

Alumni Reception at SPE Conference

To Our Petroleum Alumni:

Your attendance is requested at the Colorado School of Mines, Petroleum Engineering Alumni Reception to be held during the annual SPE Technical Conference in Houston, Texas, September 25 through 29, 2004. The Alumni Reception will be held on Tuesday evening, September 28th at the Hilton Americas Hotel, Houston, 5:30 to 7:00 pm. The charge will be \$25, because students are free. As always, there will be plenty of food with a cash bar.

HOW TO REGISTER: Phone Kathy Breit, Program Director of CSM's Alumni Office at (303) 273-3290, or e-mail kbreit@mines.edu or phone the Petroleum Engineering Office at (303) 273-3740 or email jwaitman@mines.edu ASAP. Drop-ins are welcome; however, we would appreciate it if you would make a reservation in advance.



**Department of Petroleum Engineering
Colorado School of Mines
1500 Illinois Street
Golden, CO 80401**

U.S Postage
PAID
Golden, CO
Permit No. 7



Newsletter Petroleum Engineering

Vol. 9, No. 1

September 2004

Colorado School of Mines

Greetings from Craig W. Van Kirk

This annual newsletter to alumni and friends of CSM's Petroleum Engineering Department provides me with great pleasure and satisfaction. I always enjoy sharing with you, and anyone else, the many successes of our PE program during the past year. In every way we can be measured, we continue to improve, grow, and expand our influence.



Craig W. Van Kirk

On a personal note, my immediate family continues to enjoy good health, with no major new illnesses or accidents during the past 12 months. However, very sadly, one of my cousins and one of my nephews died quickly and unexpectedly during the summer. These premature deaths should remind all of us to love life, live life to the fullest, and be careful.

During this past year we did not add any new faculty members, but we did change out the entire classified staff. Both of our Administrative Assistants, Dee Brown and Chris Cardwell, retired simultaneously at 5:00 PM on Friday May 28. What a coincidence that after 21 years of service by Dee and 11 years of service by Chris that they both independently chose the same moment to retire. At the end of last Spring semester we had a great retirement party for them, thanked them for 31 years of excellent service, and wished them well. Fortunately, they both live nearby so we are able to keep in touch and visit frequently with our two former teammates and lifelong friends.

On a very positive note, our two new Administrative Assistants are doing a great job. Jackie Waitman and Denise Winn-Bower joined us during May for several weeks of overlap with Dee and Chris. Both Jackie and Denise bring to us many years of professional experience in private industry and the University of Colorado system. The transition has been as smooth as it could possibly be. You alumni and Department friends should introduce yourselves to Jackie and Denise, you will be pleased to see the continuity of high quality and friendly service provided by our Administrative Assistants.

Also, our Lab Technician Randy Miner retired during the year, and we have filled the position with Al Sami. Al has a BS in Mechanical Engineering and many years of practical engineering experience. He brings to our undergraduate and graduate research labs a high level of expertise, dedication, and enthusiasm; plus a great sense of humor. Al really enjoys showing off our lab facilities, so please stop by for a visit to meet Al and get a customized tour.

Inside this issue:

Greetings from Craig Van Kirk.....	1
Faculty Letters	3
Field Trip Photos.....	11, 13-15
Alumni Reception-SPE Conference	16



(continued on page 2)

Please help us by completing and mailing the enclosed Alumni Survey.



Scenes from Massadona. . .

This brief introduction of our three new teammates reminds me to remind you PE alumni and friends to keep in touch with us. The daily messages and visits we receive from you truly do provide us with a significant portion of the satisfaction we enjoy in our endeavors.

This past year saw the PE program grow in many ways and enjoy great success. The job market for our students continued to be strong, with nearly 90% of students placed by graduation time. The starting salaries for our BS graduates averaged \$63,000 per year, the highest on campus, as usual.

Our annual senior class sizes of approximately 30 are healthy, and undergraduate enrollment is growing. Our graduate student enrollment of 60 is among the largest on campus, with a nice mix of International and USA students.

PE's faculty is truly a great team of professionals. We have strength at all positions and are well balanced between teaching and research, with excellence. Our research funding provided by sponsors from both private industry and government agencies is growing significantly. It is very satisfying for us to receive many recent accolades for our dedication to excellence on all fronts, a natural consequence of our long-standing policy of making the students' success our number one priority.

The PE program attracts the highest portion of non-Colorado resident students on campus, and the largest absolute number of international students of any department at CSM. We continue to expand our national and global reputations, with several significant new projects.

The Petroleum Ministry of Egypt has asked us to start CSM-Egypt, a branch campus focusing on PE and several other petroleum industry related programs. During the past year I have made several visits to Egypt to discuss and clarify Egypt's needs. Also, CSM's Vice President of Academic Affairs Nigel Middleton and CSM's SPACE (Outreach) Director Gary Baughman have been to Egypt with me to further this new and exciting possibility. The three of us are the prime movers at this time, and we expect other CSM teammates to get more involved in the near future.

The Egyptian Petroleum Sector and several Government Agencies are in complete agreement in their desire for this new CSM-Egypt campus. They are quite familiar with CSM's very successful Abu Dhabi Petroleum Institute (ADPI), and they want to go even further. The ADPI is domestic for UAE citizens, and the graduates will not receive CSM diplomas. Egypt wants the new CSM-Egypt campus to be an international campus serving the immediate region and the rest of the world; and Egypt wants the graduates to receive CSM diplomas! If this comes to fruition, it would truly be a very big deal for CSM, Egypt, the USA, et al!

Much more work needs to be done by both parties before reaching any final agreement. In the meantime, in order to make some much needed progress, we PE profs will be teaching 4 graduate courses in Cairo this Fall semester.

Among our several cheerleaders in the Egyptian project at this time is a White House Energy Task Force lead by DOE personnel. We are working together on a broad-based national project to better educate the public regarding USA energy development and production. CSM is playing a major role in these activities, and might wind up with a prominent position to play, such as a National Center. These are only possibilities, and there are no guarantees that anything will develop. But we are hopeful, and, as always, we try to be helpful.

On the global front, since our last Newsletter from a year ago, I have also been to China with CSM's President John Trefny to expand our successful training projects and develop joint research efforts. Also, I spent a week in Colombia South America during the summer and was pleased to see the high level of enthusiasm for numerous new graduate students who intend to come to CSM.

On the home front, we are preparing for the SPE Annual Technical Conference in Houston in late September. As always, we will cancel all PE classes for the 3 days Monday through Wednesday September 27-29, so that all PE faculty can attend and any PE student who wants to can also attend. As always, the PE Department will provide significant resources to fund most of the costs for the trip.

At this time I want to thank you alumni and other friends of the Program for your continuing financial support, which enables us to provide many exceptional educational experiences for our students; such as, the annual SPE Conference, their off campus meetings, our outstanding computer lab facilities and coordinator, our two Summer Field Sessions off campus, and many others. The result of the healthy partnership among you supporters, our staff, and our students is the continuing excellent yearly graduates who enjoy successful careers in our global petroleum industry.

It is my pleasure to provide this report to you and to be a part of CSM's PE team. After 24.5 years as PE's Department Head, I look forward to several more years in this capacity before starting to phase down.

Please keep in touch with us and come by for a visit any time. I look forward to seeing you at our annual PE Reception on Tuesday evening September 28 during the SPE Conference in Houston. The event is always fun. For more info please contact Denise or Jackie at (303) 273-3740.

My best to you and yours,

Craig



The only shade available for 20 miles



Dr. Anderson enjoying a refreshing Massadona snowy morning

This year's camp consisted of the classic exercises with geology and field petroleum themes. We were hosted once again by ChevronTexaco at the Rangely Field, Questar at the Red Wash Field, and Production Logging Services (PLS) for their production logging school. I'd really like to thank ChevronTexaco, Questar, and PLS for their continuing annual help with the field camp. I'd also like to send a special thanks to Encana who joined us this year by hosting our group at Mamm Creek Field.

I'd like to thank those of you who sent stories about their Massadona experiences to me after last year's newsletter and would encourage others to send their stories as well. I'm trying to gather a collection of these various stories and experiences so I can convey the history and traditions associated with the camp to future students. If you have a few minutes, please email them to me at jmiskimi@mines.edu.

As with past articles, I have included a few pictures from the camp that I hope you will enjoy. We have updated the PEGN 316 for 2004 and would encourage you to visit it at <http://www.mines.edu/academic/petroleum/316/PEGN316.html>.



Production logging in the Rangely Field



Dr. Miskimins overseeing the troops on Raven Ridge



Scenes from Massadona. . .

On May 9, 2004, the headline of the Rangely newspaper read “POPULATION OF MASSADONA EXPLODES FROM 6 TO 44!” Ok, well, the headline really didn’t say that, but the population did explode as we arrived once again in Massadona for the start of the 2004 PEGN 316 field session. This year we had 33 undergraduates, two TA’s, two instructors, and one very brave graduate student.

As with the trend of the previous few years, this was the biggest group we’ve had in awhile. Donna Anderson from the Geology and Geological Engineering Department once again joined me this year as co-instructor. Andrea Blecha returned for a second year as a TA, and Nate Gilbertson joined us for his first year as a TA. Unfortunately, this will be Andrea’s last year since she will be graduating with her Masters, but Nate will be joining us again next year to keep the TA rotation alive and well. This was one of the coldest camps we’ve had in recent memory—at least in Donna’s and my memories (which may be suspect). There were several days with frost in the air and more than one day with snow on the ground.

This year the Junior/Senior class made a wonderful addition to the camp—they built a permanent fire pit. This brings some safety to having a fire in the evenings, as well as providing a great place to sit and discuss world politics, the NBA playoffs, or the next day’s assignment. In addition to the new fire pit, the department bought 10 new Bruton compasses this year. Unfortunately, they were on back order until after this year’s camp, but we have them now and they will be ready and waiting for next year’s class.



Massadona - Group Photo



SPF45 anyone?

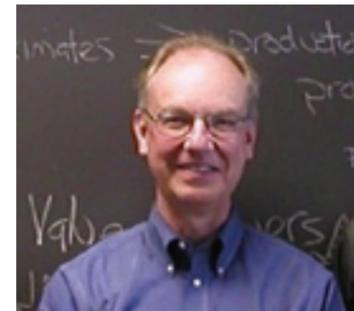


Measuring fractures in the field

Letters from Our Faculty

Larry G. Chorn

Lately, I have been asking myself where the last 52 weeks disappeared. Needless to say, my first year on the faculty has been exciting and broadening. I taught the Senior Economics and Evaluation class (PEGN 422) this past fall and a graduate class in Economics of Investment Under Uncertainty in the spring. This fall I am teaching another new graduate course on Uncertainty in Subsurface Estimation. We will build upon the Investment Under Uncertainty material and investigate risk and risk management in Exploration investments. The final project



Larry G. Chorn

will be to develop a capital-constrained exploration investment portfolio using my capital budgeting software and a large set of ready-to-drill opportunities to choose from.

At the end of this past spring semester, I had the pleasure to participate in the annual Sophomore–Junior field trip that visited Southern California. It was an excellent group of students and they very much enjoyed the locations we visited. I actually got to “kick the wellheads” in several fields on which I had run production forecasts, reserves estimates and capital budget numbers while I was with Mobil. Many thanks to those of you who arranged and hosted our visits.

Professor Van Kirk regularly shows up with so-called opportunities for my participation in committees and outreach to the community. Now that I am a “non-aligned” agent in the industry, I have much more latitude to comment on policy matters and the state of the industry in general than when I represented a company. It’s refreshing! Exercising that latitude, I will be delivering the December Heiland lecture for the Geophysics Department. My lecture will address the status of the world’s reserves and resources and who’s actually in control.

Developing my research program required the majority of my time during the school year. I submitted three research proposals during the year and was fortunate to win funding (\$300,000) for a modeling and experimental study on low cost wellbore integrity monitoring in the underground gas storage industry. Professors Miskimins and Eustes and I remain optimistic regarding our joint proposal to DOE and the BLM regarding the application of horizontal well technology to develop unconventional gas resources in the Rocky Mountain region. My portion of the proposal addresses the economics of horizontal versus vertical wells and their impact on recoverable

reserves per well. Both issues are loaded with risk and uncertainty, as you might imagine.

I have five excellent master students performing research with me beginning this fall. Their topics will be quite varied: the wellbore integrity research, the unconventional gas resource topic, a real options analysis of an exploration program in the Caspian Sea, reserves management best practices, and a new E&P portfolio modeling concept. They will be looking for employment in about a year, so get your bids in early!

All in all, it looks like another busy year!

Richard L. Christiansen

To the point!

My research project on lifting liquids from gas wells continues to grow. I won another year of financial support from the Stripper Well Consortium, which is funded by DOE and NYSERDA (a research funding source in New York). With funding in previous years, we developed technology for liquid misting, technology for solving lifting problems at the end-of-tubing, and thought-provoking insight on formation damage by liquids that accumulate in the bottom of the well. The funding for the coming year is aimed mostly at developing correlations for flow of foam in gas wells. But in addition, we will develop a short course on liquid lifting and get the misting technology to the field—finally.



Richard L. Christiansen

I am excited about the liquid lifting short course. It will consist of brief lectures on key topics and many flow loop demonstrations: flow regimes, lifting with plungers or foam, vortex flow, and more. “Seeing” will be a big part of the course. If you are interested, please call or send an email.

If your company operates gas wells, please visit with me in the flow loop lab. Bring your co-workers! You will be fascinated by what you see. In April, a bunch of engineers from Marathon and Centrlift visited the lab—we put together a short project on gas-water separation in CBM wells. In early July, I hosted three visitors from ChevronTexaco—they are interested in formation damage caused by liquids. I expect to host visitors from BP in August and September.

During Spring semester, I taught a course on liquid lifting from gas wells. We met in the Flow Loop Lab. I enjoyed teaching the course immensely. It was great to have a course so closely tied to my research. Two undergrad students used the flow loop to gather data for a project in another PE class—also great fun!

As mentioned in last year's newsletter, I am a member of the Faculty Senate. In that position, I am heavily involved with many of the issues that will shape the future of CSM: declining funding from the State, increasing undergrad enrollment and tuition, changing policies for research funding, and more. I encourage you alumni to participate in this process of re-defining the school.

The coming year is my 15th at CSM. During this time, there have been many changes in the faculty – and many more in the students. On the wall of my office hangs a picture of a group of students from the 1996 summer field session in Canada – a very memorable trip. I enjoy reflecting on those and other experiences with former students. I hope that all of you are finding satisfaction in your careers – and that the oil and gas industry will continue to challenge your abilities.

Alfred W. (Bill) Eustes

It is interesting being a faculty member. There is a definite rhythm to the academic year. The year starts with the fall semester. You go through Christmas break then it is spring semester. Then there is field session followed by summer. Then it starts all over again. And again. There is a certain predictability to my life.

This year, however, I have been granted a sabbatical for the spring semester which makes it unpredictable for a change. I am still finalizing plans for the sabbatical, so I am not certain of where I will go; but it promises to be different.

I continue to teach the PEGN 311 and PEGN 361 classes. I am always interested in feedback about what was useful and what needs to be added.



Bill Eustes

Please let me know when we meet or by email or phone. Also, for those of you who have taken a graduate class from me, I would like to know the same thing for the particular class you attended.

The Rocky Mountain Region is a hotbed of natural gas drilling activity. In fact, it is one of the few regions in the US with an upbeat outlook for continued discoveries. However, it is not without controversy. Coal bed methane activities and tight gas development are causing debate (if that's the right word) between environmental versus energy issues. A number of conservation groups are looking to successes elsewhere as models for development. However, as we all know, success elsewhere does not necessarily translate into success everywhere. As part of that, directional drilling is seen as the answer to surface mitigation

woes. Even the Denver Post, who interviewed me, recently had an article on the subject.

The Bureau of Land Management is in the middle of this controversy. I have been working with them on the directional drilling issues, teaching them about the technical aspects of directional drilling. Larry, Jennifer, and I had assembled a proposal for determining the drilling, completion, and reservoir management issues and potential solutions and limitations of directional drilling. So far, no funding; but we are hopeful.

The Jet Propulsion Laboratory Martian Drilling project is currently on hold. When President Bush reoriented NASA towards a goal of Lunar and Martian exploration earlier this year, NASA halted most of their discretionary R&D projects to reevaluate what needed to be done regarding this new initiative. In August, JPL released an invitation for a deep drilling (100 meters to 1 kilometer) R&D effort for Mars. Given the excitement of Spirit and Opportunity and the discoveries being made, there is a renewed effort for the next great exploration frontier in space, underground! I am certain that CSM and this department will be there.

Another facet of being a faculty member is service. In the last few years, I have been on the Executive Committee of the Petroleum Division of the American Society of Mechanical Engineers (ASME). This year, we became the second ASME Institute: the International Petroleum Technology Institute (IPTI). The IPTI reports directly to the Board of Governors (BOG) that runs the ASME. The Petroleum Division still exists; we are under the IPTI now rather than the previous two layers to the BOG. If you know of any mechanical engineers that are not involved in the ASME, please have them contact me.

I am also the chair for the sixth SPE Colloquium on Petroleum Engineering Education (CPEE). It was held on the CSM campus in the Green Center August 8th, 9th, and 10th. We had 48 attendees and for a first, the industry people outnumbered the academics. The theme was life-long learning. There were five sessions with the first session on current expectations. The SPE Gulf Coast Emerging Leader group assembled a survey on the expectations of our ten-year or less experienced engineers. The results will be disseminated soon via papers and the SPE website; but, suffice it to say that CSM looked pretty good in the responses (which were tracked by school but not by individual). The other sessions were on education innovations (we talked about our field sessions) and internships, education beyond the degree, and a final presentation session on the future as a petroleum engineer. I must admit that the audience was biased; but the consensus was that for the next fifty years, we must continue to develop more difficult and challenging heavier oils and unconventional natural gas deposits. And as Kate Baker, SPE President said, "What industry has every one who is born as a customer?"

American Association of Drilling Engineers

by *Jeff Reimer*, President

Welcome back to all the faculty, alumni and students of the Petroleum Engineering Department. My name is Jeff Reimer, and I am this year's President of the Colorado School of Mines Chapter of the American Association of Drilling Engineers (AADE). AADE allows student members to participate in the very dynamic world of Petroleum Engineering by getting them actively involved in drilling and other operational practices. The Colorado School of Mines Chapter was started in 1996, and was the first AADE student chapter in the nation. Since then, many other Universities have followed suit. The CSM chapter has been enjoying a steady increase in membership and hope to continue the trend this year.

AADE offers many opportunities for new members. The chapter hosts bi-monthly chapter meetings in which a guest speaker from the industry will come to campus and speak about the drilling side of the Petroleum Industry. We call these "Lunch-and-Learns" and it is geared to educate the students about new practices in drilling applications. The officers and I have also been in



Jeff Reimer - President

the planning stages of some rig tours in the Fall and Spring of the school year. These would be some weekend day trips to orient the members to Drilling rigs, as well as to make contacts in the industry. Hopefully, by the end of the Fall semester, we will have two trips planned. AADE is also involved with the other two Petroleum Societies at CSM: the Society of Petroleum Engineers (SPE) and Pi Epsilon Tau (PET). The three groups will usually team up to perform community service and fundraising activities. This year, we hope to keep this tradition going, and help the community of Golden. There will also be many other events planned. In the early Fall and

late Spring an AADE BBQ will take place. This will allow new members to meet the current officers as well as our faculty advisor, Dr. Bill Eustes. Also, Joint Session with the Denver Chapter will occur in the Spring. This allows the members to meet members of AADE that are already in the workforce. This is also where the Denver chapter displays their generosity in giving scholarships.

The officers and I are really excited about running such a great organization.

We will definitely have a lot more events planned, so please feel free to stay in touch. Also if you would like to speak or attend a meeting, do not hesitate to contact me by email at jreimer@mines.edu.



More Field Session in California



> *Oxy's mobile drilling rig dwarfs students on the THUMS Island offshore Long Beach.*



< *Halliburton's white suited men give a demonstration of frar fluids*

Student Organizations

Society of Petroleum Engineers

by *Matt Gallaway*, President

Colorado School of Mines. Mentioning those four words instantly invokes over a century of tradition and respect. Petroleum Engineering has arguably been the cornerstone for this institute for many years. It got to be that way through dedicated professors and most of all, empowered students that run and are involved with clubs like the Society of Petroleum Engineering (SPE).

I'm Matt Gallaway, 2004-2005 SPE President. Our Mines SPE group is a local chapter of an international organization. SPE is the coalition of thousands of professionals all linked in one way or another to the Petroleum Industry.



Matt Gallaway

We are without doubt one of the largest and most active student clubs on campus. Our main priority is to benefit each member as much as possible. Some immediate benefits of joining SPE are discounts on books, access to numerous technical sessions, and most importantly networking with industry.

SPE organizes and participates in major events throughout the school year and even during the summer. One of the goals this year is to organize a golf tournament that will be held with alumni and students. ATCE (Annual Technical Conference and Exhibition) is a huge event that highlights some of the newest technologies in the industry. This year's ATCE is in Houston, TX and travel arrangements will be organized and subsidized heavily through SPE. ATCE has both a social side and an educational side and has proven to be a student favorite for many years. Since we are a local student chapter, we like to host a Joint Session Dinner with the Denver professional chapter in the spring. Once again, this proves very beneficial to students because we can meet with alumni, get advice on our future, and make lasting industry contacts.

I personally am looking forward to this year with great anticipation. We have great financial standing due to generous donations from the industry. This will allow us to try events that may have been too expensive in years past. I look forward to meeting all new students that may be interested in Petroleum Engineering. I think SPE is a great way to get involved on

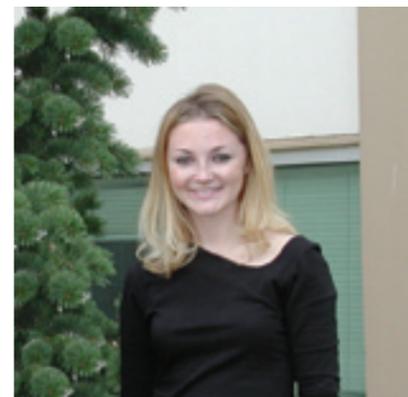
campus, meet your peers, and make lasting friendships. If your interest is spiked and you would like to learn more about SPE, or have any other questions, please feel free to contact our Membership Chair Ryan Cadenhead at rcadenhe@mines.edu. Thanks for your interest and GO DIGGERS!!

Pi Epsilon Tau

by *Ashley Lantz*, President

The Pi Epsilon Tau chapter at Mines is looking forward to another great year! Pi Epsilon Tau (PET) is the Honor Society of Petroleum Engineering. Our organization aims to foster student ties to industry, broaden the scope of activities of its members, and maintain the high ideals and standards of the Engineering Profession. Active members are selected based on academic scholarship, leadership, and involvement on campus or in the community. Eligibility for undergraduate membership requires a cumulative grade point average of at least 3.0; whereas, graduate students must have a minimum cumulative grade point average of 3.25. All faculty of the Colorado School of Mines Petroleum Engineering Department are members of PET. Currently, active membership consists of more than twenty undergraduate and graduate students.

PET officer elections were held in April, electing Ashley Lantz as President, Maythem Al-Ismael as Vice President, Lindsey Mitton as Secretary, Candra Janova as Treasurer, and Justin Sandifer as Initiation Chair. As officers, we are very excited about the upcoming year. Some of our goals for this year are to hold our initiation of new members in late September, plan a service activity for each semester, facilitate faculty and student appreciation events, provide tutoring to Sophomore and Junior students, help with tours and visitors when needed, and continue and revive our past traditions. We are all looking forward to working with Dr. Graves, our faculty advisor, and will try to build on the energy she radiates. If you have any questions or suggestions, please contact me at alantz@mines.edu.



Ashley Lantz

The final session was a "brainstorming exercise" to determine the next steps. We will be presenting a series of messages to various audiences through the JPT, SPE website, and the ATCE. Be looking for them.

This year, I didn't lead the field session. Instead Erdal, Mark, and Larry went. I expect to be back in the saddle for next year's Field Session I. We are considering Europe, but security and expenses may scuttle the plans. What do you think?

John R. Fanchi

This summer I developed a new industry short course entitled "Estimating Stress-Dependent Well Productivity." Course participants learn how to use porosity – permeability – pressure relationships to identify flow units and estimate the stress-dependent productivity of a well. The two-day short course gives attendees an interactive, hands-on experience. The course is designed for reservoir and production engineers, and reservoir geoscientists who are familiar with reservoir terminology and Microsoft Excel.

Phase II of the Consortium for Integrated Flow Modeling will be completed this fall. We have created algorithms for preparing low-cost estimates of important geomechanical parameters. Our work includes a series of reports for Consortium members that contain details of the research. For example, we have developed a catalog of coefficients for estimating bulk and shear moduli as a function of lithology. More information about the Consortium is provided at my website. There is still time to join Phase II and obtain copies of our technical reports.

The new SPE Petroleum Engineering Handbook is now scheduled for publication in 2005. I have served as the editor of the General Engineering section in this time-consuming undertaking. The new handbook has received contributions from our colleagues around the world, including CSM.

The publisher of my book Principles of Applied Reservoir Simulation, Second Edition is interested in a third edition. If you have suggestions for improving the book, I would like to hear from you. It is easy to reach me at the email address below.

Last year I reported the introduction of a technical energy survey course at CSM. I have had a chance to refine course content and teach the course a second time. The text I wrote for



John R. Fanchi - Studying a waterfall formed by water from a melting glacier in the Swiss Alps near Saas Fee

the energy engineering course is entitled Energy: Technology and Directions for the Future and was published in January 2004 by Elsevier-Academic Press. We were able to use it in the Spring 2004 offering of the energy engineering course. The course is an elective that has attracted students from several departments. Guest speakers over the past two years have helped expose our students to energy issues that will affect their futures.

In support of continuing education, I have developed a non-technical industry short course entitled "Energy for Decision Makers" that is excerpted from the energy engineering course. The short course is a customizable short course that may be presented in one or two days, depending on the range and depth of topics covered. It presents an integrated overview of energy sources that will contribute to the energy mix of the 21st century. The course is designed for decision makers who must factor energy into their decisions. Participants in the course have an opportunity to develop a deeper understanding and appreciation of the role of competing energy components in the energy mix. Individuals who should benefit from the course include managers in the energy industry, strategic planners, and individuals who are interested in the energy industry, such as investors and environmentalists.

If you would like more information about any of these topics, visit my website at <http://www.mines.edu/~jfanchi/> or email me at jfanchi@mines.edu.



Denise Winn-Bower, Craig Van Kirk and Jackie Waitman

Ramona M. Graves

Once again it has been a marvelous year for me. As usual - too many opportunities and too little time! My most exciting news is that in May I was promoted to Full Professor. I owe a special thanks to all of my students over the last 23 years for



Ramona M. Graves

helping make me “look good”. It was really quite satisfying preparing the necessary documentation because it forced me to take the time to reflect on my career over the past quarter century. The transition from growing up in a Nebraska town of 350 people, where my biggest goal in high school was not getting caught tipping over outhouses or cows, to a Full Professor in the greatest Petroleum Engineering Department in the world has been an amazing journey! I look forward with anticipation to the next quarter century!

Some of you will remember my two dogs from field camp – the old dog, Sevarg and the hyper dog, Fred. When Sevarg was nine years old she was losing her zest for life so I bought her young Fred to rejuvenate her enthusiasm. It worked and she was like a young dog for the next ten years! I think Craig had the same plan for me when he hired Jennifer. Jennifer’s zest for teaching and research is contagious. This past year, as co-directors of the new multidisciplinary research center housed in our department, the Center for Earth Materials, Mechanics, and Characterization (EM2C), we were thrilled to pass the \$1.5MM mark in research. See our web page (em2c.mines.edu) for the varied topics that are being studied.

Additionally, she and I have been involved with two challenging international projects. In August, we completed developing the Junior and Senior level Petroleum Engineering courses for the Abu Dhabi Petroleum Institute. During June and July we were working with Myanmar Petroleum Resources Limited on reservoir management concepts. This included spending two weeks in Myanmar during the monsoon season. As it turned out, it only rained two days during our visit! Myanmar is a beautiful country, the people are so gracious, and the work was rewarding. We hope to return when we have more time to enjoy the culture.

On the laser/rock interaction front, the research is ongoing. Besides me, the research team includes Parker Geosciences, Argonne National Laboratory, Wavefront Research, and Native American Technologies. I plan on taking a sabbatical next year to raise funds to build a prototype laser-rock destruction apparatus, with the first oil field applications being perforating or shallow drilling. The discoveries we make on a regular basis

are so exciting it is easy for us to maintain our ultimate goal of seeing this new technology applied daily in the petroleum industry.

My kids are a joy. Jacob (23) just received a second associate degree specializing in diesel engines and thinks he might consider a job in the oil field. He is still in the Denver area and is a huge help to me. Lacey (22) is still going to school in the Bay Area. Her latest career objective is to be an archeologist! She is very proud of me even though she won’t tell any of her young California friends that her mother is the faculty sponsor for the CSM Young Republicans!!

I hope each of you has a joyful year and I look forward to seeing many of you at the CSM alumni reception at the SPE ATCE in Houston.

Hossein Kazemi

The academic year 2003-2004 was one of my most productive years at CSM. I became heavily involved in teaching, research, and technology transfer. I am very grateful for the support I received from my colleagues in the department, especially Dr. Erdal Ozkan who relentlessly supported my technical activities in the department and collaborated on several research projects with me. Dr. Ozkan’s most notable contribution was accepting to be the Co-Director of Marathon Center of Excellence for Reservoir Studies. The Center receives \$100,000 annually for a total of \$300,000 from Marathon Oil Company. We are in the second year for this grant. We also received a two-year \$360,000 contract from WestPort Resources (now, Kerr-McGee) to conduct geological



Hossein Kazemi

reservoir characterization and reservoir engineering evaluation of Wasatch and Mesaverde formations in southeastern Utah. The goal is to improve gas production from the area. In this project we are collaborating with Dr. Neil Hurley and Dr. Mike Gardner, both from the Geology Department. We also received additional financial support of more than \$200,000 from Repsol, Aramco and Ukos for specific projects.

We held the first annual meeting of Marathon Center of Excellence in late April, 2004. We had representations from several oil, service, and consulting companies. We believe the interest in research projects is high enough that will promote additional participation from a few other companies in the coming year.

The most exciting research area is new developments in reservoir modeling using very small grid dimensions. The



Field Session in California



Joe Nahama ('90) leads a discussion of producing California's heavy crudes



Khris Kircher ('01) of Pacific Operations leads a tour of platform Houchin offshore beautiful Santa Barbara.



Oxy's mobile drilling rig dwarfs students on the THUMS island.

Mike Clark ('91) and Dave Mayer ('80) lead a field trip to look at diatomite outcrops



Mike Clark describing the McKittrick oil seeps.

I also spent considerable time on professional services. As one of the Executive Editors of the SPEREE, I reviewed numerous papers submitted for journal publication. Because of the implementation of the new on-line review system of SPE, this year the review process required some extra time and attention. I have also completed two chapters for the new SPE Well Testing Monograph, which should be published soon, and another chapter for the new SPE Petroleum Engineering Handbook.

The SPE Annual Convention is one of the events I look forward to every year. In addition to listening to the presentations and visiting the exhibition, I also enjoy the opportunity to see a large group of our alumni during the alumni meeting. This fall, I will be looking forward to seeing you in Houston.

Turhan Yildiz

In the past 12 months, I taught graduate level courses on basic reservoir engineering and natural gas reservoir engineering. In these days, I am getting ready to co-teach the natural gas reservoir engineering class in Egypt this fall.

During the academic year of 2003/2004, I authored two journal articles and two papers in conference proceedings. Both of the articles are about horizontal well performance. The article titled "Productivity of Horizontal Wells Completed With Screens" will be published in SPE Reservoir Evaluation & Engineering. The second article, "Inflow Performance Relationship for Perforated Horizontal Wells", will appear in SPE Journal.

At the end of last year, I accepted the invitation to serve as Associate Editor for the Journal of Energy Resources Technology published by ASME. If you are interested in publishing, send your papers in.

I look forward to seeing you during the SPE Annual Meeting in Houston. I wish you all peace, happiness, and prosperity.



Turhan Yildiz

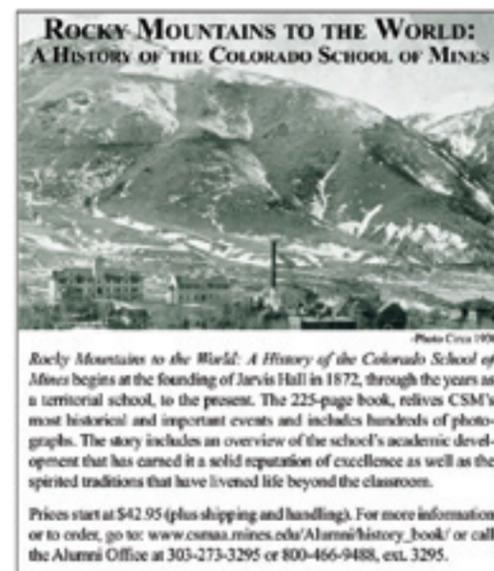
Al Sami

I would like to introduce you to our new lab tech, Al Sami. As the Petroleum Engineering Laboratory Coordinator and Safety Officer, it was my responsibility to hire a replacement for Randy Miner. I decided to go a slightly different direction from what the department has done in the past. I hired someone with not only "machine shop" skills, but also someone with a technical background to assist in the hands-on laboratory experience in the undergraduate laboratories. Al was just what we needed! He has a BS degree in Mechanical Engineering from the University of Alabama and he has spent much of his career in design, testing, and training. In addition to the fine job he did assisting me in the Rock Properties lab last semester, Al has proven to have great skills in designing experiments to assist the professors with their research projects. His industry experience in various aspects of manufacturing has been a real asset in reviewing and improving the department's environmental and safety practices.

Al has been taking some of our graduate classes and he loves them. The more he learns about Petroleum Engineering, the greater his contribution to the department will be. Welcome Al, we're glad to have you as part of our team.



Al Sami



new models will provide very high resolution for the effect of reservoir heterogeneities on fluid flow in the reservoir. Both streamline simulation and dual-mesh computing were used in these studies. We believe we are exploiting the hidden power of the dual-mesh computing to capture detailed reservoir physics.

Two other exciting areas that Dr. Ozkan and I are collaborating are: (1) Hybrid analytical-numerical modeling of transient flow in hydraulically fractured wells. This project will provide us with a great flexibility to evaluate the response of hydraulic vertical fractures emanating from a horizontal well. (2) Modeling multilevel fracture network in naturally fractured reservoirs. The latter will provide us with a better tool to model fractured reservoirs more realistically because fracture width, length, and spacing are highly variable and need to be accounted for.

In addition to teaching Reservoir Simulation I and II, I had the privilege to work extensively with fourteen to fifteen graduate students last year, two of whom completed their M.S. program and one his Ph.D. program.

I was asked by Dr. Van Kirk to participate as a speaker in a fractured karsted carbonate reservoir symposium in Beijing, China in early July. The symposium was a technical success for me and I learned a lot about another reservoir that I had not encountered before. I am grateful to Dr. Van Kirk for the opportunity to represent both our department and CSM at such an international event.

Finally, I continued to chair the SPE Committee on Primers. We hope to publish several short technical books (primers) on timely topics of interest to the SPE members in 2005. These books should promote collaborative effort among various disciplines in our business. I am also co-chairing SPE Forum on R&D - who pays who plays, to be held in late June 2005.

Mark G. Miller

Wow, ten years have quickly passed. The Petroleum Engineering Department started providing a general computing laboratory to its students in 1994. While the campus computing center had provided labs for several years, we were the first department to create a computer lab for its own students. The remodeling of Alderson Hall gave us the space, and donations and building funds provided the money



Mark G. Miller

to start the lab. Bill Eustes configured our sixteen machines to be the envy of the campus. We had some of the first Pentium machines, complete with floating point error. The machines ran Windows 3.1 on top of DOS 6.2. Life was good. Configuration, other than the 640K-memory problem, was easy. Well, mostly. There were some nasty virus problems and people always wanted to "temporarily borrow" the machines for their research work.

Thanks to donations and a student technology fee, we have been able to continuously upgrade the labs. Every year we get a few new machines. Our labs are never full of outdated technology. We try to get a few machines that are near the top of performance and hope they last. In fact, the machines that I am retiring from around the department this year are some of those that were originally purchased in 1994. With a few upgrades, they have had a long productive life. They are still pretty quick, but only if you use software from 1994. Install the latest virus protection, and you are in for some waiting. With our newest machines, the department has approximately 35 machines in its two labs and about 75 machines everywhere else. Machines are in every nook and cranny, but the labs are where the students are able to meet and do homework.

Our labs are successful because of several unique features. First, we have a healthy amount of industry-donated software available in our labs. Students get exposure to software that they use when they get out. From reservoir simulation to frac design, companies have been very generous. Second, the lab is available 24/7. If a student can get into the building, he can get into the lab. A barcode reader provides entry security, while a video camera surveys the lab. While other labs force students out at night, we allow them to stay. And stay they do, sometimes all night. Another feature unique to the department's labs is free printing. Year after year, surveys of our students indicate that one of their most favorite features is being able to print for free. Since the labs inception, the students have printed over a million pages. We are on the fifth and sixth printers. I think Denise and Jackie will quickly figure out where all the paper goes.

It remains to be seen whether the machines purchased this year will still be working in 2014. They are 3.2 GHz Pentiums with 1.0 GB RAM. They seem more than adequate right now, but software bloat will someday cause them to be "so slow, we just have to get new ones." However, it is a race. Plant facilities is bent on killing them first with a little heat here, a little heat there.

I thank you for your support. It has really helped enable us to create labs that the students depend on. Stop by sometime and we will be glad to give you a tour of our facilities.

Jennifer L. Miskimins

Greetings from Golden! I hope this newsletter finds you healthy in mind, body, and spirit! As I am writing this article, the school year is just on the horizon. From what I understand, the freshman class will be one of the largest ever—to match the large groups from the past two years. It will be interesting to see how the school and the departments adjust to these additional forces. From my perspective, I will again be mentoring a group of around 12 PE freshmen this fall to help them adjust to life at Mines. Always a trial!

Once again it has been a busy year for me and everyone else in the department. The biggest announcement I have for you is the formation of a new research consortium—the Fracturing, Acidizing, Stimulation Technology (FAST) Consortium. FAST is a joint industry/university research consortium that is performing research in all areas of stimulation of oil and gas wells with the member companies voting on which projects should be undertaken. FAST was created on January 1, 2004, and currently has seventeen member companies. The initial projects being investigated include hydraulic fracture height containment, slickwater fracturing techniques, non-Darcy flow effects, and coal bed methane stimulation. This fall, I will have three graduate students working fulltime on FAST along with several part-timers. The cost to join FAST is \$15,000 per year and we are still taking in members. If you are curious about the specifics of the consortium or wonder if your company is a member, please visit the website at www.mines.edu/fast/. Please don't hesitate to call or email if you have any further questions about this undertaking!



In addition to establishing FAST, this has been a year of traveling for me. During the last seven months, I have been to Scotland, England, Croatia, Italy, and Myanmar (mainly for working purposes, but some for play). I have found that the one thing which is consistent between these countries is the camaraderie I find between CSM alumni and the kindness with which they treat me. Thank you to all who have helped make these visits so enjoyable!

Jennifer L. Miskimins

In closing, I'd like to say one more "thank you" to Chris and Dee and congratulate them again on their retirements. We miss you! Also, ABET accreditation is just on the horizon in 2006. Please help us out by responding to the enclosed survey which aids in assessment for ABET requirements. As always, feel free to contact me anytime at (303) 384-2419 or jmiskimi@mines.edu or visit my web site at www.mines.edu/~jmiskimi/. I hope to see you at SPE in Houston!!

Will Fleckenstein

This is the first newsletter I'm writing and I'm really excited about the coming year. I've taught courses since 1997 and have been an Adjunct Professor in the Department since completing my doctorate in 2000. Being an adjunct means I have a varied academic work schedule, depending on the needs of the department, and consulting projects I have off campus. As a non-tenure track faculty member, I have much more flexibility in my schedule to be involved in well operations; experiences that I hope enrich the educational experience for the students.

A great example occurred several years ago during a graduate class I teach on Workover Operations. I gave an in depth assignment on squeeze cementing, and when the class handed their solutions in the next week, we had a great discussion since I had performed the exact squeeze detailed on the homework assignment two days previously. We had a plethora of well site data including pressure charts and displacement volumes, allowing the class to follow squeeze from the injection rates and pressure through the attempt at a running squeeze, to the hesitation cycles and final squeeze, a two-hour process. This allowed the class to compare their expectations for the squeeze behavior to the field reality, hopefully somewhat of an improvement over a numerical answer key. Many thanks to Steve Coombs of Pacific Operators Offshore, Inc. for allowing me to intertwine the class with a multi-well workover project, offshore of Santa Barbara, California.



Will Fleckenstein

This spring I'm taking the place of Dr. Eustes during his sabbatical and will try to fill his shoes by teaching the Graduate Core Drilling Class and the undergraduate Completions Class. I have taught some form of both of those classes before, and hope the students will not notice too large of a drop off. Dr. Eustes and I have been involved in a variety of projects together and have co-authored a series of SPE papers investigating the cemented wellbore, the latest with Andreas Berger examining the effects of non-uniform loading on casing collapse, using finite element modeling. Good cement jobs are worth their weight in gold and the alternatives can truly be frightening.

I have been running PERFORM, a research center which was originally set up by Dr. Mark Pearson to study methods of enhancing the productivity of oil and gas wells. Unfortunately, the shoestring finally broke, and the funds are depleted, but not before some interesting work was done. The good news

is that I'm in the process of commercializing a very novel stimulation process I call FASTER, hopefully coming soon to a well site near you. George King with BP liked FASTER, but cautioned I would need a great deal of patience bringing it to the field. It is exciting conceptualizing an idea and watching it move to fruition. Any alumni with words of wisdom on intellectual property issues should feel free to share them with me at wflecken@mines.edu, along with any spare shoestrings they have laying around to resuscitate PERFORM, which is really not dead, just out of money.

Erdal Ozkan

Greetings. I hope everybody has had an enjoyable twelve months since our last newsletter. I had another busy year but I am happy with the outcome. I spent most of my time teaching and working with students. I had my usual teaching load: PEGN 601 (Applied Mathematics for Fluid Flow in Porous Media), PEGN 505 (Horizontal Wells), PEGN 605 (Well Testing and Evaluation), and PEGN 414 (Well Testing). Effective fall 2004 semester, we switched the semesters PEGN 414 (Well Testing) and PEGN 426 (Stimulation) are offered. This semester, I am teaching PEGN 414 again.



Erdal Ozkan

I also organized the PEGN 315 Summer Field Session and led a group of 36 students, 3 TAs, and 3 Faculty members to Southern California. With the help and support of Dr. Larry Chorn and Dr. Mark Miller, we had a very good field session. I must also acknowledge the great help of our TAs: Kristina Loop, Sara Teel, and Christian Aguilar. They did an excellent job in keeping the Field Session in order while also serving as driver, chaperon, mentor, and friend for the students.

We spent about a week in the Bakersfield area and visited Vaquero Energy, Schlumberger, Aera Energy, Caza Drilling, ChevronTexaco, Halliburton, and Occidental. We also had an excellent geology field trip that gave the students an early introduction to structural and petroleum geology. The students, TAs, and the faculty greatly enjoyed the opportunity to meet with the CSM alumni in the Bakersfield area during the Alumni Picnic. After Bakersfield, we spent the last four days in the Ventura, Santa Barbara, and Long Beach area visiting the offshore platforms and the gas plant of Pacific Operators and the islands of THUMS. We returned home exhausted but everybody in the group felt that the Field Session had accomplished its objectives.

Throughout the field session, we enjoyed the help and hospitality of our alumni, which have always been the key to the success of our field sessions. I will not give a list of the people who helped us during the field session because the list is long and I would be afraid to omit some names unintentionally. All of you please accept our sincere appreciation for the help and support you provided for the 2004 PEGN 315 Field Session to Southern California.

In the last year's newsletter, Dr. Kazemi and I told you about the Center of Excellence for Reservoir Studies we had just started. We made great progress since last year. The funding we have received from the industry for different projects has reached \$700,000. We are currently working on projects for Repsol YPF, Argentina, Saudi Aramco, and Westport Resources (now Kerr McGee).

As the Graduate Program Coordinator for the PE Department, I also spent considerable time communicating with the potential students, reviewing applications, and advising new students. I am happy that it paid back and we had 22 new graduate students last spring semester and we will have about the same number of new graduate students this fall semester. Altogether, we have 67 graduate students in our program, which makes us one of the largest graduate programs in Petroleum Engineering in the US.

(continue on pg 10)



From left to right: Bill Eustes, Larry Chorn, Mark Miller, Thurhan Yildiz, Richard Christiansen, Ramona Graves, Jennifer Miskimins, Will Fleckenstein, Erdal Ozkan, John Fanchi, Craig Van Kirk, and Hossein Kazemi.