WANTED

AIPG needs quality articles for future issues of *The Professional Geologist*. Members are encouraged to submit articles or call Headquarters and recommend individuals who should be asked to submit articles. Photographs enhance articles and make great TPG covers. Be sure to send photographs when possible with your articles OR send your favorite photograph for consideration as the cover for a future TPG issue.

Editorial Calendar

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Send your article and/or photograph TODAY to:

The Professional Geologist
AIPG - Editor
7826 Vance Drive, Suite 103
Arvada, CO 80003

For questions or further information on articles or advertising
call Wendy Davidson at (303) 431-0831 • M - F • 7:30 - 4:00 MT.

THANK YOU

Tom Jones and Wendy Davidson would like to thank the individuals who have submitted articles and photographs for *The Professional Geologist*. Your response has been outstanding! You make TPG what it is today and what it will become.

PLEASE CONTINUE THE GOOD WORK!

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 six months, as presently scheduled, is:

Feb. 21 - 22: Oklahoma Section, Tulsa, OK
Feb. 24 - 27: Society of Mining, Metallurgy and Exploration, Phoenix, AZ
Mar. 1: AGI/GAP Advisory Committee, Alexandria, VA
Mar. 2 - 3: (Tentative) Appraisal Subcommittee, Washington, DC
Mar. 4 - 7: Council of Engineering and Scientific Society Executives, Tucson, AZ
Mar. 23: Geoenvironmental Forum, Washington, DC
Apr. 11: AIPG Executive Comm., Arvada, CO
Jun. 19 - 26: European Federation of Geologists, Latin American Geological Congress and Spanish Geological Congress, Salamanca, Spain
Jul. 11: AIPG Executive Committee, Arvada, CO
The Professional GEOLOGIST

FEATURES

Mining Chief Defends Law of 1872

Geoenvironmental Registration and Certification Programs - Part 2

Project Planning: An Organized Approach

AIPG to Meet With European and Latin American Geologists

USGS Expands Knowledge of Mineral Resources on Public Lands

Eighth Wonder of The World

COVER - Glaciated terrain in Colorado. Note the knife-edge ridges, U-shaped valleys, cirques and patronoster lakes typical of mountain glaciation.

Excerpted from USGS 40105-A4-PF-050, Rocky Mountain National Park 1:50,000-scale topographic map, 1987.

DEPARTMENTS

PRESIDENT'S MESSAGE
STUDENTS' AND CANDIDATES' COLUMN
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TODAY IN WASHINGTON...
EXECUTIVE DIRECTOR'S COLUMN
MEMBERS IN THE NEWS

The purpose of AIPG is to strengthen the geological sciences as a profession with all reasonable actions, to establish professional qualifications, to certify those qualifications to the public, and to evaluate continuously the ethical conduct of its members. Further, the Institute establishes ethical standards to protect the public and geological sciences from nonprofessional practices, monitors governmental and other activities affecting the geological sciences, and communicates with the public.
We begin 1992 with a new slate of officers who will constitute the Executive Committee for AIPG. To refresh your memory, they include William L. Fisher (President-Elect), Austin, TX; Richard C. Fountain (Vice President), Winter Haven, FL; Robert K. Merrill (Secretary), Edmond, OK; and Charles W. Dimmick (Editor-Elect), Cheshire, CT. These individuals will join with Dale O. Reese (Treasurer), Dallas, TX and Thomas Z. Jones (Editor), Columbus, GA who are already on board. The new Executive Committee representatives of the Advisory Board are F. W. Obermolte, Jr. from Frankfort, CO, Mark L. Reinhardt from Lexington, KY, Frank S. Turek from Scottsdale, AZ and Ronald P. Zurawski from Nashville, TN. Please take note: these are your representatives to AIPG’s organizational affairs -- use them.

The Committee met for the first time with the national headquarters staff January 25-26 in Arvada, CO, made final modifications to standing committee appointments and tackled a comprehensive agenda related to AIPG activities nationwide.

How much AIPG is able to accomplish in 1992 now depends upon the effort put forth by its individual members who take our objectives seriously. All of our committees need your help and they want your input. If you need assistance in contacting committee chairman call, or write Richard Fountain, Vice President, (813) 299-4475, Dan Miller, President, (307) 766-6506 or the National Headquarters office (303) 431-0831.

Throughout the year, we will be doing our best to provide summary articles of committee activity and progress in The Professional Geologist. Your additional comments regarding each committee report will also be welcome and should be forwarded directly to Thomas Z. Jones (Editor), Columbus, GA.

Those of you who have questions or who can assist with corporate funding to the AIPG Foundation, Inc., should contact Ernest K. Lehmann (Chairman) or Adolf U. Honkala (Treasurer). Your assistance will be gratefully appreciated.

Because of AIPG’s expanded activities and involvement over the past few years, we need to give serious thought and appropriate action to ways of earning additional income. The Executive Committee welcomes your ideas. If you have questions, contact Bill Knight (Executive Director) at National Headquarters (303) 431-0831.

Mining Chief Defends Law of 1872

Just because it was written more than 100 years ago doesn’t mean the Mining Law of 1872 is old-fashioned, according to the director of the U.S. Bureau of Mines.

"Even though the law has the date of 1872, it’s as modern as you can get," said T S Ary, who spoke at the 97th annual Northwest Mining Association convention in Spokane, Washington.

The convention, which started Sunday, Dec. 1 with a technical course on blasting, attracted more than 3,700 members from the minerals industry.

Ary spoke to miners at the convention welcoming lunch on Dec. 4 and again at a news conference on Dec. 5.

He warned miners to expect another big push after the first of the year to change the nation’s basic minerals law and to look for proposals for new increased fees. In addition to leasing and permitting fees, which he said will cripple the already struggling domestic mining industry, he cautioned miners to expect proposals for a hard-rock mining reclamation fund.

Speaking against such a fund, Ary said the money would end up in the eastern United States, not in the West where most mining takes place today and where the money would come from.

"I don’t think they could ever clean up all the abandoned mine lands in the Appalachian area," Ary said.

Ary said reasonable changes to the mining law would be acceptable, as long as Congress conducts cost/benefit studies first.

"From the Bureau’s perspective, we want to see the minimum requirements maintained in the Act but enough teeth in the law so land management agencies can answer environmental concerns," Ary said.

Commenting that the Bush administration is supportive of the mining industry, he added that some think they could do more to strengthen it.

"Extractive industries create wealth," Ary said. "We need a minerals policy that encourages industry."

He said that government regulations are driving miners offshore and that the United States is at risk because it depends on foreign governments for strategic minerals.

"If Pearl Harbor was today, we couldn’t gear up like we did," Ary said.

In addition, consumers pay more for goods that require foreign minerals or processing, he said.

Ary advised the mining industry to embark on a serious public education program to dispel the perception that it is a dirty industry.

"We have to teach the teachers first," Ary said, "so they can teach the children."
Part 1 of this two part article was printed in the January 1992 issue of The Professional Geologist.

3. General Environmental

General environmental registration/certification programs are intended to address general environmental knowledge as well as a few specialized programs. Some programs stress general knowledge in all areas potentially encountered by someone in the environmental field. Some certification programs are intended to be more specific and address only specialized areas such as environmental audits, property transactions, asbestos, and visible emissions.

A. Certified Environmental Professional (CEP) - The National Association of Environmental Professionals (NAEP) established the Certified Environmental Professional (CEP) program in 1979, in response to situations where experienced environmental project managers were receiving no peer recognition or certification program, such as that developed for engineers. The cornerstone of the new association was its "Code of Ethics and Standards of Practice for Environmental Professionals". When the Council on Environmental Quality held formal hearings in 1978 on proposed revisions to NEPA regulations, NAEP was the only professional society officially invited to give testimony, thereby giving federal recognition to NAEP and its membership of environmental professionals[11].

An applicant can be certified in one of five areas: environmental planning, environmental documentation, environmental assessment, environmental operation, and environmental research and education. The applicant must be a general member of NAEP before consideration of qualifications as an EP can occur. A bachelor's degree and a minimum of nine years of applicable professional experience are required; five of these years must be served in responsible charge or responsible supervision. Two mandatory general questions and three additional essay questions must be answered as part of the review/exam process. Qualifications are evaluated by seven members of the Certification Review Board, and an interview of the applicant is required[11].

B. Registered Environmental Manager (REM) - The Registered Environmental Manager (REM) is one of several programs administered by the National Registry of Environmental Professionals (NREP). These programs are intended to promote legal and professional recognition of individuals possessing experience and knowledge as environmental managers, engineers, scientists, and technicians, and to consolidate that recognition in one centralized source[12].

The REM is the highest professional/management level of NREP registration. A three-hour, 150-question exam is mandatory. The purpose of the exam is to evaluate a person's understanding of environmental project coordination and management. Exam topics include project management/coordination theory; environmental regulations; multimedia treatment technologies; project planning; emergency conditions (spills and injuries); public relations; hazardous materials; and a basic understanding of global issues, ecosystems, and endangered species.

Prior to receiving permission to take the exam, the applicant must provide proof of a bachelor's degree in an environmentally related discipline and three years of relevant work experience[12].

C. Registered Environmental Professional (REP) - The Registered Environmental Professional (REP) is an intermediate level program of NREP intended to recognize those already possessing other significant certification programs outside of the NREP program. The primary reason for the REP is to provide governmental agencies with an alternative to "grandfathering" an untested body of people when they accept NREP's programs.

Individuals possessing one of the following registrations/degrees are eligible for the REP without examination:

1) Graduate level environmental specialty certificate;
2) Master's degree/doctorate from accredited institution in an environmentally related field;
3) Law degree (J.D.) with specialization in environmental law;
4) Certified Industrial Hygienist (CIH);
5) Certified Environmental Trainer (CET);
6) Certified Health Physicist (CHP);
7) Certified Safety Professional (CSP);
8) Certified Environmental Professional (CEP);
9) Certified Hazardous Materials Manager (CHMM);
10) American Academy of Environmental Engineers Diplomate (DEE);
11) California Registered Environmental Assessor (REA).
Registered or Certified Professional Geologist (PG/CPG); or
Registered Hazardous Substance Professional (RHSP) 

D. Registered Environmental Property Assessor (REPA) - The NREP’s Registered Environmental Property Assessor (REPA) program is intended for persons engaged in the inspection and evaluation of environmental risk in real property. The REPA is expected to be proficient in principles and practices related to the evaluation of the environmental conditions of property and real estate. If problems are discovered with the property, the REPA should be able to address proper remediation techniques for the problem/property in question.

The basic requirements for the REPA are:
1) Bachelor’s degree in an environmentally related discipline (or substitution with AEP registration);
2) Two years of work directly related to property transactions and assessments; and
3) Successful completion of a three-hour, 150-question examination.

The basic topics addressed in the REPA exam are: basic concepts of environmental laws and health effects; site history analysis; sampling theory and techniques; document analysis; pollutant control and transport mechanisms; and development of an auditible environmental risk inventory.

E. Registered Environmental Lending Analyst (RELA) - The Registered Environmental Lending Analyst (RELA) program was developed by NREP as a recommendation from agencies such as the Federal Home Loan Bank Board and the Federal Deposit Insurance Corporation. The designation is intended to address property valuation, financial risk evaluation associated with property, and financial risk control mechanisms that may be employed with environmentally risky situations. The applicant must pass a three-hour, 150-question exam as well as satisfy typical NREP education/experience requirements.

F. Certified Environmental Auditor (CEA) - This specialty certification program was intended by NREP to recognize professionals conducting environmental compliance and risk audits for operating facilities, associated equipment, and practices/procedures conducted within the facility. Certified Environmental Auditors (CEAs) are expected to be able to address environmental compliance and risk issues associated with operational facilities.

A bachelor’s degree in an environmentally related discipline (or an AEP registration) is a prerequisite for certification. The applicant must have two years of experience dealing with operational facility audits and then pass a three-hour, 150-question exam.

G. Associate Environmental Professional (AEP) - The Associate Environmental Professional (AEP) is the entry level program established by NREP for environmental profession registration, intended to emulate the Engineering-in-Training level for professional engineering programs. No experience is required, but a three-hour, 150-question exam must be successfully completed which addresses general environmental issues. Two years in an environmentally related bachelor’s degree program is required as a minimum for the educational requirements. The next step for the AEP, upon service of the experience requirement, would be attainment of the REM designation.

H. Environmental Technician (ET) - The Environmental Technician (ET) is NREP’s introductory certification program which is intended to allow applicants to participate in NREP’s programs. With no exam or experience requirements, this is the first step for professional recognition.

I. Certified Environmental Trainer (CET) - The National Environmental Training Association (NETA) has evolved over the past 14 years into an organization intended to recognize and provide well-trained and knowledgeable trainers for the environmental workforce. A formal system to measure, document, and demonstrate technical competency among its members was developed in 1983, and the first credentialing exams were offered in 1986.

Due to the youthfull age of the program and the rigorous examinations, there are less than 250 Certified Environmental Trainers (CETs) worldwide. Fewer than one in five pass all examinations on the first try. Applicants must prove technical competency in one or more environmental specialty areas, which include water treatment; wastewater treatment; transportation of hazardous materials and waste; occupational health and safety; hazardous materials and waste management; the Hazard Communication Standard; and asbestos abatement.

Requirements for certification as a CET include:
1) 270 contact hours in any training area;
2) Three letters of reference attesting to the applicant’s training abilities;
3) Proof of six eligibility units acquired through experience in a relevant technical area or a combination of education and experience; three units (three years) must be relevant to technical experience;
4) Successful completion of Instructional Technology and one or more technical tests; and
5) Renewal every three years by proof of continuing education programs and training hours.

J. AHERA Building Inspector - The AHERA (Asbestos Hazard Emergency Response Act) legislation mandated that training programs be established for individuals involved with inspections, management plans, contract supervision, or design of projects involved with asbestos control.

While AHERA applies specifically to schools, current legal trends indi-
cate that the AHERA program will be the "state-of-the-art" standard to which all building owners will be held. Under the National Emission Standards for Hazardous Air Pollutants (NESHAP), virtually no reconstruction of a building containing certain types of asbestos may take place without reference to much of the material presented in the AHERA courses.

AHERA requires that applicants who conduct inspections or develop management plans be trained in specifically defined courses which are offered by a number of institutions. Recertification must be done within 366 days of the issue date of the certificate.

**K. Certified Professional Chemist (CPC)** - The American Institute of Chemists (AIC) developed the Certified Professional Chemist (CPC) program approximately 20 years ago to recognize the achievements of chemists and offer a certification program for such professionals. It is operated by the National Certification Commission in Chemistry and Chemical Engineering and grants official status as a CPC to those who have been diligent about maintaining their competency. The program does not involve an exam, but focuses upon the applicant's activities and works over a period of years.

The program is open to anyone possessing a bachelor's degree in chemistry or a closely related field. Membership in any organization is not a condition for membership. For applicants who have not yet acquired the necessary experience, a Certificate-in-Training designation is available. Those who may not yet qualify for certification can become annual enrollees.

The Certification Commission established a system of certification units by which it measures the chemist's eligibility for certification. Certification units (CUs) are generally equivalent to contact hours of participation in qualifying continuing education and related professional development activities. The applicant must demonstrate the acquisition of at least 300 certification units during all or part of the three calendar year interval immediately preceding the year of application. The official participation year begins July 1 and ends the following June 30th. Certification is valid for a three-year interval beginning July 1, and recertification is required every three years.

Certification units can be acquired from four general categories of professional activity: continuing education; publications, reports, and presentations; professional society participation; and other professional activities. Each of the four categories has a maximum amount of certifica-

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tion units that can be acquired for a three-year period. The applicant must provide documentation to substantiate participation in these activities[3].

L. Visible Emissions Evaluator (VEE) - The Visible Emissions Evaluator (VEE) certification program was developed to address the visual determination requirements of USEPA Test Method 9.

"Visual Determination of the Opacity of Emissions from Stationary Sources." Not only does Method 9 address the determination of plume opacity by qualified observers, but also provides procedures for the training and certification of observers and the procedures to be used in the field to determine plume opacity.

The candidate first takes a test on the meteorological aspects of visible emissions. A field test follows where the candidate must demonstrate the ability to assign opacity readings in five percent increments to 25 different black plumes and 25 different white plumes with an error not to exceed 15 percent opacity on any one reading and an average error not to exceed 7.5 percent opacity in each category. If the candidate fails to qualify on the first run of 50 readings, a retest may be performed if time permits. The smoke test may be administered as part of a smoke school or training program.

The certification is valid for six months, at which time the qualification procedure must be repeated by any observer in order to retain certification[14].

M. Registered Environmental Laboratory Technologist (RELT) - The Registered Environmental Laboratory Technologist (RELT) is another specialty registration program developed by NREP for purposes of recognizing professionals involved with laboratory management or the analysis of environmental samples. The applicant must be able to satisfy the typical education/experience/exam requirements of NREP.

The applicant must possess a bachelor of science degree or an associate of arts degree in chemistry or biology, plus four consecutive years of performing laboratory analyses. The experience requirements consist of two consecutive years of laboratory work conducting research and/or analyses of environmental contaminants. The use of wet chemistry, gas chromatography, and mass spectroscopy must be demonstrated in the application form.

A three-hour, 150-question exam must be successfully completed. The exam addresses good laboratory practice involving gases, solids, and liquids from environmental samples; quality control; basic knowledge of analytical techniques; liabilities; evidence handling; and definitions and a basic understanding of scientific principles[12].

Summary
Numerous registration/certification programs now exist in the "geo-environmental" fields to address the wide range of opportunities and situations that have developed in recent years. While the more traditional programs are more recognizable and have larger memberships, some of the new programs should develop in these aspects in the coming years. These programs will help demonstrate applicable knowledge and experience to someone looking for professional services and assistance and provide opportunities for people seeking to enhance their professional qualifications.

References
(12)National Registry of Environmental Professionals - "The Environmental Registry," Glenview, IL.
(13)National Environmental Training Association (NETA), Certified Environmental Trainer/Associate Environmental Trainer, Scottsdale, AZ.

NOTE: Reference 11 was obtained from the following: A.L. Johnson, ed., Professional Certification and Registration for Water Resources and Related Disciplines, American Water Resources Association (AWRA), Bethesda, MD, 1989.
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E.O.E./A.A.
Project Planning: An Organized Approach

Bruce Tohill, Consulting Geologist

The objective of project planning and scheduling is to establish a logical sequence of jobs that constitute the project, their interrelationships, and the times they must be performed to ensure that the project is completed on time and within budget. To accomplish this objective, a project has to be well organized from the beginning. Each job must be assigned a start and finish date, and resources necessary to complete each job must be available when needed. Failure to plan carefully often leads to inadvertent omission of a job necessary to complete the project; shortages of personnel, data, equipment, or materials when needed; and frustrating bottlenecks in work flow. The end result is a project that is late and over budget.

One of the simplest, yet most effective systems of project planning and scheduling is Analysis Bar Charting. Benefits of this system are:

1. It visually expresses thoughts about complex plans and schedules and resolves the uncertainty in them;
2. It improves coordination and communication between project team members and management;
3. It can be used to schedule limited resources more efficiently;
4. It can be used to shorten project duration; and
5. It provides a means to monitor performance against plans and schedules at any time and determine where corrective action may be needed.

Analysis Bar Charting uses two basic charts to organize thinking about complex problems into a logical sequence of planning and scheduling. The first chart constructed is the plan. Technically termed the precedence network diagram (Figure 1), it is used to display the logic of the work flow, determine the earliest and latest start and finish times of each...
job, identify the critical path, and establish the amount of time required to complete the project.

Each job that is part of the project is depicted in a box with the job duration (days for this project) shown on the left. The personnel responsible for completing the job are identified below the job duration. Work performance flows in the direction of the arrows, either as sequential dependencies or as overlapping dependencies. Sequential dependencies are jobs that cannot begin until the previous job has been completed. These jobs are connected with previous jobs by one arrow from the side or end of the previous job. Overlapping dependencies are jobs that can begin after a specified amount of work has been completed on a previous job and they end a specified time after the previous job has ended. They are connected with previous jobs by arrows from the corners of the job box.

The performance time of each job is shown above and below the boxes. The numbers above the boxes are the earliest time the job can begin (left) and the earliest time the job can finish (right). These times are calculated by adding the job durations along the logic arrows from start to finish. The time required to complete the project is the completion time. The late start/late finish times are posted below the boxes and are derived by subtracting job durations from the completion time backward to the start. These are the latest times a job can start and finish to complete the project on schedule.

A significant amount of time can be saved by converting sequential dependencies into overlapping dependencies when possible. For example, 62 days would be needed to complete "contour maps" and "draft maps" if these jobs were performed sequentially. By performing them almost simultaneously as overlapping dependencies, they can be completed in 37 days.

Jobs that have identical early and late start on early and late finish times are critical jobs that define the critical path of the project. The critical path is the longest job path in the project and, therefore, establishes the project duration. All jobs on the critical path must be performed on time and within their estimated duration or completion of the project will be delayed. Only parts of some overlapping dependencies fall on the critical path (Figure 1). "Print logs" is critical for the first two days. Non-critical jobs have float time, which is the amount of time available to perform the job in excess of the job duration.

Why is it important to identify the critical path? To identify the jobs that impact the project completion date and perhaps save wasted effort if the
project falls behind schedule. Often, when a project falls behind schedule, everyone works overtime to catch up. Normally, only 25-50% of jobs in a project are on the critical path. Therefore, 50-75% of the overtime work is unnecessary because it does not affect the project completion date. It is much more effective to use personnel working on noncritical jobs, if possible, to catch up on the critical jobs that are behind schedule.

Information from the project plan is used to construct the project schedule, technically referred to as the sequenced Gantt chart (Figure 2). Job performance times on the plan are converted to performance dates on the schedule. Each week in this schedule has five working days with no holidays. The jobs on the critical path are laid out first on the schedule within the bold outline. All other jobs have float time depicted by cross-hatching. The length of the critical path establishes the completion date of the project. If the critical path can be compressed by adding additional resources to shorten the duration of any of the jobs on the critical path, the project can be shortened.

How are jobs with float time scheduled? Scheduling is controlled by the constraints of the project. If personnel availability is not a constraint, all jobs should be scheduled with an early start/early finish. This method of scheduling will reduce the risk of not completing a job with float on schedule and it will give the personnel working on these jobs free time to assist work on critical path jobs later if needed.

The Winters Geologic Analysis was constrained by personnel availability, however. Only one technician and one geologist were available to perform the work. Therefore, jobs requiring a technician could not be scheduled for an early start because four technicians would have been required the week of 5/7 to post tops on logs, lay out cross-sections, print logs, and check spotting. The performance times of these jobs were scheduled by using float time to level the number of technicians needed from four to one on the staff histogram at the bottom of the schedule. Careful scheduling was also required the week of 5/7 to post tops on logs, and check spotting. The performance times of these jobs were scheduled by using float time to level the number of technicians needed from four to one on the staff histogram at the bottom of the schedule. Careful scheduling was also required to enable one technician to count porosity and post datums efficiently. These jobs were scheduled by calculating the rate that logs would become available to the technician after being correlated by the geologist. Performance times then were scheduled within available float time so these jobs would be completed in time to provide maps to the geologist for contouring.

If jobs are scheduled for a late start/late finish, the project probably will be late. The most common question asked when a job is assigned to someone is, "When does it have to be finished?" The answer invariably leads to a late start/date finish. If jobs are scheduled for a late start/date finish, they automatically become critical because all the available float time is used before they even begin. Any delay in completing these jobs will delay the completion of the project.

A project manager that completes a project without amending the original plan and schedule is either very lucky, a genius, or out of touch with reality. Changes in plans and schedules are inevitable. They must be updated to show the situation as it currently exists. If they are not updated, they show only the situation as the manager wishes it existed. Simple methods of statusizing the plan and schedule can be used to monitor performance against plans at any stage of the project. It is imperative that plans and schedules be current. If they are not, management will lose confidence in their self and discard the system. Failure of the system usually is not due to ineffectiveness of the techniques, but instead results from improper management. Analysis Bar Charting techniques are easily learned and will work if properly applied.
AIPG to Meet With European and Latin American Geologists

AIPG has been invited to a series of events in Europe in 1992. These are consistent with its efforts to expand employment opportunities for its Members in the international arena.

The first is concurrent meetings of the Latin American and Spanish Geological Congresses, and the European Federation of Geologists (EFG), in Salamanca, Spain, June 21-26. The official languages will include English. There are to be sessions on geological subjects, symposiums, field trips, seminars, round tables, and a number of social events. Both scientific and professional subjects will be addressed.

The second is a field trip, arranged especially for AIPG by the EFG and The Geological Society (UK), to geologic sites in England and Wales, June 29 - July 4. Plans for this trip were kindly provided by TPG by John Shanklin and The Geological Society.

Monday 29th June: Leave London by coach for Bath, Avon 150 miles west of London. Bath, a Roman and Georgian "Spa" town, is a central canal district. In the late 18th century, William Smith, realized the sequential nature of sedimentary strata in canal cuts and, by 1815, he produced the first world's major geological map.

Monday and Tuesday: Examine the areas where William Smith made his deductions.

Tuesday p.m.: On To Cardiff, capital of Wales and a center of industrial development in coal, iron, limestone, railway engineering and ship-building.

Wednesday a.m.: Visit a coal-mining project which has been converted to a working museum.

Wednesday p.m.: North-east to Ebbw Vale. Until 3 years ago this was a scene of utter industrial devastation: a huge derelict steelworks and vast shale tips from coal-mining. Ten years ago $200M was released for 5 garden festivals to take place in areas of extreme dereliction. The last of these is being held at Ebbw Vale this summer. We will stop here for a few hours en route to Llandudno, a seaside jewel on the North coast of Wales, where we will be entertained at a banquet by the geological contracting company Simon Robertson.

Thursday a.m.: A huge 18th century open-cast copper mine, revitalized recently with new underground workings. This mine in the centre of Anglesey once controlled the world price of copper.

Thursday p.m.: Stopping briefly at the mighty castle of Conway, on to the Roman city of Chester with its walls intact and a cathedral celebrating 900 years since its foundation in 1092.

Friday a.m.: Inspect the only salt mine in Britain, some 500 feet underground with vast galleries; then to London for an evening buffet at The Geological Society.

The geological highlights of the tour are the Jurassic and Cretaceous rocks of the Bath area, the Carboniferous coal measures of South Wales, the Pre-Cambrian Island of Anglesey, the Triassic (Sherwood) sandstones of the city of Chester, and the slates and Triassic marls of Cheshire.

This is a valuable opportunity to see something of the geology and way of life in a wide area of England and Wales.

To participate, contact Ambassador Travel, Newark, Delaware, 1-800-235-3739. Owing to the Olympic Summer Games, a final deadline of March 13 has been imposed.
USGS Expands Knowledge of Mineral Resources on Public Lands

The Organic Act establishing the USGS in 1879 stipulated that the Geological Survey shall examine the geological structure, mineral resources, and products of the public domain. It is a current goal of the USGS to increase knowledge of the distribution and quality of national and global mineral and energy resources for use in the formulation of policies that involve the long-term availability of these resources and the wise use of the Nation's land, mineral, and energy resources. The USGS produces geologic reports and maps of mineralized areas, and increases basic understanding about mineral deposits, so that decisions on mineral development and other compatible or conflicting land uses are made in the absence of needed information.

The disposal and management of Public Lands has been debated since the Continental Congress. The Land Ordinance Act of 1785 reserved for disposal by Congress one-third of the output from public lands of all gold, silver, lead, and copper mines, a practice that followed the policies stipulated in the Crown Charters to the early colonies. This practice ceased with the end of the Continental Congress. In 1807, President Thomas Jefferson implemented a leasing and royalty system that was abolished in 1846, for lead mines in parts of the mid-continent.

In 1872, the Mining Law became the governance of metallic minerals resources on public lands. The law was passed to "promote the development of the mining resources of the United States." Under this law, United States citizens are entitled to free and open access to public lands without prior notice for the purposes of mineral exploration and exclusive right of possession upon discovery of a valuable deposit. Official management of the Mining Act was effectively left to the States and, to a certain extent, the private sector itself.

A New Federal Presence - A Changed Federal Goal

The past 25 years or so have ushered in dramatic social and operational changes for minerals exploration in the United States. The management of public lands, including mineral resources, has changed. Promotion of the development of mineral resources no longer has the high national priority that it did in the past years. Minerals now must be balanced with other competing uses of public lands.

The Wilderness Act (1964), the National Environmental Policy Act (1969), and the Endangered Species Act (1973), together with the social pressures attending urbanization, are among the factors that have altered the general social climate in which natural-resource companies must operate. In addition, the Wilderness Act and the Federal Land Policy and Management Act of 1976 demanded the periodic and systematic inventorying of the public lands and their resources through a land-use planning process.

The further interest of the Federal government in broad-based planning and management is exemplified by the 1974 Forest and Rangeland Renewable Resources Planning Act and the 1976 National Forest Management Act, which require the Forest Service to formulate resource management plans for all units of the national forest system.

New USGS Program Emphasis: Information for Planners

Industry is not alone in experiencing a cultural change. The role of the USGS in Federal lands issues has also changed. For example, the Wilderness Act initiated mandatory studies of U.S. Forest Service Roadless Area Review and Evaluation (RARE) I and RARE II areas by the USGS. And the 1976 Federal Land Policy and Management Act extended this activity to Bureau of Land Management Wilderness Study Areas. In addition, the National Materials and Minerals Policy, Research, and Development Act of 1980 directed the Secretary of the Interior to improve the availability and analysis of minerals data in Federal land-use decisions. Through these acts, an era of Federally acquired, comprehensive minerals data on public lands was born.

The USGS maintains three programs that address issues related to mineral resources. The Strategic and Critical Minerals and Development of Assessment Techniques programs address the more traditional aspects of producing geologic reports and maps of mineralized areas as either topical or local scientific studies. The National Minerals Resource Assessment Program provides mineral-resource information directly to land-management agencies. This assessment program accounts for 60 percent of the funds that Congress appropriates for mineral-resource investigations in the USGS - a program orientation that reflects Congressional priorities.

The emphasis on information and assessment represents a change in the operational climate for economic geologists in the USGS. Policy goals and programmatic content emphasize products that provide mineral-resource information to land managers and Congressional staff who, in some instances may have only general familiarity with geology and mineral resources.

USGS Office of Minerals Resources Newsletter, Summer 1991
Two New Geologic Maps for Southeast Oregon Region Released

Two new geologic maps that describe in detail the geology and natural-resource potential of a portion of the Owyhee region in eastern Oregon have been released by the Oregon Department of Geology and Minerals Industries (DOGAMI). In addition to gold and silver and minerals associated with hydrothermal mineralization, the studies identify basalt and previously unreported low-grade limestone among the mineral resources of the study areas.

- Geology and mineral resources map of the South Mountain Quadrangle, Malheur County, Oregon, by James G. Evans. DOGAMI Geological Map Series GMS-67, two plates (one two-color geologic map, scale 1:24,000, and one sheet containing geologic cross sections and geochemical data). Price $6.
- Both publications are now available at the Oregon Department of Geology and Mineral Industries, 910 State Office Building, 1400 S.W. Fifth Avenue, Portland, Oregon 97201-5528. Orders may be charged to credit cards by mail, FAX, or phone. FAX number is (503) 229-5639. Orders under $50 require prepayment except for credit-card orders.

Bureau of Land Management Desert Plan

The extensive study of the desert ordered by Congress in 1976 has been completed, and legislation implementing the BLM Desert Plan has been introduced in Congress. That bill reflects public comment collected over four years, completion of environmental impact statements on each study area and detailed mineral surveys of areas proposed for wilderness conducted by the U.S. Geological Survey and the Bureau of Mines. The bill was reviewed by the Department of the Interior and Office of management and Budget before it went to the White House for submission to Congress.

The other desert bills propose areas for wilderness which were found not to be suitable for that designation in the land management studies. No further studies have been conducted by authors or supporters of that legislation.

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Eighth Wonder of The World

Billion Barrel Capacity New Goal For Strategic Petroleum Reserve

The Strategic Petroleum Reserve, which last August achieved its goal of 750 million barrels of crude oil storage capacity, is now aiming for a capacity of one billion barrels.

"We're creating the eighth wonder of the world and we're three quarters of the way there," says Bob Weller, DOE/SPR Project Manager. "We're about to undertake another milestone. We expect it to be just as successful if not more so because of the lessons we have learned from our prior efforts."

Congress authorized the expansion to one billion barrels last year, and DOE is now studying salt dome storage sites along the U.S. Gulf Coast to determine the best candidates to receive additional oil for storage. The SPR system, which is connected to major private sector distribution systems, currently holds an emergency stockpile of approximately 570 million barrels of crude oil.

Weller, named Project Manager last August, was formerly Director of the Office of Project and Facilities Management at DOE Headquarters. He held a number of management positions in the SPR program from 1977 to 1985, including construction project manager for the SPR’s West Hackberry Site, Director of Operations, and Assistant Project Manager for Engineering and Construction. In 1985, he became Director of the DOE Naval Petroleum Reserves at Elk Hills in California.

The SPR stockpile is stored in cylindrical caverns created inside salt domes through a leaching process. They are typically 61 meters (200 feet) in diameter and 610 meters (2,000 feet) deep. A salt dome formation can measure up to 8 kilometers (5 miles) across and 16 Kilometers (10 miles) deep.

Quick Construction

Two SPR sites, Bayou Chocatow in Louisiana and Big Hill in Texas, completed cavern development in record time to reach the 750-million-barrel storage capacity goal.

DOE acquired the Bayou Chocatow site in 1977 with four existing brine caverns suitable for storing 46 million barrels of crude. Since, DOE acquired another existing cavern, developed another cavern from scratch, and expanded yet another cavern from an 11- to a 17-million-barrel capacity. Bayou Chocatow has 47 million barrels of oil in its current inventory and now has a total storage capacity of 72 million barrels.

While all but one of Bayou Chocatow’s six caverns already existed when it was acquired from industry, the SPR created all of Big Hill’s 14 caverns. Each has been leached to hold approximately 11.5 million barrels of crude oil, giving Big Hill a total site capacity of approximately 160 million barrels. Big Hill cavern development began October 1, 1987 and was completed August 29, 1991.

The other SPR sites are Bryan Mound near Freeport, Texas; West Hackberry near Lake Charles; and Weeks Island in Lafayette, Louisiana.

Solution Mining

Thus far, the SPR’s cavern development has involved the movement of approximately 10 billion barrels of fluids. Nearly 4.5 billion barrels of raw water have been injected into the caverns and 4.5 billion barrels of brine were removed and disposed of in the Gulf of Mexico or in brine disposal wells. Approximately 580 million barrels of brine were displaced by the crude oil pumped into the caverns for storage.

SPR caverns are developed by a technique called “solution mining.” Two wells are drilled into the salt dome. Strings of tubing are lowered into each well. Fresh water is injected into one well and brine is extracted through the other. Salt around the wells dissolves, and a cavern is formed. The position of the strings is adjusted to control the size and shape of the cavern, creating a cavern that is large at the top and narrow at the base. For each barrel of oil storage space created, seven barrels of fresh water must be injected and seven barrels of brine disposed of. Creation of a cavern takes from three to three and one-half years.

DOE This Month, (December) Vol. 14, No. 12, 1991

Editor’s Note: Many of our Members regard SPR as a boondoggle that is much less cost-effective strategic energy reserve than were the stripper oil wells that were taxed out of existence to pay for it.

U. K. Coalbed Methane Joint Venture

The United Kingdom Department of Energy has awarded an Exploration License conveying more than 150,000 acres in the unmined portion of the South Wales Coal Basin to the Kirkland (CBM) Group for coalbed methane exploration. Denvers geologists Tom Falls, CPG 3174, and Keith Murray, CPG 446, working with Dr. David Whitbread of Oxford, England, generated the South Wales prospect, and formed and managed the applicant group for this license. Group participants are Kirkland Resources (Holdings) Plc., the Operator; Ashdown Resources Ltd. and the UK subsidiary corporations of J. Makowski Associates, Boston; Resource Enterprises, Inc., Salt Lake City, and Falls and Murray. An aggressive exploration program is planned for South Wales, and additional applications for coalbed methane license rights in the UK are contemplated.

For additional information, call: Tom Falls (303) 296-3537, Keith Murray (303) 986-8554. •
With this issue of The Professional Geologist, AIPG is commencing a service to its Students and Candidates for Certification. We solicit your questions and your opinions on professional matters. We would like to share them with other young geologists and with the entire profession. AIPG recognizes that you hold the keys to the future of our science, both as a discipline and as a profession. From time to time we will have guest columnists who will address topics perceived to be of particular interest to you. We hope this will help you in planning and developing your career.

What Do Employers Want?
Anyone who has ever looked for a job has been faced with this question. All too often, the answer has not been very clear. We asked some of our Members who are employers of geologists and have developed a few answers that may help Students who are planning their careers, as well as Candidates who are just starting out.

At the entry level, employers want their geological employees to have a good grasp of the fundamentals of geology. That means, as stated in AIPG's report, "Education For Professional Practice", that they should be able to:

- identify fossils, minerals and rocks;
- recognize and map bodies of rock exposed in the field and from imagery;
- correlate bodies of rock from surface and subsurface information and recognize spatial relationships;
- effectively use subsurface data and integrate it with surface data;
- interpret geologic structures, age sequences, geologic histories, and conditions of formations;
- recognize and map surficial material other than bedrock;
- evaluate sites for mineral extraction, suitability for land use, and susceptibility to environmental damage;
- apply current technology and theories;
- think critically, define problems, quantify parameters and provide solutions;
- communicate effectively to a variety of audiences;
- effectively use the major informational sources and know the organization of geology as a science and a profession;
- recognize career opportunities;
- appreciate obligations and responsibilities of a geologist to an employer and to society; and
- respect other disciplines and their professionals.

It should be clear from this list that employers want their beginning geologists to understand the concepts that underlie the various techniques that they use in both the laboratory and the field. Techniques evolve. They come and go, but most are based on geologic concepts that are constant. While it is important to know how to use certain specific tools and procedures, it is more important to understand the underlying concepts. Then, as the tools change or are replaced, you can readily adapt. That is not to say that you should not be able to use and apply the more common techniques. That is essential. But, to learn techniques at the expense of fundamentals and concepts is to learn a trade and not a profession. You will always be limited to the techniques that you know and to the jobs which employ them. Beginning geologists frequently fail to understand this. They find themselves initially assigned to some relatively mental tasks, for which they were not specifically trained. Their expensive educations appear completely irrelevant and a total waste of time and money. They then complain that their colleges failed them in not training them properly for their careers. They need to be patient. They need to understand that this "geotech", or "geolabor", should not be seen as their primary career. It should be viewed as an additional part of their basic training and experience that is essential to their professional advancement. They need to learn and perform these tasks well and cheerfully because, when they later advance to supervisory and management positions, this experience in their background will make them infinitely more effective and valuable.

Also clear from this list is the emphasis on communication skills, oral, written and graphic. Many geology majors shun courses that give them training and practice in speaking and writing. This is a serious mistake. You may be the best geologist in the world, but, if you cannot communicate what you know to others, especially to non-geologists, nobody but you will ever know.

In our next column, we will talk about what is needed for advancement. Meanwhile, send in your comments, questions and suggestions for future columns. If you have particular concerns, we want to know about them. If you would like to be a guest columnist, let us know. Address your correspondence to: AIPG, Editor-TPG, 7828 Vance Dr., #103, Arvada, CO 80003, or FAX (303) 431-1332.
maintenance of natural gas pipelines; includes provisions to hold harmless and indemnify for civil damages to third parties suetors who issue bonds for hazardous waste site restoration contracts. Provides for limited liability of suetors under default of such contracts.

STATUS: 1/21/92 INTRODUCED. To HOUSE Committees on NATURAL RESOURCES, FINANCE & TAXATION and APPROPRIATIONS.

FL H 1865 AUTHOR: Ascheh
TOPIC: ENVIR, PROTEC. & POLLUTION CNTRL
SUBTOPIC: HAZ. & TOXIC WASTE - NON-NUCLEAR
SUMMARY: Authorizes the Dept. of Environmental Protection to proceed with development of standards and guidelines to control hazardous waste to prevent or correct for civil damages to third parties. Provides for limited liability of suetors under default of such contracts.

STATUS: 1/21/92 INTRODUCED. To HOUSE Committees on NATURAL RESOURCES, FINANCE & TAXATION and APPROPRIATIONS.

FL H 2097 AUTHOR: Davis
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Creates the Natural Gas Pipeline Site Relocation Act to establish a centralized and coordinated permitting process for the location of natural gas pipeline corridors and the construction and maintenance of natural gas pipelines; includes provisions to hold harmless and indemnify for civil damages to third parties suetors who issue bonds for hazardous waste site restoration contracts. Provides for limited liability of suetors under default of such contracts.

STATUS: 1/21/92 INTRODUCED. To HOUSE Committees on NATURAL RESOURCES, FINANCE & TAXATION and APPROPRIATIONS.

STATE NET

U. S. 20758 AGENCY/DO/Office of Surface Mining Reclamation and Enforcement
TOPIC: RES. MGMT AND PRESERVATION
SUMMARY: The Office of Surface Mining Reclamation and Enforcement (OSM) is revising the definition of "previously mined area" and adjusting the requirements governing off-site coal preparation plants. OSM is taking this action as a result of two U.S. District Court decisions affecting OSM's permanent program.

CREATION: 30 CFR 701 and 765
PROPOSAL DATE: 09/25/91
COMMENT DEADLINE: 01/31/92
MESSAGE: EXTENSION OF PUBLIC COMMENT PERIOD (57 FR 20655-66)

U. S. 2166 AUTHOR: Johnston
TOPIC: ENERGY
SUMMARY: Reduces the Nation's dependence on imported oil, provides for the energy security of the Nation.

STATUS: 1/29/92 INTRODUCED.

AK S 334 AGENCY: Adams
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Relates to the Natural Petroleum Reserve - Alaska special revenue fund.

STATUS: 1/13/92 INTRODUCED. To SENATE Committee on BUSINESS AFFAIRS AND LABOR.

CO S 109 AUTHOR: Hopper
TOPIC: ENERGY
SUBTOPIC: NUCLEAR ENERGY AND RADIOACTIVE SUBSTANCES
SUMMARY: Concerns radon services and, in connection therewith, establishing a voluntary certification program for radon service providers.

STATUS: 1/10/92 INTRODUCED. To SENATE Committee on BUSINESS AFFAIRS AND LABOR.

FL H 1199 AUTHOR: Jones
TOPIC: RES. MGMT AND PRESERVATION
SUBTOPIC: MINERALS AND MINING
SUMMARY: An increase from 5% to 8% the tax on severing solid minerals other than phosphate rock and heavy minerals. Redistributes revenues from gas, gas, phosphate, and heavy minerals severance to include deposits into the trust fund, established to fund reclamation programs, the state geological survey, and regulation of oil and gas exploration and production, continues on.

STATUS: 1/21/92 INTRODUCED. To HOUSE Committees on NATURAL RESOURCES, FINANCE & TAXATION and APPROPRIATIONS.

FL H 1285 AUTHOR: Beallinger
TOPIC: BUSINESS AND CORPORATIONS
SUBTOPIC: BUSINESS - MISC.
SUMMARY: Relates to the Pacific Ocean Resources Compact. Concerns the protection of marine and coastal resources.

STATUS: 1/23/92 INTRODUCED. To HOUSE Committee on OCEAN AND MARINE RESOURCES and INTERGOVERNMENTAL RELATIONS and INTERNATIONAL AFFAIRS. 1/15/92 Additionally referred to HOUSE Committee on FINANCE.

HI S 2302 AUTHOR: Matsura
TOPIC: ENERGY
SUBTOPIC: ALTERNATIVE ENERGY SOURCES
SUMMARY: Provides relocation assistance to any homeowner meeting certain eligibility criteria, who feels obliged to move away from geothermal development by providing for the sale of the property. Provides a fair and equitable system for the sale of such property situated near geothermal development.

H I 2589 AUTHOR: Crazier
TOPIC: REAL ESTATE CONSTRUCTION
SUBTOPIC: REAL ESTATE DEVELOPMENT
SUMMARY: Relates to alien ownership of real property.

STATUS: 1/23/92 INTRODUCED.

HI S 2612 AUTHOR: Levin
TOPIC: ENERGY
SUBTOPIC: ALTERNATIVE ENERGY SOURCES
SUMMARY: Makes an appropriation for Geothermal Coordination; establishes a State Geothermal Compliance Coordinator Office, and to create two new positions for a Geothermal Compliance Coordinator and an assistant.

STATUS: 1/23/92 INTRODUCED.

HI S 2648 AUTHOR: Wong
TOPIC: BUSINESS AND CORPORATIONS
SUBTOPIC: SPECIFIC INDUST., OCCUPATIONS
SUMMARY: Relates to licensing of engineers, architects, surveyors and landscape architects.

STATUS: 1/23/92 INTRODUCED.

ID H 449 AUTHOR: Comm. on Government
TOPIC: BUSINESS AND CORPORATIONS
SUBTOPIC: SPECIFIC INDUSTRIES, OCCUPATIONS
SUMMARY: Requires the Board of Registration of Professional Engineers and Professional Land Surveyors to promulgate rules of continuing education.

STATUS: 1/15/92 INTRODUCED.

IN H 1299 AUTHOR: McConnell
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Requires a person who extracts oil to provide the Township Assessor with information describing the amount of the person's gross annual oil production.

STATUS: 1/07/92 INTRODUCED. To HOUSE Committee on CONVEYANCE AND TOWNSHIP.

KY S 34 AUTHOR: Maslen
TOPIC: RES. MGMT AND PRESERVATION
SUBTOPIC: MINERALS AND MINING
SUMMARY: Prohibits an oil and gas operator from drilling on the land of the surface owner if the mineral interest holder holds the surface interest and the operator does not give reasonable compensation to the surface owner for damages; requires operators to reclaim the drilling operation and to monitor water in the area of the operation; requires enforcement by the Department for Surface Mining Reclamation and Enforcement.

STATUS: 1/07/92 INTRODUCED. To HOUSE Committee on TOURISM DEVELOPMENT AND ENERGY.

KY H 269 AUTHOR: Yates
TOPIC: BUSINESS AND CORPORATIONS
SUBTOPIC: SPECIFIC INDUSTRIES, OCCUPATIONS
SUMMARY: Requires the Board of Professional Engineers and Land Surveyors to adopt a program of continuing education for licensees prior to July 1, 1992.

STATUS: 1/16/92 INTRODUCED. To HOUSE Committee on BUSINESS ORGANIZATIONS AND PROFESSIONS.
STATE NET

LA 3489  AGENCY: Dept. of Wildlife and Fisheries/Wildlife & Fisheries Commission
TOPIC: BUSINESS AND CORPORATIONS
SUMMARY: Relates to fees in addition to supervisory fees to be paid by seismic operators for application to work on any designated red lined oysterseed ground belonging to the State of Louisiana, additional fees apply to use of airguns.
AGENCY CONTACT: Karen Foote, Administrator, Fisheries Research Division, Dept. of Wildlife and Fisheries, Box 98000, Baton Rouge, LA 70899-9800.
CITATION: HAC 76: 1, 1301
PROPOSAL DATE: 12/20/91
COMMENT DEADLINE: 02/14/92

MD S 92 AUROR: Comm. on Ecol&Env Affairs
TOPIC: BUSINESS AND CORPORATIONS
SUBTOPIC: SPECIFIC INDUSTRIES, OCCUPATIONS
SUMMARY: Authorizes the State Board for Professional Engineers to waive examination requirements for engineers who are licensed in U.S. territories or foreign countries if those engineers are of good character and reputation, pay to the Board a $100 license fee in lieu of any fee required under specified provisions, and provide adequate evidence that at the time the engineer was licensed by territory or foreign country, engineer met requirements that were equivalent to those required by State laws.
STATUS: 01/08/92 INTRODUCED. To Senate Committee on ECONOMIC AND ENVIRONMENTAL AFFAIRS.

MS H 35 AUTHOR: Ross
TOPIC: RES. MGMT AND PRESERVATION
SUBTOPIC: MINERALS AND MINING
SUMMARY: Relates to unused mineral interest extinguished after 20 years.
STATUS: 1/13/92 INTRODUCED. To Senate Committee on OIL, GAS AND OTHER MINERALS.

MS H 45 AUTHOR: Mock
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Requires tax on natural gas and on locomotive fuel.
STATUS: 1/13/92 INTRODUCED. To Senate Committee on WAYS AND MEANS.

MS H 251 AUTHOR: Sheppard
TOPIC: UTILITIES AND APPLIANCES
SUBTOPIC: UTILITIES - OIL, GAS
SUMMARY: Provides that mineral estates separated from the surface estate shall revert to the owner of the surface estate after ten years of nonproduction; defines nonproduction; provides that the owners of such mineral estates shall have an exclusive option to renew the agreement creating the mineral estate.
STATUS: 1/17/92 INTRODUCED. To Senate Committee on OIL, GAS AND OTHER MINERALS.

MS S 2081 AUTHOR: Deering
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Reinstates and extends the exemption from oil and gas severance tax on certain production from new wells.
STATUS: 1/08/92 INTRODUCED. To Senate Committee on OIL, GAS AND OTHER MINERALS and Finance.

MS S 2113 AUTHOR: Bean
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Notifies and furnishes information to surface owner before drilling oil or gas wells; requires notification to furnish surface estate on which proposed well is located; requires such person to furnish surface owner a detailed description of method to be used to restore land and improvements of surface estate; prohibits drilling of any well and issue of permit until 30 days after such notice and information is furnished.
STATUS: 1/08/92 INTRODUCED. To Senate Committee on OIL, GAS AND OTHER MINERALS.

MS S 2364 AUTHOR: Canon
TOPIC: ENVIR. PROTEC. & POLLUTION CNTRL
SUBTOPIC: ENVIRONMENTAL ISSUES - MISC
SUMMARY: Establishes an office of environmental protection within the Department of Environmental Quality to set standards to guide governmental bodies within the state in allowing only such activities of quarrying and civil liberties of all its citizens and those of nearby states from environmental impact. Oversees all related activities for that purpose, enforces violations and authorizes civil action by litigation.
STATUS: 1/27/92 INTRODUCED. To Senate Committee on ENVIRONMENTAL PROTECTION, CONSERVATION AND WATER RESOURCES.

NEL 1273 AUTHOR: Schmidt
TOPIC: RES. MGMT AND PRESERVATION
SUBTOPIC: WATER SUPPLY AND PRESERVATION
SUMMARY: Relates to ground water, to levy a severance tax on ground water delivered to a point outside of Nebraska; provides for enforcement and collection of the tax; provides penalties.
STATUS: 1/22/92 INTRODUCED.

NY A 911 AUTHOR: Robach
TOPIC: BUSINESS AND CORPORATIONS
SUBTOPIC: SPECIFIC INDUSTRIES, OCCUPATIONS
SUMMARY: Provides that the application against a professional engineer, architect or surveyor based upon an alleged deficiency in professional services which resulted in a defect or defects which are patent, must be commenced within the date of completion of the particular services or within six years after discovery of the defect or defects or when with reasonable diligence such defect or defects should have been discovered, whichever is greater.
STATUS: 1/22/92 INTRODUCED. To ASSEMBLY Committee on CODES.

OK H 2006 AUTHOR: Lucas
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Provides that when proceeds derived from the sale of oil or gas production cannot be paid because the title thereto is not marketable, the holder of the proceeds shall annually submit a list of such interest to the Oklahoma Tax Commission.
STATUS: 1/09/92 FILED.

OK H 2122 AUTHOR: Lucas
TOPIC: TAXATION
SUBTOPIC: PERSONAL INCOME TAX - MISC
SUMMARY: Provides for refund of grass production taxes paid by any person, firm, association or corporation for any oil, gas or oil and gas well.
STATUS: 1/17/92 FILED.

SD H 1209 and SD S 155 AUTHOR: (H 1209) Viken and (S 155) Dunn
TOPIC: RES. MGMT AND PRESERVATION
SUMMARY: Revises the rate of taxation on precious metals.
STATUS: 1/12/92 INTRODUCED. To HOUSE Committee on JUDICIARY.
(S 155) 1/22/92 INTRODUCED. To Senate Committee on TAXATION.

SD H 1269 AUTHOR: Viken
TOPIC: OIL, GAS, PETROLEUM
SUBTOPIC: MINERALS AND MINING
SUMMARY: Regulates the increase of large-scale gold and silver surface mining in the Black Hills.
STATUS: 1/24/92 INTRODUCED. To HOUSE Committee on STATE AFFAIRS.

SD S 20 AUTHOR: Comm. on State Affairs
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Provides for oil and gas royalty increment status for certain state mineral lands.
STATUS: 1/14/92 INTRODUCED. To Senate Committee on STATE AFFAIRS.

SD S 215 AUTHOR: Wagner
TOPIC: BUSINESS AND CORPORATIONS
SUBTOPIC: ECONOMICS
SUMMARY: Regulates the practice of soil science and to require the registration of soil scientists.
STATUS: 1/24/92 INTRODUCED. To Senate Committee on AGRICULTURE AND NATURAL RESOURCES.

UT S 83 AUTHOR: Rinslien
TOPIC: POLITICS AND GOVERNMENT
SUBTOPIC: ADMINISTRATIVE AGENCIES
SUMMARY: Relates to oil and gas; specifies terms for orders of the Board of Oil, Gas and Mining to pool oil and gas interests; allows consenting owners to recover from production estimated plugging and abandonment costs; increases the risk penalty for a nonconsenting owner; provides for payment of royalties.
STATUS: 1/16/92 INTRODUCED.

VA H 793 AUTHOR: Murphy
TOPIC: ENERGY
SUBTOPIC: OIL, GAS PETROLEUM
SUMMARY: Relates to drilling in Tidewater, Virginia. Prohibits drilling wells for gas or oil in Chesapeake Bay Preservation Areas or within 500 feet from the edge of the Bay or its tributaries, whichever is greater. Establishes a 1 year moratorium on drilling all wells or producing from oil wells throughout Tidewater Virginia.
STATUS: 1/21/92 INTRODUCED. To House Committee on CONSERVATION AND NATURAL RESOURCES.

WV H 4230 AUTHOR: Chambers
TOPIC: ENERGY
SUBTOPIC: OIL, GAS, PETROLEUM
SUMMARY: Relates to coiled methane gas wells and units; provides for a system of issuing permits for coiled methane gas wells; declares public policy; defines certain terms; provides for an application procedure; provides for the Director of the Division of Environmental Protection with authority to review applications; rules on certain permits and modifies permits; provides for promulgation of legislative rules; gives the Director of the Division of Environmental Protection certain responsibilities.
STATUS: 1/27/92 INTRODUCED. To House Committee on GOVERNMENT ORGANIZATION; and then to HOUSE Committee on JUDICIARY.

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F. B. "Ted" Mullin, CPG-1716

By now, you have all cussed and discussed the President's state of the union message. Let's hope some of his proposals will come to fruition (without extra regulations).

Writing these notes, as short as they are, is an education in itself. In order to bring you these few notes, I have reviewed a stack of Federal Registers approximately twelve inches in height, and which contains approximately 2900 pages of "stuff". This latest stack of Registers dates from December 23, 1991 through January 17, 1992 -- 2200 pages for the first seventeen days of 1992. It is no wonder the general public doesn't know what the government is doing. They can do it, publish it in the Federal Register, ask for comments, publish it in final form and most of us don't even know it has been done until it is too late.

I am the last person on the routing list for the Federal Register. As a result, there are proposed regulations for which the commenting period has come and gone by the time I see them. Such is life. One such announcement dealt with special research grants for the U.S.D.A. Water Quality Program for fiscal year 1992. The solicitation for grant applications for research emphasises on groundwater was published on November 1, 1991 and proposals had to have been postmarked by January 21, 1992. Anyone with questions may call Dr. Berlie Schmidt at (202) 401-4504. Who knows, there may still be a chance to submit an application. If not, you will have at least established a contact for future opportunities.

The general accounting office has completed an audit undertaken at the request of Chairman Vento (D-MN) to analyze the causes of restricted access to public lands. The audit was to determine (1) the amount of Federal land affected, (2) the categories of public users who feel most affected by inadequate public access, and (3) land management problems that result from restricted access. The report will not be released until late February. Oversight hearings are anticipated in March or April. One wonders if the mining or oil and gas industries were approached for input. If not, they should watch for the oversight hearings and prepare some comments.

Workers who have traditionally viewed the Democratic party as the party of jobs, are increasingly viewing it as the party of the environment and abortion according to Stuart Rothenburg, a Washington D.C., political analyst and editor/publisher of The Political Report. Rothenburg, in an article titled, "The No Growth Party" (The American Enterprise, Nov./Dec. 1991), cites the liberal policies supported by the Democrats as having cost workers their jobs. Rothenburg reported that in the 14 months since the Spotted Owl was placed on the endangered species list, the Northwest's logging industry closed 71 primary manufacturing plants employing 6371 workers.

In the Federal Register, Vol. 56, No. 250, Page 67256, are proposed regulations and a request for comments regarding enhanced oil recovery credits. Comments and an outline of oral comments plus a request to appear must be received by March 24, 1992 for a hearing to be held on April 7, 1992 at 10 a.m. in the I.R.S. auditorium. For further information, call Brenda Stewart at (207) 566-4919. These regulations provide guidance in determining the cost subject to credit and the circumstances under which credit is available.

In Vol. 57, No. 6, Part II, is a proposed rule for land disposal restrictions for newly listed wastes and contaminated debris. These proposed regulations involve 40 CFR, Parts 148, 260, and 261 et al., and 85 pages of fine print. Comments must be in no later than 2-24-92. For further information, contact the RCRA Hotline at (800) 424-9346.

AIPG Member - President of ASBOG

Don E. Williams, CPG 1340, is the President of the Association of State Boards of Geology (ASBOG) for 1992. He served as President-elect under President Charles R. Sherman of Aiken, South Carolina during ASBOG's first year under charter in 1991.

Williams has completed a term on the Arkansas State Board of Registration for Professional Geologists where he served as the first chairman in 1987.

He received a BS in Mining Engineering-Geology in 1956 from the University of Missouri School of Mines. He is retired from the U.S. Forest Service in Washington, D.C. where he served as group leader for minerals administration.
Geologists - An Endangered Species?

William V. Knight, CPG 153

Most geologists by now are aware of the collapse of the petroleum exploration industry in the United States, and to a somewhat lesser extent, throughout the world. This has resulted in a drastic reduction in the number of employment opportunities for geologists. Some have even been able to find a niche in petroleum development and production. Many have retrained for other fields of geologic practice. Others have moved into other professions. (I know one who has developed a thriving business in stripping parking lots.)

The domestic mining industry has been similarly affected. Because of its relatively fewer employees, fewer geologists have been impacted. But, the result is the same; many experienced geologists forced to seek new opportunities.

The environmental field has provided these new opportunities for many. It has generally required some retraining and a significant career step backwards in order to move forward again. But, many have made that move and have found satisfying new careers.

Now, we are beginning to see some evidence of the supply of service capabilities outstripping, not so much the demand, but the resources to pay for them. To a greater extent than the resource industries, this area of geologic employment is "statute-, or regulation-driven." It lives or dies with the statutes and regulations that govern it. As the competition among those providing these services increases, the natural tendency will be for them to call for ever more stringent environmental rules to provide more work. Opposed to this will be those who must pay the bill, including the taxpayers. Some will simply go out of business, or leave the country, or seek relaxation of the rules.

Where does all of this leave geologists?

I remember several years ago listening to a prominent petroleum engineer take geologists to task for being too willing to voluntarily restrict their fields of opportunity. He pointed out that, in his view, the field of reservoir engineering in which he practiced, had evolved because geologists had progressively abandoned it. He has also been pointed out that many of the early soil surveys were performed by geologists and that the field of soil science has, in large part, evolved from geology. Now, we are seeing increasing pressure to make hydrogeology a science separate from geology. We have real estate appraisers displacing geologists in evaluation of mineral and water rights. Geologists are being challenged by other professions in dealing with underground storage tanks. "Environmental specialists" are doing work - often poorly - that geologists should be doing.

All of this results from default by the geologic profession. Instead of saying "geologists don't do that", as is so often heard, we should be firmly and frequently telling the world that "geologists can do that as well, if not better than, anybody else". We should be aggressively seeking opportunities to expand our horizons, rather than be content to do our own little thing in an ever-shrinking market. One of the primary purposes of AIPG is "to advance the geological sciences and the profession of geology". To do this, each of us needs to be more pro-active in public, professional, and political affairs. We need to reach out for and develop opportunities, not give them away. Otherwise, geologists will, indeed, become an endangered species. And, to paraphrase the C & W song title, we will be "just what we had comin'".*

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MEMBERS IN THE NEWS

Dan C. Buzea, CPG-5157, J. Kevin Powers, CPG-7375, and W. Peter Balleau, CPG-2716, have become Principals, Vice Presidents, and Directors of Leggette, Brashears & Graham, Inc. All were initially affiliated with LBG's Connecticut headquarters office, where Buzea remains. Kevin Powers now manages LBG's, St. Paul office and is completing a term as President of the Minnesota Section of AIPG. Peter Balleau is manager of LBG's, Albuquerque office.


Gerald M. Friedman, CPG-1531, has just completed a new textbook, "Principles of Sedimentary Deposits - Stratigraphy and Sedimentation". This book is to be published and distributed by MacMillan Publishing Company and should be available in February, 1992.

Craig A. Cox, CPG-7612, was appointed to the position of Associate by Geraghty & Miller, Inc. Craig is based at the firm's Dublin, Ohio office. His areas of expertise include the management of complex multi-disciplined investigations and hydrogeologic data collection and interpretation techniques. As Groundwater Services Division manager for the Dublin office, Craig has provided technical oversight for a variety of ground-water investigation projects. This includes negotiating implementing work plans at CERCLA and RCRA sites, designing and installing ground-water monitoring systems, and assessing remedial alternatives.

William L. Fisher, CPG-2398, is the 1991 recipient of the Hollis D. Hedberg Award in Energy, presented by the Institute for the Study of Earth and Man at Southern Methodist University/Dallas, given for exceptional research contributions to the understanding of the earth and its resources. He also is president-elect of the American Institute of Professional Geologists for 1992. Bill is Director of the Bureau of Economic Geology at the University of Texas/Austin.

Wallace A. Jenksy, II, CPG-4724, has recently joined Harding Lawson Associates as Managing Principal Geologist of the firm's Thousand Oaks, California, office. Wally's professional experience includes over 12 years in oil and gas exploration and production, and 6 years in environmental geology.

James P. McCalpin, CPG-7020, has retired from teaching at Utah State University and has founded GEO-HAZ Consultants in Estes Park, Colorado. GEO-HAZ specializes in analysis and mitigation of geologic hazards, particularly from active faults and landslides.

Michael J. McEachern, CPG-3835, recently published an article in the November 1991 issue of "Environmental Waste Management Magazine" entitled, "Groundwater Modeling - An Emerging Remediation Tool". Mike's article features the strengths and weaknesses of modeling for evaluation of remedial alternatives and cautioned against back-calculation with too little data in forensic applications for contamination dating.

Edward R. Rothschild, CPG-7360, received promotion to the position of Chief Operating Officer for Geraghty & Miller, Inc. Ed will be responsible for the firm's operations in the United States, Canada, and Puerto Rico. Currently, the Midwest Regional Vice President, Ed has been responsible for operations throughout the upper Midwest in addition to technical responsibilities, including the organization and supervision of ground-water projects and analysis of hydrologic data. His recent experience includes a wide variety of projects involving water supply, ground-water contamination, and the management of underground storage tank systems in a variety of geologic settings and chemical conditions. Ed previously served as Vice President of Business Development, Manager of the Seattle office, and initiated the Geraghty & Miller office in Milwaukee, Wisconsin.

David L. Tarbox, CPG-6156, was appointed to the position of Associate by Geraghty & Miller, Inc. Dave is based at the firm's Florida office. He has more than 20 years of experience in environmental geology, water resources development, and geotechnical investigations. He is the Division Director of Hydrocarbon Services in the southeastern United States and is responsible for providing technical assistance and oversight for a wide variety of services for the assessment and remediation of hydrocarbon impacts.

Mark E. Wagner, CPG-7632, was appointed to the position of Senior Associate by Geraghty & Miller, Inc. In addition to fulfilling his new responsibilities, Mark will continue as Manager of the firm's Annapolis, Maryland office. He specializes in the management and/or advisement of investigation/remediation projects within the CERCLA and RCRA regulatory arena. He has been predominantly involved with industrial impoundments and municipal solid waste facilities located within fractured bedrock terrain and the processes of contaminant transport and remediation strategies within these fracture-flow dominated hydrogeologic environments.
# AIPG 1992 ANNUAL MEETING

**SOUTH LAKE TAHOE, NEVADA**  
**September 27 - 30, 1992**

**THEME:** GEOLOGICAL REASON, A BASIS FOR DECISIONS AFFECTING SOCIETY

**HIGHLIGHTS:**
- Five technical sessions over three days (Monday - Wednesday)
- Business meetings scattered from Monday - Wednesday
- Five field trips, tied to theme sessions
- Three workshops, one tied to field trip
- Keynote Speaker: T S Ary, Director, U.S. Bureau of Mines

For information on registration, exhibiting, or presenting a poster, please contact:  
Jonathan G. Price, Nevada Bureau of Mines and Geology, Mall Stop 178, University of Nevada,  
Reno, Nevada 89557-0088, (702) 784-6691  •  FAX:  (702) 784-1709

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