



Newsletter

Petroleum Engineering

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Colorado School of Mines

Greetings from Craig Van Kirk

This Newsletter was prepared and completed prior to Tuesday, September 11, and the abominable acts of terrorism on America this Tuesday morning are just a few hours old as we take this Newsletter to press for mailing. When you receive this in late September, I hope the World is safe and at peace. God help us all.

It is my honor to provide this introduction for our annual Newsletter and to report to you on the status of the Petroleum Engineering Department here at the Colorado School of Mines.

The worst thing that happened during the past twelve months since the last Newsletter is that our dear Professor Robert Thompson died this summer unexpectedly on June 8. Robert and his wife Geri were hiking in western Colorado, and Robert continued "on up the hill, just a little farther", looking for rocks to add to his collection. It appears that heat exhaustion overcame Robert before he could make his way back. It is with great personal sadness that I must report this tragedy to you. The next section in this Newsletter is dedicated to Robert's memory.

The best thing that happened during the past twelve months is that my family remained healthy and happy. We have been very fortunate, and very grateful. Happy? Very much so, except for the passing of Robert.

My wife Denice is nearly finished with her breast cancer treatment. In fact, her year-long treatments as part of a national experiment will be completed in late September. Yes, as I predicted last year, her hair has grown back, more beautiful than ever.

Our family continues to grow very nicely. Our daughter-in-law Amy and son Sam introduced their third child, Ellie May, on November 15, 2000. Five-year old Gus and three-year old Grace continue to amaze and entertain us with their discoveries and interpretations of life. In July Sam completed his four-year residency and started private medical practice in Portland, Oregon and Amy has been especially busy making a home out of their new house, not to mention riding herd over the three kids.

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Craig Van Kirk

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

Also, our son-in-law Tom and our daughter Connie had their first baby, Brendan Thomas, on December 5, 2000. Tom thoroughly enjoys the thrills of flying helicopters for the U.S. Marine Corps both domestically and throughout the Mediterranean region. Connie loves being a new Mom and homemaker in their "base house" in Jacksonville, North Carolina.

Our four kids and four grandchildren fill our lives with love and happiness. Our friends and relatives do so, too. Our cups do runeth over. Denice and I have been lucky, and we appreciate it fully. Thank you for your closeness, support, cards, and letters.

This past summer CSM's Board of Trustees selected John Trefny as our 15th President, after John had served in that capacity on an interim basis for one year. I had the pleasure of serving on CSM's Presidential Search Committee during most of this past academic year, and we considered many outstanding applicants who wanted to be CSM's President. The Board's selection of President John Trefny puts CSM in a strong position for a great future. Throughout the 23 years I've known and worked with John here at CSM he has always impressed me with his sincere dedication to CSM, our students, and our alumni. If you haven't yet had the pleasure of meeting John and his wife Sharon, who is also a staunch supporter of CSM and the President's office, let me tell you this: "to know them is

to like them."

Last September in our Newsletter I told you about our preparation for our accreditation visit and review by ABET, the Accreditation Board for Engineering and Technology. It went great. We passed. The ABET team visited CSM on October 15-17 last Fall, gave us a favorable preliminary report, and on August 16, 2001 submitted their final and official report stating that we have been fully accredited for another six years (as always). You can be proud of our PE Department's long string of successful ABET reviews for full accreditation. The ABET visiting team was particularly impressed with our assessment practice and with our undergraduate laboratories (our thoroughness, careful planning, and safety record).

Our entire staff worked extremely hard, as usual, in preparation of our ABET report and for the visit to campus. Keep in mind that these successful efforts are not simply the results of very hard work over a short 1-year period of time. In fact, it truly is a continuous concerted effort, year after year, to ensure that our program satisfies not only ABET, but also, naturally, satisfies our industrial partners, alumni, and students. It appears we continue to satisfy our clients on all fronts; we do have a lot of satisfied and continuing customers.

Many of you provide us with useful input regarding our program, and this is truly necessary and very much appreciated. This ongoing practice of open communication with alumni and other industry friends and associates keeps us informed and up to date. It is easy to incorporate good advice into our ever-evolving curriculum, research, areas of focus, and practices.

Last Fall on September 21 and 22 we hosted our PE Department's Visiting Committee, composed of alumni and other practicing professionals from a wide spectrum of the petroleum industry. The Committee met with our faculty, staff, students, President John Trefny, and other CSM faculty and administrators during the 2-day meeting. As always, the Committee provided us with very useful advice and forecasts. The next meeting will be scheduled sometime during the Spring. Please feel free to offer us your advice regarding the program, or if you want to volunteer



Craig Van Kirk and Robert Thompson

or nominate someone else to serve on the Committee.

In April 1999 I was in Abu Dhabi for opening discussions on the possibility of CSM assisting them in setting up a new university to focus on petroleum. After two years of continuous effort, CSM and Abu Dhabi have consummated an agreement to establish a new Petroleum Institute in Abu Dhabi. The following few paragraphs are excerpts from Mines Magazine.

Colorado School of Mines and the Abu Dhabi National Oil Company (ADNOC) have signed a 10-year agreement for the development of the Petroleum Institute in Abu Dhabi, United Arab Emirates. A physical plant with a value in excess of \$100 million is planned for the Petroleum Institute campus. The institute was established by Abu Dhabi government decree as a separate legal entity, and it is funded by ADNOC and its industrial partners.

Recognizing the potential for advancement and innovation in the oil and gas industry – through degree programs, research opportunities, and continuing education for practicing professionals – ADNOC took the initiative in developing the institute.

Following a world-wide search, ADNOC chose CSM as its academic partner because of the School's longstanding reputation for excellence in engineering education and applied sciences, as well as its focus on energy and natural resource technologies. CSM will provide leadership in program and curriculum design, and in mechanisms for achieving international accreditation.

The Petroleum Institute will offer five degree programs: petroleum engineering, petroleum geosciences engineering, chemical engineering, mechanical engineering, and electrical engineering.

Also, the State of Colorado has recently designated CSM as an "Exemplary Institution", the first and only such special status in Colorado. The state bill recognizes CSM as having "demonstrated a high degree of responsibility and capability with regard to its academic and administrative functions." It allows CSM to: *Work with the Colorado Commission on Higher Education to develop performance goals and accountability measures that are suitable to CSM's unique mission. Create, modify (or eliminate) academic programs and directions, within the School's role and mission, to serve the needs of industry and society.*

According to President John Trefny, "We are pioneering this concept in Colorado and are serving as a model for other institutions in the

country. This new relationship with the state will allow CSM to realize its full potential as an institution of higher education.

Our PE students continue to do very well. During graduations in December 2000 and May 2001 we awarded 43 BS degrees, 15 Masters, and 5 PhD's. These numbers were among the largest in the USA, as usual, and the students enjoy very high salaries and practically 100 percent job placement prior to graduation. The few students without jobs at graduation time had simply declined earlier job offers and were planning to pursue other opportunities after graduation. The quality, work ethic, and spirit of our students continue to maintain our proud tradition and expectations. Our senior class size this year is approximately 35, with forecasts of increasing enrollments. Our graduate program continues to be among the largest and fastest growing on campus, with a total of approximately 50 Masters and PhD candidates.

The PE Department staff remains strong and thoroughly involved in teaching, research, and service to CSM, professional societies, society in general, and private industry. All professors teach at both the undergraduate and graduate levels, and their areas of research are truly amazing (as you'll read about in following sections). We recently requested approval from the Administration to add two additional faculty members, and we received the go ahead to start advertising for one new professor.

After a thorough worldwide search during this past academic year, we were fortunate to find and hire a new professor, Dr. Turhan Yildiz. Turhan joined us at the start of this semester and brings with him a strong teaching and research background from The University of Tulsa. You'll enjoy reading more about Turhan later in this Newsletter.

Our classified staff continues to support the faculty, students, and many other customers with vigor. Bill Robbins, our lab coordinator, retired in May after 21 years with us as an Instrument Maker/Fabricator. His replacement is Randy Miner, who joined us in May. Randy has over 6 prior years of experience at CSM in the Chemical Engineering Department's labs.

Secretaries Dee Brown and Chris Cardwell continue to coordinate many of our activities, and they provide essential support in so many ways, too many to mention. Dee has been with us for 18 years, and her title is Program Assistant I. Chris, our Administrative Assistant III, has been with us 8 years.

CSM's PE program is one of the largest and oldest in the world. We attract students, sponsors,

and partners from all over the world; creating a great diversity of people, cultures, perspectives, and activities. We continue to expect a high level of performance from our students, with 145.5 credit hours required for the BS degree.

As for myself, I continue to enjoy teaching Reservoir Engineering and the Introductions to Petroleum Engineering course for the freshpeople. My areas of research interest are reservoir management, simulation of geologic features, coal-bed methane, economic evaluation techniques, and risk and decision analysis.

In early June I participated in a 2-day meeting in Houston along with other representatives of top PE programs from around the world, private industry, and the DOE. The purpose of the meeting was to address future research and development needs and plans; very exciting.

Also, I was in Washington DC on June 12 in response to an invitation to provide testimony before Congress on President Bush's proposed National Energy Policy. The hearing was called by the Energy Subcommittee of the House Committee on Science. I provided a 12-page document, made a 5-minute summary statement, and answered questions during the 1-hour open discussion period. Let's hope my input was useful for the government leaders.

Please try to make it to the annual SPE Conference in early October. This year the conference is in New Orleans, and Tuesday evening

we will host the annual CSM alumni reception. It would be great to see you there. As usual, we'll cancel all of our classes on Monday through Wednesday and all of the PE professors will be there. Also, we will sponsor any students who want to attend, and we pay for at least 50 percent of their costs. Usually we have approximately 50 students in attendance, among the largest of any university student group. Our sponsorship of the students is one of the many ways we invest funds which we receive as donations from alumni and industrial partners.

In closing I want to thank so many of you for supporting CSM's PE Department in so many ways. Your letters and cards are appreciated, whether they are short and sweet or otherwise.

Other support in the form of guest speakers, or hosting our students and faculty, or cash donations are essential to our continuing health. Typically, annually we receive several hundred thousand dollars in donations, grants, and gifts which we invest with the goal of the best quality program possible. Thank you for your interest and investments in CSM's PE program.

Please keep in touch and come and visit whenever you can.

Keep Robert Thompson and his family in your thoughts.

My Very Best Regards to You, Craig

Robert S. Thompson Memorial Scholarship

The Robert S. Thompson Memorial Scholarship Fund has been established at the Colorado School of Mines. This fund will be used to support undergraduate education in Petroleum Engineering at the Colorado School of Mines, a cause Robert was passionate about. The goal is to make this a perpetual fund in Robert's honor which requires a minimum of \$25,000. Donations should be sent to:

Attention: Ms. Maureen Silva
Office of Institutional Advancement
Colorado School of Mines
Golden, CO 80401

Please make checks payable to "The Colorado School of Mines Foundation," and CLEARLY LABEL them "Robert S. Thompson Memorial Fund." Donations for the Scholarship Fund can be made through the website: <https://www.oia.mines.edu/forms/pledge/pledge.htm>.

If you use the website be sure to fill out the part of the form labeled "Designate your gift" with Robert Thompson Memorial Fund so the funds get to the correct account.



Here are a few photos of Robert Thompson in his various responsibilities with our faculty, alumni, students and with his wife.



IN MEMORY OF ROBERT THOMPSON

Opening remarks by Professor Craig Van Kirk:

This section of our Newsletter is dedicated to the memory of Professor Robert Thompson. The two documents reproduced below convey some of Robert's history and accomplishments, and some of my personal feelings about Robert.

This first document is a reproduction of the Memorial Statement which I prepared and read aloud at CSM's annual faculty conference on the first day of the new semester, Monday August 20, 2001.

MEMORIAL STATEMENT FOR ROBERT S. THOMPSON COLORADO SCHOOL OF MINES Monday, August 20, 2001

Today, on this Monday August 20, 2001, the first day of the Fall semester, be it resolved that the Faculty of the Colorado School of Mines expresses its sympathy to the family of Professor Robert S. Thompson. To Robert's wife of 32 years, Geri, and their daughter, Kati, a senior at the University of Colorado in Boulder, we do hereby offer our condolences and note the following:



Robert Thompson was born on October 20, 1946 and died on June 8, 2001 at the age of 54. Robert came to the Colorado School of Mines in 1965 and earned the Professional Degree in Petroleum Engineering in 1969. After graduation Robert spent two years in the United States Army, serving in the 82nd Airborne Division and earning the Army Commendation Medal.

From 1971 to 1981 Robert worked in the petroleum industry at several locations within the U.S., and while in Houston, Texas he earned an MBA degree at the University of Houston in 1977.

Robert joined the faculty here at Mines in 1981 in the Petroleum Engineering Department and served with uncommon distinction during the past 20 years. Robert's dedication to education was demonstrated in part by his completion of a Ph.D. in Education Leadership at the University of Colorado at Denver in December 2000. Robert was always learning and always teaching, both through planned instruction and by the example he set through his actions.

As a member of the Mines faculty during these 20 years Robert focused his efforts on the well-being of the students. He taught a wide variety of classes, from freshman CSM101 through all levels of the undergraduate program, including several very popular graduate courses. Although Robert did not seek recognition for himself, he was a favorite teacher and was frequently honored by the senior class as the Outstanding Faculty Member in Petroleum Engineering. In 1994 Robert's teaching excellence was recognized with the Amoco Foundation Outstanding Teaching Award for teaching at the undergraduate level at the Colorado School of Mines.

Not only did Robert excel as a teacher, he was also thoroughly involved in research. He was a popular choice among graduate students as their research advisor and was asked to serve on many committees. Robert was a recognized expert and pioneer in several areas of research during his Mines tenure. He truly invented, developed, and mastered the area of Integrated Multidisciplinary Team research and education. His pioneering

success has been recognized by many peer universities in Petroleum Engineering and other closely related geo-science and geo-engineering programs.

In the arena of Petroleum Economic Evaluations Robert researched and developed new techniques and procedures which earned him multiple awards from the international community. In 1994 Robert was chosen to be the first recipient of the newly established International Society of Petroleum Engineers Award for Economics and Evaluation, and in 1999 the AIME honored Robert with their Mineral Economics Award.

Robert's steadfast service to CSM and to the professional community brought tremendous satisfaction to himself and worldwide recognition to CSM. He helped build CSM's Petroleum Engineering Department to a level of recognition as one of the top programs in the world.

Robert was respected, liked, and admired by the Mines Community. He was a true gentleman and a scholar, and was always friendly and helpful.

It is with deep sadness and grief that we acknowledge the passing of Robert Thompson, an educator and a friend.

This second document is a reproduction of the eulogy which was read at Robert's funeral services on June 18, 2001, containing my own personal lamentations.

To: The Family and Friends of Robert Thompson
From: Craig Van Kirk, Monday June 18, 2001

Robert has been an essential part of most of my adult life, and he always will be. During our joint efforts to accomplish our goals for our students and our comrades at the Colorado School of Mines, some times were difficult. Sometimes the dust and the smoke were so thick that I could not see clearly, and the noise and the chaos could be overwhelming so that I could not think clearly, and in the confusion on the battlefield I would stray off the course to our goal.

During these difficult times I tried to stay near to Robert, and whenever I found that I could not see him, I would look to see where he was, because I knew he was always on the right course heading in the right direction, the most perfect path to be followed.

During these difficult times I would always seek out Robert, because in his presence I always felt safe, and good, and confident of victory. In his absence, I am not so sure what to do.

In his honor we should all continue toward Robert's goals; to keep the faith, to fight the good fight, and to live the good life.

In Robert's memory, I will strive to carry on without him nearby, but always in my thoughts and prayers. But the rest of my journey will not be as good without my dear friend Robert Thompson.



Letters from Our Faculty

Richard L. Christiansen

In two previous newsletters, I described my writing project on multi-phase flow for reservoir engineering. I began selling the book in a spiral-bound format late in the Fall 2000 semester. So far, about 150 copies have been distributed; not a best seller, but I am very pleased. And, revising is a never-ending task. I spent most of this past summer on the project. I expect to print a more formal version of the book next year. I will sell that version at cost to owners of the 2001 version. The book can be purchased through the CSM bookstore and you can find it on their website. The book has seeded some consulting calls. Just the other day, I helped a Denver-area business with some relative permeability problems. If you need help with interpretation of capillary pressure or relative permeability data, please give a call.

After many attempts, I succeeded this last Spring in obtaining funding for research on lifting liquids from gas wells. In fact, both Dr. Ozkan and I received funding from the DOE through the Stripper Well Consortium operated at Penn State. With the funding, I will pursue technology for breaking liquids into small droplets that can be lifted by the flowing gas stream. I anticipate success in the research, but experience teaches that most successes are small steps. The research also includes simulation of the reservoir and well-bore system. That portion of the work will nicely complement my studies of multi-phase flow in rock. I am certainly interested in more partners in this work.

Someone might notice if I don't mention teaching. Teaching duties just won't go away! This last Spring, I taught PE 308 (a sophomore class on Rock Properties). When I started at Mines in 1990, Rock Properties and Fluid Properties were separate courses: PE 308 and PE 310. Then, five or six years ago, we combined the two into one class that we creatively titled Rock and Fluid



Richard Christiansen

Properties (PE 309). Well, to prove that we don't know what we are doing, we split 309 back into two courses (308 and 310) last year. (If you follow trends in the oil industry, this short case study will sound familiar.) As with all my teaching, PE 308 stimulated a lot of good ideas and changes in my book.

Of all that I have done in the last year, I have to say that my writing project has been the most satisfying. Evaluating and organizing the literature that we have all generated for the last 50-plus years is very rewarding and instructive. That leads to one of my pet peeves: our literature needs more QA and QC! Several times, I have proposed creating an electronic database of up-to-date reviews of all papers in our industry. So, for example, if you search through the SPE library and find a paper on a topic that is important to you, you should wonder if the paper is a "good" paper or not. Is it worth your reading effort? If the paper was not reviewed and published by the SPE, you may have no way of knowing its value. But, with my proposed database, you could quickly find recent reviews of that paper. If such a database sounds useful or truly dumb, please let me know.

Finally, the sudden passing of Robert Thompson was a shock for all of us. He was a treasured colleague and valued role model. His attitude is a source of continuing inspiration to me.

You can call me at (303) 273-3965 or e-mail me at rchristi@mines.edu.

Alfred W. (Bill) Eustes

Good heavens, has it been a year already? It is time for another news-letter.

As a professor, I like to practice what I preach. Last year, it was work in Louisiana with Sklar Exploration. This year it was a change in climates, as British Petroleum Exploration Alaska in Anchorage



Bill Eustes

engaged me to review many of their casing designs for the North Slope in a process called a Basis of Design. Thank you BP!

My wife, daughter, son, 80-pound Golden Retriever puppy, parents and I drove to Alaska via the Alaska Highway. It was a long drive, but one very well worth the effort.

Alfred Tischler of Aera Energy demonstrates a seriously cross-linked frac fluid to the students participating in the 2001 Field Session.



We eventually made it to Anchorage, where we spent the next five weeks. On the way back home, we drove through Fairbanks where we visited with the Binkleys (parents of three CSM students) and enjoyed their riverboat and gold mine tours. Then we drove on to Haines and the Alaska Marine Highway System. Interestingly enough, the Captain and I had a unique connection. We were both at the Alaska State Championship Basketball game in 1974 where Ketchikan, his high school, and Eielson, my high school, fought it out for the Championship. We lost by a lousy four points as the Captain reminded me.

Alaska is a wonderful place. We enjoyed the hospitality of the area. I even got to put some time on a seaplane as pilot-in-command.

Drilling Research Activities

My ice work is going strong. Will Fleckenstein and I authored a research report on the state-of-the-art in the US deep ice-coring program. Deep ice cores in the Antarctic and in Greenland tell the tale of climates in the past. With global climate change a major concern for the world, information from these cores is one method of predicting what the future may bring.

The Martian drilling research program at CSM is still in progress. Drs. Ning Lu and Bill Likos of CSM and Dr. Leslie Gertsch of Michigan Tech are my co-PIs. We are testing the drilling of various rocks with a proposed drill bit. So far, we have tested the bit in limestone, sandstone, and granite. We don't have any results that we can discuss at this time; however, it is a unique bit that is only 1-cm in diameter.

Field Session

It seems that many of our alum like to hear about our Field Session that we have every May. It brings back memories of times past.

Well, here it is again.

This year, we went to the far west to sunny California. My shotgun on this trip was none other than Mark Miller as usual. John Brinks, a graduate student, was the teaching assistant. There were a total of 20 students.

We flew to Los Angeles. However, for the first time since Mark and I have been running these field sessions, one of our students didn't catch the flight. As it would happen, some luggage was lost. After getting our vans, we drove back LAX. Lo and behold, when we retrieved the luggage, there was our missing student! He is the luckiest student in the world!

We drove on to visit Venoco's lease in Beverly Hills where Bill Giardino showed us their operations. They have a rig covered with a cool looking design called the Project 9865. Go see it the next time you are in Beverly Hills. Then we drove through Beverly Hills—where every car costs more than \$50,000 and every driver has a cell phone—to La Brea Tar Pits.

We spent Tuesday morning at Oxy's Elk Hills operation. There, Curt Golike, Felix Vasquez, Jeff Quintana, Jesse Pino, John Allen, Mike Moshler, Steve Hardaway, and Steve Smart showed us around the Elk Hills field, including the gas plant, and their office operations where among other tours, we saw a 3-D demonstration of geology. The afternoon was spent at Production Services in Taft with Bob Doering and Tom Demos going over downhole rod pumps and then on to Bakersfield to KBA Engineering with Rick Jones where they rehabilitate pumping units.

Aera Energy hosted the next two days. Alfred Tischler and Ryan Nelson put together quite a show for us. It started at 5:45 AM on both days. We spent all day Wednesday and Thursday morning out in the Belridge field and extensively toured the production facilities, water injection facility, co-generation plant, workover units, and a drilling rig. We even spent time at



Twenty students participated in the 2001 Field Session and toured petroleum facilities in southern California. They are shown here on the Hogan Platform in the Santa Barbara Channel.

an on-going frac job. Our appreciation goes out to the following people: Eric Paulson, John James, Lisa Denke, Mike Turner, Robert Dye, Dave Wahl, Dennis Ash, Kort Pereira, Ted Meraz, Aaron Speirs, Bob Quinn, Bryan Jolley, David Mayer, Ed Veath, John Stevens, Randy Meyer, and Sherry Riddle, all of Aera. Also, Gary Morris of Pengo and Jose Luna of Halliburton get our thanks, too. My only complaint is that I wish they could do something about that 102°F temperature. It was mid-May for goodness sake.

Friday, it was Texaco's turn to host us at the Kern River field. The Kern River field is one of the big oilfield history makers. We had Roxanne Durako, Erin Elkin, Michelle Ashton, and Mike Richey show us the various production facilities, batteries, and manifold systems and also their 3-D workroom, where we were treated to a geology show. That afternoon it was off to Halliburton's field camp where we toured the yard and then we went to the lab for some neat demonstrations of cement squeeze materials. While we were there, Roger Graham of Baroid arranged a quick visit to one of the deeper rig operations in the San Joaquin valley, Kenai Rig #44. Although it was a spur of the moment type of tour, it exceeded all of my expectations! I really appreciated the efforts of Roger, Steve Cody, Scott Harvey, Ted Meraz, Bob Martin, Dan Bour, and Matt Kohr for putting together a great visit on such short notice.

Saturday saw us at Hughes Christensen with Jim Wuertz and John Goforth looking at various bits and then on to Core Laboratory with Linda Specht and Rossini Silveira reviewing cores and core analysis. We appreciate these people giving up their Saturday mornings for us. After an afternoon of leisure, we all went to the

Alumni picnic sponsored by the Bakersfield CSM Alumni Chapter arranged by Joe Nahama. We had a great time with plenty of food and Lonnie Kerley as the Head Flipper (He has a job with McDonald's if the oil industry runs into seriously hard times) and lots of alumni/student interaction. This included a game of Frisbee football that Joe and I played against students half our age. It is a wonder that I survived.

Sunday we headed down to Santa Barbara and the cool weather. In fact, it was too cool. A day at the beach didn't pan out as it was too cold. Monday morning we visited Pacific Operators Offshore and the Hogan platform in the Santa Barbara Channel. John Kramer and Will Fleckenstein were our hosts for this visit. After we returned to shore, we went through the onshore production facilities and to their office in Santa Barbara. There, we had some good discussions on the various aspects of their operations by Will, Edwin Edwards, Bruce Johnston, and Steve Coombs.

Tuesday we were in Ventura at Schlumberger's camp. There we saw perforating guns, offshore wireline units, and a coiled tubing unit. Steve Grayson and Kenneth Gade were our hosts. After an interesting drive to get to Pasadena and holy heck trying to find a place to park, we had a tour of the Jet Propulsion Laboratory hosted by Brian Wilcox. We toured their museum and walked through the robotics laboratory. This included a look at the latest rover for Mars, FIDO, and a demonstration of a nano-rover for asteroid exploration.

On Wednesday and Thursday, we were scheduled to visit some geothermal wells but that was canceled two weeks before the trip. So, Mark, John, and I literally rewrote the field session

on the fly. I appreciate the help from Dave and Ed Mayer and Richard Christensen. The Department of Conservation of the State of California led us in a great discussion of government's role in oil and gas operations. Our thanks go to Randall Adams, Dave Clark, Bert Ellison, Dave Tuttle, and Mike Woods.

Thursday, Mike Clark of Chevron took us to the western San Joaquin Valley for a study of outcrops of turbidites and diatomite as well as a few oilfield history lessons. We saw some real history west of McKittrick at some oil seeps, including one seep that you could ignite into a ball of fire (a small one that is). That afternoon, the curator and her staff at the Western Kern Oilfield Museum gave us a tour of the museum. That is a very nice place to visit and I can recommend it. Then came the worst part of the trip: driving through LA traffic at rush hour to get to Long Beach. We survived it; just don't get in a hurry.

The last day of the field trip was spent at Oxy's Long Beach THUMS unit. Tom Turner and Pat Mays took us to a rig at Pier J and on to Island Chaffee. There, and back at their Long Beach office and at the Broadway Street Production facility, they and Gerial Holman, Kevin Olsen, Sonya Chavez, and Ted Walker showed us their operations from spud to sales.

We left California later that day. I am pleased to say we didn't lose any students, at least until we got to LAX. They all showed up in PEGN 311 this semester, so they all made it back.

Elsewhere in this newsletter, much has been written about the loss of a dear colleague. I want to add my condolences to Robert's family, too. As I have told some of you, the department, the school, and the industry has lost a great teacher and leader. We may find someone to teach economics, but we will never find anyone to replace Robert Thompson.

John R. Fanchi

Teaching. Research. Service. These three tasks are the balls that have to be juggled by a member of the faculty. Let me begin with teaching.

One of my ongoing tasks is to keep teaching materials current in an industry that is rapidly changing. We are continuing to refine the content of classes that are jointly taught by PE, Geology, and Geophysics faculty. The courses are focusing on topics that are important to industry and to society. The topics last year

included reservoir heterogeneity and coalbed methane production. I have prepared a book-length manuscript called **Shared Earth Modeling** that presents a succinct introduction to background material in the geosciences and engineering. The manuscript is used to supplement lectures in multidisciplinary courses and served as the primary text in an online integrated reservoir characterization course.

The next edition of the book I use in my senior reservoir engineering class, **Principles of Applied Reservoir Simulation, 2nd Edition**, is now in print. Its final release was delayed by an acquisition in the publishing industry. Sometimes it's nice to see that our industry is not the only industry that is changing. The new edition has been designed to make a smoother transition with the first semester course in reservoir engineering, and includes a Windows-based flow simulator. The flow simulator and an accompanying 3-D visualization program help students learn more about modern reservoir engineering by giving them hands-on experience with software they can take with them when the course is over.



John Fanchi

The senior seminar in PE has evolved from primarily oral communication to oral and written communication on topics of importance to the PE profession, including biographies of energy professionals, the future of energy, ethics, and lifelong learning. To add some spice to the course, I worked with Michael Goedecke, a writer in California, to write **Flashpoint: Sakhalin**. The book dramatizes ethical issues in the global energy industry. It should make classroom discussions of moral dilemmas quite interesting as students analyze the ethical behavior of a cast of characters.

On the research side, we are well into the first year of the Consortium for Integrated Flow Modeling, or CIFM for short. CIFM has been established to develop an understanding of the processes and interactions that are needed in a model-centric system. Integrated flow modeling, which is the combination of a petrophysical model and a traditional flow simulator, was originally devised to assist in the design and analysis of timelapse seismology. I published many of the background ideas in the 2000 book **Integrated Flow Modeling**. We are learning that integrated

flow models have other important uses.

Our research is generating new insight into how to calculate important geomechanical parameters at a fraction of the cost of more complicated systems. We are now able to easily calculate such properties as Poisson's ratio, Young's modulus, and uniaxial compaction throughout the life of the reservoir from a minimal input data set. These properties give us additional insight into the behavior of the structure of the reservoir throughout its life, and the impact of structural changes on fluid flow.

Service to organization, community, and industry is the third ball that must be juggled. Probably of most interest to you is the development of a new **Petroleum Engineering Handbook** by the SPE under the editorship of Larry Lake (UT-Austin). Many of our colleagues around the world are writing the new PE Handbook. I am editing the General Engineering Section. By this time next year, I hope to be telling you how to obtain a copy.

One other service activity might interest those of you who are involved with asset management teams: I have co-edited the October issue of *The Leading Edge* with Wayne Pennington (Michigan Tech). The Society of Exploration Geophysicists publishes the journal and our issue takes a look at applications of technology at the interface between geophysics and reservoir engineering.

If you would like more information about my research or books, visit my website at <http://www.mines.edu/~jfanchi/>.

Ramona Graves

This is the beginning of my 21st year teaching in the Petroleum Engineering Department at Mines. It is the first time I have had to start a year without the gentle humor, wry wit and quiet strength of Robert. I profoundly miss him. But WOW, did we ever have some great adventures together. The times we spent camping with the 316 students in Alaska will always be among my favorite memories. I guess we will all just have to go to "Plan B" and continue on without him.

My laser-rock destruction research is the one of the most exciting projects I have worked on in my career. The research team of engineers and scientist from PDVSA, Halliburton, Gas Technology Institute, and Argonne National Labs is one of the best functioning, productive teams I have ever worked on. This year one of the biggest accomplishments was to transmit a laser beam through a fiber optic cable

that was submerged in water and still destroy rocks. I've also been working with a Golden company, Native American Technologies, using a diode laser. The entire laser set-up is about the size of a mini-van!! Next year we will be zapping rock under simulated reservoir conditions. I plan on soliciting industry partners to supplement current DOE support in early 2002.

However, teaching is still my true passion. The students energize me and always make me laugh. What a lucky person I am to have a job I look forward to coming to every day (and lately it has been every day!) Our PE faculty is strong and enthused. It's nice to work with people who are committed to the same goals. It is going to be another great year.

On the home front, Jake has decided to be a mechanic and is in his second year of a two-year training program. It must be a good one because the tuition is higher than the tuition at Mines. He is having a good time and enjoying being 20 years old. Lacey (19) is in San Francisco studying to get a degree in photography. Much to her disappointment she still has to take math and science classes! She really loves living in the bay area and I really enjoy going there to visit her. They both go to school full time and work full time. Where did they ever get that crazy work ethic? I miss them both but I still have little dog, Fred, to keep me company.

Until we see each other again, I wish you peace and joy.

Hossein Kazemi

This is my first contribution to the newsletter. I am very grateful to Dr. Craig Van Kirk for asking me to submit a few words about my activities at the Petroleum Engineering Department. I think it would be nice to know why I am here at the CSM.

The journey began a little more than twenty years ago when Craig called me up at Marathon Technology Center and asked me if I could



Ramona Graves

teach a course on reservoir modeling or well testing. You see, the enrollment in the Department was very high around year 1980 and, as I recall, we had 511 students signed up in petroleum engineering! Everybody on the staff was very busy and the Department needed help. With permission from Marathon, I said yes to Craig. Thus, my second career began then as an adjunct professor. I taught one course a semester at night—mostly graduate courses. Then, I began doing research with graduate students. This was really fun because I wanted to continue being a researcher while I was managing the Engineering Department and later the entire Reservoir Technology in Marathon. The rest is history and it simply indicates that I was very lucky to receive that phone call from Craig.



Hossein Kazemi

Recently Marathon decided to close its world-class technology center because of pressure from both inside and outside. I decided to stay in Colorado instead of going to Houston for purely personal reasons. While I miss the heavy involvement in the business side of petroleum exploration and production, I am beginning to devote my energies to my first love, which is the academia. Now, I am planning to teach two courses in the daytime and increase my involvement in conducting research. In fact, I have proposed to Craig that we establish a Center for Reservoir Studies at the Department to conduct practical research on subjects of interest to the industry. A further goal is to conduct such research in a timely and cost-effective manner using the Department's high-class resources as well as outside help from local world-class experts we know. We will pursue this rigorously.

As for me, I taught three courses last spring—one senior course and two graduate courses. I had a great time because two of the courses were new for me. I wanted to share with my students, in addition to the required academic material, the experiences of my professional career in the business world. It worked very well! Thanks to Craig for the opportunities.

This semester I teach the first course in reservoir simulation and compositional simulation. I am also working with a couple of graduate students on topics of interest to me—especially,

gravity drainage in fractured reservoirs and understanding mass transfer mechanisms in such reservoirs.

I am excited for the opportunity to work with the students, the faculty and the staff in the PE, who have welcomed me to their workplace. Thank you all—especially Dee and Chris.

Mark Miller

The computing resources in our department received a big boost this past year. A large donation from Marathon, in combination with student technology fees, allowed us to open a graduate student computing lab. The new lab brings together state-of-art workstations with industry software, allowing graduate students to work on industrial strength problems. With all of the new machines, we were able to put older machines into graduate offices. We also set up a new server, added printers, and completely rewired the first floor. Keeping up with the constantly changing technology is a priority for the department. It also keeps me busy.

Academically, I have been working with Richard Christiansen on developing programming laboratories for our undergraduate students. Rather than learn FORTRAN or C++, we are teaching our students the fundamentals of programming using a tool that they will likely have when they leave Mines: Excel. Well not exactly Excel, Visual Basic for Applications. This tool allows engineers to greatly extend the capability of Excel. It also can make the infamous "Tarner" senior project easier.

Field session was spent in California this summer. I particularly enjoyed it, having spent several summers working there. While it seemed that there had been some growth and change, much was the same. AERA did an exceptional job of providing our students with a look at what petroleum engineering entails and the kinds of jobs they can expect to be doing. As always, more about field session activities can be found in Bill Eustes's section.



Mark Miller

Erdal Ozkan

Another year has passed and it is the time to say hello again. It was a good year until early summer when we lost Robert Thompson. As in the previous two years, we had spent two weeks in Massadona with Robert and it was another excellent PE 316 Field Session. I could not believe it when I heard the shocking news. It will take me a long time to get use to the fact that I cannot rely on Robert's experience, wisdom, and friendship anymore.



Erdal Ozkan

So many other things have happened during the last year. In general it was a busy year but not out of the ordinary. I enjoyed teaching and research. In addition to the ongoing Horizontal Well Completion Project, I obtained funding for another project on the Optimization of Plunger Lift Performance in Stripper Gas Wells. These projects and my other research should keep me busy for some time.

My family and I spent most of the summer in Turkey. It was a hot summer. (Global warming must be for real!) Coming back was nice but I am still trying to finish the work accumulated in my absence. My goal is to clean my desk by the time we meet in New Orleans for the SPE Conference (looking at my desk, it looks like an ambitious plan).

Two of my students, Jamir Gil and Mohammed Al-khamis, will present papers at the SPE conference this year. I am very proud of them and I hope you can come to listen to their presentations and support them.

Hoping to see you in New Orleans in October.

Turhan Yildiz

This is the very first newsletter I am writing as I have just joined the faculty of petroleum engineering. Prior to joining CSM, I have worked at three other universities and spent several years in the oil industry. I have taught courses on production and reservoir engineering. I was involved in projects ranging from the development of a new formation testing tool for tight gas sands to integrated surface facility/pipeline network/

reservoir simulation of gas fields with commingled multiple reservoirs.

I received my BS degree from Istanbul Technical University and MS and PhD degrees from Louisiana State University, all in petroleum engineering.

My main objective in teaching basic undergraduate level courses is to convey critical thinking and problem solving capabilities to the students. Besides teaching algorithms and engineering calculation procedures, I try to cover how the algorithms and models can be tied with the physical phenomena and blend the theory with the open-ended projects based on incomplete, partial, and contradictory real field data. I see the graduate study as the making of a researcher and an advanced technology practitioner. As a research advisor, I make the effort to see that the advisee grows to be a better researcher than the advisor.

In my research work, I search for practical solutions to real field problems, based on fundamental physical principles and the advanced computing technology. Currently, I am one of the co-principal investigators of the Joint-Industry-Project titled "Optimization of Horizontal Well Completions." In conjunction with this project, we are developing software for evaluating different completion options for horizontal/multilateral wells.

Last year, I spent most of my time developing and teaching a Capstone Design Course, which is required by ABET. The goals set for the design course are to integrate fundamentals and design concepts of petroleum geology, formation evaluation, reservoir, production, drilling aspects of petroleum engineering, to work with real field data in a multi-disciplinary team environment, and to expose the students to open-ended problems. The design problems are selected to cover as many aspects of real oilfield operations as possible. In the summer, I taught a graduate class on Advanced/Intelligent/Multilateral Well Performance. I also spent part of the summer doing research for the JIP on horizontal wells.

At CSM, I started teaching a course on well completion and stimulation. I plan to develop new courses on natural gas field operations and engineering and surface facility design.

I look forward to meeting the alumni during the SPE Annual Meeting in New Orleans.



Turhan Yildiz



2001 Summer Alumni Picnic



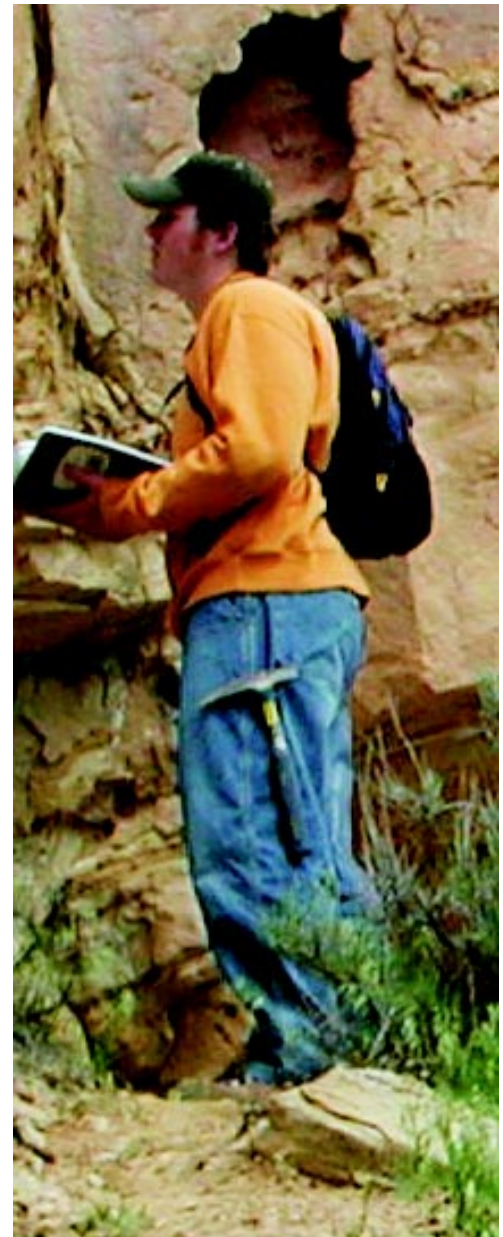
Bakersfield, CA
Chapter



Scenes from Massadona. . .

by Jennifer Miskimins
Teaching Assistant

Remember the built-in air conditioning, the delightful smell of outdoor plumbing in the late afternoon, and the nightly walks up to the Massadona Tavern? You guessed it, PEGN 316, the Junior level field session was in full swing again this year. Seventeen students attended this year's session, which was held from May 7th to the 18th. As always, alumni support was critical to the success of the program. Perennial supporter Chevron sponsored a tour of the Rangely Field, and Tom Brown Inc. sponsored a visit to a hydraulic fracture treatment, which was then tied into a new fracturing exercise. Alumni's Jim Baker (Chevron) and Adam Sayers (Tom Brown) are thanked for their support and organization of these tours. In an unusual twist, the weather was warm and sunny every day of the session with the exception of the annual raft trip day. The session concluded with the raft trip through Dinosaur National Monument, where Dr. Thompson was responsible for starting a water fight. His words of wisdom? "Always make sure you have the bucket in **your** boat!"





. . .and from CA Field Session



Student Organizations

American Association of Drilling Engineers

by Justin Stolte, President

The American Association of Drilling Engineers (AADE) is a professional organization that offers a forum for the exchange of information on drilling related topics, for its members and guests. Currently, the Colorado School of Mines is the only student chapter in the nation.

One of the primary goals of AADE is to provide students the opportunity to gain knowledge about drilling and the petroleum industry. It is also an organization where students can develop life-long friendships with other student members. The student chapter meets once a month where programs are presented by knowledgeable industry leaders in an informal luncheon environment. Each year, the AADE Denver Chapter has a meeting in the spring where students are in charge of providing a speaker and a venue for the meeting. Through the hard work of Justin Raithel, the current Vice President, last year's joint session was a success. Wild Well Control gave an informative presentation on controlling blow-outs and six students were awarded \$1,000 scholarships. In the spring, new officers were elected. Justin Stolte was elected President, Justin Raithel-Vice President, Keith Lopez-Treasurer, Ryan Butacan-Secretary, and Chris Stolte-Public Relations Chair. Dr. Bill Eustes is the faculty advisor. In conjunction with luncheon speakers, Dr. Eustes has provided valuable insight into the engineering of drilling.

Over the last two years, presidents Mike Griffis and Khris Kircher worked diligently to make the CSM AADE chapter a successful organization. I can assure you that this year's officers will work hard to build on this success. We plan on continuing monthly "lunch and learn" sessions, visiting a drilling rig in September and in the spring, and hosting social gatherings where students can learn about each other outside of the classroom. If you are interested in attending one of our meetings, contact me at jstolte@mines.edu.



*Justin Stolte,
President of AADE
and Pi Epsilon Tau*

Pi Epsilon Tau

by Justin Stolte, President

Pi Epsilon Tau, the Petroleum Engineering Honor Society, is a service organization whose purpose is to foster a closer bond between its members and the petroleum industry, to broaden the scope of activities of its members, and to maintain the high ideals and standards of the engineering profession. The organization is based on loyalty, good fellowship, and mutual cooperation among the members.

Members of Pi Epsilon Tau (PET) are chosen based upon their scholastic accomplishments, leadership, and sociability. Petroleum Engineering undergraduate students must have a cumulative grade point average of 3.0. For a graduate student to be eligible for membership, they must have a grade point average of 3.25. Currently, the CSM Tau chapter of Pi Epsilon Tau has over twenty undergraduate and graduate students from the Petroleum Engineering Department. Honorary members are chosen by each chapter as those who have proved themselves to be worthy of membership in Pi Epsilon Tau by their technical accomplishments in the field of petroleum engineering. All of the faculty in the petroleum engineering department at CSM are members of Pi Epsilon Tau.



The officers of Pi Epsilon Tau are as follos: Justin Stolte, President; Ramona Graves, advisor; Eric Miller, treasurer; Kai Binkley, Secretary; and Forest Bommarito, Vice President.

Last year's president Mark Beiriger, brought a level of organization and maturity that enabled Pi Epsilon Tau to become one of the best student chapters in the nation. We were able to provide certificates for the first time to all student

members. In the spring, new officers were elected. Justin Stolte was elected President, Forest Bommarito-Vice President, Eric Miller-Treasurer, and Kai Binkley-Secretary. Dr. Ramona Graves is the student advisor and is a member of the Pi Epsilon Tau National Council. She has done an excellent job of developing continuity between each year's new group of officers.

This year's officers are in the process of putting together a plan for a design competition between all of the national student chapters at the annual SPE conference. This competition will allow us to prove what we already know; that CSM has the best petroleum engineering students and faculty in the nation. We will have our first meeting in September and induct new members in the early fall and spring semesters. We are all excited to go to the national Pi Epsilon Tau meeting which will be held in conjunction with annual SPE meeting in New Orleans. Hope to see all of you at the Alumni Reception. The major project this year will be to set up a petroleum engineering display in the geology museum, located in Berthoud Hall at CSM. This year a strong emphasis will be placed on giving back to students and the department. We will be providing tours to prospective students and provide mentoring to petroleum engineering students. We look forward to building on the strong reputation of Pi Epsilon Tau at CSM. If you have any ideas or suggestions, please contact me at jstolte@mines.edu.



The officers of the CSM chapter of SPE are as follows: (front row, left to right,) Justin Stolte, Vice President; Chris Stolte, Publicity Chair/Webmaster; Kai Binkley, President, Josh Yanowich, Social Chair; (standing, left to right) Forest Bommarito, ATCE Chair; Keith Lopez, Secretary; Eric Miller, Membership; James Page, Fund Raising; and Ryan Helmer, Joint Session.

Society of Petroleum Engineers

by Kai Binkley, President

The Mines chapter of SPE has gotten off to a whirlwind start. During the first week we met to discuss the upcoming technical conference in New Orleans, and more importantly to share memories of Dr. Robert Thompson. Dr. Thompson will be terribly missed and fondly remembered by everyone.



*Kai Binkley
SPE President*

Last year was very successful for our organization. We participated in many social, campus wide, and community events including bowling nights, barbecues, E-Days, and serving dinner at the soup kitchen. We were very fortunate to have the International SPE President, Mr. Bruce Bernard, visit our campus as the Honored Guest at our annual Joint Session. The evening was an amazing success with outstanding participation from students, faculty, staff, professionals and alumni.

This coming year we will continue to be an active organization on campus with many exciting events planned. We have elected an enthusiastic group of officers who have already been working hard to get things done. We are all looking forward to attending the Annual Technical Conference and Exhibition in New Orleans. With substantial financial and logistical support from the department, we plan to send about 52 students to ATCE on September 29th.

We plan to meet every three weeks through this school year to hear presentations on topics including transitioning from school to industry, and technical presentations on all aspects of Petroleum Engineering. We enjoy hearing from Mines alumni whenever possible. If you are interested in sharing your knowledge, please contact our Vice-President, Justin Stolte at jstolte@mines.edu.

Thank you for your support!

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 New Orleans, Louisiana, September 30 to October 3, 2001. The Alumni Reception will be held on Tuesday evening, at the New Orleans Riverside Hilton, Grand Ballroom A, from 5:30 to 7:30 p.m. The charge is \$25. 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 e-mail dbrown@mines.edu prior to SEPTEMBER 26, 2001. 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**

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