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 broken down into parts (e.g. part I 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 material, submittals should be sent to AIPG headquarters six months 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 sections:

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

One original and two copies of each manuscript should be submitted. Whenever possible, text should also be submitted on diskette (3.5 inch or 5.25 inch IBM/PC format). Headquarters uses DOS WordPerfect 5.1, which is preferred, but Word (for Windows or DOS), ASCII, or translatable files (such as MacWord) are acceptable. The program or format of the text should be clearly marked on the diskette.

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 .dxf, .hgl, .pic, .pcx, .bmp, .eps, .GIF, or other standard formats.

**TPG wants color photographs.** Photographs alone may be submitted for the cover. They should have a geologic theme and an informational caption.

General Topics:

**TECHNICAL**
- Mining Geology
- Petroleum Geology
- Hydrogeology
- Environmental Geology
- Geophysical/Engineering

**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, Geology and the Military, Unusual Applications of Geology.

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

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FRONT COVER - This well drilled recently by Farrar Drilling for Eastern American Energy Company in Washington County, Illinois, was based on exploration work generated by Thomasson Partner Associates, a group of independent explorationists. Photograph submitted by Susan M. Landon, CPG-4591.

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Colonel Drake's well drilled in 1859 near Titusville, PA has come to symbolize the beginning of the domestic petroleum industry. Luck was the key to discovery of oil at 69 1/2 feet. The industry has changed significantly since those early days. Photograph submitted by Susan M. Landon, CPG-4591.
The New Domestic Petroleum Industry

Susan M. Landon, CPG-4591

The past decade has seen dramatic changes in the domestic petroleum industry. These changes are the result of a shift in demographics within the industry, access to leading edge technology and data by even the smallest independent, developing technology, new geological concepts such as sequence stratigraphy, and a belief in an economically viable domestic resource base. In the United States, capital has followed the development of new technologies, such as 3D seismic and horizontal drilling, thereby stimulating exploration and development.

Organizations of all sizes are competing on common technological footing. The shift of the larger companies with their significant budgets to international areas has, in part, leveled the financial field. Even the smallest organization can compete effectively in the new domestic petroleum industry.

Demographics

Mergers and layoffs modified the technical workforce and discouraged young people from studying geology and other disciplines affiliated with the petroleum industry. Although downsizing has been painful, the resulting group of experienced and motivated individuals is the current foundation of our industry. This is in contrast to a relatively young, inexperienced staff in most companies during the boom of the early '80s. Our industry is significantly more effective because of these seasoned professionals.

As major companies made strategic decisions in the mid '80s to focus exploration dollars overseas, an opportunity was presented to those who believed that an economically viable resource remained to be exploited in the United States. The decline in competition and decline in costs and access to leading edge technology, in part provided by the blossoming of Personal Computer (PC) based computing, created an environment where risk has been reduced.

The focus of the industry in the United States has also shifted away from exploration. Effective exploitation for the known reserves left in most reservoirs has drawn interest and money. Research into this field by groups such as the Texas Bureau of Economic Geology and funding by the Department of Energy (DOE) has motivated operators to pursue these hydrocarbons more aggressively. Exploration has not been completely abandoned. Anointment of natural gas, as the fuel of choice, created an increase in exploration, especially in Rocky Mountain basins and other gas prone provinces. Even a major company reversed its exodus of personnel to exotic locations like Dubai, and returned exploration staff to Denver. There are still under-explored areas in the United States, such as Arctic Natinal Wildlife Refuge (ANWAR) and the Midcontinent Rift, that may offer significant new resources when political policy and capital are appropriate.
Resource Base

Resource appraisals have historically underestimated reserves. Unconventional resources (coaled methane, tight gas sands, etc.) have frequently been excluded from appraisals. The perception that there is not a significant resource base remaining to justify providing access to public lands or exploration budgets remains a barrier to exploration in the United States.

The United States Geological Survey (USGS) completed its 1995 assessment of oil and gas resources in the United States, excluding Federal offshore areas. The study assumed existing technology and recoverable resources, including unconventional reservoirs, and concluded that 112.6 billion barrels of oil and 1073.8 trillion cubic feet of gas (USGS Assessment Team, 1995) remained to be extracted. These numbers are significantly larger than those presented in the 1989 assessment. Given the continued growth in reserve estimates with time and the probability of improved and new technologies, it is reasonable to assume that the estimated resource base will continue to expand for the foreseeable future. An economically viable resource base exists to support a creative, efficient, and aggressive domestic petroleum industry.

Access to Technology and Data

Access to technology and information has revolutionized our industry. The development of low-cost personal computers has allowed technical staff with small companies or individual independents access to leading edge technology that, a decade ago, was only available to companies with the resources to own and maintain a mainframe computer and proprietary software. As major companies have refocused their interest in overseas locations, a huge database of analytical and geophysical information has become available. A concern for the potential loss of this data base, including cores, prompted a major successful effort lead by the American Geological Institute to capture and make available these data and cores. Clever partnerships have provided proprietary data for use in generating new exploration and development opportunities. Access to data is a critical element of the new domestic industry. New partnerships allow symbiotic relationships among data holders and exploration groups. Marketing of data by wrapping a play around a seismic program sells data for the owner, and provides basic data for the exploration group.

The mature experience level of geologists facilitates a reemphasis of basics and the effective use of exploration analogs in generating new geological concepts and plays. Integration of newly available data (including subsurface, source rock, surface geochemical, gravity and magnetic, and seismic) in tandem with new geological concepts such as sequence stratigraphy, generates new opportunities even in the most mature basins.

The revolution created by personal computers has provided inexpensive hardware with capabilities greater than the mainframes used 10 years ago and affordable software specific to our industry. This revolution allows an independent or small company access to the same technology used by major companies. An example of this shift in accessibility of leading edge technology is a software program created by Platte River Associates called BasinMod. This PC-based software models hydrocarbon maturation and basin evolution. The most up-to-date information on the kinetics of the maturation process, as determined by geochemists at Lawrence Livermore National Laboratory, is the foundation of this geologist-friendly software. In contrast, ten years ago a major petroleum company used a proprietary program on their mainframe to do a similar task. Not only was the program geologist-unfriendly, the company limited access to the program because management did not believe that the geologists working "in the trenches" were sophisticated enough in their understanding of source rock geochemistry and maturation to use the program correctly. Today that company uses BasinMod with a new appreciation for the understanding of the petroleum system developed by the geologists "in the trenches."

New Geological Understanding and Developing Technology

The science of geology continues to expand. Since the revelations provided by the great unifying theory of plate tectonics, a second major insight has been provided by sequence stratigraphy. This application provided a new way of looking at rock packages which immediately generated new play concepts in exploration and effective models for exploitation. As our understanding of geology continues to grow, other new concepts
will become available to aid in the search for more subtle traps.

Advancement of seismic processing techniques has created hundreds of thousands of under-utilized miles of seismic data. Reprocessing of data acquired over the past 20 years results in a significantly better representation of the subsurface at a fraction of the cost of acquisition of new data. Reprocessing may allow for stratigraphic interpretation of data that had originally only been adequate for structural mapping. Reasonably priced software allows geophysicists to extract various components, known as attributes - frequency, phase and amplitude, from the seismic data increasing the usefulness of old data.

A driving force behind much of the new capital that has been made available in our industry is 3D seismic. This technique, originally only cost-effective in exploitation projects, has become an economic exploration tool in many areas. The availability of capital for 3D projects has led to 3D acquisition on projects where 2D would have been adequate and more cost effective for interpretation of the geology. The cost, and resulting reduction of risk, must be carefully balanced against the potential economic gain of the project.

Some of the oldest exploration tools (e.g. gravity, and aeromagnetics) are enjoying a renaissance. When integrated with other available data, these geophysical methods can be very cost-effective tools. Surface geochemistry and various electrical methods continue to be evaluated and have been used successfully in several areas. These techniques are generally less expensive than conventional seismic acquisition and are used as a method of high-grading areas for further evaluation (such as various electrical methods). Although most of the major company research laboratories have been eliminated or dramatically reduced, research and evaluation of new technologies continues because of moderate cost and potential success. Even small organizations have the resources (computers and modest dollars) to test some of these new technologies in areas where they may be effective.

Horizontal drilling, developed over the past 10 years, provides for more effective drainage of hydrocarbons in fractured reservoirs, opening up new targets for exploration and exploitation. This technology has also attracted new investment.

**Communication**

Communication among geologists in industry, academia, and government cultivates new ideas that lead to new opportunities in mature and frontier basins. The recent resource assessment completed by the USGS is an example of the benefits of cooperation in our industry. The willingness of industry to provide information to the USGS resulted in a more accurate reflection of the size of the resource base. This gives a more accurate picture to government and the general public to use in policy decisions, and the capital market to use in funding decisions.

**Conclusions**

The domestic petroleum industry is very different than it was just ten years ago. Smaller organizations, with access to leading edge technology, data, and experienced staff, dominate exploration and exploitation. Reduced costs and risk enhance extraction of the economically viable resource base.

**References**


Monitoring Oil Industry Liability

Larry C. Simpson, CPG-7215

The population of many oil producing states is rapidly changing. Demographics are being altered by influx of people from other areas. A vast majority of these new citizens have never worked for and know nothing about the oil industry. The entire population, from prekindergarten to adults, is exposed to discussions on environmental issues from segments of the media. An ever decreasing portion of the population understands the oil industry and its important role in petroleum producing states. The industry is increasingly alienated from the population base. A growing number of voters believe that the oil industry is either unnecessary and/or a major contributor to surface and subsurface pollution.

One environmental issue for the citizens of Oklahoma is oil field pollution. Surface water and groundwater users are concerned about oil field pollutants contaminating their drinking water supplies. They are often skeptical that the oil industry is concerned about this problem. This reputation is due, in great part, to the operations of only a minor portion of the oil industry and to the standard operating procedures used by the oil industry during the first half of the century.

I am suggesting a procedural change in any new development of saltwater injection (or disposal) wells. These changes should reduce oil industry operational costs, protect the environment, and begin to improve the public's attitude toward the oil industry.

The most concerned portion of the population are those with water wells. Crude oil does not represent a major source of contamination in many aquifers, since it is consumed by microorganisms and floats on water. However, saltwater, which mixes with freshwater, is a much more serious concern. The Garber-Wellington Association has over 10,000 groundwater chemistry analyses from domestic and municipal wells in Central Oklahoma. This groundwater chemistry shows that over 90 percent of saltwater contamination is within one half mile of a saltwater injection or disposal well. Therefore, these data suggest that these injection wells and the associated old unplugged dry holes are one of the major oil field polluters in Central Oklahoma. This is also the case in other areas of the country.

In the past, the disposal of saltwater was accomplished as cheaply as possible. Regulations on saltwater disposal have become more stringent over the years. Each new regulation has added to the oil industry's operational expenses. Recently, such expenses have seemed minor compared to a new series of expenses that in some areas are growing out of control. The fear of litigation on oil field pollution has increased insurance premiums and bond expenses dramatically. In certain areas these expenses are becoming a major factor in the facilities' economics.

Cities and domestic well owners are becoming quite wary of the installation of new saltwater injection wells. Most of these projects, in even sparsely populated areas, are fiercely fought. These long legal battles are expensive and have recently resulted in an oil company abandoning its planned injection facility. The public's concern over saltwater injection is growing, and success in stopping such operations is on the rise. Changing public perception is making it harder and more expensive for the oil industry to do business.

Federal government decisions may limit the area available for saltwater injection. Presently, saltwater is exempted from the Resource Conservation and Recovery Act (RCRA) regulations imposed on Class I injection wells. Saltwater is currently considered a nonhazardous waste. If saltwater is later defined as a hazardous waste, it cannot be injected through freshwater aquifers. Approximately 70% of Oklahoma is underlain by freshwater aquifers. Therefore, injection wells can only be located in the remaining 30 percent of the state. Many other oil produc-
producing states have large areas underlain by freshwater aquifers. A better alternative to the elimination of most saltwater injection and disposal wells is the installation of a monitoring well system. Such an approach could represent a possible compromise if new RCRA regulations are unfavorable to the oil industry.

Finally, there are an ever increasing number of successful lawsuits against the oil industry regarding pollution of drinking water. In some recent cases, saltwater contamination produced by a previous operator cost a major firm four million dollars. This huge settlement resulted from the loss of drinking water at only one farmhouse. Other operators have been sued for polluting groundwater that was probably undrinkable when the saltwater injection facility was installed. In at least one case, there is very little evidence that the injection well contributed to the already existing natural pollutants. Unfortunately, in both cases the companies had no data on groundwater quality under their facility prior to installation. Such litigation has caused bonding and insurance companies to increase their rates.

Many potential problems can be solved by installing an effective ground-water monitoring system around any new saltwater injection or disposal facility before the injection well is operational. The system would be used to determine the groundwater quality before the injection process begins. This would protect the company against unsubstantiated pollution suits.

During operation of the disposal system, periodic analyses of the monitor wells would determine if a saltwater release has occurred. Such analysis could include chlorides, pH, total hardness, and total dissolved solids. These chemical constituents increase dramatically when a freshwater aquifer is contaminated with oilfield brine. In order to minimize liability risk, proper handling and analysis of samples must be followed.

Monitoring wells must be properly located and close to the facility. Therefore, if a release occurs, it would be discovered while the contamination area is small, then the leak can be corrected. The comparatively small saltwater plume would disperse as it moves away from the point of contamination, decreasing to nontoxic levels before reaching the closest beneficial-use well. This approach would represent very cheap liability protection and safeguard the environment, and is required for commercial disposal facilities.

Water samples would have to be collected using a stringent EPA Quality Assurance/ Quality Control (QA/QC) methodology. This does not involve huge additional expense; it simply requires that samplers be educated in proper sampling procedures. The use of these procedures will produce water chemistry analyses that are defendable in court. Development of such data will itself discourage litigation against oil company operations.

This proposal would represent an increased awareness of environmental issues. Unlike many previous changes in oil field regulations, this program can be cost effective. Old fears of the unknown could be replaced by an awakened understanding that would not only please the oil industry and the public, but protect the environment as well. Increased public relations could be beneficial to the oil industry when the long-awaited "gas boom" occurs. Increased public support would benefit the oil industry in future political battles. Adverse rulings at the state or federal level could adversely affect the U. S. oil industry more extensively than excessive production by foreign oil producers. Upgrading certain saltwater injection and disposal well facilities would promote the survival of the U.S. oil industry.

Essential Elements of an Effective National Energy Policy to Reduce U.S. Import Vulnerability

Thomas D. Barber, CPG-0255

As domestic crude oil production continues to decline and drilling activity remains sluggish, U.S. dependency on distant, unstable foreign sources has reached a level that is jeopardizing national security and endangering our economic well-being.

In 1980, the U.S. imported 40% of its 17.06 million barrels per day (MMBPD) crude oil and liquid petroleum products requirements. In 1990, imports provided 47% of U.S. daily demand and in 1994, 51%. Projections for 1995 indicate that U.S. petroleum import dependency will exceed 52% and longer-term forecasts anticipate an increase to 68.5% by 2010.

Concurrently, the cost of this growing import burden has become the largest component of the nation’s economically unacceptable balance of trade deficit. In 1975, the U.S. had a positive trade balance of plus $89.1 billion, limited to that modest figure by the purchase of over 824 billion of foreign crude oil and liquid products. During each of the 20 years since 1975, the U.S. has posted a negative trade balance. Its cumulative balance of trade deficit for the last 15 years (1980-1994) totals $1.450 billion of which $820 billion, or 56.6%, is due to purchases of petroleum imports. Since 1989, U.S. crude oil and petroleum product import purchases have averaged approximately $1 billion per week or $143 million per day. Petroleum imports contribute more to the U.S. trade deficit than any other single commodity.

Of the four major U.S. oil consuming sectors (Residential and Commercial; Industrial; Electric Utilities; and Transportation) Transportation is the nation’s largest user, consuming almost 70% of total U.S. liquid petroleum demand. Within the total liquid petroleum mix, crude oil is the major product from which the U.S. obtains fuel for cars, buses, trucks and aircraft. For the last 10 years, U.S. production of crude oil has declined steadily from 8.971 millions barrels per day (MMBPD) in 1985 to 6.662 MMBPD in 1994, a 25.7% drop of 2.309 MMBPD. This drop has been partially offset by a modest 8.2% (0.131 MMBPD) increase in natural gas liquids production. Nevertheless, total U.S. petroleum liquids production has declined overall during the last 15 years, from 10.171 MMBPD in 1980 to 8.645 MMBPD in 1994, but domestic consumption of gasoline, diesel and jet fuels has increased. In 1980, transportation fuels consumed 10.513 MMBPD, representing 61.6% of total U.S. demand. Of this volume, U.S. crude oil and liquid products provided approximately 97%. By 1994, 15 years later, transportation fuels consumption had increased to 12.29 MMBPD, 69.4% of total U.S. demand, but U.S. production had dropped to 8.645 MMBPD, barely enough to supply 70% of the gasoline, diesel and jet fuels required by civilian and military consumers.
In recent years, various organizations have proposed ways for the U.S. to reduce its crude oil imports. These proposals fall into three broad categories: reduce consumption, substitute fuels and increase reserves. Programs addressing the first two categories have been initiated, and their contributions are reflected in current consumption figures. These projects are helpful, but their cumulative effect has only partially moderated the growth rate of U.S. import dependency. In spite of these measures, the U.S. remains increasingly vulnerable to interrupted imported oil supplies.

The nation has two alternatives: Find the crude oil we need here at home, or take what we need from those who have it. Since the latter course of action is totally repugnant to our national character, as demonstrated by our action at the end of Desert Storm, we really have only the one option, i.e., vigorously pursue category number three and begin immediately the actions required to find and produce major domestic oil reserves.

Beginning with a liquid hydrocarbon reserve base of 30.18 billion barrels on January 1, 1994, the U.S. produced 3.16 billion barrels of crude oil and natural gas liquids in 1994. Assuming that a liquid hydrocarbon supply ratio of 2 to 1, domestic vs import, would reduce U.S. dependency to a reasonably acceptable level and assuming that U.S. demand will not exceed 18 MMBPD by the year 2000, an effective National Energy Policy must establish a goal to increase domestic production from 8.5 MMBPD to 12 MMBPD within the next five years.

Latest reserve figures reported by the Energy Information Administration indicate that U.S. total reserves of liquid hydrocarbons were 29.627 billion barrels as of December 31, 1994. To increase domestic production to 12 MMBPD, using the 1994 proved produced ratio, will require the U.S. to enlarge its reserve base to 41.83 billion barrels, an increase of 12.2 billion barrels.

Can this goal be achieved? Are there liquid hydrocarbon reserves remaining in the U.S. sufficient in quantity and size to increase domestic production to 2/3 of total demand? Periodically, the U.S. Department of the Interior reports its National Assessment of Oil and Gas Resources. This evaluation is prepared by the U.S. Geological Survey (USGS), for onshore and state waters, and the Minerals Management Service (MMS) for Federal offshore waters. The USGS has completed its portion of the 1995 National Assessment, and the MMS anticipates completion of its assessment of the Federal offshore by late 1995.

As of January 1, 1994, the USGS estimates that 37.5 billion barrels of crude oil and natural gas liquids remain undiscovered onshore and beneath state waters. Although the companion report by MMS is not yet complete, an earlier 1991 MMS study estimated approximately 22 billion barrels of undiscovered oil in the offshore, only half of which (10.94 billion barrels) were classified as economically recoverable. The MMS figures for the 1995 assessment are expected to be somewhat higher. Therefore, a conservative estimate of new field liquid hydrocarbons yet to be discovered in the U.S. ranges from 50 to 60 billion barrels. In addition, the USGS calculates 73.4 billion barrels available from reserve growth in existing onshore fields. The combined total resource potential, 125-135 billions barrels, is 70-75% of the 178 billion barrels which have been produced in the U.S. since 1859, 135 years ago. Not included in these assessments are any estimates of potential hydrocarbon resources which may be contained in U.S. Frontier Areas, and sedimentary basins and trends, in which little or no exploratory drilling has been conducted and from which no production has yet been obtained.

The hard figures developed by the 1995 National Oil and Gas Assess-
pensive and very high-risk, but the profits from a major discovery can be substantial.

Historically, among those who participate in petroleum exploration, there are the many who choose to invest in low-risk, low-return exploratory programs and the few who will participate in high-risk, high-reward projects. Right now neither group is involved in domestic activities at a level sufficient to substantially increase our proved reserve base.

Concern for the nation’s security and welfare is a strong incentive for patriotic citizens to support domestic exploration, but stockholders and investors must ultimately commit funds based on expectations of a profitable return. Overseas opportunities currently appear to offer more rewarding returns on exploration investments than domestic exploration. Cheap foreign oil, however, is not so cheap when you factor in the high security risk and the trade deficit its purchase creates.

An effective National Energy Policy must first acknowledge the nation’s basic need to increase domestic reserves and declare a stated goal, e.g., to increase U.S. liquid hydrocarbon reserves to 42 billion barrels by 2010. Then implement a comprehensive program that will encourage companies and individuals to commit the venture capital required to conduct the geological and engineering studies; the pre-drilling geophysical data acquisition and interpretations; and ultimately the drilling of the many exploratory tests necessary to achieve its stated goal.

Such a comprehensive program must embody three essential elements. It must:

a. modify certain tax and environmental disincentives now in place that prohibit or inhibit domestic drilling;

b. restore the incentives that stimulate exploratory risk taking, and

c. promote the search for major and giant field discoveries by:
   1. identifying and designating Frontier Areas and Trends and
   2. providing special incentives for explorers willing to spend high-risk dollars searching for giant reserves in Frontier Areas/Trends. Such special incentives should include:
      (a). reduced royalty on all production developed within Frontier Areas/Trends during a 15 year Incentive Period after their official designation,
      (b). tax write-offs for dry holes, rentals, Geological and Geophysical (G&G) costs on unacquired blocks, abandoned leases, etc.,
      (c). a realistic depletion allowance (27.5%), and
      (d). anything else necessary to cause investors to participate in high-risk Frontier exploration.

REFERENCES

Thomas D. Barber, President,
What is the vision for AIPG's future? This is a question that I have been asking myself since the Long Range Planning Committee published "The Institute in Evolution" in 1991. That committee concluded that the mission of AIPG as stated in Bylaws Article 1.2 is realistic for the future operations of the Institute. Many of the recommendations made by that committee have been implemented, but perhaps not as effectively as they could be. A clear Vision for the Institute provides the inspiration and clarity of purpose for continued commitment and actions by members of AIPG into the future.

In the December issue of the "The Professional Geologist" I wrote that the purpose of the Institute has not changed since its founding in 1963. I went on to note that the environment in which we work has professional geologists has changed significantly in the ensuing 32 years. The Executive Committee has been considering what, if any, changes need to be made in the Institute to accommodate the changes of the last 32 years to successfully advance the geological sciences and the profession of geology into the next century. Our membership has come to recognize that there may be a need for the Institute to evolve as well.

In a recent letter Scott Wolter, CPG, President of the Minnesota Section and Terry Swor, CPG, wrote: "AIPG is at a critical juncture as a professional organization in Minnesota. For us to exploit our current momentum will require that AIPG develop a comprehensive strategy to keep the organization vital and growing. AIPG needs to evolve with the times, or risk extinction."

In its 32 year history AIPG has successfully focused on its purpose. I agree that AIPG is at a critical juncture. The challenge for us is to recognize the best path for the Institute to follow. The first step in implementing change is to establish a Vision. Vision both focuses and inspires. The vision provides a framework to think strategically so that our actions are focused on the future, not on what happened yesterday or today. Strategy then provides the framework within which plans will be executed and goals achieved. The vision of 30 years ago was that AIPG provided a vehicle to communicate professional qualifications and ethics to the general public and governmental entities.

The most significant change over the last 32 years has been that nineteen states have "practice" acts providing for licensure of geologists, four have "title" acts providing for certification, not licensure and three have "definition" acts. Those states that provide for licensure represent 37% of AIPG's active members. If Texas passes a registration bill in 1997, over one-half of AIPG's membership will be practicing in states where the practice of geology is regulated by statute. States are clearly usurping the role of establishing minimum qualifications for professional geologists. Mr. Wolter's and Mr. Swor's comment about this reality is: "Either AIPG acts and fully embraces responsibilities and leadership for representing state registered geologists, or other organizations will surface and provide this leadership." My impression is that they are not alone among AIPG's Membership which is why the Bylaws revision is being considered.

On the other hand, what has not changed since AIPG was founded is the need to advance the geological sciences and the profession of geology. AIPG programs that support this need include the "Issues and Answers" series, "The Citizen's Guide to Geologic Hazards", and local, state and national political advocacy programs. These programs provide information for use by the general public and governmental entities that provide background and scientific explanations on geology-related issues. These programs are clearly part of advancing the geosciences and the profession of geology and represent areas where AIPG can be effective and increase its influence. These programs also represent the most significant way that AIPG can raise the income to be more effective.

How do we establish the Vision for AIPG? What must we become to advance our principles most effectively? That Vision will be a statement and a focus for future action. We do not want a strategy for the future built on instinctive reactions to yesterday's success or today's issues. We want to focus on today's challenges and build an organization for the future. I would like to solicit input from our membership beyond the members of the Advisory Board. If you have comments, please send them to me or email me at o5069rkmdiscovey1.unocal.com. You will be heard. Let's talk about what we want to become.
The Future of AIPG in the Era of State Registration

Scott Wolter, CPG-8260, President of AIPG Minnesota Section and
Terry Swor, CPG-4097, Registration Chairman of AIPG Minnesota Section

Minnesota Section Editor's note: The following letter was written in response to an issue raised at the annual business meeting in December by Bob DeGroot, Terrance Brennan and others regarding the future role of AIPG in an era of widespread state registration. Several members have expressed concerns about the direction in which AIPG has been heading nationally, especially regarding the inherent conflict between its role as a certification body and the desire of many members to broaden the membership to better represent the geological community as a whole. How we choose to resolve this conflict will have a dramatic effect on the future of AIPG and the geologic profession.

This letter was presented to the members of AIPG Minnesota Section at the monthly meeting on Tuesday, January 9, 1996. A majority of the members present voted in favor of sending the letter to Bill Knight, Executive Director of AIPG, as an expression of the sentiments of the Minnesota Section.

January 11, 1996

Dear Mr. Knight:

At the last Annual Meeting, the Advisory Board proposed changes in the requirements for admission into AIPG. In essence, a motion has been made to upgrade the years of experience required for admission, assuming education requirements are met, from the current level of 5 to 8 years. It is our understanding the motion is in response to the number of states now adopting legislation for registration of geologists. The majority of the states with registration statutes mimic existing AIPG admission requirements, a testament to the wisdom of the current requirement for membership. For obvious reasons, concerns have been expressed by AIPG representatives for the potential loss of members in light of State screening/registration processes. Consequently, a philosophy has evolved that increasing the requirements for admission will create a higher order of certification and make membership in AIPG more attractive to geologists practicing their profession. Unfortunately, this is not a philosophy that the Minnesota Section of AIPG can embrace.

The advent of State registration is just another political issue which must be properly understood and addressed by our profession, without creating a larger problem. In fact, State registration should have a very positive effect on the membership of AIPG, if approached in the proper manner. As with all issues/legislation, education of those parties impacted is mandatory. Prior to State registration, certification through AIPG was considered the best existing accreditation for practicing geologists. Unfortunately, those geologists who don't understand the ramifications of registration may no longer view AIPG as a necessity and may be tempted to abandon AIPG for financial reasons.

Those individuals familiar with political process understand other legislation can negatively impact the existing geologist statutes and such statutes can be promulgated without their knowledge if no one is available to monitor such activities. As you are aware, AIPG currently provides such overview. In the case of Minnesota, geologists will have representation on the Board of Registration, but the Board member's role is to represent the State when dealing with geologic issues. Consequently, registered geologists' interests may not be adequately protected. Other registered professionals (such as engineers) have both recognized and experienced this condition firsthand and have organizations such as the Society of Professional Engineers and the Consulting Engineers and the Consulting Engineers Council to handle professional and political issues which may impact their field of interest and their ability to work. These organizations provide the following:

1. Political action committees at both the State and National level
2. Professional and technical assistance to the State's Board of Registration representative

...
3. Programs for continuing education, as required by State statutes
4. Ethics and professional practice review

The Minnesota Section believes AIPG is the best organization to provide these necessary services. We are also of the belief that any increase of the AIPG experience requirements will represent a death knell to the organization and drive members to other organizations willing to represent the professional needs of registered geologists. In light of the above, perhaps a more appropriate strategy for National AIPG is to provide immediate admission to those individuals with State registration. Full screening of an AIPG application currently takes 6 to 7 months, and essentially parallels various State application procedures. To subject registered geologists to this lengthy and redundant process will be detrimental to AIPG growth.

With respect to the Minnesota Section, we have a strong growing membership and increasing the service standard is not in our best interest. Like all organizations, especially those preparing to become even more politically active, we need funds for operating expenses (which we envision will eventually include the services of a state lobbyist). To be effective as an organization, a significant portion of the national dues needs to be returned to the State level for operating costs. Either AIPG acts and fully embraces the responsibilities and leadership for representing state registered geologists, or other organizations will surface and provide this type of leadership.

AIPG is at a critical juncture as a professional organization in Minnesota. For us to exploit our current momentum will require that AIPG develop a comprehensive strategy to keep the organization vital and growing. AIPG needs to evolve with the times, or risk extinction!

Fulbright Scholar Awards for U.S. Faculty and Professionals: 1997-98 Competition

The competition for 1997-98 awards opens March 1, 1996. Opportunities for lecturing or advanced research in over 135 countries are available to college and university faculty and professionals outside academe. Awards range from two months to a full academic year, and many assignments are flexible to the needs of the grantee.

Virtually all disciplines participate: openings exist in almost every area of the arts and humanities, social sciences, natural and applied sciences, and professional fields such as business, journalism, and law.

The basic eligibility requirements for a Fulbright senior scholar award are U.S. citizenship and the Ph.D. or comparable professional qualifications (for certain fields such as the fine arts or TESOL, the terminal degree in the field may be sufficient). For lecturing awards, university or college teaching experience is expected. Foreign language skills are needed for some countries, but most lecturing assignments are in English.

Applications are encouraged from professionals outside academe, as well as from faculty at all types of institutions. Every academic rank—from instructor to professor emeritus—is represented. Academic administrators regularly receive Fulbrights, as do independent scholars, artists, and professionals from the private and public sectors.

The deadline for lecturing or research grants for 1997-98 is August 1, 1996. Other deadlines are in place for special programs: distinguished Fulbright chairs in Western Europe and Canada (May 1) and Fulbright seminars for international education and academic administrator (November 1).

Funding for the Fulbright Program is provided by the United States Information Agency, on behalf of the U.S. government, and by cooperating governments and host institutions abroad.

The National Park Service Announces the Geologist-"In-The-Parks Program

The National Park Service is looking for motivated and qualified earth science professionals to work with park staffs in the following capacities: interpretation, education, resource management, and research. The positions are offered for time spans ranging from 2 to 6 months, and are available in the summer and off seasons. Most positions offer, at a minimum, housing in the park and a nominal stipend. Some positions, most of which are available only to university professors, are available as seasonal positions, offering salary, sick leave, and vacation time.

Position announcements and application materials are available at http://www.aqd.nps.gov/grd. If you are unable to access this web site, you can contact Vera Smith of the Geologic Resources Division at 303-969-2011 or geologic_resources_division@nps.gov.

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Here it is March already. Next month we get the yearly reminder that government costs and we pay, and pay, and pay. No need to remind anyone that there's a political race on. It seems as though all Washington is caught up in it one way or another. That includes those who work in the Fed inside the beltway as well. But then, politics have always been the moving force in the administration - agencies must follow the leader and the race is on.

**Federal Register, Vol. 60, No. 245, 12-21-95, pg 66344.** Part II, Environmental Protection Agency, 40 CFR Parts 260, 261, 266, and 268. Hazardous Waste; Identification and Listing; Proposed Rule

For further information contact: The RCRA/Superfund Hotline at 800-424-9346 or at 703-412-9810.


"The goal of the Oil Pollution Act of 1990 (OPA) is to make the environment and public whole for injuries to natural resources and natural resource services resulting from an incident involving a discharge or substantial threat of a discharge of oil (incident). This goal is achieved through returning injured natural resources and services to baseline and compensating for interim losses of such natural resources and services through the restoration, rehabilitation, replacement or acquisition of equivalent natural resources and/or services."

For further information contact: Linda Burlington, 301-713-1217 or Eli Reinharz at 301-713-3038.


Supplemental Proposed Rule. For further information or to order copies call the RCRA Hotline. Call 1-800-424-9346. The RCRA Hotline is open M-F, 9:00 am to 6:00 pm, EST. Information on mineral processing is also available from Van Housman at 703-308-8419 or from Steve Hoffman of the Industrial and Extractive Wastes Branch at 703-308-8303.

And FOR YOU SURFERS - This Federal Register notice is available on the Internet System through EPA Public Access Server at gopher.epa.gov. For the text of the notice, choose: Rules, Regulations, and Legislation; the Federal Register - Waste; finally, Year/Month/Day.

COMMENTS MUST BE SUBMITTED BY MARCH 25, 1996. THIS IS A MUST SEE FOR PEOPLE INVOLVED IN MINING AND MINERAL PROCESSING.


Notice of a proposed permit. For further information contact: Tim Hamlin at 206-553-8311 or at USEPA, Region 10, WD-134, Seattle WA 98101.


Bidding System for Leases in the Outer Continental Shelf. Final Rule.

For further information contact: Dr. Marshall Rose, Chief, Economic Evaluation Branch at 703-787-1536.

These Rules define a new bidding system.

Laissez les bon temps roulez.

F. B. "Ted" Mullin, CPG-1716, is currently a Supervisory Geologist for the Rocky Mountain Region, United States Forest Service. The Today in Washington column is a monthly feature and has been written by Ted since September, 1991.

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**Geophysical Society of Houston Environmental Applications Special Interest Group**

Affiliated with the Near-Surface Geophysics Section of the Society of Exploration Geophysicists and the Environmental/Engineering Committee of the Houston Geological Society **will host a 2-Day Program April 12-13, 1996**

**LOOKING INTO THE EARTH:**

Environmental and other Applications of Non-Invasive Geophysics to avoid risks when you plan to

Explore for mineral resources. * Characterize the subsurface * Analyze Brownfields

**Technical program and exhibits for Hunting Treasures or Avoiding Risks**

Chairperson: Dr. Warren Franz, 499-4937

Location: Texaco EPITD, 3901 Briarpark

(@ Westpark near Beltway 8), Conf. Room A

Date and Time: Friday April 12 from 9 am to 4:30 pm

The talks and Exhibits are an introduction to the best available non-invasive geophysical technology to explore for characterize, or analyze near-surface and environmental conditions in and around Harris County. The talks will be followed by a round table discussion

**Field demonstrations**

Chairperson: Mr. Alf Klaveness, 468-5123

Location: Rice Univ. soccer field. Near entrance #14 on Rice Ave

Date and Time: Saturday April 13 from 9 am to 3 pm

2-day preregistration: $10 includes refreshments and snack at on-site registration, box lunch, and a program and field booklet. Make check payable to the Geophysical Society of Houston and mail it to: GSH, 7171 Harwin, Suite 314, Houston, Texas 77036-2910. On-site registration $15.

Program coordinator: Dr. Stephanie Hrabar, CPG (713) 683-0838

Program Arrangement: Dr. Phil Inderwiesen (713) 954-6244

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The Set of Our Sails

William V. Knight, CPG-0153

Elsewhere in this issue, Past president Susan Landon, writes about “The New Domestic Petroleum Industry.” In her article, she describes the many changes that have occurred in just the past ten years, and how these have drastically altered the ways in which petroleum geologists are utilized. She also describes the ways in which these alterations have opened many new opportunities for the individual geologist who has solid geologic training and experience. Many of our Members would agree that “things ain’t like they used to be.” The role of the petroleum geologist, the way things are done, and the skills that are needed are hardly recognizable to those who left the industry ten years ago.

Note that I said “the skills that are needed,” not the geologic knowledge that is needed. Skills include things like familiarity with, and the ability to use, new tools and techniques, computer literacy, and familiarity with new ideas (whether you accept them or not). They do not include knowledge of the basic tenets of geology. These constitute the foundation upon which utilization of the new skills is based, and are essential pre-requisites.

As Past President Fisher pointed out in these pages last year, change is always with us. It is up to us, both as individuals and as a species (i.e., profession), to adapt to these changes. As geologists, we all are presumed to be familiar with evolution and the idea that a species either changes with changing conditions or it becomes extinct. Change and evolution are ongoing. Sometimes they progress more rapidly than at other times. At present, we happen to be in a period when those changes are particularly rapid.

We have seen what has happened, and is continuing to happen, to our petroleum and mining “subspecies.” Much the same thing is happening increasingly to our engineering and hydro-environmental “subspecies.” But, the latter can learn from the experience of the former. We must change with the times. This means finding new ways to utilize our knowledge to continue to make ourselves valuable to the society we serve and which pays for our services.

The analyses and decisions of where to go and what to do are processes which must be left to each individual. But, there are a few things that we each must consider in going through these processes.

- Historically, geologic employment has been statute- and regulation-dependent. As such, it tends to be cyclical, changing as the rules change. Petroleum geology lived for many years on various types of tax write-offs. Mining geology has been heavily affected by the 1872 mining law. Engineering geology has thrived on building codes. Hydrogeology was a very small field, with limited actual or prospective domestic growth until we began to worry about pollution of subsurface waters. Then we developed something called environmental geology, which some refer to as “hydro-environmental.” This has expanded beyond water to include other liquids and solids. It, too, perhaps even more than the others, has been created and maintained by statutes and regulations. When we consider that our profession has been so dependent upon what happens in the political arena. We wonder why geologists have been so reluctant to become involved in the political process. AIGP is increasingly active in the political arena at all levels of government. More (indeed, all) of our Members need to be actively engaged in this. Their future often depends upon it. But, we must also seek ways to become less dependent on the changes in political emphases.

- It has been said that geologists have given away more work than they will ever have. In recent years, even decades, geologists have established the tradition (unwittingly, I hope) of giving way to others. Why does the Federal government have a soil scientist

### Executive Director’s Itinerary

(subject to change)

The Executive Director is visiting various Sections, agencies, campuses, and other organizations. He is talking, listening, and exchanging information and ideas. Members are encouraged to attend these meetings wherever and whenever possible. His itinerary for the next several months, as presently scheduled, is:

- **Mar. 10-13:** Society for Mining Metallurgy & Exploration, Phoenix, AZ
- **Mar. 23:** Geoenvironmental Forum, Denver, CO
- **May 4:** Executive Committee Meeting, Arvada, CO
- **May 19-22:** Amer. Assn. of Petroleum Geologists, San Diego, CA

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in nearly every county in the United States, but not a geologist? Are the rocks really less important than the soil derived from them or deposited upon them? Why is soil science regarded by many as a totally separate discipline? Is soil science not, by definition, a subdiscipline of geology? Why are archaeologists thought to be the only ones who can recognize an object as man-made? Why are biologists so frequently thought to be the only ones who can recognize or define a wetland? Why do so many believe that only engineers can estimate or evaluate petroleum or mineral reserves? Early in the drive for geologic registration, a common objection often raised by resource geologists was “geologists don’t do that.” I remember a national meeting at which this refrain was heard repeatedly. Afterwards a student asked “if geologists don’t do these things, what do they do --- what is left?” I learned later that student changed to a double major in civil and mechanical engineering. AIPG is constantly searching for ways to expand opportunities for geologists to profitably utilize their knowledge and skills.

- Many (perhaps too many) students are attracted to the geologic profession because of its hobby-like appeal. They are fascinated by rocks, minerals, fossils, etc. Yet, they have no idea how these interests can be utilized to earn a livelihood. It seems they just assume that they can --- if the question ever occurs to them. Unfortunately, all too often their college curriculum does nothing to enlighten them on this vital bit of knowledge. They need to have some education in the realities of professional practice. This includes at least a rudimentary understanding of business. The basis of wealth creation and accumulation, and the entrepreneurial spirit. AIPG has been trying to overcome this shortcoming by making available a comprehensive continuing education program in management.

- Geologists have always been a mobile group. Until recent years, however, much of this mobility for Americans has been confined to the United States. With the increasing development of global businesses, this is changing. The number of our Members who are working internationally, either full or part time, has virtually exploded. It has been said that the petroleum geologists are all learning Russian and the mining geologists are learning Spanish. This is an oversimplification, but it does contain much truth. The engineering and hydro-environmental geologists also are beginning to look “offshore” for opportunities. The recent announcement by Geraghty and Miller of their new Spanish connection is only one of the latest of many excellent examples.

AIPG has been actively and successfully promoting the acceptance of AIPG’s Certified Professional Geologist title as a viable and reliable credential in the world market-place. This is a slow, but essential, process in expanding opportunities for American geologists outside of our own country.

Our challenge, then, both as individuals and as a profession, is to increasingly involve ourselves in politics, take back and expand our profession’s venue, develop business capabilities, and identify capture and expand opportunities in the global community. It should go without saying that, all the while, we must maintain our professional competence by keeping abreast of developing ideas, tools and skills.

A year or so ago, Richard Fox, one of our Honorary Members, recalled an anonymous quote from my first column as Executive Director. It still applies. “One ship sails east, another west, on the self-same winds that blow. It isn’t the gales it’s the set of our sails that determines the way we go.” We need to keep a close watch on the set of our sails.

**Life Plan Credit Announced**

Members insured in the AIPG Life Insurance Plan as of September 30, 1995 will receive a credit of 40 percent of their semiannual premium due on the April 1, 1996 renewal and a second credit of 10 percent of the semiannual premium due on October 1, 1996 renewal. This marks the 32nd consecutive year in which premium credits have been granted due to the strong financial condition of the Plan, thus further reducing cost of this valuable protection for insured members and their families.

The AIPG Life Insurance Plan offers coverage up to $300,000 for members. Protection for spouses and dependent children also is available.

For more information contact:
Administrator
AIPG Group Insurance Program
1255 23rd Street, N.W.
Washington, D.C. 20037
or call toll free: 800-424-9888
in D.C.: 202-296-8030
This column skipped an issue for a couple of reasons. First, the TPG is on a budget and last month was a "short" issue. Also, since the preceding issue arrived in the mail shortly before the due date for the column, I hadn't received any responses to my request for further views on the extent of the scope of the AIPG Code of Ethics. Should we limit our coverage to geologic practice or should we cover all varieties of ethical lapses? Donald Ruggery and Thomas Durkin contributed their responses included below shortly after the last TPG arrived. Recall that Kurt Bogner argued for the extended view in column 2 three issues ago and Fred Fox argued for the more restrictive view two issues ago.

More views on the extent of AIPG's Code of Ethics

Donald Ruggery, CPG-8330, wrote, "As much as I would like to 'vote' for the position that we should police our ranks for ethical violations outside the professional practice of geology. I can not 'pull that lever' in this instance. My vote would, in the strictest sense, then go to the position of Mr. Fred Fox in the January [1996] issue of The Professional Geologist. Our Code of Ethics governs professional conduct within the practice of geology, and therefore gives us the right to police our ranks within that scope. My only addition here, which I believe builds on Mr. Fox's idea of a 'jailed Member,' is that the Code of Ethics may be extendible to the situation where a Member is convicted of a felony. In such a case, that individual's rights are terminated for a court-determined period. As such, the right to practice as a professional geologist could be terminated by the group as part of this punishment. An action by our group for anything less than a felony conviction would however constitute an over-extension of our authority under the Code of Ethics."

Thomas Durkin, CPG-9138, contributed the following by e-mail. "In response to your request for input on the recent issue of AIPG's TPG on ethics, I offer the following. I vote for 'all unethical conduct.' Because ethics are a set of moral principles, I can't see how they can be separated in terms of a person's professional or non-professional behavior. A person is either ethical or not. I agree with Fred Fox that 'ethics is not behavior,' but behavior is a manifestation of whether a person has ethics. It is a measure of a person's character. If we want to separate our behavior on the job from our behavior off the job (and be able to measure it) we should have a 'Code of Professional Rules' rather than a 'Code of Ethics.' If we call it a Code of Ethics, we have to be willing to rise to the higher moral ground that ethics involve.

"Practical example: I wouldn't want a convicted sex offender that happened to be a CPG teaching my daughter about geology. Who can 'ethically' argue with that?"

So now we have two views on each side of the argument. More are certainly welcomed.

Let me add some practical and experiential observations to the discussion. First, in order for AIPG to do anything, the Institute, through the Ethics Chair, has to be informed of the problem. If it is a case where some judicial body, civil or criminal, has already acted. Section 2 of the AIPG Disciplinary Procedures provided for expedited proceedings. For example, if a state licensing board has suspended or expelled a Member for cause, AIPG can do the same. The hypothetical case cited, the conviction of a Member for sexual assault, could likewise be grounds for action. In these examples, there is reason to take action and evidence of the unethical conduct has been demonstrated. What then is the appropriate sanction?

The sanctions available to the Institute range from expulsion (or permanent rejection of an applicant) through suspension to a letter pointing out improper conduct and a request to no longer engage in that conduct. The Disciplinary Procedures suggest that sanctions can be tailored to fit the specific circumstances, for example a promise not to undertake work of a certain character without having that work reviewed by another Member who is more competent in work of that character. This then brings me back to part of the original example of the sex offender. If a Member is convicted, is the court-imposed sentence sufficient punishment or should

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AIPG impose additional sanctions? If so, what, in your view, should the additional sanction be?

Where the misconduct has a substantial geological misconduct component, additional sanctions are more clearly justified. Where a geological component is lacking, what factors should be considered?

Conflicts of Interest

A good many of the provisions of the AIPG’s Code of Ethics and indeed many (most?) of the ethical issues reported in the media revolve around issues of conflict of interest. Conflicts of interest arise in many ways and fairly frequently. They can result from differences between my personal views and the views of an employer or client. Or between my employer’s or client’s views and those of my obligations to AIPG, or any other organization.

Certain kinds of conflicting activities are prohibited. For example, the AIPG’s Disciplinary Procedures (see your membership directory issue for these) contain such prohibitions. For example, if I, as Chairman of the Ethics Committee, receive a complaint about a Member or applicant, it is my duty, in appropriate circumstances, to appoint investigators (Section 1.4.3) or an adjudicatory board (Section 3.1.2). In both instances, Members of the national Executive Committee and members of the Section(s) of which complainant and respondent are members are excluded. The Section members are excluded in order to help assure impartiality of those reviewing the complaint and the Executive Committee members are excluded because the Executive Committee performs an appeal function. Fundamentally, these prohibitions reflect the desire to ensure impartiality in the process.

Likewise, when one is performing an audit function, independence is required. This independence includes both personal and financial conflicts. One should not have a financial interest in the outcome (stock or percentage-based fees for example — cash fees are acceptable), nor should personal ties be too close. This differs from the performance of the work being audited. It is acceptable for in-house staff to prepare reserve estimates, etc. but you can’t audit your own work or that of someone you’re close to in some way.

In many cases, disclosure of the possible conflict is frequently all that is needed. If everyone affected knows about the conflicts, the relationships, and no one’s upset, no problem. If someone is upset, then the issues can be discussed and worked out, again hopefully resulting in no problem.

Sometimes it is good to write a memo memorializing a potential conflict of interest, even ones that don’t seem too important. I recently found myself in a situation about which I didn’t think I had a conflict of interest problem but one in which I recognized the possibility that someone with a highly tuned sensibility might. I raised the issue orally with the appropriate parties and I wrote a memo. No one I discussed the issue with thought I had a problem either. Perhaps working around lawyers so much makes me fairly sensitive. In any case, I felt better having brought the situation out in the open.

There are lots of conflict of interest situations which arise in all of our careers. Contributions discussing them are most welcome. Details of name and place are not important and need not be included; you can even change the facts a bit to emphasize a point. I find that many common situations are not all that black and white, and these are the situations whose examination can be particularly valuable.

An Oil and Gas Case Resulting in Expulsion of a Member

I end this column with a case summary addressing what actions AIPG should take when a) law enforcement agency has acted and b) conflicts of interest. And in keeping with the theme of this issue, it is an oil and gas case.

A Member was selling fractional working interest oil and gas leases to investors. The sales literature minimized the risks involved even though wildcat wells were involved. Further, investors were not told that the Member held adjacent leases whose value would increase if the wells were successful. The investors had no rights to interests in any wells on these adjacent leases. These activities and others resulted in the Member being permanently enjoined from further violations of the federal securities laws. In addition, the Member was barred from practicing as a geologist before the SEC because of his unethical conduct. AIPG’s Code of Ethics was cited as the basis of ethical geological conduct. Following the Member’s agreement to the SEC’s sanctions by consent (he neither admitted nor denied the charges made in settling the SEC’s actions) the matter was formally brought to AIPG as an ethics case. The Member was expelled from AIPG.

This case involved misrepresentation of the geological risk in drilling the wells, the undisclosed conflict of interest resulting from the holding of the adjacent leases, and civil law enforcement actions by the SEC prior to an ethics charge being made to AIPG. Because several sections of the AIPG Code of Ethics were violated by the Member expulsion from AIPG in addition to the sanctions obtained by the SEC was warranted by those who judged the issue (I brought the complaint to AIPG and was not an adjudicator). This case demonstrates that there are cases when AIPG action in addition to other actions is warranted. But is it true in every case?

As always, discussion is welcomed. When responding, please note the changes of address at the beginning of the column.
Publication Opportunity

The American Institute of Professional Geologists has announced that it will expand its highly successful ISSUES AND ANSWERS series of publications, which has become seriously depleted. This creates an opportunity for Members of AIPG who wish to publish in a peer reviewed series.

Each subject in the series is treated in an 8 1/2" x 11" twenty-four page "stand-alone" publication, with full color drawings and photographs.

The purpose of the series is to inform the public on various issues which are, or should be, of current or particular interest. Consequently, the composition should be technically accurate and written to be read and understood by the average citizen. The objective is to provide citizens with a rudimentary foundation of "good science" on which to base their decisions in the marketplace and the political arena.

Subjects (not specific titles, yet) which have been suggested include the following. Prospective authors may suggest others.

- Sand, Gravel & Stone
- Caves, Caverns & Sinkholes
- Earthquakes
- Energy Sources:
  - Petroleum
  - Coal
  - Other
- Environmental Geology
- Geology in Public Policy Decisions
- Ground Water (revision and update)
- Hazardous Waste (revision and update)
- Industrial Minerals
- Landslides
- Metallic Minerals
- Swelling Soils & Permafrost

Inquiries by prospective authors should be directed to the Editor, AIPG, 7828 Vance Drive #103, Arvada, CO 80003; FAX: (303) 431-1332; e-mail: aipg@ix.netcom.com
Hugh Hay-Roe, CPG

Certain forms of English usage that "everyone" knows to be "wrong" turn out to be perfectly acceptable. It's quite possible that your high-school English teacher, Miss Pennywhistle, slipped you a little bad advice.

If you have spent years or decades making sure you never split an infinitive, or never end a sentence with a preposition relax. These are probably the two most common pseudo-errors in English.

Such misconceptions evidently date back to the period in which grammarians, struggling to develop a formal grammar for the haphazardly evolving English language, looked to Latin for guidance. In Latin, of course, you cannot split an infinitive with another word, because Latin infinities are single words.

Similarly, Latin prepositions are literally pre-positioned, and must take an object. But English (like German) has never had this restriction; Fowler, the British authority, calls it "a cherished superstition" and cites a long list of eminent authors who ended their sentences with prepositions. As writing consultant Jerry Murray likes to point out, a preposition is sometimes the most convenient word to end a sentence with.

Those who admire the writings of Winston Churchill may be familiar with this comment he reportedly made when criticized for ending a sentence with a preposition: "This is the kind of arrant pedantry up with which I will not put."

As for split infinitives: often they are awkward and need to — like this one, for instance — be eliminated, but sometimes they are essential. Here is a nice geologic example from the book Engineered Writing, involving the need to make clear that the records do define the species, but only partly:

a) The records completely fail to define the species. [Do not define it at all.]

b) The records fail to define the species completely. [Do not define it at all, or define it only partially?]

c) The records fail completely to define the species. [Do not define it at all.]

d) The records fail to completely define the species.

Only version (d), with the split infinitive, expresses the author's meaning unambiguously.

The Data Is...

Most scientists remember data as the Latin plural of datum, and are comfortable saying, The data are questionable." But English sentences are composed every day by millions of people who wouldn't know a Latin plural if it rushed up and bit them on the ankle; so one reads "data is" with increasing frequency. Most American authorities, recognizing the inevitable, now say that data, as a singular noun meaning "information," is acceptable.

Keep in mind that this is not an isolated example. Agenda and stamina were both plural forms in Latin, yet no one today would think of writing, The agenda are too long." Some day data may be only singular, but for the present it can be either singular or plural. Take your choice.

Shall and Will

Once upon a time, will indicated intent (willpower) and shall indicated command or permission. Today the situation is more complicated. In England, to indicate simple future action they use shall with I and we, but will with you and he/she/it/they. In North America, we use will in all situations, and reserve shall for legal documents (to express obligation) and for emphasizing determination (like MacArthur's "I shall return").

In this situation, a useful guideline is "when in Rome..." In writing for North American readers, stick with will. If writing for readers in England, however, you could say, "In the next section I (or we) shall show that..."

Contractions

Writers often wonder about using can't, it's, isn't, let's, and so forth, in writing on the job. Contractions do lend a friendly, conversational tone to writing, so the best advice is to consider your readers and choose the degree of formality accordingly. In general, written communications today are more informal than they were in the past, and the contractions mentioned above would be acceptable in inter-office memos and some letters, though perhaps not in formal reports.

Of course there are still contractions to stay away from in writing on the job: it'd, could've and should've, for example, along with it'll and other contractions involving will and a noun (as in "the job'll be done on time").

What is "correct English"? It depends on what is currently acceptable to educated people. Language evolves and styles in usage change. Keep fighting a lost cause, criticizing people (for example) who say "the data is," and you get a reputation for being hopelessly pedantic.
Geologic Hazards Kill Over 100,000 People Each Year

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The CITIZENS’ GUIDE to Geological Hazards by Edward B. Nuhfer (University of Colorado at Denver) and others. Over 100 color illustrations, extensive bibliographies of books, journal articles, and videotapes; data tables, index and two appendices. Provides concise explanations of asbestos, radon, reactive minerals, earthquakes, volcanoes, landslides, subsidence, floods and coastal processes as geological hazards. Roles that geological scientists play in mitigating these hazards are explained (134 pages). Also available: 35mm slide sets for class use.

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Paleoecology Provides Clues to Ecosystem Management

Twenty years ago, most people didn’t know what an ecosystem was but today, ecosystem issues are front page news. Although we have learned much about how plants and animals interact in a given habitat, many questions remain about how habitats change and how these changes affect life on Earth.

By examining prehistoric ecosystems, paleontologists hope to shed light on current ecosystem change. In the August issue of Geotimes, paleoecologist Robert J. Burnham, paleoclimatologist Thompson Webb III, and the Ocean Drilling Program’s Leg 158 Scientific Party share their research findings.

Habitats never remain static over time; they change dynamically. Burnham writes in the article, “Plant Invasions.” An invasion, she states, is often seen as a hostile takeover of an area by non-native elements. But invasions are not necessarily injurious. Rather than resulting from a habitat’s intrinsic fallibility, they may reflect a host of ecological factors, including chance. By fusing paleoecology with experimental approaches on persistence, constancy, and disturbance, scientists may be able to interpret recurring patterns of species change over long periods of time. These patterns could help provide a basis for modern ecosystem management plans.

To calculate the functions of ancient ecosystems, paleoecologists also study carbon exchange anomalies, writes Thompson Webb in his article, “Clues to Global change.” Modern global-change research focuses on the rates and magnitudes of carbon transfer from land to oceans during glacial epochs, and the buildup of terrestrial carbon stocks during interglacial periods. These studies show how the global biosphere cycles carbon among its various components.

An international research group called BIOME 6000 is enlarging the database of paleoecological samples used to reconstruct distributions of ecosystems. Webb reports. Available data such as pollen counts, radiocarbon dates, and the presence or absence of plant macrofossils, are being compiled and placed in digital archives over the Internet.

In their report, “Exploring an Active Seafloor Hydrothermal System,” Leg 158 Scientific Party writes that they recovered a unique suite of rocks in an active mound in the Trans-Atlantic Geotraverse (TAG) hydrothermal field, which they will use to study mechanisms of hydrothermal sulfide mineralization. The rocks will also help researchers study microbiological processes within the mound and the evolution of seafloor hydrothermal systems.

American Geological Institute, Spotlight

David Applegate named Director of Government Affairs for American Geological Institute

The American Geological Institute is pleased to announce the appointment of David Applegate as Director of Government Affairs. Applegate leaves the staff of the U.S. Senate Committee on Energy and Natural Resources to begin his new position with the Institute. “With his experience as both a research scientist and Senate committee staff member, David is well prepared to serve as spokesman for the geoscience community on national issues of concern to us all,” said AGI Executive Director Marcus E. Milling, CPG-4518. “We work during a time when geoscientists face many serious challenges, not least of which result from uncertain legislative actions in Washington. David’s leadership will help the institute and our member societies address these issues.”

Applegate joined the Committee on Energy and Natural Resources at the American Geophysical Union’s Congressional Science Fellow and served the committee as a professional staff member for the minority. He contributed to legislation related to U.S. Geological Survey and U.S. Bureau of Mines operations as well as Department of Energy nuclear waste disposal, fossil energy, and environmental management programs.

Applegate succeeds Craig Schiffrin, who was appointed Director of the Board on Earth Sciences and Resources of the National Research Council (National Academy of Sciences) in June. With the strong support of the Institute’s member societies, notably including AIPG, Schiffrin initiated AGI’s government affairs program in 1992.

AIPG ASSOCIATE EDITORS

A special thank you to AIPG’s Associate Editors:

Edward M. Baltzer, CPG-8861
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Thomas E. Jordan, CPG-9384
Lynn I. Kelley, CPG-9403
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Dale Rezabek, CPG-9285

CPGs willing to work on theme issues of the TPG, or special publications in their field of expertise. should contact the Publications Manager at AIPG Headquarters.
American Institute of Professional Geologists

The Professional GEOLOGIST

RATES & ADVERTISING SPECIFICATIONS FOR MONTHLY MAGAZINE

Published monthly, The Professional Geologist (TPG) contains reports by the President, Executive Director, Committee Chairmen, news from the 36 local sections, and the profession in general, columns, letters, announcements, and brief articles of interest. Issues include a theme and a full color cover (see editorial calendar for themes).

Circulation: approximately 7,000

Demographics:
- Professional Geologists
- Businesses
- Government Agencies
- Technical Libraries
- Related Industry
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[The Editor of AIPG is authorized to accept or reject any advertising copy submitted for publication.]

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07/93
AIPG MEMBERSHIP BENEFITS

Certification
AIPG certifies the qualifications of professional geologists prior to admitting them into membership. By means of a rigorous and thorough peer review process, the Institute investigates applicants who voluntarily apply for self-regulation through the Institute. This screening carefully evaluates their education, experience, technical competence, and ethical conduct. If they meet AIPG’s high standards, applicants are granted Certification and the title of “Certified Professional Geologist” (CPG). When the letters CPG follow an individual’s name, they proclaim to the public that this person has met the standards and subscribes to the Institute’s Code of Ethics and Bylaws.

Representation
Members are represented by qualified geological professionals. Congress, Legislatures, and Federal and State agencies are lobbied on specific mining, petroleum, water, environmental and other issues of special interest to geologists.

A portion of AIPG’s monthly magazine The Professional Geologist (TPG) is devoted to reporting developments at all government levels. Thirty-six sections of AIPG provide group representation on a state or regional level and offer opportunities to meet, work and exchange ideas and information with colleagues.

Education
At the national and section level, AIPG provides materials designed to enhance the professional knowledge and skills of its members. Educational opportunities range from seminars and short courses to sectional and national meetings. To encourage high standards of educational programs, the Institute recently established a program of Accreditation of Continuing Education opportunities offered by other organizations.

The Institute prepares and distributes comprehensive publications giving background and scientific explanations on geologically-related matters of public concern. Topics include: ground water, radioactive waste, and hazardous waste.


Insurance
Professional liability, health, and life insurance are available to members.

Information
AIPG disseminates information to its members and to the public in a number of ways on a wide variety of topics. The Institute publishes a monthly magazine The Professional Geologist (TPG). It is mailed to members and interested individuals, businesses, and political leaders.

A comprehensive Membership Directory is published annually. Copies are sent to federal, state, regional and local governments, libraries, consulting firms, corporations, and other potential users of geologic services throughout the United States and abroad. The Directory may also be purchased by non-members.

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1996

Apr. 1-3 Geotechnology in Infrastructure Improvement Meeting by The American Society of Civil Engineers and the Pennsylvania Dept of Transportation, Hershey, PA. Contact: Cari Bennenga, Box 67100, Harrisburg, PA 17106. Ph.: (717) 763-7211.


Apr. 21-26. Hydrology and Hydrogeology of Urban and Urbanizing Areas. The 57 Park Plaza Hotel, Boston, MA. Contact: American Institute of Hydrology, Helen Klose, 3416 Univ. Ave. SE, Minneapolis, MN 55414-3328. Ph.: (612) 379-1030. e-mail: aihydro@aol.com.


May 19-21. 32nd Annual Forum on the Geology of Industrial Minerals, Laramie, WY. Contact: Ray E. Harris, General Chr., WY State Geological Survey, P.O. Box 3008 University Station, Laramie, WY 82071-3008. Ph.: (307) 766-2266.


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Oct. 8-12. AIPG 33rd Annual Meeting, Columbus, OH. Contact: Curtis Coe, c/o Certified Oil Co., 949 King Ave., Columbus, OH 43212. Ph.: (614) 421-7500. Fax (614) 421-6525.

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October 5-9, 1996
Columbus, Ohio

October 8-11, 1997
Houston, Texas

October 4-8, 1998
Baton Rouge, Louisiana

October 5-9, 1999
Anchorage, Alaska

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30 The Professional Geologist • MARCH 1996
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Applicants for certification must meet AIG'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.

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Share your expertise, knowledge and opinions with other professional geologists. Submit an article, paper (professional and/or technical), or guest column based upon your experiences or activities in geology. Submissions should be 800 to 1600 words in length. Photographs, figures, tables, etc. are welcome. See the inside cover of this issue for more detailed author instructions.

CLASSIFIED ADS

The Professional Geologist is now accepting classified ads. Ads are at the rate of $0.75 per word, minimum charge of $25. Just write out the ad, count the words and send it to us with prepayment. Ads paid by Visa or MasterCard ca be faxed in. Ads received prior to the first of the month will appear in the subsequent edition.

For further information or assistance, call (303) 431-0831 fax (303) 431-1324 or email: aipg@tx.net.com
The OHIO Section of the American Institute of Professional Geologists is pleased to announce that the 33rd ANNUAL MEETING will be held at the GREAT SOUTHERN HOTEL in Columbus, Ohio.

**October 7 - 12, 1996**

Theme of the meeting will be:

"The Future of Geology: Politics, Economics and Technology"

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