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.

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

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

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

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FRONT COVER - Aerial view of coal strip mines of northwestern Colorado. Photograph by Mark A. Koestel, CPG-8307.

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MESSAGE FROM THE PRESIDENT

Robert K. Merrill, CPG-4984

By this time you have noticed that your dues letter this year contained two additional items establishing a fund for political affairs and one for external affairs. The External Affairs Fund is an effort to increase AIPG’s participation in a variety of activities, most of which will not provide income. The Political Action Fund will help support the Institute’s government affairs activities. These additional funds are needed to leverage AIPG volunteers and cooperative programs with AGI and other organizations. Your support of these funds will help AIPG do the work that our membership wants when they say, “What does AIPG do for me?” This is a legitimate question, that all of you should be able to answer, and why you continue to pay your dues. Unfortunately, too many of AIPGs 4500+ active Members and 500+ retired Members and Affiliates end their commitment with their check. About 1% of you have responded with contributions for the External and Political Affairs funds.

Dues income is sufficient for AIPG’s ongoing activities, but additional sources of income are necessary to support increasingly effective activities in political and external affairs. These funds must come from outside our traditional sources of income. Publications represent AIPG’s principle source of income beyond membership dues. The Citizens’ Guide has sold very well since its publication, but The Citizens’ Guide sales are now in decline because our initial market is becoming saturated. Advertising for TPG is in decline, and this is common to publications in general. Volunteers to update AIPG’s Issues and Answers series and other publications have not come forward as quickly as expected. Sales of these publications help generate income for the Institute; meanwhile other organizations are moving into the niche that AIPG had the chance to dominate. Volunteers are not available to update old publications and publish new ones, nor have volunteers generated additional advertising income from suppliers that we Members use to conduct our business. These trends led to the Executive Committee’s decision to establish the two funds at our last meeting.

Ours is a volunteer organization that is supported by Member dues. Member dues which have not been increased by National AIPG since 1989 (some Sections have increased dues) pay for our continuing operations and minimal advocacy in either the public or political arenas. Membership in the Institute displays a commitment to high professional and ethical standards, yet without ways to make the public aware that AIPG exists, this commitment is useless. AIPG is dedicated to strengthening geology as a profession with the objective that there will be an increased public appreciation for geology in our daily lives. This recognition leads to the public asking geologists for information about geologic processes that might affect them. This, in turn, leads to work for geologists. As geologists, we must constantly be aware of what is going on in local, State, and Federal governments, actively comment on pending regulations or legislation and, indeed, undertake new initiatives. We must also find innovative ways to generate public appreciation of geology as an applied science.

I recently received the following e-mail message that demonstrates this need for AIPG’s External and Political Affairs programs:

"Thanks for the information! Unfortunately, I may not be able to use it. I found out today that the county commissioners got cold feet about the project. [They are the board of directors for the regional planning commission with which I’m associated.] This was a unique chance for locals to make decisions on how to resolve the problems associated with point and non-point sources of pollution. The alternative is that “big government” (a dirty word in this part of the world) will come in and regulate as they see fit. The commissioners would rather have EPA come in than face their constituents with their recommended decisions (they’d be on the steering committee). They want the steering committee removed from their proposal - which will probably get the program axed. I get to look for a job.”

The county commissioners needed information and their decision was apparently to get it from the regulators. This does not contribute to informed decision making. Those of you who have read my previous columns know that I strongly believe that it is our obligation as professionals to share our knowledge of the past and our perspectives on earth’s processes with the public and its decision makers. Without dedicated effort we have to accept what we are given.

The intent of the Political and External Affairs funds is to build on AIPG’s volunteer efforts to develop better environmental and resource policies utilizing our skills as professional geologists. Your financial commitment to increased political and external affairs is important, please support these funds, but also do not forget that your responsibility to the profession of geology does not end with your check.

UPDATE: AIPG E-MAIL ADDRESS

The AIPG National e-mail address has changed to:

aipg@tx.netcom.com
Coal in a Sequence Stratigraphic Framework

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Introduction

Depositional models of coal-bearing strata were largely initiated by work in the Carboniferous coal fields of the Central Appalachian Basin (eg Horne et al, 1978). These models assumed that the nature of coal deposits (thickness, lateral extent, ash content and quality) was controlled by the autocyclic of clastic depositional systems that surrounded the peat-forming environments. Such models have not proven to be predictive, even within the Appalachian Basin (eg Ferm & Staub, 1984) and it has been shown that there is a considerable amount of variability in coal bearing successions, independent of depositional environment (eg Fielding, 1985; 1987), thus these models are not accurate predictors of coal development. This paper proposes, from detailed outcrop studies of the Westphalian Breathitt Group in eastern Kentucky, a model to explain and predict the stratigraphic distribution of thick, laterally extensive and low ash coal seams, based on the concepts of EXXON-style sequence stratigraphy.

The Development of Thick, Low Ash Coal Seams

Traditional facies models for coal-bearing strata show peat accumulation in low-lying mires adjacent to active clastic depositional environments such as on floodplains (eg Gersib & McCabe, 1981), in interdistributary areas and on levees (eg Baganz et al, 1975). McCabe (1984) questioned these models, suggesting that peats accumulating in such areas would form carbonaceous shales or high ash coals. This is because peat accumulation rates are slow, and thus that any periodic influx of siliciclastic material from active fluvial systems will be an important factor in determining the peat’s ash content. McCabe proposed that raised or floating mires, which by their raised and isolated nature, self-excluded clastic input, may be the precursors to low ash coal seams. However, such peat accumulating environments are relatively rare and cannot account for all coals, hence McCabe (1984) suggested that peat and clastic deposition are not contemporaneous. This does not, however, account for the occurrence of clastic deposits in the form of swilles and seam splits that are widely reported (eg Baganz et al, 1975; Guton, 1984). Potential for thick peat development is dependent upon the length of time that clastic supply is suppressed and the area of sediment bypass which controls the extent of the peat swamp.

Humification limits development of coals to some 3m in thickness with a static water table (Clymo, 1987). It has therefore been argued that the preservation of thick coals is dependent on rising water table, which itself is best achieved by relative base level rise (McCabe & Parrish, 1992). Mires developed under conditions of rising base level may maintain themselves through many thousands of years. As mires are initiated, sustained and preserved in conditions of slowly rising base level, it is possible to consider the stratigraphic significance of coal seams within the concepts of sequence stratigraphy. It is suggested that the initiation and termination of mires may be related to accommodation space and its rate of change, as for all other sediments in fluvial to marine settings. Mires require high accommodation space (Cross, 1988), which can be defined as the maximum height to which a peat could build (McCabe, 1993). Many examples exist which illustrate that, although peat deposition-coal formation is not restricted to transgressive periods and can occur at any point on a relative sea level curve (McCabe, 1993), the thickest and most extensive coals commonly occur at, or near to, the transgressive maximum (eg Sears et al, 1941; Fassett & Hinds, 1971; Ryer, 1981; Gastaldo et al, 1993).

The Westphalian Breathitt Group, Eastern Kentucky

The Westphalian (mid-Pennsylvanian) deposits of eastern Kentucky, USA, occupy a central part of the Appalachian foreland basin. The Breathitt Group comprises eight lithostratigraphic units (Chesnut, 1988), composed of delta plain facies of siltstone, claystone, sandstone, bituminous coal and rare ironstone and limestone (Figure 1). In eastern Kentucky, the Breathitt Group is excellently exposed in a series of large roadcuts, which, along with the well established lithostratigraphy of the outcrops, provides an unrivalled data set for the study of Carboniferous fluvio-deltaic sediments, including the coal seams. In the Breathitt Group, major stacked fluvial bodies are associated with major facies tract dislocations. At these
stratigraphic levels several medium-grained, multistorey and multilateral, low sinuosity channel sand bodies with basal pebble lag conglomerates are incised into marine silstones, fine-grained mouthbar sandstone, interdistributary silstones, crevasse splay packages, coals and single-story, laterally accreted, channel sandstone bodies. This abrupt upward transition from predominantly fine-grained strata to medium and locally coarse-grained strata indicates a marked alteration in hydraulic character with or without a change in the rate of fluvial aggradation and a marked alteration in accommodation potential. Taken together these factors suggest the interpretation of sequence boundary unconformities. Hence the multistory, multilateral fluvial deposits are interpreted as incised valley fills.

Lateral to the incised valleys are interfluves, which are hiatal discontinuities represented by carbonaceous silstones, underrlays, rooted surfaces, horizons of large (up to 70cm in diameter and 80cm in height) in situ tree stumps and/or slight bleaching and mottling of the substrat. Taken in isolation, these deposits are difficult to distinguish from similar sediments deposited in the transgressive and highstand systems tracts (see below) and are only clearly defined by mapping their relationship with incised valley fills along strike.

Once both incised valley and interfluve downshift surfaces have been identified, it is possible to sub-divide the sequences into their component systems tracts. In shallow marine and coastal environments, systems tracts are readily identifiable on the basis of parasequence stacking.
patterns (examples in Wilgus et al, 1988; Van Wagoner et al, 1991) but their identification in up-dip, non-marine strata has rarely been addressed. In the Breathitt Group, parasequences and parasequence sets are not identifiable because minor (higher than 4th-order) changes in relative sea level are not readily expressed in much of the non-marine strata; in addition, any marine deposits are likely to be thin, or absent in up-dip setting; either because the transgression did not penetrate up-dip, or because of removal by subsequent episodes of fluvial incision. Nonetheless, it is possible to identify systems tracts on the basis of vertical position within a sequence, depositional environments, facies associations and changes in architectural style (cf Blum, 1991; Shanley & McCabe, 1993) and these can be related to changes in base level. The detailed sequence stratigraphic framework of the Breathitt Group is discussed by Aitken and Flint (1994a, 1994b).

**Coal In Sequence Stratigraphic Framework**

Within the sequences of the Breathitt Group, both incised valley fills and their correlative interfluvial sequence boundaries are commonly capped by thick, laterally extensive (100s of square kilometers) coals. These seams are interpreted as developing in response to water table rise, coupled with the landward displacement of clastic depositional systems due to base level rise. Consequently the base of these coal seams represents the transgressive (initial) flooding surface. Similar relationships between thick, laterally extensive coals and incised valley fills and interfluvies have been observed in the Late Permian Sydney Basin, New South Wales, by Ardito (1991) and in the Namurian (Carboniferous) of the Rough Rock Group, UK, by Hampson (1994a; 1994b).

In the Breathitt Group, at positions where sequences are bounded by interfluvial sequence boundaries, there is a clear vertical organization in terms of the thickness and
lateral extent of coals (Figure 2). The deposits overlying the lowermost, thick transgressive surface coal (see above) are characterized by coals which increase in both thickness and lateral extent upwards to a maximum. Above this 'maximum' seam, coals are less common, much thinner (commonly a few centimeters thick) and laterally restricted (typically <10 km) (Figure 2). Carbonaceous siltstones and poorly developed silty coals are common. This succession is interpreted as representing changes during the transgressive and highstand systems tracts. The rate of rise of base level increases throughout the transgressive systems tract and clastic sediment supply is effectively retarded as rivers attempt to regrade to the rising base level (Posamentier et al, 1988). Fluvial gradients decrease and suspension load to bedload ratios increase. The increase in accommodation space moves landward. The net effect is that widespread areas with high water table and little or no introduction of clastic material are produced, which are ideal nucleation sites for mines. The vertical transition between well-developed and more poorly developed coals is, therefore, interpreted as representing the point of maximum accommodation and hence the transition zone (maximum flooding zone) between the transgressive and highstand system tracts (Figure 2). Similar interpretations have been made for the Carboniferous Black Warrior Basin, Alabama, USA, by Gastaldo et al (1993) and the Permian Gunnedah Basin, Australia, by Hamilton and Tadros (1994).

In addition to the trends in thickness and lateral extent described above, preliminary analysis of coal quality data, supplied by the Kentucky Geological Survey Coal Resources and Information Service, indicates a progressive increase in BTU (British Thermal Unit) rating with associated declines in ash content upwards through the transgressive systems tract. This trend is reversed in the highstand systems tract, and commonly few coal seams are preserved. Generally sulphur contents are highest in close stratigraphic proximity to marine horizons, although exceptions exist.

Conclusions

Thick, laterally extensive coal seams, which are of economic significance in the Upper Carboniferous fluvially dominated deltaic successions of eastern Kentucky, occur dominantly in the transgressive systems tracts of high frequency EXXON-style sequences. It must be stressed, however, that thick and laterally extensive seams are not exclusive to the transgressive systems tract and can occur in any systems tract, where the rate of accommodation space creation matches the rate of peat growth. However, peats will not accumulate during periods of base level fall, although freshly exposed strata may provide an otherwise excellent platform for peat growth (McCabe, 1993). Furthermore, peats deposited prior to a base level fall (ie in the highstand systems tract) are likely to be destroyed through oxidation and decay as water tables fall, or be incised as fluvial systems attempt to return to grade during falling base level.

Thick, laterally extensive seams are the up-dip, time correlative deposits to significant flooding surfaces at the coeval coast. Coals occur which are updip equivalents to both the initial flooding (transgressive) and maximum flooding surfaces. Thick, regionally extensive seams should only be used as representatives of maximum flooding surfaces if it can be demonstrated that accommodation space increased upwards to that thick seam and subsequently declined above it. Furthermore, if there is any evidence for marine influence overlying the maximum thickness coal, then that coal seam does not represent the maximum flooding zone, but may represent the initiation of maximum flooding.

Coal exploration in virgin terrain will benefit from a sequence stratigraphic analysis, since the relative development of coal is predictable within a sequence stratigraphic framework.

Many of the concepts and evidence outlined in the paper, along with their application to the UK coal measures are expanded upon by Atkén and Flint (1994a; 1994b), Flint et al (1994) and Hampson (1994a; 1994b).

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The Role of Independent Appraisal in the "Bankability" of Mining Projects

Neal Rigby, Managing Director, SRK (UK) Ltd, Cardiff

Over the past 18 months or so there has been a general upturn in the new business activity of the international mining industry. This has been fuelled, inter alia, by selected commodity price hardening, continued divestment of minerals interests by oil companies, substantial economic growth in Asia, privatization of state owned enterprises and general relaxation of inter country investment restrictions, especially with South Africa.

South African mining houses are increasingly turning their attention to international opportunities where a combination of attractive investment returns and utilization of their considerable expertise provide compelling cause for action.

In Western Europe and the CIS particularly, mining houses that are privatized (former state owned) enterprises are looking to develop national resources to service anticipated growth in local and overseas demand in coal, copper, lead, zinc and gold to name but a few.

Whether the opportunities be national, cross border or overseas, they all have a need for finance. Finance for acquisition, development or simply working capital must be shown to be capable of generating acceptable returns against a set of prescribed parameters, otherwise it cannot be found.

In simple terms there are three forms of finance:

- internal, form retained funds/profit
- equity, from the placing of shares either private or via stock exchanges and
- debt, usually from lending banks.

Retained funds are usually under the company's control, but need to be within their own corporate restrictions. External equity and debt finance carry additional sets of accountability criteria. The truism applies: "there are only two types of money, your money and my money."

In order to procure finance for a mining project, the project must be viable, ie the finance must generate returns to the risks appropriate. In order to demonstrate such viability, a "bankable" document or Project Appraisal is often commissioned and then relied upon. The term "bankable" is usually used where external financing is required but is equally applicable to internal financing and more boards of directors are now requiring such appraisals before approving the commitment of funds.

This appraisal document essentially sets out in detail the project design, construction and operation through the closure. A detailed technical risk assessment is normally undertaken and cashflow projections presented, to establish acquisition, development and working capital requirements, financing alternatives and investment returns. An analysis is included to demonstrate the sensitivity of the returns to the main project variables, together with an economic risk/reward assessment. Dynamic risk models which take into account the normal fluctuations of mining parameters such as pricing, production variations etc. are also being used now.

A fundamental requirement of a Bankable Document is that it should provide the investor's "due diligence" examination (or at lease facilitate it). ie it must have five comfort that all material facts have been considered by appropriately knowledgeable and experienced persons.

While documentation for listing purposes has for some considerable time had a requirement for an independent technical (or "competent persons") report, bank lending has often been on the basis of the sponsor's standing on the lending bank's internal mine technical evaluation expertise. Where either of these is deemed insufficient for any reason, banks look to independent mining technical and economic consultants to give an outsider's opinion on the "bankability" of the project. A prerequisite for a bankable document is of course, a bankable project; the document itself cannot render a project bankable. It also happens at times that potentially good projects are let down by poor or misdirected assessment and associated documentation.
The fundamentals of bankable document are common of all types of funding although there are differences of risk/opportunity profiles. For examples an equity investor, in addition to covering risk would look at dividend flows, P/E ratios and would expect to see good upside potential to the project. Providers of debt finance would look much more closely at downside risks, payback and loan life cover ratios than at upside potential in which they would not share of course. As one banker put it, "we participate only in the downside rarely in the upside (the upside is for us is being paid back on time)."

The international mining and geosciences consultancy, SRK Group, principally through its UK practice, has developed over the past five years a track record in producing bankable documents and in providing independent audits of appraisal/feasibility study documents, thereby rendering them bankable. Even where SRK produce the owner's feasibility study (showing viability/bankability), they recommend an independent peer review. It is not that any deficiencies are implied but rather that objectivity of any project appraisal team can be impaired because of their necessary involvement with the projects "creation". The independent review acts as a cheap insurance to guard against for example, any material omissions or overly optimistic (or pessimistic) judgements. It could be argued that if this sort of review is required for appraisals carried out by independent experts. It is even more important to apply them to in-house or sponsor appraisals, where it has to be said, projects can generate their own momentum.

SRK subscribe to the philosophy that the best technical economic judgements are the most beneficial to the industry as a whole. After all, every project in the industry which gets finance and fails, makes the next project harder to finance. Likewise when viable projects are turned down, the industry suffers. SRK regard best technical and economic judgements as being derived from highly expert multi-discipline teams since these have been shown to be needed to analyze complex mining projects adequately. This is often beyond the scope of individual lenders and investors.

A recent example of SRK's works was their involvement with the privatization by HM Government (HMG) of the British Coal Corporation (BCC) which was "completed" on 30 December 1994. SRK were commissioned jointly by BZW Corporate Finance and by BZW Structured Finance (lending) to act respectively as Independent Technical Advisors for the proposed London Stock Exchange (LSE) listing, and Independent Technical Consultants for the debt finance, both in support of the acquisition of the BCC assets by RJB Mining plc (RJB).

The work involved a technical, management/staffing and economic evaluation, and due diligence assessment of the assets on offer. Comprehensive assessments of 144 properties comprising, collieries, opencast sites, disposal points (which are coal, collection, stocking and often beneficiation and blending, distribution sites), and prospective opencast sites, with special reference to operation viability and management of environmental risks. Subsequent to the announcement by HMG of RJB as preferred bidder for approximately 80% of the productive assets. SRK prepared the Independent Technical Consultant's report for inclusion in the Company's listing particulars and the Independent Evaluation report for the debt underwriting banks.

The LSE listing raised £400m in equity and was oversubscribed whilst £494m of senior debt was underwritten and subsequently syndicated, similarly with an oversubscription of debt take-up. The success of the project financing by debt and equity confirmed the bankability of the assets (at the price offered.) This was achieved against the difficult and often turbulent recent history of BCC and a relatively uncertain environmental legislation framework.

In conclusion it is worth making the point that any debt or equity fund raising for mining involves the working together of different specialist advisors, for example technical, legal, accounting and commercial. This requires an appreciation by each advisor of the importance of the roles of each other. By so doing the objective of serving the mining project and its stakeholders is achieved.

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Minewater Pollution: The Revenge of Old King Coal

P.L. Younger, Water Resources Group, Dept of Civil Engineering, University of Newcastle Upon Tyne

Blood From A Stone?

Britain is still a world-leader in at least one aspect of coal mining: the speed with which we can entirely demolish colliery headgear. However as the winding gear comes down, water often starts to rise: Old King Coal has the last laugh. Like some macabre scene from Agatha Christie, the corpses of once-great coalfields are lying prostrate from their death-blows, but the blood is only just beginning to ooze from within. And the metaphor of blood is indeed apt, for the waters which ooze from abandoned coalfields have a particular propensity for reddening their receiving waters.

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Devastation In Durham?

Naturally residents of abandoned coalfield areas are anxious to avoid such pollution and subsidence problems. In the Durham coalfield, the degree of inter-connection of old workings over distances in excess of 50km has precluded piece-meal abandonment of pumping except in restricted western and southern fringes of the coalfield (Figure 2). Nine pumping stations pump 105 Ml/d of acceptably clean water (sites PL and L on Figure 1) from long-abandoned workings in the exposed coalfield to protect the last working collieries, which mined coal beneath the Permian cover offshore. The area of the exposed coalfield affected by this dewatering is shaded in Figure 2. As the coastal collieries have now closed, British Coal have understandably signalled their intention to terminate dewatering.

Younger (1993) has summarized the possible environmental impacts of groundwater rebound over the vast area of inter-connected old workings in Durham, and computer model predictions suggest that these impacts would increase over 40 years or so after cessation of dewatering (Younger & Sherwood, 1993; Sherwood & Younger, 1994). It is clear from the quality of discharges in the south and west of the coalfield (Figures 1 and 2) that future AMD would be highly polluting (Younger & Bradley, 1994.) However, large uncertainties remain over the possible variations in future water quality, possible AMD flow rates and locations where AMD might emerge (Sherwood & Younger, 1994.) Current estimates suggest that (after 40 years or so) the total AMD inflow to the Wear valley might be 20 to 30 times that experienced at Ynysafawd. The effects of such a rate of AMD on fish and benthic invertebrates would be devastating. Furthermore, the Wear supplies 20% of Sunderland’s water supply, via
North East Water’s £26M state-of-the-art treatment works at Lumley. Even the national heritage is at stake, for the Wear provides the dramatic foreground to the World Heritage Site of Durham Cathedral.

This is an alarming prospect, but basic geological reasoning suggests that there is little room for optimism. Caruccio and Germ (1974) showed that the worst AMD discharges in Appalachia are preferentially associated with marine coals, or with coals interbedded with marine strata, since these have the highest sulphur contents (reflecting seawater composition). While the Durham Coal Measures sequence is largely terrestrial (fluvio-lacustrine upper delta plain facies; Fielding, 1982; 1984), thin but laterally persistent “marine bands” occur at several horizons. There is an apparent correlation between marine bands and peaks in sulphur content in overlying seams (Figure 3). Pyritic sulphur typically accounts for 50-70% of the total sulphur (NCB, 1959), and most of the pyrite is present in the form of microcrystalline frambooids (J.M. Jones, University of Newcastle Upon Tyne, personal communication, 1994) which have been shown by Caruccio (1975) to be responsible for most AMD generation. Contours of sulphur in the Hutton seam, one of the most widely worked seams in the dewatered zone of the coalfield, are shown on Figure 2. Since approximately half of this sulphur is in AMD-prone frambooidal form, the coincidence of peak sulphur contents with the dewatered area (which would experience groundwater rebound if dewatering ceases) is depressingly close.

Prevention And Cure

So what preventative measures might be taken to prevent widespread AMD in the Durham coalfield? Preventative measures usually aim to hinder pyrite oxidation, the main requirements for which are oxygen, water and bacterial catalytic activity. Typical suggestions include:

-Sealing the ground surface to minimize water ingress. This was undertaken with reasonable success in the small synclinal basin of the DALLY coalfield, Argyshire, to reduce the polluting discharge from Dalquharren mine (Prof D Hammerton, Clyde RPB, verbal communication, 30-9-93). However, short of paving most of the county, this method is not appropriate for the large Durham coalfield.

-Bactericide Application Underground. This possibility has been explored for opencast mines and spoil heaps in the USA (Kleinmann & Erickson, 1981), and would appear to have some promise in those circumstances. However, the technology is unproven for deep mines, and even if this were not the case, it has arrived about 300 years too late to be of any use in the Durham coalfield; pyrite oxidation products accumulated over many years in underground workings are awaiting contact with rising water and will flush into solution without any further bacterial catalysis.

-Flooding Old Workings to Restrict Further Oxidation. This has the disadvantage of flushing the existing oxidation products into solution (leading to gross surface water pollution; Younger, 1993), and will not entirely prevent further oxidation in any case, for dissolved oxygen in the saturated zone can oxidize pyrite. Furthermore, seasonal fluctuations of the water table (which are likely to be large (m) in mined strata, which typically have low specific yields) result in a cycle of oxidation (in the unsaturated zone), flushing (when the water table rises) and renewed oxidation on ‘clean’ mineral surfaces in the unsaturated zone (after the water table falls again). In this manner, flooded working can continue to generate AMD for decades, if not centuries.

Since the three standard suggestions for prevention are not really suited to the case of a large coalfield which has been mined over several centuries, the obvious suggestion is to keep pumping. The operation of the nine pumping stations in Durham costs approximately £1M per annum; as the water pumped is of tolerable quality, no treatment
is currently required before discharge to the Rivers Team and Wear. With water levels up to 150m below ground level, pumping heads are high. Therefore it is tempting to consider whether a partial recovery in water levels could be managed, to reduce pumping costs by lowering the head differential. However, any substantial rise in the water table would flush pyrite oxidation products into solution and cause a rapid deterioration in water quality (Cairney & Frost, 1975). Thus treatment of the pumped discharged would be necessary. Furthermore, as the pumping stations are currently maintaining fairly steady water levels, they are clearly balancing incoming recharge. As recharge will not reduce whatever pumping regime is adopted, the same total quantity of water would have to be pumped after any recovery in water levels if uncontrolled surface discharges are to be avoided. Th continued pumping in the current manner would almost certainly be cheaper than pumping from a lower head and treating the water.

What if pumping were abandoned altogether? AMD will surely ensue, and though treatment of polluting discharges is technically feasible, conventional treatment is expensive, and passive treatment (using constructed wetland technology) requires large areas of reasonably flat land (NRA, 1994). While passive treatment schemes for minewaters are currently being piloted in Wales and Cornwall, funding for both is on a "one-off" basis (from Europe in the Welsh case, from the DoE in Cornwall), and there is no general, systematic programme in the UK for dealing with AMD in abandoned coalfield. And geological problems associated with groundwater rebound are even more expensive and more difficult to remediate than pollution problems.

But surely I am not seriously suggesting that pumping be continued indefinitely? Well, you do not need to be a bookmaker to figure out that the safest bet is the one with the least uncertainty. As the preceding discussion illustrates, the uncertainties surrounding effects of pumping scheme abandonment are legion, with the most likely outcomes all bad. On the other hand, no uncertainties beset the existing dewatering scheme: It is long-established, well understood and completely predictable in function and water quality. If you had to bet a few million pounds on either option, which would you choose? And while we await the outcome of the cost-benefit analysis of these future options for the coalfield, here's a question for a start: Since we spend £3.5M on maintenance of the Thames Barrier each year, is £1M too much to ask for the River Wear?

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Minewater Pollution:
The Revenge of Old King Coal

P.L. Younger. Water Resources Group, Dept of Civil Engineering, University of Newcastle Upon Tyne

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Britain is still a world-leader in at least one aspect of coal mining: the speed with which we can entirely demolish colliery headgear. However as the winding gear comes down, water often starts to rise: Old King Coal has the last laugh. Like some macabre scene from Agatha Christie, the corpses of once-great coalfields are lying prostrate from their death-blows, but the blood is only just beginning to ooze from within. And the metaphor of blood is indeed apt, for the waters which ooze from abandoned coalfields have a particular propensity for reddening their receiving waters.

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Figure 3. Geological sequence of the productive Lower and Middle Coal Measures of County Durham showing maximum and minimum sulphur contents (data from Fielding, 1982). Peaks seem to occur above major marine bands, suggesting sulphur accumulation by outward flow of marine groundwater through the peat bodies after re-establishment of terrestrial fluvial depositional conditions.

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Report from EFG - Paris: European Geologist Title Still Available

Russell G. Slayback, CPG-2305, Chairman - Intersociety Liaison Committee

In the October 1995 TPG, I reported on the uncertain future of the availability of the "European Geologist" title to AIPG members as the result of proposed changes in the rules governing qualifications. At the European Federation of Geologists (EFG) meeting in Dublin in June, the EFG Board of Directors proposed to add European residency requirements as a qualification for attaining the title and for renewal of the title. The Board's recommendations were presented late in an afternoon and were approved by the EFG Council, the governing body, by unanimous voice vote. The specific residency rule changes had not been written but the processing of applications for the European Geologist title for non-European Union citizens was suspended until the new rules were adopted.

As "fraternal observers" at the EFG meetings, AIPG did not have the opportunity to address this issue until the following morning session. Executive Director Bill Knight advised the EFG Council in no uncertain terms that AIPG viewed a residency requirement as a serious matter involving a "closing of borders" to international practice by geologists. He noted that AIPG would have to re-evaluate its relationship with the EFG if Americans were effectively excluded from the European Geologist title.

Bill's remarks clearly startled many of the delegates and got them thinking about the importance of the vote they had taken the previous afternoon. Several spoke in support of open borders for geologists and of American participation in the EFG. The debate continued after the council meeting by correspondence and telephone communication, and the issue was addressed again at the EFG Board meeting in Madrid in September, where specific language for the residency requirement was drafted, as follows:

1.3 Qualifications (pertinent paragraphs only)

"Applicants being non-European and not residing in Europe, must give sufficient proof of professional European connection, such as having a minimum of 3 years of professional experience in Europe, research projects in Europe, education in Earth Sciences in Europe, a minimum of 3 years affiliation to a National Association member of the EFG, etc.

"The existence of reciprocity agreements between the EFG and the non-European professional association of the applicant, will be taken into consideration by the Registration Committee.

"The acceptance of the mentioned proof will be the decision of the Registration Committee."

The careful reader will note that this language is subject to some interpretation. The College from the United Kingdom, Professor Richard Selley of the Geological Society of Loncon, recognized the ambiguity and submitted the following "constructions" of the proposed changes:

"1. The antepenultimate paragraph construes that a geologist from anywhere in the world, who has been a member of the Geological Society of London for 3 years or more, could become a EurGeol. (subject to satisfying all of the other requirements already in the regulations).

"2. The penultimate paragraph construes that a geologist who has been a member of the American Association of Petroleum Geologists, or of the American Institute of Professional Geologists, for 3 years or more could become a EurGeol. (subject to satis-

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fying all the other requirements already in the regulations, by virtue of the fact that the Geological Society of London has reciprocity of qualification with AAGP and AIFG."

For at least the present, these "constructions" are the bases of interpretation of the regulations, as demonstrated later by approval of a pending application by an American, a Member of AIPG.

The end result is no change in the past policy except that an American (absent another EFG professional connection) must be a Member of AIPG or the DPA (Division of Professional Affairs) of AAGP for three years before an application to become a European Geologist, through comity with The Geological Society (GS) or the Irish Association for Economic Geology (IAEG), will be accepted. Thus, the "half step backwards" that seemed apparent in Dublin was largely recovered in Paris as the result of wise and diplomatic friends of borderless geology.

A further result was an invitation extended to Executive Director Knight by the representatives from the Netherlands to open discussions with the Koninklijk Nederlands Geologisch Mijnbouwkundig Genootschap (KNMG) regarding possible comity arrangements between KNMG and AIPG parallel to those which AIPG has with the GS and the IAEG. Subsequently, representatives of various other member societies of EFG have shown heightened interest in strengthening ties with their American colleagues and others outside the countries of the European Union.

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**Editorial from AIPG Northeast Section Newsletter**

**Allison X. Martin Kozak**, CPG-7943, Assistant Editor of the AIPG Northeast Section Newsletter

Recently, I've sensed a rumbling of discontent from geologists practicing in the environmental industry. The combined effects of less available interesting work, greater emphasis on being billable, greater regulatory burdens, and less job security are taking their toll. More and more of my friends and associates that work for so-called "big" environmental consulting firms are telling me how lucky I am to have my own firm. They confide that their "ultimate goal" is to have their own firm and (this is the scary part) that they're getting near the point where they're finally ready to take the risk.

I cringe when I hear this. When you work for someone else, you might lie awake at night worrying whether or not you'll be laid off. When you're the boss, you worry about whether or not you'll have to lay someone off... and whether or not those receivables will come in on time, and that last proposal will be given to someone who undercut you by 850, and... the list seems to go on forever. And the things that seem to be making the industry less fun for geologists hit doubly hard for those running our own firms. They don't go away; you just have no one to blame but yourself.

For me, the jury is out regarding the advantages of being a small environmental consulting firm vs. a big one. Conventional wisdom has it that small business is the backbone of our great economy. Of course, the official definition of a small business is less than 500 people! As the market shifts from an emphasis on investigation to (ultimately) remediation, will the smaller, more nimble, firms be better able to change course and respond to a new market? Or will the bigger firms be better able to offer diverse services? And what effect will privatization have?

I can only guess; I like to think it's good news for smaller firms, but perhaps that's wishful thinking.

Of course, we shouldn't be narrow minded when we think of providing diverse services. A good friend, a casualty of massive layoffs at a petroleum industry giant, looked for work for two years, first in her area of expertise, then, as time passed, in areas further and further removed until she (like many of us) pinned her hopes on the environmental industry. More time passed... to keep from going insane from the boredom of unemployment, she started baking biscotti. You know them, those trendy, hard-as-ROCK, twice-baked, almond-flavored, confections from Italy. The ones that sell for a buck a pop at a place like Starbucks' Coffeehouses. Word got around (which it does when you're good) and soon coffee houses throughout New Orleans (her home) were asking for her "product". After being unemployed for so long, it took a while before she started to believe that this was business, pure and simple. When the bank offered her an unsecured loan for all of her startup costs, based solely on their evaluation of her biscotti and the feedback from her potential clients, she really started to believe!

THIS is what it takes to start your own business. Discontent with your present situation; yes, in a small amount. But more importantly, a strong market and a place in that market. Does the environmental industry offer this for geologists now? I really don't think so. My friend opened her shop two months ago and is still unsure of how she'll do even with the strength of her start. My advice to potential future environmental consulting firm business owners is to wait.

*Reprinted from the AIPG Northeast Section Newsletter, Summer 1995.*

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UNITED STATES HY 2612
AUTHOR: Thornberry
INTRODUCED: 12/19/95
SUMMARY: Provides that the rate of tax on liquidated natural gas shall be equivalent to the rate of tax on compressed natural gas.
STATUS: 12/19/95 INTRODUCED.

UNITED STATES S 1478
AUTHOR: Grams
INTRODUCED: 12/14/95
SUMMARY: Facilitates the ability of a private consortium to site, design, license, construct, operate, and decommission a private facility for the interim storage of commercial spent nuclear fuel, subject to licensing by the Nuclear Regulatory Commission, to authorize the Secretary of Energy to contract with consortium for storage services.
STATUS: 12/14/95 To SENATE Committee on ENERGY AND NATURAL RESOURCES.

UNITED STATES S 1479
AUTHOR: Sarbanes
INTRODUCED: 12/14/95
SUMMARY: Amends the Surface Mining Control and Reclamation Act of 1977 to improve control of acid mine drainage.
STATUS: 12/14/95 To SENATE Committee on ENERGY AND NATURAL RESOURCES.

UNITED STATES 6485
AGENCY: Department of the Interior/Minerals Management Service
TOPIC: RESOURCE MANAGEMENT AND PRESERVATION -- 18
SUMMARY: Amends the regulations governing the valuation for royalty purpose of natural gas produced from federal leases. These changes add several alternative valuation methods to the existing regulations.
AGENCY CONTACT: David Guzy, Chief, Rules and Procedures Staff, Minerals Management Service, Royalty Management Program, P.O. Box 26165, Denver, CO 80225-0165; (202)231-3432.
CITATION: 30 CFR 202, 206, and 211.
PROPOSAL DATE: 11/09/95
COMMENT DEADLINE: 02/05/96
HEARING DATE: 01/22/93

CALIFORNIA 6207
AGENCY: Board of Professional Engineers
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Establishes the examinations appeal fee at $96.00 for each discipline. Defines the terms essay and multiple-choice examinations and extends the time allowed to review the examination for essay type problems.
AGENCY CONTACT: Andrea Swan, Examination Analyst, Board of Registration for Professional Engineers and Land Surveyors, 2535 Capitol Oaks Dr., Suite 300, Sacramento, CA 95833.
CITATION: 16 CCR; appeal fee for board of examination
PROPOSAL DATE: 05/20/95
HEARING DATE: 07/14/95
ADOPTION DATE: 11/16/95
EFFECTIVE DATE: 12/16/95
MESSAGE: AMENDMENT ADOPTION

CALIFORNIA 8835
AGENCY: Board of Registration for Geologists and Geophysicists
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Deals with citations and administrative fines.
AGENCY CONTACT: Mary Lynn Ferreria; (916)445-1920.
CITATION: 6 CCR, 3062, 3062-1.3, 3063, 3063.1-4; citation and fine.
ADOPTION DATE: 11/22/95
EFFECTIVE DATE: 12/22/95
MESSAGE: AMENDMENT ADOPTION

FLORIDA 16192
AGENCY: Department of Business and Professional Regulation/Board of Professional Surveyors and Mappers.
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Makes rule consistent with changes in examination rules earlier adopted by the Board of Professional Surveyors and Mappers.
AGENCY CONTACT: Angel Gonzalez, Executive Director, Board of Professional Surveyors and Mappers, Department of Business and Professional Regulation, Northwest Centre, 1440 North Monroe Street, Tallahassee, FL 32399-0750.
CITATION: FAC 61G17-4.001 and 61G17-4.004 Written Examinations Designated; General Requirements, Passing Grades.
PROPOSAL DATE: 07/28/95
COMMENT DEADLINE: 08/18/95
HEARING DATE: 08/21/95
ADOPTION DATE: 11/15/95
EFFECTIVE DATE: 11/15/95
MESSAGE: AMENDMENT ADOPTION

FLORIDA 17074
AGENCY: Department of Business and Professional Regulation/Board of Professional Surveyors and Mappers.
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Requires surveyors and mappers to provide notice to the public, via a printed statement on the map and the report, if neither the business entity nor the individual licensee has professional liability insurance, the following words in letters at least 1/8" high: The survey depicted here is not covered by professional liability insurance.
AGENCY CONTACT: Angel Gonzalez, Executive Director, Board of Professional Surveyors and Mappers, Department of Business and Professional Regulation, Northwest Centre, 1440 North Monroe Street, Tallahassee, FL 32399-0750.
CITATION: FAC 61G17-2.005 Statement Regarding Lack of Insurance.
PROPOSAL DATE: 11/03/95

FLORIDA 17178
AGENCY: Department of Business and Professional Regulation/Board of Professional Surveyors and Mappers.
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Allows the Department to provide a licensee with a Notice of Noncompliance for an initial offense.
AGENCY CONTACT: Angel Gonzalez, Executive Director, Board of Professional Surveyors and Mappers, Department of Business and Professional Regulation, Northwest Centre, 1440 North Monroe Street, Tallahassee, FL 32399-0750.
PROPOSAL DATE: 11/17/95

FLORIDA 17225
AGENCY: Department of Business and Professional Regulation/Board of Professional Surveyors and Mappers.
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Reduces the biennial renewal fee for individuals and for certificate of authorization to $100. Provides for an application fee of $30 for architects wishing to be registered as interior designers.
AGENCY CONTACT: Angel Gonzalez, Executive Director, Board of Professional Surveyors and Mappers, Department of Business and Professional Regulation, Northwest Centre, 1440 North Monroe Street, Tallahassee, FL 32399-0750.
CITATION: FAC 61G11-17.002 Prof. Fees and Penalties for Interior Designers.
PROPOSAL DATE: 12/01/95

ILLINOIS H 2606
AUTHOR: Saviano
INTRODUCED: 12/11/95
SUMMARY: Amends the Professional Engineering Practice Act of 1989 to make a technical change in the Section concerning technical submissions.
STATUS: 12/11/95 To HOUSE Committee on RULES.

ILLINOIS 6385
AGENCY: Department of Professional Regulation
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Authorizes the State Board of Professional Engineers to appoint a subcommittee to serve as a Complaint Committee to recommend the disposition of case files according to procedures established by rule; specifies the composition of a Design Complaint Committee; establishes that the Committee shall meet at least once every two months; lists the duties and functions of the Committee; specifies the Committee's role in determining whether the Department of Professional Regulation should proceed with investigation and prosecution of a case file.
AGENCY CONTACT: Jean A. Courtney, Department of Professional Regulation, 330 West Washington, 3rd Fl., Springfield, IL 62706; (217)785-0650.
PROPOSAL DATE: 02/10/95
COMMENT DEADLINE: 03/25/95
ADOPTION DATE: 11/17/95
EFFECTIVE DATE: 11/17/95
MESSAGE: PROPOSAL ADOPTION

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KANSAS 3084
AGENCY: Board of Technical Professions
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Requires proof of completion of continuing education as a condition for license renewal. States that beginning with license renewals that expire March 31, 1998, each land surveyor shall have completed 30 PDH units of acceptable continuing education during the two-year period immediately preceding the biennial renewal date as a condition for license renewal, beginning with license renewals that expire April 30, 2000, each professional engineer, architect and landscape architect shall have completed 30 PDH units of acceptable continuing education during the two-year period immediately preceding each biennial renewal date as a condition for license renewal.
AGENCY CONTACT: Board of Technical Professions, Suite 507, Landon State Office Building, 900 S.W. Jackson, Topeka, KS 66612.
CITATION: KAR 66-14-I to 66-14-12 Continuing Education Requirements - Land Surveyors, Architects, Professional Engineering.
PROPOSAL DATE: 11/23/95
COMMENT DEADLINE: 01/26/96
HEARING DATE: 01/29/96
MISSOURI 6605
AGENCY: Dept. of Health/Division of Environmental Health and Epidemiology.
TOPIC: ENVIR. PROTECTION AND POLLUTION CONTROL -- 8
SUMMARY: Establishes a list describing those persons qualified to perform percolation test or soil morphology examinations in determining soil properties for on-site sewage disposal systems.
AGENCY CONTACT: Department of Health, Division of Environmental Health and Epidemiology, Stanley R. Cowan, P.O. Box 670, Jefferson City, MO 65102; (314)751-6095, FAX (314)726-0846.
CITATION: 19 CSR 20-3:080 Description, Persons Qualified to Perform Percolation Tests or Soil Morphology Exams for Sewage Disposal.
PROPOSAL DATE: 05/15/95
ADOPTION DATE: 11/01/95
EFFECTIVE DATE: 11/01/95
MESSAGE: PROPOSAL ADOPTION
MISSOURI 7130
AGENCY: Dept. of Economic Develop./Missouri Board of Geologist Reg.
TOPIC: BUSINESS AND CORPORATION -- 2
SUMMARY: Provides a description of the organization and general methods of administration and communication concerning the Board. States the policy regarding the release of information on any meeting; outlines the procedure for licensure application; and establishes fees for the Board.
AGENCY CONTACT: Division of Professional Registration, Missouri Board of Geologist Registration, P.O. Box 1335, Jefferson City, MO 65102-1335.
PROPOSAL DATE: 11/01/95
MISSOURI 7131
AGENCY: Dept. of Economic Develop./Missouri Board of Geologist Reg.
TOPIC: BUSINESS AND CORPORATION -- 2
SUMMARY: Establishes the grandfather requirements for licensure prior to October 1, 1995. Defines the educational requirements for a registered geologist or geologist-registrar in-training, defines post-baccalaureate experience, outlines examination requirements, defines license by reciprocity, provides for license renewal, and establishes the Board's role in licensing.
AGENCY CONTACT: Division of Professional Registration, Missouri Board of Geologist Registration, P.O. Box 1335, Jefferson City, MO 65102-1335.
CITATION: 4 CSR 145-2.010 through 145-2.100 Licensure Requirements.
PROPOSAL DATE: 11/01/95
MISSOURI 7132
AGENCY: Dept. of Economic Develop./Missouri Board of Geologist Reg.
TOPIC: BUSINESS AND CORPORATION -- 2
SUMMARY: Establishes a procedure for the receipt, handling, and disposition of public complaints made against any registered geologist or geologist-registrar in-training.
AGENCY CONTACT: Division of Professional Registration, Missouri Board of Geologist Registration, P.O. Box 1335, Jefferson City, MO 65102-1335.
CITATION: 4 CSR 145-3.010 Complaint Handling and Disposition Procedure
PROPOSAL DATE: 11/01/95
MISSOURI 7133
AGENCY: Dept. of Economic Develop./Missouri Board of Geologist Reg.
TOPIC: BUSINESS AND CORPORATION -- 2
SUMMARY: Defines the expectations and requirements for practicing geology as a registered geologist or geologist-registrar in-training. Provides for the obligations to the public, the employer or client, and to the profession.
AGENCY CONTACT: Division of Professional Registration, Missouri Board of Geologist Registration, P.O. Box 1335, Jefferson City, MO 65102-1335.
PROPOSAL DATE: 11/01/95
MISSISSIPPI 1169
AGENCY: Board of Reg. for Professional Engineers and Land Surveyors
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Proposes an amendment to rules for the deadline for application, foreign applications, comity registration, and disciplinary proceedings.
AGENCY CONTACT: Rosemary Brister, Board of Registration for Professional Engineers and Land Surveyors, Jackson, (601)359-4160.
CITATION: Deadline for Applications, Foreign Applications, Comity Registration, Disciplinary Proceedings.
PROPOSAL DATE: 12/01/95
COMMENT DEADLINE: 12/17/95
MISSISSIPPI 1169
AGENCY: Board of Reg. for Professional Engineers and Land Surveyors
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Proposes an amendment to rules for the deadline for application, foreign applications, comity registration, and disciplinary proceedings.
AGENCY CONTACT: Rosemary Brister, Board of Registration for Professional Engineers and Land Surveyors, Jackson, (601)359-4160.
CITATION: Deadline for Applications, Foreign Applications, Comity Registration, Disciplinary Proceedings.
PROPOSAL DATE: 12/01/95
COMMENT DEADLINE: 12/17/95
HEARING DATE: 09/20/95
ADOPTION DATE: 11/15/95
EFFECTIVE DATE: 11/05/95
MESSAGE: RULE ADOPTION
NEW MEXICO 996
AGENCY: Environmental Improvement Board
TOPIC: ENVIRONMENTAL PROTECTION AND POLLUTION CONTROL -- 8
SUMMARY: Amends 20 NMAC 5.14, Certification of Tank Installers. Adds an additional level of certification.
AGENCY CONTACT: Teresa Griego, Environmental Division, Underground Storage Tank Board, 1190 St. Francis Drive, P.O. Box 26100, Santa Fe, NM 87502, (505)827-4308.
CITATION: 20 NMAC 5.14, Certification of Tank Installers
PROPOSAL DATE: 08/15/95
COMMENT DEADLINE: 10/20/95
HEARING DATE: 10/20/95
ADOPTION DATE: 11/15/95
EFFECTIVE DATE: 11/05/95
MESSAGE: AMENDMENT ADOPTION
NEW MEXICO 1029
AGENCY: Board of Registration for Professional Engineers and Surveyors
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Concerns continuing professional development requirements for professional engineers and surveyors, and violations of the regulations and rules and procedures.
AGENCY CONTACT: Board of Registration for Professional Engineers and Surveyors, 1010 Marquez Place, Santa Fe, NM 87505.
CITATION: Rule 100.11, 602.2 Continuing Professional Develop. and Violations.
PROPOSAL DATE: 08/31/95
HEARING DATE: 09/21/95 and 09/22/95,
ADOPTION DATE: 10/31/95
EFFECTIVE DATE: 11/30/95
MESSAGE: RULE ADOPTION
SOUTH CAROLINA 1476
AGENCY: Department of Labor, Licensing and Regulation
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Requires continuing professional development as a condition of license renewal of professional engineers and land surveyors.
AGENCY CONTACT: Mrs. Mary Law, Board of Professional Engineers and Land Surveyors, South Carolina Department of Labor, Licensing and Regulation, P.O. Box 50408
CITATION: 40-22-250 Continuing Professional Development for License Renewal
PROPOSAL DATE: 11/24/95
COMMENT DEADLINE: 01/22/96
HEARING DATE: 01/26/96
TEXAS 16114
AGENCY: Board of Registration for Professional Engineers
TOPIC: BUSINESS AND CORPORATIONS -- 2
SUMMARY: Relates to engineers seals; classifies purpose and proper use of seal and defines engineering documents which must be signed, sealed and dated.

TODAY IN WASHINGTON - Comments on Government and the Federal Register

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

Welcome to the New Year. I hope everyone had an enjoyable holiday. We did.

This past year was a doozie for the government, in more ways than one. Here are some of my views.

The Judiciary Branch managed to stay the course with few elements of surprise. The Senate Judiciary Committee voted to reorganize the 9th Circuit Court of Appeals splitting off California and Hawaii from the rest of the western states in the Circuit in order to reduce workload. The rest of the government wasn't as lucky.

The Executive Branch had it's share of problems this past year. Whitewater, chennegate, Elderspeak, and other personnel problems added excitement to the day-to-day happenings at the White House. Political appointees seem to be having problems grappling the meaning of the Governmental Ethics Regulations. I guess that if everyone is doing it -- it's okay.

I can't ignore the Congress either. The face of Congress is changing rapidly. Some members are changing from the Democratic Party to the Republican Party. Some are retiring with rather munificent benefits after long and distinguished service. Others are leaving under a cloud. Some remain and are under investigation for a variety of ethical and criminal misdeed. So much for the Congress.

At the Departmental level - reorganization, downsizing, budget cutting, buy-outs, early retirements and elimination of whole agencies, will necessitate a drastic change in the way we do business. More regulation, and concomitant legal action against the bureaucracy, will continue to drain valuable dollars that could be better spent elsewhere. There is an attempt to change the proliferation of regulations among some of the Departments. I see little evidence that these changes are coming from the environmental agencies however.

It seems to me that there is more and more evidence the public is unwilling to spend large sums of money on research from which it receives no direct benefit. Congress echoes this sentiment by cutting research dollars and stating that such research belongs in the universities or industry.

On the regulatory front, the war continues over proposed changes in the mining laws, water rights in the west, grazing, timber, endangered species, and wetlands. Most of these issues rest with the Department of Interior.

We can hope for a better new year in 1996.

Someone out there in the real world has made a difference. In this case in the Federal Register, Vol. 60, No. 218, 11-13-95, Part III, Department of Health and Human Services, Food and Drug Administration, 21 CFR Part 103

Beverages: Bottled Water: Final Rule
The agency, on page 57082 defined "artesian water" as the geologic definition and revised the definition to state that bottled water that is drawn from a well tapping a confined aquifer in which the water level stands at some height above the top of the aquifer may be called "artesian water" or "alternatively artesian well water". Part IV in the same volume contains a proposal to amend regulations to exempt mineral water from the allowable level for aluminum in FDS's quality standard for bottled water, and to update testing methods for quality standards.

Federal Register, Vol. 60, No. 227, 11-27-95 Part VIII, Department of Interior, OSMRE, 30 CFR Part 701, Lands Eligible for Remaining; Final Rule
The final rules are intended to provide incentives for the mining and reclamation of previously mined and reclaimed lands eligible for expenditures under Section 402 (g) (4) or 404 of SMCRA.

For further information contact: Douglas Growitz, P.G., OSMRE, Room 110SIB, 1951 Constitution
For further information contact: Jack Chowning at 202-761-1781

Volume 60, No. 228, 11-28-95, pg. 58590. Department of Interior, Bureau of Land Management, 43 CFR Part 3160, Onshore Oil and Gas Operations, Proposed Rule. This rule clarifies BLM’s Responsibility regarding regulations implementing oil and gas operations on National Forest System lands.

For further information contact: Erick Kaarlelaa, (202) 452-0340, or Howard Lemn (406) 255-2842

Same issue- pg. 58605, Department of Defense, Interior, Commerce, Agriculture, and EPA Federal Guidance for the Establishment, Use and Operation of Mitigation Banks.

This notice issues final policy guidance for mitigation banks for the purpose of providing compensation for adverse impacts to wetlands.

Registration Update

Periodically The Professional Geologist publishes an update of the status of registration in various states insofar as it is known to AIPG.

Currently, twenty-six states are known to have statutes relating directly and specifically to the practice of geology. This does not include statutes addressing environmental licensing, etc.

Three, Colorado, Kansas and Oklahoma have "definition" acts. These do not require licensure of geologists.

Four states, Alaska, Indiana, Virginia and Wyoming, have "title" acts. (Alaska and Indiana recognize AIPG certification in their statutes.) These "title" acts provide for certification but not licensure. However, in some cases, one must be certified in order to perform certain specified work.

The remaining nineteen, Alabama, Arizona, Arkansas, California, Delaware, Florida, Georgia, Idaho, Illinois, Kentucky, Maine, Minnesota, Missouri, North Carolina, Oregon, Pennsylvania, South Carolina, Tennessee, and Wisconsin, have "practice" acts providing for licensure of geologists. Of these, only Alabama, Delaware, Illinois, Minnesota, and Tennessee do not yet require an examination. The Delaware and Tennessee licensing programs have been active for several years.

The remaining three are in the organizing process. Alabama hopes to have applications available in the spring of 1996. For information, FAX 205-553-6813, giving your name, both your business and home addresses and phone numbers and requesting information on licensing of geologists in Alabama. Illinois' act becomes effective on July 1, 1996. Its Board has not yet been appointed. For information, phone 217-785-0822. Minnesota is writing regulations. This is not expected to be completed until late 1996. For information, phone 612-296-2388.

The statutes of five states, Alabama, Arkansas, California, Georgia, and Oregon, allow certification or licensure of certain geologic specialists. To date, this option has been implemented only in California and Oregon.

There are active efforts underway in several states to establish licensing acts. It is premature to speculate on how successful these will be in 1996.

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William V. Knight, CPG-0153

"Bowling Alone" is an oft-quoted catchy phrase which Harvard professor Robert Putnam used as the title for a scholarly monograph.

It comes from his whimsical, but telling, anecdote that more Americans are bowling than ever before but the membership in bowling leagues has steadily declined.

You do not have to be a bowler to notice what's happening in this country. Participation in organizations such as the PTA, the Elks, the League of Women Voters, Rotary, the Red Cross, the Shriners, the Boy Scouts and most churches has been flagging. Putnam notes that "...every year over the past decade or two, millions more (Americans) have withdrawn from the affairs of their communities."

While there may be comfort in knowing that everybody else is quoting Putnam, there is no comfort in his conclusion: Just as we have economic capital, we also have social capital. And, declining membership participation in volunteer organizations is an indication that this capital is being depleted.

It is affecting professional and technical societies, too, in a very subtle yet costly way. While total membership is up in many of our geological and geophysical societies, active participation in the affairs of these "communities" is down. More of the work of the organizations is being done by fewer of the members.

Professional and technical capital is both economic and social. So, as participation in organizations which serve these facets of our lives declines, so the economic and social capital of our profession, and of ourselves, becomes increasingly depleted.

Members of professional and technical organizations are offered a wide variety of opportunities to improve their technical, business and political skills and thereby enhance their careers. All too often, the response is something like, "I will attend, but only if my employer pays the cost and gives me the time off." Whose career is it? It certainly is not the employer's.

This decline in participation has been attributed to many factors, e.g., the economy, the press of work, etc. Does it not seem strange that many people think nothing of paying hundreds of dollars to travel to some distant place to lie on a beach, lose a box of golf balls, or slide down a snowy slope, all for the sake of pleasure; yet, they will not pay a minimal fee or go across the street to attend a professional or technical meeting or a continuing education class or to help influence legislation that could drastically affect their future earning potential?

As my father used to say, "People are funnier than anybody."

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Georgia Registration

Beginning in April 1996, Georgia Examinees will take the National Association of State Boards of Geology (ASBOG) National Examination for registration in Georgia. At its August 11, 1995 meeting, the Georgia Board completed its analysis of the ASBOG examination and determined that it is an appropriate instrument for use in Georgia as the examination required for registration. The board voted to begin using the ASBOG examination in 1996. The last administration of the Georgia developed examination will be in December 1995.

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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:

Jan. 20: Executive Committee Meeting, Arvada, CO
Jan. 30-Feb 1: North America Prospect Expo '96, Houston, TX
Feb. 13-22: California Section
Mar. 10-13: Society for Mining Metallurgy & Exploration, Phoenix, AZ
Mar. 23: Geoenvirontmental Forum, Denver, CO
May 4: Executive Committee Meeting, Arvada, CO
The scope of the AIPG Code of Ethics

Fred Fox responded to my queries concerning whether AIPG has the responsibility to do anything about a Member convicted of sexual assault in the first of these columns (November issue of TPG) with the following letter.

"Can't ignore your challenge!"

"Our Code of Ethics is a professional code of ethics as defined by AIPG. Anything greater would be beyond our scope; therefore, the code only can apply to "professionally related behavior." The answer to your dilemma then becomes simply: "No."

"Our code is not really a code of ethics. It is a set of standards for professional behavior. Ethics is not behavior. While we may aspire to the lofty goal of holding professionals to the "highest standards of personal and professional conduct," this is a hollow model. We can neither achieve nor demand it. None of us are capable of the highest standard of personal conduct--perfection. The best we can do is to hold our members to the highest standards of professional conduct.

A red herring in your example is the law. Legal is not the same as ethical. Ethics is the higher; just because the law makes a determination does not mean that it holds ethically. Anyone can name countless examples.

A jailed Member, however, should not expect to continue the practice of geology, nor do I believe he could.

A truly unethical person, or at least one who behaves in an "unethical" manner, will tend to be unethical across the board. Most of us are something more than this. We try to remain ethical but fail in this endeavor from time to time. The best any of us can do is, if we are unethical, to be honest about it. Admit it and "try harder," and the best our professional "code of ethics" can do is to set standards for professional conduct.

"In summary, AIPG must refrain from judgment on any but professional issues. It is neither wise nor our place to cast the first (or any subsequent) stone elsewhere."

Fred L. Fox, CPG-1273

Fred's view that the scope of the AIPG Code of Ethics should be limited to professional conduct differs from Kurt Bogner's view, expressed in last month's column, that AIPG should take action against all serious ethical lapses. I thank both Fred and Kurt for outlining these two opposing views so well. Both are seriously concerned about ethical practice and have valid points of view. Nevertheless, AIPG, as practical matter, must adopt one view or the other and stick with it. I would like further input from the rest of the membership on this issue. Drop me a note with your "vote" for either professional practices only or all unethical conduct: a summary statement of why you voted the way you did would be welcome, too. If you'd rather remain anonymous in this, let me know. I'll report the results as received.

Robert Peele on Professional Examinations, Reports, and Client Identification

I had occasion recently to review the chapter on "Mine Examinations, Valuations, and Reports" in Robert Peele's Mining Engineers' Handbook, 3rd Ed, 1941 (chapter 25, vol II). Peele made several cogent remarks concerning professional practice in general (although specifically addressed to mine valuation) worth repeating: geologist and can replace engineer.

"The object of an examination is to form the engineer's judgment; that of the report is to set forth this judgment in such form and detail as will be most intelligible and legitimately useful to the client.

"Diversity of temperament and circumstance of engineers and clients, coupled with that of the character, location, size, value, and state of development of properties, occasions great differences in method and scope of both examination and reports. ..."

"Standardization of method is sought and practiced by examining engineers whenever feasible, but no method capable of general application is likely to be developed. ..."

"Conservatism, though essential to sound judgment in mining as to any other undertaking, should not be made an excuse for timidity or indifference. To attain the closest approximation to fact (not the largest discount of favorable data) specifically, the practice of arbitrarily discounting erratically high gold assays but a generally
applicable concept to data analysis; all valid data must be included to some degree) is the engineer's obligation and the client's due, and is necessary to progress. An exact forecast being impossible, and error on the side of conservatism being usually less disastrous to the client than a mistaken optimism, the inevitable error should be kept on the conservative side. Proper margins of safety are essential, but a serious underestimate of value is as great an error as an overestimate; ...though it usually involves less conspicuous censure. ...

"Relation and responsibility of the engineer to the client are similar to those of the lawyer. No honorable means of serving the client's interest should be neglected, and every effort should be made so to present data that their meaning to the client shall be that which the engineer's judgment indicates is the most nearly correct. Though the engineer is justified in charging such fee as he believes the examination to be worth to his client, or in contracting to do the work for less if he believes this to be in his own interest, it is improper and ultimately unprofitable to regulate the extent and thoroughness of the examination (or the care in preparing the report) according to the amount of fee. Within the scope of the examination (which should be thoroughly understood and preferably embodied in a letter or other writing before the work is undertaken), the client has a right to expect that the engineer will give the best of which he is capable.

"The client is the individual, individuals, or organization, by whom the engineer is employed and to whom he is responsible, makes his report, and looks for his fee.

"In dealing with organizations, the engineer has both the right and an obligation to assume that the legally authorized officers who employ him properly represent their organization and will use his services solely for its advantage. But it is obviously the duty of the engineer, and to the ultimate advantage of his reputation, that he should sufficiently acquaint himself with the character and conduct of these officials to be assured that his services are not being used to the detriment of his true client, the organization as a whole.

"The engineer is the individual or individuals responsible for the examination and report. Assistants are here included to the extent of their responsibility for either function."

As always, comments and further observations are welcomed.

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**Geraghty & Miller and Heidemij Making Acquisitions**

Denver, Dec. 20/PRNewswire/ -- New business activities in Europe have been announced by Geraghty & Miller, Inc. (G & M) and parent company Heidemij NV. (Nasdaq: HEIDF).

Geraghty & Miller, which has had an international office in Cambridge, England, since 1992, recently acquired Environmental Strategies Ltd., with offices in Leeds and Chester.

According to Dr. Brian Crook, manager of G & M International, Inc., "Recent growth in both our UK and worldwide business sectors requires more consultants. By merging with Environmental Strategies staff will be able to expand our auditing and due diligence work and have a strong presence in the Northwest region of the UK."


Earlier this month, Heidemij began acquisition talks with the Spanish engineering firm Eptisa in Madrid. Eptisa is one of the three largest engineering companies in Spain with sales of approximately $100 million from infrastructure, water, construction, energy and environmental projects.

Heidemij is an international consulting, engineering, and contracting company with 5,000 employees operating worldwide.

Geraghty & Miller is a valued supporter of AIPG, both by advertising in TPG and by encouraging its qualified employees to become Certified Professional Geologists.

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Charles W. Welby, CPG-1033, received the American Water Resources Association’s President’s Outstanding Service Award at the AWRA meeting in Houston just prior to the GSA meeting.

###

Connecticut Governor John Rowland has appointed Russell G. Slayback, CPG-2305, to be a charter member of the Board of Examiners of Environmental Professionals under Connecticut’s new Licensed Environmental Professional (LEP) program.

The LEP program was instituted by Public Act 95-183, which revises the Connecticut General Statutes governing property transfers of Hazardous Waste Establishments and Remediation of Hazardous Waste sites. LEPs will be allowed to “sign off” on remediation of hazardous waste sites at the discretion of the DEP (Department of Environmental Protection) Commissioner, in effect a privatization of part of DEP’s regulatory function.

###

Central Resources, Inc., a privately-held Denver-based independent oil and gas producer announces the appointment of Gary D. Davis, CPG-7241, to the newly-created position of Vice President, Business Development. Mr. Davis will be responsible for property acquisition, development, and divestment; generation of new business opportunities; strategic planning; and supervision of the land and legal department of the company. He formerly held the position of Director, Planning and Business Development for Central Resources, Inc.

The company operates over 600 wells and owns interests in over 1,000 wells throughout the Rocky Mountains and the Permian Basin. The appointment of Mr. Davis occurred just prior to the negotiation and closing of the purchase of $22.8 million of producing properties from Apache Corporation, Houston, Texas. Effective July 1, 1995 the purchase involves 67 properties in 24 counties in west Texas and southeast New Mexico.

###

Jerold E. McQueen, CPG-4510, has established MCQUEEN & MCQUEEN, an energy advisory and management firm specializing in exploration and exploitation project evaluation, generation and management.

Most recently, McQueen served as vice-president of Medallion Oil Company, Houston, Texas. Earlier, he was with Exxon Company, USA.

###

James Quince, CPG-7196, President of Superior Environmental Corp, is pleased to announce that Fred Timmer has joined the firm as a Vice President. Mr. Timmer is a Registered Professional Community Planner and has a wide range of experience in the consulting and engineering fields. Mr. Timmer will provide business development assistance and management of Superior’s Marketing, Project Development, and Economic Development areas. Mr. Timmer will be working out of Superior’s headquarters in Muskegon, Michigan. He will also provide technical and management consultation to Superior’s branch offices located throughout the Great Lakes region.

###

Six registered geologists on the staff of Los Angeles-based Dames & Moore, engineering and environmental consultants, are among the first group of certified hydrogeologists in California. The consultants and their locations are, in California, Mark Grivetti and Tom Vincik, Santa Barbara; Andrew Mork, San Francisco; Tom Sheahan, CPG-2481, Ontario; and William Short, Sacramento; and Scott Stormp, in Spokane, Washington.

The state of California is the first in the nation to establish hydrogeology as a certified specialty, and its standards of practice are expected to serve as a prototype for other states. In 1994, the California Board of Registration for Geologists and Geophysicists established the following requirements for hydrogeologists in California: 1) they must be first licensed as a registered geologist; 2) have a minimum of five years of professional experience in responsible charge of hydrogeology work; and 3) be sponsored by three registered geologists with the same level of experience. In addition, applicants must pass a written examination on hydrogeology. The first examination was given in California in March 1995. Of the 3,850 California registered geologists, 551 applied for certification, 327 were found eligible to take the written exam, and 224 applicants were actually licensed.

###

Leggette Brashears & Graham, Inc., (LBB) a national groundwater and environmental services firm, has named Charles W. Olmsted, CPG-9228, P.G., as head of its Pennsylvania office.

Mr. Olmsted has extensive experience in such areas as project management, contaminant hydrogeology, soil and ground-water remedial investigations, design of remedial systems and remedial system operation and maintenance. He most recently served as a project hydrogeologist with a large Pennsylvania environmental firm, managing programs for soil and ground-water investigations, operation and maintenance projects for various remedial systems, and developing and implementing ground-water monitoring and sampling programs throughout the Mid-Atlantic region. Previously, Mr. Olmsted was a senior hydrogeologist in LBB’s Connecticut office. He was responsible for managing a variety of ground-water environmental monitoring, investigation and remediation projects at multiple sites throughout New York, Connecticut and Massachusetts.

Mr. Olmsted is an AIPG Certified Professional Geologist and a Registered Professional Geologist in Pennsylvania, Alaska and Kentucky. He earned an M.S. degree in Watershed Science and a B.S. degree in Geology from Utah State University.

###

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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
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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. Subscriptions are available to nonmembers.

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.

REQUEST FOR APPLICATION AND ADDITIONAL INFORMATION

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Please send me information on:

☐ Certification - (degree and 36 semester hours in a geological science, plus five years of experience).

☐ Candidate for Certification - (degree and 36 semester hours, but less than five years of experience).

☐ Student (major in a geological science and minimum of 18 semester hours in geological science).

☐ Continuing Education ☐ Advertising Rates

☐ Insurance ☐ TPG Subscription

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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. 15-19. Intergrated Mining and Land Reclamation, Reno, NV. Contact: Yung Sam Kim, Nevada Institute of Technology, Box 8894, Reno, NV 89507, Ph.: (510) 757-2000, Fax: (510) 757-7997.

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) 766-2286.


Sep. 22-27. American Institute of Hydrology - Third USA/CIS Joint Conference on Environmental Hydrology and Hydrogeology, Tashkent, Uzbekistan. Contact: AIH, 3416 University Avenue SE, Minneapolis, MN 55414-3328, Ph.: (612) 379-1030, e-mail: aihydro@aol.com.

Oct. 8-12. AAPG 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.

AIPG ANNUAL MEETINGS

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AIPG Membership Totals

As of 12/20/94 As of 1/15/96

- Active: 4,488 4,546
- Retired: 532 531
- Affiliates: 85 95
- Honorary Members: 3

TOTALS: 5,105 5,175

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**APPLICATIONS RECEIVED**

(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 may be positive or negative, please mail that information to Headquarters within thirty (30) days. This information will be circulated only so far as necessary to process and make decisions on the applications. Negative information regarding an applicant's qualifications must be specific and supportable, persons who provide information which leads to an applicant's rejection may be called as witnesses in any resulting appeal action.)

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(Call and welcome as professionals and add them to your directory)

**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 payment. Ads paid by Visa or MasterCard can 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) 431-1332 or e-mail: aipg@ix.netcom.com

**AIGP 1996 ANNUAL DUES STATEMENTS**

Statements were sent out the first week of October and the second week of December. In accordance with Article 8, Section 8.2.1, of the Bylaws, Annual Membership dues are due and payable January 1, 1996. Those Members and Affiliates whose dues are not paid by February 15, 1996, shall be suspended and will not be listed in the 1996 Membership Directory.

**REMARKER:**

THE PROFESSIONAL GEOLOGIST AND THE MEMBERSHIP DIRECTORY ARE INCLUDED IN YOUR NATIONAL DUES.
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:

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