991

The American Institute of Professional Geologists is Accepting Applications for the Position of EXECUTIVE DIRECTOR

The American Institute of Professional Geologists (AIPG), a non-profit organization with over 5,000 members dedicated to the advancement of geology and the geologic profession, seeks a full-time Executive Director. At the time of appointment, the appointee must be Certified by AIPG as a Certified Professional Geologist, have ten years or more of technical and management experience at increasing levels of responsibility, and be aware of the key issues affecting the geological profession and AIPG. A team-oriented leader with strong communication and interpersonal skills is sought, with appreciation of policy issues impacting geologists at federal and/or state levels, the ability to attract non-dues revenue, and enthusiasm for service as a geoscience representative.

The Executive Director will be responsible for Headquarters operations including publications and membership services. The Executive Director works under the direction of an elected Executive Committee to help formulate and undertake initiatives including such things as budgets, publications, membership and revenue enhancement. He or she shall maintain good relationships with appropriate professional and technical organizations.

The Executive Director must travel as needed. Salary is competitive with non-profit organizations of AIPG's budget and size. The position will remain open until filled, preferably during spring 1999.

Applicants should submit a complete resume, the names and addresses of at least four references (three CPGs minimum) and a two-page essay explaining applicant's interest in the position and what the applicant could bring to it. Applications should be received no later than 30 June 1998 by the:

Search Committee, AIPG, 7828 Vance Drive, Suite 103, Arvada, CO 80003-2125

AIPG is an equal opportunity employer.
No Career Placement Agencies need respond.
GOVERNMENT AFFAIRS REPORT

THE ENDANGERED SPECIES ACT: A DOUBLE-EDGED SWORD

Submitted by John J. Dragonetti, CPG-2779

The battle to protect endangered species while minimizing its impact on private property continues to rage. Given the level of hostility among the several sets of combatants — including affected landowners; property rights champions; conservationists; environmentalists; mining, timber, and grazing industries; federal agents; and Congress — it is interesting to note that there is essentially universal agreement that the Endangered Species Act (ESA) is in need of substantial revision.

In an effort to blunt criticism, Interior Secretary Bruce Babbitt recently announced that 29 species would be removed from the list of endangered and threatened species in the next two years. By contrast, only a handful have been delisted in the quarter century since the ESA was enacted. The ESA defines “endangered” as on the brink of imminent extinction, and “threatened” as facing extinction in the foreseeable future.

Species extinction as a legislated federal concern is relatively recent. Prior to the 20th century, wildlife conservation was a state responsibility. The roles began to change in 1900 when Congress passed the Lacey Act prohibiting interstate commerce of state-banned wildlife products. Since most state laws only protected individual species, it was not until 1966 with passage of the Endangered Species Preservation Act (PL.89-669) that the entire grouping of threatened species was marked for protection.

As the nation moved into the 1970’s and the environmental age dawned, it was recognized that many plant and animal species faced extinction. Congress reacted to the predicament in 1973 with passage of the Endangered Species Act (PL.93-205). The ESA placed the responsibility for protection of terrestrial species with the Department of the Interior’s Fish and Wildlife Service, and for marine species with the National Oceanic and Atmospheric Administration’s (NOAA) National Marine Fisheries Service in the Department of Commerce. The law empowered these federal agencies to unilaterally designate a plant or animal as being in danger of extinction and further to assure that land development did not imperil endangered or threatened species or harm critical habitats. Once designated, it became a federal offense to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect species listed as threatened or endangered. It also became a crime to possess, sell, import or export any listed species as well as any product made from or part of such a species.

Perhaps the case most famous (or infamous, dependent upon one’s evaluation system) was the snail darter discovery that halted construction on the multi-million dollar Tellico Dam and Reservoir on the Little Tennessee River. This diminutive three-inch member of the perch family was reportedly unknown to the world until it was uncovered after dam construction had begun. The court decided in TVA v. Hill that construction of the Tellico Dam threatened the snail darter’s habitat. In 1978, the lower court decision made its way to the Supreme Court where the finding was upheld by the justices who ruled that Congress intended to arrest species extinction irrespective of the costs. Later, Congress amended the ESA to require the Interior Secretary to weigh the economic consequences of protecting habitats and also enacted legislation to allow completion of the Tellico Dam.

Reauthorization Bills in Congress

Congress has been attempting to reauthorize the ESA since 1992. Many believe the most balanced attempt to date to rewrite the act is S. 1180, introduced by Senator Dirk Kempthorne (R-Idaho). The bill, entitled the “Endangered Species Recovery Act of 1997,” is the result of many months of negotiations and the joint effort of members of the Senate Environment and Public Works Committee including Chairman John Chafee (R-Rhode Island), ranking Democrat Max Baucus (Montana), Fisheries and Wildlife Subcommittee Chair Kempthorne, and subcommittee ranking Democrat Harry Reid (Nevada). Negotiations also heavily involved federal, state, and local government representatives and other stakeholders. The bill has passed the Environment and Public Works Committee and is awaiting consideration by the full Senate.

Senator Kempthorne contends his proposal would correct the Act’s most critical weaknesses. These are: the existing Act does not require scientific data to support federal decisions, the Act has not resulted in the recovery of any endangered species, and the mandated consultation process has proven to be too cumbersome and costly. The principal modifications to the existing Act contained in S. 1180 include:

• federal managers would be required to use the best scientific and commercial data available in their decision-making processes;
• an independent reviewers panel would be appointed from nominations provided by the National Academy of Science;
• required recovery plans would have to be reasonable and cost effective;
• recovery teams would be composed of delegates from academia, special interest groups, federal, state and local governments, and industry;
• consultation requirements would be eliminated when federal managers have not specifically identified a habitat problem;
• filing plan conditions would be abolished when landowners planned minor alterations to their property;
• limitations to landowner financial liability for unintentionally disturbed habitats;
• much greater state agency, Indian tribe, local government and landowner participation in federal decisions would be required;
• grants to landowners for creating, restoring, or improving habitats that benefit endangered species; and
• federal administrators or litigants would be required to show scientific proof that actual endangered species existed on the property in question.

Despite bipartisan support that includes the Clinton Administration, most environmental groups favor H.R. 2351, introduced by George Miller (D-California), the ranking Democrat on the House Resources Committee. The Miller bill, which has 102 cosponsors, differs from S. 1180 in several important respects:

• construction projects must be designed in a manner that would not reduce the likelihood of species recovery;
• tax incentives are available to landowners for voluntary actions to conserve listed species;
• landowner costs are limited when approved habitat conservation plans have been fulfilled;
• a Habitat Conservation Plan Fund and a Community Assistance Program are created;
• the list of violations allowing citizen suits is significantly expanded; and
• full cost recovery for restoring or replacing species or habitats from those negligently responsible is stipulated.

Although there is overwhelming public support for the protection of endangered species, federal designations of critical habitats have often generated significant objections. Opponents of such habitat classifications claim that the Fish and Wildlife Service has identified critical habitats where no endangered species have ever been seen or been known to exist. Property rights advocates point out that 70 per cent of the species judged endangered inhabit private property. They argue that the takings clause in the fifth amendment to the U.S. Constitution - "nor shall private property be taken for public use without just compensation" - requires the federal government to compensate landowners when an action diminishes the value of private property or places unreasonable limitations on its use. Private property advocates maintain that such damages are unconstitutional takings and should be decided without the need for extensive and expensive litigation. This issue of whether private citizens are entitled to payment for partial takings has been at the center of a broader debate in Congress over the rights of property owners.

Washington Briefing Addresses Issue

The nature and scope of the endangered species debate was explored in late March when Women in Government Relations and Women in Mining cosponsored an ESA briefing at the Rayburn House Office Building in Washington, D.C. A panel consisting of representatives from Senator Kemphorne's office, NOAA, the Environmental Defense Fund, the U.S. Public Interest Research Group (PIRG), and the Defenders of Property Rights presented opinions regarding S. 1180 and the general problems associated with endangered species protection.

Senator Kemphorne's staffer affirmed the indisputable need for ESA reform and characterized S. 1180 as a pro-species, non-bureaucratic endeavor to treat landowners fairly while protecting endangered species. The NOAA representative reported the federal government's support for S. 1180, describing the existing ESA as a weak tool requiring federal agencies to create regulations to accomplish their mandated tasks. The representative from U.S. PIRG opposed S. 1180 for a host of reasons, favoring what they consider the more environmentally sensitive Miller bill. Although the Environmental Defense Fund spokesman credited S. 1180 for moving in the right direction, several weaknesses in the proposal were identified in the recovery plan process. The Defenders of Property Rights representative stated that their primary concern was for landowners who have been constitutionally deprived of the use or sale of their property simply on the suspicion that endangered species might be affected. The Defenders group feels that the focus of S. 1180 is misplaced on habitat protection, rather than the more fitting concept of species recovery.

In this recent airing of the difficulties in reaching agreement on how endangered species and their habitats can be most effectively preserved, there were two points of consensus. First, the ESA is badly in need of revision; and the second, Congress has too many pressing issues and too little time in its 105th session to act upon reauthorization of the Act. Yet the issue is obviously a key concern of several stakeholders including the mining industry, and is a prominent environmental priority of the executive and legislative branches. Consequently it is destined to be with us into the foreseeable future.

The Government Affairs column is a bimonthly feature written by John Dragonetti who is Senior Advisor to the American Geological Institute's Government Affairs Program.
Update prepared by David Applegate and Kasey Shewey

- Legislation to Double Civilian Research Needs Co-Sponsors
- NSF Releases Study Critical of NIE
- AGI Selects Congressional Science Fellow
- OCS Policy Committee Resolution on Data Preservation
- House Budget Resolution Elusive, Appropriators Eager to Move On Education Legislation Update
- Tentative Schedule of Upcoming GAP Activities
- New Material on Web Site

Legislation to Double Civilian Research Needs Co-Sponsors

In January, AGI put out an alert on efforts to gain additional co-sponsors for legislation to authorize a doubling of federal funding for civilian research. The bill, S. 1305, was introduced last fall by Senators Phil Gramm (R-TX), Joe Lieberman (D-CT), Pete Domenici (R-NM), and Jeff Bingaman (D-NM). The bill’s introduction coincided with the release of the “Unified Statement on Research,” in which a coalition of 109 organizations - AGI and AIPG included - called on Congress and the President to double federal funding for research in the next decade.

At a meeting last week, Senate staffers told the coalition that S. 1305 was at a crossroads - additional co-sponsors are needed if the bill is to make progress. Currently, 16 senators are listed on the bill, and that number needs to double in coming weeks if the bill is to have enough momentum to carry it through committee and to a floor vote. The coalition is asking scientists to write to their senators asking for them to sign on to S.1305 and has created a targeted list of those senators likely to be receptive:

  - Wayne Allard (R-CO)
  - Ben Nighthorse Campbell (R-CO)
  - Christopher Dodd (D-CT)
  - Bob Graham (D-FL)
  - Pat Roberts (R-KS)
  - John Kerry (D-MA)
  - Paul Sarbanes (D-MD)
  - Barbara Mikulski (D-MD)
  - Max Baucus (D-MT)
  - Robert Kerrey (D-NE)
  - Robert Torricelli (D-NJ)
  - Frank Lautenberg (D-NJ)
  - Harry Reid (D-NV)
  - Rick Santorum (R-PA)
  - Tim Johnson (D-SD)
  - John Warner (R-VA)
  - James Jeffords (R-VT)

For additional information on contacting your senators along with an entertaining analogy to Newton’s laws, see AGU Science Legislative Alert 98-06 at <www.agu.org/cgi-bin/asla/asla-list>. AGI has not endorsed S. 1305 because it does not include the Department of the Interior among the agencies slated for doubling, an omission due to lingering opposition to the former National Biological Service, now the Biological Resources Division of the U.S. Geological Survey. If you do write, please push for the inclusion of Interior. Several of the bill’s current co-sponsors favor this change, but more voices are needed.

NSF Releases Study Critical of NIE

Last month, we reported on a National Science Board (NSB) resolution on the feasibility of creating a National Institute for the Environment (NIE) within the National Science Foundation (NSF). Since then, the NSF has released its report, which — to no one’s surprise — echoed the views of its governing body, the NSB. At a House Science Subcommittee on Basic Research hearing, NSF Director Neal Lane summarized the report by stating that an NIE “exceeds the boundaries of NSF” and may take away scientific expertise and resources from NSF. Lane told the subcommittee that better scientific information on environmental issues is necessary and a coordinated response to this inquiry should be a priority, but these goals could best be achieved through existing structures such as the National Science and Technology Council. The study is available at <www.nsf.gov/cgi-bin/getpub?nieresp>. Additional information on this issue can be found on AGI’s web site.

AGI Selects Congressional Science Fellow

AGI is pleased to announce the selection of Dr. David Wunsch as the 1998-1999 AGI Congressional Science Fellow. Dr. Wunsch is currently on the staff of the Kentucky Geological Survey and is also an adjunct professor at the University of Kentucky. His expertise is in hydrogeology and geochemistry, and he will bring with him to Washington considerable experience in evaluating the effects of coal mining and petroleum recovery on groundwater and surface-water systems. Dr. Wunsch will join fellows from GSA, AGU, SSA, and more than twenty other science and engineering societies for an orientation session in September followed by placement in the office of a representative, senator, or congressional committee for the following year. The AGI fellowship is supported by a generous grant from the AGI Foundation.

OCS Policy Committee Resolution on Data Preservation

At a meeting on April 29th, the Department of the Interior’s (DOI) Outer Continental Shelf Policy Committee unanimously passed a resolution urging Interior Secretary Bruce Babbitt to endorse the importance of preserving geoscience data preservation and specifically the National Geoscience Data
Repository System being developed by AGI. The resolution also called on the Secretary to develop a “comprehensive, integrated, long-term management plan” for data in the care of DOI agencies (including the U.S. Geological Survey, Minerals Management Service, and Bureau of Land Management) and to coordinate DOI data preservation efforts with those of AGI and the Department of Energy. In response to a 1996 resolution by the policy committee, DOI recently issued a report on the use and preservation of geological and geophysical information at Interior bureaus.

House Budget Resolution Elusive, Appropriators Eager to Move On

Speculation continues as to whether the House will pass a fiscal year 1999 budget resolution in time to confer with the Senate, which passed its version in early April. The budget resolution sets spending levels that the appropriations committees then use to determine allocations for individual spending bills. White House Office of Management and Budget Director Franklin Raines told scientists at an American Association for the Advancement of Science colloquium in early May that the current draft by the House Budget Committee would cut discretionary spending over five years by $150 billion below levels in the President’s budget request. He stated that such an additional cut could not be absorbed without reductions to NSF and other science agencies that are currently slated for substantial increases in the President’s request. If the two houses are unable to reach agreement by May 15, the House Appropriations Committee plans to move ahead anyway using last year’s allocations.

Education Legislation Update

The often-threatened Eisenhower Professional Development program would only be slightly affected by the education reform bill (S. 1138) recently passed by the Senate. The bill, which lets parents earn tax-free interest on savings for K-12 (private or public) education expenses, contains an amendment by Senator Slade Gorton (R-WA) to allow states to receive $10.3 billion in Department of Education funds as a block grant, rather than designated for specific programs. The amendment excludes the Eisenhower state grants program from the block grant but another amendment would make changes to the distribution of the Eisenhower state grant funds beginning in FY 2000. The bill, however, is not expected to become law: the President has vetoed the bill because he believes it would be detrimental to the public school system.

Tentative Schedule of Upcoming GAP Activities

The GAP Advisory Committee will meet for an informational session at the AAPG annual meeting in Salt Lake City in May on Saturday, May 16th from 2-6 pm in Salon B of the Marriott.

- May 3-6, AIPG Washington Fly-In, Washington, DC
- May 7, Natl. Geologic Map Database Forum, Reston, VA
- May 16, GAP Advisory Committee Meeting, Salt Lake City, UT
- May 19, AAPG DPA Policy Forum, Salt Lake City, UT
- May 20, CNSF Congressional Exhibition, Washington, DC
- June 14-16, AASG Annual Meeting, Portland, ME
- June 30, PPP 2000 Forum (tentative date), Washington, DC

New Material on Web Site

The following updates and reports were added to the Government Affairs portion of AGI’s web site <www.agi-web.org> since the last monthly update:

- Government Performance and Results Act (GPRA) Update (4-24-98)
- NAS Workshop on Research and GPRA: Evaluation of Agency Strategic and Performance Plans (4-24-98)
- Superfund Update (4-24-98)
- National Institute for the Environment Update (4-23-98)
- Science, Math, Engineering, and Technology Education Update and Hearing Summary (4-9-98)
- Minutes from February 1998 Meeting of GAP Advisory Cmte. (Posted: 4-7-98)
- Comprehensive Test Ban Treaty Update and Hearing Summary (4-7-98)
- Royalty In Kind Update and Hearing Summary (4-7-98)
- Electricity Deregulation Update (4-7-98)
- Clean Water Act Issues Update and Hearing Summary (4-1-98)
- Geotimes Political Scene (4/98): A Smoking Gun for Science? The President’s Budget Request
- Briefing on Endangered Species Act (3-26-98)
- Year of the Ocean Update (3-23-98)
- House Appropriations Hearing on USGS Budget Request (3-18-98)

This monthly update goes out to members of the AGI Government Affairs Program (GAP) Advisory Committee as well as the leadership of AGI’s member societies and other interested geoscientists as part of a continuing effort to improve communications between GAP and the geoscience community that it serves. Prior updates can be found on the AGI web site under “Government Affairs” <http://www.agiweb.org>. For additional information on specific policy issues, please visit the web site or contact us directly at <govt@agi-web.org> or (703) 379-2480.
Conflicts of Interest

Conflict of interest questions generally are at the heart of most ethical issues faced in professional practice on a regular basis. Perusal of the Rules in Canons 2 and 3 of AIPG’s Code of Ethics shows various explicit and more indirect references to conflict of interest situations. It has also been a while since conflict of interest situations were explored in this column. Some recent conversations brought the situations discussed below to mind.

Reporting What the ‘client’ Wants to Hear

There is a perception by some government and academic geologists that consulting geologists are prostitutes by definition. The supporting argument, reduced to basics, goes something like this. “A consultant has to keep his clients happy if he is going to get paid for the present job and/or is going to receive future jobs and/or referrals. Therefore the consultant will shade his findings to please his clients.” The argument essentially states that there is an inherent and inescapable conflict of interest between making one’s living as a consultant and keeping one’s clients happy.

I highlighted ‘consultant’, ‘clients’, and ‘jobs’ in the foregoing argument because they are key words. Replace ‘consultant’ with ‘researcher’, ‘clients’ with ‘funding agencies’, and ‘jobs’ with ‘research grants’. The result is: “A researcher has to keep his funding agency happy if he is going to get paid for the present research grant and/or is going to receive future research grants and/or references. Therefore the researcher will shade his findings to please his funding agency.”

Similar changes can be constructed for those who work for regulatory agencies; ‘consultant’ is replaced with ‘government geologist’, ‘clients’ with the name of the regulatory agency and its political masters, and ‘jobs’ can remain the same or be replaced by ‘projects’ or other suitable word.

Given that we are all subject to the same potential conflict of interest and assuming the validity of the basic argument, how does one in practice avoid the inherent conflict of interest? Is the argument valid? How can one demonstrate that the conflict of interest either does not exist in a particular case, or has no material effect on the manner in which a study was conducted, on the conclusions reached, and the recommendations made?

Is Recommending More Work an Inherent Conflict?

How many reports have you read that didn’t recommend collection of more data? On the one hand, more data provides greater assurance for the conclusions reached. On the other hand, by recommending collection of more data, are we not suggesting that we should be employed to collect this additional data? Regardless of the motivation, how does one decide that collection of more data is not any longer warranted?

One client answered the last question by deciding that the additional degree of assurance obtained by halving the proven ore drill-spacing was not sufficient to warrant the added cost except in geologically complex areas. This is clearly a judgement call, but one which can be tested by determining whether actual mining plans would be altered by changing the drill-spacing. Similar arguments on drill-spacing apply to the spacing required for the efficient development of oil or gas fields or the delineation of a pollution plume. What criteria do you use to decide that enough is enough?

Payments for Referrals

Rules 3.1.4 and 3.1.5 of the AIPG Code of Ethics specifically address fees paid for referrals. One, 3.1.4, relates to the acceptance of referral payments, and the other, 3.1.5, relates to making referral payments. Both state the general principle that such payments should be avoided, but then note that if other services are rendered, payment may be made for those services.

Assume you have a satisfied client, who continues to use you, along with referring business to you. Because you are providing actual consulting services to the client, you are not violating Rule 3.1.4.

Now assume you give this client a referral fee. If he doesn’t tell those he is referring to you that you are paying him, what do you think the referred clients will feel if they find out? “Not happy” is a good bet. If you pay the referral fee, and prospective clients are told about the referral fee, what value are they going to place on the referral? Probably not as much as if there was no fee. Certainly, you can thank the client for the referrals you’ve received. But the value of a referral from someone who has no incentive to make the referral is worth far more to you in the long run.

Now suppose you hired me as a subcontractor to work on a larger job for a client. And suppose that your firm added its customary subcontractor surcharge on my bills in preparing bills for the client. If the surcharge is a customary part of your services and billings, and it is disclosed to the client, it is not a referral fee I could be viewed as paying you.

There are two issues addressed by Standard 3.1. The first relates to disclosure of the potential conflict of interest. Disclosure generally solves the problem, although in this case referral fees depreciate the value of the refer-
The second issue relates to one's ability to serve the client faithfully. Payment of referral fees creates a situation in which there are two clients whose interests may differ. If I receive fees from two different parties for the same job, to whom do I answer?

Has the payment of referral fees come up in your practice? How do you ethically recognize the client who has given you referrals without violating Rule 3.1.5?

**AIPG and Mass E-mail**

*Column 28, Mar ’98*

**Gretchen M. Gills, CPG-9693,** responded to query about the possible use of mass e-mail by AIPG, commenting that “sections should be able to send e-mail to members. If people don’t want e-mail, they should withhold their e-mail addresses. It seems to me that sections (and AIPG as a whole) could reduce mailing expenses by using e-mail instead of print and snail mail.

“Host sections should be able to send e-mail about national meetings. As above, if the e-mail has a clear subject line, people who don’t want to read it can delete at will.

“No commercial e-mail should be sent. E-mail lists should not be given to anyone but AIPG and its sections or sub-organizations.

“E-mail more than about once a week (given that the magazine is monthly) would suggest a transition to spam.” Gills also volunteered to serve on a committee to oversee AIPG’s use of mass e-mail.

Gills noted correlation between the frequency of AIPG e-mail and its perception as spam. There are times when particular groups of members will want more frequent messages which others might not want. For example, during last year’s unsuccessful effort to pass geologic licensing in Texas, a list of interested parties’ e-mail addresses was maintained and at times the messages were more frequent than once a week. (I was on the list because I was interested in how the process was going.) This is a good example of the use of e-mail for those who are interested. You give your e-mail address to people from whom you wish to receive information. One of my original questions involved the use of e-mail to provide information about annual meetings. If I’m interested in attending a meeting, I can send them my e-mail address for more information. The Alaska Section is doing this for the 1999 Annual Meeting.

I also noted in column 28 that only around 27% of AIPG’s membership have provided headquarters with an e-mail address. I know a number of members who have e-mail addresses but do not give them out. Because of the low percentage of e-mail addresses, AIPG and its Sections cannot use e-mail to significantly reduce their snail mail budgets. This is a chicken and egg thing. More comments on this topic are welcome.

**Application to Management Activity**

Consider the following situation. A certified geologist is asked to become president of a small, public natural resources company in order to enhance the quality of management. As President, he is responsible for the company’s disclosure and financial reporting to securities agencies. Financial reporting violations are discovered in which the geologist is found to have actively been involved and he is sanctioned pursuant to the securities laws. Following conclusion of the securities case, the certifying institute initiates an ethics inquiry which results in the geologist being suspended for his dishonesty in connection with the securities violations. The geologist then sues the certifying institute claiming that his activities as President did not involve the practice of geology, rather they were business management activities, and therefore he should not have been subject to proceedings related to geological ethics. Do you agree or disagree with his position? Why?

If the violations occurred in 1990 and the securities proceedings did not conclude until late 1996 so that the ethics proceedings occurred in 1997, would these times affect your view about whether the ethics proceedings were warranted? If you believe that ethics proceedings are warranted, what sanction would you recommend: private letter of admonition, suspension (if so, for how long), or expulsion?

Most of the initial 15 installments of this column contained discussions of the scope of the code of ethics relating to the case of the geology teaching found to have engaged in sexual assault. As in this case, that discussion revolved around whether the geology teacher’s clearly illegal activities fell within the scope of a professional code of ethics. That discussion ended by noting that it depended upon whether the victims of the sexual assault were students or not. If the victims were students, the activity occurred within the scope of the normal professional practice of a geology teacher and ethics proceedings are appropriate. If the victims were not students (or employees), then professional ethics charges may not be warranted. Does serving as president of a natural resources company fall within professional practice? How does the distinction noted in the sexual assault scenario affect your view of the geology versus management argument above?

**The Difference Between Scientific and Legal Dispute**

The opinion letter by **Ramon E. Bisque, CPG-1595,** on page 21 of the April 1996 issue of the TPG describes Bisque’s reaction to the opposing positions of expert witnesses in a trial. “It was not ‘science’ but rather scientists participating in a strange forum which used their testimony for other than science.” Bisque correctly points out that there is a fundamental difference in the approaches science and the law take to reach the truth.
Science proceeds to truth by proposing and testing hypotheses followed by publications of the results. Further inquiry into a subject frequently leads to further modification and extension of the original hypothesis. Others then extend or challenge the methodology, conclusions, etc. Debate can continue indefinitely.

Law proceeds to the truth through an adversarial system. Positions are staked out and advocated and the other side's positions attacked. The point of legal disputes is to win the case for one's client. Furthermore, legal disputes come to an end at the conclusion of the case. A decision is reached (on appeal or otherwise) and that is that. The case is settled; no more debate.

Both methods of approaching the truth, scientific debate and the legal adversarial system, can lead to truth. In practice both do so imperfectly. They are different. And the difference must be appreciated by those who work as expert witnesses and by those who judge their work. As always, further comments are welcomed.

BOOK REVIEW

TITLE: The Reuse and Recycling of Contaminated Soils
AUTHOR: Stephen M. Testa
REVIEW BY: James A. Jacobs, CPG-7760

Stephen M. Testa's newest book focuses on contaminated soil disposal issues and presents a new way of viewing contaminated soils - not as a waste, but rather as a potentially recoverable resource. In the full spirit of the Resource Conservation and Recovery Act of 1976, the author provides working environmental professionals with a practical and unbiased handbook for reusing and recycling contaminated soils. The urgency for this book and approach to recycling can be understood when one realizes that in 1980, the annual amount of solid waste produced in the United States was about 90 million tons. By 1993, the amount was 4.5 billion tons and there is every indication that the amount projected into the future will continue to increase.

As Mr. Testa noted, contaminated soil has made up a continually increasing amount and significant volume of this solid waste material. This situation is exacerbated by the physical, economic, and technical limitations associated with the recycling technologies currently available for the remediation of contaminated soil. It is hoped that with a better understanding of the various reuse and recycling techniques as described in this book, environmental contractors and professionals might feel more qualified and comfortable to consider and, if appropriate, recommend some of these less familiar reuse technologies over a more commonly used dig and haul approach for contaminated soil.

The author has written an updated source book and road map for working professionals highlighting the necessary analysis and costs of the recycling process and waste laws. The book provides a compilation of regulatory aspects, soil reuse and recycling technologies. Mr. Testa discusses field, laboratory and engineering considerations while going into important details such as sampling strategies, hazardous waste characterization and leachabilities.

What is refreshing in this practical book is that the case examples for the cold-mix asphalt processes (CMA) are real world ones that most working in the field will easily recognize: petroleum hydrocarbon-contaminated soil from municipality maintenance facility with underground storage tanks, polynuclear aromatic hydrocarbon-contaminated soil (PNAs) from a former gas manufacturing site, lead-mine scale from a former geothermal plant, lead-and zinc-contaminated soil from a brake shoes manufacturing plant, and finally, lead-and hydrocarbon-contaminated soil from an auto wrecking site. The case examples show that even small projects might benefit from consideration of these reuse technologies.

Although there are numerous companies that perform the field services and provide biased literature regarding their individual recycling processes, Mr. Testa's book is an excellent resource for those professionals who need to understand all the nuances associated with soil disposal and recycling. The author describes the most important and operational details of asphaltic emulsions and cementitious products.

The book is easy to read, containing 54 charts and figures and 58 tables. The bibliographies at the end of each of the twelve chapters suggest additional sources for more information. The selected case histories are interesting and realistic. For the environmental professional or land owner who has to creatively reduce transportation and disposal costs for large or small soil stockpiles, this book provides several well researched alternatives to consider for reuse and recycling of contaminated soil.

Author: Stephen M. Testa has authored more than 60 technical papers and four books. He is president and founder of Testa Environmental Corporation and he is an active member in numerous professional organizations. He is national president of the American Institute of Professional Geologists.

Book Reviewer: James A. Jacobs is president of FAST-TEK Engineering Support Services and is past president of the San Francisco Chapter of the Groundwater Resources Association and past president of the California Section of the American Institute of Professional Geologists.

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BOOK REVIEW

TITLE: GeoDestinies, The Inevitable Control of Earth Resources Over Nations and Individuals
AUTHOR: Walter Youngquist
REVIEWED BY: Jonathan G. Price, CGP-7814

"GeoDestinies" is an interesting, enjoyable book that explores the linkages between the fates of nations and their energy, mineral, water, and soil resources. The author, Walter Youngquist, consulting petroleum geologist and emeritus professor at the University of Oregon, achieves his objectives of (1) explaining that the destinies of nations and individuals have been and most likely will continue to be closely linked to the geological distribution of energy and mineral resources, and (2) discussing these resources in terms of their short- and long-term availability and their ultimate control over the size of the human population that can be maintained on Earth. The overarching themes of the book are well summarized in the following paragraph from the final page:

"Our geological inheritance of mineral and energy resources brought civilization to its present affluence. Past geological events control the destinies of nations and individuals in myriad ways which are now playing out upon the world scene. Understanding the inevitability of geoestnies - that Earth resources control our futures - is the basis for using these resources wisely toward the objective of an orderly transition to a sustainable society. The present use of non-renewable resources simply allows us to buy time during which to accomplish this. Time appears to be running out in this regard, especially against the background of a continually and rapidly growing population."

"GeoDestinies" in not a scientific treatise on the subject. Although numerous references are provided to related works, the reader is not provided with much of the basic data that might bolster the author's arguments or allow the reader to come to an independent conclusion. Rather, the book reads as a series of lectures from an undergraduate course on world energy and mineral resources. A significant shortcoming is the paucity of data (only 14 tables and nine figures in nearly 500 pages of text) from which the reader might be swayed to accept the author's arguments. Nonetheless, with a few exceptions of punctuation errors and rare misspellings, the book is well written in a style that makes for easy, stand-alone reading of individual chapters. Because each chapter reads as an independent lecture, there is considerable redundancy throughout the book. The overarching themes and objectives are repeated in nearly every chapter.

Youngquist covers energy resources quite well, and the importance of petroleum in the economies of developed and developing countries is well documented, as are the realities of our dependence on petroleum as the energy source of choice for transportation in the next few decades. The pros and cons of alternative energy sources are presented well. Youngquist predicts that immense petroleum resources of the Persian (Arabian) Gulf countries will exercise an increasingly important influence over world affairs, and that world petroleum production will peak by 2010. While the information about petroleum and other energy resources is well covered, there are a few errors regarding mineral resources. A gross error is the statement (p. 87) that U.S. metal production is declining, as is petroleum production. In fact, gold production has been on the rise in recent years; the U.S. is in the midst of the biggest gold boom in its history. The book inaccurately describes (p. 36) Carlin-type gold deposits as hosted in black shales, rather than in a mix of impure limestones, marls, siltstones, and other sedimentary and occasionally metamorphic and igneous rocks. The book also inaccurately indicates that the U.S. is a net importer of gold (p. 333); the U.S. is, in fact, a net exporter of gold. An important application of gold in electronics and computers is missing from a list of other high-tech elements (p. 322). These errors, however, do not detract from the book's basic themes.

The book covers not only energy and classical metallic and industrial mineral resources but also soil and water resources. The strong emphasis on energy resources is appropriate, because the availability of cheap energy is vital to the development and conservation of other Earth resources. I found the chapter on money and its historical connection to metals and, more recently, oil to be an intriguing discussion of the importance of energy and mineral resources in the world economy.

Youngquist repeats a hypothesis that finite resources are a limit on growth. He states (p. 446) that Malthus, who in the late 18th century made similar predictions about a limited carrying capacity of the Earth, "was simply ahead of his time." Youngquist takes a pessimistic position and does not put much hope in technology being able to stay ahead of rising worldwide population and rising worldwide standards of living. Little discussion is presented about the impact of technology on prices; the fact that both gasoline and copper prices are today at inflation-adjusted prices nearly as low as they have ever been seems to argue against Youngquist's hypothesis. He more or less dismisses fusion and solar energy as long-term solutions to meeting energy needs. Whereas his short-term analysis that there is no foreseeable substitute for petroleum as the preferred fuel for transportation is probably correct, his view that because conventional petroleum resources are finite, the human population of Earth is already near its limit is not well supported. The counter, optimistic view would be that eventual shortages in conventional petroleum resources will lead to a rise in price that will stimulate research and make currently uneconomic resources viable, such as fusion, extensive electrical production from solar power, and oil shale.

Youngquist's pessimistic view of the future of human society is exemplified in such statements (p. 421) as "no amount of money can produce more soil," and "nor will higher prices cause more water to flow in the already overdrawn Colorado, Jordan, or Nile rivers." This pessimism doesn't recognize the futuristic view that technology, with continued cheap energy, might be able to manufacture soil (through chemical and biological processes designed to accelerate the weathering process) or that high enough prices would make desalination of Pacific or Mediterranean waters a viable alternative to overuse of the rivers.

Youngquist occasionally digresses into areas that are only peripheral related to energy and mineral resources. Although short, the sections berating the U.S. legal system, tax code, immigration policy, space exploration, and Congressional appropriations detract from the basic themes.

In summary, "GeoDestinies" is worthwhile, easy reading. Its factual errors are minor. The author's Malthusian hypothesis that finite petroleum and other energy and mineral resources are limiting the carrying capacity of the Earth to a human population approximately what it is today is more debatable than the book implies. Nonetheless, Youngquist presents the hypothesis well and provides useful insights to key geopolitical factors, especially regarding the importance of Muslim countries in the Middle East, that will shape human history for the next few decades. I recommend the book to the general public, policy makers, military strategists, geoscientists, and others interested in the future.

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Dear Editor:

A few weeks ago, I received a letter from AIPG requesting submission of an article for the upcoming issue on hydrogeology. I am not in a position to do that any longer, but I figured I could relate my recent experiences, which may or may not be of interest to the membership.

Last February 14th, I looked at my AIPG 1998 membership renewal one more time prior to the overdue payment deadline date of February 15th, then decided to fax it in to AIPG headquarters. "I may have suspended my practice of geology," I thought, "but I am still a geologist."

Last fall, I had come to one of those decision points in my life that I really don't wish on anyone. I had to decide what was more important to me: being a geologist or being a father to my son. I decided that right now, it was more important to be my son's father. And with that, I said goodbye to a 16 year career that had taken me from development of offshore Miocene oil fields of the Gulf of Mexico to groundwater exploration in the fractured Precambrian igneous and metamorphic bedrock of southern New England.

After being laid off from Shell in 1986, when the price of oil collapsed, I moved to New England. For the last 7 years, I had been involved in some aspect or another of the Federal Superfund clean-up of various industrial and military sites throughout New England. During that time, I strove to hone my technical skills as a hydrogeologist, learning numerical modeling, aquifer test analysis, contaminant fate and transport analysis as well as the ability to analyze and compilation of the often large amount of geologic and chemical data required to write Superfund Remedial Investigation reports. I took and passed the Maine PG exam, which had a first time failure rate of 95 percent. I designed and taught a groundwater hydrology course at the University of Massachusetts at Lowell.

I figured that was enough backup for a resume, but it wasn't. The industry was changing. I jumped from consulting firm to consulting firm, one step ahead of expiring government contracts that caused those firms' regional offices to contract or disappear all together. I could see the handwriting on the wall, but tried to avert my eyes from the inevitable.

At the beginning of 1997, I was laid off from my last employer, a small environmental consulting firm that had a substantial contract with the National Guard Bureau. Big contract, but no funding. No funding, no work. The firm went from 16 people to four and I was the first to go. The president, an engineer, told me that with the shift from assessment to remediation, engineers were needed, not geologists. That was his assessment of me despite the fact that I had designed the work plan for the last major clean up project the firm bid on for the Army Corps of Engineers. I was soon followed by the program manager for whom I worked as well as the senior environmental engineer, both of whom resigned, because they were fed up with the whole environmental business.

This event unfortunately coincided, almost to the day, with my now ex-wife's demand for a divorce.

Although I had (and still have) an offer to go work for a firm up in New Hampshire that specializes in water supply exploration, I opted to stay in Massachusetts so that I could be closer to my son, who was less than two at the time these events occurred.

I interviewed for the few available positions I saw in the paper, but was told that I was over qualified. No one wanted anyone with over 3 to 5 years experience. And no one was going to pay me what I had been earning before. So I decided to try my hand at independent environmental consulting, working with an existing two-man partnership.

From my home, I started making phone calls to real estate and environmental lawyers, real estate agents, developers and anyone else I could think of, trying to make the network connections that could bring in work. The existing partnership had a good back log and it appeared, at the time, to be a good opportunity.

But as the spring and summer dragged on, the existing back log evaporated due to delays and cancellations, and my marketing efforts went no where.

I watched my unemployment benefits and my savings dwindle. Every day I had my son, I would take him to daycare, telling him that I had to go to work when all I would do was go back to my apartment, make phone calls and mentally climb the walls. I had some work being fed to me by the partnership and my former employer, but it was not much and it was not paying the bills.

I also saw the market competition for what available work there was get ridiculously intense. The partnership had no overhead other than telephones, but we were being underbid by 50 percent by firms with offices and staffs. Friends of mine working at larger firms were telling me about bid meetings where there were 50 to 70 firms going after the same jobs as well as about companies who submitted bids on government contracts of zero just to get the work in the door.

One day, I was talking to a friend of mine who ran a branch office of a national consulting firm (whose staff had dwindled from 60 to 10). I mentioned to her that it seemed that the problem with environmental consulting was that it was a service nobody wanted, because all it did was subtract from the bottom line. It did not add value, at least from the nearsighted perspective that most businesses seem to have these days. She agreed with me.
So I started asking myself, “If this is where I am when the economy is booming, with an unemployment rate near four percent, just where am I going to be when things go bad, and they will go bad, because they always do.”

The last straw for me came last October. Three colleagues of mine, all of whom had been in the environmental or engineering geologic consulting business for over two or three decades told me that if they were my age and had the opportunity to do something else, they would do something else. The program manager for whom I worked had gone into financial planning. The senior environmental engineer with whom I worked went back to school to get a certificate in computer network administration. Other friends were going into secondary school teaching or getting an MBA. The firm up in New Hampshire still wanted to hire me, but the catch was that I had to move 120 miles away from my son.

So there I was last fall, looking at a fork in the road, or the edge of a cliff or whatever metaphor you would care to substitute. I made a decision, it was time to let go of who I was, who I defined myself as, for 16 years. I used to be proud to tell people, “I am a geologist.” However, saying, “I am an unemployed/underemployed geologist” somehow had less cachet.

I looked at what else I knew how to do. I knew computers. I had maintained and troubleshooted software and hardware problems for a dozen PCs at my last job. Several local universities offered 8 to 10-week accelerated graduate certificates in computer applications programming. Last winter, the 150 pages of the Boston Globe’s biggest Help Wanted Section for the year contained about 12 square inches for environmental work and 100 pages for software engineers. It did not take a rocket scientist to figure out where the future was.

So I signed up for a certificate program class at a local university. My class consisted of everyone from auto mechanics, accountants, computer hardware people, financial analysts to housewives, even a psychologist . . . and one expatriate geologist. After eight weeks, I came out with the ability to write Windows95 programs that could access databases.

Within a week of my last class, I had a job offer from a software consulting firm who found my resume on the web. As it turned out, this firm’s clients included environmental consulting and clean-up firms that needed software to store, track and manifest hazardous waste, aSs as well as to track environmental program costs for government contracts. They valued my previous environmental business experience, as well as my project management and client relations experience. The gamble paid off, and by February 1st, I had a new career. It was good finally to be able to tell my son that Daddy had a job.

Irrationally, the name of my new employer is Greystone. They code name all their computers after minerals. The workstation on my desk is called “Peridotite.” Just can’t get away from it I guess.

In the back of my mind, I still am a geologist. I have all this knowledge and experience and I do not want it to go to waste. But over the last year, I have learned never to take anything for granted as well as not to look too far ahead. One never knows what may happen . . . so I renewed my membership to AGPG and I will continue to do so.

Andrew M. Koenigsberg, CPG 7973, 46 Cochituate Road #206, Framingham, MA 01701-7944, amk@ma.ultranet.com

Dear Editor:

The letter to the Editor from R.E. Bisque and reply from R.W. Pritchett in the April issue concerning “junk science” and expert witnesses for hire prompts me to add my own recent observations about geoscience and the courts. Professor Bisque rightly pointed out the problems with “opinions for hire,” but I would take mild issue with his comment that there is no practical method for imposing reasonable peer review on the selection process for expert witnesses. Let me elaborate. By way of introduction, I should note briefly that I serve on an average of 3 court cases a year, have taught geology and physical geography courses at the university for 30 years, and have served on a number of committees concerned with scientific ethics and procedure.

I recall one trial several years ago wherein the plaintiff for whom I was working lied about the flood damages he had incurred while the expert witness for the other side was discovered to have created a nonexistent, mathematical levee to get his computer flood program to work to bolster the counter argument. When the blatant fabrications on both sides came to light, the federal judge had the good sense to throw the case out of court. I was relieved to drop out of the case forthwith. This unpleasant experience caused me to pay close attention to the overall facts of each case at the outset and to reject working on those where the information or the ethics of the situation were a bit doubtful. Still, the need for “good science” in the courts is commonly apparent and must be met in a civil society. The following discussion may add to understanding.

Each year I represent the Association of American Geographers to the Geology and Geography Board of the American Association for the Advancement of Science, where among other duties, I sponsor symposia. Over the past few years, AAAS has become well aware of the problem of expert witnesses and junk science, while at the same time recognizing the increasing need for the law to have access to sound science. For example, the Study Commission of the Federal Courts has reported recent-
ly that economic, statistical, technological, and natural and social scientific data are becoming increasingly important in both routine and complex litigation. The problem to many in the scientific community, and expressed so well with distaste by Professor Bisque, is that the law as practiced is all too often seen as a game of words and innuendo that leads to invalid scientific results.

At the recent AAAS meeting in Philadelphia and subsequently in Science (1998, 280:537-538) Associate Justice of the U.S. Supreme Court, Stephen G. Breyer pointed out that we must seek law that recognizes scientific validity. He noted that the search is not for perfection, nor even for scientific precision. Rather the courts must aim for decisions that roughly speaking, approximately reflect the scientific "state of the art." Furthermore, the law must be fair and it must not be left only to the skill of experts. The ultimate legal decisions must reside with the judge and jury as guaranteed by the Constitution.

Implementation of sound science in the courts, however, is the very issue at hand. Judges are not trained scientists, even though in some senses that is what they have been asked to be, because they are now expected to be the evidentiary gate keepers against "junk science." As most research scientists know, however, one person's junk can sometimes be another's breakthrough. The judiciary, therefore, has been seeking ways to improve the quality of science upon which judicial determinations will rest. The prestigious U.S. Supreme Court counts on 30-page amicus curiae (friend of the court) briefs on the relevant "state of the art" to identify technical consensus and disagreement. But lower courts may not easily find access to such procedures, or they may not realize that they even need assistance.

Other new trends are underway to help solve these problems. Some judges have pretrial hearings to examine potential experts or to appoint specially trained law clerks or scientific "special masters." Federal Rules of Evidence allow appointment of independent experts or a technical advisor to the court. Judges have not, however, often appointed their own experts, perhaps in absence of a means to choose such, or perhaps to avoid intruding much upon the other expert witnesses or upon the jury. To assist this process in the future, however, AAAS, working with the American Bar Association and the Federal Judicial Center, is trying to find practical ways to provide needed scientific help to the courts.

A pilot project is underway to test the feasibility of increased use of court-appointed experts in civil and criminal cases that have technical issues. The intent is to provide a slate of candidates to serve as court-appointed experts in cases where the court feels that traditional means of clarifying issues under the adversarial system are not likely to yield information necessary for a reasoned and principled resolution of the disputed issues. Much remains to be done. A national register of experts on various subjects is needed, as well as a method by which they can be fairly paid. Identification of such experts will be difficult and contentious, as will selection of alternate methods such as establishing criteria for using court-appointed experts either more as advisors, or more as actual witnesses. Educating scientists in the way of courts and judges must be part of the process as well.

All in all, the future of expert witnesses and good science in the courts is clear, even if the means to achieve this are less so. In this age of science, legal foundations must be established that are sound in both science and the law. Within the common analytical approximations and minor controversies of our geosciences, it would seem that we have much to discuss in our contributions to the process if we are to maintain a high degree of credibility. The legal community is in the process of establishing new procedures; the membership of the AIPG could undertake its own best efforts to participate in this process. I would like to hear from others about how we might best canvas our membership on these important issues, and see how professional geologists can best meet the needs of the law, while avoiding junk science.

John F. Shroder, Jr., CPG-10285, Department of Geography and Geology, University of Nebraska at Omaha, Omaha, NE 68182, <shroder@cwis.unomaha.edu>.

IN MEMORY

Noel Raymond Lamb, CPG-3189

Noel Raymond Lamb Geological Engineer and consultant of Artesia, New Mexico died August 28, 1997 in a Lubbock, Texas, hospital at the age of 83.

Born in Elida, New Mexico, but moving as a child to Burbankett, Texas at the peak of early, oil exploration and development, he acquired an interest in oil production that led him to the Texas Tech campus where he worked his way through school determined to be a petroleum engineer.

From his experiences as a youth in Burbankett, Texas, in the days of wooden oil derricks, mud-pie roads, and tent-city boom towns, he developed a philosophy that, "Experienced field personnel can always contribute to an engineer's understanding of oil field problems."

After graduation from Texas Tech in 1937 he began his career as a roustabout and later district engineer for Continental Oil Company in Hobbs, New Mexico and supervised the training program for new engineers from 1937 to 1946 when he left Hobbs and Continental to accept a position as Petroleum Engineer for the New Mexico Bureau of Mines in Artesia, New Mexico. In that capacity he was the author of bulletins, pamphlets and reports published by the Bureau of Mines and Mineral Resources for the benefit of the oil industry. He promoted and arranged for the writing and publication of the distinguished author and geologist, E. Russell Lloyd's book, Permian Prospects for Oil and Gas in New
Mexico for the New Mexico Bureau of Mines which had great influence on the drilling prospects for New Mexico. He also supervised publications on Corrosion of Oil Field Equipment. Under Lamb’s direction, The Bureau encouraged secondary recovery processes in the oil fields of New Mexico and set up experimental floodwater projects now used primarily in the recovery of additional oil which otherwise might have been lost.

In 1948 he went to work for Wilson Oil Company as Assistant to the President and later vice President in which capacity he served until he retired to set up his own consulting business in September, 1979.

Lamb was a long-time member of the American Association of Petroleum Geologists, American Petroleum Institute, Independent Petroleum Association of America, American Institute of Mining and Metallurgical Engineers, New Mexico Oil and Gas Association, and Interstate Oil Compact Commission. He served as Vice-President of the New Mexico chapter of IPAA and was on the executive committee of that organization three times. From 1946 to 1983 he was New Mexico’s representative on the production and engineering committees of IPAA and served from 1980 to 85 as New Mexico’s representative on the nominating committee for IPAA.

As the New Mexico representative he served on the Petroleum Engineering committee for the national Interstate Oil Compact Commission. He was secretary of a special committee established by the late governor of New Mexico, John D. Dempsey, for the development of deep well allocation systems of New Mexico in 1950. He was also a member of the executive committee of the New Mexico Oil and Gas association and assisted in the organization of the Artesia chapter of the Petroleum Engineering Association.

In addition to his interests in the oil business, he served his community as a lay person on the governor’s Health services Agency for three years. He was chairman of the Artesia Girl Scouts Camp Building committee for several years. he was an Elder and Trustee of the Presbyterian church.

Lamb is survived by his wife Betty and four daughters Noelle Lamb, Nancy Lamb, Sally Chumbley and Penny Lamb and two granddaughters, Susan Rook and Elizabeth Schable.

Betty Lamb (Mrs. Raymond Lamb)

Joseph Didier Martinez, CPG-2050

A retired LSU professor and life-long resident of Baton Rouge, he died at 12:15 p.m. Wednesday, February 11, 1998, at Our Lady of the Lake Regional Medical Center after a brief illness. He was a native of Plaquemine. He was a U.S. Army company commander and veteran of World War II and a recipient of the Purple Heart. Funeral was Friday, February 13, 1998. Survived by his wife of 52 years, Catherine Evanstock Martinez, Plaquemine. Preceded in death by his parents, Dr. Roman Daigre Martinez and Ruth Comaux Martinez, Plaquemine. He received a bachelor of science degree in electrical engineering, a master of science and doctorate in geology from LSU. After working for Humble Oil and Refining Co., he joined LSU as the Director of the Institute for Saline Studies and was Professor of Petroleum Engineering. He founded the Institute for Environmental Studies, having served as its director prior to his retirement from LSU. He continued to serve as Director emeritus until his death. He was widely recognized as an expert on salt domes and their industrial use. He remained active professionally and continued publishing results of his studies through January 1998. He was a member of the Environmental Advisory Committee of the U.S. Department of Energy Strategic Petroleum Reserve and served as a consultant and advisor on salt dome issues in local, state and federal agencies. Memorial donations may be made to LSU Foundation IES scholarship fund in his name.

Thomas A. Simpson, Sr., CPG-884

Thomas A. Simpson, Sr. died December 14, 1997 at the Veterans Administration Medical Center in Tuscaloosa, Alabama from complications related to diabetes. Tom thoroughly enjoyed and was proud of his profession as a geologist-mining engineer. He enthusiastically shared his ideas and insight with others and believed firmly in the concept of assisting others, particularly in advancement of their careers and professional achievement. He took special interest in the career development of students.

Tom spent his career working with the U.S. Geological Survey and the Geological Survey of Alabama in the exploration and development of mineral deposits, mining hydrology, development of ground-water supplies, blasting procedures, and at the University of Alabama School of Engineering teaching courses in geology and mining engineering. In addition to assignments in teaching and with geological work, he had experience as a geological and mining consultant in the United States and abroad. He authored over 45 reports and papers related to his areas of specialty.

Tom attended undergraduate school at Colby College, Waterville, Maine and the Missouri School of Mines, Rolla, and earned a Master's Degree at the University of Alabama. The Missouri School of Mines awarded Tom the honorary degree of Engineer of Mines in 1965. In 1952, Tom began his professional career as a Hydrogeologist with the Ground Water Branch of the U.S. Geological Survey, headquartered at the University of Alabama. His first assignment was to study the geology and hydrology of the Birmingham red iron ore district and the groundwater problems associated with the subsurface extraction of the ore. The study entitled “Geologic and Hydrologic Studies in the Birmingham Red-Iron-Ore District” was published in 1965, as U.S. Geological Survey Professional Paper 473-C.

In June, 1962, Tom joined the staff of the Geological Survey of Alabama as one of the first of new staff added in 1961 by Philip E. LaMoureux when he was appointed as the fourth State Geologist. He was appointed Chief of the Economic Geology Division with responsibility for coordinating and directing mineral resource studies in the state. Under his supervision, the survey began a county-by-county description of mineral resources. Through coordination with the U.S. Bureau of Mines, Tom supervised the preparation of annual reports of the mineral industry in Alabama. Industrial development of the state’s mineral resources was important to Tom. In 1965, Tom was appointed to Assistant State Geologist and worked with the development of all geologic programs of the Survey. During this time, he also taught part-time in the Departments of Geology-Geography and Mineral Engineering at the University of Alabama. In 1975, he left the Survey to accept a full-time appointment in the Mineral Engineering Department. Tom loved teaching and the opportunity to guide the development of new mining engineers.

Tom encouraged colleagues and students to form strong affiliations with professional societies, as he felt this was necessary for the development of professionalism and technical knowledge. Tom was a charter member of the Alabama Geological Society and is given part credit for its founding. He was a member of several professional societies, including the Alabama Geological Society, the Geological Society of America, American Association of Petroleum Geologists, American Association of Mining, Metallurgical and Petroleum Engineers, American Institute of Professional Geologists, and Sigma XI.

He was a Marine Corps Reserve officer, retired with the rank of Colonel, having served in World War II and in Korea. He was a loyal senior staff member of the Alabama Survey and played an integral role in the development of the Geological Survey of Alabama from one of the smallest State Surveys to one of the top five with comprehensive programs in topographic and geologic mapping and the evaluation of Alabama’s minerals, water and energy resources.

Philip E. LaMoureux, CPG-880

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PROFESSIONAL SERVICES DIRECTORY

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Executive Committee and Headquarters Activity

Members of the Executive Committee and/or of the Headquarters staff will participate in the following meetings, which provide opportunities for AIPG Members to exchange ideas with the Executive Committee and staff. We also welcome invitations from AIPG Sections to discuss AIPG programs and goals. If your Section would like to meet with members of the Executive Committee or Headquarters staff, please contact Headquarters to schedule a convenient time. Thank you.

Jun. 2-3: London, UK
Jun. 5-7: Cologne, Germany
Jul. 6-17: Arvada, Colorado
Jul. 20-23: Las Vegas, Nevada
Oct. 11-14: Taos, New Mexico
Sep. 28 - Oct. 2: Seattle, Washington
Oct. 3-8: Baton Rouge, Louisiana
Oct. 16-18: Charleston, South Carolina
Oct. 25-29: Toronto, Ontario, Canada
Nov. 11-13: Las Vegas, Nevada

Geological Society Annual Meeting (President Testa, President-Elect Fields, Executive Director Knight)
EFG Council Meeting (President Testa, President-Elect Fields, Executive Director Knight)
Executive Committee “Virtual Meeting” (e-mail and fax)
National Council of State Legislators (President Testa, President-Elect Fields)
AAPG-DEG Conference and AIPG New Mexico Section (President Testa)
AEG Annual Meeting (President Testa)
AIPG Annual Meeting (Executive Committee and staff)
ASBOG Annual Meeting (President-Elect Fields)
GSA Convention (President Testa, President-Elect Fields and staff)
NGWA Convention (President Testa)
California Board Approves ASBOG Exam for Comity

After many months of evaluating the equivalency of the National Association of State Boards of Geology (ASBOG) and the California geology examinations, the Examination Committee concluded that the ASBOG geology examination is functionally equivalent to the California geology examination for the purposes of licensure if a supplemental California examination is given. The supplemental examination covers seismics, deformation, strong motion seismology, probabilistic seismic hazard analysis, California geology, and California regulations. Based on the recommendation of the Committee, the Board decided at its meeting on February 20, 1998, to enter into comity agreements with any of the fourteen states that currently use the ASBOG geology examination that are interested. Applicants who pass the ASBOG and California supplemental examinations must meet all other requirements for licensure in California, such as verified work experience. The Board will advise all ASBOG states of its action and invite them to enter into a comity agreement.

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

Applicants for Certified Professional Geologist

OH-Clement, Sara J.
1919 Robin Way Dr., Cincinnati OH 45230

NY-Klaus, Keith C.
114 Circuit Rd., Bellport NY 11713

CT-Lewis, Ralph S.
P.O. Box 147, Hadlyme CT 06439-0147

CO-Lynch, William C.
1636 Glen Ayr Dr., Lakewood CO 80215

AK-Milholland, Madelyn A.
P.O. Box 110631, Anchorage AK 99511-0631

MI-Yargo, John S.
1826 Windigeway, Wikom MI 48393

PA-Dempsey, William G. Jr.,
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CO-Mock, Stuart R.
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Wong, Francis Chik-Hai
C-PG-10278
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Applications for Registered Member

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Applicant for Member

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New Certified Professional Geologists

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New Registered Members

GA-Conner, G. Ripley
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GA-Watson, Thomas W.
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MI-Pierson, Rodney
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MI-Roth, Christopher M.
CFC-0151
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