

THE HARDROCK™

WINTER 2015

SOUTH DAKOTA

M

SCHOOL OF MINES
& TECHNOLOGY



THE HARDROCK™

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Front cover: Sophomore Tiffany Johnson is enrolled in the fast-growing new Applied Biological Sciences major.

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THE HARDROCK™



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14 BIOLOGY GROWING PAINS

Enrollment in the new Applied Biological Sciences major doubled in its second year and is projected to be one of the largest programs on campus within four years. The university is working to secure funds for much-needed laboratory renovations and new hires to keep up with the growth.



22 ALL-SCHOOL REUNION

Fresh from World War II, veterans streamed to Mines for the first all-school reunion in 1946, a summer homecoming honoring their service and sacrifice. Little did they know it would grow into a highly-anticipated event every five years.

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Dear Alumni and Friends,

Last fall we marked the eightieth anniversary of our Alumni Association (October 5, 1934-October 5, 2014). As your new Alumni Association president, I am humbled to be part of this landmark year when we celebrate what it means to be a Mines Hardrocker in so many ways.

As our alma mater marks its 130th year, we invite you to join us for the All-School Five-Year Reunion—July 8-12, 2015. This time-honored tradition promises an extended weekend of Hardrocker fun and an opportunity to see all the wonderful changes on campus.

We also are pleased to welcome a new face at the Alumni Association—Katie Harwood, assistant to the director—who will be experiencing her first five-year reunion this summer. Please extend a warm welcome to Katie the next time you visit, call, or email the office. Special thanks go to the 2015 Reunion Co-Chairs **Dave Berg** (ME73) and **Kirby Mellegard** (EE72) and the many volunteers who make this event possible. Please pre-register early to help us finalize plans for your return.

This year we also joined the Foundation, the Hardrock Club, and the university in a collaborative, one-voice initiative called the Mines Annual Fund for all alumni and friends of SDSM&T. This annual campaign replaces the Alumni Association's annual request for support and provides crucial operating revenue to continue our important mission. A gift to the Mines Annual Fund is a way for alumni and friends to endorse the entire mission of Mines, including the Alumni Association. A gift to the Mines Annual Fund is another expression of support to our alma mater that has become the hallmark of dedicated alumni for more than eighty years.

Many thanks go to our Immediate Past Alumni President **Carmen Adams** (ChE75) and the outgoing board members **Susan (Booty) Banks** (GeolE75), **Roger Kiel** (GenE58), **Michelle Miller** (ME01), and **Brad Thrall** (MetE86) for all their involvement and efforts to make our Alumni Association better. We will continue their work, along with help from other board members and volunteers.

I look forward to meeting many of you at alumni gatherings around the country and at next summer's reunion. It is events like these that reaffirm the importance of our Alumni Association and its eighty-year history. Best wishes and thanks to all who support our time-honored traditions!



Mike Alley (GeolE73)
2015 President
SDSM&T Alumni Association

Flashback

Men of the "Army Specialized Training Program," organized by the War Department, received engineering training at the School of Mines during World War II to support the war effort. Training on campus was divided into basic phases covering subjects such as surveying and internal combustion engines, as well as more advanced concepts in electrical, mechanical, and civil engineering.



100 years ago

1915

Future Alumni Association founder and director, **Guy March** (EE22), and his twin brother, **Raymond** (MetE22), of Hill City, enroll at the School of Mines. The third annual M Day is held. Faculty, staff, and students whitewash the "M" on Cowboy Hill and build what may have been the first M Day bonfire. Speeches were made by President O'Harra, members of the faculty, and visitors. Discussions included ways and means of making the "M" more permanent. Dr. C.C. O'Harra secures a legislative appropriation to establish a mining experiment station at the School of Mines.

30 years ago

1985

SDSM&T celebrates its centennial; celebrations and special events are held throughout the year. M Day 1984 includes the first parade in a decade. The volleyball team wins the SDIC Conference championship. The Computer Center offers a seminar on the use of magnetic tapes to campus personnel. Research scientist John H. Helsdon, PhD, is selected by *Esquire* magazine for inclusion in its "Register of Outstanding Americans Under Age Forty." He was selected on the basis of his research area, thunderstorm electrification.

20 years ago

1995

Both the men's and the women's basketball teams win SDIC Conference championships. Museum of Geology personnel assist with a major fossil discovery at Richmond Hill Gold Mine in Lawrence County. Groundbreaking ceremonies are held for a new National Weather Service building. **Angie Monheim** (EE98) wins the "Grubby Look-Alike" contest during M Week, becoming the first female to capture the title. Tech wins the SDIC volleyball title; **Leah Novicki** (CE96) is named tournament's MVP. Former Tech coaches Sonny Coyle and Gary Boner are inducted into the SDIC Hall of Fame.

10 years ago

2005

Funding and approval are underway for the National Underground Science Laboratory. The new full-color stadium electronic board is dedicated, made possible through a gift from US Bank. **George** (ME56) and **Nancy Dunham** (EE57) are honored for their lifelong support. **Jim Guthrie** (MinE79) and **Monte Evans** (EE73) become the first inductees into the Tech Hall of Fame. The Technology Development Laboratory on Saint Patrick Street opens. **Kathryn Johnson**, PhD, (Geol86) is appointed to the Board of Regents. Tech takes first place in the Aero Design West remote-controlled airplane competition held in Fort Worth, Texas.



The November 15 Hardrocker football game against Western Oregon University will live in the history books as Snow Bowl 2014. Players faced each other in bitter 10-degree temperatures and an even colder wind chill.



Dear Hardrocker Friends,

The first class of Applied Biological Sciences majors started a little over a year ago. We were wearing green beanies together. Now in its second year, we have over sixty majors and, within four years, we expect the biology program to be one of the larger programs on campus.

The establishment of the Applied Biology degree at Mines fills some important needs. We expect some of our graduates to go into the health professions, meeting critical needs in the coming decades in South Dakota and beyond. Some students will go into biomedical engineering, and some are likely to focus on genetics and the nexus between chemistry and biology. Rapid advances in these areas will change our lives in the coming decades.

This growing program needs space. With the support of the Board of Regents, in January we asked the legislature to move forward on a \$6 million project to rehabilitate 7,000 square feet in the old part of the chemistry building to create some new biology and chemistry labs for teaching and research. This construction will likely start in the fall of 2015.

Meanwhile, we are finishing up work on the Wellness Center. It's still on track to be done in the spring, even though there was a lot of rain this summer that delayed things a bit. Those coming back for the five-year reunion will be able to visit two new recreational gyms, a bouldering wall, and a cardio room for students.

These expansions are part of our effort to prepare more leaders in engineering and science for the region and the nation. This wouldn't be possible without the support of great friends and alumni of the School of Mines.

Thanks for everything you do.

Sincerely,

Heather Wilson, DPhil
President
South Dakota School of Mines & Technology

\$200,000 Artus Fund Supports Energy Education

The \$200,000 D. Sherwin Artus Support Fund has been established to support the Energy Research Initiative and the Department of Geology & Geological Engineering. The bulk of the gift will be dedicated toward merit-based scholarships for students enrolled in the new Petroleum Systems minor and as seed money to supplement new faculty members within the Department of Geology & Geological Engineering. **Sherwin Artus** (GeolE60), retired chief executive officer of Whiting Petroleum and current company director, serves on the advisory board for the department.

Peabody Supports Mining Scholars, Faculty

Peabody Energy has given a \$20,000 gift to fund scholarships, travel, and conference registrations for students and faculty within the Department of Mining Engineering & Management.

Gulf of Mexico Data Donated for Training

TGS, a global, multi-client geoscience data provider, has given a gift of more than 3,000 square miles of Gulf of Mexico digital seismic and well log data for student use within the Department of Geology & Geological Engineering. Students preparing to enter the petroleum industry will analyze the data through a \$49 million gift of Petrel software received from Schlumberger in 2012.

Leapfrog Donates \$50K 3D Geological Software

More than \$50,000 worth of software from Leapfrog has been donated to the student chapter of the Society of Economic Geologists. Modules will be used to model highly complex geological ore deposits for evaluation and mining. The software's evaluation component duplicates models to test hypotheses, improving geological understanding.

For more Mines news: news.sdsmt.edu

Museum Mogul: 'Sue' Leads Shelton to Mines

Now the Museum of Geology's associate director and collections manager, Sally Shelton made her first trek to Rapid City in 1992 as an expert witness in the suit over "Sue" the *T.rex*. She spent a day sharing her assessment of the specimen's condition stored at Mines, but it was the university's 500,000 other specimens that caught her eye. She promised herself she'd return.

The intervening years took her to the Smithsonian to oversee the world's largest collection, until a phone call in 2008 made her leave it all for Mines. The Paleontology Research Laboratory had been given the green light, and the university wanted Shelton to oversee its construction. To see her dream built from the ground up was too tempting to ignore.

"I always liked the museum and collections, and this was a once-in-a-lifetime opportunity. Most museums are downsizing, and we are now leaders in the field."

Shelton's no stranger to that role. She's been at the forefront of museum science since childhood. "I've been hopelessly in love with museums since my parents took me to the museum at Texas Tech when I was barely old enough to form a memory. ... I've never worked anywhere but in museums since I took that first step."

Before attending the University of Cambridge, Shelton was selected for a pilot program at Los Angeles' Natural History Museum to develop nationwide museum standards. She sees this work as some of the most important of her career. "I worked with minerals collected by Charles Darwin. Without the documentation, they would just be a bunch of rocks. It can be very powerful, the who, why, and when."

Shelton hopes to instill that thoroughness in her students, imparting expertise ranging from law to field techniques.

"We're sending them out to look for fossils in remote sites. What if they come across endangered species or find the fossil on a historic site?" Shelton asks.



Providing answers to those questions and others from the National Parks Service, Forest Service, and regional tribes has turned Mines into a major regional resource, matched only by the resource that is Shelton herself.

Serving on the Rapid City History Preservation Commission, Shelton also chairs the Society for Preservation of Natural History Collections Legislative and Regulatory committee, among others. In 2014 she won the prestigious Dudley Wilkinson Award of Distinction.

When asked what the future holds, Shelton reflects. "There's lots of fear of an aging field. Other jobs offer more money. But I am constantly amazed at how good our students are, and they all want to know about museums for the love of it."

Shelton says you can glean a lot by what a person—or state—holds dear. "I've always found if you want to know a place, if it has a museum, you should go there, and South Dakota has a ton of museums. Every community is proud of its history," she says, pausing. "It feels like I'm home."

Mine Rescue Team Trains with the Pros



In the cramped, smoke-filled bowels under the quadrangle, rescuers make their way through dirt-lined tunnels, their path illuminated by headlamps, their breathing enabled with the help of tens of thousands of dollars in equipment. A sense of urgency to find the injured is balanced with the need for calm to work as a team.

One of the tethered rescuers disappearing into the hazy maze is Glenn Kellow, who, as president and chief operating officer of Peabody Energy, makes mine safety a top priority. Participating in a simulated rescue with the number two executive of the world's largest private-sector coal company was the highlight of the mine safety and rescue team's inaugural year. Kellow was on campus last May as the commencement speaker.

More than an opportunity to simply network or exhibit the skills they'd been sharpening for nine months, training with Kellow was a chance to get hands-on feedback from one of the industry's top leaders. That's a familiar learning method for the team.

When it comes to one-on-one training, the safety team works only with certified professionals, mine rescuers with decades of experience. Thanks to an alliance with the Sanford Underground Research Facility in Lead, the primary learning environment has been on site at what was once North America's largest and deepest gold mine.

"For as short a time as the School of Mines' team has been in existence and for as young as they are, they are doing phenomenal. In the exercises last spring with Peabody, they were very impressive,"

says Woody Hover, who has been working in mine rescue for about twenty years. The Sanford laboratory has allowed students to work with specialized face mask and breathing apparatuses, valued at about \$10,000 per rescuer, and has helped secure gas meters, headlamps, safety-grade helmets, and other supplies.

Students have also benefitted from family connections. Terry Tew, a certified mine rescuer with thirty-eight years in the business and father of mining engineering senior Kathleen Tew of Pueblo, Colorado, has conducted four Skype training sessions and worked with the team in person. The elder Tew is currently safety manager for Essroc Italcementi Group's plants in the United States. "It has made a huge impact for our training to have someone in the industry talk about their experiences and explain the roles each person has on the team and to give advice," says Tew of her father's interaction.

"When I was a kid I would go to work with my dad, and he would always stress safety. When I would watch mining videos on his computer he would explain everything that went wrong, what should have been done, what could have been the worst-case scenario," says Tew, whose career goal is to design underground mines.

The School of Mines rescue team could one day be considered an additional resource for real-life emergency situations on campus and at crisis situations throughout the area. And with their ongoing training from the best in the business, student rescuers are making industry connections and honing life-saving skills.

Giving for the Greater Good and Generations to Come

The Foundation, Hardrock Club, and Alumni Association are combining resources for greater impact, identifying ways to improve and meet the university's most critical needs. Fundraising as one through the Mines Annual Fund allows these organizations to invest strategically in future priorities while continuing to support existing ones.

Preparing leaders in engineering and science is the university's overarching mission, and that's possible through gifts to the annual fund, which helps to ensure the successes of the more than eighty student organizations that make up the vibrant mosaic of campus life. Scholarship recipients, departments, and student activities all benefit from the generous donors who give to the Mines Annual Fund.

"Without a doubt, the education and experiences I had at Mines helped me succeed in my career. Valuable learning came from my classes, labs, teams, and extracurricular activities. It built a great base to draw from throughout my professional career," said **Janice Vosika** (ChemE81), who began giving in 1984. "Because of my strong belief in the university's mission, I recruited and helped my employer hire many outstanding graduates from Mines. Donating to the Mines Annual Fund is a good way to leverage my donation, as it supports the operation of the Foundation, which in turn can generate even more funds for scholarships, facilities improvements, and faculty."

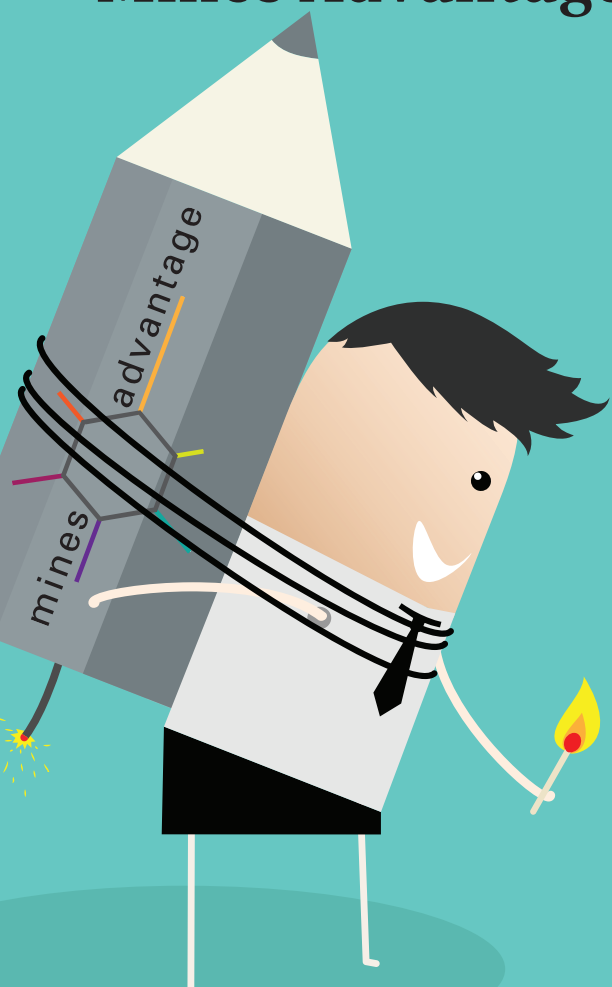
Strategically combining the efforts of primary fundraising organizations



will allow the university's successes to continue to multiply. Already, Mines boasts a 98 percent placement rate, average early-career salaries above \$65,000, and a spot on the list of "America's 100 Best College Buys" seventeen years running—surpassing even Harvard with its early-career return on investment.

Tom Zeller (ME70) says that legacy is behind his giving, a passion he hopes to pass on to recent grads. "It's important for younger alums to give because it's an opportunity to stay connected, maintain a network of friends and colleagues, and watch their careers grow."

Mines Advantage: The Hard Science of Soft Skills



Mines Advantage, the professional development program for students, has skyrocketed from 300 participants to 900—in a single year.

The reason may lie in the market. Science, technology, engineering, and math (STEM) jobs are in demand. By 2020, there will be a projected 1.4 million jobs available in computer science alone with only 400,000 people qualified to fill them.

While this talent shortage gives future STEM professionals opportunity, competition for top positions is fierce. In the age of globalized innovation, technical skill is no longer enough.

Mines Advantage gives students an edge.

"The goal is to equip students with leadership and communication skills, teach them the ethics of their field, and prepare them for the world of work after Mines," explains Jason Pfeiffer, assistant director of the Career & Professional Development Center.

In a shrinking world, graduates will work with diverse populations. By encouraging students to engage in experiences as varied as

cultural expos, national competitions, career fairs, and internships, the program fosters a versatility and business savvy highly sought after in industry.

Mines Advantage student and Australian native Blake Harris has proven that true. He's interned at both BHP Billiton, the largest mining company in the world, and Peabody Energy, the world's largest private-sector coal company. He credits the program with much of his success. "Even if you only gained a few skills that you didn't have before, it could be the deciding factor between you and another applicant for a full-time job or internship."

Ron Hughes of global giant Solvay Chemicals confirms that sentiment. "In this age, businesses are interested in future leaders more so than pure technical ability. The students who are best prepared for that career path will have a clear advantage."

Or, one might say, the Mines Advantage.

Grads Write Their Own Tickets

As **Lars Nordang** (ChemE94) sees it, recruiting students from his alma mater to work for Kimberly-Clark Corporation is a win-win for everyone. Fresh graduates land that first job, the company welcomes innovative engineers with potential to create the next breakthrough product, and he gets to give back to Mines by helping the university maintain its high placement rate.

Though it has only begun recruiting Mines students within the last year, Kimberly-Clark already employs five graduates and will soon welcome an additional four interns. The Irving, Texas-based company was among thirty-five companies recruiting for the first time at the fall 2014 Career Fair, the largest ever with 153 businesses represented.

“The fact that this fall’s career fair was the largest in campus history



speaks to the growing demand for our graduates,” says Darrell Sawyer, vice president of student development, whose office organizes the fair and tracks placement and salary figures. Ninety-eight percent of graduates land a job in their field of study or pursue advanced degrees. The average early-career salary is \$65,500.

As Mines becomes more nationally known, new companies are seeking graduates. Nordang can personally vouch for the quality of education and training and the ability of graduates to drive business forward.

“The values and skillsets I learned greatly prepared me for my professional life at Kimberly-Clark Corporation. We are a ‘family’ at SDSM&T and very much so at Kimberly-Clark. Hardworking, dedicated, and high-integrity are words that to come to mind,” says Nordang, who is print team

leader at the company’s Neenah, Wisconsin, research facility.

Burns & McDonnell enjoys a successful track record of Mines placements, not the least of whom is the company’s chief executive officer, **Greg Graves** (ME80). Of the engineering and consulting giant’s nearly 5,000 employees, twenty-eight are Mines graduates.

“Since 2003 we have continued to find rock star talent and visit every fall for the career fair and several other times a year for information sessions, advisory board meetings, student organization involvement, and campus meetings,” said Julie Hoch, college recruitment specialist at Burns & McDonnell, based in Kansas City, Missouri.

Raven Industries, based in Sioux Falls, has recruited on campus for over twenty years and currently employs about thirty-five graduates. Eight students work as interns throughout the year at Raven’s Black Hills Business Development Center location. “Graduates we hire from Mines

provide a good blend of what we are looking for—strong technical skills, a practical foundation, communication skills, a good work ethic, and a fit within the Raven culture,” said Jim Slichter, Raven’s engineering manager in Rapid City.

With five job offers, December graduate **Anne Christensen** (IE14) can attest to the effectiveness of the Mines experience. She accepted a position with the operations development program at Polaris Industries, where she interned last summer. “An internship or co-op is your first job these days. There’s so much demand for engineers, and when you have that experience you’re a step ahead of your competition.”

Christensen credits the Career & Professional Development Center with help preparing résumés and evaluating job offers. “The career fair was extremely valuable and led to five offers. If you want an internship, co-op, or full-time job, our school has the resources to get you those jobs.”



Mines: An Educational Leader for Energy Industry

The South Dakota School of Mines & Technology is poised to become one of America's educational leaders in advanced energy exploration and production. The university is equidistant from three of the country's largest energy-producing basins. With its rich history in mining and geology, the new Energy Resources Initiative is quickly gaining momentum.

Launched last summer, the effort has already earned recognition in respected industry publications and mainstream media outlets as well as an invitation to testify at a Congressional energy subcommittee hearing. Development and fundraising efforts are under way.

The new initiative stems from industry demand. Petroleum production

in America increased by one million barrels per day last year. Production in neighboring North Dakota, thanks to the Williston Basin, has surpassed that of Alaska and California, making it the second-largest oil-producing state in the country.

With 20 percent of graduates already hired into the energy industry, the program aims to better prepare students for more advanced career options, as well as position faculty researchers as resources for oil and gas companies. Specific areas of expertise are petrophysics, water resources, and materials development.

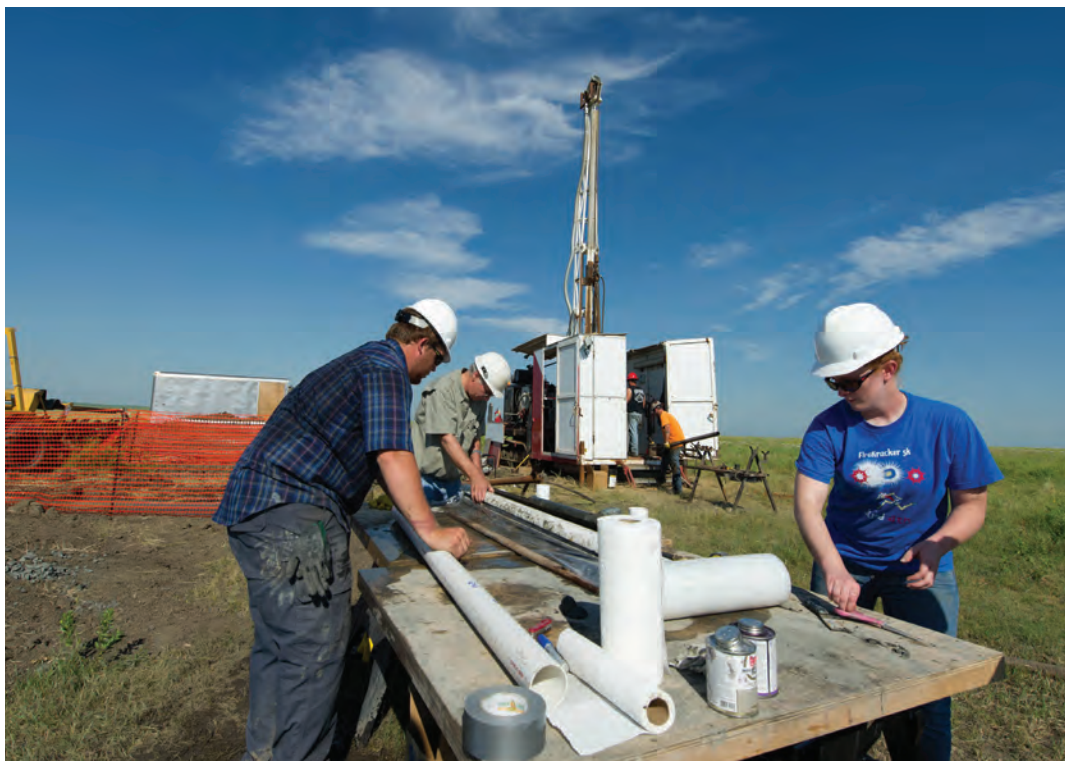
"This increase in energy production around us will impact the economy of the Rushmore Region and the nation well into the future," says President Heather Wilson. "With very strong programs in geology and geological engineering, civil and environmental engineering,

from the university and industry partner RESPEC are analyzing shale finds to determine possibilities for enhanced energy production, potential carbon dioxide sequestration, underground hydrocarbon storage, and waste disposal.

(GeolE83), who has over thirty years of upstream petroleum industry experience.

O'Rourke's career spans from engineering at Shell Oil to president of global exploration for BHP Billiton. He is currently managing director of Heat Mining LLC, a Rapid City-based geothermal technology company, and is also a consultant to the energy industry. In addition to his work on the Energy Resources Initiative, O'Rourke is chair of the Industry Advisory Board for the Department of Geology & Geological Engineering and a member of the Foundation Board of Trustees and Executive Committee.

As alumni and industry leaders, O'Rourke and **Ron**



chemical engineering, mining engineering, mechanical engineering, and materials and metallurgical engineering, Mines is well-positioned to meet emerging needs and catalyze economic development related to energy production."

A new minor in Petroleum Systems started fall 2014. A Graduate Certificate in Petroleum Systems for professionals is also being developed. The broad energy initiative envelopes the state-funded Shale Research Institute, which last summer yielded two successful drillings for core samples. Researchers

A steering committee of alumni is helping the Foundation and raising funds to hire a critical new faculty researcher renowned in the areas of hydraulic fracturing, petrophysics, and geomechanics.

"Our Energy Resources Initiative is an obvious next step for the School of Mines given its location in the heart of the region's recent shale energy boom. With our engineering expertise coupled with current research in fine-grained rocks and other areas, the initiative will focus on applying existing skills to energy industry problems," says **Steve O'Rourke**

Jeitz (CE69) offer invaluable insight shaping the new initiative.

"Our graduates are already highly recruited for energy industry roles, and with the addition of the Petroleum Systems minor, we will be able to provide students to industry who not only have an excellent engineering or geological education but who will also have a solid background in the modern petroleum industry, making them even more valuable to employers," O'Rourke says.

For more details:

www.sdsmt.edu/EnergyResourcesInitiative

An Explosive Find Fuels Research

Timothy Masterlark's research leads him all over the map. His volcano models unlock Iceland's geothermal jackpots, tap energy potential in US oilfields, and hold the key to disaster relief along Japan's coast. His latest research is no exception, fueled by an explosive discovery in Iceland's arctic depths.

In 2009 in the country's northern stretches, Landsvirkjun, the National Power Company of Iceland, began to drill near the Krafla volcano in search of supercritical steam, an energy source. Just two kilometers down it hit something else entirely: magma, which no geothermal company in history had ever hit and certainly not at such a shallow depth. The find stunned scientists, including Masterlark, a foremost expert in volcano modeling, who all had estimated the magma would be four to five kilometers underground.

Experts had missed something fundamental, but in a new study they may now have the chance to find out why.

"We have the opportunity to sample magma directly. People have drilled lava (magma that makes it to the Earth's surface) before, which represents what is down there, but is that really what's at depth? What does magma look like in-situ? And why didn't we get it right?" says Masterlark, an associate professor in the Department of Geology & Geological Engineering.

To find answers, scientists wanted to design a geophysical natural lab on-site. In 2013 researchers submitted a proposal to the International Continental Scientific Drilling Program to drill the site, inviting Masterlark to join the effort shortly thereafter. He jumped at the chance to study geology in the making at the site of a global first.

There's more at stake than you might think. The company had also found rhyolite.

Far rarer than the non-explosive basalt that makes up 90 percent of Iceland, rhyolite has a viscosity similar to toothpaste that traps gas bubbles. Pressure can build in rhyolite with the potential for a deadly eruption.

Now scientists are scrambling to see if another volcano holds a similar secret. When Iceland's Barðarbunga volcano erupted in October, it began spewing enough molten rock to bury a football field every 5.5 minutes. Masterlark hopes insight gained from Krafla can answer questions about Barðarbunga before disaster strikes.

In the interim his research has led him stateside to a different sort of explosion: the oil industry.

"Geothermal energy and petroleum are both examples of fluid and rock coupling. The models I build for simulations with magma can be extended to hydraulic fracturing."

In a volcano model, Masterlark can increase the pressure of magma until it fractures the surrounding rock and propagates to the surface. Applied to the Oglala aquifer system in the Bakken region, for example, where the energy resource is beneath water, Masterlark



can examine the conditions under which oil could propagate into the aquifer.

He's researching the manmade seismicity of the Bakken as well, exploring the possibility of forcing fractures in certain directions to increase production and keep fractures out of undesirable locations.

Across the Pacific, Masterlark is exploring another earthquake's unintended effects.

Though it was believed a 9.1 magnitude earthquake was solely responsible for triggering Japan's deadly 2011 tsunami, research published by Masterlark and an international team this fall offered new evidence that a massive underwater landslide combined with the earthquake to quadruple the tsunami's size.

Near Japan's Sanriku Coast, where waves neared 40 meters, Masterlark's earthquake models alone were unable to reproduce the tsunami's waves. At the same time, one of his colleagues, David Tappin of the British Geological Survey, examined the shape of the sea floor where the waves hit. He soon found evidence that a large piece had broken off. Masterlark's and Tappin's modeling of the tsunami and earthquake together reproduced the waves, proving what researchers suspected: the earthquake had triggered an underwater landslide the size of Paris, creating a wave that combined with the power of the earthquake to reach deadly proportions.

"If we want to warn people, we have to be able to tell them how big tsunamis will be, and we can't do that with just earthquake data. You do an earthquake simulation, then based on that, predict a sea floor shift and include plausible triggered undersea landslides to predict the tsunami," Masterlark says, adding, "What we do here at Mines can literally have global impact," from Iceland's northern stretches to North Dakota's oil-rich fields.



RESEARCH on the Upswing

Recent Research Contracts Focus on National Security as Awards Increase with Renewed Strategic Emphasis

Donning safety glasses and ear protection, assistant professor **Lori Groven** (ChemE02) and junior Claire Peavey set off a series of explosive reactions in one corner of the laboratory while doctoral student Fidel Ruz-Nuglo's friction test results in a display of flames in another.

It's all in a day's work, part of the occupational hazards this prestigious research team faces in helping the government defeat weapons of mass destruction.

"When it merely sparks like this, what this tells me is we had a poor mixture. But that's good. It's what we need to know. This isn't quantifiable data at this point. It's about seeing it and being able to tell the difference for yourself," Groven, PhD, assistant professor in the Department of Chemical & Biological Engineering, advises Peavey, a chemical engineering major from Plymouth, Minnesota. Peavey and Ruz-Nuglo are student members of Groven's team assembled to assist her in a \$500,000 Defense Threat Reduction Agency research contract. The quick, simple flame test on the role of particle size in energetic material formulations is an initial step in the five-year investigation.

Groven's award is among several prestigious national security-related research contracts Mines received early this fall. A combined \$9.25 million in contracts awarded during the first four months of fiscal year 2015 almost approached the total value of cumulative awards received in the entire fiscal year 2014.

Among major research contracts awarded to multidisciplinary teams of faculty researchers early this academic year: \$4.8 million, United States Air Force, to develop ultra-efficient energy technologies to improve military performance in hostile environments; \$1.1 million, Army Research Laboratory, to better protect soldiers and research mineral extraction methods to reduce America's reliance on foreign metals for electronics; and \$1.25 million, National Institute of Occupational Safety and Health, to design more advanced

underground ventilation systems in block caving mines.

"The School of Mines plans to continue strong research and development activities in support of the US defense and energy sectors," explains Jan Puszynski, PhD, who was named vice president for research affairs last spring. "We plan to continue our contribution to the development of new materials, additive manufacturing, nanotechnology, and energy fields by working with federal agencies and private industry."

President Heather Wilson has emphasized strengthening the university's research portfolio since her arrival in 2013. "We are very pleased to do this work to help ensure America's security, and we hope to continue to strengthen our partnership with various government agencies."

**It's all in a day's work...
helping the government
defeat weapons of mass
destruction.**

The university's revised strategic research plan remains focused on four key areas—materials and manufacturing; energy and environment; underground engineering and science; and science, technology, engineering, and mathematics education research.

Puszynski points to Groven's work as an example of new strides toward

achieving ambitious goals.

In receiving her Young Investigator Award, which is typically given to tier-one universities and research facilities, Groven has assembled a team of one PhD student and several undergraduate students, which will use novel techniques to create special structures and films, primarily focusing on printable polymer-bound reactive materials. Printed structures will then be used to study combustion characteristics. Groven's contract is worth \$300,000 for three years with the option of \$200,000 for two additional years.

For more details on Mines research contracts:
www.sdsmt.edu/Research/Research-Awards/



Diamond Tuhy completes an assignment during a freshman biology lab class.

GROWING PAINS

- New Applied Biological Sciences Program Projected to be Among
- Largest within Four Years

Just a sophomore, Tiffany Johnson is already getting significant laboratory experience beyond the regular classroom setting offered in the new Applied Biological Sciences (ABS) program. She's one of the lucky ones.

Johnson got in on the ground floor with the new ABS major, which, in its second year, is the fastest-growing program on campus with a 71 percent enrollment growth this fall. While she was reluctant to enroll in an unproven program, the Rapid City native was sure of her goal of one day practicing medicine, and she knew the rigorous curriculum and opportunities she could carve out for herself at Mines would be well-suited to her specific interests.

But with an infant program comes growing pains, and there is much work to be done to keep up with the high enrollment demand. Within four years the Applied Biological Sciences program, which offers specialties in pre-biomedical engineering, pre-medical/pre-health professions, and molecular biology/genetics, is projected to be among the five largest at the university.

Mines is the only institution in South Dakota offering an undergraduate degree related to biomedical engineering.

There is a critical need for three to four new faculty members to support the fast-growing number of students in research endeavors and courses. "We are already turning students away from research experiences in labs, as the limited faculty cannot accommodate all requests," says Interim Provost Richard Sinden, PhD, who is also head of the Department of Chemistry & Applied Biological

Sciences. Currently, five ABS faculty members, including Sinden, teach lecture and lab courses. Additionally, one chemistry professor and two from the Department of Chemical & Biological Engineering teach undergraduate ABS courses part-time.

Besides more professors to support the program, additional laboratory space is needed in the Chemical & Biological Engineering/Chemistry Building. A proposed \$6 million renovation of the south side of the 1956 building would update labs and classrooms to accommodate the growing new major. The Legislature is considering a bill to authorize the sale of bonds to finance the project. "With this, we will have modern, state-of-the-art classrooms and labs for education and training. Without new people and labs, the program will have to restrict admissions. We have great potential," says Sinden.

Among the faculty members is Professor Sookie Bang, PhD, whose research emphasis focuses on biosealants and bio-inspired nanomaterials, geomicrobiology of extremophiles, and biocatalysis in bioenergy production. Bang had been pushing for a biology program at Mines since 2009.

"This program has been a long time in the making. The School of Mines is well-known for research in science and engineering and was sorely missing this area of science. There is increasing demand for a program like this, and there is no doubt it will continue to grow and be attractive to students, both those who are wanting to go to graduate school and those who want to go directly into industry," says Bang.





GROWING PAINS

Graduates will have a broad array of options for career paths, and not all of them will require advanced degrees. Some students will go directly into jobs in clinical research and the biotech industry. Others are choosing the Applied Biological Sciences program as a second major or pairing it with other minors, which will make them more attractive to companies.

The flexibility to tailor the program is what attracted Johnson, who considered similar programs at other schools. Her goal is to one day practice medicine in a hospital emergency room or in an obstetrics/gynecology office.

Before the new major was offered in fall 2013, Mines graduates in chemistry, physics, or engineering were going on to medical school without an advanced education in biological sciences.

“This program focuses more on cellular biology and genetics, things that are both significant in medicine. Talking with friends who are studying the same subjects at different universities, I feel like I’ve had many more opportunities and learning experiences,” Johnson says. “I have friends going to really big schools for the name, and they’re stuck taking ‘Evolution of Invertebrates’ or botany as a pre-med student, which is a waste of time to me. This isn’t your run of the mill biology degree.”

Johnson’s initiative helped her land a research opportunity working with Associate Professor Linda DeVeaux, PhD, and graduate students. “The lab experience that you gain in this program is incredibly valuable. The classes can be difficult at times, but I feel that the rigor of

GROWING PAINS

this school is very adequately preparing me for the MCAT as well as medical school,” Johnson says.

Her work with DeVeaux as a freshman also helped her land a summer internship in the pharmacy at Rapid City Regional Hospital, where she continues to work throughout the school year. Because the program is so new, internships and co-op experiences have been hard to come by, but that’s changing.

“As the word is spreading through contacts in industry we are seeing interest in our current students and our graduates, which will lead to internships, co-ops, and permanent jobs,” DeVeaux says. “The Mines reputation is certainly helping pave the way. The new program is designed just as much to prepare graduates to directly enter the workforce as it is graduate school.”

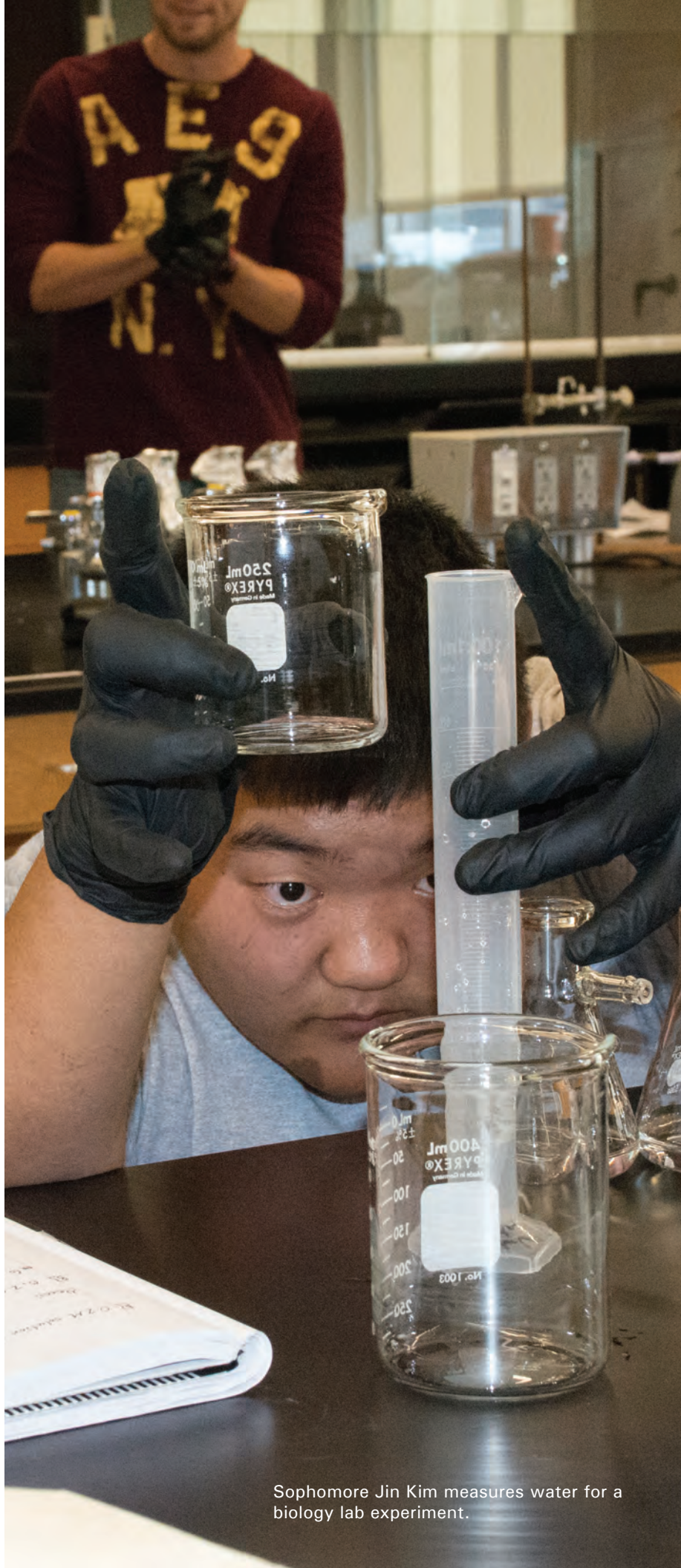
Sophomore Jin Kim, who, like Johnson, enrolled in the program in its inaugural year, is already making connections in industry. Kim, of Sheridan, Wyoming, has been offered two internships for this coming summer. “I interviewed with companies at the career fair. Some were surprised that we had this new major but were interested after hearing more about it.”

With the country’s promising job outlook in the various areas of biology, Sinden says he clearly saw this as a void in Mines’ educational arsenal. “Biology, especially molecular biology and molecular biotechnology, is becoming integrated into many fields of engineering. Not to offer this at Mines weakens the educational experience available to students. In short, this was a gap, a missing link, if you will, in the Mines curriculum.”

The momentum for the much-needed building renovation has continued to grow. Last summer, Regents approved President Heather Wilson’s request to authorize \$6 million in bonds from student tuition and fees to renovate labs and classrooms. The Legislature must also approve these bonds.

Most of the twenty-nine students enrolled in the program’s inaugural year were internal transfers from other majors. Most of the new students who have come into the program during this second year are outside transfers and new students on campus. In all, sixty-one are currently enrolled. Thirty to thirty-five new students per year are expected until the program reaches an equilibrium of between 150 and 200 students, which would put it among the largest programs on campus. Currently, only the civil engineering, computer engineering, chemical and biological engineering, computer sciences, and mechanical engineering programs have enrollments above 150.

“There is a growing bio-tech industry in South Dakota and across the nation, and we expect our graduates will fill a need in the health professions,” President Wilson says.



Sophomore Jin Kim measures water for a biology lab experiment.

According to the US Bureau of Labor Statistics, the number of microbiologists with bachelor's-only degrees is expected to grow by 7 percent through 2022, with a \$66,260 median pay in 2012; the number of genetic counselors with master's degrees is expected to grow by 41 percent with a \$56,800 salary; the number of occupational health and safety specialists requiring bachelor's-only degrees is expected to grow 7 percent with a \$66,790 salary; and the number of physician assistants with master's degrees is expected to grow by 38 percent with a \$90,930 salary.

The new program addresses an increasing need not only in South Dakota but nationally, particularly in biomedical engineering which could greatly improve the lives of an aging population through design of novel technologies.

For those who will further their education and pursue a career in biomedical engineering, the job outlook is expected to increase by 27 percent through 2022, with a median 2012 pay of \$86,960.

Like Johnson, Kim is pleased with his progress in the program and feels it addresses his specific goals of earning a doctorate and working in research and development in industry or government before eventually teaching at a university.

"The School of Mines' new program is special in the fact that basically you can get a degree in applied biology that is more focused on the underlying sciences rather than just fuzzy animals. We do study ecology and basic biology, but the department goes more in depth towards the cell and molecular area, as well as microbiology," says Kim, who is also organizing the Mines student chapter of the

American Society for Microbiology.

With a focus on microbiology, Kim is also logging research time with DeVaux who, along with her team of graduate students, is studying survival mechanisms in extreme environments.

Freshman Hannah Covey of Winner, South Dakota, enrolled in the new major because she liked the personable atmosphere of the small campus and the program's curriculum. "I thought with a heavier study load, the family feel might be more supportive. Even though ABS is a new program, I trusted that if it was important enough for the School of Mines to add it then it would be a good one," Covey says.

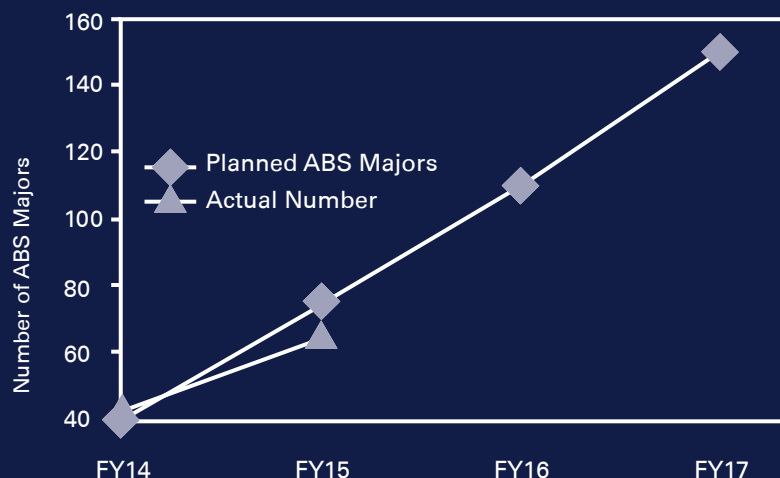
Covey was inspired to study pre-biomedical engineering because she one day hopes to design products that can help extend the careers of people with nerve damage.

"One Sunday I was in church with my family, and my dad's hands were shaking. He's a veterinarian and does a lot of surgeries, and I thought, 'What in my life can I do to study nerve damage so surgeons don't lose their skills over time?' So I found biomedical engineering. ... With applied biological sciences being so broad, it really draws students to it. You can go with the design aspect where you can be really doing hands-on machinery type things to improve healthcare, or you can improve healthcare through the research side or medicines. Students know they are going to get a good education here, but they also know they are not on one narrow path. They can weave a little bit and decide what they want to do with it."



Freshman Hannah Covey studies for a biology class in the Music Center Building.

On track for a steady state of 150+ majors



MINES IN THE MARKETPLACE

Unique Entrepreneur Program Transforms Research into Business

Their experience varies from startups to operations spanning continents. Yet around this table, their purpose is one and the same. These leaders are looking for their next business to start.

These are Mines' entrepreneurs in residence, captains of industry who have helped run major corporations: Boeing, DuPont, Gateway. Offering insight into today's competitive field, they help faculty and students assess the applications of their research.

All for an unheard of fee: \$0.

In the beginning Joseph Wright, associate vice president for research in the Office of Economic Development, says that arrangement was due to lack of resources. After he arrived in 2012, the office acted aggressively to attract potential entrepreneurs, offering an inside view on research with favorable licensing terms. The tactic yielded an unexpected benefit.

"The unique part is that the entrepreneurs in residence are incredibly engaged. ... We want to keep the program voluntary because we want entrepreneurs who are hungry. We want to be pumping out ideas with true entrepreneurs who are looking at opportunities not salaries," Wright explains.

The results of their volunteer efforts have been significant.

An entrepreneur-in-residence has won the South Dakota Governor's Giant Vision Business Plan Competition for two years running. Last year Nanofiber Separations took first. Run by Craig Arnold and Mines Associate Professor Todd Menkhaus, PhD, the company produces filters made of nanofibers for the biopharmaceutical,

water treatment, desalination, blood products, and air purification industries. In 2013, Mat Peabody's CalxAqua took home the Governor's award for a new business that uses limestone to adsorb arsenic and heavy metals.

Wright says the reason for the program's success is threefold. "We're proactive and responsive to faculty activities. There's pent-up innovation that's coming out because we haven't had this office previously, and we're a very applied school."

That focus on industry application has sparked innovation in a different arena as well. Over the last four years, the Office of

Economic Development has averaged an invention disclosure for every \$800,000 in research expenditures, significantly outpacing the national average, which fluctuates between \$2.4 million and \$2.6 million for every disclosure.

This fiscal year the office has seen nine invention disclosures and is in the process of completing seven more. That's sixteen technologies—with three-fourths of the year left to tie the university's record of nineteen.

A fourth reason for the program's success might be the caliber of the entrepreneurs themselves.

Arnold served as director of the Bill & Melinda Gates Foundation and CEO of Permara and Plymouth Energy. Darren Haar was most recently the global business director of Microcircuit Materials for DuPont before leaving to pursue other ventures, chief among them technologies at Mines. Ron Van Horssen was named Entrepreneur of the Year by *Inc.* magazine and Arthur Young.

And they do it all for an unheard of fee: \$0.



Through programs like the entrepreneurs in residence, Wright hopes his office will act as a catalyst to develop more companies from Mines research, joining other alumni-owned businesses like Innovative Systems, RPM, and RESPEC.

Entrepreneurs are inundated with good ideas from faculty. But the entrepreneurial ecosystem means researchers are finessing new skills.

David Salem, PhD, director of the Composites and Polymer Engineering Laboratory, tells the entrepreneurs he's taken his lab's income from \$0 to more than \$1 million from industrial clients in four years. "That makes you an entrepreneur on staff," Haar says without missing a beat. "Welcome to the club."

Above: Dr. David Salem's Composites and Polymer Engineering Laboratory has taken in more than \$1 million from clients within four years.

Below: Entrepreneurs in residence hear faculty research proposals.

COMING HOME

Hardrocker Alumni Return for Five-Year Reunion

Fresh out of World War II, veterans streamed to Mines for the first all-school reunion in 1946, a summer homecoming honoring their service and sacrifice. The war had made them worldly beyond their years, and the boys who left to fight returned to school as men.

“Most of us were veterans at the time, so it was a different type of situation entirely. The average age of the freshmen class was twenty-one or twenty-two. Instead of a bunch of high school kids, it was a bunch of adults who had come through war,” says **John “Jack” Goth** (MetE50). Veterans were flooding campuses across the country to take advantage of the G.I. Bill, contributing to a watershed year at Mines. “They admitted 125 percent more than they expected.”

Goth’s grit would see him through a bachelor’s degree in metallurgy at Mines, a master’s at McGill University, and executive roles at Amax, Inc., Denver Gold Group, Mining and Metallurgical Society of America, Canada Tungsten Mining Corp., Behre Dolbear & Company Inc., and Botswana RST Limited.

It would also create an inseparable bond with his fellow Hardrockers that would stand the test of time. When Goth’s fraternity brother was diagnosed with cancer, each Triangle went to the hospital to have his blood type checked, ready to give a transfusion if the need arose.

The memory is one of many that keeps Goth coming back home. For the past seventy-five years, he has attended every five-year reunion minus one: a company transfer took him to Paris months before the 1965 event. He hopes to attend the next one July 8-12, 2015.

“For me it was more of a shared experience with the guys I went to school with. ... We were scattered all over the world, and the reunion brought us together.” It also sustained his link—and that of the generations to follow—to Mines. “The reunion gives us the opportunity to see what the school is doing and where it’s going. It’s a very good feeling, somewhat amazing. When we were in school, there were two to three women in the school period, so that gives you somewhat an idea of the change,” Goth says.

The all-school reunion has evolved as well. The years have seen bootlegged beer in campus tunnels, pancake feeds for hundreds of hungry alumni, hikes up Harney Peak, and picnics in the Quad. Yet the time-honored traditions remain the same.

The march up M Hill to see dozens of senior plaques is a rite of passage, a return to the place where careers began. Today alumni,

many women numbered among them, take those same well-trodden steps—albeit lit by flood lights and a transmitter for the campus radio station, KTEQ.

The university’s growth is matched by the families of alumni, as children and grandchildren join the Hardrocker clan. “The entire Wismer family attends the reunions since all three of our children **Mark Wismer** (EE78), **Carol Van Sickle** (ChemE80), and **Holly Wismer** (EE86) are Mines graduates. Also our grandson **Clark Wismer** (EE06) and his wife **Katie** (ChemE06) are Mines alumni,” says **Richard Wismer** (GeolE54), who has attended every five-year reunion since 1960 and plans to attend again this summer.

This year’s reunion promises to be the best one yet, playing host to nearly 2,000 alumni, family, and friends. Every five-year reunion brings something new to highlight, and 2015 is no exception. The Stephen D. Newlin Family Student Wellness & Recreation Center will add basketball courts, a fitness room, and rock-climbing wall. The Paleontology Research Lab has officially opened; a brand new road and parking lot have been paved. Enrollment growth and the launch of the Energy Resources Initiative have brought shale drilling and a Petroleum Systems minor to campus along with other new programs and doctoral degrees.

Planning for the July reunion has kept the campus busy, drawing hundreds of university volunteers. Working with the Convention and Visitors Bureau and the Chamber of Commerce, Alumni Association Director **Tim Vottero** (Chem84) says everybody pitches in to ready Rapid City for an influx equal to nearly 3 percent of its population.

Through the forty-six states to be represented and eight decades of alumni to appear, there’s always a common denominator beyond the beanie and senior hat. For one week in summer, the school opens its arms to seasoned veterans and fresh-faced students alike who revel in the relationships formed during college and realize they’ve made friends for life.

**Register for the 2015 reunion and
update your alumni contact information.**

Surbeck Center

501 E. Saint Joseph St. • Rapid City, SD 57701-3995

Office: 605.394.2347 • FAX: 605.394.2383

alumni@sdsmt.edu • <http://alumni.sdsmt.edu>



Five Honored as Distinguished Alumni

Graduates spanning three decades were honored as Distinguished Alumni at the 170th commencement ceremony held December 20. Al Romig, PhD, a longtime Lockheed Martin Aeronautics Company executive, addressed more than one hundred graduates.

Honored as Distinguished Alumni were:

Stanley W. Ellis (Math74), who began his entrepreneurial career in the oil and gas industry. Over the next thirty-plus years, he bought, built, and sold several companies throughout the US. Currently, Ellis runs several businesses in California. His primary partnerships are Reservoir Management Services, LLC; PROS, Inc.; Premier Equipment Rentals; Total Process Solutions; Vertical Tank, Inc., and Sierra Process Systems.

Walter D. Jones (EE75), who has worked for Intermountain Rural Electric Association and the US Army Corps of Engineers' Reconstruction of Iraq, and has served as an advisor to the National Electrification Administration. He is a member of the Institute of Electrical and Electronics Engineers and National Electrical Safety Code Accredited Standards Committee.

Harold D. Nelson (GenE58), who was founding chair of the Department of Engineering at Texas Christian University and currently is professor emeritus at Arizona State University. He has also worked at a number of aerospace companies. His research on satellite stability was first published in 1966, and in 1976 he published a landmark paper that helped him become world-renowned in modeling and analysis of the dynamics of rotating assemblies.

Karen N. Swindler (ChE88), who began her career at Exxon and transferred to LyondellBasell. Among her titles: director of global operations planning and scheduling and divisional vice president of polymers manufacturing, North America. She most recently served as senior vice president of manufacturing, Americas. Swindler is one of only a handful of women leading



Harold Nelson, from left, Richard Wells, and Karen Swindler were honored as Distinguished Alumni at the 170th commencement ceremony.

manufacturing for a Fortune 500 company.

Richard A. Wells (ChE82), who began his career at Dow in 1982. Currently vice president, Global Government Affairs and Public Policy, Wells has held a number of positions during his thirty years with the company. Wells has contributed his expertise on energy efficiency to Pulitzer Prize-winning author Daniel Yergin's book, *The Quest*.

Anne Christensen (IE14) delivered the senior class message. Christensen earned a Six Sigma Green Belt certificate, served as president of the Mines Circle K chapter and vice president of the Professional Development Institute, and participated in a number of student engineering organizations as well as two university bands. She accepted a job at Polaris Industries.

SPECIAL REUNION 2015 PLAQUE PROJECT

If your name is missing from your undergraduate class senior plaque, the 2015 Reunion Committee has budgeted for an additional plaque with 'lost names' to be produced and installed this summer.

PLEASE NOTE: This is only for undergraduate names not appearing on any plaque, not for names on the wrong year plaques. Please contact the Alumni Association before April 15, 2015, to be included on this special plaque.

1930s

MEMORIALS

Bradley F. Lockwood, Jr. (CE37)

1940s

Harry Head (EE49) is enjoying retirement at ninety-one. His daughter, Evelyn, is a nurse practitioner; son, George, is in business and finance; son, William, has a master's in EE; daughter, Lorraine, is a pediatrician; son, Charles, is an agronomist; and son, John, is a retired Army colonel and works as a lawyer. All of his children keep close tabs on him.

Robert Malone (CE43) is wondering if any classmates from 1943 are still around.

L. Eugene Wingert (ChE44) writes "it's hard to realize I graduated from Mines seventy years ago." After graduation he operated and repaired radio, radar, and sonar equipment in the Navy. He was in the occupation of Japan then worked for four companies: Deere & Co., US Gypsum, 3M, and Kimberly-Clark. He relates his training at Mines helped him to do a good job for all. He has some health problems. His mind is sharp, and he enjoys life.

MEMORIALS

Samuel E. Adler (Phys49)

Lorne A. Davis (ChE41)

Clarence A. Dickey (Chem44)

Roger W. Hill (ChE42)

Roger A. Orvedahl (CE48)

Floyd E. Stone (CE49)

1950s

Bernard Biberdorf (EE50) gives his regards to **John Colgan** (EE42), his first employer at Flahart & Colgan Engineers. The firm was instrumental in extending electric service to rural western South Dakota and Nebraska. They were also closely associated with the Golden West telephone cooperative in Wall, South Dakota. He has five grandsons: Nathan, Joel, Ben, Jeffrey, and Scott Biberdorf.

Allen Brugman (GeolE56) celebrated his eighty-fifth birthday October 4. He is living by himself and his health is pretty good.

Earl Brunson (ME54) is riding horses and raising cows.

Louis "Jim" Buchholz (EE50) notes the faster the years go by the slower we become. Since his daughter had lower back surgery, they have been getting "meals on wheels." Very good!

Jim Bump (CE57) hopes to see everyone in July!

Warren Dowler (ChE56) is consulting at eighty-four years!

Frank Dvoracek (EE54) works as a docent at Eldorado County Historical Museum. Everyone is well, just another year older!

Terrance Fiechtner (ChE59) and Arliss are now Colorado residents after many years of Florida living.

Conrad Fuchs (ME59) lost his wife of sixty years to Alzheimer's and his brother to cancer. Doris is buried in Pierre, South Dakota. Conrad was back to Pierre for her funeral and in October to replace the flowers there. He expects to be at SDSM&T for the all-school reunion in July.

Jim Hayes (GenE59) is traveling and playing golf all over. His health is relatively good, and he enjoys time spent with extended family members.

Terry Heil (ME55) lost his wife of fifty-five years August 19. She was from North Dakota.

Allan Hins (MetE59), seventy-three, got his last paycheck from Argonne National Laboratory. Now he is immersed in making music on a big scale. He plays low brass euphonium as a soloist and in a Lutheran ensemble, the English hand bells in a Presbyterian bell choir, an eclectic quartet, and quartet ensembles. He performs vocalizations in a Downer's Grove community chorus. He is also completing

on-call work in Lutheran and UCC vocal ensembles.

Clark Kurtz (EE59) and his wife, Joan, are being kept young by two granddaughters. Evelyn is going on three, and Norah is four months. They plan to attend the Rapid City High School sixtieth reunion in September 2015 and visit the Mines campus.

Harold Larson (EE51) moved to Venice, Florida, in 2011 after fifty-four years in St. Petersburg. He is residing with his daughter and her husband. They have purchased acreage in South Carolina and plan to move there when their house in Venice sells. His two sons live in Spring Hill, Florida, and are nearing retirement. As of October 2014 he has two great grandsons. He still gets a yearly visit from **Les Larson** (CE58) while Les and his wife winter in Naples, Florida. Life continues to be good with family nearby.

John Mohr (EE56) and Alice visited daughter, Laura, who is working in Abu Dhabi. While there, they took a side trip to Istanbul.

Delmar Montycka (MinE51) has been retired for twenty-two years. He has fond memories of students at Mines. He is glad to hear **Owen Tripp** (ME50/MinE51) is still active. There are two other mining engineers from the small class of 1951 around.

Lawrence William Paschal, Jr. (GeolE57) died on March 7, 2014, of a broken heart after the passing of his wife, Staley Paschal, in February. They had been married sixty years. Lawrence was one of the few students from the south in the 1950s. His son, Greg, remembered hearing that a Mines professor helped his father get his first job working for Mobil Oil Company.

Donald Peterson (ME50) and his wife, Florence, have been snow birds for fourteen years. They sold their New Jersey home and are now full-time residents of sunny and humid Florida! They are in good health.

Eugene Poch (CE58) travelled to Cheyenne, Wyoming, for his sixtieth high school reunion, followed by a Poch family reunion with sixty-five attendees. In October, he joined his brothers—two WWII veterans, ages eighty-nine and ninety-three—and an eighty-seven-year-old. They had not seen each other in fifteen years. It was a great time remembering childhood.

Robert Prutny (ME50) and Eleanor moved to Somerset Court, an assisted living facility. They are doing well, not traveling far from home, and moving slowly.

Bill Richardson (ME59) and wife, Shirley, are happily retired in Las Vegas. The great-grandkids are a joy! He still flies, crashes, and fixes his model airplanes.

Ernest Sundstrom (ME58) is really enjoying retirement and life in Athens, Georgia.

Ken Urban (CE53) enjoyed twenty years with the Civil Engineer Corps-Navy, large projects in the Bay area, five years in Rapid City, and ten years with Trus-Joist Corp. After a midlife crisis he started teaching wood-shop, drafting, and the Bible in a small Denver Christian school. He also worked to pioneer a church planting in Kazakhstan, lead young teams to Africa, New Guinea, Europe, and Asia. Doris is a great quilter, daughter Barb runs a mission in Alaska, and son Tom is a builder.

Ronald Varilek (CE57) is looking forward to the five-year reunion in the beautiful Black Hills.

Richard Wismer (GeolE54) is in Ajo, Arizona for the winter. His whole family is planning on attending the five-year reunion.

William Yates (EE53) is feeling his age. He has given up wintering in Florida and is going to hunker down in the cold of Ohio.

MEMORIALS

James R. Gassen (ME50)

Derald B. Gellhaus (ME58)

Everett L. Kidner (CE57)

David E. Papcke (GeolE58)

Lawrence W. Paschal (GeolE57)

David C. Ridinger (MinE51)

Horton F. Steinmeyer (EE50)

John R. Taylor (CE50)

1960s

Jon Anderson (ME60) is enjoying summers in Washington and winters in Surprise, Arizona, with his wife, Billie Jean. They plan on being at the 2015 reunion.

Theodore Andrews (CE62) and his wife, Louise, both celebrated ninety-first birthdays this year. They also celebrated their seventieth wedding anniversary in June. They have slowed down a little, but he still bowls twice a week. He gave up on golf after fifty years at his favorite golf course—Fresno Airways. They are looking forward to their family Christmas reunion.

Edward Bane (MetE60) has two great-granddaughters who have joined one great-grandson, a three-year-old. His oldest granddaughter was recently married in South Texas. It was some event (ten attendants on each side). He hopes to make it to the reunion next summer!

Gale Bishop (Geol65) is helping operate the GA Southern University sea turtle program at St. Catherine's Island, Georgia. In 2014 he got in 140 field days during the nesting season. In the winter he is trailing his wife, Katherine, in beautiful NE Iowa, cleaning, shoveling, and writing. He is now busy observing the Modern Transgression as sea level rises on SCI at 1.9m/year which is rapidly causing the sea turtle nesting habitat to deteriorate.

Russell Buyse (EE63) and his wife of seventeen years, Carolyn, are doing well enjoying retirement. They travel a lot and have held season tickets to the Denver Broncos since retiring. They enjoyed attending most home games with **Randy Parcel** (MinE97) and Tracy Kovach.

Carl Coad (Math60) is in Olathe, Kansas. He is enjoying grandchildren's sports and musical events. He is going to try to get to the 2015 Mines reunion.

Thomas Crooks (Geol66) notes four years ago he and his wife, Treva, began the Wallowa Mountain Garlic Company. They raise and sell gourmet garlic. They are enjoying harvest at the end of July. It has been a great retirement occupation.

Archie Doering (ME63) and his wife, Judy, celebrated their fiftieth wedding anniversary with an Alaskan cruise and a vow renewal service and dinner at church with 160 family and friends.

Lynn Englehorn (ME66) has been retired from working for consulting engineering firms for fifteen years. He and Polly enjoy traveling and hosting international students from the local college (Univ. of WI Stout). They have toured twelve countries and all fifty states. They own farms and grow popcorn.

Michael Fischbach (ME64) lost Ann, the love of his life, to early onset dementia in April 2014. Despite his sad loss, he really enjoyed the Class of 1964 reunion in May and an extended trip reconnecting with his family and old friends. He loves his new townhome and having time to travel and participate in various volunteer activities. He was looking forward to Thanksgiving with his four children and their families.

Frank Hahn (CE66) completed the second of his three-year commitment to the Engineers Make Great Entrepreneurs speaker series. This fall he spoke about the success of his business and how that has allowed him to fund the program and its scholarships.

Maurice Hargens (ME65) retired from the engineering profession in February 2014. He and wife Tootie are looking for a winter retirement community in the Southern USA. They have checked out Texas and Arizona, and are now planning to spend January and February in Florida. All of their children and six grandchildren live nearby and get together often. They plan to be at the SDSM&T Reunion.

Gary Lower (ME69) finally “retired” in July of 2014 and is enjoying “smelling the roses.” He and Michelle have their first grandson, born February 2014. He keeps them busy.

Duane Malde (ME65) is farming—while seeing his former classmates are retired. He and his wife, Mary, keep busy with farming and following ten grandchildren’s activities and lives.

John Mallow (ME63) sold his business to his oldest son, John, and two others. He has not retired, but works less each year. He and Pat spend the winter in Ft. Myers, Florida, and summer at the cabin on Crane Lake. The cabin is accessible only by water between BWCA and Voyageur National Park. Their grandson, Gabe Miller, will be a freshman at Mines in 2015! They will be attending the 2015 reunion and were glad to catch up with **Jerry Takle** (EE64) to pheasant hunt.

Bashir “Bash” Master (ME67) keeps busy consulting on solar and conventional power projects while his wife, Barbara, enjoys complimentary health practice through “Master Healing Arts, LLC” which she established in New Jersey. They added a grandson in July 2014 and now have seven grandchildren (five boys and two girls) through their five children (two boys and three girls). There is always a family reunion at their house during Thanksgiving.

Don McComber (ChE61) appreciates the *Hardrock*. “You have faithfully sent it to me now for over fifty years and I scour it

from cover to cover.” Don was a key person in the development and marketing of the motorcycle drive belt, now used by Harley Davidson and others. He also did much of the original work on the CVT used on some Audis and Nissans. He has been retired for ten years, and has started writing historical fiction books for the fun of it. He and his wife exercise every day and enjoy hiking. Other 1961 classmates can reach him at bigmtnclimber@aol.com.

Eugene “Gene” McPherson (EE68) says after thirty-two years he and his brother sold McPherson Propane. He relates he is “out,” except that he remains on two national technical propane committees. Gene likes to hike, ski, bike, dance, and travel. He is still in charge of the reunion plaque and hopes to see you all next July.

Frederick Meyer (EE62) still flies his homebuilt RV-6A.

Harlan Miller (GeolE62) is moving from a two-story home to a single level.

Richard Moen (MetE62) enjoyed the Mines get together last March in Richland, Washington. He was impressed to see the changes that have taken place and plans for the future. He and Mary Jo give top priority to their five grandkids, all of whom live in western Washington. They are grateful they are healthy enough to do so.

George Peacore (ME60) notes he started Weather Engineering & Manufacturing Inc., a commercial HVAC contracting firm in 1968. He ran the firm for thirty years, sold it to a national firm, and retired in 1998. He and Marcia have been married fifty-four years, and Colorado Springs has been their home for fifty years. He rode his bike across the country, coast to coast, in six weeks, about seventy-five miles a day, for his seventieth birthday. His mental condition is still pretty good.

Carol Reed (Geol66) is retired, but works part time for the Minnelusa Pioneer Association as Head Curator/Archivist at the Journey Museum in Rapid City.

David Rogers (ME60) and his wife, Jan, have had a good year. Skiing was much better in 2014 following his 2013 hip replacement. They enjoyed visits this year with LaVonne and **Jim Hayes** (GenE59) in Fort Smith, Arkansas, and **Tom Gorder** (MetE60) in Tuscaloosa, Alabama. They also enjoyed a nice round of golf with Louise and **Dave Coe** (CE60) when they stopped for a visit. They just returned from two weeks in the Balkans, a beautiful and interesting area, and are looking forward to the reunion next July.

Harlan Rosin (ME63) retired in October 2002. He did some consulting, but now spends his time with grandkids, woodworking, cars, and church. His career was centered on HVAC (mostly transport such as subway cars) and transport refrigeration, with long terms at Trane and Thermo King. Prior to retirement he spent six years at Thermalex, an aluminum extrusion company providing multichannel microtubing for automotive air conditioning. Life is good!

Halvdan Saethre (ME68) went to Bergen, Norway, to spend Christmas and New Year's with his two sisters. They had Christmas together for the first time since 1965. While there, he spent time with **Freddy Frydenbo** (ME68) and **Rolf Gulbrandsen** (ME67). **Oistein Nyberg** (CE67) stopped by to see him in Truckee in September.

Jeanette Salverson (Chem69) is retired and loving it.

Lin Seder (ChE69) and **Barbara Seder** (Math70) retired over three years ago. Their travels include visits to family, friends, and national parks. They have been from Glacier to Orlando and from California to Wisconsin. They are hoping to get to NE Alaska and Hawaii. They have met with fellow alumni and friends Kathy Doto, **Marc Keltner** (Math/Phys70), **Vicki DeNeui** (Math73), **LaRon**

Smith (Math66), Lorna (Huston) Keltner, **Jeff Lane** (ME70), **Al** (CE73) and **Bonnie Blair** (Chem72), John Zolnowsky, and **Jeff Wood** (Phys83).

Charles Snyder (ME63) and wife, Lucille, traveled to Rapid City in early December when she accompanied the Mines choirs on the hammered dulcimer in concert at the Cathedral of Our Lady of Perpetual Help. Fifty plus years ago he worked part time for the local architect responsible for the design details of that wonderful venue for singing and worship.

Walter Sutherland (GeolE60) is enjoying retirement. He continues to be saddened over the loss of his wife, Joan, whose hard work as a wife, mother, and campus secretary contributed greatly to his graduation.

Edward Texel (ME61) is fully retired. He is playing trumpet in a few dance bands, playing duplicate bridge, and golfing twice a week. He plans to attend the upcoming reunion.

Darwin Wika (ChE63) just returned from an annual two weeks hunting trip in South Dakota with his brothers. The entire family is healthy and active. He and his wife, Kathleen, had dinner with Nancy and **John Baker** (ME64) of Watertown one evening. They are planning on coming to the five-year reunion.



Friends in Frisco (seated, l to r) Mark Olson (EE75), Scott Rausch (EE75), Anita Freeman (EE76), Linda Rausch (ChE75); (standing, l to r) Susan Banks (GeolE75), Carmen Adams (ChE75)

San Francisco area alumni and friends gathered last summer for a fun evening out. Thanks go to organizers from near and far (pictured above) for working together to bring the event together!

Carroll Wills (ChE61) has been retired sixteen years. He reports time flies. He was able to visit some of the old classmates. He enjoys traveling and visiting the grandkids and children. "Life is good!"

MEMORIALS

Daniel L. Callahan (ME67)

Richard L. Haeder, Sr. (ME61)

Lowell K. Hanson (EE61)

Dean F. (Buck) Buchanan (EE62)

Richard A. Goertz (CE67)

Steve Bauman (CE79) has lived in California for thirty-five years. He loves every trip made to the Hills to see family and friends but knows he was not destined to live in South Dakota. He loves his bride, Janice, and their nine, going-on-ten, grandkids! He went back to PG&E a few years ago and is hoping to retire in about eight years. He is looking forward to the reunion.

Bill Belden (ME75) is taking a hiatus from work after forty years in the oil and gas E&P industry and the successful sale of Sequel Energy, a Williston Basin-focused energy company that he was involved in.

Lorin Brass (MetE75) of Lennox was named to the South Dakota Investment Council last summer. There are five citizen members, and they serve single five-year terms. The council serves as an advisory and sounding board

1970s

Susan "Booty" Banks (GeolE75) will see you at the reunion!

Scott Barber (ChE71) shut down his consulting business in November 2013 and is now 100 percent retired. He spends time enjoying his wife, son, new granddaughter, and playing golf in the sunshine of Florida.

for the state investment office's management of various trust and cash funds as well as the South Dakota Retirement System portfolio. A retired engineer and executive for Shell Oil Company, Brass also serves as the chairman of the Board of Trustees for the SDSM&T Foundation. Brass and his wife, **Mary (Rausch) Brass** (CE77) established a scholarship at the school in 2007 to assist students to learn abroad.

Dennis Bryan (GeolE70) is having too much fun to retire. Western Lithium keeps him busy with the opportunities in Nevada.

Peter Eckhoff (Mtro78) retired from the EPA last Labor Day after forty-one plus years of government service.

Robert Erdmann (CE74) has a junior, Mary, at Waubay High School. The next youngest is Gabby, a freshman at SDSU. Their daughter, Marija, was married June 21 to Travis Hansen. Molly, the eldest, is working for NBC as a graphic designer. Greg is working at First Interstate Bank in Rapid City. Ryan will be graduating from medical school on May 15, 2015. All is well in retirement, and visitors to Enemy Swim Lake are welcome.

Steve Erdmann (CE74) retired from Nascote Industries in 2010 and moved back to the family home in Mobridge, South Dakota. He is enjoying the great fishing and hunting on Lake Oahe.



Jim Green (ME74) with Hall Inn sign

Sumo Japanese Kitchen (formerly the Hall Inn) owners Chie Ronneberg, Kaz and Joe Campillo, and Sumo staff have adopted SDSM&T students, faculty, staff, and alumni as their favorite neighbors. Last fall they graciously donated the old "Hall Inn" sign to the SDSM&T Alumni Association. Then alumnus **Jim Green** (ME74) moved the sign to his shop; disassembled the entire structure; had it sandblasted, painted, and refitted with new lights; rigged it to his son **Josh Green's** (ME11) Jeep hitch and battery; and displayed it proudly at home football games on the B-Ramp to serve as a marker for our Alumni Association tailgate area. Many thanks go to Sumo and the Greens for their generosity in helping preserve this landmark sign.

Mark (ChE79) and **Melanie** (CE79) **Fiegen's** son-in-law, Nate completed his PhD. He and Jane moved to Eau Claire, Wisconsin. Karen married Zach Allen after graduating with a BS from U of M, but not before being selected by NASA to participate in their Reduced Gravity Education Flight Program and take her team's space glove experiment on the "vomit comet." Ann continues pursuit of a PhD in virology and married Wil Durbin; Mel made the wedding cake! Mark farmed corn, CRP, food plots, and pheasants.

John Floden (CE71) was one of the 500-plus US contractors to be evacuated from Balad Air Force Base, Iraq, last summer. Special thanks to the Iraqi Air Force who used their C-130 planes to fly out many of the contractors. His firm was reconstructing the base, and he was in charge of rebuilding the runways, taxiways, aprons, and ramps, as well as some support facilities, hangars, PAX terminal, parts warehouses, etc.

Michael Flood (Chem77) and his wife, Peggy, now have two beautiful granddaughters, Kalina and Austin. Disney World was awesome this summer!

John Grimes (Geol73) retired this past year. He is occupied by historical and genealogical research, but in the warmer months he is still consumed with the study of Grenville age rocks in Ontario and Quebec.

Robert Heier (ME73) and Madonna split time between South Dakota and Louisiana. They plan to be at the 2015 reunion. They hope to see a lot of alumni there to make it the best reunion to date.

Douglas Hellekson (EE75) retired in 2011. He has been busy building a cabin in the Little Belt Mountains in Montana. He enjoys 4-wheeling, fishing, hiking, and gatherings with family and friends. They get back to Rapid City about twice a year to visit.

Robert Howe (EE72) retired from John Deere. He moved back to Sioux Falls, with wife Evie, to be closer to family. To keep busy, he started Howe Consulting, LLC, which is a business improvement company. They are enjoying their flexibility.

Dennis Kalvels (EE73) is awaiting his ninth grandchild in January!



Margaret (MetE77) and Wayne Larsen (GeolE76) Photo: Jay Pickthorn / Argus Leader

Margaret (MetE77) and **Wayne Larsen** (GeolE76) appeared in the *Argus Leader* advocating for girls in engineering. They fund an annual scholarship to send two eighth grade students from the Tea, South Dakota, area to summer engineering camps at SDSM&T. They have also started a school-wide learning project in STEM-related fields at the Tea Intermediate School. Margaret relates “we just want to expose everybody to it.”

Donald “Joe” Kellar’s (Phys74) wife, Linda, retired as a senior accountant at Radia, Inc. His daughter, Nicole, is pursuing a master’s degree in counseling at Seattle University and his son, Michael, finished an IT program at Edmonds Community College. Joe is still having fun as a T&D Standards Consultant at Snohomish County PUD.



Ken Nelson (GeolE71) on M-Hill

Ken Nelson (GeolE71) picked a nice day in October to check out M Hill. Only forty-eight years since he made the first trek wearing a frosh beanie!

Norman Kolb (EE71) retired October, 2014, as a distinguished member of tech staff at Sandia National Laboratories. He totaled forty-three years at Western Electric Company and Sandia.

Jim Miller (Mtro71) and Trina moved into one of Westhill’s triplexes. The retirement village provides window washing, lawn mowing, snow removal, etc. It has a small theater, warm swimming pool, exercise equipment, a library, a wood working area, pool tables, and some meals. They have enjoyed February in Puerto Rico, Arizona, and Florida. They have five grandkids, and three great grandkids.

Arne Nilsen (ME75) returned to Norway after graduation. He has worked in the oil offshore industry and has travelled throughout the world with his job. For the

last few years, he has worked as engineering manager for a Norwegian drilling contractor in Brazil. He is looking forward to visiting the SDSM&T campus for a reunion soon!

Thomas Norman (CE77) is living in beautiful Fort Collins, Colorado, providing environmental consulting services. His children are grown, and he and his wife have five awesome grandchildren. He enjoys having time to volunteer for some great professional groups. He was recently president of the Colorado Environmental Professional Association for two years and is currently president of the Rocky Mountain Chapter of the Certified Hazardous Materials Managers.

Larry Pearson (ME72) enjoyed another good winter in Arizona with Linda. He regularly sees **Ed Olson** (ME61), **Randy Shaw** (EE70), **Bob Malone** (CE43), and **Duane Olberts** (ME52) in Tonto Verde and Rio Verde. He is looking forward to several fishing and golf outings this summer. Retirement is treating them well.

David Rawlins (GeolE78) and wife, Brenda, have spent twenty-eight great years in Midland, Texas. Brenda is busy with local clubs and charities. Their son, Kyle, attends the University of Texas of the Permian Basin, and he hopes to teach science. David works as an exploration

geologist for Newbourn Oil Co. He has enjoyed the oil business for thirty-six years. He is glad to see the emeritus faculty still kicking and sends his greetings to Drs. Lisenbee, Fox, Redden, and Rahn.

Richard Rubendall (CE79) says the family is doing fine. Their youngest, Bailey, who is fourteen and in eighth grade, says that she is going to SDSM&T. Amy, the oldest, just visited and they were able to enjoy their four-year-old grandson, Will.

Richard (Chem70) and **Jeanette** (Chem69) **Salverson** are enjoying their three grandkids—Nathan (seven), Emily (five), and Aaron (seventeen months). Richard is retired.

Grant Shelton (ME70) retired this past August. He had an enjoyable and rewarding career which was made available to him from his days at SDSM&T. He looks forward to spending time with his kids and grandkids, and traveling.

Richard Twigg (MetE70) is doing well and enjoying semi-retirement.

Leo Van Sambeek (MinE72) expects to work at RESPEC until he can take employee number 1,012 to lunch. It is hard to believe 1,000 people have come to work since he did. He hopes **Paul Gnirk** (MinE59) can join with #1,001, (assuming he was #0001).



(front, l to r) Phil (friend of the Hulls), Jeanne Hull (CE77), Joe Vig (CE71); (back, l to r) Patti Vig, Jan Lux, Mark Lux (MinE80), and John Hull (MinE77)

Joe Vig (CE71) gathered with a small SD Mines group from the 1970s in Arizona at the world famous Buffalo Chip in Cave Creek, after watching the Schwab Cup Championship in Scottsdale. Jan and **Mark Lux** (MinE80) and **Jeanne** (CE77) and **John Hull** (MinE77) hosted the gathering at the Desert Mountain Golf Club, along with Patti Vig and Phil (friend of the Hulls). Vig added that John Hull is the 2014 Match Play Champ at Desert Mountain, no small feat.

(**Brost**) **Heupel** (MetE88) live just down the road and they get to see them quite often.

Randal Evans (EE80) retired April 1, 2014, from the Boeing Company. He completed thirty-three years with Boeing as an electrical engineer and a senior engineering manager. He is now a small acreage farmer raising a herd of forty-five cattle. He received a good education from SDSM&T and he really appreciates that.

Robert Gnirk, Jr. (ME84) and wife, JaNelle, celebrated the marriage of their son, Garth, to Kayla Pfaff on October 11, 2014. They have a daughter, Heidi Lynn, who has given them the wonderful new role of grandparents!

Kenneth Green (ME85) recently became part owner of an industrial refrigeration construction company. He says all is well and sends best wishes!

Everett “Bud” Hendrickson (ME88) and Nancy relocated to Portland, Oregon, with Americold. He is the regional facility services director for the Pacific Region. They bought a home in Washougal, Washington, with a view of the Columbia River and Mt. Hood. Their eldest son, Grant, started his fourth year at Menlo College playing defensive line on the football team and majoring in international business, and Brett started his first year at SDSM&T majoring in mechanical engineering.



Jon Kellar (MetE84) with Drs. Ken Han and Stan Howard

Dr. **Jon Kellar** (MetE84) has been selected as the recipient of the Mineral Industry Education Award, a prestigious national honor granted by the Society for Mining, Metallurgy, and Exploration the American Institute of Mining, Metallurgical, and Petroleum Engineers. He will receive his award at the SME Annual Conference and Exhibit. During the twelve years Kellar served as head of the Department of Materials & Metallurgical Engineering, enrollment doubled and research and industrial participation within the department increased. His research has resulted in more than eighty publications and earned recognition from the Board of Regents and National Science Foundation, which named him a Presidential Faculty Fellow. Kellar was awarded the CASE Carnegie Foundation's US Professor of the Year for South Dakota in 2008.

Dale Westendorf (ChE71) is living in Texas hill country and loving it.

Ronald Wiest (ME73) fully retired January 3, 2014, from the utility business after over forty years of utility and pipeline safety. It was time to make weekends long enough and enjoy his four grandchildren. His woodworking shop is a good place to relax. Surviving prostate cancer has given him a new attitude and changed his priorities.

MEMORIALS

James L. Frank (CE72)

Michael D. Higgins (ChE70)

Robert E. Santee (ChE71)

Gary A. Spencer (EE73)

1980s

Dean Bierwagen (CE82) is proud to have two grandkids, Tristan and Alexis.

Ingar Brauti (EE80) and his wife, Kari, have seven grandchildren now. All four of their daughters have children. He is working with standardization with ISO on a portfolio program and project management in addition to his consulting work.

Kim Dockter's (ME85) wife, Becky, got an excellent opportunity at Journey Construction as vice president of finance. Their children are both in college, and being empty nesters they decided to move to Sioux Falls. He is a design engineer with RMS Roller Grinder. **Mark** (ME85) and **Erin**

Todd May (ME89) left Chrysler in August 2013 after twenty-five years. He and Patricia moved back to Rapid City, and he took a sales position at A-1 Auto Recyclers. He really enjoys auto sales and advising people with their auto needs. It has afforded him the chance to gain sales experience and witness “end of life” results of different automakers.

Jill (MinE82) and **Mark Nelson** (ChE83) thank everyone for their support through the past several months following the untimely death of their son, **Conlan** (MinE12), on September 9, 2014. Never satisfied with complacency, Conlan was always ready for that next adventure. Whether it be traveling the country or abroad, flying airplanes or jumping out of them, serving mojitos to friends and family, attending any kind of sporting event, or dressing up for a concert with friends and family, he always gave every inch of his being to whatever he did. His compassion, energy, and incredible gift for enriching the lives of his family and friends will live within each of them forever. He will be greatly missed. His obituary can be viewed by logging onto the online community on the Alumni Association website and searching for his name. The Conlan Nelson Memorial Scholarship has been created with the SDSM&T Foundation by his family in his honor.



(l to r) Robb Winter (CBE Dept Head), Evan Waddell (ChE10), Byron E. Wolf (ChE87), Dave Dixon (ChE78; CBE faculty)

Byron E. Wolf (ChE87) was recognized by the Chemical & Biological Engineering Department last spring for his twenty years of service teaching the Organosilicon Polymer Chemistry and Technology course on campus. Byron has worked at the Dow Corning Corporation since he was hired by another SDSM&T alumnus with a long history of service, **Doug Aldrich** (ChE62). In 1995 Byron took over teaching a course on silicone polymers from **Kathy (Rossknecht) Ulman** (Chem76), who originally developed the course, working in conjunction with the chair of the Chem/ChE department, Dr. **Robert Sandvig** (ChE44). The last two years he recruited **Evan Waddell** (ChE10) to help teach. He will take over fully next year and will be the thirtieth year that a Dow Corning employee has continuously delivered this course on campus.

Mark Rantapaa (GeolE87) is living in Elko, Nevada, with wife, Cassie. He is with Barrick Gold but working at the Cortez mine now as manager of the open pit. Their son, Dylan, is in his first year at the University of Montana at Missoula, and they have two beautiful granddaughters from their daughter, Stephanie. Life is good!

Bruce Stearns (GeolE85) has been working for the Bristol Alliance of Companies, a part of an Alaskan Native Corporation for the past two years. His projects have centered on US Army Corps of Engineer projects throughout

the lower forty-eight. His family travels to South Dakota from Tennessee to keep up with the in-laws.

MEMORIALS

Chris W. Korpi (GeolE83)

Christy A. Donley (CSc86)

Timothy S. Skeen (GeolE86)

1990s

Michael Arens (CE98) received the Engineering News Record (ENR) “Top 20 under 40” award last spring. Arens began his career with Kiewit Construction working as a field engineer and

eventually as a project engineer. In 2004 Arens joined the Salt Lake City office of Michael Baker Jr. Inc. and over the next nine years progressed from bridge design engineer to being a national leader on accelerated bridge construction (ABC).

Matthew Bunkers (IS92) has been catching up with classmates **Rob Christiansen** (ME95), **Steve Dykstra** (CE92), and **Scott O’Meara** (CE92) for the past several years. They have all moved back to Rapid City. He also has reconnected with **Jason Kippes** (ME92), as their daughters run cross country and they see each other at meets. His best friend and college roommate, **Chip Koerner** (CE93), has two sons attending SDSM&T, and they have been able to get together over the past couple of years.

Matthew Getty (CE98) and wife, Hilary, welcomed a baby girl, Alexis Ann, on October 16 to their growing family.

Rich Hardegger (ChE91) and his wife, Kate, had the good fortune of having their entry into empty nesterdom coincide with Barr Engineering’s need for a senior leader in their Calgary office. They just had their one-year anniversary in Calgary and Alberta. The change of scenery has been wonderful with the Canadian Rockies only forty minutes away. They will be there through 2018.



(l to r) Greg Hintgen (EE99), Chuck Cox (ME00), Kameron Williams (IE03), Ben Dines (MetE97), and David Brucker (CE97)

Greg Hintgen (EE99) sent a photo of alumni brothers who competed in the 2014 Lenexa Chili Challenge last fall. "While we didn't bring home the trophy, we sure had fun trying!"

James Lang (ChE99) is living in Tennessee after five years. He loves it there!

Jon Lowe (ChE93) moved to Baku, Azerbaijan, in February 2013. He and Stephanie are enjoying the expatriate experience and living there. It is quite an adventure! Their children attend an international school and Stephanie continues to work at BP.

Trisha (MetE95) and **John Ludeman** (MetE94) have moved from York, Nebraska, to Cedar Falls, Iowa. The girls (Ryen, Briar, and Drew) started school there in August. Trisha took a quality engineering job with Viking Pump and he is the Quality Manager for Advanced Heat Treat Corp. in Waterloo, Iowa.

Anthony Oehlerking (EE93) is busy and life is great. His travels for business have taken him to over forty countries again this year. The girls have grown fast.

Brittany graduated from SMSU, Aleisha from Augustana, and Brooklyn is now attending DWU. All three play/played soccer for their universities. Chandra keeps busy with her career and keeping the family happy.

Audra Walsh (MinE95) was appointed by Sierra Metals Inc. as chief executive officer and president, effective July 28, 2014. She is a highly regarded mining executive with extensive experience in strategic planning, mine optimization, and management of large engineering and operating teams, including operating experience in Peru. Audra was the chief executive officer and president of Minera SA, a privately held mining company with mining projects in South America, North America, and Europe, and the controlling shareholder of Orvana Minerals Corp. She has held senior management positions at Newmont Mining Corporation and Barrick Gold Corporation.

MEMORIALS

Jon L. Lange (MS EMgt90)

2000s

Eric Brandner (CE08) passed the Minnesota PE exam in April, 2014.

Chuck Cox (ME00) has relocated back to South Dakota after being away for thirteen years. Tara, his wife, was able to transfer with her company and she loves Sioux Falls. Their son, Ethan, has picked up his athletic career with some new teams and is adapting well to his new school and friends. Their daughter, Camdyn, is enjoying her new school too. He cannot wait to see everyone at the reunion!

Jennifer Da Rosa (Geol00) recently accepted a position at the US Naval Academy as an instructor of STEM education. Her kids, ages ten, eight, and six, are growing quickly. She and her husband, Francisco, have been married for eleven years now.

Brian Drake (ChE00) just moved to Washington wine country to make room for his growing family. This year marks fifteen years with Trane. Time flies!

Sarah (IS02) and **LeRoy Ellis** (CSc00) welcomed their second child on January 18, 2013. She is a little miracle at ten weeks early! She keeps very busy with her big brother.



Sarah (Grover) (IE06) and Kory Bockelmann (IE06) with Asher

Sarah (Grover) (IE06) and **Kory Bockelmann's** (IE06) son, Asher, was diagnosed with Rhabdomyosarcoma this past August at just twenty months. A 5K Run/Walk "All for Asher" was held last fall to raise funds for Asher and his family. Please see their www.gofundme.com/de4nm8 link to support "Smasher's Angels".

Julie (Abrams) Galbraith (CE07) and her husband, Aaron, welcomed their first child, Sierra May, into the world on June 20, 2014. She weighed 7lb-3oz and measured 21.25" long.

Adam Lungren (ME08) notes his sister, **Sarah Suek** (IE06), brother-in-law, **Jesse Suek** (CEng04) and step-father **Bill Wallace** (MinE78), all graduated from SDSM&T. He and his sister returned for their master's in engineering management.



(l to r) Alena Ori, DPT (IS09), Valeri Eisenbraun, PA-C (IS09), Stephanie Cass (IE10), Leah Wiedrich, PA-C (IS10), Renae Schmidt, DPT (IS09)

Alena Ori (IS09) sent the photo above of SDSM&T alumnae who were in Nashville last year to celebrate finishing their professional degrees. Two received their master's as physician assistants and two received their doctorate's in physical therapy. They are pictured at the Country Music Hall of Fame.

Tammie Klinker and **Warren Mayes** (MS TMgt02) were married July 12 at St. Paul Lutheran Church in Fairfield, Montana. The bride taught for the Cascade Public School district for twenty-five years before retiring and now works part time for the Great Falls Public Schools district. The groom spent twenty-five years in the military before retiring to become a teacher. He taught at Simms High School for eight years but now works as a teacher for C.M. Russell High School.

Joy McClure (MetE07) married Brian Mueller of Rapid City, June 28 at Palmer Gulch Resort. They were joined by many of their SDSM&T family and friends and had a wonderful time!

Terence Satchell (CE09) and his wife, Jackie, moved to Fort Bliss, Texas after he completed the Army Engineer Career Course. He also completed his MS in Engineering Management from the Missouri University of Science and Technology. They had their first child, Marilyn Kay, September 14, 2014.

MEMORIALS

Andrew T. Johnson (MEM08)

2010s

Anastasia "Tasha" Baker (MetE10) is engaged to Justin Cote, who graduated from Colorado State University in 2007. They are planning their wedding from Utah for October 2015 in the Black Hills.



Conlan Nelson (MinE12)

Jill (MinE82) and **Mark Nelson** (ChE83) thank everyone the support following the untimely death of their son, **Conlan** (MinE12), on September 9, 2014. Never satisfied with complacency, Conlan was always ready for that next adventure. Whether it be traveling the country or abroad, flying airplanes or jumping out of them, serving mojitos to friends and family, attending any kind of sporting event, or dressing up for a concert with friends and family, he always gave every inch of his being to whatever he did. His compassion, energy, and incredible gift for enriching the lives of his family and friends will live within each of them forever. He will be greatly missed. His obituary can be viewed by logging onto the online community on the Alumni Association website and searching for his name. The Conlan Nelson Memorial Scholarship has been created with the SDSM&T Foundation by his family in his honor.

Spencer Ferguson (CE14) is living with fellow alumnus **Garrett Frederick** (ME13) and working out regularly with **Austin Norberg** (CE12). He attended the SDSM&T vs. William Jewel football game in Liberty, Missouri.

Erik Engelmeyer (EE10) was married in April 2013 to Kelly. They have one son, Sutton, thirteen months and they are expecting another boy in January 2015.

Kelsey Koch (Chem12) is currently a third year medical student at USD Sanford School of Medicine.

Tiara (Mueller) Marcus (IE11) and her husband, **Zachary** (MinE10), work for Cliffs Natural Resources. He is a senior mine engineer and long-range planner, and she works in the business improvement department as a project manager. They recently had their first baby.

MEMORIALS

Conlan W. Nelson (MinE12)

Former Faculty & Friends

MEMORIALS

Greta Giannonatti Nelson (Former Staff)

AREA MEETINGS



1. M Day Muster – Spokane, Washington: (l to r) Gene Skinner (GeolE53), Bob Turner (CE52), Darlene Turner, and Evie Skinner celebrated M Day with a late lunch at Lindeman's



2. M Day Muster – Mitchell, South Dakota: (l to r) Danielle Erdmann (Geol05), Kevin Erdmann (ME04) (holding Gabrielle), Keith Beck (EE90), David Kringen (Ex88), and Sean Stucker (ChE89)



3. M Day Muster – Loveland, Colorado (2013): (l t r) Jeanne Callahan, Skip Arnold, Sandi McColl (Math88), Gary Callahan (ME70), Karla Callahan (Chem76), Del Mank, Jim Roehr (ME67), BJ Callahan, Dan Callahan (ME67)

4. M Day Muster – Loveland, Colorado (2014): (l t r) Dennis Hinders (Chem67), Bernita Greiner, Lloyd Greiner (EE63), Jim Roehr (ME67), Jeanne Callahan, Sue Lewton, Morie Block (CE76), Sandy Block, Terry Lewton (CE74), Peggy Klammer, Gary Callahan (ME70), Dan Callahan (ME67)



AREA MEETINGS

5. M Day Muster – Midland, Michigan: (Families starting from the left) Seth (CE07) and Christine Kruse (ChE05) with Hunter and Flint; Dan Wynia (ChE96); Anne Putnam (ChE05) with Alivia and Larson (Jon Putnam not pictured; photographer); Colin McGowan (ME14) and Megan Frager (ME14); Steve Holty (ChE98) and Saeda; Al Clark (ChE71) and Carolyn; Evan Waddell (ChE10); Travis Hoon (ChE12) and Emily with Mason; (Not pictured) Dan Hines (ChE13), Cody Marnach (ChE14)



6. M Day Muster – Shanghai, China: (l to r) Richard and Tami Heilman-Adam (ChE98) with Luke, Henry, and Chloe; Wei Luo and Canyuan Wang (ME91); (back) Lily and Dana Bauer (ChE97); Hua Zhang (MS MES05) and Wei Chian (former Dreyfus Fellow, ChE); (unable to attend) Mullans and Gassens



7. M Day Muster–Kerrville/ Fredericksburg, Texas: (l to r): Jim Adams (ChE58) and Sherry, June Begeman, Diana and Chuck Fishel (GeolE61), Sam Begeman (ME64), Dan Brennan (Geol51), Tony Evers (ME80) and Audrey



8. M Day–Past Alumni President Carmen “The Grey” Adams (ChE75) jokes with Alumni President Mike Alley (GeolE73) at board meeting about what he has to look forward to as president.



9. M Day – Past President Carmen Adams (ChE75) with her Diet Coke awards





10. M Day – Homecoming King Tyler Artz (MinE) and Queen Cassandra Tomac (ME)

11. M Day – Alumni Board members (past and present): (l to r) Greg Hintgen (EE99), Bryan Schumacher (CSc89), Wayne Baumberger (ME96), Jason Erickson (CEng97)

12. M Day – Picnic Goers: (l to r) Jan Puszynski (vice president of research affairs), Dave Berg (ME73), Lynn Kading (CE73), Carmen Adams (ChE75), Linda Rausch (ChE75), Debra Bienert (EE78), Lisa DeVries (SDSM&T staff), Cliff Bienert (CE79)

13. M Day – Senior Plaque Installation Crew: (l to r) Kirk Ehlke (CE14), Nick Claggett (CE15), Mike Dollarhide (CE14), Mike Leopold (GeolE15), and Kaitlyn Mahlik (IE15)

14. M Day – Class of 2014-15 Senior Plaque

15. M Day – Hill Climbers: (l to r) Greg Hintgen (EE99), Kathy Antonen (SDSM&T faculty), Chuck Cox (ME00)

16. M Day – Hill Climbers: (l to r) Connie and Jim Green (ME74), Heather Wilson (SDSM&T president), Greg Hintgen (EE99), Anne Ekern (SDSM&T Foundation), Brianna Pesek (SDSM&T Foundation)

AREA MEETINGS

17. M Day – Seniors and others on M Hill

18. M Day – Alumni Board Social: (l to r, seated) Mike Alley (GeolE73), Carmen Adams (ChE75), Jason Erickson (CEng97), Becky and Bob Miesen (CE61), (standing) Greg Hintgen (EE99), Tom Zeller (ME70)

19. M Day – Hardrock Hall of Fame Inductees (2014): (l to r) Elaine (Foy) Baker (Chem99), Rick Wass (IS96), Craig Nelson (MinE97), Brian Goetsch (ME98), (not pictured) Shawn Banks (Ex85)





20. M Day – Parade Goers: Deb Kullerd and Alumni President Mike Alley (GeolE73) with Tom Zeller (ME70)

21. M Day – Grubby with parade marshal Al Boysen (SDSM&T faculty) and Judy

22. M Day – Past, present, and future Alumni Association presidents: (l to r) Carmen Adams (ChE75), Mike Alley (GeolE73), Dave Berg (ME73)

23. M Day – B67 Crew celebrating Alumni Association's eightieth anniversary

24. M Day – SAC Golf Tourney Goers: (l to r) Linda Rausch (ChE75), Ken Miller (CE75), Becky Miesen, Carmen Adams (ChE75), Kathy Miller (Chem74)



AREA MEETINGS

25. San Francisco, California: (seated, l to r) Vivian Raeside (ME80), Mike Selzer (EE74), Carmen Adams (ChE75), Susan Banks (GeolE75), Roger Baird (EE53); (middle row, l to r) Debbie Richard, Larry Simonson (EE69), Anita Freeman (EE76), Anna Synhorst, Donna Baird; (back row, l to r) Steven Richard (CE74), Scott Rausch (EE75), Linda Rausch (ChE75), Mark Olson (EE75), Stuart Calhoon (ME72), Liz Calhoon, Larry Johnson (ME59), Carole Lobdell, John Synhorst (EE68), Donn Lobdell (ME58), Karl Gerdes (ChE71), Todd Stewart (ME80), Dave Hobler (Math76), Darrell Brekke (EE54); (not pictured) Murgesh Navar (M.S. CSc89)



26. Rapid City, South Dakota – Alumni Board Social: (l to r) Sharon Zeller, Tim Vottero (Chem84), Linda Rausch (ChE75), Carmen Adams (ChE75), Brandy Kean (CE06), Abe Kean (CEng03), Bill Jones (IE96), Cammi Jones, Nancy May, Tom Zeller (ME70), Ken May (CE61), Mike Alley (GeolE73)



27. 1960's Decade Mixer Group at Arrowhead



28. 1970's Decade Mixer Group listening to Nate Brown (Hardrock Club) at the VFW



5-YEAR REUNION

the proof is in the numbers

1,350

Sourdough pancakes served at the pancake breakfast, smothered in **8 gallons of syrup**

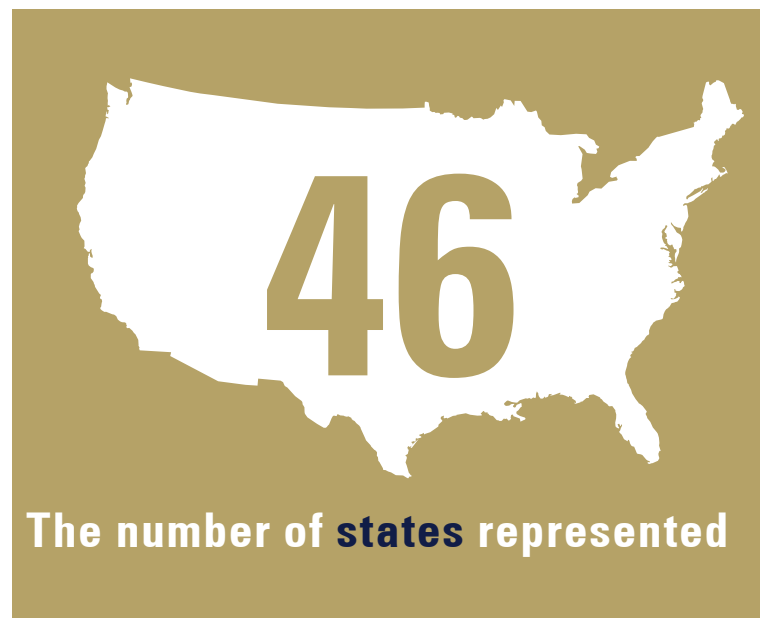


3

Number of graduates traveling from foreign countries.
(Australia, Canada, & Czech Republic)

700

Number of hamburgers & buns served with **125 pounds of potato salad at the family picnic**



9

Decades of alumni represented (1936-2010)

1,500

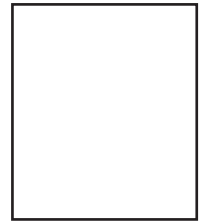
Number of people participating in the reunion

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