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PEER REVIEWED ARTICLE
Subsidence on I-70 in Russell County, Kansas Related to Salt Dissolution—A History

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Part 3 of 3

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FRONT COVER—Sunset Crater, Arizona. A Holocene volcanic (cinder) cone which is part of the extensive San Francisco Volcanic Field of northern Arizona. Photograph by Mark A. Koestel.
Abstract

A short section of Interstate 70 in Russell County, Kansas crosses two active sinkholes. These sinkholes have slowly and steadily pulled down the driving lanes since construction of the highway in the mid-1960's. They are the result of dissolution of a thick salt bed over 1,300 ft below the surface. Oil drilling activity has allowed fresh water to pass through the salt, dissolving a considerable volume of it and causing the overlying strata to sink. The two areas of interstate have been regraded at significant cost, and efforts were made in 1986 to stop the subsidence at one of the sinkholes, but the lanes continue to drop. The Russell County sinkholes continue to be costly objects of attention to geologists and engineers at the Kansas Department of Transportation.
Discovery of the Crawford Sink

All highway construction in Kansas first has a geologic survey. When geology crews began their preliminary studies for this section of I-70 in the early 1960's, there was a large pond along the right-of-way six mi west of Russell. They noticed that the pond appeared rather deep, and although it was situated in a streambed, apparently had no dam. Asking around among local residents, Highway Commission geologists were told that the pond had always been there. An 83-year-old woman who had lived in the area all of her life reported that there had been a pond in that location ever since she could remember. So little additional thought was given to the mysterious origin of the pond. During construction, it was filled in and the highway was built, along with a nearby bridge to carry county traffic over the interstate. Final grading for the new lanes was finished in the spring of 1966.

But something was wrong. Just east of the new bridge, exactly where the pond had been, the subgrade kept dropping. Since it was a stream crossing and a fill section, Highway Commission officials at first just assumed that the fill dirt was settling. But it wasn't just the lanes that were sinking. A few quick level runs confirmed the worst—the new interstate, the pride of Western Kansas, had been built right over a sinkhole.

The summer of 1966 was a busy one for our geology crews. While I-70's lanes were being paved on either side, geologists and their technicians scrambled to find out what was causing the sinking. Someone thought to check some air photos of the region that were taken in the 1950's. There was no pond. The locals had been wrong—the deep pond with no dam was a relatively new feature. And the State Highway Commission of Kansas had a big problem.

Cause of the Subsidence

I-70 in this area is aligned through the heart of the Gorham Oil Field. It is a very densely-drilled portion of the state, and although sinkholes hadn't caused much trouble at the time, geologists quickly suspected that the subsidence was caused by improper plugging of abandoned wells. Research into oilfield geology and deep ground-water movement led the Highway Commission to the cause—dissolution of the Hutchinson Salt Member.

This salt bed is Permian in age, a member of the Wellington Formation. In western Russell County, the Hutchinson Salt is 270 ft thick and its top is 1,300 ft below the surface. Above the salt are three sandstone units—the Dakota Formation, the Cheyenne Sandstone Formation, and the Cedar Hills Sandstone Formation. All three have considerable flows of fresh or brackish water.

Oil wells in the Gorham field were drilled through the salt to a structural high in the Lansing-Kansas City Group and the Arbuckle Group. Hundreds of wells were drilled here beginning in the 1920's; many have since been abandoned. If an abandoned well is not plugged correctly, the fresh water flowing through the overlying sandstones pours down the borehole to replace water taken out of oil-producing layers by nearby active wells. On the way down, the fresh water washes across the salt face, dissolving it. The cavity in the salt grows, and eventually overlying beds sag downward until the depression shows up on the surface.

The sinkhole east of the bridge was named the Crawford Sink, after the Crawford oil lease. There are two wells 50 ft apart at the center of the sink. They are the Crawford 12 and Crawford 16. Both were drilled in 1937 and abandoned in the early 1940's.

Investigation of the Sinkholes

Geologists with the State Highway Commission of Kansas realized that the highway was probably safe as long as the sinking continued. But the I-70 project was too high-profile to take chances with, so during that summer of 1966, before the
highway opened, a test hole was drilled. Geology crews drilled a core hole down 240 ft in the Crawford Sink. This remains the deepest hole ever drilled by our crews. They found only solid bedrock the entire way. The geologist who logged the hole called them, “as perfect cores as you could ever find in that section”. They also drilled and dug down to the Fencepost Limestone Member, which is close to the surface here. A structural contour map was drawn that showed the bowl-shaped drop in strata. Officials were reasonably sure that there was not a void under the highway that could suddenly collapse.

About that time, still before the highway was open, construction crews had more bad news: another section of road wasn’t holding its profile. This area was a half-mile west of the Crawford sink. The oil well responsible was the Witt A#1, just south of the right-of-way. This well was drilled in 1937 and plugged in 1957.

Highway Commission engineers and geologists got together late that summer to decide how to proceed. There was serious talk of rerouting the highway around the sinkholes, despite the enormous cost and delays. But the Gorham Oil Field stretches several miles to the north and south. Geologists told officials that there was no way to guarantee that a new alignment wouldn’t just put I-70 over other sinkholes. Since there apparently wasn’t any danger to the public, the lanes in the subsidence area were paved that fall. Interstate 70 between Russell and Hays opened on schedule on November 16, 1966.

The next summer, the Highway Commission contracted with a drilling company to drill a deep exploratory well at the Crawford site. A crew with Rosencrantz-Bemis Drilling, of Great Bend, Kansas, drilled to 100 ft below the base of the Hutchinson Salt Member, a total of 1670 ft deep. Circulation was lost at 250 feet and never regained, which was attributed to washing of loose material at and below the Dakota Formation. Analysis of a radioactive gamma-ray neutron log indicated that the salt itself was washed along its entire thick-

Cross-section of the Crawford Sink, drawn after the initial deep study in 1967.
The bridge's days are numbered.

ness, and had been replaced by material from above. An anhydrite marker bed 350 ft above the salt had, at that time, already dropped 36 ft. Most importantly, however, was that very few voids were found, and none of these were large or near the surface. Officials told the public that the highway was safe, and that the sinkholes would cause only minor damage to the highway.

The 1970's

Nothing was done for a few years. The sinkholes continued to get deeper and broader, and the pond at the Crawford site reformed. The Witt sink, which formed near the top of a ridge, created a noticeable depression. By 1971, the lanes had dropped so much that they had to be regraded. During the summer of that year, both areas were brought up 5 ft and repaved at the cost of 220,000 dollars. Elevations of the lanes and the bridge were taken every 6 months, making it the most surveyed section of road in the state. The highway continued to drop at almost 6 in per year. Public relations in the area began to sour when local newspapers figured out that the subsidence showed no sign of stopping. Still, there was no danger, and so people gradually got used to sinkholes under I-70. It became old news.

Overnight on May 1 or 2, 1978, however, a huge sinkhole suddenly opened up in a field 20 miles northwest of the I-70 sinks. This hole, in northeast Ellis County, was also centered on an old well. In a few days, the hole was 75 ft across and 100 ft deep. The press coverage of the nearby collapse forced the Highway Department, now KDOT, into action once again.

Geologists were still reasonably sure that the gradual subsidence of the highway was a good indication that nothing catastrophic was going to happen to I-70. But, primarily in response to public pressure, new studies of the problem were ordered late that year. The Kansas Department of Health and Environment (KDHE) and the Kansas Geological Survey (KGS) helped this time. Not enough money was available to do any deep drilling, but the KGS ran seismic refraction surveys along both the I-70 sinkholes and near the Ellis County collapse. Again, no near-surface voids were found beneath I-70, and few deep voids. No satisfactory conclusions were ever drawn, however, as to why the Ellis County sinkhole behaved differently from the I-70 sinks.

Cross-section of the drill hole used for the first grouting attempt in 1986.
In addition, the KDHE took infrared air photos of the Gorham Oil Field to try to identify new sinkholes that might be developing. The idea was that shallow surface depressions would hold water after rainfall, and therefore show more lush vegetation. Regular air photos were taken early in the morning and late in the afternoon, to try to find new sinks highlighted by shadows cast by the low-angle sunlight. Neither of these endeavors yielded much useful information. The Hays Daily News took credit for instigating the investigations; the uproar finally died down.

**Attempt to stop subsidence at the Witt sinkhole**

By August of 1984, the lanes at the Witt sink were back down 8 ft. It was starting to cause sight distance problems—engineers were afraid that a stalled car at the bottom of the depression would be rear-ended. So the Witt was again regraded and repaved at a cost of nearly 500,000 dollars.

KDOT engineers in that district were beginning to get more and more concerned. There didn't seem to be any end to the subsidence, and public relations in the Hays-Russell area were a serious problem. In January 1986, the state again contracted with a drilling company. The goal this time was to stop subsidence at the Witt sinkhole by shutting off the flow of water across the salt.

A hole was drilled 4 ft west of the old Witt A#1 well, to a depth of 1948 ft. This is approximately 400 ft below the base of the salt. Circulation was lost at 157 ft and never regained. A thickness of 124 ft of the salt was dissolved at that time, having been replaced by soft, residual material. No major voids were found during the drilling. Casing was set and cemented. The casing was perforated between 1930 and 1940 ft, in a limestone zone below the Wellington Formation. The limestone was acidized and fractured in an attempt to establish communication with the original hole.

After this cement had set, the casing was again perforated, this time at the base of the salt between 1538 and 1548 ft. Fresh water was then pumped at 4 to 5 gallons a minute in an attempt to wash through the basal salt and reach the old hole. After 400 barrels of water had been used, there was a pressure drop. Then, 200 cubic yards of cement with additives was squeezed to try to plug the old well at the base of the salt.

Over 30 cubic yards of cement were pumped down the new hole, until pressure built up. Satisfied that the breach below the salt had been sealed, officials resumed their frequent surveys of the lanes. And in fact, it worked—for a while. For 6 months, the lanes didn’t move. But somehow, water got around the plug and the highway quickly resumed its subsidence of 5 to 6 in a year.

In 1988, more cement was pumped down both holes at the Witt sink. This cement was saturated with salt in the hopes that it would bond to the salt face itself. After "lubricating" the hole and cavity with 200 sacks of bentonite, drillers pumped almost 100 cubic yards of the salt-rich cement down the holes. Eventually, pressure built up to 300 psi in both wells at the same time. The voids in the immediate vicinity of the boreholes were filled, and KDOT geologists were again cautiously optimistic. Again, their optimism was short-lived, because water soon ate another hole in the salt and the subsidence continued.
Subsidence on I-70 in Russell County

Nothing has been done at the sinkholes since this attempt to stop movement at the Witt sink. A drilling program of several holes in a circular pattern around each original well hole would probably give the best chance of stopping the subsidence. No one can guess the quantities of cement or other fill material that would be required to fill the voids at depth. Of course, the tremendous cost of such an undertaking is a concern, especially since there is no guarantee that it would succeed. In the current economic climate, it seems unlikely that another attempt will be made to halt the subsidence in the foreseeable future.

The Bridge

The highway in the vicinity of the Witt sink can be regraded as many times as necessary. The Crawford sink is a different matter. It can't be regraded any more because of clearance requirements under the nearby bridge; the bridge is sinking, too. One end of the 2-pier concrete structure has dropped over 6 ft since it was built in 1965. At the south abutment, the east curb is now 2 ft higher than the west curb. Strangely, about the only indication that the bridge is under any stress at all is narrow cracks in the curbs just over the piers. Except for its noticeable tilt to the east, the structure looks like any other 35-year-old bridge in Kansas.

The Future of the Russell County Sinks

After over a decade of inactivity, work is once again planned for I-70 in the vicinity of the sinkholes. The Crawford sink is the biggest concern—either it will finally subside enough to become a sight distance problem, or water will begin to cover the roadway during storms. A current project proposal calls for removing the bridge over the highway at the Crawford sinkhole and closing the county road. The roadbed, in addition to dropping has, in recent years, developed a distinct tilt to the south, and can then be brought back to grade.

Meanwhile, traffic continues to go over the sinks at a count of over 11,000 vehicles a day. The Witt sink continues to drop at 5 in a year; the Crawford is subsiding about 4 in a year. They will keep sinking until the Gorham Oil Field is finally abandoned and water is no longer drawn out of the strata below the salt.

Summary

Improper plugging of abandoned oil wells in Russell County led to the development of two large salt-related sinkholes beneath Interstate 70. The Kansas Department of Transportation has struggled with costly, embarrassing repairs and a failed attempt at remediation during the 35-year history of the highway. Despite knowing in detail the cause of the subsidence, an economical solution has eluded us. At present, KDOT plans to simply grade the lanes for as long as possible. The sinkholes will continue to consume our time and resources well into the 21st century.

Acknowledgments

Most of the information presented in this paper was taken from records and reports on file at the KDOT Geology Section in Topeka, Kansas. In addition, the author would like to acknowledge valuable information gained from interviews with the following individuals, all of whom work or have worked for the KDOT: Wally Taylor, Regional Geologist, north-west region (retired); Larry Rockers, Chief Geologist (retired); Ron Sherard, Area Engineer at Hays; Lynn Washburn, Bridge Evaluation Engineer; and Wes Moore, District Maintenance Engineer at Norton. Recognition is also given to the Photo Section in Topeka for their assistance in preparing the photographs for this paper, and to Jeff Geist, R.J. Crow, Herb Streit, Bruce Havercamp, and Lynn Byrne for their help in preparing the diagrams.

Neil M. Croxton is the KDOT Regional Geologist for the northwest portion of the state, including the subject area.


Reviewed by AIPG Associate Editors: Edward M. Baitzer, CGP-08861; Douglas J. Perisutti, CGP-10055; and Scott A. Tiller, CGP-10016.

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FEDERAL LAND ACQUISITIONS

When a U.S. Federal agency is buying or condemning (acquiring through forced sale) land, another document takes precedence. The Uniform Appraisal Standards for Federal Land Acquisitions (UASFLA) was first released in 1971, and has since been updated four times, with the 2000 edition being 129 pages (UASFLA, 2000).

UASFLA reads rather like a court's legal decision. A significant percentage of government acquisitions of land in the U.S. are conducted by condemnation action, and for many of these the amount of compensation the government must pay is settled by courts. Therefore, case law forms an important basis for this document. In effect, UASFLA is a set of strongly recommended guidelines rather than being a set of rules. These are directed to employee and contract valuers working for Federal agencies, and to reviewers of their valuation reports. UASFLA instructs them on how to best develop the valuation so the valuer will be able to defend it in court if necessary.

The UASFLA guidelines are effectively supplemental guidelines to USPAP's standards 1 and 2 for conducting and writing real property valuations. UASFLA very strongly recommends relying primarily on the sales comparison approach over the income and cost approaches.

In eminent domain (condemnation and takings) situations in the U.S., the federal agencies are only required to compensate for the taking of real property, not for the loss of any business value of profit. The history of court decisions behind this is based on constitutional property rights. So, UASFLA cautions that it is particularly important to exclude business value, which is often captured in income approach methods. For application of the NPV Method to mineral properties and mines, it restricts the forecast income stream used to only the royalty income that a private owner of the property could obtain from leasing the mineral property or mine to a mining company.

Because of this restriction to royalty income, many minerals valuers view the UASFLA as unfair to the minerals industry. However, a business that operates within a commercial building that it owns will receive similar treatment to exclude business value from the valuation of the real estate being taken. Other requirements for the valuer to follow often also result in compensation to the minerals holder that is less than expectations. However, these finer points of protocol are beyond the scope of this paper.

The important lesson to be learned here is that UASFLA and the courts in the U.S. make the clear distinction between the market value of real property and its business value. The AusIMM's VALMIN Code instructions appear to result in the inclusion of business value in mining property valuations. In the author's opinion, this results in the value obtained being a Use Value of the real property under its current specific use, rather than market value or results in a Going Concern Value of the mining operation as a business valuation, instead of a real property valuation (Ellis, 2000a; Ellis, 2000c; USPAP 2002; IVSC, 2000; Appraisal Institute, 1993).

Such a value conclusion is probably desirable result for use in securities filings. It also will be desirable for the proceed sale of a mining operation as a going concern business (Stagg, 2001). However, the valuation assignments that the author receives generally require determination of the market value of the real property, such as for income tax filings, litigation, and business decision-making. Therefore, one must always be sure what type of value one is to determine, and the property basis from which that value is derived. The author's recommendation from this is that it is preferable that any valuation code or standard designed for the valuation of minerals industry assets be consistent with IVS.

U.S. STATE AND FEDERAL COURTS

Court records provide an important framework to guide minerals valuers. The courts are where work of minerals valuers is put to the test.

The expert testimony of a minerals industry practitioner regarding the value of a mineral property is often opposed in court by the testimony of a state licensed certified general real property valuer who has no minerals industry education or qualifications. The author has discussed such situations with colleagues who study court cases involving the value of mineral properties. These discussions and his review of the
literature indicate that in those situations the testimony of the real property valuer generally prevails.

This poor to abysmal track record for minerals industry practitioners appears to be largely due to them not following the ground rules of generally accepted valuation principles for real property valuation, and not following the specific valuation ground rules applicable in the particular jurisdiction. Many minerals valuations are essentially thrown out of court in eminent domain (condemnation or takings) hearings because the minerals valuer has not applied the appropriate ground rules (Paschall, 1999).

Any expert’s mineral property valuation that relies solely on the income approach will have a high probability of losing to the opposing expert’s valuation when that includes simple sales comparisons. The courts in the U.S. have ruled that market value valuations should be based as much as possible on data derived from the market. Sales are market data. Therefore, when developing a market value valuation, all methods of value estimation should draw as much as possible from sales. As explained earlier in this paper, the author does not believe that this means that sales need to be comparable, such as we are familiar with seeing applied in residential Real estate valuation. As UASFLA indicates, the courts have a strong preference to rely on the results of the sales comparison approach to the exclusion of the cost and income approaches. J.D. Eaton, a leader of the appraisal unit, U.S. Department of Justice, authored the 2000 UASFLA revisions. In his 1995 book, Real Estate Valuation in Litigation, he states:

Most courts do not seem to understand that each of the three approaches to value is an integral part of the valuation process. Many court rulings appear to be based on the assumption that the three approaches to value are totally independent of one another and that only the most applicable approach is used in the appraisal of a specific property. (Eaton, 1995, p. 158).

In the context of the cost approach, Eaton goes on to explain that in the U.S. “the appraiser has an ethical and professional obligation” to develop each of the three approaches to value “whenever the results of the approach will assist in estimating the value of the property.” He encourages the valuer to then educate the court as to the role of each approach in developing his value conclusion.

The dismal lack of success of minerals industry professionals testifying as valuation experts in the courts provides important lessons. One should not expect to learn how to develop a strongly defensible valuation through only on the job experience. There is a lot one can learn from how other real property valuers (such as valuers of agricultural lands, timber tracts and unique office buildings) develop their valuations. They are confronted with the same issue of a lack of directly comparable sales data. There are good reasons why a certified general real property valuer has to pass 180 hours of valuation courses, and has to maintain a regimen of continuing education. Few if any minerals valuers give serious consideration to the three approaches to value that Eaton emphasises as being “an integral part of the valuation process.” Minerals valuation is a niche specialty within the universe of real property valuation and business valuation. Reviewing example valuation reports available from major valuation institutes can prove instructive (e.g., ASFMRA, 1995b).

U.S. SECURITIES & EXCHANGE COMMISSION

The SEC rules which most directly impact minerals valuers were first issued in March 1981 when the SEC introduced Form S-18 for reporting by mining companies. In 1992, the SEC transferred the definitions and disclosure requirements of Form S-18 to Industry Guide 7, which is still in force (SEC, 1992).

Industry Guide 7 is focused on investor protection, as are SEC rules in general. It defines proven and probable reserves using its own definitions, not the internationally accepted definitions of the Council of Mining and Metallurgical Institutions (CMMI). It then prohibits the disclosure of quantitative estimates, such as tonnage and grade, for all mineralisation other than those two reserve categories, except in rare circumstances. Similarly, it restricts disclosure of value estimates to reserves only (SEC, 1992; Abbott, 1985; Ellis and Abbott, 2000).

The policy is designed to prevent private investors from confusing resources and other mineralisation, with reserves that can be mined economically and legally (Abbott, 1997; Ellis, Abbott and Sandri, 1999). It also is intended to reduce the speculation associated with initial, in situ estimates of resources, which are invariably greater than the reserves, if any are delineated (Noble, 1993). In only rare cases have other disclosure pressures allowed these rules to be overridden. The dissatisfaction with these Industry Guide 7 rules is quite widespread.

In March 1999, the U.S.-based Society of Mining, Metallurgy and Exploration (SME) released an update of its 1991 guidelines for definitions to be used in reporting of mineral resources, reserves and exploration information (SME, 1999, 1991). These closely follow the 1997 CMMI recommendations, which were in turn derived from the Australasian JORC initiatives. To date, the SEC has stuck by its antiquated 1981 reserve definitions and prohibitions. This has effectively barred public reporting in the U.S. under the SME and CMMI definitions (Ellis and Abbott, 2000).

Despite this regulation, in recent years an occasional company listed on a U.S. exchange, such as Newmont, has begun publishing estimates of tonnage and grade of non-reserve mineralisation, using terms such as “Measured and Indicated Mineralization.” The SEC has not acted to stop this apparent violation. In February 2001, R. Baer, an SEC Mining Engineer, gave a presentation explaining the SEC position on mining industry public reporting, in the valuation sessions of the SME 2001 Annual Meeting. He explained that the SEC is allowing an “Administrative Exception” to Industry Guide 7. Quantity and grade estimates for the sum of measured and indicated Resources meeting SME and CMMI definitions, can be reported as “mineralized material,” but no allowance for disclosure of inferred resources (Baer, 2001).

Prior to this, U.S.-listed mining companies frequently refused to provide resource estimates to the author and other minerals valuers for valuation work involving their mine and mineral property. Signing of a confidentiality agreement often did not mitigate the concerns. This was apparently due to worries about resource estimate information from the valuer’s report getting into the public domain in breach of Industry
Guide 7. Mineral resources often carry a significant portion of the value of a mineral property, even for a mine. The restriction also resulted in mineral resource information not being available for sold properties for use in sales comparison analysis (Ellis, 2000a, 2000c). In these situations, the author found himself having to make his own quantitative estimates from what information and impressions he could glean.

The author does not expect to see much increase in the amount of information available to the minerals valuer due to this administrative exception. He does not expect a large percentage of reporting companies to take advantage of it, especially given that not many industry professional will understand the specific meaning of the information. Not allowing inferred resources to be reported cuts out much of the information about the long term potential of a property.

Industry Guide 7 contains the harsh statement that value should only be assigned to reserves. It is rare that a minerals industry company files a market valuation report for Reserves with the SEC, and few of those that are filed are found acceptable (Baer, 2001). Most of the U.S.-based minerals industry companies are listed on a Canadian exchange. Accounting for public reporting of U.S. companies is on an historic cost basis, which includes accounting for the value of reserves. Therefore, the market value of reserves could only be relevant in a SEC filing regarding a merger or acquisition involving a U.S. listed company.

Unfortunately a considerable number of U.S. minerals valuers sincerely believe the SEC’s notion, expressed in its Industry Guide 7, that only reserves should be assigned value. This belief does not match the realities of transactions taking place on a regular basis in the market place. Those show that the value of resources and exploration potential often reach many tens of millions of dollars (Lawrence, R, 2001).

These unintended consequences of the SEC’s actions show that rules designed to control reporting for securities purposes also will impact on mineral valuations performed for a wide variety of purposes unrelated to securities reporting, unless great care is taken in their drafting and keeping them up-to-date.

THE BIG PICTURE AND THE FUTURE — FROM A U.S. PERSPECTIVE

The following discussion provides the author’s perspective on the current status and future direction of valuation standards development with relevance to the minerals industry.

WITHIN THE U.S.

The author considers that the U.S. national set of valuation standards, USPAP, provides a clear, well structured set of standards appropriate to valuation of all types of assets, including mineral deposits, mines and mining companies. It provides strict, difficult to achieve criteria for a valuation report to bear the labels of USPAP’s highest classifications for scope of the valuation process undertaken and the level of detail provided in the valuation report. Yet it also provides considerable flexibility for departing from some of the strict rules for the conduct of the valuation process, and allows the report to be abbreviated, when the intended use of the valuation report does not justify the level of cost and effort involved in producing a premium quality product, and a less assuring label on the valuation report will be satisfactory.

USPAP provides concise, strongly worded instructions. The level of explanation provided is minimal. The document assumes that the valuer as user already has education and experience in the application of USPAP to his field of work. This contrasts with the IVS document, which provides extensive explanation and advice throughout. Soon after the publication of the IVS 2000 Edition, the Appraisal Institute, one of two leading general U.S. valuation societies, asked the Appraisal Foundation to migrate USPAP to more closely mirror IVS (IVSC, 2000b, p 0).

The U.S. has no comprehensive valuation standards or guidelines specifically designed for valuation of mineral property or mineral business assets. The SEC’s Industry Guide 7 and the UASFLA provide only a few rules for specific uses, and are therefore not relevant in the context of this discussion. A valuation standard development initiative begun in the U.S. in 1999 by the American Institute of Minerals Appraisers was set aside in favour of striving for a coordinated international effort. The formation of the IVSC’s Extractive Industries Task Force in 2000 was to some extent a result of this international effort.

In this paper, the author has raised serious professional qualification problems regarding the (technical) legality of minerals valuers undertaking mineral property valuation assignments in most states of the U.S. These condense down to:
- jurisdictional issues evolving from minerals being part of the land and therefore part of the real estate in the U.S.;
- state licensing of real property valuers, geologists and engineers and the qualifying criteria for such licenses;
- state barriers to free trade in professional services, deriving from the above two points.

However, these problems do not detract from the author’s positive review of the USPAP document, since they do not derive from it. These problems are derived from badly implemented regulation of professional qualifications and professional services.

The Future

The U.S., Australia, and other leading countries of the world, are working on harmonising (merging) their accounting standards for public companies and government agencies, with the International Accounting Standards (IAS). The goal is to allow companies to report their financial statements to stock exchanges around the world without adjustment to individual country rules. Many other countries have ‘passed’ the harmonisation process and adopted IAS directly. The harmonisation process, since earlier this year, appears to have evolved into an expanded task of selecting the best parts of the participating countries’ accounting standards for incorporation into IAS, prior to merger of IAS standards with those of the individual countries. The process can be expected to take a number of years.

Around 2005, the author expects that substantial introduction of IAS into the U.S. will effectively occur. One or two small standards were incorporated already in recent years.
IAS is largely a Current Cost (also called Current Value or Fair Value) accounting system, allowing the reporting of the appreciated fair value of assets; while the existing GAAP accounting systems in the U.S. and Canada are Historic cost based, not allowing any upward adjustment for appreciation (Ellis, 2001b; Lawrence, M, 2001). The SEC has expressed reservations about allowing current value reporting, and has this topic under review. The author is hopeful that by about 2005, the U.S. and Canada will decide to join most other countries in allowing Current Value reporting in financial statements.

IASB has yet to decide to what extent, if any, its proposed extractive industries standard for global use by the minerals and petroleum industries will provide for current cost accounting. This is a major subject of discussion in the Issues Paper released in November 2000, by its predecessor, the International Accounting Standards Committee (IASC, 2000). The SEC is actively assisting IASB with the development of this Standard (Baer, 2001). Feedback from various sources, and the contents of the Issues Paper, demonstrate that the SEC has lobbied heavily for only historic cost reporting under the proposed new standard, and for reporting restrictions on reserves and resources similar to those contained in Industry Guide 7 (SEC, 1992). Such restrictions could have a devastating global impact on the ability of mining industry companies to compete for financing (Ellis, 2001b; Lawrence, M, 2001). The Extractive Industries Task Force of the IVSC conducted considerable research in developing a comprehensive submission to the IASB, responding to the Issues Paper (IVSC, 2001). This submission strongly supports the use of current value reporting and maximum disclosure. Even if IASB allows current cost accounting and open disclosure of Resources and other mineral deposit information in the new Standard, Baer of the SEC indicates that the current reporting restrictions in the U.S. will likely be maintained (Baer, 2001).

IAS references IVS in a number of places, including for referencing the basis for Fair Value, and for establishing the value of assets in the accounts. The two leading U.S. valuation societies have been important sponsors of IVSC for many years. The author predicts that IVS will eventually replace USPAP, or essentially change to being essentially IVS within a USPAP cover.

INTERNATIONAL

IVS has been evolving since it was first published in 1985. In recent years its pace of development has accelerated. The 2000 Edition, being 376 pages, represented a major advancement over the preceding 1997 Edition of a third that size. This advance resulted in a significant increase in acceptance of IVS around the world (IVSC, 2000a-b). Rapid evolution of the standards is planned by IVSC for at least two more years.

IVS design is to play essentially the same role internationally as USPAP does as a National Standard within the U.S. Many countries reference IVS in their regulatory systems as their national valuation standards. Like USPAP, IVS is based on generally accepted valuation principles. The conclusion of value developed from conducting a market valuation of an asset under IVS should vary little from that developed under USPAP. IVS provides comprehensive sets of well-explained instructions for valuations of the four property (asset) types. It also provides a variety of other instruction, such as a Standard titled Market Value Basis of Valuation and another titled Valuation Bases Other Than Market Value. IVS is crafted so that it provides workable instructions in a wide range of countries and legal settings. Due to the flexibility this requires in the operation of instructions, some instructions may have more flexible wording than the USPAP equivalent. Generally though, requirements clearly use the term must.

The 2000 Edition mainly contains instructions pertaining to the valuation process, together with a code of conduct and supporting valuation concepts and principles. It contains only a few pages of critical instructions regarding the content of the valuation report. This is because the IVS is a document still under development. Future editions, beginning with the 2001 Edition (not received by the author at this time of writing), will introduce comprehensive guidance on valuation report content.

IVS contains no instructions specific to the valuation of properties or other assets of the extractive industries. However, IVSC's intention is to add sections with instructions for such specialised areas of valuation, including the extractive industries, as funds allow those to be developed

Presently, The AasIMM's VALMIN Code is the only comprehensive valuation standard in the world designed specifically for minerals or petroleum assets. VALMIN has achieved a significant level of recognition and respect from the major mining institutes of the world.

The Canadian Institute of Mining, Metallurgy and Petroleum (CIM) formed a Special Committee on Valuation of Mineral Properties (CIMVal Committee) in response to the January 1999 final recommendations of the Mining Standards Task Force of the Toronto Stock Exchange and the Ontario Securities Commission. The CIMVal Committee actively sought input from interested parties, then sought responses to concepts in an April 2001 Discussion Paper. CIMVal's next step is to circulate for comment a draft report on Standards and Guidelines for Valuation of Mineral Properties. The objective of CIMVal is to develop a working document containing a Canadian code and guidelines, which will be recommended as a national standard that Canadian mineral valuation practitioners will be required to follow in the process of valuing a mineral property. A significant portion of this Canadian standard will likely reflect an origin of the VALMIN Code.

The Assets Valuation Committee of The Royal Institution of Chartered Surveyors (RICS), England, publishes The Appraisal and Valuation Manual, generally called The Red Book. This practice manual contains compulsory instructions for RICS members. It contains a practice statement relating to wasting assets, which covers the valuation of interests in mineral bearing land and waste management sites. The author found that this 20-pg section provides a wide scope of instruction to the valuer, but is written at a level appropriate for someone without a geology or mining industry background.

THE FUTURE

There appears to be a slowly growing recognition of a need for enforceable minerals asset valuation standards by the mining industry institutes of the world and by securities industry regulators. If the IASB's proposed extractive industries
accounting standard is implemented with a provision for current value reporting for reserves and resources, the need recognition will suddenly jump.

However, the international mining institutes have been very slow to take on developing their own minerals valuation standard, even if by directly copying much of the VALMIN code. No matter how an institute attempts to go about installing a minerals valuation standard, it is a lot of work by a few members. The resultant standard adopted by the institute also will regulate only a handful of members (say 10), who work as minerals valuers full-time, and a few times that many who attempt such work occasionally.

Worldwide, the author estimates that there are only about 100 full-time, independent minerals valuers (excluding petroleum). Including minerals industry professionals who work part-time or occasionally as minerals valuers, the number may increase 10-fold to 1,000 people. That is still a very small number of people to regulate worldwide through a network of institutes. To make things worse, half of those people will not be members of any of those institutes. Even if the number of professionals doing minerals valuation work triples due to a current value reporting for the mining industry being introduced, 3,000 people to regulate worldwide is a small number, particularly if only a tenth (300) work full-time in mineral valuation, and half of those are members of the institutes (150). No matter what way one cuts this, implementing and managing these standards will be a lot of work for a small number of members of each institute, to mainly regulate themselves.

The author also has previously pointed out that the VALMIN Code needs considerable restructuring for it to be ready for implementation in the international arena and particularly the U.S. (Ellis, 2000a, 2000c-d, 2000f, 2001a). This is because of the need for mineral assets valuation to function smoothly within the larger universe of general property and business valuation.

The author recommends that mineral valuation standards development initiatives of the mining institutes should be refocused on supporting IVSC and our existing relationship established through the IVSC Extractive Industries Task Force. An international team of mineral and petroleum valuation experts should be assembled by IVSC to develop an extractive industries standard for inclusion in IVS. That way the standard will attain fast global coverage, within the existing valuation framework of the internationally respected IVS. Mining institutes would then be able to specify that their members must abide by IVS in conducting mineral valuation work, and enforce that requirement through their code of ethics.

The IVSC Extractive Industries Task Force that drafted the IVSC's June 2001 submission to the IASB regarding the proposed development of an extractive industries accounting standard, consisted of the following minerals industry valuation experts:

- Trevor Ellis, Leader (President, American Institute of Minerals Appraisers) – USA
- Michael Lawrence (Chairman, AusIMM's VALMIN Committee) – Australasia
- William Roscoe/Ross Lawrence (Co-Chair, CIM's CIMVal Committee) – Canada
- Roger Sawyers (Chartered Member, Royal Institute of Chartered Surveyors) – UK

The author sees a need for wider international participation, and some petroleum industry participation. IVSC has expressed its readiness to support the Extractive Industries Task Force in undertaking this work. A fast development initiative for the extractive industries standard is encouraged by IVSC, to provide a valuation standard for the proposed extractive industries accounting standard to reference. The IVSC submission includes the statement:

Development by IVSC of the extractive industries guidance section of the international valuation standards using VALMIN and CIMVal as a base will allow a truly international extractive industries standard suitable for all jurisdictions to be referenced by the IASB Standard. (IVSC, 2001, p 34).

The existence of the relevant IVS standard will remove many of the arguments opposing current value reporting for the extractive industries, and in that regard could prove to be extremely important to the long term financial health of the mining industry (Ellis, 2001c; Lawrence, M, 2001). The IVSC however, in turn needs support from the mining industry in the way of substantial financial contributions. In addition to covering operating and travel expenses, enough funding is sought to provide two or three members of the task force supplementary income to allow them to work half-time on the project.

CONCLUSIONS

The lessons drawn from the U.S. experience and points made from the U.S. perspective are too numerous to list in the conclusions. Many important lessons are listed at the end of major sections. The following are some of the more important conclusions drawn.

The U.S. experience with licensing of geologists and real property valuers, demonstrates that poorly designed regulation can prevent those who are competent from practicing their profession, replacing them with people who are technically qualified but not necessarily competent. The Australasian minerals industry must stay vigilant and proactive to prevent anything equivalent.

Licensing requirements at a state level are a barrier to freedom of trade in professional services, preventing some minerals industry professionals from working across borders.

USPAP and IVS have been developed based on generally accepted valuation principles developed by the international valuation community. When objectively and fully carried out, the valuation process follows the scientific method, resulting in an objective conclusion of value.

USPAP and IVS provide separate instructions for conducting real property valuation, personal property valuation, and business and intangible asset valuation. Separating these Property types assists the valuer in developing a conclusion of value that correctly matches the purpose of the valuation.

Separating the instructions for the valuation process from the instructions for writing the valuation report, and providing these in a sequence that matches approximately their order of use, aids the valuer in assuring that he addresses all necessary items.
Some of the denigration that the cost approach and sales comparison approach have received from U.S. minerals valuers is due to their misunderstanding of the broader meaning and application opportunities of the two approaches.

Developers of standards should be extremely cautious of barring any specific method of value estimation. The minerals value needs all the methods available that can be mustered to develop indications of value, given the inherent difficulty of his task in an environment suffering from a severe shortage of good data. Method selection must remain the prerogative of the expert valuer.

Minerals valuers should not expect to learn how to develop a strongly defensible valuation through only on-the-job experience. There is a lot learn from how other real property and business valuers develop their valuations.

The unintended consequences of the U.S. SEC’s Industry Guide 7 in severely inhibiting mineral property valuations in the U.S., indicates that unless great care is taken, rules designed to control reporting for securities purposes will probably impact mineral valuations performed for the wide variety of purposes unrelated to securities reporting.

The internationalisation of valuation standards for the minerals industry is best achieved by supporting IVSC and a reassembled Extractive Industries Task Force, with their plan to develop an extractive industries valuation section for IVS. A delay has occurred in the IASB schedule for drafting the proposed IAS Extractive Industries accounting standard. This delay may allow the IVSC to advance the development of the extractive industry’s valuation standard on time for it to be referenced by the extractive industries accounting standard.

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A PLEA FOR TEACHING SUPPLIES

It is great to see interest being focused to junior high-high school earth science education. Clearly this is fertile ground to generate vocational focus to geology given that many this age have a great interest in the outdoors. I am pleased to see advocacy made for active and retired geologists to volunteer time and effort to local schools to share expertise and allow students to meet a geologist.

I have the good fortune of landing an earth science and dual-credit college geology high school job after a wonderful career with the Forest Service. I am fortunate to be in a school system and high school that is extremely supportive of my programs. However, one of the main short-comings of most schools in earth science and geology is resources. I would like to encourage all members to scour through your closets for rock, mineral and fossil samples, geologic maps and other goodies not needed by you, but would be a treasure-trove to a school’s earth science program. Often, you can secure a thank you letter that you might be able to use as a tax deduction.

My program is no different. I have $200.00 this year to spend for supplies for two programs of over 125 students. I could really use a petrographic microscope and some classic thin sections to support my program. I also need good mineral and fossil specimens, sedimentary structures, columnar jointing sample, compasses, etc. I contribute approximately $750 of my own money a year to my program for things I need, such as maps and geo-maps. It would be great if there was someone in our membership that had any of these in a non-use status that could be donated. Since I am not ashamed to admit I am only a teacher, I proudly use my school address as my address of record.

Schools starts in August. Any donations will be cheerfully acknowledged in writing on official school letterhead. Thank you for your support of high school earth science and dual-credit geology programs!

Robert H. (Barney) Oldfield, RG, CPG-06346  
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Tracking

Lawrence A. Cerrillo, CPG-02763

As I prepare this month’s article, it occurs to me that the current executive committee, with minor exceptions, is halfway through our term of office. As many before me have no doubt done, I have reflected on what has been done, what is still to be done, and perhaps what ought to be considered doing. I would like to encourage all of our members to take five and reflect on the future and make your concerns, suggestions, and ideas known to the committee.

The continuing professional development committee has been working diligently under the care of Tom Fairs, and we should have a program to initiate by the September meeting. As with any new undertaking of this magnitude, there will no doubt be some glitches, but none that cannot be corrected. I encourage everyone to take advantage of the program when made available. Most of you are already doing things that will qualify as professional development, so why not get credit for your effort.

Mike Lawless and the membership committee are continuing efforts to increase our numbers. This is an effort where everyone should be participating. I think, because most of us are CPGs, that when we talk to folks about AIPG we think in terms of qualifying for that level of membership. Remember that a person can become a member without getting certified. This is an important step in getting geologists exposed to the Institute and what it can do for them.

President-elect Rick Powers is working on corporate membership. If you or the company you are working for employs a number of geologists, consider corporate membership. This will be a distinction that the company could include in its brochures, and add to its credentials. AIPG’s legislative activities help in such companies as much as it helps the individuals employed there, regardless of whether they are AIPG members.

School will soon be starting, and it is a good time to be thinking about getting a speakers group up and running in your section. Get acquainted with the principals and the science teachers and let them know that you are interested. You might also volunteer to be a judge at any science fair that might be held.

This has been a drought year in many parts of the country, and you may want to get out and talk to the service clubs about drought and how they can conserve water. There is plenty of information on the Internet, and many of you no doubt have direct experience you can relate.

You should be receiving this prior to the annual meeting in Reno. So, I hope you made plans to attend. In addition to learning more about, and having an opportunity to contribute to AIPG, it is a great way to network and develop contacts.

In closing, I might paraphrase from Anthony Robbins’ little book “Giant Steps” “...if we want to change the quality of our lives (Organization), we must change what we habitually ask of ourselves and others.” Make it a great day!

AIPG LIFETIME MEMBERSHIP?

Barbara Murphy, Advisory Board Representative

A proposal was submitted to the Executive Board to consider offering an AIPG Lifetime Membership category. This issue was discussed at the May Executive Board meeting and we would like to receive input from our members. Part of our discussion focused on the fact that AIPG membership also is a certification program and the question arose as to whether a person may be certified for life? Certainly, some sort of qualifier could be included in the Lifetime Membership, so that the CPG would adhere to the requirements of CPG or have the certification revoked or suspended. The discussion also included the cost of that category of membership and the duration that the fee would need to cover so that AIPG still had fair revenue from that source of membership without making the cost too prohibitive to some of our members. There also was a discussion of offering a multi-year category, perhaps for two or three years at a time. Some of our members work out of the country or in the field a greater portion of the year and felt that having an option for paying for several years at a time or a Lifetime Membership would be appealing. Please send your comments and suggestions regarding Lifetime Membership or multi-year membership payment options to The Professional Geologist at AIPG headquarters.
Employment

William J. Siok, CPG-04773

The employment situation for geologists in general continues to be an up and down, good and bad proposition. A frustrating aspect of professional association management is not being in a position to actually procure jobs for geologists seeking to either change employers or those who have lost jobs due to the evolving marketplace.

In an effort to improve job seekers’ circumstances, AIPG has implemented a web-based program in conjunction with JOB TARGET™. This program constitutes a service for AIPG members seeking professional positions or seeking employees.

The program is called AIPG Career Center, became operational on the AIPG website in early June, and is free to all AIPG members wishing to post their resumes. There is a modest fee to AIPG member-owned companies seeking employees.

Those who wish to post resumes do so anonymously, although the pertinent contact information is submitted with the resume. The job seeker is able to modify the contents of the resume at any time. The resume becomes a part of a nationwide listing, which is available to employers. When an employer identifies a resume as appropriate for the position to be filled, the resume owner is contacted by the AIPG Career Center administrator to determine whether the resume owner will be interested in the position and wishes the contact data to be released to the prospective employer.

All contact information is retained by the AIPG Career Center administrator until the job seeker has had the opportunity to evaluate the available position and agree to the release of contact information to the employer, thereby providing the maximum degree of situational control to the resume owner and assuring that confidentiality is maintained as long as possible. The job seeker will then be contacted by the prospective employer.

While the agreement with JOB TARGET™ was under development, AIPG opted to become part of a broad national network through which both job seekers’ resumes and job postings would be available to AIPG members. By the time this issue of TPG reaches you, there should be some job postings for your consideration. However, since this is a new endeavor for AIPG it will require some time and effort for us to build a database and successfully advertise the availability of this search service to employers of geologists. Your assistance is sought in announcing the existence of the database to both colleagues looking for positions and organizations likely to be looking for geologists to fill vacancies. Also send us any constructive comments about ways the service might be improved and headquarters staff will do its best to implement your ideas.

Annual Meeting: Please note that the time for the annual meeting is rapidly approaching. This year’s activities and venue are particularly promising and you’re cordially invited to attend and mix it up with fellow professionals from AIPG and AEG. Information is always available on the AIPG website www.aipg.org. It will be a distinct pleasure to meet you in Reno.

Takes the Cake

The Utah Council of Professional Geologists (UCPG) recently celebrated passage of House Bill 96, which requires licensing for professional geologists in Utah.

The group had ordered a large sheet cake, instructing the bakers to decorate it with UCPG’s logo and the words: “Congratulations. HB96 Passage.”

Apparently not accustomed to cakes celebrating passage of House bills, the bakers decorated the cake to read: “Congratulations. Happy Birthday ’96 Passing.”

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In many ways, it was inevitable that I would become a geologist. My father is an archaeologist, and I remember, at the age of four and a half, going along with him on a dig in the Sierra Nevada Mountains and wondering why we didn't have big rocks like that in our house. After that, I fell off the wagon; in kindergarten I wanted to be a zoologist (I even knew what the word meant!). From second through seventh grade I wanted to train horses, and over my seventh grade year I wanted to be an architect, a civil engineer, a paramedic, and an ornithologist.

In eighth grade my father pointed out to me that if I was going to keep damaging my mother's washing machine by leaving rocks in my pockets, I might as well plan to make a living out of them. This had never occurred to me. My freshman year in high school, my physical science teacher, Dan Gruber, let me set up and write the geology unit for the class. That summer, I took a community college introductory geology course, and then I was hooked.

The thing that most draws me to geology, and to exploration and mining geology in particular, is the way that no knowledge is irrelevant. Going into geology without a basis in chemistry, physics, engineering, biology and even (shudder) math, is kind of like going into a bookstore without knowing how to read. I'm probably exaggerating, but in my biased opinion geology has the most amazing combination of both depth and breadth of any field of study. One can concentrate a career on one kind of micro-deformation, or one can choose to study the universe as a whole, and both represent geology.

The particular field of study I have chosen with geology, exploration or ore deposit geology, interests me for precisely this reason. I have always wanted to travel, and I have always been interested in economics, international business, and politics. I find it fascinating how one ore body, a geological "accident" can change the position of a nation in the global economy, and thus change the history of the world.

The summer after my senior year in high school, I had the opportunity to be a member of a joint American-Mongolian archaeological expedition to the Egin Gol Valley, in Northern Mongolia. By this time, the idea of exploration geology, mostly due to the fact that I thought it would be very cool to call myself an explorer, had already fired my imagination. Our field director, a former Peace Corps volunteer, was horrified.

In my opinion, mineral resources are going to be developed. Development can be done right, or it can be done wrong. I want to be one of those people who do it right. Mineral development does not have to be damaging to the physical or cultural environment; no matter where it occurs. I truly believe that nations can and should develop their mineral resources in order to improve the standard of living for every citizen of the nation. I would like to be a part of that process.

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Monthly review prepared by Margaret Baker, David Applegate, MEM-0002, AGI Government Affairs Program, and AGI/AAPG Geoscience Policy Intern Heather Golding.

MAY 2002

- House Vote Favors Yucca Mountain Repository, Senate Hears Testimony
- Representatives Push for NSF Budget Doubling
- Energy Conference Awaits Naming of House Members
- USGS Re-Assesses NPRA Resource Potential
- Court and Congress Reject New Definition of “Fill Material”
- Bush Administration Agrees to Buy Back Florida Oil Leases
- Federal Agencies Release Data Quality Guidelines
- List of Key Federal Register Notices
- New Material on Web Site

House Vote Favors Yucca Mountain Repository, Senate Hears Testimony

On May 8th, the full House of Representatives voted 306-117 in favor of House Joint Resolution 87, a measure to override Nevada Governor Kenny Guinn’s (R) formal objection to the siting of a high-level nuclear waste repository at Yucca Mountain. The resolution was then passed on to the Senate where a much closer vote is expected. Guinn issued his objection on April 8th. Under the terms of the Nuclear Waste Policy Act of 1982, Congress has 90 working days to override the governor’s objection with simple majority votes in both chambers, not subject to filibuster in the Senate, which has until July 25 to pass its version of the override resolution. The Senate process began with a series of three hearings held by the Senate Committee on Energy and Natural Resources on May 16th, 22nd, and 23rd. Committee Chair Jeff Bingaman (D-NM) focused the hearings on hazards associated with transportation of the waste, an issue that has become the principal rallying point for opposition to the repository. The committee heard from Secretary of Energy Spencer Abraham and from the project’s regulators and federal oversight bodies.

Non-federal witnesses testified on radiation exposure and threats to waste transportation, including vulnerability of waste shipments to terrorist attacks. These witnesses expressed great concern about the safety of moving nuclear waste and suggested that a more organized and detailed transportation plan be presented before allowing the site evaluation process to move farther along. On June 5th, the committee voted on Senate Joint Resolution 34 by a 13-10 margin. Nine Democrats were joined by Sen. Ben Nighthorse Campbell (R-CO) in opposition. If the resolution passes in the Senate, Congress will have approved the site selection, and DOE will have 90 days to submit a license application to the U.S. Nuclear Regulatory Commission. More at http://www.agiweb.org/gap/legis107/yucca.html. Witness statements are available at http://energy.senate.gov/cfdocs/hearings.cfm?id=5#hearing.

Representatives Push for NSF Budget Doubling

As reported in a May 15th Action Alert, a bipartisan group of representatives is pushing to put the National Science Foundation (NSF) on track to double its budget over five years. A “Dear Colleague” letter making this case was sent to the House Appropriations Committee on May 28th. The letter was sponsored by Reps. Vernon Ehlers (R-MI), Rush Holt (D-NJ), Sherwood Boehlert (R-NY), Ralph Hall (D-TX), Constance Morella (R-MD) and Eddie Bernice Johnson (D-TX). In addition to those six, 126 of their colleagues also signed the letter. The group seeks a 15% increase for NSF in fiscal year (FY) 2003. Such an increase would make it possible for Congress to fund the EarthScope initiative and build other key geoscience programs.

The letter to appropriators is part of a broader effort by the House Science Committee to support a five-year doubling of NSF’s budget. The chairman of the committee’s Research Subcommittee, Rep. Nick Smith (R-MI), introduced the National Science Foundation Authorization Act of 2002 (H.R. 4664) at a well-attended press conference on May 7th. The bill would authorize increases for the next three years that track with a five-year doubling. Such funding, of course, would be contingent upon congressional appropriators following through with the actual dollars, but passage of the bill would put Congress on record in support of this goal. The full House passed the bill on June 5th by a 397-25 margin, and the Senate has already begun the process of developing its own reauthorization bill. These efforts dovetail with the recommendations of the Coalition for National Science Funding (CNSF), to which AGI and several of its member societies belong. More at, http://www.agiweb.org/gap/legis107/nsfDrawerToggle.html and at http://www.agiweb.org/gap/legis107/nsf_alert0502.html.

Energy Conference Awaits Naming of House Members

A May 8th Special Update provided a comparison of the House-passed and Senate-passed versions of comprehensive energy legislation. The Senate passed its version of H.R. 4 late in April, and the House passed its version the previous August. The Senate members of the House-Senate Conference Committee were named at the beginning of May, but House Speaker Dennis Hastert (R-IL) has not yet announced the House conferees. It has already been agreed that Rep. Billy Tauzin (R-LA), the chairman of the House Energy and Commerce Committee, will serve as chairman of the conference. The Senate lineup includes eight Democrats, eight Republicans, and one Independent (Sen. Jim Jeffords, VT), which will favor the Senate majority on most matters but not on the key issue of drilling in the Arctic National Wildlife Refuge — Sen. John Breaux (D-LA) supports opening the refuge for oil exploration as do all the Republicans. The conference is expected to get under way in June and complete action later this summer. It remains unclear whether any conference agreement can achieve House and Senate passage before the end of the session. The special update is at http://www.agiweb.org/gap/legis107/energy_update0502.html.
USGS Re-Assesses NPRA Resource Potential

On May 16th, the U.S. Geological Survey (USGS) released its re-assessment of the undiscovered oil and natural gas resources within the National Petroleum Reserve Alaska (NPRA). The reserve occupies 23 million acres on the western part of the North Slope along Alaska’s arctic coast. The survey’s last NPRA assessment was completed in 1980, reporting that the technically recoverable oil on federal lands in the area totaled between 0.3 and 5.4 billion barrels of oil (BBO). In the new assessment, those numbers (which represent the 95% and 5% probability, respectively) jump to 5.9 and 13.2 billion barrels. The new assessment also includes an economic analysis, concluding that between 1.3 and 5.6 BBO are economically recoverable at market prices between $22 and $30 per barrel. The USGS also estimates that there are between 39.1 and 83.2 trillion cubic feet (TCF) of natural gas within NPRA. The economic viability of these resources, however, depends on developing the capacity to transport them to markets. According to the fact sheet released at the press conference (http://geopubs.wr.usgs.gov/fact-sheet/fs045-02), the “increase in estimated oil resources is largely the result of the recognition of new plays based on oil accumulations recently discovered just east of NPRA.” Included in the assessment is a comparison of the resources available in NPRA (using the 2002 assessment figures) and ANWR (using the 1998 assessment figures) that will be of great political interest as Congress begins to craft compromise energy legislation this summer.

Court and Congress Reject New Definition of “Fill Material”

With the approval of the Bush administration, the U.S. Army Corps of Engineers recently changed their definition of “fill material” to match a broader definition of the material set by the U.S. Environmental Protection Agency (EPA). This change was intended to allow disposal of spoil from mountaintop-removal mining practices by filling in adjacent valleys. On May 8th, U.S. District Court Judge Charles Haden ruled in Kentuckians for the Commonwealth v. Corps of Engineers that the Corps does not have the authority to make the definition change, which would effectively reverse part of the Clean Water Act. Haden concluded that such a change would require a revision of the act by Congress. But a bipartisan group of House members have made clear that they would oppose any change. Before Haden’s ruling, the group — led by Reps. Chris Shays (R-CT) and Frank Pallone (D-NJ) — introduced legislation to maintain the original limits placed on fill material in the Clean Water Act. Opposition to the definitional change has been expressed in the Senate as well. In response, mining industry representatives argue that the composition and structure of fills is largely misunderstood and that they abide by EPA standards and monitor for negative impacts on the affected streams. Information on other Clean Water Act issues is at http://www.agiweb.org/gap/legis107/clean_water.html

Bush Administration Agrees to Buy Back Florida Oil Leases

On May 29th, the Bush administration announced that it has agreed to buy back portions of Florida’s Gulf of Mexico offshore oil leases as well as some mineral rights in the Florida Everglades. The Department of the Interior (DOI) will spend $115 million to reacquire seven of nine existing leases in the natural-gas-rich Destin Dome Unit, located offshore Pensacola, from Chevron, Conoco, and Murphy Oil. Murphy Oil will suspend development of the two other leases until the moratorium on current leasing expires in 2012. Florida has contested development in the leases since 1998 under the Coastal Zone Management Act. DOI will also spend $120 million to purchase the mineral rights to 390,000 acres in the Everglades from Collier Resources Co. Collier will retain 200 producing acres that have an estimated 10 to 15 more years of oil production. This acquisition agreement, which covers parts of Big Cypress National Preserve, Florida Panther National Wildlife Refuge, and Ten Thousand Islands National Wildlife Refuge, is supported by environmental groups concerned with habitat quality for the Florida panther and American crocodile. Also, Interior Secretary Gale Norton acknowledged that the purchase of this acreage further insures implementation of the $5 billion Comprehensive Everglades Restoration Plan. Unlike the Destin Dome buyback deal, however, the Everglades agreement must be ratified by Congress. Both buyback agreements were sought by Florida Gov. Jeb Bush (R) as part of a wider effort to curtail oil and gas production in Florida. California, eager to begin lease buybacks of its own, promptly appealed to President Bush to extend buybacks to other states as well. More on outer continental shelf issues at http://www.agiweb.org/gap/legis107/ocs.html

Federal Agencies Release Data Quality Guidelines

As reported in the September 2001 Monthly Review, the White House Office of Management and Budget (OMB) is requiring all federal agencies to establish procedures to improve federally produced information disseminated to the public. The agencies must develop quality criteria and an administrative mechanism to respond to inquiries about the quality of information provided. In recent months, several agencies have released their draft guidelines, including NSF (http://www.nsf.gov/home/pubinfo/infouqual.htm), EPA (http://www.epa.gov/oei/qualityguidelines/), the Department of Agriculture (http://www.ocio.usda.gov/orm/qi_guideindex.html), the White House Office of Science and Technology Policy (http://www.ostp.gov/html/DataQuality.html), and the National Oceanic and Atmospheric Administration through the Department of Commerce (http://www.oesc.doc.gov/cio/opcr/eqg.html). On May 1st, OMB announced in the Federal Register that it is seeking public comments on its draft Information Quality Guidelines for “pre-dissemination information quality control and an administrative mechanisms for requests for correction of information publicly disseminated by OMB.” All federal agencies are required to make these guidelines available on their web site no later than October 1, 2002. The guidelines were originally required by a con-

List of Key Federal Register Notices

A new feature of the AGI Monthly Reviews is a summary of Federal Register announcements regarding federal regulations and notices of interest to the earth science community. Entries are listed in chronological order and show the federal agency involved, the title, and the citation. The Federal Register is available online at http://www.access.gpo.gov/su_docs/fedreg/frcon02.html.


New Material on Web Site

The following updates and reports were added to the Government Affairs portion of AGI’s web site http://www.agiweb.org since the last monthly update:

- High-Level Nuclear Waste Disposal (6-5-02)
- Geotimes Political Scene: Energy Policy at the Crossroads (6-02)
- Action Alert: House Members Seek to Put NSF Budget on Doubling Path (5-28-02)
- National Science Foundation Authorization (5-28-02)
- Special Update: Senate Passes Energy Bill, Conference is Next Stop (5-8-02)
- Geotimes Political Scene: Becoming a Standard Bearer (by AGI 2001-2002)
- Congressional Science Fellow David Curtiss; 5/02)


This monthly review goes out to members of the AGI Government Affairs Program (GAP) Advisory Committee, the leadership of AGI’s member societies, and other interested geoscientists as part of a continuing effort to improve communications between GAP and the geoscience community that it serves. Prior updates can be found on the AGI web site under “Government Affairs”<http://www.agiweb.org>. For additional information on specific policy issues, please visit the web site or contact us at <govt@agiweb.org> or <(703) 379-2480, ext. 212>.

AIPG ANNUAL MEETINGS

Sept. 22-28, 2002
Reno-Lake Tahoe, Nevada

October 4-9, 2003
Glenwood Springs, Colorado

2004
Saratoga Springs, New York

Topical Index to the Professional Ethics and Practices Columns

I have prepared a topical index covering columns 1 through 76 that has been placed on the AIPG web site in the ethics section. The index is in PDF format. The original file is in Microsoft Excel format. If you would prefer the Excel file, send me an e-mail and I'll send it to you. I'll update this index periodically and post the new copy on the AIPG web site. If you have suggestions on organization, please let me know.

David M. Abbott, Jr., CPG-04570, 2266 Forest Street, Denver, CO 80207-3381, 303-394-0321, fax 303-394-0545, DMAgeo@aol.com
Another difference is in the length of the statement. The sentence disputed by Johnson and Bloom could be written by almost anyone discussing the quantitative determination of precious metals. I could have easily written it myself—I even checked to see if I had done so in one likely paper; I hadn’t. However, when there is a high degree of correspondence between a larger number of words in several sentences or a paragraph, the argument for plagiarism becomes stronger. An exact wording match is not required. What is required is giving appropriate credit for the idea expressed. Indeed, most citations in scientific literature do not involve quotations, they give credit for ideas or findings that the author is incorporating into the paper.

Aside from the specifics of the alleged plagiarism, Johnson’s letter is an example of one way to make an allegation that unethical practice occurred. Johnson’s very public, letter-to-the-editor allegation did result in resolution of the issue, but not a particularly satisfactory one for either party. I suspect neither Johnson nor Bloom appreciated the resulting publicity. This example demonstrates the advantages of using AIPG’s Disciplinary Procedures as a method of making and resolving allegations of unethical practice.

AIPG’s Disciplinary Procedures are conducted confidentially until there are findings of fact by an Adjudiciatory Panel and either there is no appeal of that decision or the appeal is resolved. All of the allegations of unethical conduct received during my Chairmanship of the Ethics Committee were resolved prior to the need for an adjudicatory hearing. A number were dismissed after inquiry determined that no violation had occurred.

Assume for the moment that Bloom was an AIPG member and that Johnson had submitted his allegation to AIPG. The initial inquiry into Johnson’s allegations would have resulted in receipt of a similar letter or statement from Bloom that would have allowed a decision on the matter to be reached, namely that there was no violation in this case. Because the allegation would not have been public, neither Johnson or Bloom would have suffered the public embarrassment resulting from the exchange of letters to the editor.

I’m not suggesting that Johnson should not have pursued his concern regarding what he believed to be an example of plagiarism. However, Johnson was not fully informed of all the facts. That is what the investigation process in the Disciplinary Procedures is designed to uncover. And in cases where no violation has occurred, which is not uncommon, the confidential nature of the process protects everyone.

Acknowledging Other’s Work
(Column 76, July ’02)

The foregoing discussion on plagiarism caused me to think further about the problem raised by Peter Rose, CPG, in last month’s column, concerning the failure to cite previous work in presentations, reports, and other communications like letters to editors. What is the difference between “everyone knows” and building on previous work?
Everyone familiar with the analysis of precious metals in geologic materials knows that fire assay is considered the most accurate method for quantitative determination of total precious metal content in a sample and thus will write very similar sentences to make that point. But someone made the statement first. Should we all be citing that person?

I’ve just finished re-reading James Gleick’s biography of Richard P. Feynman, Genius, and Feynman’s own, “Surely You’re Joking, Mr. Feynman!”. Both books describe Feynman’s habit of not liking to read professional literature. Feynman’s common practice when reading a paper was to read only enough to figure out what the problem was and then work out the answer for himself. In those cases where the final equations were equivalent, did Feynman rely on the paper or not?

Should Feynman’s citation of the paper be for stating the problem or answering it?

Reserve classification is one of my specialties. Figures 1 and 2 illustrate two versions of essentially the same idea. Figure 1 from Herbert Hoover’s Principles of Geology (1909), while Figure 2 is a more modern version. The concept of reserve classification developed by Hoover in 1909 has been a fundamental part of mineral reserve classification for decades. Anyone familiar with mineral reserve classification would, if asked, create a similar illustration of the different reserve categories in a longitudinal section illustration. I’ve seen a number of illustrations; they generally are more similar to Figure 2 than Figure 1. Yet all these figures retain the same essential elements. I created Figure 1 based on Hoover’s original figure 1. Figure 2, however, is an electronic copy of the original that I downloaded from the web. Should those creating drawings like Figure 2 cite Hoover for the idea (or cite another source)? Or have the concepts involved become so well understood that anyone is free to create his or her own drawing of the concept from scratch?

Because Pete Rose initiated this inquiry into giving appropriate credit, I asked him for his answers to my question. He replied, “It is indeed a good question, and the answer is necessarily gray, because knowledge is continually advancing. What was a noteworthy insight or discovery in 1962 is now accepted fact in 2002. We now use the word ‘xerox’ to mean ‘copy’.”

So what’s the solution? When to cite and when not to? Here are a few random guidelines (in no particular order) I personally find useful:

1. Did I rely on an individual’s written paper or conversation to build from in my current presentation? If so, acknowledge.

2. Was the basic source published within the last generation (±25 years)? If so, acknowledge.

3. Is the source someone whom I think is a legitimate authority in the general field of inquiry? If so, acknowledge.

4. Would omitting a reference to some previous worker suggest my shoddy scholarship or inappropriate claim to origination? If so, acknowledge.

5. Is any harm done by acknowledging a source? There’s no end to the good you can do if you don’t care who gets the credit! So turn the question around—what’s the justification for not acknowledging?

6. Is the theory or fact so well known and now integrated into knowledge that all your readers will think a reference or acknowledgement will be gratuitous or superfluous? If so, don’t acknowledge.

7. A more subtle problem arises when a young, enthusiastic researcher stumbles on an insight unaware that it has been published previously by someone else, and charges forward to proudly announce his breakthrough. You don’t want to ‘rain on his parade,’ after all, he knows he came up with the idea on his own! But you do want to urge a more thorough knowledge of the prior literature. How to handle?
Peer Review: Does It Really Work?

The June 5, 2002 issue of the *Journal of the American Medical Association* (JAMA) (v.287, no. 21) was a thame issue devoted to the Peer Review Congress IV, held in Spain in September 2001. Drummond Rennie’s editorial for the issue noted that “Once again, ... we publish studies that fail to show any dramatic effect, let alone improvement, brought about by editorial peer review.” Although noting qualitative impressions supporting peer review, “we find ourselves in the peculiar position of believing still more in the virtues of peer review, a system we know to be ‘time consuming, complex, expensive and...prone to abuse,’ while we acknowledge that the scientific evidence for its value is meager. Indeed, if the entire peer review system did not exist but were now proposed as a new invention, it would be hard to convince editors looking at the evidence to go through the trouble and expense. This dissonance suggests that we are using the wrong tools to study the wrong factors.”

Articles in this issue discuss:

- the problems of honorary and ghost authorship;
- the effectiveness and quality of peer review, which is mainly judged by authors on the basis of acceptance or rejection;
- the quality of the discussion in papers of research results and supporting statistics;
- the bias introduced by preferential publishing of only positive results;
- the failure of authors responding to comments to respond to all the issues raised in comments; and
- ethical and legal issues relating to confidential data.

The contents, quoted editorial, and articles from the cited issue of JAMA can be obtained from http://jama.ama-assn.org/issues/v287n21/full/jtw20017.html#a4.

Although specifically addressing peer review in medical journals, several of the bulleted points have been discussed in this column over the years. While I don’t claim to be an expert in the peer review process, the issues raised the cited issue of JAMA warrant study by those who are. Comments on the effectiveness of the peer review process in geology are welcomed.

While searching the JAMA web site, I noticed that the May 1st issue (v. 287) featured articles on global warming and potential impacts on public health. One particular article, “Global Climate Change and Health: Challenges for Future Practitioners,” by J.A. Patz and M. Khalilz, contained statements on droughts, flooding, and sea-level rise. None of the literature cited in support of statements made came from geological journals, even though I believe that geology has important contributions in these areas. Is this article an example of another problem with peer review? Does it reflect a problem with the splintering of science into specialized areas that do not look beyond the particular area of interest in looking for data relevant to questions being asked?

Are computers killing geology?

Mike Young of Golder Associates in Perth, WA, posted the following on a computer discussion group: “I am an industry consultant with 17 years experience in both Canada and Australia. My work has involved grass roots exploration, resource definition drilling, and resource modeling and estimation. I am an expert user of 3-D software packages for resource modeling and grade estimation.

“My job takes me to many sites and recently I have started to notice a disturbing trend: the young geologists on mine sites seem to be doing very little real geology, but instead are more concerned with playing with mining software or when their next break is! One case, and not an isolated one, follows.

“I was recently involved in a pit mapping project and in a 2¼ week period, not one of the geologists asked to come along and see what and how we were doing things. Finally, when I was being driven to the site by a junior geologist, I asked if he wanted to see what we were doing... He thought that it was a great idea and sought permission from his supervisor who was more than happy for him to go with us. Amazingly, the younger geologist admitted that he hadn’t previously thought of coming with us! As I was showing him what we’d done, I was disturbed at his lack of mapping field craft. Then I discovered he’d actually not done any mapping since graduating from university! Not his job.

“It appears to me now that as we are becoming more and more computer literate, we are becoming less geologically skilled. Young geologists hope that by putting data into a GIS or 3-D software package, the answer will just pop-up. They ignore geology and rely instead on variography, colours, and contours to show them the answers! Maybe we should start calling ourselves Variographers!! Or Geocomputologists!

“As supervisors and mentors, it is our responsibility to train young geologists properly, to teach them that computers are only tools like the hammer, compass, and hand lens. There is no denying that a computer is a very powerful tool. But like the hand lens, it becomes even more powerful in the hands of a person who understands what they are looking at. Mapping can be very frustrating at the best of times and the answers are not always obvious; sometimes even the question isn’t obvious. But without understanding the geology, the structures, and controls on mineralisation, staring at a computer screen will be even more baffling—the answers won’t just pop out.

“But to a person who has spent time looking at and has some understanding of the geology, the questions will flood in and the computer will become a very powerful aid to finding the answers. So when the budget cuts come, don’t sell out geology. Maybe give up one of those extra software licenses instead.”

Basic computer skills are required for any professional position, geologic or otherwise, today. However, GIGO (garbage in, garbage out) continues to apply even if GIGO is a less commonly heard expression these days. As a colleague remarked the other day, the problem he sees with most ground-water models is that there isn’t sufficient data to test the model being used and therefore hydrologic models are justifications of the assumptions made by those who constructed them and are not valid models of the hydrologic regime being modeled. The same problem exists in reserve modeling and the construction of variograms. As always, comments are welcomed.
Defend Against Misuse of Geologic Reports

Douglas W. Reynolds, CPG-01840

Defend against misuse of geologic reports

One source of potential misery for professional geologists is the misuse of their work. People who come into possession of geologic reports after they leave the hands of geoscientists may use the work in inappropriate ways. The users may innocently mischaracterize work that they don’t understand. They also may selectively use, or even dishonestly alter, the findings of the geologists.

Professional geologists must keep the possibility of misuse in mind as they prepare reports. As a matter of professionalism, geologists must go the extra mile and do what they can to make misuse of their findings less likely. Below are a few strategies for you to use in defending against misuse.

Manage ambiguity

Geologic findings are very often made from less than ideal data sets. Specific, easily quantifiable answers are often not possible. In order to fairly portray the best answer to the question, findings must often be stated in less than concrete terms. Be aware of the range of possible findings that your data might allow and the possible conclusions your work might support. Expect that the user of your work will want to distill your conclusions to the simplest possible terms and that your client may draw a simpler conclusion than you would be comfortable with.

Say what you intend to say

It’s easy to be less than clear when writing a report if you don’t pass along all the details. People who use your work won’t have the full content unless you give it to them.

A friend of mine who edits a trade magazine told me that he would often need to tweak quotes for his magazine so that the message conveyed by the quote would be what the speaker meant to say, rather than what was actually said. He learned that when he quoted people inaccurately he was occasionally faced with furious people who would accuse him of printing a misquotation. They would usually burn with righteous indignation, until he played them the tape of what they said. Review your work to see if there are things someone might misunderstand. Better yet, have a colleague or associate do a review.

Stay within your data envelope

When making interpretations, make sure they honor your data. This means exercising restraint if the data are too thin. It also means using all the data that are relevant.

Distinguish fact from opinion

This point is actually part of the code of professional conduct in the regulations. It bears repeating here. Clients seek you out to apply your knowledge of geology to help them understand their mystical pile of rocks. Don’t assume that the client can easily distinguish between the concrete data you use and the abstract opinion you generate.

Use disclaimers for liability protection

Disclaimers clarify what you consider to be the reasonable limits of responsibility. They are one of the main defenses employed by professionals against unintended use.

Use caution when “recycling”

Old reports can be a gold mine and a minefield. The gold nuggets are the work appropriate to the new context that you don’t have to do twice. The land mines are the easily overlooked, irrelevant bits that you might forget to remove.

Keep office copies

If someone misrepresents your work, a good line of defense is to be able to quickly produce your own record of what you released to the client.

Compiled by Douglas W. Reynolds, Jr., Communications Coordinator, Kentucky Board of Registration for Professional Geologists.

Kentucky Geologists, Volume 3, Issue 2, November 2001

AIPG History Book

How did AIPG really get started?

What roles did the well-established AAGP and AGI play in the formation of the first Professional (not scientific) geological society?

Who were the “Magnificent Seven” who founded AIPG in 1962-63?*

What great deed did Michel Halbouty, CPG-00010, perform for the fledgling AIPG in 1963?

Who were the 18 CPGs who gave Congressional Testimony in the turbulent years for the livelihood of many geologists in the 1970s and 1980s?

We were APGs in 1975-79: why did we change our name, and what does APGs stand for?

The answers to these and other questions make interesting reading to the curious as to the formation and progress of AIPG. After two years of accumulating information, past President Richard Proctor has just finished the book, titled “A History of AIPG 1963-2000”, which includes many photographs, a Who’s Who/Who Was Who in AIPG, and more than 70 selected speeches and papers by CPGs.

We are asking for donations from our members to help publish the book. So, if you would like to eventually own a copy, please send a generous check to Headquarters earmarked “for AIPG History Book.” Thanks you!

(*The magnificent Seven who founded AIPG, by correspondence prior to the Organizational Meeting in September 1963, were Edward “Bud” Runge of Illinois, Frank Conaline of Texas, William Mallory of Colorado, Allen Tester of Iowa, Ad Honkala of Virginia, Robert Becker of Oklahoma, and Ben Parker of Colorado.)
LETTER TO THE EDITOR

Is the Climate Changing?
Raymond S. Bradley, University of Massachusetts

Lee Gerhard (Is the climate is really changing, and why do we care? The Professional Geologist, Jan/Feb. 2002) suggests that "...natural climate variability overshadows any human climate effect." (1). Taking a geological perspective, this is undoubtedly true. But in examining the effects of society on climate, it is essential that the timescales of variability be kept in mind. The build-up of greenhouse gases in the atmosphere, largely due to the combustion of fossil fuel, has occurred virtually instantaneously on a geological timescale. In the blink of a geological eye, human activity has driven CO$_2$ levels higher than at any time for at least 420,000 years (the longest perspective we have, based on atmospheric samples from ice cores), and probably several million years. With world population now at 6 billion, and projected to reach 9 billion by later this century, it is virtually certain that atmospheric CO$_2$ levels will continue to rise, reaching levels not seen on earth for several million years. These changes, from pre-industrial background levels of CO$_2$ to levels at least twice as high, will thus have taken place over a time span of less than 300 years. There is no evidence that such a rapid change in atmospheric greenhouse gases has ever taken place, and certainly with so many people on earth, this must raise concerns for global stability (climatric, ecological, societal, and political).

Is there evidence for climate warming? Dr. Gerhard fails to recognize that local temperature anomalies are of little local warming; it is a matter of the extent and thickness of ice shelves. (11). There have also been shifts in the distribution of plant and animal species, latitudinally and altitudinally (12, 13), changes in the phenology of plant leafing and flowering (14), the storage of significant quantities of heat in the near-surface ocean (15) as well as an overall rise in sea-level driven by both continental ice melting and a steric change due to the increase in overall ocean temperature (16). There have also been remarkable increases in ground temperatures over the last millennium (17, 18). Thus, there are multiple indicators of warming in the 20th century that paint a vivid picture of the global-scale environmental consequences of the temperature increase. Going forward in time, the accelerating rate of fossil fuel consumption will drive global temperatures to levels not seen in at least a millennium, and probably higher than for many thousands of years, as noted in the recent report of the Intergovernmental Panel on Climate Change [IPCC] (19). This scenario will play out in a world whose population will increase by 50% over the next century. Yes, the climate is really changing, and we certainly should care about it.

References


Prof. Raymond S. Bradley, Head, Dept. of Geosciences, University of Massachusetts, Amherst, MA 01003-9297.
MEMBERS IN THE NEWS

Goldich Medal to Ernest K. Lehmann

The Institute on Lake Superior Geology has awarded its Goldich Medal to Ernest K. Lehmann, CPG-00583, for his contributions to the understanding of the geology of the Lake Superior region and his contributions to the Institute. The award was made at the Institute’s 48th Annual Meeting on May 14th at Kenora, Ontario.

Mr. Lehmann, a resident of Minneapolis, is currently the president of the Minnesota Exploration Association, a mineral industry trade group, and is a past president of the American Institute of Professional Geologists, and currently serves as chairman of the A.I.P.G. Foundation.

A consulting geologist, he and his companies have been actively engaged in mineral exploration, and mineral deposit evaluation and development in North America, with emphasis on mineral exploration in the lake states and the northwestern U.S. They also have worked extensively overseas, particularly in Latin America and Africa for both industrial and financial clients. Lehmann is currently chairman of the board of Franconia Minerals Corporation, a publicly held exploration company.

The Institute was founded 48 years ago to provide a forum for interchange of geologic knowledge about the Lake Superior region among geologists in government, industry and academia. It meets annually at locations in the Lake Superior area.

Walter E. Heinrichs, Jr., CPG-00688, (SEG 1963 SF), was selected by the Society of Mining, Metallurgy, and Engineering (SME) to receive the Ben F. Dickerson III Award. The award recognizes professionalism and contributions to the mining industry. Heinrichs also was honored as an SME Distinguished Member.

Murray W. Hitzman, CPG-09562, (SEG 1978 F) was named head of the Geology and Geological Engineering Department at Colorado School of Mines in January. He had served as interim head of the department since August 2000. He will continue his appointment as Charles Franklin Fogarty Professor of Economic Geology.

Hitzman graduated with a bachelor’s degree in anthropology and geology from Dartmouth College, received a master’s degree in geology from the University of Washington, and a doctorate in geology from Stanford University. From 1993 to 1994 he served as a member of Sen. Joseph Liberman’s staff, followed by work in the White House Office of Science and Technology Policy on environmental and natural resources issues. He has nearly 15 years experience in industry, including work for Anaconda, Bear Creek Mining, and Chevron Minerals. He has been at CSM since 1996.

Douglas B. Silver, CPG-10593, (SEG 1983 F) received the SME President’s Citation for his service to the organization.

SECTION NEWS

GSA MEETING IN LEXINGTON A SUCCESS!

John T. Popp, CPG-06724 AIPG Kentucky Section Editor

The Northcentral and Southeastern Regions of the Geological Society of America held their annual meeting in Lexington April 3-5. The Kentucky Section of AIPG took the opportunity to host a booth with materials provided by National AIPG. We shared the booth with our friends from the Kentucky Society of Professional Geologists (KSPG)

AIPG members were active at the meeting sessions as well. Charlie Mason authored a paper and helped lead a fieldtrip, while John Popp co-chaired a session and presented a paper. The Kentucky Section also contributed $200 to offset food costs at one of the mixers.

BOOK REVIEW

AAPG Memoir 42
SEG Investigations in Geophysics, No. 9
Interpretation of Three-Dimensional Seismic Data,
Fifth Edition
By Alistair R. Brown
Tulsa, OK 514pp.
Review by John F. White CPG-4632

This book should be required reading for all geology and geophysics majors who are planning a career in the petroleum industry. For those students who have access to workstations in their respective departments it can complement efforts involving workstation-oriented projects. Geologists and geophysicists already in the petroleum industry, regardless of their experience level, also could benefit from reviewing this text because it provides numerous examples of seismic analyses and reservoir mapping techniques. Although the book lacks a companion workbook, it has the potential to be a very useful supplemental learning tool. Several years ago, I had the opportunity to read the first edition, and I was very impressed with the displays and various types of interpretation techniques that were discussed. The book is very beneficial in terms of presenting various mapping techniques that, for the most part, are not typically done by interpreters on a routine basis.

The fifth edition differs from earlier editions by including chapters on depth conversion and depth imaging, 4-D reservoir monitoring, and regional and reconnaissance use of 3-D data. Also, the fifth edition contains useful charts that summarize workflows associated with various types of geophysical processing. However, the text falls short in that it does not include a chapter on the acquisition and interpretation of 4-D data.

The book is divided into 12 chapters that, in addition to the aforementioned new topics, include discussions on workstation color display theory, structural and stratigraphic interpretation, reservoir identification; tuning phenomena in reservoirs; reservoir evaluation, horizon and formation attributes, visualization of horizon attributes, and discussions of case histories. Two appendices also are included. Appendix A addresses 3-D design, acquisition and processing, whereas Appendix B contains an interpretation exercise. An appropriate amount of geophysical theory is included in each major chapter topic. Chapter discussions are supported by excellent illustrations that basically constitute the core of the text. They are well captioned, and in many cases the illustrations contain multiple, sequential frames depicting seismic responses to workstation data manipulation programs.

It is unknown whether or not future additions of this text will be forth coming; however, one could expect that to be the case when considering the progress that is being made in terms of 3-D data interpretation on workstations. Consequently, it suggested that this text be acquired as a useful reference regardless of the possibility for future additions.

NEWS

Mail or e-mail your AIPG Section News to be included in TPG. Sections benefit in learning what other sections are doing. Members in the news is always welcome.
NEW APPLICANTS AND MEMBERS (06/06/02-06/28/02)

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

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O6/06/2002 - 06/28/2002

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CA-Klaus Triebel CPG-10657
240 Suxe St. Apt. 9, Amoay Grande CA 93420, (510) 781-4967

OH-H. Mark Kleinman CPG-10659
3206 Paul’s Point Court, Loveland OH, 45140, (513) 985-0226

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403 Catesby Ln., Williamsburg VA 23185, (757) 221-2448

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As of 6/25/01 06/28/02

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CPG - Retired 515 510
Member 68 76
Registered Memb. 20 20
Associate Memb. 8 13
Student Adjunct 97 125
Honorary 20 21
TOTALS 4,681 4,657

ADVERTISERS INDEX

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GeoCare Benefits Program IFC
Krueger Enterprises, Inc. 18
Professional Services Directory 30-32
RockWare, Inc. 25-26

AUGUST/SEPTEMBER 2002 • The Professional Geologist
This service is open to AIPG Members as well as non-members. The Professional Services Directory is a 10-month listing offering experience and expertise in all phases of geology. Prepayment rates are based on a 3 3/8" x 1 3/4" space.

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30 The Professional Geologist • AUGUST/SEPTEMBER 2002
The Annual Meeting Employment Interview Service will offer an opportunity for employers to recruit students and professionals in AEG/AIPG-related fields, Interviews will be held Wednesday, Thursday, and Friday, September 25, 26, and 27. The Employment Interview Service brings potential employers and employees together for face-to-face interviews.

The Resumé Book will be located at the Annual Meeting Registration Desk in the Tahoe Foyer. The Sierra View Room (#1748) on the 17th floor of the Peppermill Hotel has been reserved for interviews (see room schedule located on the Message Board near the Registration Desk).

Employers:
- If you would like to schedule an interview time in the Sierra View Room (#1748), please contact Julie C. Keaton, AEG Meetings Director. A limited number of time blocks are available and will be filled on a first-response basis.
- Register in advance and have your job(s) posted when the Registration Desk opens on Monday, September 23.
- Be sure to specify educational or professional experience requirements as well as your specialty area or areas of expertise your applicant should have.
- The Annual Meeting must receive your job brochures and position description no later than August 16, 2002.

Job Candidates:
- If you are seeking employment and would like to participate in the Interview Service, please complete the Response form attached with three copies of your resumé. A limited number of interview appointments may still be available on-site, based upon arrival.
- By reviewing our job posting daily, it will be easier to find the job that's right for you.
- The Annual Meeting must receive three copies of your resumé (limited to two pages) no later than September 11, 2002. Include your name, address, and phone number on your resumé. Also include concise details of work experience and education.

Employment Interview Service Room (Sierra View Room — #1748) is open September 25, 3:00 pm to 6:00 pm, and September 26 and 27, 10:00 am to 6:00 pm. For more information, contact: Julie C. Keaton, AEG Meetings Director, 909-337-0657 or aegjulie@verizon.net

AEG•AIPG 2002
Meeting Interview Service Response Form

Check the appropriate box and complete all information.
- [ ] I am interested in interviewing candidates during the meeting. I have enclosed 20 brochures and a one-page write-up on my company.
- [ ] I am interested in meeting with employers during the meeting. I have enclosed three copies of my resume.
- [ ] I would like more information on the Interview Service.

Title: Dr. [ ] Mr. [ ] Ms. [ ] Mrs. [ ] Miss [ ]
(please print)

Name ________________________________

Company or School ____________________

Address ______________________________

Phone ________________________________

Fax _________________________________

E-mail Address _________________________

Comments/Questions ___________________

For those people interested in having their resumés placed in the Resumé Book, resumés must be mailed to the address below NO LATER than August 16, 2002.

Employers wishing to receive the Resumé Book must send this form to the address below NO LATER than September 11, 2002.

Send this form to:

Julie C. Keaton
AEG Meetings Director
PO. Box 5204
Blue Jay, CA 92317

THIS SERVICE IS FREE TO ALL REGISTERED PARTICIPANTS.
Welcome to the
AIPG • AEG
JOINT ANNUAL MEETING

"Gambling with Geologic Hazards"
and
"Dealing with Sustainability"
Reno, Nevada
September 22-29, 2002

As Co-Chairs of the 2002 annual meeting, it is our pleasure to extend a warm welcome to the members, spouses, and friends of the Association of Engineering Geologists and American Institute of Professional Geologists. On behalf of the organizing committee, thank you for choosing to join us in Reno for what promises to be an exciting week.

Reno, "The Biggest Little City in the World" has a lot to offer as a venue for a meeting such as this. Our meeting will be held at the Peppermill Hotel Casino located a short distance from Reno-Tahoe International Airport. World-class entertainment, recreation, and gambling facilities coupled with many natural scenic wonders make Reno a destination resort city.

Nestled at the base of the Sierra Nevada Mountains, Reno is located at a crossroads in the settlement of the west. From the building of the Transcontinental Railroad to the mining of the Comstock Lode, geology has been central to the history of the State of Nevada. Now as then, geology is in the forefront of the issues facing our State and the Nation. The influence of geology in our lives is reflected in the main theme of our meeting, "Gambling with Geologic Hazards". Our technical program will emphasize the relationship between society's needs for growth, and the associated risks to the public and the environment. With this theme in mind, some of the newsworthy topics that will be explored include: the environmental threats to Lake Tahoe, seismic hazards in the Basin and Range, modern mining techniques, mine reclamation, and the geologic suitability of the nations proposed Yucca Mountain National Nuclear Waste Repository.

The sub-theme selected for the meeting is "Dealing with Sustainability". This sub-theme is intended to have a double meaning; the needs in the future to be able to sustain our profession, and the role engineering geology plays in providing sustainable infrastructure necessary for society in an increasingly sensitive environment: Professional registration, new advances in technology, teaching ethical practices to the next generation of practitioners, the role of geologists in planning communities, and the role of mining in sustaining our quality of life are just some of the topics that will be examined.

Attendees will benefit from the combined efforts and talents of members of the two professional associations working together. Select from an outstanding array of field trips, short courses, technical sessions, and symposia. The meeting also will be enhanced by the presence of the University of Nevada, Reno. The facilities and staffs of the Mackay School of Mines, Department of Civil Engineering and Nevada Bureau of Mines and Geology located on campus have contributed to the outstanding program schedule. Be sure to thank our exhibitors and sponsors; their support allows us to deliver a quality meeting experience at a reasonable cost.

Once again thank you for choosing to come to Reno.

Kelvin Buchanan, AIPG Co-Chair AIPG 39th Annual Meeting
Gary Luce, AEG Co-Chair AEG 45th Annual Meeting
FAX- BACK PEPPERMILL HOTEL
REGISTRATION FORM

2002 AEG•AIPG Joint Annual Meeting
September 23 – 29, 2002
Peppermill Hotel; Reno, Nevada

Fax to (775) 689-7348 Attn: Reservations Department
Group Code: CHBENG9

Reservations must be received by the Hotel no later than August 16, 2002!
Reservations made after this date will be subject to room and rate availability.
Reservation Code (check one) = □ Association of Engineering Geologists
□ American Institute of Professional Geologists

Or, Mail to: Peppermill Hotel & Casino
2707 S. Virginia Street
Reno, Nevada 89502
Phone: (775) 826-2121 or 1-800-648-6992

When calling the Hotel, always identify yourself as a participant of the Association of Engineering Geologists OR American Institute of Professional Geologists

All reservations must be accompanied by a first night’s deposit (room rate + tax). Deposits can be made by check or credit card number (AmEx, Carte Blanche, VISA, Master Card, Air Canada, Eurocard, JCB, Discover, Diners Club). Up to two children, regardless of age, may stay free when occupying the same room as their parents. Limited number of accessible rooms available upon request. Please register early!!

Name ____________________________

Firm ____________________________

Address ____________________________ Day Phone ____________________________

City ____________________________ State __________ Zip __________

Arrival Date ____________________________ Departure Date ____________________________

Deposit Information: Amount Enclosed $ ____________________________

| Circle One: AX CB VA MC AC Euro JCB DC Diners |
|---|---|---|---|---|---|---|---|---|

*Check-in time is 3:00 PM. Check-out time is 12 NOON.

Request: □ Smoking □ Non-Smoking

Room Type: □ King □ Two Double Beds

Please circle the type of accommodation and rate requested:

Rooms: Single/Double $89.00 Triple $99.00 Quad $109.00

A 12 percent room tax will be added.

Note: Reservations must be guaranteed for arrival. Reservations must be cancelled by 3:00 PM, 24 hours in advance to arrival date or you will be charged for the sleeping room.
<table>
<thead>
<tr>
<th>NAME (LAST)</th>
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<th>NAME FOR BADGE</th>
<th>MEETING STATUS</th>
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<tr>
<td>NAME OF SPOUSE/GUEST</td>
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<td>(Please list attending children's names and ages.)</td>
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### ANNUAL MEETING REGISTRATION

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<tr>
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<th>Before 8-16-02</th>
<th>After 8-16-02</th>
<th>AMOUNT</th>
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<tbody>
<tr>
<td>Full Registration: AEG, AIPG or GSN Member</td>
<td>$220.00</td>
<td>$275.00</td>
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<tr>
<td>Full Registration: Non-Member</td>
<td>$290.00</td>
<td>$350.00</td>
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<tr>
<td>Corporate Registration</td>
<td>(one floating registration pass for your employees for the three days of technical sessions, one pass for Ice Breaker, one pass for Exhibitors Lunch, and &quot;Short Course Only&quot; or &quot;Field Trip Only&quot; one-day registration covered)</td>
<td>$350.00</td>
<td>$350.00</td>
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<tr>
<td>Short Course ONLY Limited Registration *</td>
<td>$40.00</td>
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<tr>
<td>Field Trip ONLY Limited Registration *</td>
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<tr>
<td>Student (full time with proof of current enrollment)</td>
<td>$70.00</td>
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<td>$90.00</td>
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<tr>
<td>Spouse/Guest Nonprofessional Registration</td>
<td>$70.00</td>
<td></td>
<td>$75.00</td>
</tr>
<tr>
<td>Daily Full Member Registration: 9/25 (Wed)</td>
<td>9/26 (Thurs)</td>
<td>9/27 (Fri)</td>
<td>$110.00</td>
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<tr>
<td>Daily Non-Member Registration: 9/25 (Wed)</td>
<td>9/26 (Thurs)</td>
<td>9/27 (Fri)</td>
<td>$130.00</td>
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<tr>
<td>Daily Student Registration: 9/25 (Wed)</td>
<td>9/26 (Thurs)</td>
<td>9/27 (Fri)</td>
<td>$40.00</td>
</tr>
</tbody>
</table>

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### FIELD TRIPS (requires regular or limited-field-trip reg.)

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<thead>
<tr>
<th></th>
<th>Before 8-16-02</th>
<th>After 8-16-02</th>
<th>No.Tickets</th>
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<tbody>
<tr>
<td>#1: Yucca Mountain, Las Vegas, NV (Sept. 23) [1 day]</td>
<td>$25.00</td>
<td>$35.00</td>
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</tr>
<tr>
<td>#2: Open Pit De-watering / Deep Mine Excavations (Sept. 24) [1 day]</td>
<td>$65.00</td>
<td>$80.00</td>
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</tr>
<tr>
<td>#3: Seismic Hazards, Carson Range Fault System (Sept. 24) [1 day]</td>
<td>$45.00</td>
<td>$60.00</td>
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<tr>
<td>#4: Mini Trip: Sparks Marina (Sept. 25) [2 hours]</td>
<td>$20.00</td>
<td>$30.00</td>
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<tr>
<td>#5: Mini Trip: Mount Rose Fun (Sept. 26) [2 hours]</td>
<td>$20.00</td>
<td>$30.00</td>
<td></td>
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<tr>
<td>#6: Mini Trip: University of Nevada-Reno (Sept. 27) [2 hours]</td>
<td>$20.00</td>
<td>$30.00</td>
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<tr>
<td>#7: Reconstruction of Historic V&amp;T RR (Sept. 28) [1 day]</td>
<td>$35.00</td>
<td>$45.00</td>
<td></td>
</tr>
<tr>
<td>#8: The Lake Tahoe Crapsheo (Sept. 28) [1 day]</td>
<td>$65.00</td>
<td>$80.00</td>
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</table>

### SHORT COURSES (requires regular or limited-short-course reg.)

<table>
<thead>
<tr>
<th></th>
<th>Before 8-16-02</th>
<th>After 8-16-02</th>
<th>No.Tickets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracting for Geophysical Services (Sept. 23) [1 day]</td>
<td>$200.00</td>
<td>$250.00</td>
<td></td>
</tr>
<tr>
<td>Using RockWorks2002 (Sept. 24-AM) [1/2 day]</td>
<td>$50.00</td>
<td>$75.00</td>
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<tr>
<td>What Are The Odds? Probabilistic Methods (Sept. 24-AM) [1/2 day]</td>
<td>$150.00</td>
<td>$175.00</td>
<td></td>
</tr>
<tr>
<td>BEST GeoSim: Simulator to Teach (Sept. 24-PM) [1/2 day]</td>
<td>$50.00</td>
<td>$75.00</td>
<td></td>
</tr>
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</table>

### REGISTRATION FORM CONTINUED ON OTHER SIDE

* Not required if you are registering for at least one day of technical sessions.
REGISTRATION FORM -- cont'd

<table>
<thead>
<tr>
<th>SPECIAL EVENTS (requires conference registration)</th>
<th>No. Tickets</th>
<th>Total Amount</th>
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</thead>
<tbody>
<tr>
<td>Golf Tournament (Tuesday, Sept. 24)</td>
<td></td>
<td>$45.00</td>
</tr>
<tr>
<td>Ice Breaker Reception (Tuesday, Sept. 24)</td>
<td>Must Register</td>
<td>Complimentary</td>
</tr>
<tr>
<td>AEG Corporate Business Meeting &amp; Luncheon (Wednesday, Sept. 25)</td>
<td></td>
<td>$25.00</td>
</tr>
<tr>
<td>Joint AEG/AIPG/AWG 2002 Annual Banquet (Wednesday, Sept. 25)</td>
<td></td>
<td>$45.00</td>
</tr>
<tr>
<td>TAKE A STUDENT TO DINNER -- Buy an Annual Banquet Ticket and Donate to One of our Participating Students</td>
<td></td>
<td>$45.00</td>
</tr>
<tr>
<td>STUDENT: If you are interested in participating in &quot;TAKE A STUDENT TO DINNER&quot; — be sure to register for the drawing at the Registration Desk while at the Annual Meeting in Reno</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women in AEG/AIPG/AWG Breakfast (Thursday, Sept. 26)</td>
<td></td>
<td>$15.00</td>
</tr>
<tr>
<td>Exhibitors' Luncheon (Thursday, Sept. 26)</td>
<td>Must Register</td>
<td>Complimentary</td>
</tr>
<tr>
<td>Special Event: Lake Tahoe Dinner Cruise (Thursday, Sept. 26)</td>
<td></td>
<td>$45.00</td>
</tr>
<tr>
<td>Speakers/Moderators' Breakfast: 9/25 (Wed) -- 9/26 (Thurs) -- 9/27 (Fri)</td>
<td>Must Register</td>
<td>Complimentary for Speakers/Moderators</td>
</tr>
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<table>
<thead>
<tr>
<th>SPouse/GUEST ACTIVITIES</th>
<th>No. Tickets</th>
<th>Total Amount</th>
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</thead>
<tbody>
<tr>
<td>#1: Virginia City Tour (Tuesday, Sept. 24)</td>
<td></td>
<td>$35.00</td>
</tr>
<tr>
<td>#2: Hidden Cave/Grimes Pt. Archeological Site (Wednesday, Sept. 25)</td>
<td></td>
<td>$45.00</td>
</tr>
<tr>
<td>#3: Lake Tahoe: Heavenly Tramride/Club Cal-Neva (Thurs., Sept. 26)</td>
<td></td>
<td>$58.00</td>
</tr>
<tr>
<td>#4: Truckee and Donner State Park Tour (Friday, Sept. 27)</td>
<td></td>
<td>$35.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TEACHERS WORKSHOP (held Sat. &amp; Sun., September 28 &amp; 29)</th>
<th>No. Tickets</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Trip &quot;Geology of Lake Tahoe&quot; on Sept. 28</td>
<td></td>
<td>$65.00</td>
</tr>
<tr>
<td>and in-class workshop on Sept. 29</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SPECIAL NEEDS:</th>
<th>MAKE CHECK PAYABLE TO &quot;AEG<em>AIPG</em>2002&quot;</th>
<th>TOTAL AMOUNT:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREFER VEGETARIAN MEALS:</td>
<td></td>
<td></td>
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<tr>
<td>DIABETIC:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Be sure to make hotel reservations: Peppermill Hotel in Reno – 1-800-648-6992 or 775-826-2121
Identify yourself as attendee of the Association of Engineering Geologists OR American Institute of Professional Geologists; deadline for conference rates – August 16, 2002!!

If you have any questions, contact:
Julie C. Keaton
909-337-0657
aegjuliekaol.com

Send registration form to:
Julie C. Keaton
Association of Engineering Geologists
P.O. Box 5204
Blue Jay, CA 92317-5204
Fax: 909-337-6518

Please indicate method of payment (check one):

check Amount of $____________________

MasterCard Discover

VISA American Express

Account Number for charge card (include all digits):

Expiration Date:____________________

Signature:____________________

Name on Card (PLEASE PRINT):____________________
The 2nd Joint AIPG • AEG 2002 Annual Meeting being held in Reno in September will feature two special events that AIPG members may wish to participate in. Both events are sponsored by AIPG solicited corporations and both events have limited space. The purpose of this notice is to give those AIPG members who will be attending the meeting in Reno the opportunity to sign up for either event prior to receiving the official registration form.

The concept for the golf tournament is that 5 four-member teams each from AIPG and AEG will tee off at 1:00 P.M. on September 24, 2002. Lakeridge Golf Course is 10 minutes by car from the Peppermill Hotel. The course is designed by Robert Trent Jones and the 15th hole, pictured above, is the signature hole. In addition to the golf cart and on course refreshments, there will be prizes for low net, most lost balls and other fun categories. The format will be best ball scramble with handicaps submitted by the players.

Please contact Kel Buchanan by fax or e-mail if you are interested in playing in the golf tournament. I will need your handicap or USGA index if you have one. For golfers who just like to swing away, the handicap is 40. My contact numbers are listed in TPG under the AIPG Foundation. The cost for the golf tournament is $45 thanks to our sponsor, Eklund Drilling, but don’t send any money until you register, just notify me of your interest so I can put you on the list.

The Dinner Cruise on Lake Tahoe: On September 26, four buses will leave the Peppermill Hotel at 4:30 P.M. for a very scenic mountain journey, arriving at the MS Dixie pier at 6:00 P.M. The MS Dixie is a new, fast paddle wheeler, (pictured above), one of two paddle wheelers which travel Lake Tahoe in the summer. The AIPG • AEG dinner is a private event. The MS Dixie has a live band on board for your enjoyment and the lake is a sheet of glass in the evening. The number of guests is limited to 180 persons. Because this cruise is such a good value thanks to our sponsor Mungas Construction, I expect it will have a waiting list. Since this sponsor was solicited by AIPG, I would prefer that those on the waiting list not be AIPG members. The cost of the dinner cruise is $45 and, as with the golf tournament, please just notify me of the names of the participants for the priority list.
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