Since 2013, AGI's Geoscience Student Exit Survey asked about internship participation among recent geoscience graduates. Consistently over the past four years, participation rates have been much lower than expected, particularly among bachelor's and doctoral graduates. In 2016, 35% of bachelor's graduates, 56% of master's graduates, and 43% of doctoral graduates participated in at least one internship.

In 2015, the survey also investigated the efforts of recent graduates to obtain an internship before graduation. The assumption behind these questions was that students were applying but not selected for an internship. However, in 2015 and 2016, higher than expected percentages of graduates, particularly bachelor's and doctoral graduates, did not apply for an internship. These results raise a couple of important questions. Do students not recognize the importance of internships to their educational and professional development; or are students having a hard time finding appropriate internship opportunities?

Internships are an essential experience for geoscience students because these opportunities provide a firmer understanding of the daily activities in various geoscience occupations, as well as provide students with new contacts that can lead to jobs after graduation. Further investigation is needed into the availability of geoscience internships and concepts for creating internship-like experiences for those students that need them.
On the Cover: Douglas Lake during winter drawdown Jan. 9, 2017, from approximately 35.97949 -83.33661, looking southeast. It shows snow-covered blocks of coarsely arenaceous limestone within the upper part of the Middle Ordovician Sevier Shale. English Mountain, an overthrust block of Lower Cambrian Chilhowie Group clastics, is in the background. Photo taken by Martin Kohl.
The mission of the American Institute of Professional Geologists (AIPG) is to be an effective advocate for the profession of geology and to serve its members through activities and programs that support continuing professional development and promote high standards of ethical conduct.

The American Institute of Professional Geologists (AIPG) is the only national organization that certifies the competence and ethical conduct of geological scientists in all branches of the science. It adheres to the principles of professional responsibility and public service, and is the ombudsman for the geological profession. It was founded in 1963 to promote the profession of geology and to provide certification for geologists to establish a standard of excellence for the profession. Since then, more than 10,000 individuals have demonstrated their commitment to the highest levels of competence and ethical conduct and been certified by AIPG.


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For AIPG news and activities go to www.aipg.org.
Come Join Us in Nashville, TN!!!

The 54th American Institute of Professional Geologists National Conference will be held in Music City, USA, also known as Nashville, Tennessee, from September 23rd through 26th. Be sure to save the date so you don’t miss a note of “Music City Rocks – Geology in the Past, Present, and Future”. The Tennessee section is co-hosting the meeting and we invite you to come and explore the diverse geology our region has to offer, along with participating in the technical sessions that provide opportunities to present and learn from experts in various geology and geoscience fields. Geology has shaped the history of the Tennessee-Kentucky area, continues to provide present day resources, and prepares us for tomorrow’s challenges. Come explore a region that includes the Great Smoky Mountains in east Tennessee and travel to the top of Tennessee at Clingmans Dome or enjoy the miles of hiking trails that include a portion of the Appalachian Trail. Take in an active archeology site where fossils of tapir, tortoise, and rhinoceros have been discovered at the Gray Fossil Site in the folded and faulted Valley and Ridge Province in East Tennessee. Experience the sharp relief of the Cumberland Plateau resulting from the hard, erosion-resistant Pennsylvanian aged sandstone at The Big South Fork Recreation Area with its numerous sandstone arches. As you continue to move west across Tennessee, you will drop into the central basin where you can explore the karst features of the area. Further to the west is the Gulf Coastal Plain including the Mississippi River valley as well as the New Madrid seismic zone.

Although the diverse geology across the state offers numerous opportunities for adventure, Nashville has attractions for the entire family. Visit the Corvette museum in Bowling Green, Kentucky and continue your visit to the bluegrass with a stop at Mammoth Cave. Explore the local civil war battlefields in the area including sites in Murfreesboro and Franklin, Tennessee. Take a tour of the “Mother Church of Country Music” at the Ryman Auditorium and then walk down to Broadway to experience the music side of Music City and maybe see the next big star. The planning committee looks forward to welcoming you to Music City in September.

Todd McFarland CPG-11348
AIPG Tennessee
Section President
Conference Chairman

Clingman’s Dome picture provided by Todd McFarland, CPG-11348

Big South Park picture provided by Todd McFarland, CPG-11348

Burgess Falls picture provided by Todd McFarland, CPG-11348
<table>
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<tr>
<th>Day</th>
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<tr>
<td>Friday</td>
<td>Sept. 22</td>
<td>5:30 pm—10:30 pm</td>
<td>Field Trip — General Jackson Showboat Cruise, Dinner, and Show</td>
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<td>(open to all registrants)</td>
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<tr>
<td>Saturday</td>
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<td>8:00 am—12:00 noon</td>
<td>AIPG Executive Committee Meeting (open to all registrants)</td>
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<td>9:00 am—5:00 pm</td>
<td>AIPG Student Career Day (Sponsored by AWG)</td>
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<td>12:00 noon—1:00 pm</td>
<td>AIPG Luncheon (open to all registrants)</td>
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<td>AIPG Advisory Board Meeting (open to all registrants)</td>
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<td>AIPG 2017-2018 Joint Executive Committee Meeting &amp; Business Meeting</td>
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<td>4:30 pm—5:30 pm</td>
<td>AIPG Foundation Meeting (open to all registrants)</td>
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<td>5:00 pm—6:30 pm</td>
<td>Student Networking Event with Professionals</td>
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<td>Sunday</td>
<td>Sept. 24</td>
<td>7:30 am—5:00 pm</td>
<td>Registration — Hotel</td>
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<td>7:30 am—6:00 pm</td>
<td>Field Trip — Mammoth Cave, Crumps Cave, and Corvette Museum</td>
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<td>7:30 am—6:00 pm</td>
<td>Field Trip — Harpeth River and Stones River</td>
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<td>Exhibitor and Poster Set-up</td>
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<td>TN Section Meeting (open to all)</td>
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<td>6:30 pm—8:00 pm</td>
<td>Reception — Exhibit Area Open (complimentary for all registrants)</td>
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<td>6:30 pm—8:30 pm</td>
<td>Silent Auction (to be held during the Reception)</td>
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<td>8:00 pm—10:00 pm</td>
<td>Rockslide Rendezvous! Come and share your musical talents or listen to live music and singing from your fellow geologists, enjoy the evening! (complimentary for all registrants)</td>
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<td>Monday</td>
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<td>7:00 am—5:00 pm</td>
<td>Field Trip — Lookout Mountain and Raccoon Mountain</td>
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<td>Field Trip — Big South Fork National River and Recreation Area</td>
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<td>7:30 am—8:15 am</td>
<td>Section Delegate Meeting (open to all registrants)</td>
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<td>Field Trip — Castalian Springs Mound Site and Wynnewood Museum</td>
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<td>8:30 am—10:00 am</td>
<td>Plenary Session</td>
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<td>Technical Sessions</td>
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<td>Luncheon with Keynote Speaker (complimentary for all registrants)</td>
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<td>AIPG Awards and Dinner (all attendees welcome with additional fee)</td>
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<td>Tuesday</td>
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<td>Field Trip — Gordonsville Underground Zinc Mine Tour</td>
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<td>Field Trip — Jack Daniel’s Distillery Tour</td>
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<td>Luncheon with Keynote Speaker (complimentary for all registrants)</td>
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Field Trips

General Jackson Showboat Cruise, Dinner, and Show

Date: Friday, September 22, 2017
Time: 5:30 pm to 10:30 pm

Trip includes transportation, cruise dinner, and show.

Join us for a fun evening cruising around Tennessee.

A Road Guide to the Harpeth River and Stones River Fault Zones

Date: Sunday, September 24, 2017
Time: 7:30 am to 6:00 pm

Trip includes box lunch, snacks, water, transportation.
Leader: Mark Abolins, Department of Geosciences, Middle Tennessee State University

The Nashville dome is the southern extension of the Cincinnati Arch and contains widespread joints and folds with minor fault exposure. Four blind normal faults have been identified on the northwest flank of the Nashville dome approximately 20 miles south of Nashville. The Harpeth River fault zone includes the Peytonsville, Arno, McClory Creek, and McDaniel fault zones. This area includes the Harpeth River syncline and construction of Tennessee State Route 840 revealed minor normal faults, non-vertical joints, and mesoscale folds. No faults are depicted on existing geologic maps, but these maps reveal macroscale folding of the contact between the Ordovician Carters Formations and the overlying Hermitage Formation. The Stones River fault zone includes the Ordovician Lebanon limestone and is surrounded by older strata of the Ordovician Ridley and Murfreesboro limestones, defining the Stones River syncline.

Mesoscale faults are exposed at the Harpeth River syncline, but not at the Stones River syncline stops. Participants will examine minor normal faults, mesoscale folds, and joints. At these stops, participants can discuss the hypothesis that the minor fractures and mesoscale folds formed through movement on larger blind normal faults. (Stop 1), Arno (Stop 2), McClory Creek (Stop 3), and McDaniel (Stop 4), and the entire zone (Harpeth River fault zone) is a little less than 4 miles wide along the field trip route. Joints at Stop 5 are the principal mesoscale structures interpreted as fault-related. At Stop 6, joints are exposed in a north-plunging fold hinge.

Dissolution widened these joints into fissures, creating natural trenches, and a cedar forest grows atop the area. The fissures and trees were used as protection by Union soldiers on the morning of 31 December 1862 during the American Civil War Battle of Stones River. Union soldiers held out in this defensive position throughout much of the morning, although Confederate soldiers took the position by noon. Casualties were high on both sides and some Union units lost one third of their men, providing a spectacular example of the connection between karst and Civil War casualties.

Mammoth Cave, Crumps Cave, and Corvette Museum

Date: Sunday, September 24, 2017
Time: 7:30 am to 6:00 pm

Trip includes lunch at the cave, snacks, water, transportation & Museum entrance.
Leader: Chris Groves, Western Kentucky University, Bowling Green, KY, Pat Kambesis, Western Kentucky University, Bowling Green, KY, Donald K. Lumm, Ph.D., CPG-08987

Mammoth Cave is the longest cave system in the world, with over 405 miles mapped as of 2015. Located only 1 ½ hours from Nashville in western Kentucky, the cave system has five levels developed in soluble Upper Mississippian limestone formations, and extends to a depth of approximately 400 feet below the karst landscape, which is capped by resistant, non soluble Upper Mississippian sandstone. The field trip will present and discuss the primary elements for developing the classic karst topography and cave system, including the lithology, structure, and climate.

Field trip stops include an overview of the karst topography from a promontory located near Park City, Kentucky. We will visit Crumps Cave Research and & Educational Preserve, an active research and monitoring facility located near Smiths Grove, Kentucky and managed by the Hoffman Environmental Research Institute of Western Kentucky University. The
private research cave is used to study epikarstic processes, atmospheric/weather conditions, water chemistry parameters, cave microclimate, bat activity, and the impact of agricultural activities on the quality of karst groundwater. Visitors will also take the popular “Historic” tour led by the National Park Service, and given the opportunity to view the fine museum exhibits at the Visitor’s Center.

On the return trip to Nashville, the group will tour the National Corvette Museum located in Bowling Green, Kentucky. The museum showcases the Chevrolet Corvette, its various production models and history, and its prominence in American motorsports racing and touring. The Museum Skydome was the site of a collapse sinkhole on February 12, 2014 that destroyed or damaged eight rare Corvettes. Although the 20-foot deep sinkhole has been filled-in and most of the vehicles restored, a special exhibit showing closed circuit camera footage documents the disaster as it unfolded in the pre-dawn hours.

**Big South Fork National River and Recreation Area**

Date: Monday, September 25, 2017  
Time: 7:00 am to 6:00 pm

Trip includes box lunch, snacks, water, transportation.

Big South Fork (BSF) National River and Recreation Area (NRRA) is situated on the Cumberland Plateau on the Kentucky-Tennessee border. Located approximately 2 ½ hours east of Nashville the terrain of the NRRA rises over 1,000 ft above the surrounding region. The Cumberland Plateau is a large, flat-topped tableland with deeply incised river valleys and canyons. The BFS NRRA boasts the largest collection of natural arches and sandstone shelters east of the Mississippi River. The rocks of the Plateau consist of a Mississippian and Pennsylvanian limestone, shale, sandstones, and conglomerates. The area is also rich in natural resources including oil, gas, and coal. The field trip will present and discuss the lithology, structure, resources, and climate of the region.

Stops will include scenic overlooks, overviews of arches, rockshelters and chimneys; waterfalls; as well as a possible abandoned oil & gas well and mine shaft. The primary rock formations outcropping within the BSF include the Rockcastle Conglomerate and the Fentress Formation. The Rockcastle consists of fine to coarse sand with round quartzite gravel. The arches and rockshelters are formed within this unit. The Fentress Formation consists of interlaminated fine sandstone and shale with thin beds of sandstone and coal.

As of 2012, there were more than 250 private oil and gas wells with the BSF’s 125,000 acres, most of which were drilled during the boom of the 1970s and ‘80s. Approximately 100 of these wells are still producing today. In addition, there were 54 “orphaned” oil and gas wells within the BSF park boundaries, all of which have been abandoned.

**Castalian Springs Mound Site and Wynnewood Museum**

Date: Monday, September 25, 2017  
Time: 8:00 am to 1:00 pm

Trip includes box lunch, snacks, water, transportation & Museum entrance.  
Leader: Dr. Kevin Smith, Middle Tennessee State University

This field trip will provide a tour of the Castalian Springs Mound State Historic Site and the Wynnewood Museum. Both sites are located near a salt lick that provided salt and wildlife for native American use and cures for all ailments for 19th century travelers. The site is Mississippian culture archaeological site comprised of three burial mounds. Mineral springs created salt deposits at the area known as Bledsoe’s Lick. This mineral salt attracted
game including Mastodons. Humankind first visited the area during the Paleo period (15,000 B.C. to 5000 B.C.), leaving behind Stone Age artifacts. Native Americans known as Mound Builders erected a mud-walled village just north of the springs around A.D. 1350.

The Mississippian culture was a mound-building Native American civilization archeologists date from approximately 800 CE to 1600 CE, varying regionally. It was composed of a series of urban settlements and satellite villages (suburbs) linked together by a loose trading network. The civilization flourished from the southern shores of the Great Lakes in Western New York and Western Pennsylvania in what is now the Eastern Midwest, extending south-southwest into the lower Mississippi Valley and wrapping easterly around the southern foot of the Appalachians barrier range. The field trip will provide a tour of the site and discuss the archaeological significance.

The Wynnewood museum comprises a residence, inn and out-buildings built in 1828. The residence is the largest existing log structure in Tennessee. The Wynnewood State Historic Site is a uniquely well preserved location that protects an area in Castalian Springs associated with the beginnings of colonization of the Old Southwest. It was a destination point for westward travelers from 1780-1830. The site exists today as a group of six original log buildings centered around the historic mineral springs. The Circa 1830 main house has functioned as a mineral springs resort, as a stagecoach rest stop, and was the operational center of the Wynne family farm for over 140 years.

**Field Trips**

**Lookout Mountain and Raccoon Mountain**

Date: Monday, September 25, 2017  
Time: 7:00 am to 5:00 pm  
Trip includes box lunch, snacks, water, transportation, railway tickets  
Leader: Rusty Sewell, MEM-2487, AIPG Advisory Board Representative  

Field Trip attendees will travel from Nashville to Chattanooga via Interstate 24. Travel will begin in Ordovician carbonates of the Central Basin, cross Mississippian rock of the Highland Rim and cross Pennsylvanian sandstones before reaching Chattanooga at the eastern edge of the Cumberland Plateau.

Once in Chattanooga, field trip attendees will ride to the top of Lookout Mountain via the Incline Railway. The railway, constructed in 1895, climbs approximately 1,700 feet, consists of a mile of standard single track rail and at its extreme reaches an incline of 72.7%. At the top of Lookout Mountain, Point Park is located just a short walk from the Top Station. Point Park is part of the Chickamauga and Chattanooga National Military Park, and attendees will receive a tour of the park that includes information associated with the pivotal Battle Above the Clouds that gave Union troops control of Chattanooga in the fall of 1863. Additionally, the park tour will include three dimensional views of crossbeds and intraformational folds in the Pennsylvanian Warren Point Sandstone, as well as views of the Chattanooga Valley from the Ochs Observatory Museum where one can see the eastern edge of the Cumberland Plateau, the width of the Valley and Ridge, and the western edge of the Blue Ridge physiographic provinces.

After riding the incline railway back down to the valley floor, attendees will travel to the Raccoon Mountain Pumped-Storage Plant. This plant is the Tennessee Valley Authority’s largest hydroelectric facility. The facility is comprised of a storage reservoir on top of Raccoon Mountain that was constructed in Pennsylvanian sandstone and shale. The power plant chamber and associated shafts connecting the reservoir to the Tennessee River were constructed in the heart of the mountain where the Mississippian Bangor Limestone provides structural stability. The area around the facility is a state-designated Wildlife Observation area that includes multiple vistas of the Tennessee River Gorge. The Tennessee River Gorge is the fourth largest river gorge in the eastern United States. The 26-mile gorge cuts through the Cumberland Plateau as the river winds its way into Alabama from Tennessee.

*All field trips begin and end at the Nashville Airport Marriott Hotel.*

Hope To See You In Nashville
Field Trips

Jack Daniel's Distillery Tour

Date: Tuesday, September 26, 2017
Time: 8:00 am to 2:00 pm
Trip includes box lunch, snacks, water, transportation, tour ticket.
Leader: Rusty Sewell
Travel approximately two hours to Lynchburg, Tennessee, located in Moore County, the smallest county in the state that has been dry since prohibition. Attendees will take a tour of the Jack Daniel's Distillery that includes a history lesson 150 years in the making. The majority of the tour will be outdoors and will make stops at aging warehouses, the rick-yard where Jack Daniel's sprayed sugar maple is burned to make charcoal, Cave Spring where the water used in the distillation process flows from a cave formed in the Ordovician Bigby-Cannon Limestone, Jack's former office and the still house. At the tour’s completion, attendees will get an opportunity to sample several of the spirits distilled on the grounds in the tasting room.

Gordonsville Underground Zinc Mine Tour

Date: Tuesday, September 26, 2017
Time: 7:00 am to 5:00 pm
Trip includes box lunch, snacks, water, transportation.
Leader: Adolph Minert
Travel approximately one hour to the Gordonsvill Zinc Mine. Attendees will do a surface tour to include tailings, milling, or historical operations. The underground tour will develop familiarity with host rocks and alteration patterns, and visit active faces to see ore types/textures/associations, collect some material.

Social Events

Welcome Reception

Date: Sunday, September 24, 2017
Time: 6:30 pm to 8:00 pm
Cost: Included in Registration
This is a chance to get to know your fellow colleagues attending the annual meeting. This Sunday evening reception is the perfect opportunity to renew acquaintances, meet new people, and visit exhibitors. The reception will feature a cash bar and hors d'oeuvres.

Foundation of AIPG Silent Auction
The silent auction will be held during the Welcome Reception. Join in the fun and raise funds in support of student programs.

Rockslide Rendezvous
Following the Welcome Reception! Bring your instruments and join in for a rocking good time with fellow AIPG members.

AIPG Awards and Dinner

Date: Monday, September 25, 2017
Time: 6:30 pm to 8:30 pm
Cost: $70 per person. All attendees welcome
Monday evening will be a pleasant one in the company of friends and colleagues. The festivities will begin with the AIPG National Awards presentations, Section Leadership Awards, and Presidential Certificates of Merit. Dinner will follow. This event is intended to be informal, relaxing and an opportunity for all attendees to meet and socialize.

AIPG Career Day

Enrichment & Development Opportunities for Students

September 23, 2017
Nashville, Tennessee
Hosted by American Institute of Professional Geologists and Association for Women Geoscientists

9:00 am – 10:30 am: AWG Workshop 1 – Resume Writing and Review
10:30 am – 11:00 am: Break
11:00 am – Noon: AWG Workshop 2 – Implicit Bias
Noon – 1:00 pm: Lunch with Professionals in the Geosciences and a Panel available for questions.
1:00 pm – 2:30 pm: AIPG Geology Careers Technical Sessions
  • Preparing Our Workforce (POW): Thinking Differently About Geoscience Careers
  • The Role of Geology in Today's Society
2:30 pm – 3:00 pm: Break
3:30 pm – 5:00 pm: AIPG Geology Careers Technical Sessions
  • Vapor Intrusion 101
  • Geology Employment Opportunities with State Agencies
5:30 pm – 6:30 pm: Mentoring Reception
Join the American Institute of Professional Geologists (AIPG) and the AIPG Tennessee Section for the 2017 Conference “Music City Rocks - Geology in the Past, Present, and Future” in Nashville, Tennessee. This is a great opportunity to promote your company to hundreds of professionals locally and throughout the US. Following is a summary of available sponsor levels, and the associated benefits to you as a sponsor. If you have a sponsorship idea you don’t see on our list, we can create a custom package for your company.

**Clingmans Dome Level: $5,000**
- Company name, address and logo on conference website with a link to your company website
- Company logo on cover of the conference program
- Company logo on sign at event entrance
- Complimentary exhibit booth
- Company acknowledgement during Opening Remarks
- Company logo prominently displayed on sponsor page of conference program
- Two complimentary registrations to the conference
- Company logo displayed on poster boards in reception area
- Marketing material will be included in conference registration packet (if desired)

**Cumberland Plateau Level: $2,500**
- Company name, address and logo on conference website with a link to your company website
- Company logo on sign at event entrance
- Complimentary exhibit booth
- Company logo on sponsor page of conference program
- One complimentary registration to the conference
- Company logo displayed on poster boards in reception area
- Acknowledgement during technical session breaks
- Marketing material will be included in conference registration packet (if desired)

**Nashville Basin Level: $1,500**
- Company name and logo on conference website
- Company logo on sign at event entrance
- Complimentary exhibit booth or one complimentary registration to the conference
- Company logo on sponsor page of conference program
- Acknowledgement during technical session breaks

**Memphis Sands Level: $1,000**
- Company name on sponsor page of conference program
- Company name on sign at event entrance
- Acknowledgement during technical session breaks
- Company name on conference website

**Sunday Evening Welcoming Reception: $750**
- Company logo on sign at welcome reception area during reception

**YES!!** We want to be part of the AIPG 2017 Conference, September 23-26, in Nashville, Tennessee. The 2017 Conference can count on us as a Sponsor.

- Clingmans Dome ($5,000)
- Cumberland ($2,500)
- Nashville Basin ($1,500)
- Memphis Sands ($1,000)
- Welcome Reception ($750)
- Lunch ($500) (1 Lunch)
- Break ($250) (1 Break)
- Materials in Reg Bag ($250)

**TOTAL AMOUNT: $________ Date:__________**

- Check enclosed (Payable to AIPG)
- Please invoice - payment due within 30 days
- Credit Card (circle one) MasterCard, Visa, Discover, or American Express

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Send Sponsorship Form Agreement to:
AIPG, 12000 N. Washington St., Suite 285, Thornton, CO 80241
(303) 412-6205 • Fax (303) 253-9220
www.aipg.org, eld@aipg.org

AIPG will contact you upon receipt of this form to complete arrangements.
YES!! We want to be part of the AIPG Annual Conference “Music City Rocks - Geology in the Past, Present, and Future”, September 23-26 in Nashville, Tennessee.
Completed forms can be sent to: 12000 N. Washington Street, Suite 285, Thornton, CO 80241, Fax: (303) 253-9220, or cld@aipg.org

____ $525.00 Exhibit Booth (Includes one complimentary meeting registration)
____ $225.00 Additional Exhibitor Registrant

Exhibitor Information
__________________________________________________________
Name (as you wish it to appear on your badge)

__________________________________________________________
Title

__________________________________________________________
Company

__________________________________________________________
Address

__________________________________________________________
City, State/Province, Zip

__________________________________________________________
Phone

__________________________________________________________
Fax

__________________________________________________________
E-mail Address

__________________________________________________________
Website

Additional Exhibitor Registrant
$225 for each additional person.

__________________________________________________________
Name (as you wish it to appear on your badge)

__________________________________________________________
Title

__________________________________________________________
Company

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City, State/Province, Zip

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Phone

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Fax

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E-mail Address

TOTAL AMOUNT: $________

____ Check enclosed (payable to AIPG)

____ Please invoice immediately - payment due within 30 days.

____ Credit Card (circle one): MC  Visa  AmEx  Discover

Card Number: _____________________________

Expiration Date: __________CVV (3-digit)____

Card Holders Name: _______________________

Card Holders Address: _______________________

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Exhibit Hours
- Set-up Sunday, September 24, 2017, 12:00 noon - 4:00 pm
- Sunday, September 24, 2017, 6:30 pm – 8:00 pm (reception)
- Monday, September 25, 2017, 10:00 am – 5:00 pm
- Tuesday, September 26, 2017, 10:00 am – 3:30 pm
- Tear down Tuesday, September 26, 2017, 3:30 pm - 5:00 pm

Space Requirements
Space will be reserved on a first-come, first-served basis and we will try to honor special requirements.

Indicate your space requirements below:
□ Electrical (please bring your own power strips/electrical cords)
□ Other________________________

Please note that AIPG is not responsible for any lost or stolen items. The exhibit room will be locked at night, but we cannot guarantee security.

AUTHORIZATION
I, on behalf of my company, hereby acknowledge that we have received, read, and understand the 2017 Exhibitor Prospectus and Terms & Conditions. Furthermore, we understand that these Terms & Conditions are a part of this contract and that by signing this application, we agree to be bound by all the terms contained therein.

__________________________________________________________
Signature

__________________________________________________________
Date
NAME __________________________________________ COMPANY ____________________________
NAME FOR BADGE __________________________________________ PHONE _______________________
EMAIL __________________________________________ ADDRESS ______________________________________
CITY __________________________________________ STATE _______ ZIP ________________________
SPouse/GUEST NAME FOR BADGE __________________________ EMERGENCY CONTACT NAME ___________ EMERGENCY CONTACT PHONE __________

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FIELD TRIPS (must be registered for the conference)

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<tr>
<th>Field Trips</th>
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<tr>
<td>Mammoth Cave, Crumps Cave and Corvette Museum Tours (Sun., 9/24/17, 7:30 am - 6:00 pm)</td>
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<td>Harpeth River and Stones River Trip (Sun., 9/24/17, 7:30 am - 6:00 pm)</td>
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<td>Lookout Mountain and Raccoon Mountain (Mon., 9/25/17, 7:00 am - 5:00 pm)</td>
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<tr>
<td>Big South Fork National River &amp; Recreation (Mon., 9/25/17, 7:00 am - 5:00 pm)</td>
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<td>Castalian Springs Mound Site and Wynnewood Museum Tour (Mon., 9/25/17, 7:00 am - 1:00 pm)</td>
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Acceptance of Terms: I understand that by registering for the 2017 AIPG Conference and Exhibition, I release and agree to indemnify the American Institute of Professional Geologists (AIPG), its agents, officers, volunteers and employees from any and all liability, claims, lawsuits, damages, losses, costs and expenses of any kind which arise out of or result from my attendance at the AIPG National Conference, whether or not foreseeable, including, without limitation, personal injuries to me or my guests. I also understand that submission of this registration form gives AIPG the authority to utilize any photograph or video taken, or uploaded to the conference app, of me and/or my products, for conference related publicity (e.g., website, TPG, videos, etc.).

Cancellation Policy: You must send written notification of registration cancellation by mail, email, or fax to the AIPG office. Registration cancellations received by September 15, 2017 will receive a refund of their payments minus a $35 processing fee. No refunds can be issued for cancellations after September 15, 2017 or for no-shows after the meeting. Substitutions welcome. Based on the decision of AIPG, field trips are subject to cancellation due to lack of participation. Notification and a full refund for field trips will be given in case of required cancellations.

Field Trips (must be registered for the conference)

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Social Events / Donation

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<td>AIPG Awards and Dinner (Monday) Select your dinner choice:</td>
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<tr>
<td>□ New York Strip</td>
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<td>□ Miso Salmon</td>
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<td>□ Vegetarian Quinoa Stuffed Pepper</td>
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<td>□ Chicken Venetian</td>
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<tr>
<td>Make a Donation to the Foundation of the AIPG</td>
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PLEASE CHECK METHOD OF PAYMENT
□ Check Enclosed (payable to AIPG)
□ Visa □ Master Card □ American Express □ Discover (Credit cards are processed in US dollar amounts only)

Card No. ____________ Expiration Date ____________ CVV ____________
Print name of cardholder ____________

REQUIRED: Credit Card Billing Address (if different from above-street, city, state, and zip)

Hotel Information: Nashville Airport Marriott, 600 Marriott Drive, Nashville, TN 37214, (615) 859-9300, (800) 228-6280. When making reservations, be sure to use the group code AIPG 2017 or M-7G0NV51 to receive the reduced conference rate of $149+ tax per night, which will be honored until 9/1/17.

Send completed form to: American Institute of Professional Geologists (AIPG) 12000 Washington Street, Suite 285, Thornton, CO 80602-1000 aird@aiipg.org, fax (303) 253-9220, phone (303) 412-6205 Register on-line at www.aiipg.org
AIPG 2017 National Award Recipients

Ben H. Parker Memorial Medal
Stephen M. Testa
CPG-6464
Mokelumne Hill, California

Martin Van Couvering Memorial Award
Michael D. Lawless
CPG-9224
Blacksburg, Virginia

John T. Galey, Sr. Memorial Public Service Award
Jonathon D. Arthur
MEM-0932
Havana, Florida

Section Leadership Award Recipients

Recipients
Jayne Englebert
Dawn Gracia
Curtis Hudek
Ronald Wallace
Robert Zierenbert

Section
Wisconsin
Arizona
Minnesota
Georgia
California

Award of Honorary Membership
Dennis G. McGrath
CPG-8578
Hastings on Hudson, New York
Candidate for AIPG National President-Elect

Keri A. Nutter CPG-11579
Anchorage, Alaska

I am humbled and honored to be nominated for the position of AIPG National President-Elect and I would like to thank the nominating committee for considering me a qualified candidate. Though hesitant at first when President Heft called to ask me to accept the nomination, I knew that this opportunity to serve was incredibly important. The key to success of any organization is dependent upon the passion and contribution of volunteers, and I knew that my acceptance would allow me continue contributing to an organization that has given so much to me and my colleagues.

My first meeting with the Executive Committee was in May 2013 when they held their meeting in Anchorage to explore options to hold the annual meeting in Alaska. Where I thought I would be attending and simply listening from the edges of the room, Ron Wallace and Bill Siok asked me to join them at the meeting table. Throughout the meeting, I was asked questions, engaged in the discussions, and given the opportunity to observe first-hand the work of the Executive Committee - I couldn’t believe that such an experienced and involved group of professionals wanted me, a young and newly minted CPG, to be a part of the conversation! Even after that day, members of the Executive Committee continued to engage me and ultimately asked me to attend the 2013 National Meeting and run for election as an Advisory Board Representative. I had never served on a national board of a professional organization and was hesitant and terrified; but with the encouragement of my new mentors and colleagues, I happily took the leap. After being elected, I quickly realized how important the opportunity was and became excited to give my time and energy to an important organization.

I served two terms as an Advisory Board Representative working to rejuvenate not only my local AIPG section but also other struggling sections. I realized that I truly enjoyed my service to AIPG and desired to continue giving to an organization that provides so much. I was introduced to an array of concerns affecting geoscientists across the country and became committed to a desire to continue working with the Executive Committee to navigate through these challenges. I accepted the nomination for 2016-2017 National Secretary and was honored to serve again. In just the past year, pressing issues that have arisen include the elimination of or threat to professional licensure for geologists in numerous states; evolving geoscience academic programs; shifting opportunities for geoscience graduates; reduced membership; and the loss of student members after graduation.

Though I have learned and experienced so much with AIPG over the last 3.5 years, the growing connections that I have made with students and young professionals have been the most fulfilling. These young members are essential to the continued growth and success of AIPG. And as a leader in the organization, it is my responsibility to continue encouraging their participation and service, as well as mentor their leadership and professional goals; I want to continue and enhance the opportunities that were afforded to me as a young member and CPG. With their engaged participation, AIPG can evolve to remain relevant to our younger members while their continued service will help AIPG shift deliberately in how we engage and communicate with AIPG’s future leaders. Much work has been done in the past years, especially by those that held the position of President. However, many of the challenges and key issues continue to affect the organization and profession. If elected, I will continue the effort of those before me to achieve the goals set by the Executive Committee through extensive strategic planning. I want the reinvigorated relationship between AIPG and ASBOG to provide even more benefits to our members. And I want to further engage our student chapters, members, and young professionals to become involved and consider serving earlier in their careers.

If elected, I will remain committed to the engagement of the entire membership. Not only to the CPGs, but also to the aspiring CPGs, the current and future student members, and members of our sister societies. I look forward to continuing work with the wonderful staff at headquarters that make everything happen, and I am excited about the new Executive Director’s ideas. I would be honored to have your vote to serve as your President-Elect, President, and Past-President and I look forward to this opportunity. Should you have questions about any of my experience, positions, or thoughts for the future of AIPG, please do not hesitate to email me at knutter@dowl.com. Thank you deeply for your consideration.
J. Todd McFarland CPG-11348
Nashville, Tennessee

It was a great honor as a geologist to receive a nomination for President-Elect of AIPG. However, this statement does not adequately convey the excitement I feel for this opportunity. This is one step in a career goal I set after I became involved with AIPG. My career in geology started as I searched for an interdisciplinary course requirement to complete my undergraduate degree in chemistry at the University of Kentucky. As I prepared for my last two semesters as an undergraduate, I was unsure of what career path to take. After spending my younger years exploring the caves of south-central Kentucky, the thought of spending my working days inside did not align with my interests. When I selected an environmental geology class to fulfill my interdisciplinary elective course requirement, my career path took a quick turn toward geology. My future was defined after the first day of that class, and my only question was “How do I get from an undergraduate chemistry degree to a geology graduate degree?” I spent the next year immersed in a typical undergraduate geology curriculum, although at a somewhat accelerated pace. I was then admitted to the geology program and completed my graduate degree.

After graduation, I spent the next few years behind a drill rig and quickly learned what it meant to be a field geologist, but I still had a lot to learn about what it meant to be a professional geologist. As noted by the Geoprofessional Business Association, if a profession is to thrive, every member of the profession must be involved. I embraced this view and began to seek out professional opportunities outside the normal day to day requirements of a consulting geologist. I joined AIPG in 2008 and upgraded to a CPG in 2010. Although field work consumed most of my time (as it should) during my initial years as an AIPG member, I remained involved with the organization on the Section level and became the Tennessee Section President in 2013. My first trip to the annual AIPG meeting was the 2013 meeting in Colorado where I was subsequently elected to the Advisory Committee for 2014. I was honored to serve as Vice President in 2015 following my year on the Advisory Committee. I am currently the Tennessee Section President immersed in assisting with planning the 2017 National Meeting. I am also the Chapter Sponsor for two student chapters in Tennessee.

The office of President-Elect includes presiding over the advisory board, and my time on the executive committee, my year as Vice President, and my role as the Tennessee section delegate at the national meeting provides me with the experience needed to serve this role and connect with the incoming advisory board. An additional role of the President-Elect includes assisting with preparation of the budget for the fiscal year. I am currently the Geo-Environmental Team leader at Amec Foster Wheeler where I routinely prepare cost proposals while managing a six-member team’s utilization and workload. I am also tasked with management of financials on projects with varying budgets for a variety of clients as well as review of project financial statements each month, so this work history will provide me with the experience needed to assist with budget discussions.

The President of AIPG acts as the official spokesperson for the Institute, which I consider a great opportunity to represent the geological community. AIPG must continue to promote professionalism and focus on students and young professional members to solidify our membership. AIPG continues to actively engage student members and we will need to continue this effort with our young professionals early in their careers to grow the organization and increase participation at the National, Section, and student chapter levels. One of the things I have enjoyed during my time with AIPG is the interaction with geologists in academia, regulatory, mining, consulting, and other fields. The wealth of knowledge that can be conveyed to our students and young professional members will be invaluable to their careers and can only benefit the future of AIPG. A geological community that strives to constantly advance must include students and young professional members that understand the value of the profession. AIPG has the resources to advance our profession. As the President of AIPG I will continue this focus and help to grow this great organization. I am honored to have the opportunity to write this statement for my candidacy as President-Elect and appreciate your support.
Growing and broadening our Wisconsin AIPG membership has been a challenge throughout our 26 years as a Section. There are many student and professional geoscience organizations our members can join in Wisconsin, but our Section continues to provide geoscience purpose, perseverance, partnerships and personal experiences. As Vice President of AIPG National Board, I would bring these 4 P’s to our National Organization.

Our members and students want an organization that plays an active purpose in their education and careers. The students and professors have a need for showcasing their current research findings; and WI AIPG has sponsored student presentation days and workshops where undergraduate and graduate students presented posters and oral presentations. Professionals need to hear about the latest groundwater monitoring technologies; and WI AIPG has organized and sponsored webinars and workshops presenting the newest technologies.

Wisconsin also experiences periods of professional geologist devaluation where the state legislature proposes to eliminate the Wisconsin Professional Geologist License. We persevere in actively responding to this threat to our profession by connecting with our geoscience professionals across Wisconsin and providing real-time examples to our legislators why Professional Geologists are needed to grow our economy and protect our citizens and natural resources.

Growing our AIPG membership and providing financial stability for our own organization can only be achieved in today’s complex world by developing partnerships. Partnerships with colleges, businesses, geoscience organizations and other AIPG Sections allow us to share resources, staff and event expenses. AIPG’s visibility increases as we participate in larger events with a multitude of partnerships. Wisconsin AIPG has had numerous partners in supporting our: Geology Day at the Capitol, Frac Sand Webinar and the scheduled National Sand Mine Life Cycle Seminar, Earth & Water Student Presentation Day, Student Presentation Days at River edge Nature Center, the scheduled Groundwater Technology Webinar and the scheduled “Why Geology Past is Important to Our Future” MI-WI fieldtrip.

Finally, we must remember that providing personal learning experiences is just as important as providing economic and professional development resources. As Vice President of our Association, I would highlight and encourage replication of the personal learning experiences our Sections and other earth science organizations are providing throughout our nation. I would also encourage matching young professional geologists with mentors and advisors. Paper and web documents provide a wide variety of learning experiences, but if you connect the student and young professional with a real life location and mentor, we can provide a deeper, life-long connection to geology and to our Association.

We’ve taken the local geology/human connection concept serious in Wisconsin. One of the programs that our Section helped create was the Wisconsin State Master Naturalist training program. Geology is now one of prominent portions of the training program for nature educators. We teach our educators and the educators then teach students of all ages that Wisconsin geology is a living part of our state. It is not only a beginning point, but geology changes and supports us through time. It is enduring part of the Wisconsin story.

Geoscience purpose, perseverance, partnerships and personal experiences have been made thorough out my geology career as: a graduate student organizing Watershed Basin and Wellhead protection training events locally and nationwide, a hydro geologist and licensed geologist (PG) at the Wisconsin DNR, Wisconsin Electric Power Company and Mid-State Associates, and as Wisconsin’s Section’s Vice President, President and News Letter Editor.

As one of your National AIPG Board Advisors from 2014-2015, I worked hard with the other advisors to reach out to the Sections and share resources and ideas between the Sections. Many of the Sections are now joining together to sponsor events and resources and the current advisory board continues to spread this support throughout our Association.

It would be an honor and privilege to serve as your National Vice President by sharing geoscience purpose, perseverance, partnerships and personal experiences. I believe providing these 4 P’s to our National Organization will ensure life-long connections to geology and AIPG!
I would like to thank the nominating committee for the opportunity to be considered for the role of Vice President on the 2018 Executive Committee.

I wanted to be a geologist when I was a kid. Paleontology, of course, was the initial draw. Show me a kid not fascinated by dinosaurs, and... actually, no “and” statement is needed; that kid doesn’t exist. As I progressed through school, I gravitated to the sciences. I may not have always applied myself in all High School subjects as I should have, but to me studying the sciences didn’t feel like studying. At every opportunity I read science books, science oriented magazines, and some science fiction, too. At university, my 1st year advisor turned out to be a paleontologist, of course! Bob Lindsley became a trusted advisor and a good friend... but I resisted the initial urge to major in geology. There were so many choices on campus, and while Bob agreed that I should investigate other departments, he kept a close eye on me. After two semesters of intellectual wandering, I sat in Bob’s dusty, sample-bag filled office and said, “OK, I’m ready to be a geology major”.

Those were formative years. I went on to concentrate on igneous petrology, doing my undergraduate thesis work under Jim McLelland in the Adirondacks of NY State. Then on to graduate school at University of Vermont, where I studied isotope chemistry and structural geology under Rolf Stanley, and did my thesis research on the Carrizo Mountains of West Texas. I bounced between Van Horn, Texas and University of Texas, Dallas, before ferrying Precambrian rocks in the trunk of a great red rental Cadillac (the SUV had not yet been invented) to the sample processing labs at Syracuse University, and then on to M.I.T. to be irradiated prior to Ar/Ar dating. Those were the salad days!

Since then, I have worked as both a consultant and a regulator. Each role has been challenging and rewarding, and I have formed many lasting friendships along the way. However, it wasn’t until I worked for the State of Oregon, living in Eugene, that I came to appreciate how important it was to volunteer. Non-profit organizations do important work, and the individuals who serve them can appreciate how a small group of dedicated people can change the world.

Since those days, I’ve volunteered with several organizations, including over 10 years with AIPG. My executive non-profit experience includes my service to AIPG – NE Section, where I was elected President of the NE Section in 2012, and served consecutive two-year terms. In addition, I was nominated and elected to the 2016 National Advisory Board, and was re-nominated and elected to serve on the 2017 Board. Our work on the 2016 Advisory Board was focused on helping the new Executive Director Aaron Johnson transition to his role, while we provided him with new concepts and organizational ideas to take AIPG forward.

The primary role of the Vice President is to: “maintain liaison between the Executive Committee and the Section Presidents and shall contact each Section President at least once annually to determine the status, condition, problems, and concerns of each Section and to inform the Sections of Executive Committee requests, initiatives, questions, and concerns.” Working closely with the Advisory Board, the Vice President may also undertake special projects requested by the President and report periodically thereon.

If elected, I would bring with me the lessons learned from my years of involvement with the NE Section and the National Advisory Board. Respectful teamwork and direct communications are fundamental to our success, as are the continued efforts of our dedicated members. I would bring my passion for the profession, and a willingness to work with members, sub-committees, and the Advisory Board to serve the needs of the President and the State Sections to strengthen the future of AIPG.

At AIPG, we may not intend to change The World. However, the work AIPG does, from student outreach and scholarships to professional support and development, has certainly changed the world, for the better, of many of our student and professional members. I look forward to the opportunity to further serve the profession that has given me so much over the years.

Vote ballot is on page 25 or vote online
I am honored to accept the nomination for 2018 AIPG National Executive Committee Secretary and thank the Nominating Committee and the Executive Committee for their endorsement. It is a privilege to be considered for this important role on the Executive Committee that has been held by exceptional past officers. If selected I will serve AIPG and its members earnestly and enthusiastically by working in partnership to advocate for the profession of geology, to promote professional and career development and to effect strategic objectives. I am proud to be a member of AIPG and to be in the company of geoscientists that serve key roles in resource development, environmental protection, economic development and policy decision-making. The future success of AIPG and the strength of the geosciences lie with the continued leadership and forward thinking of the AIPG Executive Committee, staff and its members.

I have served as president-elect and president of the Florida Section of AIPG for the past six years. I have relied on the value, resources and support that AIPG has provided and as a result have been better able to serve section members. As an AIPG national meeting Section Delegate, I have forged strong relationships with AIPG staff, Executive Committee members and other section delegates who have helped shape my perspective and knowledge base. I feel strongly that participation and involvement in the Florida Section and in AIPG national meetings has better prepared me to join the Executive Committee. It has been incredibly insightful to understand the issues that face AIPG on a national level and to appreciate the unique and often shared challenges of our state sections. I believe shared understanding gives way to creative solutions and opportunities.

I was honored last year to lead the first ever National Conference Delegates Breakfast in Santa Fe. The discussion topic was Licensure, Privatized License Management and Continuing Education. This was a successful forum affording section delegates and executive committee members an opportunity to examine and discuss a current hot topic. Maintaining state professional geology licensure has been an ongoing challenge in Florida as well as in Arizona and other states. Our licensure programs are persistently challenged by divisive proposed legislature. The future of licensure and scope of practice remains vulnerable. State and national discussions have provided strategies and solutions to reduce exposure and strengthen PG’s by encouraging improved relationships with state professional geology boards, engaging in legislative affairs, implementing continuing education programs and considering alternative solutions such as privatized license management. I support AIPG taking steps to develop an ASBOG-based national license while maintaining the CPG program. National licensure would greatly benefit members particularly in states with no PG licensure. In this current political environment of reduced federal and state budgets, deregulation and shifts in program priorities we must work more diligently to advocate for PG’s that serve vital roles in policy decision making and in solving complex geoscience issues related to public health, welfare and safety.

I have served as a hydrogeologist in both the private and public sector primarily in Florida but also in several other states. I have worked closely with individuals from local governments, consulting firms and regulatory agencies in water resource related programs, projects and planning efforts. I have enjoyed collaborating to develop and implement strategies for sustainable water resource development and management. I have also gained global perspective through involvement with international water, sanitation and hygiene (WASH) programs with Water For People and most recently with Engineers Without Borders (EWB Rutgers University Student Chapter). I have worked with geologists and engineers on projects in Africa, India and South America that has underscored for me the importance and value of professional teaming. As an EWB student mentor, I am grateful for experience gained with students in the geosciences through AIPG. In the past four years the Florida Section has welcomed three AIPG Student Chapters including Florida State University, Florida Atlantic University and University of South Florida. I relish interacting with students and enjoy their keen interest, knowledge and unflagging enthusiasm at workshops, conferences and fieldtrips. I also serve on the AIPG Education Committee and this year there were nearly 70 scholarship applications! This role has provided a unique opportunity to read through cover and recommendation letters and essays. I was truly impressed by the stories, experiences and tenacity of some of our exceptional student members. I will take pleasure in future opportunities to support young geoscientists through AIPG.

Specific to duties as AIPG secretary, I pledge to perform my responsibilities in a professional, attentive manner by recording and generating accurate minutes of the National Executive Committee meetings for the record and conveyance of proceedings to membership. I will work in collaboration with officers, staff and members to further advance AIPG and its support of PG’s and the profession of geology.

I look forward to serving as secretary on the AIPG Executive Committee and thank you for your consideration.
I am pleased and honored to be nominated as AIPG National Secretary for 2018 and 2019. I give special thanks to the nominating committee for considering me for this honorable and responsible position. AIPG has played a key role in advocating for geologic and ethical excellence. I am and have been a member of several professional organizations related to geology and water resources. They are all good organizations but AIPG has always stood out in that the Institute makes a strong stand for professional ethics. I hope that I can help continue to maintain the high standards of AIPG.

I first became a member and Certified Professional Geologist with AIPG in 2004. That year my employment was somewhat unsteady and I was primarily interested in the professional certification. I needed strong credentials if I ended up job hunting and Hawaii does not have geologic licensure. I quickly found out that AIPG offers much more than professional certification. Mark Rogers was our Section President and our section was very active under his leadership. We met frequently and I was fortunate to be able to meet and learn about my colleagues in other fields of geology. Often geologists in government, academia and private industry do not get a chance to collaborate and AIPG affords a good venue for interaction.

When Mark left Hawaii we became very busy and preoccupied and our section languished for several years. Unfortunately, Hawaii geologists lost many of the benefits of AIPG for this period. We were lucky that Ms. Keri Nutter from Alaska contacted the Hawaii Section as part of her duties on the Executive Committee Advisory Board. She was wonderfully supportive and encouraged me to attend the 2015 National Meeting in Anchorage Alaska. I signed up at the last moment and arrived in Alaska a few hours before the start of the executive committee meeting. The hotel staff recognized me as a geologist and from Hawaii (It could have been the shorts and sandals) and whisked me to my room so I could get a little sleep before the meeting. I was very impressed with the people at the meeting. I was thrilled to see the commitment, knowledge and professionalism of the executive committee, section representatives and AIPG staff. I realized that I wanted to be a part of this and I made a swift decision to run for the Advisory Board and was elected.

I have been lucky to work for both government agencies and private consulting firms. I started my career as a geologist with the Honolulu City and County public water utility. I was primarily engaged in water resource monitoring and production well drilling. After several years, I moved to state government and worked for the Hawaii water regulatory agency. I travelled frequently throughout Hawaii and learned about water resource management from the regulatory angle. For the last 10 years, I have been working in environmental and water resources consulting. I have learned about the commercial side of our profession and worked on a diverse array of projects.

Serving on the Advisory Board in 2016 was a privilege and an educational experience. It was my first time on a national-level committee so I was uncertain about my role but I got to know my fellow committee members and the AIPG staff and I learned how the executive board can help our membership. Executive committee members should play an important role in implementing the desires of the membership.

One of my primary goals is to increase membership and participation. We are working hard in the Hawaii Section to build a local Section that works for the members. I think it is important to do the same at the national level. As geologists, we play a vital role in the issues facing our society, at scales varying from the local to the international. The recommendations and decisions that we make affect the environment, water supply, mineral availability and public safety. As such, we also should collaborate continuously to help ensure that we are well informed and educated about our profession and role in society.

I hope that you will allow me to help lead AIPG into the future. I will do my best to keep good notes at the meetings! I respectfully solicit your vote of support for Secretary to allow me to continue with my efforts over the past few years. Thank you for your consideration.
Keri A. Nutter
CPG-11579
Anchorage, Alaska

Statement of purpose or goals you have for AIPG: My goals for AIPG are to increase membership and continue the engagement of students and young members while maintaining, enhancing, and expanding our services and benefits to existing members and CPGs. I want to continue spearheading the efforts made by the ExCom, working to achieve the goals of the strategic plan, and developing solutions to the concerns and issues that affect AIPG and the geoscience profession.

Universities Attended
- Washington State University, Pullman, WA
  B.S. Geology 2001-2004
- University of Alaska Anchorage
  University of Alaska Anchorage

Company
- DOWL Staff Geologist 2004-2013
- DOWL Geotechnical Engineering Manager 2013-Present

AIPG Activities
- AIPG National Secretary 2016-Present
- AIPG Alaska Section President 2017-Present
- AIPG National Advisory Board Representative 2014-2016
- AIPG Presidential Certificate of Merit September 2015
- AIPG Annual Meeting (Anchorage, Alaska) Chairperson 2015
- AIPG Alaska Section Vice President 2014-2017
- Speaker, Young Professionals Technical Session, Annual Meeting, Prescott, AZ September 2014
- TPG Article, 10 Years and a Million Lessons March 2015

J. Todd McFarland
CPG-11348
Nashville, Tennessee

Statement of purpose or goals you have for AIPG: Continue to promote professionalism within the geological community with a focus on students and young professional members. Promote the wealth of knowledge that our professional members can provide to our students and young professional members to assist with career advancement and increase their involvement with AIPG on a Student Chapter, Section, and National level.

Universities Attended
- University of Kentucky
  B.A. Chemistry 1999
- University of Kentucky
  M.S. Geology 2003

Company
- Shield Environmental Associates, Inc.
  Staff Geologist 2003-2006
- Amec Foster Wheeler
  Senior Geologist 2006-Present

AIPG Activities
- AIPG Tennessee Section President 2017
- AIPG Vice President 2015
- Executive Committee Member – Advisory Board 2014
- AIPG Tennessee Section Past President 2014
- AIPG Tennessee Section President 2013

Anne Murray
CPG-11645
Stuart, Florida

Statement of purpose or goals you have for AIPG: To advocate for the profession of geology, to promote professional and career development and effect AIPG’s strategic objectives. To encourage more active participation by state sections and increased communication between sections and with National to share ideas, hurdles and opportunities. To support and encourage student and young professionals to actively participate in AIPG activities.

Universities Attended
- Boston University
  B.A. Geology 1981

Company
- Sunedco Coal Company
  Reclamation Specialist 1982-1983
- Georgia Geologic Survey
  Associate Hydrogeologist 1983-1984
- Denver Water Board
  Water Resource Specialist 1984-1985
- Jehn and Wood, Inc
  Hydrogeologist 1985-1987
- MWH Global
  Supervising Hydrogeologist 1987-2001
- Martin County Board of County Commissioners
  County Hydrogeologist 2001-Present

AIPG Activities
- AIPG Section Hawaii Section Leadership
- AIPG National Conference Delegates Breakfast Moderator 2016

Kevin L. Gooding
CPG-10856
Waimanalo, Hawaii

Statement of purpose or goals you have for AIPG: To attend all necessary meetings and carefully record the proceedings. To promote the profession of geology. To continue the process of increasing the relevancy of AIPG to our membership while adhering to AIPG’s strategic goals. To encourage more participation in the Sections and to support students and new professionals.

Universities Attended
- Northern Arizona University
  B.S. in Environmental Science 1990
- Colorado State University
  M.S. in Geology 1993

Company
- Honolulu Board of Water Supply
  Hydrologist Geologist 1994-2002
- State of Hawaii Commission on Water Resource Management
  Geologist 2002-2007
- Oceant Laboratories
  Hydrologist Geologist 2007-2016
- INTERA
  Senior Hydrogeologist/Manager 2016-present

AIPG Activities
- AIPG Section Hawaii Section Leadership
- AIPG National Advisory Board Representative 2015 to present

Anne Murray
CPG-11645
Stuart, Florida

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  Associate Hydrogeologist 1983-1984
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  Water Resource Specialist 1984-1985
- Jehn and Wood, Inc
  Hydrogeologist 1985-1987
- MWH Global
  Supervising Hydrogeologist 1987-2001
- Martin County Board of County Commissioners
  County Hydrogeologist 2001-Present

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CPG-10856
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Stuart, Florida

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Kevin L. Gooding
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  Senior Hydrogeologist/Manager 2016-present

AIPG Activities
- AIPG Section Hawaii Section Leadership
- AIPG National Advisory Board Representative 2015 to present

www.aipg.org
Statement of purpose or goals you have for AIPG: As Vice President, I would highlight and encourage replication of the personal learning experiences our Sections and other earth science organizations are providing throughout our nation. I would also encourage matching young professional geologists with mentors and advisors. Paper and web documents provide a wide variety of learning experiences, but if you can connect the student, young professional and professional with a real life location and mentors, we can provide a deeper, life-long connection to geology and to AIPG.

Universities Attended
- University of Wisconsin-Milwaukee B.S. Geology 1981
- Edgewood College, Madison M.A. [Env Ethics & Stewardship] 1995

Company
- Lake Sinnissippi Improvement District Board Commissioner 2017-Present
- Wisconsin Dept. Health Services Environmental Specialist 2016-Present
- Wisconsin Electric Power Company Hydro geologist & Project Manager 1991-1993
- Mid-State Associates Hydro geologist & Project Manager 1993-1996
- Wisconsin State Parks Ranger - Naturalist 1996-2001

AIPG Activities
- AIPG Wisconsin Section Vice President 2009-2011
- AIPG Wisconsin Section Chair – Geology Day at Capitol 2010
- AIPG Wisconsin Section President 2012-Present
- AIPG Wisconsin Chair – Earth & Water Student Presentation Day 2013
- AIPG Section President Award 2013
- AIPG National Advisory Board Representative 2014-2015
- AIPG Wisconsin News Letter Editor 2014-Present
- AIPG Section Leadership Award 2015
- AIPG Regional Workshop Co-planner – Sand Mine Life Cycle Seminar 2017

How Prepared are Students to Enter into Geoscience Careers?

The American Geosciences Institute (AGI) conducted a study investigating students' preparation in Master's programs. The Geoscience Career Master's Preparation Survey (Geo Career MapS) compared their preparation to what employers indicated as critical skills to transition into the workforce. This graphic represents results found between students' preparation and employers' rated importance for specific competencies, both for technical geoscience and non-technical business skills. The relative sizes of the circles can only be compared within the same category of technical or non-technical skills. Items selected displayed statistically significant disparity between student preparation and employers' rated importance, indicated by the Geo Career MapS report. Larger dark circles indicate that professionals found these skills to be more important than the overall preparation of students (light circles) in Master's programs. Students' preparation was determined by aggregating responses of students and faculty. For more information, please contact Heather Houlton at hrh@agiweb.org. Read the report at www.americangeosciences.org/workforce/reports.

The cost of a custom search is $225.00 plus $.45 per reference. Please mention AIPG when ordering your custom search.
Many geologists find themselves drawn into the growing area of environmental regulatory compliance in their jobs. They may be required to prepare reports for permits, participate in regulatory inspections, deal with enforcement actions, or testify as “Subject Matter Experts” at hearings and audits. The transition from scientific training to regulatory compliance is not always automatic.

Here are some observations based on four decades of experience:

- **The burden of proof is on the permittee.** Regulatory compliance is not an exchange of information and interpretations between equals in a collegial setting. The burden of proof is **always** on the permittee (the entity which has been granted a permit by a regulatory authority) to demonstrate, to the regulator’s satisfaction, that a particular regulatory requirement has been met.

- **Choose your battles.** A determination of non-compliance by an inspector or permit reviewer may be subjective and can prompt a typical response: “That doesn’t make sense – we need to fight it.” Such determinations can be challenged but appeals require a tremendous amount of preparation and expense, often including legal support (which at several hundred dollars per hour quickly mounts up). They only make sense if there is a good chance of prevailing; otherwise they become an unnecessary diversion of resources. Sometimes, it is simply more cost-effective to comply.

- **Common sense does not always factor into regulatory compliance.** What may appear to the permittee to be “common sense” may be of little concern to the regulator who is charged with protecting the public and the environment. In the eyes of the regulator, business concerns, such as: cost, productivity, reliability, pay-back period, or return on investment, are considered to be “costs of doing business” which should have been taken into account at the outset of the project.

- **The regulator has to check the boxes.** Regulatory compliance is concerned with ensuring that all sections of the regulations have been addressed. The regulator is often literally checking boxes – has this section of the regulations been addressed or not? The permittee’s best approach is to address all the sections as directly and briefly as possible, so that the regulator can check the box and move on to the next one. Lengthy dissertations on the merits of the permittee’s case provide little added value and may confuse, or worse frustrate, the reviewer.

- **The regulator may not have discretion.** In some cases, enforcement action has to be taken as soon as a case of non-compliance is seen (“on sight” enforcement). In those situations, the regulator is required to immediately issue a citation (usually in the form of a “Notice of Violation”), and does not have the discretion to offer the permittee an opportunity to remediate the situation.

- **Process is more important than substance.** Regulatory compliance is often more about process than substance – have all the forms been properly filled out, have deadlines been met, have certifications been signed by authorized officials? Many citations are issued for not following the process rather than for actual impacts to the environment. That is why record-keeping is so critical to regulatory compliance. This includes not straying from procedures. Notices of Violation are regularly written for failing to follow an organization’s own procedures even when there has been no violation of a regulation.

- **Professional conduct is essential.** Interaction with regulators may, by its very nature, be adversarial and even frustrating, but there is no room for emotion. The regulator has a job to do and has been given the authority to do it. Arguments are unhelpful but respectful requests for clarification are allowable. One technique is to summarize a question in your own words and ask the regulator to confirm.

- **Conduct in formal situations.** Professional conduct becomes even more important at formal occasions, such as hearings or audits. The proceedings may be recorded in transcripts for review by a Hearings Examiner or Judge. It is essential to provide the correct answer and to resist the temptation, under pressure, to provide a quick retort. It is permissible to request time to confer with the attorney or with colleagues.

- **Role of personal ethics.** In the final analysis, interactions with regulators may be boiled down to personal ethics. The best guide on how to act is to put yourself in the other party’s shoes and to treat the regulator as you, yourself, would want to be treated.

Jan K. Horbaczewski graduated from the University of Durham in northern England with a B.Sc. in Geology (1972) and a Ph.D. in Soil Science (1976). From 1976 to 1983 he worked on agricultural development projects in the Middle East and Central America. From 1984 to 1998 he was employed by Morrison Knudsen Corporation on lignite mine reclamation projects primarily in Texas. In 1998 he joined the Texas Municipal Power Agency where he currently works as the Regulatory and Compliance Manager. Jan is a naturalized U.S. citizen since 1999, and is licensed as a Professional Geologist in the State of Texas.
A New Experience-based Applied Geology Degree at Metropolitan State University of Denver Accelerates Students’ Entry into the Geosciences

Uwe Kackstaetter, Ph.D., MEM-2437
Barbara EchoHawk, Ph.D.,
Earth & Atmospheric Sciences Dept,
Metropolitan State University of Denver,
890 Auraria Pkwy,
Denver, CO 80204

Metropolitan State University of Denver (MSU Denver) is a predominantly liberal arts teaching institution of higher education nestled within Denver’s downtown district. It is one of the largest baccalaureate-granting institutions in the nation with over 20,000 students and was given university status in 2012. Until recently, geoscience programs were housed under concentrations in Land Use and Environmental Sciences. While a stand-alone Geology degree was often discussed, developing such a program was daunting, given existing geology offerings by two neighboring major research institutions. MSU Denver set out to develop a unique degree to occupy a niche not filled by existing offerings at neighboring schools, relying on the unique strengths of MSU Denver’s faculty and facilities resources and taking into account the demographics of our student population.

Unlike R1 schools, where the majority of students attend directly out of high school without much in the way of work or family obligations, MSU Denver’s clientele is a diverse group of non-traditional students who typically are older, many with previous degrees, many with family, most who have military or other work experience, and most who are currently employed. The university is a commuter school with very limited student housing, which creates its own set of challenges. Exit demographics of MSU graduates show that 60-70% of baccalaureate degree earners seek or continue current employment for a time before continuing to graduate school.

The new B.S. degree in Applied Geology at MSU Denver takes into account the special characteristics of our student clientele, as well as the strengths of our faculty and institutional resources. In addition to emphasizing core knowledge and academic rigor, the degree program focuses on real-life, hands-on experience and practical problem solving in the lab, the field, and in oral and written communication. Important field experiences are divided into smaller, manageable units, thus allowing our working clientele and those with family to experience a field education equivalent to that provided by other schools with longer duration field camps. By design, every geology course incorporates field components; several courses are specifically designed around field experiences. Several shorter trips explore various geologic aspects within Colorado’s greater Front Range, southern Wyoming, and the Colorado Western Slope. Longer duration field experiences, lasting from 3 to 17 consecutive days, take our students to the Colorado Plateau, and from northern Utah to Arizona to the volcanics of the West Coast and beyond. Our students also have access to international geologic field experience through a traditional field camp in Ireland, in collaboration with the National University of Ireland in Galway and the Burren Geologic Field School, as well as our own MSU Denver field trips to explore the European Alps and the geology and mining history of Germany. Future endeavors will give students the rare opportunity to study active volcanism in Italy and to witness actual volcanic eruptions.

We also have notable research facilities for student use, including the portable XRF (X-ray fluorescence), XRD (X-ray diffraction), ICP-MS (Inductively Coupled Plasma – Mass Spectrometer), AAS (Atomic Absorption Spectroscopy), anion and carbon analyzers, and Scanning Electron Microscopy (SEM) with EDS (Energy Dispersive Spectroscopy).
Spectroscopy) capabilities. We are also one of the few colleges in the nation that teaches undergraduate students how to make thin sections and how to use PLM (Polarized Light Microscopy). Students gain hands-on experience in operating a variety of research instrumentation and interpreting the results they generate. In addition, collaboration with our neighboring Colorado School of Mines and the United States Geological Survey in Denver has contributed to the expansion of our undergraduate student research capabilities.

Every geology student at MSU Denver is required to undertake an internship to gain practical geoscientific experience. We partner with local institutions such as the Denver Museum of Nature and Science, the U.S. Geological Survey, local parks and open space agencies, municipal water boards, and the private sector to provide students with real-world, hands-on experience. As a component of their coursework, students also visit active industrial operations, including mines, processing plants and drill-sites.

Geology students also undertake at least one (and often more) undergraduate research projects. These projects are often student-driven and require one-on-one instruction and supervision from the sponsoring faculty. Our undergraduate research projects are comparable to senior courses at European universities titled “Instructions for independent scientific work”. Our past undergraduate research projects have included the discovery of a new kimberlite, geoscience field studies in Ireland and Germany, subsurface assessments of oil and gas field potentials, impact of acid fracturing fluids in well maintenance, investigations of rare earth element mineralization, GIS-linked studies of rock glacier distribution, and much more. Many of our students have won undergraduate research awards by presenting their findings at national conferences, such as the AIPG national meetings in Alaska (2015) and Santa Fe (2016) and the GSA Annual Meeting in Vancouver, B.C., Canada (2014).

Having a two-person full-time geology faculty is a challenge in developing diversity in the geology curriculum. Each of the two tenure-line faculty teaches three 4-credit introductory and advanced courses per semester, in addition to “Maymester”, summer, and/or individual research-based courses. Part-time affiliate or adjunct faculty also teach introductory courses. One of the tenure-line faculty specializes in hardrock geology, the other in soft-rock geology. Between them, they have work experience in a range of specialties, including hydrogeology, petroleum and minerals exploration, and engineering geology. Both of the tenure-line faculty, in different years, received the MSU Denver university-wide Teaching Excellence Award, attesting to the excellent instruction students are receiving in the Applied Geology degree program.

Many of our graduates have found meaningful employment with “only” a Bachelor’s Degree in the geosciences. Past employment opportunities have ranged from work with the USGS, the Henderson, Climax, and Cripple Creek-Victor mining operations in Colorado, the EPA, and various public and private entities including water treatment and field work. One of our graduates now owns a successful business built on the skills attained in the geology program at MSU Denver by providing expert thin-section services in geology, forensics and planetary geology. Another graduate is now a senior lab coordinator at a neighboring R1 institution thanks to our geology education. Many geoscience alumni have landed fully paid graduate school admissions and continue to pursue their “dream”.

To see some of our MSU Denver students in action in the field and lab, please visit us at: https://www.youtube.com/watch?v=v_oMTwppNNg

Dr. Uwe Richard Kackstaetter, a German native, received his B.A. in Geology from the University of Northern Colorado, his M.S. in Geology from BYU, Provo and his Ph.D. in applied geology and mineralogy “magna cum laude” from the University of Würzburg, Germany. His professional expertise on two continents ranges from environmental testing and geohydrologic investigations to minerals and igneous research. As an educator he has taught not only in college and secondary classrooms, he has also conducted numerous national and international geological field courses. Dr. Kackstaetter’s current interests are in developing various practical approaches as advanced tools for the geosciences, such as field specific gravity testing, automated percolation testers, new wavelength dependent night prospecting tools, improved processes of rock and mineral thin sectioning, field portable cation chromatography and clay mineral analytical processing and computations. He currently works as Associate Professor of Geology at Metropolitan State University of Denver where he teaches courses in Mineralogy and Optical Mineralogy, Hydrogeology, Igneous and Metamorphic Petrology, Applied Volcanology, Field Methods and a senior capstone course in Undergraduate Research for the geosciences. Dr. Kackstaetter is an advocate for undergraduate research and involves his students in various meaningful projects both in Europe and the United States, which have yielded some exciting discoveries, such as a new, accessible kimberlite in the Colorado-Wyoming State line kimberlite district.
More on De-Licensure

Possible role for AIPG in licensing geologists

National registration is an interesting idea. Perhaps even a great idea, since national registration is still very unusual. Lawyers, doctors, engineers, and most technical professions go through state regulators. Still, it’s an increasingly global world, and maybe the time has come to expand the thinking. Two problems immediately come to mind: buy-in and enforceability.

For national registration to be successful, the current stakeholders must buy in. Arizona is taking an uncommon step in delicensing professionals, and I doubt that other states are lining up to follow that lead. Many states only began licensing geologists in the last 15 years, and might consider a national program an intrusion, especially if state licensing is an income source. Recall the territorial tug-of-war between Arizona and AIPG 15-20 years ago. Other national professional organizations might want a say, and there are enough national professional organizations for geologists alone that an attempt to include them could quickly become unwieldy. AIPG would have to find a way to organize a national licensing program that would not be perceived as stepping on others’ toes.

How would a national license be enforced? I doubt there have been many complaints against honest professional geologists, and AIPG—or any other licensing unit—would be filtering out the charlatans. But in the event of a complaint against a license-holder, who has jurisdiction? What might be the legal ramifications of withdrawing a license for professional misconduct (maybe there is a reason this doesn’t seem to happen very often in any profession)? Alternatively, is AIPG willing to defend a licensed geologist against a potentially spurious complaint from a grumpy client?

On the other hand, I can see a lot of value in having a national license. A national license would give geologists living and working in states that don’t currently license geologists some professional elbow room. It would also have more clout for geologists working internationally, since many foreign companies treat state licenses as provincial fluff.

But one of the best reasons for a national license would be the ability to iron out some of the inequities of state registrations. Full disclosure: I may be more excited about this reason because it is personal. Some 20+ years ago, when I first sought registration, the rules in Arizona declared that experience would count toward the requirements of professional registration only if that experience had been earned under a geologist registered in the state where the work took place. Very few states registered geologists back then. Even that early in my career, I could cobble together 10 solid years of experience, but only one that counted under Arizona rules. I testified in front of the State Board of Technical Registration in an effort to get them to be more flexible on that restriction, but to no avail. I began working outside the US soon after, and of course, that experience was also invisible to the Arizona SBTR. I found the whole process so offensive that I am personally somewhat soured on registration, and gave up on it years ago. It is one reason I have stayed loyal to AIPG and kept up my membership even in lean years, especially after AIPG made it clear they would defend the right of a CPG to advertise himself as a geologist in Arizona at a time when the State was threatening fines for professionals who had the temerity to call themselves geologists without state approval. A national registration would likely eliminate that kind of arbitrary filtering of experience—or at least loosen the filter.

National licensing could probably pay for itself with fees charged for the license as long as the license is desired even in states that currently license their professionals. (A license useful mostly to geologists who work in states that do not license professionals might be seen as a second class license.)

So—in short—does AIPG have the talent, creativity, and motivation to lead the effort to nationalize registration? (Probably!) Is AIPG willing to take on the headaches and legal problems that might result from such an effort? (One wonders!)

Ann Pattison

The INTRAW consortium has recently launched three operational reports providing insights on best practices and weaknesses of raw materials research & innovation, education & outreach and industry & trade in the project’s five Reference Countries: Australia, Canada, Japan, South Africa and the United States of America.

The findings of these operational reports also contribute to the design of the International Observatory on Raw Materials that is to be launched by the end of 2017. The Observatory will be a permanent international body that will remain operational after the end of the project, aiming at the establishment and maintenance of strong long-term relationships with the world’s key players in raw materials technology and scientific developments.

The operational reports and their summaries are available through the project website at http://intraw.eu/publications/. We also invite you to follow the project’s seven-weeks-long social media campaign that provides further insights into the operational reports on Facebook, Twitter and Linkedin.
Election of officers shall be by a ballot. The ballot shall be sent to all Members by May 15. Election shall be by the majority of all qualified ballots cast. In order to be counted, ballots must be received at Institute Headquarters on a date named by the Executive Committee, which date shall be no later than June 30.

Only AIPG CPGs, Members and Young Professionals are authorized to Vote.

Ballots Must Be Received At Headquarters By JUNE 30, 2017. Your AIPG Name and Member Number Must Be Printed Below For The Ballot To Be Valid.

Name ________________________________
Member Number ________________________

Mail your ballot to:
AIPG
12000 Washington St., Suite 285
Thornton, CO 80241
Berry College
Founded in 2016
Chapter Sponsor:
Ronald Wallace, CPG-08153

Bowling Green University
Founded in 2004
Chapter Sponsor:
Robert K. Vincent, MEM-0216

Central Michigan University
Founded in 2003
Chapter Sponsor:
Eric Wallis, CPG-09518

Colorado School of Mines
Founded in 1999
Chapter Sponsor: 
Graham Closs, CPG-07288

Columbus State University
Founded in 2011
Chapter Sponsor:
Ron Wallace, CPG-08153

Eastern Illinois University
Founded in 2013
Chapter Sponsor:
Craig McCammack, MEM-1295

Eastern Kentucky University
Founded in 2016
Chapter Sponsor:
Bill Brab, CPG-11693

Eastern Michigan University
Founded in 2006
Chapter Sponsor:
Walter J. Bolt, CPG-10289

Florida Atlantic University
Founded in 2014
Chapter Sponsor:
Anne Murray, CPG-11645

Florida State University
Founded in 2014
Chapter Sponsor:
Anne Murray, CPG-11645

Georgia Southwestern State University
Founded in 2013
Chapter Sponsor:
Ronald Wallace, CPG-08153

Georgia State University
Founded in 2005
Chapter Sponsor:
Ronald Wallace, CPG-08153

James Madison University
Founded in 1998
Chapter Sponsor:
Cullen Sherwood, CPG-02811

Metropolitan State University Denver
Founded in 2013
Chapter Sponsor:
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Student Scholarship application are due on February 15, 2018. Application can be found on the website.  
Undergraduate Scholarship - http://aipg.org/under-graduates  
Graduate Scholarship - http://aipg.org/graduates

AIPG Membership Totals

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### AWG Book Announcement

**TECTONICS, CLIMATE CHANGE AND EVOLUTION - SOUTHERN CANADIAN CORDILLERA**  
: Road Log and Accompanying Narratives From: Calgary - Lake Louise - Icefields - Field - Revelstoke - Fernie - Dinosaur Provincial Park – Calgary”, 2016, Association for Women Geoscientists (AWG).”

Debra Hanneman

This field trip guidebook is written by Katherine J.E. Boggs and Debra L. Hanneman, and edited by Janet Wert Crampton and Stephanie Yager. It is the AWGs’ first fully published field trip guidebook and is a field-tested guide from their 2014 field trip through the Canadian Rockies and Alberta’s Dinosaur Park area.

The guidebook is a 209-page geology tour through many well-known parts of the Alberta Canadian Rockies, including the Front and Main Ranges of the Canadian Rockies and the Columbia Icefields. The Burgess Shale’s Wakott Quarry, the Okanagan Valley vineyards, and the Rocky Mountain Trench are trip highlights for geo-tours in British Columbia. The field trip guidebook ends with a geology tour of the Crowsnest Pass area on the British Columbia/Alberta border, and with field stops in Alberta’s Dinosaur Provincial Park and at the Royal Tyrrell Museum, Drumheller, Alberta.

The field guide is printed on double-sided 8.5” x 11” pages with the guide cover on 100 lb paper and the text on 80 lb paper. It has black wire-o binding and a clear acetate front and a black acetate backing for improved field durability. The guidebook is available at the AWG online store for $55 (www.awg.org), which includes shipping.
Each year, Earth Day is celebrated on April 22. The history of Earth Day is fascinating, and involves two founders and two stories. In 1969, at a UNESCO conference in San Francisco, John McConnell proposed a global holiday to be celebrated on March 21, to honor Earth and to advance peace. McConnell’s proposal was recorded in a proclamation that later was signed by United Nations Secretary General, U Thant. Less than a month after John McConnell made his proposal, Gaylord Nelson, a senator from Wisconsin, proposed a separate Earth Day focused on environmental education and awareness. This holiday, scheduled for April 22, was focused on the United States. Denis Hayes coordinated this Earth Day in 1970, and in 1990 founded the Earth Day Network which brought Earth Day to a global audience. Hayes would later go on to become director of the Solar Energy Research Institute, which would become the National Renewable Energy Laboratory. Both Earth Days continue to be celebrated as each year, on March 21, the United Nations rings the ‘Peace Bell’ as part of UN Earth Day celebrations. The second Earth Day, celebrated on April 22, is the day that has been adopted by most of the world.

By the time you read this, Earth Day will have come and gone, and with it the March for Science, which is the real subject of this column. I’ve received numerous emails from members of AIPG inquiring about our position on the March for Science. Some members have proclaimed staunch support for the March and asked that AIPG lend our support. Others were equally convinced that AIPG is a professional organization devoted to ethics and professional practice and should voice no support for the March, since its aims ‘appear to be more political than professional.’ A third group expressed genuine curiosity as to the role AIPG would have in the March, if any at all, and why. Frankly, as I read through the letters, and spoke with members via phone, email, and text message, I found that there was no consensus among our members.

Nevertheless, I investigated the core values and goals of the March for Science, to see if these goals shared significant overlap with the core values and goals of AIPG. The March for Science holds the following core principles: 1) science that serves the common good; 2) evidence-based policy and regulations in the public interest; 3) cutting-edge science education; 4) diversity and inclusion in STEM; and, 5) funding for scientific research and its applications. In addition the March lists humanizing science, partnering with the public, advocacy for open, inclusive, accessible science, support for scientists, and the affirmation of science as a democratic value as specific goals of the March for Science. These are valuable core principles and laudable goals, but they share very little overlap with the principles and goals of AIPG.

I also examined the activities that the organizers of the March for Science had planned. I found that the March for Science did not plan direct outreach to legislators and instead had planned a rally that featured speakers on a main stage and teach-in tents around the National Mall. The organizers also planned a march along a predetermined route. As I investigated the March, it seemed to me to be designed more as a rally to draw attention rather than as outreach to identify solutions.

Finally, I reached out to our sister society, the American Geoscience Institute (AGI). The Institute was founded under a directive of the National Academies of Science, and has as its mission to “represent and serve the geoscience community by providing collaborative leadership and information to connect Earth, science, and people.” The Institute also found no consensus on support for the March for Science among their members.

Given the lack of consensus among members, the small amount of overlap between the principles and goals of the March and those of AIPG, and the decision by AGI to make no statement regarding the March, AIPG also chose to make no statement about the March for Science. In addition, as Executive Director, I was unwilling to attempt speak on behalf of all members with respect to the March for Science. I continue to believe that our best strategy is to reach out directly to legislators and speak to specific geoscience topics. Certainly this is something that we can do more effectively and in a more organized, directed fashion. Ultimately I encourage you to continue to make your opinions about pressing issues known, especially those issues that impact the geosciences. We are stronger when we participate in the process of self-governance.
In this quarter’s TPG there is a very good article by our ethicist, David Abbott. It covers a variety of topics, from how to make the best use of conferences, to a discussion of proposed new federal rules on the preservation of fossils found on public land, to safety and de-licensure. David would like to retire from the Ethics Committee and the preparation of the Ethics Column: if you, or anyone you know would make a good ethics committee person and journalist, please let us know. Thank you David for a wonderful job done over many years!

Much of this issue is taken up with announcements of the annual meeting and its field trips and social events. There are also the bios and statements of the candidates for national office. Please look this material over: we need your educated votes and I think that you will enjoy our Annual Meeting in Nashville even if, like me, you prefer musical genres other than those popular there. What could be better than to learn about the world’s longest cave system, or see where 8 priceless Thunderbirds (er, Camaros? er, oh well, they were priceless sports cars) disappeared down a sinkhole: in a museum yet!

In this issue of TPG we have contributed pieces representing a wide range of topics, from the antics of inebriated miners (Lamarre), to the best way to deal with regulators (Horbaczewski), and a short piece on looking for MVT's in Missouri and (Turner). We have two great stories concerning new and inspirational approaches to education. Liniger tells of how to use one of the more spectacular properties of rocks to reach out to many hundreds of children in grades 4-12. If only more of us could find the inspiration and the kind of energy that Doug showed in stepping in when his state cut back on the educational budget! Kackstaetter and EchoHawk tell about the very successful field-based approach to teaching geology to “non-traditional” students at the the undergraduate level at Metropolitan State University of Denver. Makes me wish I were going back to school now! More importantly, these students are going to learn practical things in the field and lab that many R1 (hate that acronym - I think it stands for Rank1 Research University) students are expected to master by groveling before the “owner” of the piece of equipment that they need to learn to use. Michael Urban’s Educator’s page brings this focus into our professional realm with a discussion of the options available for continuing professional education.

Aaron Johnson has a well-reasoned piece on AIPG’s attitude, as an organization, to the recent March for Science. I would personally have loved to have taken part, but couldn’t. Professional organizations are in a weak position when it comes to taking part officially in anything that can be seen as lobbying, or trying to influence politics, because of both their tax position, and their openness to charges of self-interest. In particular, we see more and more the accusation from some members of the public that some scientists deliberately try to scare the people and their politicians in order to bring in more grant money. That, to me, leaves science and branches of science emasculated in ways they shouldn’t be. Some other countries have very efficient systems by means of which the government itself reaches out to scientific and technical institutes (such as, in Britain, the Geological Society of London or the Institution of Mining and “Metallurgy”, to ask for unbiased white papers on specific issues. It is left to the scientific bodies in question how to ensure thorough and unbiased input: but their continued positions of public respect depend on their being able to do so.

I’m writing this to you from Germany, en route to the three large islands of the western Mediterranean: Corsica, Sardinia and Sicily, where I hope to observe some of the fascinating local geology, as well as the archeology and local culture. Sicily I already know something about: the island is formed of a series of large nappes from the north (i.e. thrust out of the Tyrrenhins Basin onto African Crust. As a result the evaporites of the Messinian salinity crisis, laid down on this African crust, can be anywhere from 7,000 feet below sea-level to nearly a thousand feet above sea level. Gypsum has been mined for centuries, but bitterns are present, too. In the nineteenth century British companies mined potassium (sylvite), exploiting children as young as 6 years old to carry loads up and down stairs hewn in the narrow and steep inclines which gave access to the underground. This gave Agrigento-born Luigi Pirandello (playwright and novelist) good reason to hate the English. Today potash is produced from deep boreholes between Caltanissetta (where the Sicilian School of Mines is located) and Agrigento, an ancient Greek town on the south coast. Etna also sits in part on the evaporite basin. While in Sicily I will be field-checking the results of a project I have recently done in the hinterlands of Selinunte, another beautiful Greek city on the far SW coast, for an archaeologist friend, Sardinia has its nuraghi (ancient stone towers), but it also has a varied geology. The NE of the island consists largely of granites, basalts and metamorphic rocks, whereas the SW portion is largely limestone, and contains some apparently Mississippi-Valley-Type Lead-Zinc deposits. The NE corner of Corsica contains a Tertiary (Alpine) ophiolite complex thrust westward onto a Permo-Triassic igneous complex which itself intrudes Panafican crust.

We need more really good articles for TPG: my I encourage you to send in any good ideas you have!

I shall be keeping in regular touch with Dorothy Combs at the office, so TPG will go on as usual.
1. The stratigraphic principles of “superposition”, “original initial horizontality” and “original lateral continuity” are attributed to this important early geologist:
   a) William Smith.
   b) Abraham G. Werner.
   c) Nicolaus Steno.

2. The foraminifera Globorotalia menardii has been used as a climate indicator. Which of the following statements is correct?
   a) Shells are larger and more abundant during warmer periods.
   b) Shells are larger and more abundant during colder periods.
   c) Globo what?

3. It is a characteristic of “quick clays” to have values of “liquidity index” ($I_L$) of 1.0 or greater. How is the “liquidity index” defined?
   a) $(\text{Liquid limit} - \text{Plastic limit}) / \text{Plasticity Index}$.
   b) Plasticity index / Percent Clay.
   c) $(\text{Natural Water Content} - \text{Plastic Limit}) / \text{Plasticity Index}$.

4. In our studies of rock mechanics and structural geology, we often deal with the concepts of the stress vector (force per unit area at a point on a plane) and the stress tensor (defining the overall state of stress). Find the stress vector ($\mathbf{S}$) if the unit normal vector for the plane ($\mathbf{n}$) and the stress tensor ($\mathbf{T}$) are:

   \[ n = \left(\frac{2}{3}\right) \mathbf{x} - \left(\frac{2}{3}\right) \mathbf{y} + \left(\frac{1}{3}\right) \mathbf{z} \quad (1) \]

   \[ \mathbf{T} = \begin{bmatrix} 7 & 0 & -2 \\ 0 & 5 & 0 \\ -2 & 0 & 4 \end{bmatrix} \quad (2) \]

   a) $\mathbf{S} = 3 \mathbf{x} - (14/3) \mathbf{y} + 2 \mathbf{z}$
   b) $\mathbf{S} = 2 \mathbf{x} - (16/5) \mathbf{y}$
   c) $\mathbf{S} = 4 \mathbf{x} - (10/3) \mathbf{y}$
   d) Are you crazy? You think I am Einstein’s brother or something?

5. An isolated block of a nappe overlying autochthonous rocks defines:
   a) An “inselberg.”
   b) A “klippe.”
   c) A “monadnock.”
   d) A “fenster.”

**TALES FROM THE FIELD:**

Got an interesting field experience? Of Course you do! Send in your field (or office) story and we’ll share it in TPG. Send tales to Dorothy Combs at aipg@aipg.org
Competence. Integrity. Ethics. These are the three cornerstones of AIPG. For over 50 years, our organization has proudly upheld these principles. None of the three are any more important than the others, and all three are interrelated and lend stability in the way our members practice professionally. Just as a tripod without three legs will fall; not adhering to these three principles detracts from a person’s professional practice.

An individual’s competence is obviously important and is easily measured and appreciated by others. It begins with education and a degree and continues throughout your career. On the job training, successfully completed projects and assignments, and continuing education all contribute to competence. As many of our long-time members can attest, your education doesn’t stop when you graduate with a degree. Rather, it continues, and you will find that if you take advantage of the opportunities, you learn more during your professional career than you did when you were a student. After all, most individuals are only students for four to eight years, but professionally practice for 40 or more years. AIPG offers many opportunities for continuing education, including both Section and National activities such as technical presentations, field trips, short courses, workshops, and webinars. As more states that have professional licensure of geologists require continuing education, demonstration of competence becomes increasingly more important. Take advantage of what AIPG has to offer; the benefits will outweigh the costs and time spent in doing so, and both you and AIPG will benefit.

Integrity is being honest, truthful, and doing the right thing even when no one is there to see it or know about it. It appears to be a commonly valued principle in today’s society, and at the same time seems to be one that is often abused, neglected, or ignored by many. It applies to our actions toward our employer, our clients, our friends, and our neighbors. After all, who wants to work with or associate with an individual who would lie, cheat, or steal from them? It is a measure of trust that others have in us, and comes from delivering sound, competently completed projects to our clients and how we deal with them as we do so. Integrity is something that is built up over time and can take only a moment of poor judgment to destroy.

Ethics has been described as the slippery slope between right and wrong. Being ethical has also been considered as following both the letter and spirit of the law. Ethics is perhaps the most difficult of the three principles to quantify and for others to decide whether an ethical breach exists. Ethics touches on both competence and integrity; if an individual’s professional practice is not competent or done with integrity, they are also not being ethical in their representation to their client. AIPG is fortunate to have an ethics column that David Abbott has run for many years in TPG and discusses a wide range of situations. AIPG takes allegations of ethical breaches seriously, and investigates each complaint it receives. There have been some disciplinary actions through the years, and these are dealt with in accordance with the bylaws. Of course, the Executive Committee must be made aware of potential ethical breaches; a complaint must be filed, and evidence must be provided. And once this information has been received, it takes time to conduct the investigation. In some cases, the individual under investigation either resigns their membership immediately when notified of the complaint, or does not renew their membership for the next year. In either case, this method of ending their membership is, in accordance with the AIPG bylaws, considered to be termination with prejudice. Termination of membership also effectively ends AIPG disciplinary proceedings.

AIPG is proud of its many members and the way that they practice geology competently, with integrity, and ethically. The small number of ethical problems that AIPG has had is a tribute to the quality of member that AIPG has attracted. That said, it is important that our members actively participate in the organization, and if you become aware of potential ethical issues that they be reported so they can be investigated. Remember, communication is key. Only by doing so can AIPG maintain its reputation for high standards in this regard.

This is an important facet of our organization, particularly in a time when so many individuals in today’s society seem to have forgotten or ignore these principles. Practicing competently, ethically, and with integrity represents added value to those with whom we work, and is not necessarily something that hiring or working with a state-licensed, non-AIPG individual would provide. This is another example of why it is important to get the word out about what it is we do, how we do it, and why AIPG is important. Let’s work together to keep the cornerstones of AIPG solid and its reputation strong into the future!
Answers:

1. The answer is choice “c” or Nicolaus Steno (1638-1686), one of the early founders of modern geology and stratigraphy.

Professor Abraham G. Werner (1750-1817) was a popular and influential geologist and competent mineralogist. Werner was also the leader of the concept of “Neptunism”, postulating an aqueous origin for all rocks.

William “Strata” Smith (1769-1839) was an English geologist, engineer and surveyor who developed the first nationwide geologic map of England and Wales. Smith advanced stratigraphic correlation techniques by using similar fossil assemblages in matching rocks of the same age but of different lithologic composition. His work ultimately led to our understanding of the principle of biologic succession. On a personal note, I had the good fortune to see the original map by William “Strata” Smith at the Burlington House in London, headquarters to “The Geological Society” of London.

2. The answer is choice “a” or “Shells are larger and more abundant during warmer climate periods.”

Various confirming studies may be referenced, such as that by Bhonsale and Saraswat (2012) analyzing late Quaternary sediments in the northeastern Indian Ocean.

3. The answer is choice “c” or “[(Natural Water Content – Plastic Limit) / Plasticity Index].” Thus:

\[ I_L = \frac{W_N - PL}{PI} \]

The plasticity index divided by the percent clay defines the “activity ratio.” Thus, choice (b) indicates:

\[ A_R = \frac{PI}{\% \text{ clay}} \]

Since the liquid limit minus the plastic limit defines the plasticity index, choice (a) becomes:

\[ LL - PL / PI = PI / PI = 1 \]

Also, please recall that the “sensitivity” of a clay is defined by the ratio of its undisturbed strength to its remolded strength. “Quick clays” and “extra quick clays” have a “sensitivity’ values of 8 to more than 64! Some Norwegian and Canadian clays have “sensitivity” values of 500 to 1,000! Wow!

4. The answer is choice “c” or \( S = 4 \, x - (10/3) \, y \). The proof follows:

“Cauchy’s Principle” relates the stress vector to the stress tensor via the unit normal vector. Thus:

\[ S = n \ast T \]  \hspace{1cm} (3)

Then, from (1) and (2):

\[ n = (2/3) \, x - (2/3) \, y + (1/3) \, z \]  \hspace{1cm} (1)

\[ T = \begin{pmatrix} 7 & 0 & -2 \\ 0 & 5 & 0 \\ -2 & 0 & 4 \end{pmatrix} \]  \hspace{1cm} (2)

we write:

\[ S = [2/3 \, -2/3 \, 1/3] \ast \begin{pmatrix} 7 & 0 & -2 \\ 0 & 5 & 0 \\ -2 & 0 & 4 \end{pmatrix} \]  \hspace{1cm} (4)

\[ S = [(14/3) + 0 - (2/3)] \, x + [0 - (10/3) + 0] \, y + [- (4/3) + 0 + (4/3)] \, z \]

\[ S = 4 \, x - (10/3) \, y \]  \hspace{1cm} (5)

Equation (5) is the answer to our problem and coincides with our choice “c”. Cool stuff, isn’t it?

5. The answer is choice “b” or “a klippe.”

A “fenster” describes an erosional “hole” or “window” in the overlying strata of the nappe exposing the underlying autochthonous rocks.

The terms “inselberg” and “monadnock” may be used interchangeably in describing an erosional remnant or residual hill or mountain standing above a plain.
Young Professional Status Is Extended to 5 Years

In the lead topic of column 161 in the January ’17 TPG, “Transitioning from Student to Young Professional Status,” I noted that extending the period during which one could be a Young Professional to 5 years had been suggested at the 2016 Annual Meeting and was on the list of proposed Bylaws changes. At its Winter meeting in January, the National Executive Committee made that change.

I would still like to receive your thoughts on transitioning from Student to Young Professional status.

Talk Length at Conferences and Online Conferencing

In his “In Conference!” contribution to the December 2016 GeoScientist, Arjan Reesink notes that we spend a lot of time and money going to conferences that are supposed to be “opportunities for sharing, questioning, networking, and absorbing the latest insights.” Reality is that we spend a lot of conference time passively sitting in chairs listening to one or two all too brief presentations with real substance for our practice specialties and then to a number of talks that are “simplified too far for scrutiny, or pitched too high for comprehension.”

I realize that conference program committees are trying to get lots of different talks and fit as many as possible into a schedule. Having lots of talks helps draw in attendees. And conference registration fees provide significant amount of non-dues revenue that all professional societies are constantly seeking. But there’s not a lot one can present on a complex topic in 15 minutes if one allows for the expected 5 minutes for questions. Reesink proposes using video presentations that don’t necessarily have the time limitations of conferences and don’t require travel expenses and time as an alternative to traditional conferences.

While video presentation papers can help to solve the problems of presentation length and the elimination of travel expenses, video presentations do not provide for the networking, sharing, and discussions that do occur at professional conferences. The importance of this less formal interaction is hard to measure but is very real. In addition, conferences that move around the country provide the opportunity for field trips in the vicinity of the conference’s location.

In March I presented a webinar on the fundamentals of professional ethics for AIPG and AGI that lasted about an hour. This webinar featured one of the drawbacks of video presentation, the lack of the ability to easily interact with the participants. Even though there was a means of asking questions, this still didn’t allow the rapid interchange of ideas that occurs with a live audience. At SME’s Annual meeting in February, I led a 2-hour professional ethics discussion following up on the November presentation. This live presentation allowed for a number of interesting discussions of the topics presented by attendees.

While I don’t believe that video conferences will replace conventional professional society meetings, I do believe that Reesink’s observations on the length of presentation time is worth serious consideration. If we want talks with depth, we must allow the time for that depth to be developed. Thirty-minute talks (25 presentation minutes and 5 question minutes), or longer should be considered. And video presentations posted on YouTube or professional society websites may become a recognized way of presenting professional research.

Correction to “USGS Inorganic Geochemical Lab Manipulated Data and Proving Your Data Are Accurate,” PE&P 160

The topic, “USGS Inorganic Geochemical Lab Manipulated Data and Proving Your Data Are Accurate,” appeared in Column 160 on pages 31-33 of the Oct/Nov/Dec ’16 issue of the TPG. The first full sentence in the left column on page 32 was less than clear. An improved version is, “Only by rigorous application of QA/QC protocols can one demonstrate that analytical and other sampling results are reliable.” The point is worth repeating and applies to all types of data collection.

Paleontological Resource Preservation and Mining

Tony Adkins, CPG-8159, alerted me to the proposed regulations to implement the Paleontological Resources Preservation Act of 2009 (PRPA), www.federalregister.gov/documents/2016/12/07/2016-29244/paleontological-resources-preservation. These proposed regulations directly address those who are exploring for and collecting fossils on federal lands, particularly on more than a casual level. However, these regulations could impact some types of mining exploration. In particular, the Salt Wash Member of the Morrison Formation in the Four Corners area has been both the site of intense uranium exploration and mining since the 1950s and the site of some major dinosaur and other fossil locations. Adkins notes, “Proposed §49.15 would state that the proposed rule does not impose additional requirements on

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Compiled by David M. Abbott, Jr., CPG-04570, 5055 TAMARAC STREET, DENVER, CO 80238, 303-394-0321, FAX 303-394-0543, DMAGEOL@MSN.COM

PROFESSIONAL ETHICS AND PRACTICES - COLUMN 162

Topical Index-Table of Contents to the Professional Ethics and Practices Columns

A topically based Index-Table of Contents, “pe&p index.xls” covering columns, articles, and letters to the editor that have been referred to in the PE&P columns in Excel format is on the AIPG web site in the Ethics section. This Index-Table of Contents is updated as each issue of the TPG is published. You can use it to find those items addressing a particular area of concern. Suggestions for improvements should be sent to David Abbott, dmageol@msn.com
activities permitted under the general mining or mineral laws, does not apply to Indian land, and does not apply to land other than federal land as defined in the proposed rule.” The potential for these regulations to impact mining activities exists depending on the interpretation of several points. It might be, for example, that paleontological surveys might be required as part of a plan of operations that could require similar surveys for cultural items. I am not personally aware of uranium deposits that have contained important paleontological and cultural finds. However, Adkins, who lives in Nucla, Colorado in the middle of uranium country has seen radioactive fossil bones and logs kept as souvenirs and some bone debris in the backs of some mines. Adkins agrees that fossils aren’t common in uranium mines in the area but they do occur. I do know that significant fossils have been recovered from coal mines. Also, the Lompoc, California diatomite deposit contains significant marine animal fossils that are exposed and collected as mining progresses. Lompoc is an example of a location where if mining didn’t occur, the fossils would not be uncovered and made available for collection.

It appears that the proposed paleontological resources preservation should be expanded to specifically deal with the situation where significant fossils are uncovered as a byproduct of the exploration and mining activities. If at Lompoc, the miners and paleontologists work together, both benefit. Those with specific knowledge of particular sites where a significant fossil location is a byproduct of other activities, should consider contacting the relevant BLM and other agencies to develop mutually beneficial regulations.1

Safety in the Field

Two articles in the Jan/Feb/Mar ‘17 issue of the TPG addressed safety issues. The first, “Safety for the infrastructure geologist—expecting the unexpected,” by George Davis, CPG-10951, specifically addresses (1) the need to “call before you dig” due to underground utility lines (electric, natural gas, petroleum products, steam, etc.) that you do not want to inadvertently encounter, (2) overhead powerlines, and (3) vehicular traffic. Davis works for the Missouri Department of Transportation and knows whereof he speaks. But the hazards of underground utility lines and overhead powerlines can be encountered out in the country, not just next to highways. In addition to the very real safety issues presented by utility lines, these lines can also adversely affect your geophysical surveys.

The second article, “Field trip insurance and safety,” addressed the problems encountered in trying to obtain liability insurance for field trips. Despite the hundreds of field trips run by geological societies and schools every year, the insurance industry has no actuarial data on incident rates. I drafted this article for the National Executive Committee as a “heads up” to a potential problem for AIG and the Editor decided it belonged in the TPG. It is an issue all of us must deal with. This article contains the Rocky Mountain Association of Geologists “Accident and Emergency Plan” checklist that all leaders and sponsoring organizations of field trips, including AIG Sections, should adopt.

De-licensure of Geologists

R. Douglas Bartlett’s article, “De-licensure of geologists: coming soon?,” in the Oct/Nov/Dec ’16 TPG and Alan V. Moran’s, CPG-9568, and Bill Dixon’s, CPG-3658, Letters to the Editor, “Re: De-licensure of geologists in Arizona,” in the Jan/Feb/Mar ’17 TPG renews a long-standing debate in TPG and these columns over the years (see “Topical Index” under www.aapg.org/codeofethics for the listings under “licensing”). It’s time to take another look at some of the arguments for and against state licensing of geoscientists.

The justification of professional licensing laws is protection of the public’s health, safety and welfare by setting standards of education (confirmed through examination for ASBOG states) and experience. The AIG Code of Ethics, Canon 2. Obligations to The Public, “Members should uphold the public health, safety, and welfare in the performance of professional services, and avoid even the appearance of impropriety” states the same principle and Rule 2.1.3 and Standard 3.2 and Rule 3.2.1 provide that protection of public health, safety, and welfare takes precedence over client confidentiality. But is this justification being met? The answer is, generally very poorly.2

There are a variety of reasons for this poor performance, one of which is the ability to investigate allegations of incompetent or unethical practice. States only have jurisdiction within their boundaries and actions that licensee (or registrant) in that state takes in another state are not investigated. This is why Canada no longer recognizes an ASBOG license for purposes of Canadian National Instrument 43-101 for technical mining reports. Another problem results from the fact that investigations of incompetent or unethical practice require time and expertise, which cost the state attorney general’s office money and lead to a disinclination to prosecute.

A 2016 review of disciplinary proceedings in Canada, the United States, and Australia identified 50 proceedings for incompetent or unethical practice; they were AIG, 11 since 1985; Canada, 19 since 1990; ASBOG states, 17 since 1995; and Australia, 1 in 2010 and 1 in 2016.3 The 50 proceedings fell into 6 general baskets of offence types, (with some actions falling into more than one basket (the total baskets is 61)): 1) 2 concerned falsifying data. 2) 5 concerned fraudulent billing and/or falsifying time sheets. 3) 9 concerned inappropriate behaviour towards others. 4) 9 concerned problematic geoscience work and/or technical deficiencies.

1. The uncovering of the Snowmass Village fossil (Snowmastodon) site during the excavation of the Ziegler Reservoir in October 2010 is a well-known example of a significant fossil site being discovered as the byproduct of other activity. A number of fossil sites around the Denver area were uncovered during construction of homes, highways, or the Coors Field baseball stadium.
3. Bonham, O., Abbott, D., and Waltho, A., 2016, An international review of disciplinary measures in professional geoscience—both procedures and actions (abs); 35th International Geological Congress (Cape Town, South Africa); available through GEOREF; a paper based on this talk is in preparation for Geoscience Canada and will be re-printed in the TPG.
been the subject of a disciplinary action
renewal forms asking if the licensee has
states have a question on their license
particularly one who has few if any references
it very difficult for the public to perform
against whom a disciplinary action has
taken (2016, op. cit.). This makes
registry that lists those geoscientists
failure to pay taxes or fees.
12 other state actions were taken for
Development reporting requirement and
took 28 actions for failing to comply
other convictions against the same individual. In addition, Texas
took 28 actions for failing to comply
with its annual Continuing Professional
Development reporting requirement and 12 other state actions were taken for
failure to pay taxes or fees.

As I pointed out there is no central
registry that lists those geoscientists
against whom a disciplinary action has
been taken (2016, op. cit.). This makes
it very difficult for the public to perform
due diligence on a geoscientist, particu-
larly one who has few if any references
on Google or similar databases. Most
states have a question on their license
renewal forms asking if the licensee has
been the subject of a disciplinary action
during the previous year. The wording of
this question varies from state to state. If
the state is informed on an action, then
the state could take action to suspend or
not renew the license, but how many do?
How many engineers are the subject of
disciplinary actions for incompetent or
unethical practice. How well does state
licensing of geoscientists, engineers, or
any other profession really protect the
public?

The exemption of some classes of geo-
scientists from licensing creates another
set of problems. Government employees
are usually exempted. In one sense, they
work for their agencies and do not, in
that sense, work for the public. But as
the agencies are working for the benefit
of the public, this exemption seems a bit
stretched. The next group of exempted
geoscientists are those working in the
natural resource sector, mining and
petroleum. This exemption avoids the
political problem faced by those advo-
cating geoscience licensing from having
what may be a significant number of
natural resource geoscientists opposing
the licensing effort. A major objection
natural resource geoscientists have to
state licensing is the fact that most of
them have a multistate practice and
getting and maintaining a bunch of
state licenses is expensive. The lack of
easy reciprocity is a real problem
in such cases. Many natural resource
geologists work for companies and not
directly for the public and thus, in some
states, can avoid licensing because they
are not practicing publicly. This is one
of the issues in the recent change in the
Arizona licensing law. For those few
natural resource geoscientists who do
engage in or contribute to fraudulent
activity, they are almost always subject
to state and federal securities laws that
carry both civil and criminal penalties.
These are much more severe than a
licensing violation.

Geoscientists practicing engineering
geology, environmental geology, and
hydrology are usually those promoting
licensing. They practice in just one or
a few states and feel that the license
puts them on a par with licensed engi-
neers. In Colorado, which does not have
geoscientists licensing these geoscientists
use AIPG Certification as an alternative.

Geologic Ethics & Professional Practices is now available on CD

This CD is a collection of articles, columns, letters to the editor, and other material
addressing professional ethics and general issues of professional geologic practice that
were printed in The Professional Geologist. It includes an electronic version of the now
#1. The intent of this CD is collection of this material in a single place so that the issues
and questions raised by the material may be more conveniently studied. The intended
students of this CD include everyone interested in the topic, from the new student of
geology to professors emeritus, working geologists, retired geologists, and those interested
in the geologic profession.

AIPG members will be able to update their copy of this CD by regularly downloading the
pep index.xls file from the www.aipg.org under “Ethics” and by downloading the electronic
version of The Professional Geologist from the members only area of the AIPG website. The
cost of the CD is $25 for members, $35 for non-members, $15 for student members and
$18 for non-member students, plus shipping and handling. To order go to www.aipg.org.

Geoscience Online Learning Initiative (GOLI) - AGI/AIPG

You, as an AIPG Member, are invited and encouraged to submit a presentation to be given online for the Geoscience Online Learning Initiative (GOLI). AGI and AIPG have teamed up to build a portfolio of online learning opportunities to help support
the professional development of prospective and early-career geoscientists as well as addressing topics of interest to the broader
geoscientific profession. GOLI courses support both synchronous and asynchronous online learning, and count toward continuing
education units (CEUs).

A $200 stipend and 10% share of registration fees are provided to the presenters (details on presenters guide).

If you are interested please read the GOLI - AGI/AIPG Presenters Guide and Guidelines and Suggestions for Webinar Presentations on the AIPG National website (www.aipg.org).

AIPG, 303-412-6205
www.aipg.org

www.aipg.org

PROFESSIONAL ETHICS AND PRACTICES - COLUMN 162
How do you Fulfill Your Professional Development Needs?

Michael J. Urban, MEM-1910

People participate in professional development for a variety of different reasons. Some of us need it for career advancement. Others are required to stay abreast of new technologies or techniques related to their jobs. Still others feel that in order to remain current in their disciplinary fields, they must brush up on their understanding of concepts or new ideas encountered in the mainstream literature. And then, of course, there are those life-long learners who simply just want to continue accumulating knowledge over the years. Whatever the reason, professional development is a necessity for many. Geologists are no exception. Be they involved in industry, private consulting, education, or another setting, professional geologists are routinely on the lookout for inexpensive and efficient ways to meet their professional development needs.

**Professional development** may be defined as the pursuit of relevant knowledge or skills in a particular profession. It may have widely varying meanings, depending on the profession in question, but is typically used in reference to furthering professional preparation or credentialing via formal or informal education and training. Professional development activities may provide clock hours, continuing education units (CEUs), university credit, certificates, or other forms of verifiable documentation.

### Types of Professional Development

What types of professional development (PD) opportunities exist? Given the somewhat expansive definition of professional development, an assortment of different activities may meet the general description. Of paramount importance, then, is knowing specifically which kinds of PD activities are acceptable to your organization or employer for advancement, credentialing, and disciplinary knowledge maintenance. Seek out the specific guidelines of your organization, or ask someone who knows.

Common professional development activities include formal coursework (through universities or organizations), workshops, short courses, seminars, or webinars. Conference attendance may count toward PD needs too (but again, check with your organization first). In some instances, workshops and field trips may be offered at conferences, and it may be possible to obtain, or arrange for, CEUs for participation. It is also worth mentioning the possibility of earning college credit through completion of short courses or other forms of PD (existing partnerships between organizations and universities may already be arranged, or you may contact a university to discuss earning credit; these usually involve additional costs).

Depending on a person’s career goals, it may be advantageous to pursue a graduate degree or another certification simultaneously with professional development.

### Important Considerations

What should you look for in a professional development opportunity? In addition to pertinence, one might weigh a number of other factors when deciding whether or not to pursue a specific PD option. If you are anything like me, you probably want the biggest bang for your buck – so, finding a high-quality, low-cost prospect is vital. Equally important to cost, though, is the required investment of time. Expediency may be a top priority for us, so that we can accomplish our PD goals in one sitting (e.g., seminar) or through a short-course lasting just a few weeks. Therefore, the **three** most important considerations when evaluating the value of any potential professional development activity relate to: 1) quality, 2) cost, and 3) efficiency.

While less substantial than the previously mentioned considerations, there may be a few relevant others. At the risk of betraying our idiosyncrasies, we might consciously note the location of a PD event, opting to select or dismiss it based on particular characteristics of the building, city, state, or nation in which it is being convened. Our rationale may stem from a desire for specific driving conditions or to avoid certain airports. We may, for example, simply prefer local or online PD activities for sake of convenience, or when combined with a sense of fiscal responsibility, so that we do not incur the additional costs associated with distant travel.

Today, we also face another critical decision: mode of delivery. Do we prefer in-person or virtual meetings? **Online** professional development – thanks to lower costs, ability to reach a greater audience, and convenience – is much more prevalent than in the past and continues to open doors for both providers and intended recipients. Still, some topics may better lend themselves to face-to-face training, where specific tools or equipment must be utilized under direct supervision. Also of consequence is our preferred style of learning. Is our motivation in an online setting different than in a traditional, face-to-face, environment? Depending on your answer to this question, and the topic of the PD, online options may present advantages or disadvantages, and these must be taken into account.

Veteran professional development attendees likely have preferences, but sometimes we have a need that must be satisfied and do not have the luxury of being too selective. For newcomers, you may want to try out a few different kinds of professional development settings to see how each fits your individual interest, learning style, or need. One could, after all, be pleasantly surprised by a new venture.
Summary

Those working in geology, as in other professions, need to stay current in discipline-specific knowledge and skills related to their jobs. At times this may require recertification or the completion of other recognized professional development activities (e.g., short courses, workshops, etc.). When considering whether or not to pursue specific professional development opportunities, three important considerations are: quality, cost, and the investment of time. Ideally, we seek high-quality, low-cost prospects requiring a minimal investment of time. But, of course, we do not wish to sacrifice quality for cost.

Featurerd Resource

This issue's featured resource is the Geoscience Online Learning Initiative (GOLI) located at http://aipg.org/online-courses

A collaborative effort between the American Geosciences Institute (AGI) and AIPG, the Geoscience Online Learning Initiative provides webinars and courses appropriate for meeting professional development needs in geology. A number of topics are currently available to choose from, and may be free or at a cost. The courses and sessions range from less than 1, and up to several, earnable CEUs.

IN MEMORY

John Kenneth Shanklin, passed away May 4, 2017, peacefully in the Countess of Chester hospital, England. John Shanklin was for a long time deeply involved in the politics of geology in the United Kingdom. He helped to create the Institution of Geologists (IG) and later was involved in the merger of that organization with the Geological Society. This led to the establishment of the title Chartered Geologist.

John Shanklin gave some 20 years of his life to the European Federation of Geologists (EFG). At the end of the Seventies, with Gerald Clement of France, Eric Groessens of Belgium, José Martins Carvalho of Portugal, Renzo Zia of Italy, Santiago Leguey of Spain and others, he was one of this group of far-sighted geologists who understood the necessity for geologists across Europe to join together to protect and to develop their profession, through an European community of geologists stretching from the Atlantic to the Urals.

Following two years of meetings and drafting, the Federation was officially formed at the Inaugural Council Meeting in July 1980 at the Maison de la Géologie in Paris, France. John Shanklin was elected to be the first President. He successfully guided the EFG through its formative years, helping to develop its policies, to draft the first dossiers and to start the process of enlargement. So in 1983 he was able to hand over a fast-growing organisation to Renzo Zia.

Then in 1989 when John was attending the World Geological Congress in Washington, USA, he met Executive Director Bill Knight, President Richard Proctor and other members of the American Institute of Professional Geologists (AIPG). This led to the exchange of information and visits which culminated in the establishment of reciprocal associate membership in 1998 between our two organisations and opened up the marvellous dialogue between the EFG and the AIPG that continues today. The AIPG recognised the important part played by John and in 1993 AIPG President William Fischer awarded John Shanklin Honorary Membership of their Institute.

When John ceased to be one of the UK’s delegates, he was soon drafted in to serve on the Registration Committee for the EurGeol title. There he served diligently, first with Franz Goerlich and then with Eric Groessens.

In 2000 the EFG recognised its huge debt to John Shanklin and he was awarded the first Honorary European Geologist title (later morphed into the EFG’s Medal of Merit) on the EFG’s twentieth birthday.

When he retired from active geological life, he continued with his interests in local Parish, School and Village affairs, along with a long involvement in local Conservative politics. However he always kept up his interest in the progress of the EFG. He will be very much missed by Family, Friends and Colleagues.

Gareth Ll. Jones Past President
Richard Fox Past President

Gilbert (Gil) J. Gabanski, M.E.M.0908, unexpectedly passed away on Friday, March 31st at his home. Gil’s family is planning a remembrance service, and we’ll update our members when details become available in the coming weeks/months.

Gil was involved in several professional organizations in Minnesota, including the American Institute of Professional Geologists (AIPG) Minnesota Section, the Minnesota Groundwater Association (MGWA), and Minnesota Brownfields. Gil was an early member of the Minnesota Brownfields Advisory Committee. Gil was a co-founder of MGWA and also the President of the MGWA Foundation for many years. Gil also served on the Professional Geologist licensing committee in the late 1990s.

Gil was an active, engaged, and enthusiastic volunteer for the AIPG Minnesota Section. He was very involved in the early days of the AIPG MN Section – helping us recruit members and keep the section growing. Recently, he was serving as a Director and on the Bylaws Revision Committee. It was Gil’s idea to start the Student Support Committee, and he chaired the committee since its inception in 2015. The committee reviews dozens of college/university student resumes each year at no cost. He participated in many of our geoscience career panels and presentations at local colleges/universities. On Monday, March 27, Gil was a guest presenter in the Practical Skills for Professional Geologists course at the
University of Minnesota. His talk left such an impression, that a couple of the students told their professor that they were now considering careers in environmental geology as a result of Gil’s visit!

Gil was a judge at the Minnesota Academy of Sciences State High School Science Fair for the last 11 years and always encouraged his fellow geologists to volunteer as well.

Gil worked for several companies over the years. Most recently he worked at Hennepin County in the Contaminated Lands Unit where he helped manage the Environmental Response Fund grant program. He also kept his own consulting firm, GJG Environmental Consultants, going for the last 15 years.

Gil had a profound impact on the groundwater and geosciences professional communities in Minnesota. Gil was a mentor and friend to many of us and he will be missed.

04/18/2017 - Gil’s family has posted an obituary, which includes visitation information. Visitation to be from 3 to 7 PM on Thursday, June 8, 2017 at Gearty-Delmore Plymouth Chapel, 15800 37th Avenue North at Vicksburg Lane. 763-553-1411 or www.gearty-delmore.com.

Dr. Donald O. Doehring, CPG-02682, died December 19, 2016 in Green Valley, Arizona. He was a Geologist, a Professor, a Consultant and an Expert Witness during his career that spanned some thirty-five years. He enjoyed teaching Geology at the introductory to Ph.D. level. His introductory-level course filled the largest classroom on campus each semester for several decades. His hobbies included ham radio (K7DOD), travel, reading, geocaching, baking and making people laugh.

He advised 88 masters-level and 5 doctoral students. Also, he served as Department Head, Acting Dean and University Mediation Officer at Colorado State University. He is survived by his wife Barbara Doehring of Green Valley, Arizona; his son Frederick Doehring and his wife Vicky Doehring and their children Josef Doehring and Gabrielle Doehring of Sandy, Utah; and by his daughter Katherine Doehring Egan and her husband Kevin Egan and their daughter Kate Egan of Dallas, Texas.

Don devoted his life to teaching others. Whether it was lecturing to 400 undergraduate students or helping his son learn to fix the family car he always took time to encourage and support his children and students. He passed his concern for providing for his family to his daughter, who he mentored in financial matters to great success. Don was a devoted and loving husband. He and his wife Barbara had 57 wonderful years together.

The family wishes to thank the wonderful professionals who took such good care of Don during his final year. At the risk of forgetting someone, this includes Dr. Porterfield and his staff with Arizona Oncology, Dr. Laguillo, Dr. Levine, and, in his final hours, the caring staff of Soulistic Hospice.

A Celebration of Don’s Life will be held sometime in the Spring.

In lieu of flowers the family suggests donations to either the Green Valley Amateur Radio Club (c/o Bob Call, treasurer, 501 S. La Posada Circle, #195, Green Valley AZ, 85614) or Soulistic Hospice (http://soulistichospice.org/#home).

Richard H. Pearl, CPG-02340, passed away April 30, 2017. Services will be held June 3rd at Green Mountain United Methodist Church at 10 A.M. The church is located at 12700 W. Cedar Ave. in Lakewood, Colorado. It is with a heavy heart that James Pearl notifies us.

Attention Members
Please remember to notify AIPG National office of any changes you may have.

- Employer
- Address
- Email
The following members have received in recognition of their membership milestones, pins, and certificate. Your dedication to AIPG throughout the years is truly appreciated. It has ensured the growth and success of the Institute. Please join AIPG Headquarters in thanking these members for their continuous support.

### 50 Years

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Comments on proposed rule: Modernization of Property Disclosures for Mining Registrants

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Wisconsin and Michigan Field Trip

Why Geology Past is Important for Today's Present World
MI & WI AIPG Field Trip

Day 1 - Wisconsin Geology
Saturday, August 12, 2017
8:30am to 5pm

On this day, we will start with the Archean rocks and work our way up looking at: Paleoproterozoic Palms, Ironwood Formation, Tyler Formations, then some stops in the Mesoproterozoic Mellen Complex of the Mid-continent Rift, all near Mellen, Wisconsin. Then heading east we will look at the Oronto Group at the mouth of the Montreal River. These rocks span more than 1.7 billion years and represent many different geologic environments and provide many different mineral resources.

Day 2 - Michigan Geology
Sunday, August 13, 2017
8:30am to 5pm

On Sunday, we will examine the geology of the rocks of the Keweenawan Supergroup (1.1 Ga) and related intrusive rocks of the Midcontinent rift system exposed around the Porcupine Mountains. The Porcupine Volcanics create much of the area topography and represent a volcanic center that became active late in the volcanic history (about 1093 Ma). The Porcupine Volcanics are distinctly enriched in light rare earth elements (LREE). Economic-grade ore bodies are located on the western and eastern mountain flanks. Transportation: Both field trips will leave from Porcupine Mountains Wilderness State Park.

Register Today!
Cost: $40 per person includes motor coach transportation to and from the park on both days and a barbecue dinner at the park on Saturday night!
Sign up to reserve your spot!

Lake of the Clouds, Porcupine Mountains Wilderness State Park. Photograph by Bill Cannon.
It’s getting to the end of the spring semester, and for many, that means the time to graduate is just around the corner. Countless individuals spend their entire school career looking forward to celebrating each graduation milestone, from Elementary School, to Middle School, to High School, College, and on and on. All throughout the different stages of schooling, students were commonly asked questions like “What do you want to do when you grow up? Or what do you want to do when you’re done with school?” For some, that end goal has stayed with them since the beginning, but for others that goal has changed and changed back and changed again, and some individuals spend their entire life undecided. For those select school-enthusiasts, that career decision gets put on hold while they pursue graduate and post-graduate degrees, which is the route that I choose. Fortunately, or unfortunately for me that time is coming to a close this semester, and truthfully my post-school plans are still up in the air.

Reflecting back on my graduate school experience I can honestly say that I had some great experiences and some not so great, but the positive experiences most certainly outweighed the bad. My best moments were making friends, presenting at conferences, traveling, taking part in internships, and getting the chance to grow more as an academic. Many of my negative experiences stemmed from struggling to find my footing as part of a new research team, and trying to mesh different personalities and work ethics as part of that new team. When times got tough, at times I questioned if I was cut out for graduate school, but ultimately I decided to continue on and just not dwell on any negativity, and I’m glad I did. Being in graduate school has made me more confident in staying true to myself. Focus on the way you conduct yourself and make connections with others, if people don’t take the time to really know you then they’re not worth your time or energy. Very rarely are things handed to you in life, so you’ve got to make opportunities for yourself, whether they be work or academic-related. If school is your passion then pursue a higher education, or if you’ve always dreamed of having a career in industry then go out and do it. I’m not sure what the future holds for me, but I am ready to take what I have learned and venture out into the world.

Hazardous Duty

Upon arriving at our exploration office the day after the July 4th holiday, my staff and I were met with a scary scene—a hole had been blown through the roof of our single-story Tucson office building, specifically, right over my office. Debris was everywhere—on the floor, on bookshelves, and on my desk. That night we were bombed again! We had known that the patrons of the bar next door often became rowdy, and over time we had kindly asked them to be less so. They apparently did not appreciate our input, and in their exuberance celebrating the Fourth of July, they decided to apply their skills as explosives experts by tossing sticks of dynamite onto the flat roof—they were miners, after all. We worked with detectives from the US Bureau of Alcohol, Tobacco, and Firearms to find the perpetrators, but no one was ever arrested. No one told me of this possible hazardous duty while I was studying geology in school!

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We thank all our donors for their generous support to the Foundation. All contributions, no matter the amount, are greatly appreciated. Thank you!

Barbara Murphy, CPG
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We ask that you continue supporting the Foundation with monetary contributions that would be used primarily to fund our scholarship and young professional initiatives, and other Foundation programs as well. The Foundation relies on the support of generous individual and corporate or group donors for financial contributions or gifts in kind. Information about donations is on the Foundation web page of the AIPG web site http://aipg.org/foundation. You may donate on-line or send your donation check by mail to:

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If you have any questions or comments about the Foundation, please contact me for additional information.

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Barbara Murphy, CPG
Chairperson, Foundation of AIPG
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ANNOUNCEMENT

SILENT AUCTION

The Foundation of the American Institute of Professional Geologists will hold a Silent Auction at the Welcome Reception of the AIPG Annual Meeting in Nashville for the benefit of the Foundation and its programs. More details about the silent auction, including donating items for the auction, will be available on the AIPG web site and Foundation web page.

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Register to attend the AIPG 54th National Conference Nashville, Tennessee.
September 23-26th, 2017

Silent Auction Photo are from the 2013 50th National Conference in Colorado.
Apparent MVT Lead Mineralization

As Defined by a Linear Regression Sulfate Reduction Geochemical Model Calculated from Lead Production and Reserve Records, and from NURE Program Stream Sediment Geochemical Analyses

Lawrence D. Turner, CPG-11408
DIR Exploration, Inc.
December 2016

Introduction

DIR showed (Turner and Turner, 2016) that by combining the semi-quantitative ore resource estimation method of Miesch et al (1959,1960) with the qualitative lithogeochemical interpretation techniques of Beus and Grigorian (1977), it was possible to statistically model the MVT mineralization system (Wenrich 1985) of uranium-mineralized collapse breccia pipes of northern Arizona. The resulting statistical model makes it possible to detect and predict the magnitude of blind uranium mineralization in northern Arizona from the chemical analyses of surface geochemical samples with accuracy sufficient to guide greenfields reconnaissance and project scale exploration work.

DIR has just completed the same work for Mississippi Valley Type ("MVT") lead deposits in Missouri using published average lead ore grades and maps of orebody surface projections for the Old Lead Belt, the Fredericktown area, the Indian Creek area, and the Viburnum Trend. Under the guidance of the same MVT sulfate reduction mineralization model employed in Turner and Turner (2016), these production/reserves data were regressed against stream sediment geochemical analyses from the late 1970s Figure 1. Contoured stream catchment Log10(Mt Pb) values calculated using an algorithm relating historical Pb reserves/production to NURE stream sediment trace metal analyses using an algorithm based upon the MVT deposit sulfate reduction model. Green sample locations are the MVT algorithm calibration points. DIR Exploration, Inc., December 2016

Figure 1. Contoured stream catchment Log10(Mt Pb) values calculated using an algorithm relating historical Pb reserves/production to NURE stream sediment trace metal analyses under the constraints of the MVT sulfate reduction mineralization model. Base map is after Kisvarsányi 2007 (Figure 3) and Leach et al., 2010 (Figure 4). Dark ‘blobs’ represent magnetic highs. Red solids show ore body projections while turquoise lines mark outer boundaries of drainage cells covering the ore deposit projections.
National Uranium Resource Evaluation (NURE) stream sediment sampling program to generate an algorithm that predicts magnitude of MVT lead mineralization in SE Missouri with about 87% accuracy. Excepting arsenic and uranium analytical determinations, the production function and the controlling or independent geochemical parameters used in the Missouri geochemical modeling case were identical to those applied in northern Arizona (ibid.).

Results

Figure 1 shows the results of applying the MVT lead resource algorithm to NURE stream sediment geochemical data covering SE Missouri.

Aside from the very poorly sample-represented Old Lead Belt area, all known lead mineralization trends in SE Missouri are very accurately marked by algorithm-transformed contoured stream sediment data. In addition to this result, the transformed NURE data indicate the presence of a number of other MVT lead mineralization trends within the same exploration and mining province. Most of these trends follow the N-S orientation of the Viburnum Trend, very evidently reflecting the basic structural control of province lead-zinc mineralization by compression (Hagni 1989) of ground marginalized by the left-lateral, SE-striking Central Missouri, Grand River, and NE Missouri tectonic zones (Kisvarsánya 2007). See the inset stress ellipsoid provided on Figure 1.

At the scale of the Missouri state map view (not provided here), the Joplin Pb-Zn MVT mining district in SW Missouri shows up as clearly in the algorithm-transformed NURE stream sediment geochemical data as the SE Missouri MVT district does.

Among other things, Figure 1 suggests that higher density stream sediment sampling might constrain the subsurface locations of MVT lead deposit mineralization to a degree sufficient to guide early exploration drilling. Figure 1 also indicates that the Pb-Zn mineralization potential of southeast Missouri has not yet been exhausted.

Cited References


Larry D. Turner is a mineral exploration geologist with graduate education and training in exploration geochemistry and mineral economics. Although he was raised in the Missouri Lead Belt, since the mid-70s he's worked as a mineral exploration geologist and geochemist in the western United States.
As a geologist, it is almost a prerequisite to have some sort of a rock collection. I have been a rock collector since I cannot remember when. Some of the most interesting pieces that I’ve collected are fluorescent specimens. I became interested in fluorescent minerals when I went on a weekend geologic field trip with a friend in the military. He was from Sterling, New Jersey, where some of the most brilliantly colored specimens can be found. After stopping by a road cut with just a small ultraviolet (UV) light, I was mesmerized by the bright orange, green and blue colors I saw. I started collecting small pieces that would fit nicely in a box and pull them out when the mood struck me. Until approximately 2013, the collection was intended only for my personal interests. That all changed with the budgetary stalemate on school funding in the State of Illinois.

In 2013, the State failed to provide approximately $1,000,000 of the allotted funds that were designated for the school district that our children attend. Budgets were cut, teachers let go and programs eliminated. Programs in the sciences and arts seemed to be affected the most. My wife and I, both being scientists, wanted to do something. My wife suggested that we build a display for the school district to use for teaching students about the unique and fascinating properties of mineral fluorescence. So I put my rudimentary carpentry skills to work and we built a display box with shelves to hold several specimens.

The UV light source I had been using for years was mounted to the top of the display directly over the minerals, with disappointing results. The UV light source was a small, ½ watt fluorescent tube, similar to the one that came with our kid’s toy detective kit (fingerprint lamp). The higher the wattage in the UV lamp, the more the electrons are excited in the outer valence shell, which results in the brighter, more vivid colors being emitted. So we started researching for economical alternatives. We decided on a 4-watt model from the mid-1970s. The unit arrived in about ten days and we were pretty excited. This unit had both short and long-wave UV bulbs. The minerals looked great in my dark basement, but when I brought the display up to a room with more light, it just didn’t come close to something that would be of interest to kids.

Certainly novices regarding fluorescent minerals, we started researching the topic. We looked at new light sources. There were several available that might fit the project, but they were certainly well outside of our budget. My wife found a fluorescent mineral group on social media. In that forum, we told people what we were planning to do with the collection. Once we met up with knowledgeable folks, we were able to connect with a manufacturer of various light sources. We spoke to the marketing manager and told her of the mineral collection and what we intended to do for the school. Apparently, the company has a program to specifically support these types of projects. She offered us a refurbished 18 watt lamp with short, mid and long-wave bulbs for a great price. She also included several hand-sized, very bright specimens in the package to augment the collection. Counting her donated specimens, we now had around 20 nice pieces to share with the classes. We were ready for the our children’s classes to use the display.

During the parent/teacher introduction night at the beginning of the next school year, we shared photos of the collection under light with our kid’s science teachers and offered it on loan for their classes. Our daughter’s 6th grade science teacher jumped at the chance to use it. We delivered the display at the beginning of the school week and gave the initial demonstration. The teacher was going to have the collection for the rest of the week and asked if other classes in the school could...
view it too, which was fine with us. When we picked up the collection the following Friday, the teacher told us that all of the science classes in the school (4th through 6th grade, over 200 students) had the chance to see the display and were very impressed. As we discussed what the children had learned and what they had to say about the display, I told her why we assembled it. She indicated that several other school districts could also benefit from using the collection. At that time, we decided this would be the mission: education of grades 4 through 12 by providing the collection and other materials to classes in the area.

The intent of the collection is to get students inspired about the sciences. While dissecting a frog may be interesting to some students, there are many that are repulsed by the idea of touching a slimy, dead creature. The mineral collection is certainly not the same experience as dissection of a frog. The vivid colors of the various minerals certainly add a “WOW” factor to the process. Today, there are fewer and fewer kids getting interested in the sciences in general and earth science in particular. If we can inspire just one kid, then it has all been worth it.

When we got home from picking up the collection, we made a post on the fluorescent mineral group’s Facebook page of our experience. We were contacted almost immediately by the founder of the group and he asked about the specimen varieties that were in the collection. He volunteered to send several specimens that we didn’t have to improve the collection. When the samples arrived, there were many bright colored specimens that were not represented and added a lot of variety to the display. Others offered package deals at significant discounts to help build the collection. From there, things took off.

Over the last 3 years, we have increased the quality and size of the collection by investing our own money and time and securing donations of specimens and teaching materials. Today, the collection has well over 100 museum quality specimens for the students to enjoy. A power point presentation is now available to augment teacher’s lessons. A “dark-room” shroud is also available to enhance the viewing in bright class rooms. To date, the display has been viewed by nearly 2,500 students in over 45 classrooms and special education facilities.

Through the experience, we have seen first-hand the benefits of getting involved in community outreach programs. We have witnessed student’s excitement using hands-on experimental methods and seeing the minerals react to UV light or blue lasers in their hands. We were successful because we were willing to reach out to like-minded folks using social media for assistance. People were much more willing to provide aid for a cause they already were interested in. It is important to get involved in K-12 programs to excite students about science. We need to educate a new generation of scientists. Current data shows a decline in people entering the profession.

There are opportunities everywhere, if you are willing to invest your time and talents to assist a student, class, school, etc. If readers are interested in getting involved in similar outreach programs or assisting us in ours, we can be contacted through the AIPG Member Directory.

Douglas E. Liniger has been a member of AIPG since 1994. He is employed as the Senior Specialist overseeing geologic and waste assessment investigations on behalf of IDOT. Mr. Liniger has worked in the environmental industry as a soil scientist, wetlands specialist, remediation expert, and environmental consultant for nearly 30 years prior to accepting his position at IDOT in 2016.
AIPG’s May 2017 Sand Mine Seminars and Field Trip

Christine Lilek CPG #10195
Wisconsin Section President and Conference Chairperson

The Wisconsin Department of Natural Resources (WDNR) estimates that there are more than 2,500 nonmetallic mines (NMM) in the state that mine sand, gravel, limestone, dolomite and igneous rock for aggregate, fill and landscaping; dimension stone for monuments, landscaping and buildings; volcanic andesite for shingles; peat for horticulture and landscaping; industrial sand for a variety of uses; and other nonmetallic minerals.

In order to bring these mining professionals together, National AIPG and WI Section hosted the May 11 – 13, 2017, Sand Mine Life Cycle Seminar and Wisconsin Pollutant Discharge Elimination System (WPDES) Nonmetallic Mining Permit Process Seminar and Industrial Sand Resources of SW Wisconsin Field Trip in Eau Claire, Wisconsin with the cooperation of AIPG Minnesota Section, WDNR, Wisconsin Geologic Natural History Survey (Survey), and the Wisconsin Industrial Sand Association. The event gathered over 125 presenters, exhibitors, sponsors, professionals and students from many states across the nation and from Canada.

Presentations included all aspects of planning, siting, permitting, operating and reclaiming sand mines. Twenty professionals and researchers gave oral presentations and twelve student groups and the Survey professionals displayed posters at the event. The latest environmental research and operation innovations were shared at the event with time to talk with industry experts and exhibitors.

The May 13 Field Trip showcased outcrops, mine sites, and drill cores of the major rock units in the industrial sand mining region of west-central Wisconsin. These units included the Cambrian Eau Claire shale (fill), Wonewoc sandstone (industrial sand), Tunnel City shale and sandstone (fill and potentially industrial sand), St. Lawrence Formation dolostone and siltstone (aggregate and fill), Jordan sandstone (industrial sand), and the Ordovician Prairie du Chien dolostone (aggregate). The trip proceeded stratigraphically up-section, showing the rock units from oldest to youngest, and highlighting the geologic history recorded in these rocks, their geochemistry and mineralogy, and their natural resource potential. We even got to drive through an operating sand mine! Copies of the presentations and field trip guide will be made available to AIPG members on the WI AIPG Section webpage in the near future.

Draws International Attendance

The sand that brought all of us together!

Field Trip Participants Appreciated Touring Active Badger Sand Mine – Taylor Division

Photo Provided by Badger Mines
California Section Presents Awards at the 2017 State Science Fair

For the 17th consecutive year the California Section of AIPG presented awards at the California State Science Fair at the California Science Center in Los Angeles on April 25. Mark Rogers and Dave Sadoff, AIPG California Section Southern and Northern Vice Presidents, respectively, judged 12 Junior Division geoscience projects.

Northern Section VP Dave Sadoff, First Place Winner Mia Chou, project entitled “Radon: The Silent Killer in Your House”. and Southern VP Mark Rogers.

Honorable Mention Awards, Gillian Healey, for her project “How Saturated is Saturated?”

Honorable Mention Awards, Nidhya Shivakumar, for her project “Halophytes: A Potential Solution for the Remediation of Soil in Saline Wastelands”.

Honorable Mention Awards, Luke Merickel, for his project “It’s Not My Fault, I couldn’t Handle the Pressure: Compression Obsession”.

Florida Section - Waterfest in Stuart Florida

AIPG booth we had literature for adults, high schoolers thinking about geology as a prospective career or as a hobby, as well as small children who wanted to color a dinosaur, mining equipment or minerals.

Each year in April, the City of Stuart in southeast Florida has hosted a community education event in a beautiful local park near the City Center. It is organized by the City Utility Department’s Conservation and Recycling Coordinator to raise awareness of the environment, and in particular, water conservation. They invite local organizations, including the American Institute of Professional Geologists (AIPG) to participate in this event, which was held on Earth Day, April 22nd, 2017 this year.

We asked each student with a card if they knew what Geology was, then followed up with what geologists did in Florida (since there is little surface evidence of rocks)! Our activity was a binocular microscope where interested children or budding geologists could look at small samples of rock, minerals or fossils to see them in detail. It is surprising how many students and even very small children are interested in fossils and other rocks if they can look down a microscope.

Georgia Section - Drilling Demonstration at Columbus State

On April 11, 2017, we did a drilling demonstration on campus. The students had an opportunity to watch direct push and hollow stem auger drilling. Dr. Clinton Barineau and Dr. Diana Ortega-Ariza helped the students in describing the lithology. Once again I would like to thank Jim Fineis with Atlas Geo-Sampling Company for their drill rig and personnel.

Hollow stem auger drilling.
AIPG STORE 😊

Check out these items!

**New Item**

### T-Shirt with Screen Print - Brunton Compass

Heavy Cotton Tee, 5.3-ounce, 100% preshrunk, open-ended carded cotton (except gray shirts which are 99% cotton and 1% other fibers), classic loose fit for all-day comfort, shoulder-to-shoulder tape and seamless collar, double-needle neck sleeve and bottom hem.

**Available colors:** White, Ash Gray

**Member Price:** $17.00

(Includes shipping)

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### Sport Bottle with Flip Lid

This blue, AIPG sport bottle/water bottle is 27 oz. in size with a comfort grip and flip lid.

**Member Price:** $10.00

(Includes shipping)

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### Zoom Checkpoint-Friendly Compu-Backpack Bag

Make your next plane trip much easier with the Zoom Checkpoint-friendly Compu-backpack. Specially designed to increase your speed through airport security, this laptop backpack includes a laptop-only section that unfolds to lay flat on the X-ray belt. This backpack has a side-entry 15” laptop compartment and an open main compartment that includes a dedicated zippered nylex-lined padded iPad pocket. It also features extra storage capacity with the zippered external pocket perfect for storing small items like power cords, USB drives, pens and business cards. Use the comfortably padded shoulder straps, the neoprene carry handle or just slip the bag over your suitcase and go catch your flight with effortless ease. Embroidered AIPG logo on front.

**Available colors:** Black

**Member Price:** $65.00

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### Button-Up Long Sleeve Denim Shirt

Button-Up Long-Sleeve Denim Shirt - A 6.5 oz. fabric, 100% cotton, garment washed, generous cut, double needle stitched, tuck-in tail, button-down collar, horn tone buttons, patch pocket, and adjustable cuffs. Embroidered AIPG logo.

**Member Price:** $32.00

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### Embroidered Essential Jacket (Windbreaker)

AIPG’s lightweight essential jacket is perfect for spring and summer. It is 100% polyester with a locker loop, dyed-to-match zipper, front pouch pockets, and elastic cuffs and hem.

**Available colors:** Black, Red, Lime, Blue, Navy

**Member Price:** $33.50

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### Sportsman Hat

A fun-loving choice that’s a true fashion accessory, 100% cotton twill, garment-washed.

**Available colors:** Black, Khaki, Navy, Pink Raspberry, Red, Royal, White

**Price:** $22.00

(Includes shipping)
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- **September 1, 2017**  
  Registration and housing central opens

- **January 8, 2018**  
  Call for abstracts closes

- **March 1, 2018**  
  Authors notified of abstract acceptance

- **April 1, 2018**  
  Presenters registration deadline
  End of early-bird registration rate

Find more information at [RFG2018.ORG](http://RFG2018.ORG)