Greetings from Golden. The Petroleum Engineering Department has continued to evolve and change as it settles into Marquez Hall. There have only been two permanent Department Heads since 1980, Dr. Craig Van Kirk and Dr. Ramona Graves. I’ve committed to staying in the position on an interim basis until we find a leader of comparable quality to my predecessors, and one must be careful of one’s commitments, because those two are irreplaceable. I am discovering on a firsthand basis what a tremendous job that both Craig and Ramona have done, and just what the responsibilities and rewards are possible in this job. The first step to attracting the world class leader this job demands is the establishment of the $3.5 million F.H. “Mick” Merelli/Cimerax Energy Distinguished Department Head Chair in Petroleum Engineering. Many thanks to Cimarex for the commitment to the Colorado School of Mines, in honor of Mick, a founder of Cimarex and a shining example of what a Miner can be. The next step is to bring this to the attention of those with the combination of leadership, management skills and burning love for the education of the future of the petroleum industry. Please respond to this call to CSM PE alumni to think about this challenge themselves, or bring this to the attention of someone you would entrust with our department and your sons and daughters. The ad will soon be out.

I’m happy to report that the PE Department passed the ABET review process with flying colors. This is a critical objective for us, and as the result of the efforts of our faculty and staff, we are accredited for the full 6 years.

The first year is behind us after the move to Marquez Hall, and it has fulfilled its promise to be the best possible facility for Petroleum Engineering in the world. The only possible exception being the fact that it was designed for a department about half the size that demand had driven our growth in students and research to. If you would like to donate a building to allow us to accommodate that growth, please contact President Scoggins or myself and we will be glad to talk with you about that. Seriously (no, we really could use the donation), the building that our alumni and industry partners made possible has been wonderful, and everyone that donated to this endeavor can be very proud.

The Petroleum Department enjoys a special relationship with our alumni and industry partners and supporters that is the envy of the campus. I cannot express how important that relationship is, both financially to us from the continual flow of donations to support our department efforts, but also the help with intangible things, like assistance with our field sessions,
or a willingness to serve on our various steering committees. Many thanks.

Since Marquez Hall is the newest and most beautiful building on campus, I believe it is the flagship of the CERSE college and its six departments. Dr. Graves, as the Dean, is effectively our Admiral (Queen?), and so I offered to convert a beautiful space that Bud and Kaye Isaacs donated to an office for Dean Graves, in her flagship building, which the Isaacs agreed to. The construction of the Dean’s office is almost completed, and it is, like everything else in our new home, spectacular. It seemed fitting to me that the person most responsible for putting Marquez Hall together in its final form should be based there, and I am glad that my offer was accepted.

We have two new faculty that have joined us. Dr. Ronny Pini joins us from Stanford University, where he completed his postdoctoral work. Dr. Pini is an experimentalist whose primary work has been in the areas of CO2 sequestration and coal bed methane. Dr. Pini fills an immediate void in the PE undergraduate laboratory classes left by the promotion of Dr. Ramona Graves to the Deanship of CERSE. He has collaborated with both national and international institutions and organizations and has an impressive array of publications. His research interests are adsorption mechanisms in CBM, something easily translated to other unconventional resources, such as shales.

Dr. Luis Zerpa, joins us after completing his doctoral work at CSM in Petroleum Engineering in deepwater flow assurance, with close collaboration with the CSM Center for Hydrate Research. Dr. Zerpa taught for five years at the University of Zulia in Venezuela at the Masters level, and brings a South American perspective to our staff. Dr. Zerpa is teaching this Fall PEGN 423, our Reservoir Engineering I class that has long been the domain of Dr. Van Kirk (can anyone say Tarner Project?).

Dr. Van Kirk is now entering a new period in his relationship with CSM as his transitional retirement period ends, and Craig expressed the desire to me to take only his second sabbatical in 35 years at Mines to spend more time with his grandkids and do many other things. In light of Craig’s service over those 35 years, I hope that he greatly enjoys his time away, and will continue to assist us over the coming many years. The department owes a debt of gratitude to Craig for all that he has done.

Tom Bratton has completed the first year of Schlumberger’s commitment to support our department and that is going extremely well. Tom has been instrumental in assisting with our research and graduate needs, and is teaching with Dr. Manika Prasad our undergraduate formation evaluation class. He also will be instrumental in working with Petroleum, Geology and Geophysics to help address their graduate formation evaluation needs as well. Not to be left out, Halliburton is greatly increasing their technology commitment to the Halliburton Visualization Center, and is also supporting a graduate fellows program, with six fellows from various departments around campus. These Fellows, plus new graduate students and research faculty, will be housed in space converted and remodeled in the Green Center for us. This space, outside Marquez Hall, emphasizes the multi-disciplinary nature of our research, and is also necessitated because we are essentially out of room in Marquez Hall for additional faculty, or graduate students.

The students and faculty, as you will read in this newsletter, have accomplished many wonderful things this year – starting with winning the Petro-Bowl at the SPE-ATCE. This year we had approximately 200 students divided into 4 PEGN 315 field sessions that went to Alaska, California, Gulf Coast and Wyoming. I accompanied the group that went to Alaska, and was very impressed with the level of presentations and visits arranged by our host companies, and a special shout out to ConocoPhillips, who chartered a plane and took the whole group to the North Slope to tour the Kuparuk field. The field sessions went extremely well, and really introduced the students just beginning the Petroleum classes to the breadth and depth of the oil and gas industry. On behalf of the department, many thanks to all who assisted us.

The Petroleum Department was honored to be asked to assist in an effort to design a new research facility in Kuwait. This is a multi-year effort, which is evolving as the process continues. Dr. Graves and I spent three weeks in Kuwait this summer conducting a series of workshops, to help identify and prioritize challenges meaningful to the various parts of
the Kuwaiti oil industry. Dr. Hossein Kazemi participated in 3 days of the workshops, and made several presentations that illustrated the effect that good research, coupled with well-designed pilot programs, can have on the success of large investments by both international and national oil companies. This effort is off to a flying start with our partners, and reaffirms the CSM PE Department’s standing as a leader in both petroleum engineering research and education.

I personally have continued working on a series of high-level unconventional resource development workshops in Eastern Europe with the latest in three cities in the Ukraine, and another in Lithuania. These workshops present an unbiased view of the issues associated with shale development, and discuss the North American experience, with the technology, regulatory frameworks, economic benefits, and impacts on infrastructure, environment and society in general. This has went hand in hand with a large, 5 year, multi-institutional NSF project that Dr Eustes and I are involved with, to study the feasibility of using natural gas as a “bridge fuel” to a more sustainable energy future. Our portion of the proposal is to quantify the risks to the environment from drilling and completion techniques. In the early summer, I traveled to Washington DC and presented our preliminary results to the NSF and made other presentations on Shale Development to other groups. The four tasks of our portion of the research is to:

1. assess the hydraulic isolation of aquifers from hydrocarbon bearing formations,
2. estimate the probabilities of casing and cement sheath failure in surface, intermediate, and production casing,
3. analyze the probability of fracture propagation hydraulically connecting aquifers with hydrocarbon bearing zones and the chemicals used in the stimulation process
4. evaluate the procedures employed by various operators and service companies for “green” versus “non-green” well completions

I am also working on the commercialization of several technologies either directly through CSM, or through a related start-up called FracOptimal LLC, which had a very important milestone of revenue generation through its first generation of multistage fracturing technology, and is now working through its second generation. CSM is applying for Patent protection for a casing seal verification technology I developed to positively prove hydraulic isolation exists in the annulus of casing. I am also negotiating with several investments groups to complete the research on a propping technology for fractured completions.

The changes continue in the PE Department. This is probably my last newsletter as Department Head, and I wish to thank all of those who have assisted the department or me during my tenure. The PE Department would not be the institution it is today without your help, and I personally owe a great deal of thanks to those that have helped or will help me during this time of transition. I hope everyone has had a wonderful year and look forward to seeing many of you at the CSM Alumni Reception at the SPE ATCE in New Orleans this fall.
As I write this, we are set to celebrate the first anniversary of Marquez Hall, home of the Petroleum Engineering (PE) Department. This state-of-the-art facility contributes to maintaining Mines’ position as a leader in energy-related research and education, as do our world-class faculty housed in Marquez Hall and all over the Mines campus.

For CERSE, the Economic and Business, Geology and Geological Engineering, Geophysics, Liberal Arts and International Studies, Mining, and Petroleum departments began to form a cohesive unit. We also added the Colorado Geologic Survey to our team. I knew I would miss working closely with the PE faculty but found that the Department Heads and Division Directors of CERSE are equally committed to CSM and to building a strong, effective College. Having a College Administrator, Patti Hassen, and a College Fiscal Officer, Beth Sjaastad, has made this transition efficient and affective. Thanks to the entire CERSE team!

Under Will Fleckenstein’s leadership, the PE department made amazing strides forward - new research, new faculty, new enthusiasm, and renewed energy! My primary objective for the department this year is to hire a permanent department head so Will can go back to devoting his time to us as a “super” adjunct with teaching, research, corporate relations, and entrepreneurial activities.

And finally for me (as Will states it), CERSE is the flagship college and the admiral needs to be in the flagship building on campus, so as Dean I have a new home in Marquez Hall. A space on second floor of Marquez, room 202, has been remodeled so Patti, Beth, and I now have a permanent home. As Dean my travel schedule, especially to our international partners, is as busy as ever - in January to Abu Dhabi, in June to Kuwait, and next December to Indonesia and of course many meetings with CERSE alumni and corporate supporters in the US. Also had a real vacation this year! Geri Thompson, Robert’s wife, her sister Maureen and I took a two week safari in Tanzania.

However, the best of the year was that Lacey and her partner, Brandon, moved back to the Denver area and I am going to be a grandma! We will be welcoming Oliver into our lives in November! Jake still lives in the Denver area and my mother is doing fantastic at 86. My life, both personal and professional, continues to be a wonderful adventure!

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In August I was part of a panel discussion at the Unconventional Resources Technology Conference, a joint venture between the Society of Petroleum Engineers, the Society of Exploration Geophysicists, and the American Association of Petroleum Geologists, and sponsored by the industry leaders that are well known on our campus and employ many Mines alumni. With over 3,500 attendees made up of scientists, engineers, and business managers, this was a visible reminder of how important cross-disciplinary collaboration is and will continue to be in the coming years.

U.S. oil production continues to rise, as does domestic gas production. Together these form an impressive engine of job creation and economic growth, leading to abundant opportunities and multiple career paths. In fact, I often find myself envious of the opportunities available to today’s Petroleum Engineering graduates—the landscape certainly didn’t look like this when I stepped into the marketplace in the 1970s!

Now that the Petroleum Engineering Department has settled into its new home, we can turn our attention back to the really exciting stuff—students and faculty working together to learn the foundations, push the edges of scholarship and research, and explore innovative solutions for the world’s resource and energy challenges. It’s an exciting time to be a Mines student, with more opportunities to study across disciplines than ever before. Make 2013 a great year!
Our first academic year in Marquez Hall was great! We unpacked our boxes from Alderson Hall, passed ABET accreditation with flying colors and watched Dr. Graves move from Department Head to Dean of the College of Earth Resources Science and Engineering (CERSE). With Dr. Will Fleckenstein, Interim Department Head, at the helm, the 2013-2014 academic year should be smooth sailing!

This semester I am teaching PEGN681 Petroleum Seminar and two sections of PEGN310 Petroleum Reservoir Fluids along with Dr. Xiaolong Yin. Last spring Dr. Mark Miller, our colleagues from the Geological and Geophysical Engineering Departments and I taught the PEGN439 Multidisciplinary Engineering capstone course with a focus on unconventional reservoirs. Additionally, I taught PEGN530/ESGN490/ESGN502 Environmental Law for both the Petroleum Engineering Department and the Civil & Environmental Engineering Department (CEE) and was the Department Coordinator for our four PEGN315 Field Sessions. In May, I led a group of 48 students to Southern California and Bakersfield on the annual California PEGN315 Field Session. Most of my summer was spent drafting journal manuscripts in preparation of my PhD dissertation.

I continue to serve in a variety of capacities with the Society of Petroleum Engineers International (SPE): Faculty Advisor to the CSM SPE Student Chapter, Board Member of the SPE Denver Section, and Board member of the Health, Safety, Security, Environment and Social Responsibility (HSSE-SR) Advisory Board. I also serve on the 2013 ATCE Health, Safety and Environment (HSE) Subcommittee and will be a HSE Session Chair again at the conference in New Orleans, LA.

Our SPE Student Chapter had another great year. We received over $50,000 in undergraduate scholarships from SPE Denver Section as well as financial support for ATCE. The student chapter organized their annual major fundraisers, a golf tournament and a clay shoot. Both of these activities had great industry turnout and they are slated again this year.

The annual April Joint Session Meeting with the SPE Denver Section was a tremendous success. For the second year, the event was held at CSM in Friedhoff Hall and this year CSM PE Alum, Dan Kelly, Noble Energy Inc., spoke about Noble’s Niobrara activity and green technologies. We were pleased with the tremendous turn out from the SPE Denver Section and Industry and grateful for their financial contribution. Even a snowstorm could not turn away the attendees! We are also very proud of our Student Officers for their tremendous leadership, professionalism and organizational skills that made this event so successful.

I continue to work closely with the Association of International Petroleum Negotiators (AIPN). One of my favorite “duties” as a member of the Education Committee is to judge the annual Writing Competition that is open to all universities that have an affiliation with AIPN. I enjoy the opportunity to read and rate the papers and to work with other members of the Education Committee to select winners to attend the Annual Conference. Additionally, AIPN sponsors one student from CSM to attend the annual conference all expenses paid. This unique opportunity allows the student to network with engineers, negotiators, attorneys, and management and to learn the most current issues in the upstream sector of the oil and gas industry. Also, for the second time in a row, a $5000.00 AIPN scholarship was awarded to a CSM student!

Outside of CSM, I maintain my legal consulting practice in the area of international oil and gas law. It is a pleasure to work with my colleagues Laure Bonna, Philippe Auzas, and Audrey Grosset at Bonna Auzas Avocats of Paris, France and to occasionally have them co-teach with me a short course on international hydrocarbon agreements. On a personal note, I continue to take ballet and pointe classes, yoga, lap swim, and occasionally make it to a book club meeting.

“Rosebud,” my brilliant Boston Terrier, will be five years old in December. Where does the time go? She continues her education a few days a week at Animal Lodge, the doggie daycare of Alameda East Veterinary Hospital, where she has many friends. A socialite, she loves all people and other animals!

Thanks for your continuing support of the Petroleum Engineering Department and Mines! We look forward to seeing many of you at ATCE 2013 in New Orleans and of course, we always enjoy seeing you on campus for alumni events and recruiting!
Change is the one constant in the universe. After a 36 year career with Schlumberger, 12 different jobs and 12 moves to different locations, I’m returning to academia where if I remember correctly, it all started. I’m looking forward to helping others get a good start just as I was helped so many years ago.

My academic background was in experimental atomic physics. It was just plain fun accelerating different particles with a Van de Graaff generator and observing the many different collisions and reactions. My advisor informed me that companies like Schlumberger actually send nuclear accelerators down into the earth in the search of hydrocarbons. I was surprised! The world was in an “energy crisis” at the time and here seemed an opportunity to apply physics to a real problem. The work was mostly outdoors and that component of the job was a real attraction.

So life after university began as a wireline logging engineer based in Grand Junction, Colorado. It was perfect for me, exciting work set in a recreational paradise. I and my fellow engineers found new gas fields in the Piceance Basin (I logged one of the discovery wells in the Rulison field) and had time to discover rock climbing and other outdoor pursuits on my days off.

Over the next several years I transitioned thru several different roles and locations with each role having a new and different challenge and each location having a new and different recreational diversion to maintain some amount of balance. Along the way I got married and began a family.

My mid-career activities concentrated in geoscience: petrophysics, acoustics and geomechanics, but the application of these earth resource sciences were directed at the important problems facing the petroleum engineers.

During this time I was able to work on different problems in drilling, completion and reservoir engineering and apply an integrated geoscience and engineering workflow to solve problems all over the world.

I transferred to Denver in 2004 where I applied my knowledge and skills to problems in the western US. I was immediately attracted to the research being done at CSM. Being local, I was able to attend the research consortia meetings sponsored by Schlumberger and I began interfacing with the graduate students. Soon, I was sitting on graduate committees and advisory boards. I’d have to say my relationship with CSM was addictive. It was no surprise when my youngest son Michael decided on CSM. He graduated from Mines in 2011.

Both Schlumberger and CSM are making it possible for me to contribute my industry experience to both research and teaching at CSM. I will continue to work in many of the research consortia this year and I will begin taking a larger role in teaching. I will be co-instructing the 419 formation evaluation course with Dr. Prasad.

Most organizations have accepted the notion that synergy (1+1=3) is the consequence of diversity; diversity in gender, nationalities and scientific and engineering disciplines. Mines is leading the world in this philosophy. I am looking forward to my new role at CSM and supporting a growing need for integration. And I’m looking to return to Alaska for more adventures!
We have now spent a year in our new building and I can say our building is beautiful and works well. Clearly, it is a world-class facility. And for now, my petroleum classes are in the same building as my office. We typically hold the undergraduate classes in MZ 126, our big classroom (80 or so) and the graduate classes in the EnCana Simulator room (MZ 104). Classes have been going fine; however, there is always the opportunity to refine them further. In PEGN 311, the labs have been upgraded. We have the micro-rig experience up at the Edgar Mine. This year, we are adding higher fidelity sensors to record WOB, N, TOB, and ROP. I also want to get Q and P; but, that will be later. We will be able to do drill-off tests with our diamond core system better. The full-scale rig simulator was completely upgraded in September. We now have the latest upgrade and graphics for the “Big Rig”. Of course, we still have the ultra-light simulators from CS Inc. for student use. And finally, the mud lab kits have been increased by 50%. We have four more for a total of twelve full rig basic mud kits with Fann VG 35’s and blenders. This allows us to give everyone a chance to get muddy.

I still work with the Society of Petroleum Engineers at the Education and Accreditation Chair. I continue to volunteer for the Petroleum Division of the International Petroleum Technology Institute of the ASME. I took over as faculty advisor for Pi Epsilon Tau (no doubt due to my singing prowess) as well as continuing since 1996 as the American Association of Drilling Engineers faculty advisor. I also chaired the department’s recent ABET accreditation visit as well as still act as the department’s Undergraduate Council representative. Drilling research activities have been ramped up. First, we are working with our sister school in Boulder, the University of Colorado, on a National Science Foundation (NSF) Sustainable Research Network grant ($12MM for five years). With this program, in cooperation with Civil and Environmental Engineering on campus and six other institutions, we will be determining the impact of natural gas operations in the Rocky Mountains. You can find out more at: http://www.airwatergas.org/

Of course, the Unconventional Natural Gas and Oil Institute continues to move forward. Among the many projects, my team is working on taking surface rig data and linking it to reservoir characteristics. It is an interesting challenge as there are lots of variables to weed out to get to the interesting parts. I also have a team working on finding and documenting the best drilling practices in Argentina’s Neuquén Basin with our Vaca Muerta Consortium headed up in the Geology Department. You can find more at: http://ungi.mines.edu/projects.html

We also have some potentially fascinating projects with our international partners and the National Renewable Energy Lab; but, those are still speculative. I also continue to work with the NSF’s Ice Drilling Program Office (IDPO) and the Ice Drilling and Design Office (IDDO at University of Wisconsin, Madison). And in May, I was asked along with Dr. Chris Dreyer of the Mechanical Engineering Department, to contribute to a Planetary Drilling Workshop hosted by the Goddard Space Flight Center in Maryland. The scientists there were casually mentioning places to drill such as Europa, Enceladus, and, naturally, Mars. One on them even showed a photo of where he wanted the drill to land on Europa. This work along with the previous work I and others have done is the basis of my upcoming SPE Distinguished Lecturer tour.

Yes, I will be on sabbatical starting this fall. One of the most exciting things I will be doing during this time is to be one of this year’s SPE Distinguished Lecturers! I will be following in the tradition of Jennifer Miskimins, Erdal Ozkan, and Manika Prasad to continue waving the Mines PE banner. I will be speaking on “Extraterrestrial Drilling: How on Earth Can Martian Drilling Help Us?” In two sentences, finding life on other worlds will take drilling engineering. What can we learn about drilling here by taking on the challenges there? My schedule is as follows:

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<td>11:45 AM</td>
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<td>Tue May 27, 2014</td>
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EUSTES CONT.

If you are anywhere near one of my talks, I would be pleased to meet and at least say “hi!” Don’t forget, Jennifer Miskimins is a SPE DL this year too. Be looking for her upcoming talks.

As for me, my daughter will graduate from the University of Wyoming this fall in Microbiology with a minor in music and honors. My son starts his college career at Colorado State University. My wife continues to work at IHS in Englewood. While we lost our two cats to old age, we still have our German Shepherd Dog. I do hope to see you on one of my upcoming tour visits, a conference or two, or maybe on some other planet or moon someday. Until then, keep turning to the right.

MANSUR ERMILA

In May 2012, I graduated with a PhD degree in petroleum engineering from Colorado School of Mines. I came to Mines with more than 10 years of experience in production and workovers in the Libyan oil fields. My research topic was on Using Magneto-rheological Fluids to Improve Mud Displacement Efficiency, which is a new methodology introduced to the mud displacement process. After graduating, I had the honor to work at CSM as a research assistant professor. I helped Dr. Eustes teach and supervise the Drilling Engineering and Well Completion courses this past year. In addition to that I taught an advanced drilling fluid course to graduate students in the same semester.

My work experience at Colorado School of Mines has been remarkable; I had the opportunity to learn a lot of useful information that I’ll need in the futures. I learned new techniques of teaching and communicating with students that will complement my previous teaching experience.

This academic year (2013-2014) is going to be very busy. While Dr. Eustes is on his sabbatical leave, I will teach Drilling Engineering (PEGN 311) and Well Completion (PEGN 361), in addition to building up a new course (Advanced Production Engineering) during spring 2014.

One of the opportunities I enjoyed while working with School of Mines was being a member of the supervising team for the summer field session course for PEGN 316. The field session was highly organized and the students were well prepared, behaved and followed all the rules.

I continue my research on Magneto-rheological fluids (MRF) and I will try to model this fluid to be used as a completion fluid in so numerous aspects of drilling and well completion.

Finally, I would like to thank Dr. Graves and Dr. Fleckenstein for giving me this chance, and I wish all the best to Dr. Eustes on his sabbatical leave.
I decided to take a page from Dr. Kazemi and write my letter from the banks of a Montana lake.

It is the last days of July, and truly, the calm before the storm as the first part of August brings the excitement (and craziness) of a new school year. But now it is peaceful at the secluded mountain lake where my family is spending our vacation.

As I reflect back on the past year, it has been really great. It is hard for me to realize that I have only been at Mines for two years. I have been able to do so much in those years and it feels very comfortable here.

One of my most enjoyable experiences was watching last spring’s graduating class walk across the stage to receive their diplomas. I had those students in my classes three of the four semesters I have been here, so I got to know them very well and I am excited to see them start their careers and to see where life takes them. Also, four Master’s students that I had advised graduated last spring: Adlet Jambayev, Cuiyu Dong, Nathan Junor and Qi Cui. I am very proud of them as they each completed important and unique research on a variety of interesting reservoir engineering projects.

As Dr. Miskimins transitions to a new position and we look for her replacement, I have temporarily taken over the FAST consortium. It has been a great learning opportunity, and has helped me as I have begun the process of starting my own consortium specifically targeting EOR for unconventional oil reservoirs such as the Bakken. Parts of the Bakken are becoming mature with primary recovery dropping off, and the need to develop new improved recovery techniques that are specific for these types of reservoir is clear.

I was able to do something else unique in our petroleum department this year. For the first time, I attended the Massadonna field session. It was really fantastic; I got to know the students better, had a Massadonna burger - and I even learned a little geology :-). I continued to teach Geostatistics, EOR and co-taught Fluid Properties and this year I also co-taught Reservoir Engineering II with Dr. Wu. Trying to teach graduating seniors in their final semester has its own unique challenges, but overall, I think it went well.

I look forward to the year to come with its new experiences and things to learn. I hope to see you around the industry.

HOSSEIN KAZEMI - C H E S E B R O’ D ISTINGUISHED C H A I R

It is late-July and I am getting a headstart in writing about my past year’s memorable events and especially the summer of 2013. Fortunately summer is not over yet, but it is fast approaching the end. Here is the story of the last twelve months:

The 2012-2013 school year was exciting, starting with the move to our new and beautiful petroleum engineering building (MZ Hall). The move motivated me to spend time on upgrading and revitalizing some of the laboratory facilities we need for our research program. Two specific items involved rejuvenation of an old rising bubble apparatus (RBA) and upgrading existing coreflooding equipment, located in the PVT laboratory on the second floor. The RBA demonstrates how miscibility is achieved and measured, and the coreflooding equipment, plus a high-speed centrifuge, gives us the capability to measure three-phase relative permeability of very tight cores from unconventional reservoirs. These laboratory improvements are in the last stages of being
KAZEMI CONT.

finalized by two dedicated graduate students, whose work I applaud. I believe high quality experimental equipment is the heart and sole of our research program, and I hope we will find financial, material, and personnel resources to continue upgrading our laboratories in the coming year.

In addition to research activity and supervision of nearly twelve PhD graduate students, I taught a reservoir simulation and a compositional modeling course in fall of 2012 and a course on fractured reservoir engineering and modeling in spring of 2013. My research interests included both conventional and unconventional reservoirs. In the conventional area, I continued to work on projects involving reservoir modeling, laboratory experimental measurement, and field data analysis. In the unconventional area, much of my research effort was focused on Bakken and Eagle Ford oil production.

In late spring and early summer, I became involved with a project on wet-gas production in Jonah field, where two of my graduate students expanded their research on shale production to tight-sand production. This project is of great interest to me because both shale and tight sandstone reservoirs have very low permeability; otherwise, there are significant differences in stratigraphy, pore structure, and hydrocarbon source. Much progress was made in this area.

In the second week of June, my wife and I visited my family in Paris, France. My previous visit to Paris was around Christmas time six years ago when the weather was rather cold, but the weather in June was very pleasant which allowed us to walk for pleasure and for shopping and dining.

In the first week of July, I joined Dr. Graves and Dr. Fleckenstein in Kuwait for a project on R&D to be conducted both at CSM and Kuwait Oil Company’s new technology center (to be constructed in the near future). The trip was very enlightening and rewarding, both technically and for personal reasons which gave me a chance to meet three of my past students for a couple of hours.

The last week of July was the pre-fall vacation time for my wife Bonnie and me when we traveled to Seeley Lake in Montana for a family reunion. Below are several pictures reflecting the fun I had in beautiful Montana. One picture is from Seeley Lake and one from Glacier Lake, where I was introduced to huckleberry picking along the hiking trail to the lake. Now, I am an expert on picking huckleberry and baking pies!

I love sports. Fortunately, summer is often a wonderful time for watching great international competition. This year I watched the NBA championship series (not that exciting), the U-20 men’s soccer world cup, and the North and Central America soccer Gold Cup where US won the championship. In the U-20 event, there were several great games among the youth of the world. The Iraq team reached the semi-finals for the first time in their soccer history – a great accomplishment for a war-torn country. Almost everyone in the audience was pulling for this team.

As for the new school year (2013-2014), I look forward to teaching, working with my students and my colleagues at CSM, and our supporters in the industry. Lots of new and exciting projects are on the horizon which I hope to materialize.
This year was an adjustment for me. The computing center took over management of our computer labs and helped with most other computing related issues. While it was a relief not to manage file, license, and other servers (and over 500 user accounts), there was little I could do to help students in the computer arena. Because a wide variety of people in the computing center do what I formerly did, the point of contact is not a single person, but a single email address: helpdesk@mines.edu.

In addition, this was the first year that I led a section of field session. I took 50 sophomore students through Wyoming and provided an introduction to the petroleum industry. One of the rewards of this trip was to see the excitement that students had as they connected different aspects of the industry together and the enthusiasm they had for their future careers. I hope that the next year continues to be as rewarding as the last one was.

In the petroleum seminar class, seniors had the opportunity to innovate petroleum engineering solutions and propose them to a fictitious investment entity led by the prestigious billionaire "MacMoney". They had some really good ideas, which shows me that there are some very intelligent and creative engineers entering the work force this year…

Hiking through snow and forest to view a waterfall during field session in Wyoming.

Dr. Mark Miller assisting the PEMEX group at ATCE.

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I do help with the Halliburton sponsored Visualization Center. This room is divided into two functional parts. The first is a distance learning component that allows us to videoconference with other sites. Cameras at the front and back of the room show us to them while monitors and screens show them to us. We have used it for a variety of meetings and thesis defenses. Theater style seating occupies the other half of the room. Computer Modeling Group donated software and equipment for 3D reservoir visualization. With a click of a button, the reservoir jumps out of the screen. It can be examined from every side, split apart, and set into motion. We have used it to entice new students into Mines and to show “old” alumni modern technology. This fall, we are planning on using it in our graduate multi-disciplinary class. If successful, we will implement it in our undergraduate curriculum. Halliburton is investing substantial resources to help make this happen.

Summers get shorter and shorter, at least that is the mantra. However, compared to last summer’s move from Alderson Hall, this summer actually went slower. It was pleasant. Last summer, my bees died. This summer, they are still alive.
Well, this is a very different article for me to write. For the first time since I started contributing to the PE newsletter in 2002, I am no longer a full-time faculty member at CSM. In January of this year, I opted to return to the private section and have joined Barree & Associates in Lakewood, CO. For those of you who know me personally, it’s probably not a huge surprise to learn that I’ve returned to private practice – I have missed being a day-to-day engineer. However, I am still as involved with CSM as I possibly can be. I have maintained a part-time appointment at the school and am still advising some graduate students and might be teaching a graduate class or two in the next couple of years. It’s nice to still be in the area and be able to contribute to the department.

With my departure, Todd Hoffman has stepped up to the plate and is manning the FAST Consortium while the department looks for a full-time director. He’s doing a great job, and it’s nice to know it’s in good hands. I did miss being out at Massadona this year, but at the same time, it was nice to actually be home all of May for the first time in ten years (who knew it was easier to mow a lawn before it had grown 10 inches!!).

On another front, I’ve been very lucky in that SPE approached me about reprising my role from 2010-2011 and doing another Distinguished Lecturer trip this coming year in 2013-2014. I guess the world is hungry for some more information on hydraulic fracturing. I’ve received my schedule, and it’s another wild one with ~30 stops. Hopefully, I’ll get a chance to see some of you where I visit – it’s always great to see Mines’ alums out on the road! And if I don’t see you then, then maybe in New Orleans at ATCE or perhaps somewhere else around the world. So, until then…

**JENNIFER L. MISKIMINS**

Only few days are left and I will be a new member of the PE faculty at Mines! As I am writing this brief article, I am (literally) moving from San Francisco, California, to Denver, Colorado. A new city, a new state and a new adventure; but let’s take a step back for a minute. My name is Ronny Pini, and I am a Swiss citizen born in 1980; I was raised in the Italian-speaking area of Switzerland, in a small town called Ascona, and afterwards I moved to Zurich, which is located in the German-speaking (northern) region of the country, to complete my studies. I hold a Diploma (M.S., 2004) in Chemical Engineering from the Swiss Federal Institute of Technology (ETH) in Zurich, and a PhD (2009) in Mechanical and Process Engineering from the same university. The title of my PhD thesis was “Enhanced Coal Bed Methane Recovery Finalized to Carbon Dioxide (CO2) Storage”. A chemical engineer who works on an application related to the Earth Sciences; doesn’t this sound like the definition of a petroleum engineer? All kidding aside, I have always found it very exciting to work at the interface between these two disciplines. In fact, in October 2010 I decided to join the Department of Energy Resources Engineering (the former Petroleum Engineering Department) at Stanford University in California as a postdoctoral scholar with the intention of pursuing this interdisciplinary education. I have been at Stanford for about three years and had the opportunity to extend my knowledge to many types of reservoirs, such as deep saline aquifers, with emphasis on the geological storage of CO2. And now Mines, where I will join the PE department as a faculty member! I am very excited because, besides research, my motivation of pursuing an academic career is driven by a desire to teach and I am glad to be part of a university where teaching has a high priority. I have been an instructor for lab courses in Process Engineering at ETH, and at Stanford I taught a class on Laboratory Measurements of Reservoir Rock Properties for several quarters. This is probably the reason why one of my first duties in the department will be to sit in Ramona’s lab classes this coming semester.
**FACULTY LETTERS**

**PINI CONT.**

My research interests lie in the thorough understanding and characterization of phase equilibrium and displacement dynamics in porous systems. During both my PhD and postdoc, I developed experimental and modeling tools to characterize some of the main mechanisms that control fluid injection, recovery and storage in reservoir rocks. At the same time, I worked on several projects related to the sorption of high-pressure (supercritical) fluids on a variety of materials, such as microporous commercial adsorbents and polymers. Interestingly enough, these “synthetic” materials are very good proxies for natural systems, such as our reservoir rocks. I like to remind the students that rock formations are very complex and they were not designed by engineers! Our job as engineers is to understand how these natural systems work, and to design a safe and efficient subsurface operation. Hereby, my approach includes both the experimental characterization of such processes as well as their combination with models and theories. I like carrying out experiments, and I have already made a list of “toys” that I would like to set-up in my new lab!

My research work aims at answering fundamental questions related to the physical state of fluids confined into nano/micropores of rocks, the mechanisms controlling the containment of fluids into and their release from these spaces and the dynamics of multiphase flow in the porous network of these natural systems. These are relevant to practical problems such as storage capacity estimates and production/injection strategies from/into these formations. My current main applications of interests are the sequestration of CO2 into deep geological formations, with or without hydrocarbon recovery, thus including formations such as deep saline aquifers, coal seams and shales. The dramatic increase of interest on the latter has set new challenges with respect to oil/gas extraction from these formations; it is one of my aims to apply and extend the knowledge developed in the past years to those systems, and I know that Mines is the ideal institution to lead innovations in this area. Additionally, the same fundamental principles can be applied to other operations, thus including both shallow (groundwater hydrology, in-situ bioremediation) and deep geological settings (enhanced oil recovery, geothermal energy). As you can see, this type of research spans across various disciplines, such as chemical, petroleum and environmental engineering, and I look forward to develop collaborations within this and other universities around the world!

As anticipated above, only few days are left and I am very excited about this new adventure! I look forward to meeting you in the department and introducing myself. I wish you all an exciting semester!

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**AZRA NUR TUTUNCU - HARRY D. CAMPBELL CHAIR, DIRECTOR OF UNCONVENTIONAL NATURAL GAS AND OIL INSTITUTE (UNGI)**

Enjoying the graduation of 2013 Class just after the ceremony in May 10.

It is amazing how time flies. This is my fourth Alumni newsletter article and I have lots of good news for you. First of all, I would like to thank Schlumberger, Itasca and Golder Associates for the Petrel, FLAC3D and Fracman software packages they have provided to be used in my Geomechanics classes. It is a joy to see so many students interested in learning more about geomechanics and incorporate the knowledge into their own interest area in applications and research. I guess we need to thank Unconventional Resources for making geomechanics so popular these days. The “Unconventional Geomechanics” and “Reservoir Geomechanics” classes continue to attract not only graduate, but also our undergraduate students. Undergraduate and graduate versions of the Reservoir Geomechanics classes are offered in fall semesters, yet most interested undergraduates are also taking the graduate class as their electives. The students are so enthusiastic to learn more that I am adding new material every semester for them to practice the fundamental concepts before leaving the school. The number of the Unconventional Natural Gas and Oil Institute (UNGI) sponsored graduate students has been steadily increasing as we are adding more projects to the institute research portfolio. Our UNGI Consortia research projects are progressing quite well and we are making valuable contribution in fundamental understanding of geomechanics, reservoir characterization, coupled geomechanics and transport models and measurements for the unconventional resources. We are also continuing to pursue further research in deepwater reservoirs and geothermal resources characterization, wellbore stability, and drilling. The stress...
state and particularly pore pressure and fracture gradient are critical parameters to predict in deepwater environment.

I enjoy serving in professional society committees helping with several meetings and workshops every year. One of the most interesting and fruitful SPE/SEG joint workshops we organized on Seismic While Drilling was held in Galveston in May. I also co-chaired the SEG Summer Research Workshop on Unconventional Resources in Pittsburgh in early June. The past two summers we have been organizing the ARMA/UNGI Geomechanics workshop preceding the US Rock Mechanics Symposium and this year was no exception. Three of our graduate students and Daisuke have attended the workshop and we had excellent presentations. The workshop feedback was so exhilarating that I now have to consider continuing the trend and have the 4th workshop in Minnesota where the next ARMA Conference will be held in early June. If you would like to present a case study or discuss some of the challenges you are facing in Unconventional Shale Gas or Oil operations, I would like to welcome you to join us there.

Two of our graduate students also had great presentations at the US Rock Mechanics/Geomechanics Symposium in San Francisco, a favorite conference to attend and present within my research group at Mines.

Several Mines faculty including myself helped organize and also chair the Unconventional Resources Technology Conference (URTeC), a joint meeting between three major professional societies, SPE, SEG and AAPG. Our UNGI students will have already presented a small portion of their research results in five papers by the time you are reading this article. The past two years at the SEG Annual Meetings, together with several of my SEG Research Committee colleagues, we had organized a special session on Environmental Challenges of Unconventional Resources and Hydraulic Fracturing. In addition to my presentation on how geophysics helped to solve these challenges, two of my graduate students also presented papers at other sessions at the SEG Annual Meeting that received great reviews from the attendees last year. This year we are continuing along the same path and are organizing the special session again at the annual meeting in Houston.

The UNGI Coupled Integrated Multiscale Measurements and Modeling (CIMMM) consortium projects have started to produce fruitful results. We have received valuable field data from our UNGI CIMMM sponsors and preserved full cores in several counties in Eagle Ford, Texas.

In addition to Tlek, Sen, Vladimir and Mohammed from my research group, Cong Wang with Dr. Yu-Shu Wu and Mehmet Torcuk with Dr. Kazemi also received their MS degrees working on UNGI projects and a decided to join the PhD program to continue their projects with UNGI. Meanwhile, Perapon Fakcharoenphol will have already completed his dissertation study and will be our newest PhD alumni working for Shell by the time you read this article.

In addition, The UNGI Vaca Muerta consortium has been progressing well with the coordination of Dr. Sonnenberg. The giant shale formation in Neuquén Basin of Argentina also has a growing level of interest after starting with only a handful of sponsors. The similarity between the Vaca Muerta and Eagle Ford shale formations is significantly benefiting both UNGI consortia and the participating faculty and student research. We have already had a kick-off meeting in Buenos Aires last fall and a progress meeting in Golden.

In the three short years of UNGI’s existence as a research institute, 6 students have completed their graduate studies through the funding from UNGI’s projects in the institute. Please make sure to visit our UNGI website for continuously updated information about the institute activities, research projects and students and faculty who are involved on all these activities (http://ungi.mines.edu).

The US Department of State had introduced a program in 2010, Unconventional Gas Technical Engagement Program (UGTEP), to help countries seeking to utilize their unconventional natural gas resources by identifying and developing these resources in a safe and economically viable way. While the success of the U.S. shale development may not be duplicated, sharing the US experience is anticipated to help other countries in understanding the challenges and complexities involved in shale gas and oil development effort. The ultimate goal for the UGTEP program is to achieve energy security with strong environmental commitment and of course to further the U.S. economic and commercial interests in these partnering countries. I had participated as an invited technical keynote speaker at two of the UGTEP regulatory workshops organized between US Department of State, Department of Interior and Chilean and Mexican governments in Santiago, Chile last summer, and in Mexico City, Mexico in winter this year, respectively. I should proudly mention here that after the success of these two workshops, the Department of State granted CSM UNGI to be the sole receiver of an UGTEP grant to help spread the technology and regulatory effort together with DOS to several countries on their priority list.

Together with Penn State and the University of Texas we have created a joint training initiative to support the rapidly growing shale natural gas and oil development industry to serve our communities in environmentally friendly and safe unconventional shale gas and oil production opportunities. I would like to thank our sponsors Exxon and GE Oil and Gas to make this effort turn into reality, and COGCC, TRRC and DEP for taking time with us to discuss the challenges and sharing their expertise in the inspections to contribute into the
TUTUNCU CONT.

curriculum we have designed, and Noble Energy for allowing
the attendees for the pilot training offered this summer to
visit their operations and facilities near Denver during the
engineering field trip of the program.

Another great moment in my career happened this year in
March when I learned that I was selected to be one of the EPA
Scientific Advisory Board Members on Hydraulic Fracturing
Research; the panel met in Washington D.C. in early May to
start serving our terms.

The UNGI/ARMA distinguished speaker series during the
academic year invited distinguished experts from industry
including Dr. David Yale of ExxonMobil, Dr. Tom Doe of Golder
Associates, Dr. Jonathan McKenna of Microseismic Inc. and
Hal Macartney of Pioneer Natural Resources. We have also
received funding to help with the ARMA and UNGI student
activities from ExxonMobil and Shell Oil Company. I would
like to send my heartfelt thanks to our speakers, ARMA and
UNGI event contributors, and UNGI consortia sponsors for
their support for another GREAT YEAR and looking forward to
continuing the same effort in the coming semesters with your
ongoing support and collaboration.

Azra Tutuncu
August, 2013

CRAIG VAN KIRK

This annual installment of my part of the PE Department
Newsletter might very well be my final one, perhaps my last
opportunity to communicate with you alumni and other friends
in this manner. After 35 years with CSM and the last three
years at a 50% work level (called Transitional Retirement), at
the end of this August CSM will consider me fully retired. In
the coming school years and semesters I might accept current
invitations to teach a class or two, or to coordinate a special
training program or other special project. Or, perhaps I will
“take a semester off” from CSM. Hopefully, you have read
these Newsletters of prior years so that you can relate this
year’s news to older news.

I do hope that you and yours are healthy and happy, and
sharing your good fortunes with others. My family and I
continue to enjoy good health, and we are happily pursuing
a variety of endeavors. My wife Denice and I celebrated our
wedding anniversary number 46 earlier this year, and we
have been “a couple” almost since the beginning when we
first met when we were seven years old in the second grade.

Our two children and their spouses continue to enjoy their
lives and families, and their seven kids make for a fun group
for all of us. Earlier this summer all 13 of us spent one week
on a cruise to Alaska and had a wonderful time both on
the ship and on shore excursions. Plenty of whales, eagles,
bears, seals, porpoises, glaciers and ice bergs, helicopters,
canoes, zip lines, sled dogs and lumberjacks, and salmon
fishing for all of us.

In fact, Denice and I first learned to appreciate fishing at the
same “fishing hole” when we were kids, even before we met in
1952. Through the years we learned about sharing fish with
others, and then about teaching other people “how to fish”. Finally
and ultimately, it became possible to teach some of the
other “fishers” how to teach others how to fish. Working with
people of all ages and levels of maturity throughout my career
has been very satisfying in so many ways. I fully appreciate
the lessons I learned from the “tribal elders” during my youth,
and the many opportunities provided me to share such
knowledge with others. My career as a petroleum engineer
and professor at CSM have made such learning and teaching
activities easy to pursue and enjoy.

This past school year I taught PE 102 (Introduction to PE) during
the spring semester with 170 students, and last fall semester
I taught PE 423 (Reservoir Engineering) for 155 seniors. As
usual, both classes provided me with a tremendous amount of
satisfaction. And, the senior class honored me at the end of
the spring semester voting me the “Outstanding PE Professor” for the academic year. Such periodic recognition for us professors goes a long way toward satisfying our goals, just as do your periodic communications with us even many years after your graduation. So, please do keep in touch with us, it is great to hear from you.

In retrospect, here are a few items I would like to share with you within these pages.

1. I first came to CSM in December of 1968 to visit the school, some PE profs, and Shell’s offices downtown Denver. In June of 1969 Denice and I arrived here for me to begin working for Shell and start my Ph.D. program in PE at CSM.

2. In 1970 CSM Liberal Arts Professor Chapitas emphasized to us ten students that we did not need to go through life “being common”. This philosophy fit in well with my own ways, and reminded me of my frosh year in August of 1963 at USC when I was the only one who declared PE as my major, the only one out of all us new students in USC’s School of Engineering.

3. After earning my Ph.D. in PE in 1972, I continued working in the petroleum industry according to my career plan until 1978, when I was ready to be a PE professor at CSM for the “rest of my life”.

4. During this past school year and continuing these days, I remain very much involved with global Outreach, Reaching Out to many peoples around the world and responding to the many requests for assistance. I am engaged with associates (old and new) in Asia, North and South America, Europe, Africa, and especially throughout the Middle East and North Africa (MENA) Region. In particular, most of my efforts are focused on Iraq, Jordan, Turkey, Libya, Egypt, and the Arabian Peninsula. The forms of my activities have been affected significantly by the sad events of last September 11, 2012 and by the current events this summer of 2013. The importance of these engagements keep me connected to the many parties involved, at the appropriate levels of engagement.

5. One of the “themes” which I share with others is this: “I offer my suggestions for your consideration”. The long-standing well known successes of CSM’s PE Department have been “noticed” for many years throughout the world, by industry and academia and government agencies in many countries. One of my roles within these many international partnerships has been to share what I have learned, both successes and failures.

6. I believe each and every one of you reading this Newsletter understand what I have been saying, and in your own ways you too practice “giving more than you take”.

7. During my 35 years at CSM I have enjoyed teaching approximately 2,500 students and training approximately 1,000 more non-CSM students. This significant quantity, combined with the uncommonly high quality of the 3,500 have helped make my career experience most uncommon, and I am filled with gratitude and appreciation for this opportunity. Also, throughout these many years I have enjoyed many excellent teammates who have inspired me. Since all 4,000 of us associated with this Newsletter have been “helped” by the CSM PE Programs, we have the opportunity and responsibility to help others create “wealth” for humanity, in a wide range of ways.

In closing, I look forward to continuing communications with you readers in a variety of ways, perhaps in next year’s PE Newsletter, or other CSM Alumni pathways, or via emails. Also, even though I might not teach a class each semester at CSM, I look forward to teaching some classes some semesters and representing CSM on a variety of special projects, as appropriate.

Please accept my sincere kind regards for you and yours, and thank you for your attention throughout the years.

Craig W. Van Kirk
It is hard to believe that it is already my fifth year as a PE faculty member at CSM. I have to mention that the past five years have been very rewarding and enjoyable to me in every aspect and they are among the best years of my life. Among the highlights of the past year for me was the southern California trip for the PEGN 315 Field Session in May with Prof. Linda Battalora’s group. During the trip, I joined a group of 50 of our young, enthusiastic and energetic sophomores to visit oilfields, companies, geologic sites, and even had a real “look” at the Monterey Formations; maybe the final frontier of the golden state’s petroleum reserves. I also had a chance to revisit an offshore platform (See the picture) and some oilfields, which I saw some 20 years ago as a Cal student. Of course, most exciting, was when we met many of our own, Mines’ PE alumni, during the trip and we received so much help in every way from them. I was even happier to see several of our PE graduates from my PEGN 424 classes with helping hands.

On a personal note, my family has been fine and coping well with the four people living in four different cities in the past year. My son has finally completed all his formal education during the last year and my daughter is the college student in the family.

In the past year, I kept my high-level research effort on the development of our own state-of-the-art reservoir simulation technology. Our new PE research team, the Energy Modeling Group (EMG), has accomplished several major milestones in the development of TOUGH2-CSM and TOUGH2-EGS reservoir simulators, sponsored by the US DOE, on CO2 sequestration and geothermal engineering projects, respectively. These new generation reservoir simulators, developed in our PE department, are advanced and capable of fully coupling geomechanics with multiphase fluid and heat flow in reservoirs. The major technical breakthroughs and impacts are shown by the two successful international workshops for the two reservoir simulators, which were offered by EMG in the early June at CSM. The two workshops were attended by more than 35 professionals each with half the audience being international from worldwide CO2 and geothermal communities.

In addition, we at EMG are continuing our effort to develop reservoir modeling tools for simulation of shale gas/oil reservoirs, for which we have published several SPE papers and given several invited seminars and speeches around the world. One of the highlights of our research activities over the last year has been that, Dr. Jennifer Miskimins and Dr. Xiaolong Yin, and I, with a team of a postdoc and five graduate and undergraduate students, have started working on a cryogenic fracturing experimental project in FAST Lab, supported with multi-millions of dollars funding from USDOE-RPSEA program as well as by Pioneers Natural Resources and Lawrence Berkeley National Laboratory. The goal of the project is to find and study an effective fracturing technology without using water. We are making significant progress in fracturing “rock” in lab now. For the project, I was interviewed by a JPT tech editor and some of the interview can be seen in the June issue of JPT.

In the coming year, Dr. Xiaolong Yin, Dr. Philip H. Winterfeld, and myself, would like to launch a new research consortium, MMRD (Multi-Scale Modeling of Reservoir Dynamics). The mission of the MMRD Consortium is to improve fundamental understandings of porous media flow and transport, fluid flow dynamics, and geomechanics, to advance numerical simulation technologies, and to develop advanced simulation tools for research, education, and field applications. Industry-sponsored programs in MMRD focus on subsurface fossil energy extraction: oil and gas production from conventional and unconventional reservoirs and improved / enhanced oil recovery. MMRD also maintains strong fundamental and applied research programs on geothermal, CO2 sequestration, subsurface storage, and ground water resources. MMRD’s current research emphasizes multi-scale (pore-to-reservoir), multi-physics (hydro-thermal-mechanical-chemical), and strongly coupled processes. In short, we will try to solve modeling issues in field application which cannot be solved using current commercial simulators. We expect more interactions between EMG, MMRD, PE faculty, students, and our alumni to enhance our PE modeling capabilities and hope for more support from national and international petroleum companies and, in particular from our alumni.
My greetings to the alumni and friends of the PE Department! As usual, we start to draft the newsletter as the new semester (and academic year) is on the horizon, and it is time to write about the year that has just gone by.

The first year in Marquez Hall is simply dazzling. On the second floor of MZ we have a new research laboratory for enhanced oil recovery. The equipment that barely fit into the Alderson Hall (some of them in the High Bay) now have a good “home”. We have floor space to fit large systems such as Rising Bubble Apparatus and Slim Tube, as well as many desk spaces to fit core flooding, pumps, scales, bath, ovens and newly acquired fluid characterization tools for interfacial tension and contact angles. Besides the generous laboratory spacing, the research groups also enjoy new study, group, and meeting rooms.

The research activities are growing steadily. Three new projects have been commenced from the American Chemical Society (ACS), National Science Foundation (NSF), and the Department of Energy (through Research Partnership to Secure Energy for America – RPSEA). They were initiated to study a number of fundamental, complex fluid dynamics problems as well as practically relevant solutions for the industry. The ACS-funded project studies gas flows in ultra-tight formations; the NSF-funded project is a collaborative one with the University of Colorado in Boulder to study the dynamics of solid particles when they are entrained and carried by a gas stream; the RPSEA-funded project, co-led by Prof. Yu-Shu Wu and Prof. Jennifer Miskimins, with the participation of the Lawrence Berkeley National Laboratory, is a multi-million dollar effort to investigate cryogenic fracturing, which is a technology that may be very useful for regions that lack water resources. The current projects are progressing well too. The students’ work has been presented at various national and international conferences, and we are working on the manuscripts. The use of microfluidics and nanofluidics in studying flow and transport in porous media (in collaboration with Prof. Keith Neeves in the Chemical Engineering Department) has received good receptions.

I co-taught PEGN 310 again with Dr. Hoffman in the fall of 2012. It was great to have his help in a large class such as PEGN 310. In the Spring of 2013, I continued with PEGN 511 Advanced Phase Behavior. In summer 2013, Dr. Ozkan and I led a field session group to Texas Gulf Coast regions (see PEGN 315 Field Session Reports). Thanks to the support from the companies and alumni, the trip was again a joyful experience for us as well as for the participating students.

Over the summer, I visited the Yellowstone National Park with family and relatives. We had a great time there. In July and August I had a lot of travel – I attended a conference in Vienna, Austria on poromechanics and a conference in Qingdao, China on porous media flow. In between the conferences, I visited colleagues in Marseille and Beijing, family in Lanzhou, and also took a week of vacation in Southern France and Barcelona. Now, I am back to office and ready for the new semester!

On the research side, I will need to finish up a few projects, submit the manuscripts and get the new projects “going”. On the teaching side, after several years of experience with PEGN 310 and 511 and with the growing number of students (from just over 100 back in 2009 to 200+ in 2013), I plan to revisit the teaching materials and make some changes.
LUIS E. ZERPA

As a new member of the faculty team of Petroleum Engineering, I would like to start with a brief introduction of myself. I am from Venezuela, born in Caracas, the capital of the country, but raised in Maracaibo, the oil capital of the country. Originally trained as a Mechanical Engineer, I started to work in petroleum related projects early in my engineering career; basically in the area of reservoir engineering and enhanced oil recovery. I was an assistant professor at the University of Zulia, located in Maracaibo, where I taught in the graduate program of the Engineering School and did research in the area of thermal and chemical enhanced oil recovery methods. I also worked as a consultant for the Venezuelan National Oil Company (PDVSA) in the design of an industrial pilot for chemical enhanced oil recovery. I got married one month before moving to Golden in the Spring 2009, and started a PhD in Petroleum Engineering at Mines. My wife, Patricia, did her Masters with Dr. Jennifer Miskimins, and now she is working as a Completions Engineer at an oil company in downtown Denver. I had the opportunity to work with Dr. Hossein Kazemi and the Directors of the Center for Hydrate Research, Drs. Dendy Sloan, Carolyn Koh and Amadeu Sum, doing research in the area of flow assurance predicting gas hydrate blockages in pipelines. I watched the construction of the new Marquez Hall from scratch, but was able to skip the big move to Marquez since I was still working at ye olde Alderson Hall. Patricia and I love Colorado so much, that we decided to stay here for a little longer, so by the end of my PhD, I applied for a faculty position in the Petroleum Department, and got it!

My first official assignment as faculty of the Petroleum Engineering Department was to attend the second session of PEGN 316 field camp at Massadona. I was joined by Mark Miller, Todd Hoffman, Joe Chen, a group of 9 TA’s, one shepherd dog, and 70 junior (soon-to-be senior) undergraduate students. I am really thankful to the geology and PE TA’s, who made the faculty’s job really easy. The shepherd dog kept the herd of students, TA’s and faculty close together during the fun geology hikes. This was a really good group of students; hard workers, punctual and very respectful, they showed a remarkable behavior at camp and during our visits to the Chevron and PLS production logging lectures. I got the opportunity to meet half of the class I will be teaching in the fall 2013 semester.

During the summer, I have been working in preparation for the fall semester. I will be teaching PEGN 423 Reservoir Engineering. I heard from the students at field session that they have a lot of expectations about this course. I am getting really good pointers from Dr. Craig Van Kirk for this class, who was teaching this class for the last two decades. This is one big change in the Petroleum department, and I will strive to keep the high quality of the reservoir engineering course, and plan to include an introduction to reservoir engineering for unconventional reservoirs as a bonus at the end of the course.

On the research portion of my job, I have been working with Dr. Hossein Kazemi starting a research project funded by Saudi Aramco, where we are looking at the integration of microseismic with reservoir modeling for the management of waterflood projects. Also, I am collaborating with the Center for Hydrate Research of Chemical Engineering in a research project on flow assurance and gas hydrates. For the upcoming fall semester, I plan to develop a research program that extends the Petroleum Engineering Department further into the broad subject of flow assurance, including hydrates and other solids such as asphaltenes and waxes. The main goal of the flow assurance research program will be to improve our understanding of multiphase flow mechanisms of solid deposition in pipelines and the development of reliable predictive tools. If you would like to learn more about this project or get involved in similar research areas, I will be happy to provide further information about these subjects.

We certainly are going to have a very exciting academic year here in the Petroleum Engineering Department. I wish you the best in your careers and personal endeavors.
A warm “Greetings” to you all! If I had to use one word to sum up my year, it would be “monumental”. This year kicked off the development of my interdisciplinary research program that involves projects with faculty members in the Geophysics, Geology and Petroleum Engineering departments. The scopes of these projects include:

- Pore-scale modeling of pore and mineral characteristics using micro-imaging techniques and software
- Mineral-fluid interactions on pore-scale to understand a reservoir’s wettability and relative permeability
- Simultaneous electrical and elastic lab measurements and using those measurements to predict pore shape and characteristics
- Correcting for the influence of metallic minerals such as pyrite on electrical and NMR responses

Currently, I am enjoying the excitement of the culmination of two MS student’s works which I have had the pleasure to oversee as an advisor, the role that I enjoy the most. One of those students is Liwei Ou. Liwei meticulously spearheaded a project whereby he explored the possibility of constraining interpretations of pore shape using a new petrophysical charting technique that involves cross-plotting acoustic velocity – formation factor data together with theoretical bounds and models as a reference for interpretations. He used micro-XCT images to interpret a bi-modal pore shape distribution in Mesa Verde TGS samples and used this distribution to constrain the modeling of his velocity – resistivity lab measurements under pressure. The significance in Liwei’s research is in being able to use electrical and elastic data to predict how pore shape will influence the amount of irreducible fluids in a reservoir and petrophysical interpretations of electrical and elastic data in tight sands. This project provided Liwei the opportunity to understand the limitations and assumptions of various rock physics models, and while in the lab, retrofitting a vessel to make measurements under pressure. It has been such a pleasure to see Liwei grow into an outstanding modeler and experimentalist, an invaluable skill set.

Abdulla Kerimov is another exceptional MS student who I have had the opportunity to advise. Abdulla came into the PE department with an undergraduate research project under his belt that focused on the influence of wettability on resistivity. Having Abdulla arrive at my door step was like receiving “a gift from heaven” since I had just been awarded a contract for exploring USBM and NMR wettability indices and relations to resistivity in a tight sand. He very confidently and enthusiastically entered the NMR world, burying himself in literature and data collection, processing and evaluation. He is testing different NMR wettability indices and exploring the influence of metallic minerals on NMR measurements. Abdulla is always motivated to exceed expectations and to be the best at what he does.

I am especially grateful for all of the support I have received from Drs. Hossein Kazemi and Mike Batzle, who have been there for me every step of the way. I am grateful to the Petroleum Engineering department for providing me with this amazing opportunity to explore my passions, research and mentoring students, while I maintain a balanced family life. I thank you!
name of your simulator. The TOUGH2 is from the reservoir simulator by that name, developed at Berkeley Lab, that was the starting point for TOUGH2-CSM. TOUGH is an acronym for Transport Of Unsaturated Groundwater and Heat. CSM stands for Carbon Sequestration Model as well as Colorado School of Mines. The workshop was well attended with attendees from academia, research organizations and industry. Topics covered included the TOUGH2-CSM mathematical formulation, the parallel code structure, input and output file descriptions and running sample problems.

I continue to administer our group’s cluster computer, called EMGCluster, that is housed in the Green Center. The number of users have grown and we are in the process of expanding the cluster. We will be doubling the number of nodes from sixteen to thirty two, and we expect it will be up to the task of handling a grid containing at least one hundred million cells for our CO2 sequestration simulations.

AL SAMI

The 2012-2013 academic year was even busier for me due to the higher number of student enrollment. CSM’s PE Department is recognized as one of the best Petroleum Engineering Institutions in the world, and to avoid sacrificing quality for quantity is another undeniable challenge. Now we have a challenge to not only maintain our excellence, but also lead it to the next level.

The teaching is the easiest part of the job compared to the logistics required to handle 220 sophomore students safely in the labs. That’s not to mention the 32 TAs needed for the safe operation of these labs, which is a separate class by itself. The needs of these 220 students must be accommodated in order for them to receive a top quality education. As the number of students increase, more lab equipment is needed. The basic equipment that I feel is most instructive are no longer available for purchase anymore, so I have to improvise. Pushing buttons will not teach sophomores anything.

For the graduate research equipment, our department is equipped with the latest models and features. To name a few, ultra high speed centrifuge, FRT, NMR, Tri-Bore Separator and……

As always, I enjoyed the 315 field session in CA and am prouder than ever about the number of our alumni that are employed in all the companies we visited. In particular, the number of our female alumnus continue to increase and hold top professional positions. Congratulations.

FROM THE PE OFFICE STAFF

Wow, what a year it has been........... Alderson Hall was the “wonderful, old worn, warm blanket” we all knew so well, so making changes was a little bittersweet. It didn’t take long to forget Alderson, for Marquez Hall has been a great new home for Petroleum Engineering, more office space for professors and graduate students, improved research and computer labs, up-to-date state of the art surroundings and plenty of natural sunlight. Another change was Dr. Ramona Graves moving on to take the challenge of being a Dean. We also lost Patti Hassen as she moved with Dr. Graves to be her admin assistant to the college. We are a little short handed in the PE office at the moment, but we have some great student workers that we can count on to fill in the gaps as we make transitions and changes in the department.

One of the bright points of working in the PE Office is always working with the undergrad and graduate students. Terri and I had the privilege of being asked to chaperon and drive for the 315 Field Session. We spent 5 days in Colorado and then 7 days in Alaska. It has been a while since a field session went to Alaska, so we felt very fortunate to be asked to be on this field session. We had wonderful students on our trip that appreciate all the companies we visited in both states. Terri and I dropped the students off at the Anchorage airport at the end of the field session and we stayed a few more days visiting the vast wilderness of Alaska.

We wish you well in the coming year, Denise and Terri
The PE Faculty back on campus for the start a new fall semester.

Yu-Shu Wu missed the faculty photo shoot due to joining CSM freshman on the M-Climb.
I’m thrilled to tell you that it has been an outstanding year for the Society of Petroleum Engineers (SPE) here at Mines as we continue to grow and develop. For those I haven’t yet met, my name is Erich Kerr, and I am the current president of SPE. Last semester, our chapter consisted of over 280 students, and it is still growing! The goal for our SPE Chapter is to increase student awareness, strengthen the relationship between industry professionals and our student body, and ultimately, create a positive impact on our community through the SPE Student Organization. To attain this goal, we have not one, but multiple contributions, which have allowed us to benefit all the arenas surrounding our organization, and these include: service to our community through Castle of the Cans, support for our peers via a new implementation of a tutoring program, and educational opportunities through the Ambassador Lecturer Program and other unique Lunch-and-Learn events. By participating in an array of activities, we have been able to encourage all the SPE Members in our chapter to get involved with the community, the industry, and peers.

Our first fundraising event of 2013, the Annual Sporting Clays Tournament, was a great success this past spring. We had over 100 participants this year, and industry leaders were afforded the opportunity to recruit and network with our SPE student members while enjoying a round at Kiowa Creek. Next year is sure to be a success, so be sure to join us!

The chapter has exciting plans this upcoming Fall Semester 2013. We will be holding our 5th Annual Golf Tournament, where SPE Students and industry professionals may interact and bond while they enjoy lunch and hopefully a few birdies. Another popular event, SPE International’s Annual Technical Conference and Exhibition (ATCE), which was held in San Antonio last year, was a big success for our chapter. It was a wonderful opportunity for over 100 of our student members to increase their knowledge and understanding regarding Petroleum Engineering. I’m proud to say that our SPE Chapter holds the title for the 2012 PetroBowl, an international knowledge based trivia competition. At this time, we are planning the 2013 ATCE event, which will be held in New Orleans, LA, and we are actively working to increase SPE student and industry participation this year. It is definitely a great time to be involved with our chapter, and we look forward to having everyone’s support.

At last, our SPE chapter has benefited from are the numerous Lunch-and-Learns and BBQs, which many companies have graciously hosted for our students. During these events, SPE students get to learn about the latest technologies being developed in the oil fields in addition to other great presentations. The topics that engineers and others have delivered to our SPE students ranged from the progression of horizontal completions in the Uinta Basin to reservoir management in Prudhoe Bay. These industry contributions inspire our SPE Student Chapter to strive for innovative approaches to helping our community and encourages academic outreach to impact the future of the global energy industry. Finally, I would like to thank the irreplaceable people who help make SPE a reality for our students, which include: Linda Battalora, Terri Snyder, Patti Hassen, Denise Winn-Bower, and the SPE Officers.
It seems like yesterday that we were all anxiously awaiting the official opening of Marquez Hall... how time has flown! Now that the student body has a full year with the new building under our belts, we are truly starting to settle in. My name is Alex Jones, and I am the current chapter president of Pi Epsilon Tau. It is such an honor to be involved in this organization which represents the Petroleum Engineering Honor Society for Colorado School of Mines. Pi Epsilon Tau was originated in 1947, and our CSM chapter was founded in 1983. We are a group that represents both graduate and undergraduate students who showcase not only high academic standards, but also high leadership and integrity standards. Pi Epsilon Tau is dedicated to enhancing student involvement on campus, in industry, and in the community. Our group conducts and participates in different events each year such as Castle of Cans, Discover and Preview Mines, and Alumni weekend. Each spring we hold an initiation event where we welcome the newly selected students to the organization.

This past year we had great success in giving tours of Marquez Hall during the Discover and Preview Mines events held on campus. It is such an awesome opportunity to be able to interact with high school students and convey to them our excitement about the oil and gas industry. We spoke with over 125 students and their families about what Petroleum Engineering is really all about. What an exciting time! During the spring, we initiated 62 new members to Pi Epsilon Tau, including Dr. Mansur Ermila as our honorary graduate. And as always, it was a pleasure to welcome Dr. Graves to the ceremony. We also had pins created for the members of Pi Epsilon Tau; they turned out great and will undoubtedly serve to be long time keepsakes.

Pi Epsilon Tau held a welcome back barbeque in the fall to gather all of our members together for good food and fun. We had a great turnout and are planning on having another this fall. Castle of Cans (a school-wide food drive) was a great opportunity for our organization to give back to the community. We collected 1200 pounds of food and won the first place prize for most weight collected! We also held a shop tour at Well Master Corporation, a local oil and gas company specializing in plunger lift. It was a great opportunity to connect with professionals in the industry and learn about their operations.

I would be remiss if I didn’t thank Dr. Eustes for all of his hard work and help in leading the organization last year; he will be missed this year as he embarks around the globe as a SPE Distinguished Lecturer. We are even working out the details on getting Dr. Eustes to “skype” in during our initiation ceremony to lead our PET song. I would also like to thank our whole officer team from last year for all of their help and dedication in progressing our Pi Epsilon Tau Chapter to where it is today. I’m very excited for everything this year has in store, and I know it will be a successful one. Our newly elected officer team consists of some marvelous individuals: Scott Dunagan, John Ablutz, Stewart Barber, Hannah Madden, Jordan Tucker, and Daniel Fullerton. With Dr. Eustes’s absence, we are also excited to welcome Dr. Miller as the new faculty advisor to Pi Epsilon Tau. We couldn’t be happier to have Dr. Miller and his fresh ideas and enthusiasm help lead us this year. I would like to end with a huge thanks to the whole Petroleum Engineering Department at Mines who make being a student in the department a true honor.

Best Regards,
-Alex Jones
The American Association of Drilling Engineers (AADE) had another exciting year here at the Colorado School of Mines. Lunch and learn sessions and certification workshops are among the few events that were organized last year for our members to participate in. For this year, AADE has set out to recruit more members and also to increase student involvement in the chapter on and off campus.

Last spring semester, Schlumberger was kind enough to host our chapter for a visit to their facilities at Commerce City, CO. They gave a presentation on Pathfinder and brought us around their facilities. We also had the opportunity to meet with various staff members to chat with them about their area of expertise.

Lunch and Learns are one of the most happening events that AADE organizes for all its members. This chapter saw an increase in attendance for lunch and learns throughout the semesters. Companies such as Smith Bits, National Oilwell Varco, PDC Energy and Scientific Drilling International will host upcoming sessions for this Fall 2013.

The Wild Well Control class is another major event that is held by AADE. This class certified 20 of its participants with the help of Steve Vorenkamp, who facilitated the class. AADE was also given the opportunity to host and coordinate was the BHP barbeque together with SPE, ARMA, PET and ASME.

Members also participated in the AADE 2013 National Technical Conference and Exhibition that was held in the Cox Convention Center at Oklahoma City, Oklahoma in February 2013. It was a great bonding and learning experience for the members. Seth Dickson and Ruben Markarian represented the Mines chapter with their presentation: Assessment of Drilling Education and Training Improvements. It was much to everyone’s delight that their presentation won 1st Place under the “Undergraduate Research Poster” category.

Every year, our members are given the opportunity to participate in the Fin, Feather, Fur Food Festival (5Fs) that is hosted by the AADE Denver Chapter. Members volunteer with set up, clean up and ticket sales.

The AADE Denver Chapter also hosts the Bi-Monthly Meeting for its members at the Denver Athletic Club. The student chapter here at CSM actively participates in these social networking events as it is important for us to show appreciation to the Denver chapter for their help and support to our student chapter. The Denver chapter also awards scholarships to members from our chapter for their academic excellence.

Our school chapter would like to thank our faculty advisor, Dr. Alfred Eustes, for his guidance and support. We are also extremely grateful for all the help and support that we have received from other staff and faculty members of the Petroleum Engineering department.

STUDENT ORGANIZATIONS

AMERICAN ASSOCIATION OF DRILLING ENGINEERS

President
Nick Spinks

Vice President
Sherene Jawing

Treasurer
Cameron Baynes

Secretary
Will Stevenson

Matt Arreola and Blakley Farrow representing CSM AADE in the Giant Jenga competition.

Ruben and Seth with their award winning poster in Oklahoma.

President
Nick Spinks

Vice President
Sherene Jawing

Treasurer
Cameron Baynes

Secretary
Will Stevenson

TM
It has been my pleasure to serve as the president of the ARMA student chapter in the 2012-2013 academic year. I believe that as a recently established student association, we have made wonderful progress so far, and I am more confident that there are plenty of activities to be offered with your support. The Distinguished Lecture series that we organized in collaboration with UNGI, was one of our key contributions to the geomechanics community at Mines. With the support and funding from Dr. Tutuncu, we had the privilege to invite well known rock mechanics experts for the Lunch and Learns and other distinguished speaker events.

The growing interest in unconventional resources and the critical role of geomechanics in exploiting these resources allowed us to organize several Lunch and Learns on unconventional resources. These meetings included Mr. Chad Hartman from Weatherford with a presentation on “An Overview of Unconventional Resources”, Dr. David Yale of ExxonMobil on “Geomechanical Challenges in Unconventional Shale Resources”, and Dr. Thomas Doe from Golder Associates who provided a training session on FracMan as well as a lecture on “Characterizing Fractures for Subsurface Fluid Flow”.

Numerical modeling has paramount importance in geomechanical studies. We have had the privilege to have continuous support of Mr. Tom Bratton and Mr. Matthew Blobradydic to provide training on how to extract geomechanical properties from logs using Petrel every Fall and Spring semesters since Dr. Tutuncu joined the faculty. We are also very thankful to ITASCA for providing FLAC3D license during the 2012-2013 academic year and to Mr. Sen Guan and Mr. Simon Prassetyo for offering an introductory course on FLAC3D last year. We are building on our experience with geomechanical software packages and utilizing them in our classes and in research studies.

Microseismic has become a critical monitoring tool for evaluating hydraulic fracturing. Dr. Jon McKenna of Microseismic Inc. presented us a talk on “An Overview of Microseismic Technology” and Mr. Hal Macartney of Pioneer Resources presented “The Application of Microseismic in Coalbed Methane Production and Induced Seismicity in Trinidad, Colorado” in the spring semester.

Traditionally, graduate students are interested in becoming a member of ARMA. Our goal has been to disseminate the critical role of geomechanics in every aspects of petroleum industry as
STUDENT ORGANIZATIONS

AMERICAN ROCK MECHANICS ASSOCIATION CONT.

far as exploration, drilling, production, reservoirs engineering and monitoring, and to introduce ARMA to undergraduate students as well. To this end, we initiated joint Lunch and Learns with AADE last academic year. Mr. Brandon Harris from Drilling Specialties presented “The Properties of Various Drilling Fluid Materials” and Dr. Reza Ettehadi Osgouei from the University of Tulsa talked on “Hole Cleaning Performance of Gasified Drilling Fluids”.

We appreciate the generous sponsorship by ExxonMobil, GSA and UNGI. I would like to take this opportunity to ask the industry experts and Mines Alumni to continue supporting ARMA student chapter activities. We welcome presentations on various aspects of geomechanics when you are in Denver area, financial support for Lunch and Learns and travel grants for students to attend ARMA annual symposium and other professional meetings. Speaking of the ARMA symposium, this year it was held in San Francisco in late June, and three of our chapter members not only attended (two presented papers) the symposium, but also volunteered to help the sessions run smoothly, a small contribution from CSM to the national group.

We have designed a new website for ARMA student chapter. We are thankful to one of our members, Binh Bui, who is a PhD student in Petroleum Engineering for his contribution and great design. We will definitely keep the website updated, thus I encourage you to follow up the website for news and events. The link for the ARMA CSM website is as follows: http://organizations.mines.edu/arma/index.php

We will hold the election for 2013-2014 academic year officers of the CSM ARMA student chapter early in the fall semester. ARMA needs enthusiastic and energetic students to keep pursuing the goals for this chapter. If you are interested, I encourage you to nominate yourself.

Last but not least, I would like to thank Dr. Azra Tutuncu for her continuous support of CSM ARMA student chapter. Her enthusiasm for geomechanics science, interest in the team work with the students in ARMA, her eagerness to share knowledge and hardworking character are everyday lessons for us in ARMA.

Thanks Dr. Tutuncu. I would like to extend my appreciation to all ARMA officers whom I present their efforts and the kind support of PE office in making the logistic arrangements for all these activities.

If you have any questions or comments regarding ARMA student chapter at CSM, please contact me via email at mmokhtar@mines.edu. Have a fruitful semester.

Mehdi Mokhtari

FIELD SESSIONS

PEGN 315 - COLORADO/ALASKA FIELD SESSION By Bill Eustes

This makes my fifteenth field session in my seventeen year career here. This year with the large numbers of students, we split the PEGN 315 into four sections. I took one of the sections. And as always, I look towards visiting cool places, both figuratively and literally! This year, since it has been eleven years since we visited Alaska, I investigated if that was feasible. After discussing this with our good friends at BP and ConocoPhillips, I was convinced that with some work, this could happen. But instead of spending our customary two weeks in one area, we could split it into two one-week sessions. So, the first week was held right here in the Denver area and the second week up in Alaska working out of Anchorage with a side trip to the Kenai. This model worked very well!

I had the usual excellent assistance of Denise Winn-Bower for the third time in a row and, for the first time, Terri Snyder, an exceptional logistician and assistant, as part of the leadership team. In addition, I had Comert Satkin, one of my master’s graduate students, and Seth Dickson, just graduated senior as our Teaching Assistants. And in Alaska, Dr. Will Fleckenstein joined us. It was an outstanding team for the field session.

Dylan Goudie of CalFrac showing PE students how to whip up their own batch of frac fluid.
COLORADO/ALASKA CONT.

COLORADO
As noted, we spent our first week here in Colorado. In fact, the first visit was to CalFrac’s Louisville laboratory, about three miles from my home. There, we had a nice lunch on the lawn followed by a visit through their frac and cementing labs. The students were given the opportunity to whip up their own batch of frac fluid, with a dash of crosslinker thrown in. They also brought in a couple of trucks for us to crawl around on, which is nice as you can get up close and personal with the equipment when it is not running. Dylan Goudie (09) got this organized and along with Mark Elliot (98), Matt Sinkey (09), and Chad Caldwell, got it rolling. Assisting with the tours was Nicolai Baer, Chuck Halstead, Kelly Hunter, Chase Iron, and Misty Winters.

On Tuesday, we took off on our long day to the Evraz North America steel mill in Pueblo. It is quite fascinating to see how seamless casing is made. After a safety briefing and steel making introduction by Chad Ones, we wandered around the steel mill with him and guides, Corrine Candelaria, Geno Garcia, Mark Koshank, Skeeter Kovtynovich, Sarah Lamshere, Shad Newbauer, and Bob Robertson. Thank you all. When we were done with the steel mills, we ventured over to NOV Tuboscope’s inspection facility on the mill site. There, Chad Padilla and Jason Strickland showed us how to confirm the integrity of the pipe through ultrasonics, magnetic flux, and just looking at it! Thank you Les Massoletti for getting that arranged for us.

The next day, we headed north to the Halliburton Brighton Field Camp, one of the largest in North America! They have significantly expanded it. In fact, I went to the older facility not expecting the camp to be that far east! Well, Brandon Baker (03) along with Chris Hatcher (12), William Stark, Ryan Plieness (10) and Adam McKay showed us the various tools of the cementing and stimulation trade. John Plinkett (08) and William Stark presented the wireline tools and perforating guns.

Brandon and Chris wondered if we had lunch plans, and no, we did not. So Chris asked me what I thought about bringing a lunch in. Of course, Famous Dave’s is nearby, so I immediately thought: BBQ (one of the four food groups). So that is what we literally had on the fly. Thank you Kumar Ramurthy for helping us with this tour. But we weren’t done then.

Thursday we headed back out into the DJ Basin to PDC Energy and Ensign #32. We took a tour of that kelly drive rig with all of the directional gear available for us to poke at. Arranging and leading us on that work was Joel Igli (12), along with Danny Green, Jason Miller, Evan Rodgers, and Mike Schweizer. At a nearby pad, Halliburton, Magna Energy, and other folks were setting up for a frac job. Since things were not running, we were able to get up close and personal with the equipment. So Brandon, Chris, and others were on hand to show us how a frac job is assembled in the field. In addition, the fine folks out there, with Magna Energy providing the manpower and tools, hosted a cook out for everyone. On a personal note, my
parents were visiting us to see my son graduate from high school the next day. I asked my father, 80 year old retired chaplain and Air Force Colonel, to join us. It was a mistake to give him control of the radio I use to instruct the others on our trips. Let’s just say, his radio stories and descriptions were of the caliber that was enjoyed by all the students!

Anadarko hosted us on Friday. Joe Aucoin along with Mike Dinkel, Rachel Hill (05), Kirk Patterson, and Elizabeth Smith met us out at one of their newer tank batteries out by Hudson. After reviewing that, we traveled north to Anadarko and Noble’s newest oil polishing and transfer station. Clearly, the Niobrara production is having a big impact on Colorado. Finally, we went over to their state-of-the-art salt water disposal facility. That is a very neat and well-designed facility. All in all, a good way to finish part one of the 2013 Field Session.

ALASKA

Part two started with me going up a day early to Alaska to smooth out any glitches, which, of course, did happen with the Hertz reservations. For some reason, our SUVs were canceled (apparently, 15-passenger vans are hard to come by up there). So I stayed up late straightening out that mess. I met the students the next evening for their Alaska adventure, along with our department head, Will Fleckenstein. By the way, it had snowed in Anchorage two days earlier.

Noel helped us further with the next day. He arranged for us to split into two groups. One group went to Baker Hughes’ camp in Anchorage to look at downhole drilling equipment including bits, MWD/LWD systems, and mud motors, and electrical submersible pumps. Thank you goes to Baker hands Gerald Atol, Joe Cessar, Jason Goodwin, Steve Gould, and John Spaar. The other group went to Unique Machine, with Brad Frazier, Guy Yorka, and Noel showing us the machine shop that makes interesting construction tools for the slope. In between visits, BP ordered us a bunch of pizza that was eagerly consumed at a local park. That evening, Ruth Jones of the Mines Alumni Office set up an alumni/student soirée in a well-known downtown establishment, Humpy’s. It was great meeting up with the local alumni. I say thank you to all those who attended the alumni get-together.

The next day was a first. We didn’t drive anywhere. We walked. We were staying in a hotel just west of downtown, four blocks from the ConocoPhillips’ office. We spent that day with Taufeeq Mian (12) orchestrating a plethora of visits by various aspects of North Slope operations, geology, and
reservoir engineering. We had presentations by Thomas Nenahlo (08), Vanessa Angel, Mark McClellan, Heather Frenier (07), Capt. Kurt Hallier, William Hurley, J. Scott Jepsen, Liz Jolley (03), and Dan Venhaus. There was also a great lunch provided which turned out providential for me (more later). Thank you to Forest Bomorito (05) for pointing to the right folks not only for ConocoPhillips but also for our next trip to the Kenai.

We left early Thursday morning for Hilcorp Swanson River Field and the Kenai Gas Field. Once again we split into two groups with me leading four SUV’s and Will leading his SUV’s. They went to the Kenai Gas Field and, me being the history buff, I took my group to the Swanson River Field, the first commercial field in Alaska. Luke Saugier was our host along with Chad Helgerson, Dale Ashe, Bruce Hershberger, Greg Merle, and Heather Wagner. They showed us the discovery well, production facilities, well pads, a workover rig, a drilling rig, a gas plant, and numerous bears. What a show. The group at the Kenai Gas field, led by Chris Myers, saw field facilities, compressor stations and swabbing operations. All of the students saw how a small company can produce oil on fields that were previously owned by large companies, but not considered profitable and turn those around! I thank Lori Nelson for arranging both tours for us and making certain that we had lunch waiting for us at both locations. That’s a long ways back in the woods to go to the Swanson River Field.

The next morning was a two-fer. We started at Schlumberger’s Nikiski Field Camp with an explanation of wireline operations and interpretation by Doug Hupp, a great introduction to PEGN 419, and a tour of the facilities by Dan Baeten, Colin Bowker, and Allie Schoessler. After lunch on our own, we met back at ConocoPhillips LNG plant on the shores of the Cook Inlet, currently down as their export license expired. That was good for us as most of the plant was either shut down (think really “quiet” compressors) or in safe mode. We had quite the entourage as Judy Abrahams (98), Greg Beiser, Chris Endsley, Kevin Kovalkowski, Jud McGillivray, Chris Pipkins, Robby Saxton, and Rachel Seal showed around the plant and Steven Arbelovsky put on a LNG show. We left that evening and returned to Anchorage.

That’s because, in a surprise to me, Travis Smith and Taufeeq Mian were able to arrange for a Kuparak North Slope tour. Much thanks must go to the management of ConocoPhillips Alaska including Billie Korsunskiy, Nick Olds, Bill Arnold, Steve Bradley, Mike Wheatall, and Shon Robinson. We had our own 737! Now, earlier on Wednesday at lunch as I alluded to earlier in this section, my lunch host commented that being as this is a shared services flight, one might be able to get into the jump seat in the cockpit. Being a private pilot (and budding IFR pilot to boot), naturally, I immediately asked Taufeeq if he could find out how to do that. He did more than that, he got me into the jump seat. How cool is that?
Of course, the weather on the slope that Saturday morning wasn’t cooperating. Finally, after about three hours, the visibility lifted enough to make it in and so, off we went. We landed at the new Kupakak airfield (PAKU on airmaps) and took a bus to the main camp where we met up with Travis Smith (09) and Micheal Hazen. There we had lunch along with devouring a beautiful cake with the Mines logo on it. We split again and one group went to the Compressor Station 2 and another went to the Kuparak Drill Site 2 and the Nabors CDR2-AC Coiled Tubing Drilling rig. While on the pad, we saw the “Octowell”, a well with eight multilaterals. There were many people who made this possible, including Taufeeq and Travis; but also, Karl Lemmerman and Brian Schindler for the drill site tour and to Mike Coph, Matt Galbraith, Zach Poehler, and Scott Keiser for the rig tour. We then switched with the other group and went to the Compressor Station 2 facility. There, Mark Choney, Roy Thornton, and Todd Parish kept us safe and showed us the machines that keep the Kuparak field humming. And that hum is loud, inside the building, that is.

Sadly, we had to leave that evening. The captain, retired KAL pilot Douglas Leamon, and copilot, retired USAF Col. Nathan Braspenninckx, invited me to join them in the cockpit again so that is how I rode back to Anchorage.

Since the flight back to Denver wasn’t until 10 pm that next day, we had all day to play. So one group went fishing, one group went biking and hiking, and one group took it easy. I took another group to Seward where we rode the “Star of the Northwest” through Resurrection Bay. There were seals, otters, porpoise, and lots and lots of frolicking whales. Just remember, if it wasn’t for the oil industry taking off in the late nineteen century replacing whale oil for illumination, whaling would have caused the extinction of these creatures. We saved the whales.

Another fine field session has been completed. These field sessions are a highlight of our program and the envy of many other schools. If it wasn’t for our generous alumni and partner companies, this signature event would not happen. And if I have misspelled your name, got your graduation year wrong, or worse, left you off entirely, blame me and my sloppy notes. You would think I could write better. Please accept my apologies and just know that we really do appreciate all you do for our program. It is your effort and success that drives the Mines’ reputation and good fortune. Thank you one and all. See you on my next field session (which will not be this next May as I will be on a Distinguished Lecture tour in Russia and Europe next May.)
Thanks to the generosity and enthusiasm of our many alumni and friends, the 2013 PEGN 315 Field Session was a great success! Forty-eight students, two recently graduated student TAs (Sarah Nowak and Keith McKenzie), graduate student Soroush Sadaat, Patti Hassen (College Administrator), Al Sami (Lab Coordinator/Instructor), Dr. Yu-Shu Wu and I set up “camp” at the La Quinta Inn in Ventura on Monday, May 13, 2013. On Tuesday we began our first full day in beautiful California sunshine and mild temperature with our annual “beach” geology field trip. Starting at Arroyo Burro Park and ending at Loon Point, Jon Schwalbach accompanied by PE alums, Dave Mayer and Indar Singh (all of AERA Energy), reviewed basic geologic concepts and lectured on regional fracture development and structural traps. After an interesting tour of Weatherford’s “Oil Country” on Wednesday morning, we visited the Getty Villa in Malibu. The students had a fun time wandering through the gardens, courtyards and main halls of the Villa and learning about J. Paul Getty’s contribution to the oil industry and regional culture.

Later in the week, we divided into two groups, and enjoyed a comprehensive tour of Venoco Inc.’s Platform Gail. The morning boat ride is always exciting only matched by ingress and egress to the platform. We thank the Venoco folks for providing the safety training and snacks in anticipation of the Thursday tours and for their generosity in arranging the platform tours.

Another highlight of this year’s CA trip was a specially arranged tour at Vandenberg Air Force Base. In the morning we learned about base history and its participation in the United States Space Program. In the afternoon, we were led by the base geologist on a geology tour of the Monterey Shale located on an exquisite portion of the Pacific Coast. Afterward we headed to Bakersfield where we set up “camp” in the Homewood Suites. On Saturday, we met with Tim Elam (retired Chevron), Dave Miner (CSM alum) and Dave Mayer for a day of San Joaquin Valley oil field history and geology. Highlights of the day included the McKittrick Tar Seeps, West Kern Oil Museum, and Chico Martinez Creek where the students explored the base of the Monterey in search of sand dollar “buttons.”

After a leisurely Sunday morning, we visited the Kern County Oil Museum and then enjoyed dinner and mingling with Bakersfield CSM Alumni at Famous Daves. We would like to thank a number of our PE alums and their companies for organizing and sponsoring this annual event: (1) Planning/Organization: Kelsey Gallegos (Drilltek), Tiffany Brewster (AERA), Lonnie Kerley (Freeport-McMoRan Oil & Gas) and Dave Mayer (AERA); and (2) Funding: Kelsey Gallegos (Drilltek), Lonnie Kerley (Freeport-McMoRan Oil & Gas), David Mayer (AERA), Brent Vangolen (OXY), Steve Clark (Neon), Geordie Chambers (Chevron). The students had a great time networking and asking questions of the alums. They also appreciated the leftover food! We hope to have this opportunity again next year to mingle and hear “stories” from the Bakersfield alums! Thank you!
CALIFORNIA CONT.

We spent the entire day on Monday with OXY at Elk Hills. This was a fantastic opportunity for the students to learn about the former U.S. Naval Petroleum Reserve, tour a drilling rig in action, as well as see production operations. Many thanks to Brent Vangolen (PE alum) for arranging our tour and hosting us at Elk Hills!

On Tuesday, AERA hosted us once again at their Belridge Field. Beginning with a safety meeting and breakfast burritos, the morning was spent at several field locations featuring a variety of contractors including Baker Hughes, Weatherford, Pengo Wireline, Pro Tools, Key Production Rig and Coiled Tubing. Many thanks to Michael Dixon, Angel Forsling-Ransom and Travis Ransom for coordinating the tour along with Stacie Erbes-Gallegos, Jeff Kim and Nick Clausnitzer. After a presentation and lunch with AERA, we visited Core Lab where students saw core preparation and lab equipment setups similar to experiments in PEGN308. Thank you Linda Specht of Core Lab for hosting us and providing afternoon snacks and beverages!

The morning of our last day in Bakersfield was spent with Chevron at the Kern River Facility. Chevron engineers, Geordie Chambers and Elliott Riege (both PE Alums), guided us on an excellent tour of their operations and provided a delicious lunch. In the afternoon we headed to Long Beach for the remainder of the trip.
Our final day of the Field Session was spent with THUMS/OXY Long Beach, Inc. We appreciate CSM alum Mike McCarter’s time and effort in organizing a full day of hospitality and learning including breakfast and lunch at The Reef Restaurant, presentations about THUMS and the Wilmington Field, a site visit to Tiger Wireline’s new shop to learn about packers, ESPs, and a tour of Island Grissom.

The field session in Southern California would not be possible without the generosity of our alums and friends in the area. The students, TAs, Staff and Faculty had a wonderful learning experience and another enjoyable visit to California. Thanks again! We hope to see you next year!

Alum, Mike McCarter giving a tour of OXY/THUMS island Grissom.

Group photo at Chevron with Alum Geordie Chambers.
This year’s field session was larger than ever, so large that we divided the and was the first we divided up into four group the PEGN 315 crew into four groups! Professor Ozkan and I took a group to Houston and San Antonio again, with the help from four Teaching Assistants – Yuefeng Gao, Carelia Rojas, Koko-ete Obott, and Wisam Assiri. We had 47 students in the group.

Our tour started with two slight mishaps. Wisam’s name on his ticket was misspelled and he missed the morning flight to Houston. Luckily, one of the student drivers gladly offered to sit behind the wheels, and Wisam joined us later in the afternoon. Another is that a student’s luggage was not able to come with the plane – it was delivered to the hotel in late evening.

Everything after that was smooth. After we arrived in Houston, we visited the Energy Museum in the afternoon. The event was kindly hosted by the Marathon Oil Corporation. The museum is always of great educational value as the first stop. In the second day (May 14), Chevron hosted us at Brian Park. Tours of the fluid characterization, SEM imaging, and X-ray laboratories made up a wonderful morning. Then, we drove to Galveston. Chevron again hosted us there with a seafood lunch, and then in the Ocean Star Offshore Drilling Rig Museum.

Wednesday, May 15. In the morning we visited H & P Rigs near the harbor area of Houston. There we were greeted by CSM Alumni J.T. Dohm. JT and other on-site crew led us through the manufacturing facility, and led us through a brand new flex rig on the site. After a pizza lunch, we drove to San Antonio to get ready for the two-day tour of the Eagle Ford.

Eagle Ford is one of our favorite locations because of its busy activities in the recent years. Thursday, May 16, we visited Pioneer Natural Resources’ Pawnee field office. CSM Alumni Troy Hoefner and Bailo Suliman greeted us. We visited production and fracturing sites as well as a central gathering point. The next day, arranged by our recent graduate Chris Enger, the troop visited EOG in their oil producing zone near Gonzales, Texas. We started at a train station with oil tankers. Then, we toured drilling, fracturing, and production sites (they have the largest flare torch in the region). After a day of rest in Corpus Christi, we left Southwest Texas on Sunday and headed back to Houston.
TEXAS CONT.

On Monday (May 20) and Tuesday (May 21), we visited the service companies. In Schlumberger’s Rosharon facility, the students studied shape charges and downhole tools for multilaterals and others. Baker Hughes arranged us to visit two of their Houston locations: the Center for Technology Innovation and the Hughes-Christensen Drill Bit Manufacturing and Testing Center in the Woodlands. Wednesday, May 22. We drove to Fairfield, Texas to see Marathon’s operation in the Mimms Creek Field – drilling rigs and production facilities. In the last day of the trip (May 22), we visited US Steel’s Tubular Innovation and Technology Center in Houston. The center has a small but phenomenal museum about the makings of steel and steel pipes. US Steel’s field engineers from Pittsburgh and from Lorain, Ohio to give us introductions and lectures. US Steel has many tubing products for oil field applications. We were given excellent lectures on tubing selection and the various failure modes. After the lectures, a contest was held to see how many failure modes the students can reproduce from a simulator. We divided up based on vans. Two of the teams won with perfect scores.

We want to thank the companies, our contacts, and our alumni for helping us to successfully run another year of PEGN 315! We specifically acknowledge: Angelique Buster, Scott Abel, Benjamin Ramirez (Marathon); Chiedozie Ekweribe (Chevron); Bailo Suliman, Troy Hoefner, Michelle Wendel (Pioneer); Chris Enger (EOG); Mark Teel (SLB); Erwin Hernandez, Patrick Brown, Marilyn Lee (Baker Hughes); Peter Moore, Wendy Loggins, Xin Long (US Steel), whose efforts have made this trip possible and memorable.
A group of sophomores traveled throughout Wyoming this year to get an introduction to the industry. The trip began with a visit to the WPX corporate offices in Denver and then continued with visits to Halliburton in Rock Springs; QEP, Encana and Exaro in Pinedale; Anadarko and Baker Hughes Centrilift in Casper; and BP in Wamsutter. We were also treated to an amazing geology tour by Kent Sundell of Casper College. The students received an introduction to oil, natural gas, artificial lift, carbon dioxide injection, hydraulic fracturing, and other aspects of the industry.

A highlight of the trip for the faculty and TAs was an amazing dinner provided by Steve and Mary McPherson. Many thanks to them. A highlight of the trip for the students was a weekend visit to Yellowstone National Park. Students deemed the trip a success – learning a lot about the industry and meeting some new friends. So that makes the trip a success in my eyes as well.

Enjoying the scenery, the wildlife, and the weather in Yellowstone.

Stormy Weather and muddy roads...

Learning all about the rig...
Tents here, tents there, tents everywhere. While we had approximately the same number of students as last year, 150, we had triple the number of tents. Teaching assistant Andrea Switzer put together a slide show early in the spring semester to give students an idea of what to expect during field session. Typically, students have been shown what the outside of the cabins looked like. Andrea’s presentation showed that our “cabins” might be more appropriately called “sheds”. These pictures of the inside of the cabins as well as comments about sharing the cabins with the year round snake and mice population may have caused many students to decide to tent for two weeks rather than live in the cabins. It turned out to be a good decision. We had great weather. While it was still cold at night, it wasn’t that cold. In fact, less than one drum of kerosene was used in camp this year. Frequently we use a drum during the first week.

In addition to myself, Mansur Ermila helped with the first session. Todd Hoffman and Luis Zerpa were the faculty for the second session. We had a great compliment of both geology and petroleum teaching assistants. For the third consecutive year, Jeremiah Moody and Jane Stammer led us to the world class geology sites surrounding Massadona. They did a great job. It is great to see students coming with no love of geology, and leaving with a much better appreciation. While they still may not love it, they see how it fits. Because both of our lead geologists will likely not be available next year, we also had Michele Wiechman, Mitchell Weller, John Detring, and Marieke Dechesne helping on the geology side of things. We appreciate Microseismic, Inc for letting John help us out. We hope that he will be back next year. On the petroleum side of things, Andrea Switzer, Cody Godsell, Kenny Rennick, and Talgat Kosset were at camp for four weeks of fun. Andrea spent a lot of time streamlining the exercises during the spring semester. Her effort was much appreciated by faculty and students.

Yet, another field session begins at Skull Creek.

Mesaverde fluvial depositional environments come to life.

First Session-Group Photo.
Both **Chevron** and **Production Logging Services** arranged presentations for our students. Rory Clark led the **Chevron** group. Geology, field development, enhanced oil recovery, and facilities were tied together. While production logging is typically one of the last days of field session, scheduling issues made it happen earlier this year. Craig Stratton, **PLS**, was appreciative of “not having to go last”. We will try to mix the schedule up a little in the future. We continue to be very grateful to **Chevron** and **PLS** for their help in educating our students. It is one thing to look at a picture in a book, and another to hold a tool in your hand or make the link between geology and petroleum engineering.

One of the traditional Massadona opening activities has been roof repair. Year after year, layer upon layer of asphalt were deposited in the hopes of having a water tight roof. Some repairs were more successful than others. Unfortunately, the less successful repairs allowed water to seep in causing rot and potentially dangerous mixes of water and electricity. This year we finished installing sheet metal roofing on all of the cabins. Students and TA’s stripped asphalt, fit new plywood, placed underlayment, and screwed down new roofs. It was hot and tiring work. But in addition to the feeling of a job well done, students were rewarded with a Massadona Tavern steak.

What to do next? Actually prepare cabins for painting, rather than glob the paint on? Fix seismic trailer roof? Repair rotted foundations? Gravel down road? Next years field session enrollment is expected to be on the order of 200 students. We will need to decide how to manage a 25% increase in enrollment. Our project list might include making bunk beds, making a new cabin or two, and potentially going to three sessions. Or, we could make a stronger case for tenting. Vermin, loose nails, heat, cold, crowded living conditions, power going off in the middle of the night, cabins are terrible (except for the roofs, they are great).
Alumni Reception at SPE ATCE

To Our Alumni:

Please join us for the Colorado School of Mines, Petroleum Engineering Alumni Reception to be held during the Annual SPE Technical Conference in Denver, Colorado. September 30th through October 2nd, 2013.

The Alumni Reception will be held on Monday evening, September 30th at the Hilton New Orleans Riverside, in the Grand Salons 3/6 2 Poydras Street, New Orleans, LA 5:30 to 7:00 pm.

Cost $30

As always, there will be plenty of food with a cash bar.

All are welcome to attend this reception, regardless of attendance at the SPE Conference. You may now RSVP and pay online at www.minesonline.net/SPEDenver2013

Don’t hesitate to email Terri Snyder (tsnyder@mines.edu) with any questions.