Mewbourne School of Petroleum and Geological Engineering

Discovery

Mewbourne Gift Makes College of Engineering History

The Mewbourne School of Petroleum and Geological Engineering will be the first endowed School in the College of Engineering, thanks to the generosity and commitment of the Curtis W. Mewbourne family.

What's Inside

Curtis W. Mewbourne

Mewbourne School of Petroleum and Geological Engineering

OU Discovery

Vol. 2 Number 2
The University of Oklahoma

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OU Discovery

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OU Discovery

Mewbourne School of Petroleum and Geological Engineering

Editor's *Letter*

At this year's Distinguished Scholars Banquet honoring the department's scholarship recipients, our keynote speaker, Curtis Mewbourne, shared the following description of the oil and gas industry:

"It is a wonderful business filled with opportunity and excitement. The opportunity to learn and work with some of the finest people in the world. A business that is a long journey with a lot of interesting stops along the way…"

I thought of those words when I heard that alumnus and longtime OU supporter and Industry Advisory Board member Joe Lawnick had passed away. Joe Lawnick was truly one of those "finest people in the world" to whom Mewbourne was referring. And anyone familiar with the many ways in which Joe and Oryen demonstrated their love and commitment to the University of Oklahoma knows that he had lots of interesting stops along his way.

I've made many new friends since I joined the School of Petroleum and Geological Engineering in August of 1998 but Joe Lawnick was someone I had met many years prior to my return to Oklahoma. I first met Joe and Oryen when they helped host OU student recruitment events in Tulsa and I worked in what was then called High School and College Relations (now Prospective Student Services). "Helped" is an understatement as they were the alumni we consistently relied on year after year to help with the planning of major annual events as well as the personal recruiting. Joe could and would talk to anyone and he talked to lots of prospective Sooners in his lifetime. Lots. And convinced more than a few to join the worldwide community of students, faculty and alumni who make up the University of Oklahoma family.

More will be written about Joe Lawnick in the next issue of *OU Discovery*. Joe passed away on March 22 in Tulsa. He will be greatly missed.

Lisa L. Schmidt

Faruk Civan

Civan Publishes First Book

Reservoir Formation Damage, written by Faruk Civan, professor of petroleum engineering and associate director of reservoir engineering in the Mewbourne School of Petroleum and Geological Engineering, has been published by Gulf Publishing Company. The publisher describes the book, which just became available in March, as "a concise and practical reference for practicing engineers, scientists, and operators engaged in various aspects of formation damage including testing, evaluation, diagnosis, prediction, and mitigation."

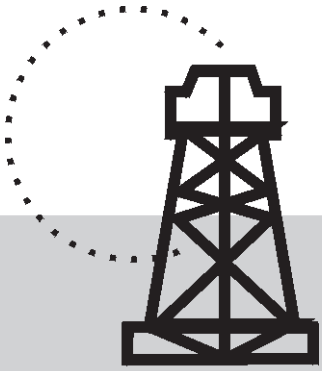
"The author's expertise in petroleum, chemical and geological engineering make this book unique because of its broad, thorough coverage. It provides an understanding of the testing, modeling and simulation techniques available for formation damage assessment and strategies for better management of the adverse processes to minimize and avoid formation damage in petroleum reservoirs."

Civan's previous publications include one book chapter and over 67 technical articles in refereed journals. He is the recipient of several honors and awards, including five distinguished lecturer awards.

Change, Volatility, Uncertainty and Risk:

The Four Horsemen

Curtis Mewbourne served as keynote speaker at the 1999-2000 Petroleum and Geological Engineering Distinguished Scholars Banquet on Feb. 11, 2000, in the Ballroom of the Oklahoma Memorial Union, Norman. Speaking to more than 200 students, parents, faculty and staff members and guests from the University community, Mewbourne challenged and entertained his audience with these remarks, which he graciously allowed us to include in this issue of *OU Discovery.*



Executive *Column*

By Curtis Mewbourne

Founder, president and chairman of the board
Mewbourne Oil Company

B.S. School of Petroleum and Geological Engineering, The University of Oklahoma

Good evening, ladies and gentlemen. As I glance around the room, I see two of my former professors, Dr. Menzie and Dr. Campbell, here in the audience tonight. I know they must be concerned about listening to me speak on petroleum engineering since they were both convinced I knew absolutely nothing about the subject, but they can relax. It is not my intention to discuss "fluid flow through porous media." There are others who can do a better job of that than me.

I am here tonight to tell you a story. A famous writer called one of his stories, *A Tale of Two Cities.* I will borrow his title and call my story "A Tale of Two Businesses." One of these businesses is the oil and gas industry I have known since 1953 as a freshman petroleum engineering student and a roughneck on a drilling rig near Natchez, Mississippi, that summer.

It is a wonderful business filled with opportunity and excitement. The opportunity to learn and work with some of the finest people in the world. A business that is a long journey with a lot of interesting stops along the way, where you will see challenges of every sort and technology beyond your belief. The challenge to drill a well all by yourself in the isolation of the Rocky Mountains and to work on a project in the deep waters of the Gulf of Mexico. To solve problems with a pencil on the back of the daily drilling report in a Ford pickup truck in western Oklahoma or with massive parallel processors in a high-rise building in Houston. An opportunity to initiate a project from only a dream and see the idea through the leasing, seismic acquisition, money raising and then finally to see the drilling rig on location about to bring a conclusion to your dream. Yes, it can be a long journey, but one filled with adventure, whether found in the blissful small towns of America or the different languages and cultures of other countries.

I can look out there now and see what some of you are thinking. You picture yourself working on your French while sipping coffee and reading the Herald Tribune on the Champs Elysees, but more likely you will be swatting mosquitoes in Angola!

But this is a tale of two businesses. And I have some friends who look at the oil and gas industry and see a different business.

They see a business that is extremely cyclical, and they see the cycles as unpredictable and uncontrollable. They see a forecast calling for cloudiness and tough times. They are depressed. They do not see their fate in their own hands. They see a business controlled by OPEC forcing

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the price of oil and gas up or down at their pleasure.

But let me pause here and introduce you to some of my friends. I call them the Four Horsemen. Their names are *change, volatility, uncertainty, and risk.* You will meet them someday, their skeletons covered in suits of armor and empty eyes staring at you from under their helmets while they sit on their horses whose breath condenses like steam. And they will beat their swords on their shields, call out their names to you in their sorrowful, moaning cries: *change, volatility, uncertainty, risk.* And they will tell you their stories.

Change is the first to spur his horse forward. Mergers and restructuring. Majors selling off all onshore properties and concentrating on offshore and overseas. Major companies like Exxon Mobil and BP-Amoco becoming gargantuan enterprises. ExxonMobil's combined budget will be larger than the budget of the Republic of France. Service companies taking over the role once the domain of operators. Jobs in large companies becoming almost unrecognizable in description. Chevron outsourcing operations in west Texas to contract operators in SACROC and the large Crane and Ector country fields. BP-Amoco turning over all accounting and similar jobs to Price Waterhouse Coopers, a public accounting firm.

But our friend does not mention all the positive change currently going on here at OU in petroleum engineering. Changes like:

▲ Our new cooperation with Sandia Laboratory in the Well Construction Technology Center to jointly manage research in drilling and completion technology. This partnership with the Department of Energy is the type of change that every school wishes for themselves.

▲ OU P&GE competed with other major universities to obtain the industry-recognized BP-Amoco Petrophysics Center in Tulsa, worth over $6 million. Two new faculty with 36 years of industry experience between them joined P&GE at the Center. OU now has a world-class facility and professors to teach petrophysics on the Norman campus.

Mewbourne Oil Co. intern and scholarship recipient Seth Crawley; Mewbourne; first Mewbourne Leadership Scholar Charles L. Martin.

▲ OU P&GE is one of the first universities to start a master's program in Natural Gas Engineering and Management.

▲ OU P&GE has formed one of the first fully functioning Reservoir Characterization Programs, combining for the first time geologists, engineers and geophysicists in one central unit.

Now it is volatility's turn. The price of oil goes to $39 per barrel in 1981, and then collapses to $8 per barrel by 1986. The rig count hits 4,500 in 1981 and dives to 600 in 1986. The majors hiring people by the thousands and then firing people by the thousands. Petroleum engineering students at OU numbering 800 in 1982, then declining to 60 in 1989. The latest cycle being the most vicious of all. Prices declining from $26 in December of 1996 to $12 in February of 1999, then back to $29 in January of this new year. The rig count on the same roller coaster. A round trip in only three years.

This same volatility, however, has brought many positive things to OU along with the problems.

▲ New faculty from industry have joined P&GE in areas of reservoir engineering, natural gas, petrophysics, and drilling.

▲ Small class sizes afford a greater learning experience.

▲ A student-professor ratio to be envied by those of us educated in earlier years.

▲ Petroleum engineers working as members of interdisciplinary teams, and often the leaders.

▲ Exposure to geology, geophysics, and land that was never available in previous times.

All of these things help make petroleum engineers leaders and propel them toward management.

We now hear uncertainty in his whining voice. The cycles are unpredictable. We cannot control our future. OPEC controls the prices and therefore the industry. Service companies have laid off so many people and disposed of so much equipment that they have very limited capabilities. The majors aren't drilling holes in the ground, they

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Mewbourne, *continued from page 3*

have been concentrating on mergers and rationalizing assets. Crude oil reserves fall 7 percent, the largest decline in more than 50 years. Natural gas reserves fall 2 percent. If no new gas wells were drilled in the State of Texas, the composite decline rate would be 23 percent a year.

But, uncertainty causes people to focus on problems and to find solutions. We have solved many problems here at OU:

▲ *The Mewbourne Leadership Scholars Program* - the best petroleum engineering scholarship program anywhere in the United States. Would Charles Martin please stand? Ladies and gentlemen, I take great honor in introducing you to the first recipient of this new program. Charles is currently president of the SPE chapter and has worked as an intern in Mewbourne Oil's junior engineering program for the past two summers. He is a perfect example of the young persons we are seeking as Mewbourne Leadership Scholars.

Distinguished Scholar Marvin Montgomery, Keith Millheim

▲ P&GE is discussing a major initiative to do advanced drilling operations research.

▲ Already OU P&GE has redesigned its undergraduate program to offer the undergraduate a new, balanced petroleum engineering program with drilling, production, reservoir engineering and economics.

▲ Sarkeys Energy Center is providing the best classrooms, labs, and facilities of any school in the country.

Distinguished Scholar and SPE officer Suzanne Williams (right) and Mary Ellen Williams

And last, we hear from risk. Industry has cut billions of dollars in costs out of its overhead, mostly people. The industry is not investing in long-term research. Can anyone manage these cycles of boom and bust? Jobs are disappearing and changing in character. Will there be a place for me in the future? What about retirement and job security in these new major companies? This Horseman called risk also has some nicknames; he's known as anxiety or fear. He is the most dreaded of all the Horsemen.

But here at OU we have been willing to assume the risk that goes

> (This business) is a long journey with a lot of interesting stops along the way, where you will see challenges of every sort and technology beyond your belief.

along with being the leader in petroleum engineering education. We have made the decision to be the number one petroleum engineering school in the world. As a result:

▲ OU P&GE formed a major education and training alliance with Schlumberger, Texas A&M, and Heriot-Watt University to provide industry training worldwide. This organization is called NExT-a Network of Excellence in Training. OU will be a Center of Excellence for well construction, drilling, completion, well operations and petrophysics.

▲ OU P&GE is the only petroleum engineering school to have a major distance learning operation in a key Middle East country where over

fourteen master's degrees have been earned.

▲ A new reservoir engineering center where four petroleum engineering professors will make OU reservoir engineering second to none.

▲ One hundred percent placement in good jobs of all of our bachelor's degree graduates for the last three years.

▲ The highest starting salaries of any graduates on campus.

These Four Horsemen may seem to be a terrible group, but do not be afraid. Do not cover your eyes in fear, for these Four Horsemen are your friends. They created the atmosphere that makes it possible for you to have unlimited opportunity in the years to come. It takes a climate similar to that of today's industry to provide a chance for young leaders to show they have the right stuff. A chance for achievement and success beyond your wildest imagination. Just remember: there is no reward without risk. A lifetime without change would be a lifetime prison sentence. And opportunity is the other side of the coin from uncertainty. It will be a long journey, however, but I have never seen this much opportunity in my almost half-century in the business. Today you have an unparalleled opportunity to benefit from a wonderful business. This is a great time to be in the oil and gas business. It is a great time to be a petroleum engineer. You only have to decide which of these two businesses is for you.

And my journey, well, it is best described by a paraphrase of a famous poem: "In the forest I came to a fork in the road, and I, I took the road less traveled." And you will probably come to that fork someday, and if you see the Four Horsemen sitting there, smile at them and wave to them, for they are your friends.

Good evening, and good luck! ■

Curtis W. Mewbourne was born in November 1935 in Shreveport, La., where he and his wife, Joanne, also attended Byrd High School together. After obtaining a bachelor of science degree in petroleum engineering at the University of Oklahoma in 1958, he served as an officer in the U.S. Army. After working as a petroleum engineer in industry, he founded Mewbourne Oil Company with his last paycheck. Mewbourne continues to operate the company privately for the benefit of his family, which includes three married daughters and nine grandchildren. The family lives in Tyler, Texas, and attends Marvin United Methodist Church, where Mewbourne has been active as chairman of the administrative board, finance committee, stewardship campaign and pastor-parish relations committee. In earlier years, he taught Sunday school to both adult and junior high classes. At various times he has served as a board member of several civic and charitable organizations, and he is particularly interested in financial support of the Saint Paul Children's Foundation and the Methodist Children's Home.

His interest in children and education caused him to fund the Mewbourne Fellowship for Mathematics Enrichment at St. John's School in Houston and All Saints Episcopal School in Tyler. The program offers diverse enrichment opportunities for elementary students of varying abilities and interest in mathematics and insures an introduction to math that is fun and interesting and not intimidating.

He is a founder of the Sarkeys Energy Center, a lifetime member of the University of Oklahoma Alumni Association, has served as a trustee of the University of Oklahoma Foundation, and was the first chairman of the Industry Advisory Board for the School of Petroleum and Geological Engineering. He was honored in 1992 by the College of Engineering as a Distinguished Graduate.

Mewbourne's loyalty to and pride in the School of Petroleum and Geological Engineering is longstanding. In 1982 he endowed the Mewbourne Professorship in Petroleum Engineering. It was the first such endowed position in the School as well as in the College of Engineering. For many years and throughout the industry's up and down cycles, he has been a consistent and strong supporter of the School, its faculty and students. While selected major companies have hired more graduates or employed more summer interns in a single year, Mewbourne Oil Company stands alone as the largest supporter of student scholarships and internships over the past 20 years.

Curtis Mewbourne is director and vice president of the Texas Oil and Gas Association and the U.S. Oil and Gas Association and he has served as a board member of publicly owned companies in the petroleum and transportation businesses.

For many years, Mewbourne Oil Company has been one of the most active exploration and production companies in the Anadarko and Permian Basins. The general office is located in Tyler, Texas, with district offices in Amarillo, Midland, Perryton, Hobbs, Oklahoma City, and Woodward.

The Mewbourne School of Petroleum and Geological Engineering

Energy, without question, and specifically oil and gas, is still and will continue to be the most dominant force affecting global economics and our way of life. The Pulitzer Prize-winning book about the oil business, *The Prize*, by Daniel Yergin, unfolds the events leading to our current global oil and gas industry. Even though Colonel Edwin L. Drake is acknowledged as the man who made the first commercial discovery of oil, it was Anthony F. Lucas who found oil at Spindletop in south Texas and kicked off the North American oil industry. After the Spindletop discovery in 1901, Oklahoma entered the race with a string of discoveries that culminated in the great Glen Pool find near Tulsa. From 1906 until 1928, Oklahoma was the number one oil producing state in the country.

Two significant events occurred at the University of Oklahoma during this time. The first bachelor's degree in geological engineering was awarded in 1919 and in 1927, the first bachelor's degrees in petroleum engineering were awarded to Jack William Dunn, Johnnie Lorenzen, and Clement Scott Luce. At that time, no one would have guessed that by 1999 over 5,000 petroleum and geological engineers would have graduated from the University of Oklahoma, a statistic matched by only two other universities in the country.

By Dr. Keith Millheim

Eberly Family Chair and Director,
Mewbourne School of Petroleum
and Geological Engineering

Curtis W. Mewbourne

A third major event occurred in 1963 when John Campbell created the School of Petroleum and Geological Engineering at the University of Oklahoma. It was "Dr. John," as he was called by the students, who launched an era of graduate research that was to become a benchmark to which other petroleum schools would aspire. Again, no one in the early 1960s would have imagined the tens of millions of research dollars that would flow through the University of Oklahoma. No one would have predicted the impact of this research on technologies like drilling, natural gas engineering, waterflooding, stimulation, reservoir management, oil property evaluation and well testing.

And what of the graduates? Over the past 80 years, University of Oklahoma petroleum and geological engineers have populated the management of companies worldwide from Indonesia to Saudia Arabia to Venezuela and Canada. Many have reached the highest levels in companies like Exxon, Conoco and Texaco. Other graduates followed the wildcatter path and founded major independent oil companies. One such graduate is Curtis W. Mewbourne.

Back in the late 1950s, Curtis Mewbourne, like many of his colleagues, would not have predicted the greatness that followed. Sitting, listening to "Dr. John" and Don Menzie and others lecture, Curtis would never have imagined he would start his own company, Mewbourne Oil Company, with his last paycheck and become one of the most successful privately owned independents in the United States. He would never have imagined that he would estab-

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lish the School of Petroleum and Geological Engineering Industry Advisory Board and become its first chairman. He would never have imagined walking into the office of the president of the University of Oklahoma and being the first sponsor of a petroleum engineering professorship, the first privately funded chair in the College of Engineering. As Mewbourne Oil flourished, it did so with University of Oklahoma School of Petroleum and Geological Engineering graduates. Every year, during good times and bad, Mewbourne Oil Company hired summer interns. Mewbourne Oil offered scholarships and Mewbourne Oil hired graduates. No one in the history of the School has been as strong a patron as Curtis W. Mewbourne.

Back in 1958 when Curtis was receiving his bachelor's degree in petroleum engineering, would he ever imagine that 42 years later he would step forward again and create another new endeavor that would initiate the ascendancy of the University of Oklahoma School of Petroleum and Geological Engineering to number one in the world.

Last fall, Curtis Mewbourne went to President David Boren's office with the idea of another "first" for the College of Engineering. "I believe in this petroleum school's future and greatness," he said. "I want to help." He offered to endow the School with approximately $6 million.

As Curtis W. Mewbourne stands in front of the entry to the Mewbourne School of Petroleum and Geological Engineering, he can close his eyes and imagine his daughters and grandchildren sharing in the pride of the School's accomplishments, always to be associated with the name of the man who was so instrumental in making it all happen.

Thirty years from now, it will be said that the renaissance of petroleum engineering in the new millennium started in the year 2000 at the Mewbourne School of Petroleum and Geological Engineering. It will be cited how the new undergraduate program implemented in 2000 to meet industry needs set the standard in petroleum engineering undergraduate education. It will state how Mewbourne School students continuously found summer internships because industry was anxious to start courting future petroleum engineers in their freshman year. "One hundred percent placement is the Mewbourne School's reputation," it will be said. Like the 5,000 petroleum and geological engineering graduates who came before them, Mewbourne School graduates will be the CEOs, presidents, industry leaders and SPE presidents. A dream? Not really. Read my comments in the "Message from the Director" on the groundbreaking accomplishments already made or in progress now in the School of Petroleum and Geological Engineering.

The military uses a phrase, "an officer and a gentleman." Often portrayed in books and movies, a true officer is a leader of men and earns their respect. To carry the Mewbourne name for the School of Petroleum and Geological Engineering will signify the same qualities of leadership, commitment, generosity and excellence that Curtis W. Mewbourne has demonstrated in his life.

Curtis W. Mewbourne is an officer and a gentleman of the highest order. The students, faculty, alumni, and officers of the University of Oklahoma salute him. The challenge for the Mewbourne School of Petroleum and Geological Engineering to be the best in the world is accepted.

Curtis W. Mewbourne has committed a gift of approximately $6 million. The gift will be funded in phases over the next several years by the Mewbourne Family Supporting Organization, a charitable foundation founded by Mr. Mewbourne to help guide his family's charitable activities.

- Two million dollars will be allocated to three Mewbourne Chairs in Petroleum Engineering. This will be matched by the State Regents for Higher Education resulting in a total of $8 million for the School thanks to his gift.
- Two of the newly created Mewbourne Chairs will be visiting professorships filled by engineers from the petroleum industry, persons with years of experience working at the leading edge of technology. These will be non-tenured positions. When the individuals holding those chairs return to industry, they will be replaced by new industry professionals bringing the most current issues and ideas to the classroom.
- Three and half million dollars will be used to endow:
  - *The Mewbourne Leadership Scholars Fund*, strengthening the ability to attract the top prospective petroleum engineering students to OU and support them through graduation.
  - *The Mewbourne Enrichment Fund* to benefit undergraduate students and help re-energize the undergraduate program with an emphasis on quality teaching.
  - *The Mewbourne Opportunity Fund* to allow the School to capitalize on opportunities for unique and productive partnerships with industry in the areas of research and development.

One hundred thousand dollars is being used to upgrade the School's computer lab and classrooms with new networking equipment and software.

The Climb to the Top

Message from the *Director*

What is more important on a journey, the journey itself or getting to the final destination? For some who climb mountains, it's simple. When they reach the top, there is only one other direction. For a special breed of mountain climbers, reaching the top of one mountain is only preparation to climb another higher or more difficult summit. The "ultimate mountain" is never there.

In the last two issues of *OU Discovery*, the message was clear: the Mewbourne School of Petroleum and Geological Engineering is on a journey, a quest to climb mountains, not one but many. Reaching the top of one only prepares us for the next challenge. As you read through this issue, I think you will get a sense that a new journey has started with many mountains to climb.

Without a doubt, the most significant and exciting event since John Campbell created the OU School of Petroleum and Geological Engineering in 1963 is the endowment of the School by Curtis W. Mewbourne (see pages 6-7). It is my prediction that this commitment by Curtis Mewbourne and his family will not only change the landscape of petroleum engineering at the University of Oklahoma but the ramifications will be felt throughout petroleum engineering education.

At a time of industry uncertainty, Curtis Mewbourne has stepped forward and said, "I have never seen this much opportunity in my almost half-century in the business. Today, you have an unparalleled opportunity to benefit from a wonderful business. This is a great time to be in the oil and gas business. It is a great time to be a petroleum engineer." (See Executive Column, pages 2-5) A bold statement? Or a wise observation?

Take a moment to ponder the following. Even though there might be ample oil to meet current global demand, OPEC is starting to figure it out. Control production, control price. They also know that non-OPEC production can no longer find and produce easy oil. Only deep-water exploration offers any competition. In the United States, a decision has been made: we will migrate to natural gas as a primary energy source, moving away from coal and crude oil, especially for heating, power generation and heavy industry. The next 10 years will see an unprecedented growth in natural gas exploration and exploitation in North America. All of this is happening around a maturing and rapidly decreasing workforce.

It is my prediction that this commitment by Curtis Mewbourne and his family will not only change the landscape of petroleum engineering at the University of Oklahoma but the ramifications will be felt throughout petroleum engineering education.

Keith Millheim

The new petroleum industry will not require as many practicing engineers as before. That is a reality. Properly trained and educated, a new millennium petroleum engineer can do the work of five or more engineers of the past. They have more skills, better tools, and they just know more. The number of required engineers may go down but the quality and efficiency of the new engineer will go up, as will the expectations.

Meeting the challenge, the Mewbourne School has just completed its new undergraduate curricu-

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lum, re-engineering the degree requirements the first time in 12 years. The faculty, working as a team, solicited feedback from students, alumni, and industry in an attempt to design a curriculum that not only meets ABET 2000 standards but goes beyond that. Trimming eight hours from the degree requirements, the new bachelor's degree (see Proposed Petroleum Engineering Curriculum) balances basic math and science with drilling, production reservoir engineering and economics. Computer tools are used to reinforce problem solving and practical applications throughout the new curriculum. Unique to the degree is the overlaying understanding of petroleum geosciences, economics and communications. The Mewbourne School graduate will be the best prepared undergraduate engineer in the world for the upstream oil and gas industry. We will be imitated but never duplicated.

As the United States and others respond to the increased demand to use natural gas, there is a challenge to create engineers who can understand the full supply and demand chain of natural gas. Not only are the undergraduate courses being changed to reflect this new direction but a new master's degree program in natural gas engineering and management is being designed.

Along with the new strength in petrophysics in our Tulsa program, a master's degree will soon be offered for geoscientists and engineers interested in rock physics. Again, this is a world class, unique offering that will be hard to match at other universities.

The master's level graduate program also includes a new reservoir engineering emphasis. This combines geosciences and engineering to offer a level of training that has been dreamed of but that very few programs have reached. The truly integrated reservoir engineering master's degree will be designed to fit the needs of the industry.

Underpinning all of the educational thrusts are the Mewbourne School's new associations with industry. The guest column in this issue of *OU Discovery* was written by Bill Cotten, manager of NExT. NExT is a global industrial training initiative involving Schlumberger, the University of Oklahoma, Texas A&M University and Heriot-Watt University. Our Well Construction Technology Center here in Norman is being readied for the first industrial courses in drilling operations and engineering. This fall, we will offer an industrial petrophysics program in Tulsa in conjunction with the Schusterman Health Sciences Center and the Integrated Core Characterization Center. Worldwide, the University of Oklahoma will be in the center of the new millennium E&P training. And there is more to come.

In the next issue I will comment on our new aggressive research directions that are well under way. Research programs in rock physics, reservoir engineering, natural gas engineering, drilling and others are already started.

The quest has begun. Education, training, industry and research programs are all being integrated into a juggernaut called the Mewbourne School of Petroleum and Geological Engineering. The climb to the top of many new mountains is well underway.

Alumni, students, colleagues, and friends, join us for the climb. Look for us at the SPE meeting this fall in Dallas. You will be excited and proud about what you see and hear. Until then, have a wonderful summer. ■

Proposed Petroleum Engineering Curriculum:

- Reduces number of hours required to graduate from 135 to 127.
- Offers earlier interaction between students and faculty and earlier exposure to petroleum engineering as a major with three new courses offered during the sophomore year including *Introduction to Petroleum Engineering Systems, Reservoir Rock Properties* and *Rock Properties Lab.*
- Adds *Principles of Economics-Macro* as a degree requirement.
- Replaces *Earth History* and *Structural Geology for Petroleum Engineers* with *Petroleum Geophysics, Petroleum Geology.*
- *Technical Communication* emphasizing planning and writing technical reports and preparing and delivering oral technical presentations replaces *Technical Writing*
- *Reservoir Rock Properties and Rock Properties Lab* will provide a more comprehensive overview of petrophysics, measurements, effects of pressure and temperature on rock properties.
- Drilling and production requirements each expanded to two-course sequences. These four courses will replace the current three-course operations sequence.
- Reservoir sequence expanded to three courses: *Reservoir Engineering Fundamentals, Applied Reservoir Engineering,* and *Improved Recovery Techniques.*
- Revises capstone course, *Integrated Reservoir Management*, to emphasize the design and development of the reservoir management plan and require application of petroleum engineering and geoscience principles.

NExT - *a Network of Excellence in Training*

Heriot-Watt University, Texas A&M University, The University of Oklahoma and Schlumberger Form NExT, a Worldwide Training Alliance.

HOUSTON, February 17, 2000- Heriot-Watt University, Texas A&M University, the University of Oklahoma and Schlumberger announced today the signing of a Memorandum of Understanding formalizing a training alliance. NExT-a Network of Excellence in Training - is dedicated to delivering training courses for the petroleum industry that combine academic excellence with professional expertise.

"We are committed to becoming the pre-eminent training and technology transfer provider to the petroleum industry," said William B. Cotten, general manager of NExT. "The coursework is designed to be academically sound as well as practical in application."

William B. Cotten

Guest Column

by William B. Cotten, Manager, NExT

On February 17th, the news release on the left announced the start of a new type of training-provider to the petroleum industry. The trends in the industry today are requiring changes in the way coursework is structured and training is delivered. The need is for more than just increased knowledge. Training is becoming more of an outsourced activity. Training designed to ensure that the engineer acquires skills and competence with an immediate impact on the business unit's effectiveness is preferable. With industry training needs changing, the needs of graduates from petroleum engineering programs are also changing. The importance of NExT is that for the first time, a collaborative effort is being made that can serve as a model of how the petroleum industry and academics can create a synergistic system from which both will benefit.

"One of the core competencies major oil and service companies promoted was their ability to "train up" company personnel in the critical technologies, processes and operations," says Keith Millheim, Eberly Family Chair and director of the OU School of Petroleum and Geological Engineering. "Over the last decade this core competency has been surrendered.

"However, most company leaders are getting scared that they are in a knowledge decline or 'training down.' NExT comes along at the right time for companies to halt the decline and rebuild their knowledge base around a virtual global training system that can be custom-designed for any need."

Many large oil companies are redefining their strategic visions, re-evaluating their core competencies and restructuring their business organizations accordingly. Where once there were large corporate structures centrally supporting operations, today the central corporate organizations are small with operating teams formed to manage the corporate assets at various locations around the world. Corporate management is focusing on strategic portfolio management and the corresponding return on investment of these assets. The asset team is empowered to operate the asset. Authority to make day-to-day decisions necessary to increase the asset's productivity in the most effective and efficient manner possible is required. From an engineering perspective, the asset teams are faced with an ever-increasing need for high-tech solutions to meet the demanding complex environments in which they must work. Because of the complexity of the technology needed today, most companies cannot afford to support the research and development needed to continue to advance these competencies in-house. It makes sense to outsource most of these technologies to the service sector, where they are supported as core competencies. The result is a need for collaboration between the team operating an asset and the technical solution providers who hold the keys to efficient exploitation of the reserves.

With the fast-paced changes in technology, this industry trend creates a tremendous challenge for E&P companies to maintain a competent workforce. Oil companies cannot create most of the upstream technology they need for modern operations. Corporate training departments are becoming smaller and more focused on supporting the defined core competencies. Decentralized

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managers of business units operating assets are still responsible for their results and therefore need to have team members who are technically competent and able to make effective contributions. Business units are small efficient teams, making it difficult to send key personnel away for extended periods of time for training. The training investment made by the asset team needs to be relevant to their operations and have an immediate impact on the team operations. The impact this has on a newly graduated engineer is significant. The new engineering graduate is expected to arrive equipped with a skill set and make an early contribution to the team's effectiveness.

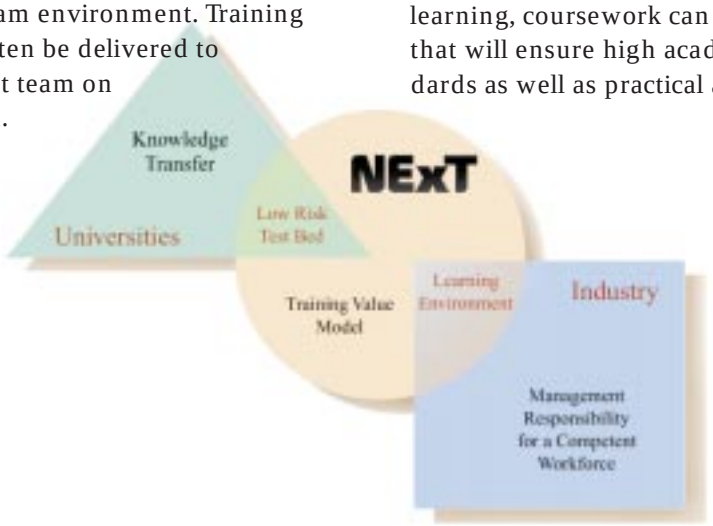
These trends in the modern petroleum industry and the resulting training challenges are what NExT is all about. NExT is able to meet the industry training needs through a collaboration of partners, combining intellectual capital with flexible delivery methods in a Training Value Model that is unique in the training industry today.

Collaborative Link Pin

The University of Oklahoma and the other partner universities are experts in instructional design, assessment and managing the transfer of knowledge. Where NExT can add value is through designing simulation systems and incorporating the latest engineering practices. The predesigned application exercises allow engineers and university students to convert coursework knowledge into modern skill sets in low-risk test beds. By interfacing with industry, NExT is able to provide mentored learning environments where engineers can practice their skills and develop a certain level of competence assurance.

Flexible training delivery methods are an important requirement in an asset team environment. Training must often be delivered to the asset team on location. Small, efficient teams cannot afford to let a key team member be away for extended periods of time. For larger topics, coursework will need to be structured into smaller units and delivered over time. Maybe a series of one-day training sessions or even a series of "lunch and learn" sessions delivered over a few months are the most useful, integrating self study CD-ROM programs. Whenever possible, the use of client preferred software and proprietary data sets will add relevance and the possibility of providing actual solutions to asset team problems.

The NExT Training Value Model is a series of progressive training levels. Depending on the desired level of learning, coursework can be designed that will ensure high academic standards as well as practical applications.



NExT Training Value Model

The first step in the Value Model is converting the subject matter into coursework. NExT utilizes our "Virtual Faculty" in a team combining academia and industry. This use of the best-in-class approach and instructional design combined with the latest technology and appropriate delivery methods provide improved value in the coursework.

Proper management of the transfer of knowledge ensures that the engineer actually learns and understands the subject matter. This requires choosing the appropriate delivery method. Not all coursework needs to be delivered in a classroom. Distance learning can be just as effective and much more flexible. The coursework presenter must be qualified. We all know of recognized industry experts who are unable to stand up and teach their own subject matter. Successful presentations take knowledge of the subject, a desire to teach and training in order to be effective. For more advanced subject matter, NExT screens candidates who register for the course. If the course is too advanced for the knowledge or skill level of the applicant, NExT suggests prerequisite coursework first. NExT does not issue certificates for attendance. The engineer needs to attend class, participate, and pass an exam to demonstrate understanding of the subject.

To progress from simple knowledge of a subject to acquiring skills, NExT simulation laboratories are equipped with pre-designed application exercises. "Walking the talk" allows the engineer to develop a proficient ability through working

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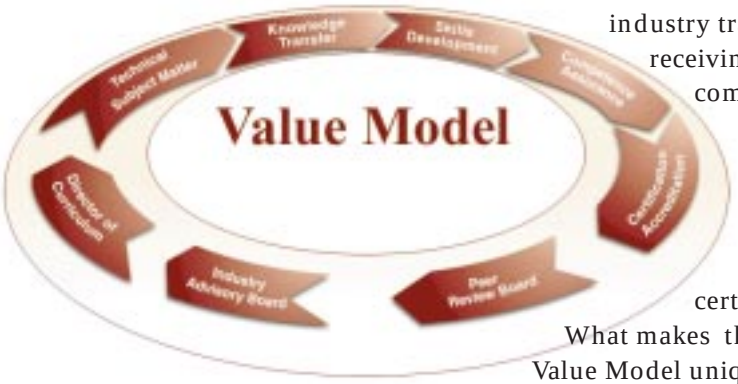


NExT, *continued from page 11*

applications. For coursework designed to include competence assurance, NExT creates a low risk learning environment where skills can be practiced. NExT includes mentoring in some course work where it is important that the engineer not only has skills but also can provide solutions through the innovative use of those skills. NExT has created this low- risk learning environment through workshops using relevant data sets and mentor-assisted on-the-job application of skills through a three-way relationship between the engineer, the mentor and the engineer's supervisor. NExT is currently developing on-line virtual reality programs where distance learning programs can actually provide an acceptable level of competence. Through NExT, the University of Oklahoma will have access to these programs to provide students with better skill sets with which to enter the petroleum industry.

Master's level programs will be available from NExT through the university systems. The goal for a NExT-certified course is to be recognized as having university-level academic excellence that contains the latest technical information combined with a managed knowledge transfer process. We will raise the level of industry training above merely receiving a certificate of completion. Engineers attending NExT courses must successfully complete all requirements to receive certification.

What makes the NExT Training Value Model unique is our system of quality assurance. Each university partner has a Center of Excellence headed by a director of curriculum for a particular field of expertise. In Norman, the University of Oklahoma is the Center of Excellence for Well Engineering and Operations. Francis Tuedor is the director of curriculum. In Tulsa, the University of Oklahoma is the Center of Excellence for Petrophysics and Geophysics. The director of curriculum is Jeff D. Johnson. The Directors of Curriculum function as the custodians of the NExT curriculum within their respective fields of expertise. They collaborate with the other NExT partners and experts throughout in-dustry to ensure that our course work is developed and maintained at the highest standards. The other two Centers of Excellence are located at Texas A&M University, with William McCain serving as director of curriculum, and Heriot-Watt University, Edinburgh, Scotland. At Heriot-Watt, John Ford is co-director for academic applications and Charles "Chuck" Sargent for engineering applications.

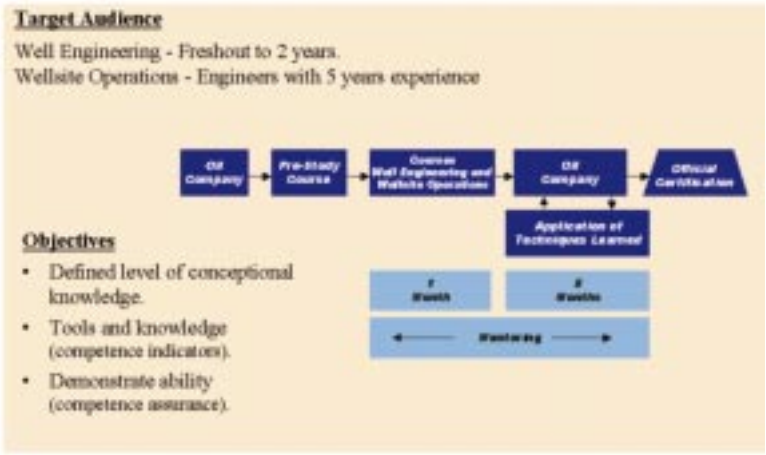
Each director has a Peer Review Board. The board consists of representatives from each NExT partner and from industry as needed on an ad hoc basis. The mission of the Peer Review Board is to provide a uniform, independent and professional quality control for NExT courses, programs instructors and subject matter experts, ensuring they meet or exceed both academic and industry approved standards.

On a broader basis, NExT is assembling an Industry Advisory Board composed of NExT partner representatives and oil company representatives. The mission of the Industry Advisory Board is to ensure that NExT meets industry needs and is the preeminent training and technology transfer provider to the petroleum industry. By having a quality assurance mechanism that includes these two boards, one focused on the curriculum content and the other industry needs, the NExT Training Value Model provides a unique program of quality in learning.

NExT will have two programs: the Well Engineering and Wellsite Operations Certificate Program and the Subsurface Integration Program. Both are directly linked to the University of Oklahoma School of Petroleum and Geological Engineering and are of major importance to the petroleum industry.

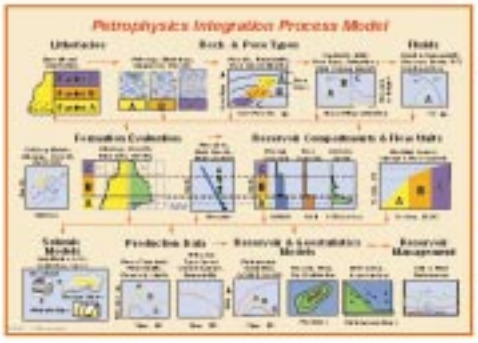
Tuedor directs the Well Engineering and Wellsite Operations Certificate Program, located in the OU Well Construction and Technology Center. Francis also directs the activities of the NExT Training Center in Pau, France. Francis actually started the Pau facility three years ago to train young graduate engineers to be well engineers for Schlumberger's Integrated Project Management group. The program is designed to train new well engineers who have up to two years industry experience. The Wellsite Operations segment targets engineers with five years industry experience. The program equips engineers with skills and a certain degree of demonstrated competence.

Well Engineering Diagram



Both the Well Engineering and the Wellsite Operations segments of the program take six months to complete. The program is designed around a pre-study program to be completed prior to arriving to a four-week classroom-based course. A full drilling simulation laboratory is included in the course-work. Classroom course work is followed by four months of on-the-job experience with a mentor-assisted self-study program. The self-study program is CD-ROM based with an on-line logbook. The logbook documents the successful completion of modules that focus on both furthering knowledge and the on-the-job application of skills. Engineers must complete technical projects that have relevance to the business groups in which they are working. Each engineer will need to successfully complete a final exam to receive NExT certification. This program is modular and can be delivered at any of the NExT partner locations or at a client's preferred location anywhere in the world. Jeff Johnson, NExT director of curriculum in Tulsa, also directs the NExT Subsurface Integration Program. The NExT facilities are in the same location as the OU Integrated Core Characterization Center. The program is an interactive, non-traditional project-based learning environment that is driven by the synergistic process of integrating multiple disciplines to characterize rock, pore and fluid systems.

NExT Subsurface Integration Program



The program is the heritage Amoco Petrophysics Program that has been operating since 1972. NExT has enhanced the program by adding risk management and uncertainty modules, increasing the physical content and adding modules in well operations, facilities and production management. The class takes 11 months and will start on September 2000. The objective is to teach the application andintegration of multidisciplinary subsurface technologies that solve business problems across the asset life cycle. Half the course addresses modules presented in one-to-five day learning segments in log analysis, geophysics-geology, project management, engineering and petrophysics integration. The other half is devoted to the project analysis and integration solving the business problem that each engineer brings with them. Not only will attendees come away with the knowledge and application of new technologies but they will also have a fundamental methodology for problem solving. Their completed projects will provide integrated technical evaluations of project data sets that form value-based business recommendations for E&P operations.

I appreciate the opportunity given to me by Keith Millheim to contribute to *OU Discovery*. Over the past few months I have been able to meet a number of the faculty and staff associated with the OU School of Petroleum and Geological Engineering, Sarkeys Energy Center and the Integrated Core Characterization Center in Tulsa. With the exceptional expertise and the "winning attitude" I have seen, I am proud to have the University of Oklahoma as one of the founding partners of NExT.

Francis Tuedor had the occasion to meet Preston Moore, one of the prominent "coaching staff" members

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of the School of Petroleum and Geological Engineering team at OU from the 1970s. They discussed the vision and value system that NExT has along with the new trends in industry and how training is impacted. Moore taught petroleum engineering at OU for 14 years and was awarded the Outstanding Drilling Engineer in the World award in 1993 by the Society of Petroleum Engineers. In 1996, he was named a Distinguished Member of SPE. Preston has written four books and published more than 130 articles in oil and gas publications. He had this to say about NExT:

"Over the years oil & gas companies have contributed research funds to universities without getting value for the money spent by integrating the results into their operations. Through the technical expertise of Schlumberger and the R&D/analytical resources of the partner universities, NExT has the ability to integrate research results into its training programs.

"Engineers participating in NExT programs will therefore be able to transfer knowledge and skills to their operations, resulting in better return on investment on training and R&D. NExT is the beginning of a new era in the petroleum industry."

For more information about NExT, please visit our Web site: www.nexttraining.net ■

William B. Cotten is general manager, NExT - a Network of Excellence in Training. After graduating from Oklahoma State University in 1972 with a bachelor's of science degree in business management, he was recruited by Schlumberger and began his career as a field engineer in Dubai, UAE. Cotten has been with Schlumberger for the last 27 years in various assignments as resident manager, technical engineer and personnel manager in the Middle East, South East Asia, Europe and the USA.

Francis Tuedor is the NExT director of curriculum (DOC) for Well Engineering and Operations and is based in the Well Construction Technology Center in Norman. He is responsible for managing the activities of the Well Engineering and Wellsite Operations field of expertise for the purpose of achieving the strategic objectives of NExT. He is also responsible for ensuring that training programs and curricula are designed, developed and delivered to meet or exceed expectations of NExT customers in a safe, professional and cost-effective manner.

Tuedor was district manager for Dowell Schumberger (Nigeria) Ltd., Warri, Delta State, Nigeria, before accepting the post as DOC in Norman. His experience with Schlumberger includes oilfield operations and line management, training design, development, delivery management and commercialization. As a corporate training manager in Schlumberger, he was also responsible for establishing and managing a training facility in Pau, France, that led to an on-line training project.

Francis Tuedor, NExT Director of Curriculum

Tuedor earned a degree in chemical engineering from the University of Ife (now Obafemi Awolowo University) Ife-Ife, Oyo State, Nigeria, and completed Harvard University's Management Development Program in November 1999. He is married to Mimi Tuedor and they have one daughter, 5-year old Tiffany. The Tuedors live in Norman. ■

Ruth Brown Takes New Job

Ruth Brown, project specialist at the Well Construction Technology Center since 1993, has accepted a position as assistant to the director of the Oklahoma Geological Survey. Located in Sarkeys Energy Center, the Oklahoma Geological Survey is a state agency that supports research and public service.

"I speak for everyone at WCTC when I say that Ruth will be missed," says Subhash Shah, director of WCTC and Stephenson Chair Professor. "She has been an important member of the WCTC team and she has our best wishes for continued success at the Geological Survey."

Ruth Brown

Brown began her responsibilities at the Oklahoma Geological Survey in mid-April 2000. ■

Well Construction Technology Center Update

Subhash Shah, director of the OU Well Construction Technolgoy Center, was named to the board of directors of the International Coiled Tubing Association in February of this year. The annual ICoTA meeting will be held in Houston April 5 and 6. Dr. Shah is also a session chairman at the convention.

Coiled Tubing Consortium Update

The Coiled Tubing Consortium was initiated in 1997 when a number of industry service providers teamed together to establish a consortium to develop correlations for frictional losses and rheology on non-Newtonian fluids and foams pumped through reeled and straight coiled tubing. In Phase I of the study, the Consortium focused on gathering frictional pressure loss data for drilling, completion and stimulation fluids; developing engineering and design correlations; and evaluating rheology of fluids and foams as a function of shear rate and temperature. Phase II is currently under way and includes research topics such as drag reduction, wellbore cleanout, foam friction, coiled tubing fracturing, and field data comparison and confirmation.

National Science Foundation

Applied Geodynamics in Steamboat Springs, Colorado and the WCTC research team jointly submitted research proposals to the NSF "Controlled Foam Injection for the Fracturing of Rock and Concrete" project. Phase I was completed in the spring of 1999 and Phase II started in the fall of 1999. WCTC is a sub-contractor in both phases of the project. This project is researching the application of using foams for rock excavation in the mining industry.

Noble Engineering & Development Ltd.

Noble Drilling Corporation and WCTC have signed a two-year agreement to develop technologies specifically designed to improve the real-time drilling performance of the driller. Noble's strategy is to develop PC-based tools to assist the driller with control of the application of WOB, rotary speed, torque, and overall control of the drilling fluids and circulation.

NExT

Schlumberger, the University of Oklahoma, Texas A&M University, and Heriot-Watt University in Scotland have entered into a joint venture called NexT, Network of Excellence in Training. NExT, will offer the industry education programs that com-bine academic excellence with professional industry expertise. NExT is based at the Well Construction Technology Center (WCTC) where training will be delivered. (See Bill Cotten's Guest Column about NExT on Page 10)

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Roegiers Selected for SPE Honor

Jean-Claude Roegiers, McCasland Chair and Professor of Petroleum Engineering in the Mewbourne School of Petroleum and Geological Engineering, has been selected as an SPE Distinguished Lecturer for 2000-2001. Beginning next fall and continuing through June 2001, Roegiers will be traveling nationally and internationally to SPE sections to speak on "The Importance of Rock Mechanics to the Petroleum Industry. "

"To be selected by a panel of one's peers as an SPE Distinguished Lecturer clearly marks the mastery of one's profession," says Keith Millheim, Eberly Family Chair and director of the Mewbourne School of Petroleum and Geological

Feeding Life through *Education*

John Dewey, American philosopher and educator, never met Curtis Mewbourne but he certainly recognized the makeup of the man. Dewey once said, "Education is not a preparation for life …education is life itself." For Curtis Mewbourne, life and education have walked hand in hand.

As you will read in other articles, Curtis Mewbourne graduated from OU in 1958 with a bachelor's degree in petroleum engineering. After serving as an officer in the U.S. Army and working as a petroleum engineer in the industry, he founded Mewbourne Oil Company in 1965. In the dawn of the new century, Mewbourne Oil holds exploration and production operations in Oklahoma, Texas and New Mexico.

Lifelong learning, a popular "new" direction in academia, has existed for centuries. Those men and women who recognize education as a vital nutrient for their own health foster the value of education in others. Curtis Mewbourne is such a man. A caring family man and outdoor enthusiast, he passes his love and knowledge of Mother Nature and her creatures to his children and grandchildren. Curtis also shares the great fun of life with his friends.

A longtime supporter of the University and Petroleum and Geological Engineering in particular, Curtis endowed the first professorship in the history of the College of Engineering. He has been instrumental in raising industry support and has provided internship opportunities for petroleum engineering majors for more than twenty years.

He recently made a strong commitment to funding and mentoring future engineers through the newly created and very unique Mewbourne Leadership Scholars Program.

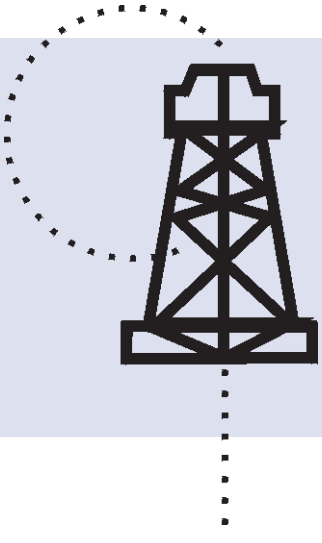
Forty-two years after he wore the OU mortarboard, Mewbourne is once again making history. The Mewbourne School will be the first endowed school in the College of Engineering. With his support, the Mewbourne School of Petroleum and Geological Engineering at the University of Oklahoma will not just prepare its graduates for life; it will help satisfy the essential need for lifelong learning.

W. Arthur "Skip" Porter is university vice president for technology development and Dean of the College of Engineering. He also serves on the Cabinet of the Governor of the State of Oklahoma as Secretary for Science and Technology Development.

OU Means Leadership for SPE

Eight OU graduates have served as president of the Society of Petroleum Engineers:

1959	John S. Bell	1979	Charles L. Bare
1960	Wayne E. Glenn	1982	W. Clyde Barton, Jr.
1962	R.A. Morse	1991	Arlie M. Skov
1974	Donald G. Russell	1999	Gustavo J. Inciarte



OU's Presence in Tulsa Continues to Grow Rapidly

The Integrated Core Characterization Center located at the OU Schusterman Health Sciences Center (former Amoco Research Center) in Tulsa has been far from idle during the transition from BP Amoco to OU ownership. It continues to generate business in the area of special core analyses and field studies. Among the current projects at the laboratory are:

- Calibration of two Atlantic margin 4D seismic studies for reservoir management.
- Determination of anisotropic elastic properties of shales from the Gulf of Mexico, North Sea, deepwater Angola and Caspian Sea.
- The calibration of NMR response to characterize the pore models for a carbonate reservoir in Saudi Arabia.

Additional specialized projects have been carried out to examine the seismic expression of shallow water hazards. The IC^3 resource is the focal point for an industrial consortium called the "Experimental Rock Physics Consortium." This effort capitalizes on the unique ability of the facility to perform fast and efficient technical service work but more importantly to carry out fundamental research in the area of rock physics. Anadarko, Apache, Conoco, Exxon, Halliburton, Phillips, Texaco, Unocal, Vertias and Western were visited during the consortium's promotional tour. Representatives of the Department of Energy have visited the lab and expressed interest in its capabilities.

The presence of IC^3 in Tulsa was pivotal in locating the NExT petrophysical training program in Tulsa. The University of Oklahoma is the NExT Center of Excellence for Petrophysics and Geophysics. The director of curriculum is Jeff D. Johnson, who also directs the NExT Subsurface Integration Program. NExT is an exciting opportunity in which Schlumberger has partnered with three major universities to supply industrial training in core areas such as petrophysics and well completion. (see article on pages 10-14).

Results of the studies being conducted at IC^3 are being integrated into a new graduate "Seismic Reservoir Modeling" course offered this semester. The course is team-taught by professors Anuj Gupta, Chandra Rai and Carl Sondergeld, all from the Mewbourne School of Petroleum and Geological Engineering, and John Castagna, McCollough Chair and professor in the College of Geology and Geosciences at OU. This new integrated training will help engineers in using time lapse seismic as a reservoir management tool. Ten graduate students are participating in the class this semester.

The facilities have already been used to enable graduate students to carry out research activities related to their theses and will continue to factor heavily in future student research. ■

To contact IC^3:

The University of Oklahoma
Integrated Core Characterization Center
OU - Schusterman Health Sciences Center
4502 E. 41st Street
Tulsa, OK 74135-3014
918-660-3014
FAX: 918-660-3001

Roegiers, *continued from page 15*

Engineering. "This is a wonderful honor for J.C. as well as for the Mewbourne School." Millheim is one of the few individuals who have been selected twice as an SPE Distinguished Lecturer.

Roegiers has more than 30 years of experience in rock mechanics as applied to civil, mining and petroleum engineering. He is the author or co-author of more than 200 technical papers and has supervised more than 40 graduate students. He is the founder of OU's Rock Mechanics Institute and is regularly called upon as a consultant, mostly when traditional approaches fail to explain the reservoir behavior. He is a founding member of the American Rock Mechanics Association and is active in promoting interdisciplinary approaches. Roegiers holds a civil engineering degree from the Université de Liège in Belgium and a doctoral degree in geoengineering from the University of Minnesota.

"There is now sufficient evidence that rock mechanics plays a primary role in all aspects of oil and gas field developments," says Roegiers, "from the exploration phase to the well's abandonment. "When humans intrude, the formation or rock mass adapts and/or reacts and is either cooperative or disturbed to the point of shutting off any further production."

'My goal for these lectures is to illustrate these points via pertinent field case studies and to show that a better appreciation of the reservoir behavior can be extremely beneficial from an overall economical aspect." ■

Young *Perspectives*

Warrick Combs

Warrick Combs graduated from OU with a bachelor of science degree in petroleum engineering in May 1998 and will complete his MBA at the University of Houston-Clear Lake in August 2000. He is currently employed as a production engineer with BP Amoco and lives in Houston with his wife, Jarie Combs, who studied pre-nursing at OU. Warrick served as president of the National Society of Black Engineers in 1996 and was nominated for National Black Engineer of the Year for 1997-98. He is originally from Houston.

What were your thoughts on graduation day? For me, I thought the most difficult times were behind me. No more studying until the wee hours of the morning. No longer would I have to rush to the computer lab to finish a report. In short, I saw life after graduation as a utopian state of existence consisting of no lectures, no quizzes, no tests, and no grades. Boy, was I wrong. Working in the petroleum industry, I quickly learned that weekly classroom quizzes were replaced by managerial inquiries on individual well performance. Semester exams were replaced by technical position papers justifying operational decisions. And final grades in the workforce will determine my continued employment and advancement within a company.

However, there is definitely no need to fear graduation. While commencement placed me on the threshold of the greatest challenges of my life, it also provided me with the greatest opportunities of my life. I was blessed to have knowledgeable mentors both inside and outside of the petroleum industry speak words of wisdom into my life. I would like to share a few fundamental principles that will make commencement the starting point on a pathway that leads to excellence.

▲ *View problems as opportunities.*

When you are given an assignment or a project that seems difficult to complete, boldly accept the challenge. In the process of working on this project, you will develop new skills that will increase your effectiveness.

▲ *Be the MVT (Most Valuable Teammate).*

Most tasks in the petroleum industry are completed by teams. To be successful, you will need to display the characteristics of a quality team member. Having clarity in your communication, understanding what is expected of you, and helping your fellow teammates are just a few of the things you can do to make yourself a valuable asset to the team.

▲ *Be innovative.*

This is easier than it sounds. No matter what your work responsibilities are, ask yourself, "Is there a better way of doing what I am doing?" The answer to this question may take your performance to a higher level.

▲ *Find a quality mentor.*

Find people who are successful and imitate them. Listen to their experiences and use their input to plan your career development. These individuals have already been down the path that you will travel, so let them guide you.

Commencement is the start of a new journey into uncharted territories. No one knows exactly where his or her journey will take them or where their journey will end. But, by practicing the principles mentioned above, you can construct the map that will lead you toward a place of future success. ■

The end is finally near. I can see the light at the end of the tunnel and yes, it's warm on my face. May 2000 marks the end of my seventh year of university education, the end of a second (more useful) degree and the beginning of a new adventure. Although none of the past seven years has been given me any bad memories, the last three at OU have truly provided some of the finest.

Attending a big university in the States was a dream of mine back in high school up in Canada. Thanks to four years of hard work, generous support from alumni, and faculty and staff who believed in me – that dream was made possible. After three years in the Mewbourne School of Petroleum and Geological Engineering here at OU, the excitement still hasn't worn off. I pinch myself sometimes walking across campus for it is only now that I can fully appreciate how fortunate I am to have been educated at this fine institution.

My Petroleum Engineering degree has opened doors that I didn't even know existed. I know there is immensely more to learn, and there will be many problems I do not yet have the answers to, but I thank the faculty and staff for giving me the background and confidence to tackle these future challenges.

As I am about to head off into that foreign land known as the "real world," I would like to pass on a few bits of advice I know to be true in this

stable world I leave behind known as "university." To students – go to class, ask questions, and don't cheat. I have never known anyone who did these simple things and failed. Get involved, play sports, volunteer, whatever you want to do, don't just sit there. To faculty – genuinely care for your students and get excited about your lectures. We will learn 10 times more about a subject if you teach with enthusiasm. To employers – recruit with integrity. Othewise, you make us all (the industry and the institution) look bad. To the recruited – don't give up and don't play games. If you know you're going to reject an offer, do it quickly. If you've already accepted an offer, cut other leads.

It's not much, but it's what I leave you with. Thanks for the education, the friends, and the memories. See you in the foreign land. ■

Kevin Book

Kevin Book is from Edmonton, Alberta, Canada, and holds a degree in mathematics from the University of Alberta. He will graduate from OU in May 2000 with a bachelor of science degree in petroleum engineering. The P&GE faculty elected Kevin "Outstanding Senior" in the School. He has accepted a position with Burlington Resources and will be starting his new job in Farmington, New Mexico, in July.

I made the decision to attend OU at the suggestion of my father's boss. My dad works in the petroleum industry. His boss encouraged me to consider petroleum engineering as my major. He gave me the phone number of the recruiter for one of the best petroleum engineering schools in the world, Teri Walker at the University of Oklahoma. My experiences at the University of Oklahoma began the day Teri showed my parents and me around Sarkeys Energy Center. We were shown the state-of-the-art lab facilities. I was given an application for petroleum and geological engineering scholarships. Later I found out I'd been awarded the Buck and Laura Lale Scholarship.

In the beginning of my freshman year, I attended the Career Services orientation. I signed up and began applying for summer jobs. Fall 1997 was a good time in the industry. Many companies were hiring. I had several interviews and offers. One interview stood out. Drew Greene interviewed me for a summer internship with Mewbourne Oil Company. A few weeks after that interview I introduced myself to Curtis Mewbourne and Joe Odom at a P&GE Advisory Board luncheon. Mr. Mewbourne is the founder and president of Mewbourne Oil Co. and Joe Odom is vice-president for Administration. Mr. Odom recognized my name from Drew's interview report. It was then that Joe took me aside and interviewed me himself. A few days later my parents and I attended the P&GE Distinguished Scholars Banquet. Mr. Mewbourne and Mr. Odom were at that event, too. It was a short time later that I received the job offer that I accepted. I was placed at a field office in Woodward, Oklahoma. I learned a great deal about the operations of an independent oil production company. I worked alongside both engineers and field personnel. After my summer evaluation was complete, I was invited to work for Mewbourne Oil Company the next summer at Perryton, Texas, and I was offered a Mewbourne Oil Company Scholarship to help with the costs of school. I accepted both. I was again evaluated based on my summer performance and was offered full time employment at Mewbourne Oil Company after I graduate. I accepted. This commitment inspired me to become more involved in the School. I served as SPE student chapter secretary and president, and as a result of my activities became the first recipient of the Mewbourne Leadership Scholars Award.

After working for Mewbourne Oil Company I realize why so many of his employees have worked for the same company for so long. Mr. Mewbourne is very loyal to his employees. At Mewbourne Oil Company I am a face and a person, not just a number on the payroll.

I am very appreciative of those who have helped me along the way. Thank you. ■

Charles Martin is a junior in the School of Petroleum and Geological Engineering and served as president of the OU chapter of SPE. He was recently named the first Mewbourne Leadership Scholar at the University of Oklahoma. Charles is from Carmen, Oklahoma and graduated from Alva High School.

Charles Martin

The Algerian Graduate Program

An International Success Story for OU

The University of Oklahoma graduate program in Petroleum Engineering in Algeria is rapidly becoming the primary educator ofpetroleum engineers for the Algerian National Oil Company, SONATRACH, the 10th largest corporation in the world.

The program officially began in July 1997 with the enrollment of the first group of 12 Algerian students. All 12 students completed their master's degree in petroleum engineering (with thesis) in the summer of 1999 and are currently working for SONATRACH. The performance of these first graduates of the Algerian Program has been impressive and the program is receiving positive attention in Algerian technical journals.

"This is the first time we have hired petroleum engineers who required very little supervision. All 12 engineers are now involved in major projects. We strongly support the OU graduate program. We have high expectations from this program because it provides human resources in an area so vital to SONATRACH and to our country," stated A. Delhomme, director of SONATRACH's Petroleum Engineering Division in a recent conversation with Djebbar Tiab, director of the Algerian Program and professor in the Mewbourne School of Petroleum and Geological Engineering. Two additional groups totaling 34 Algerian students are currently enrolled in the master's program. The 13 students in Group 2 started the program one year ago and are expected to defend their theses next summer or early fall 2000. The remaining 21 students who comprise Group 3 will start their coursework next summer. The research emphasis of the first three groups is reservoir engineering. The fourth group, which is also about to start a nine-month English language program, is expected to emphasize drilling engineering. Due to the large increase in enrollment, Tiab expects to hire an adjunct professor or lecturer dedicated full-time to teaching graduate courses in Algeria and supervising thesis research projects. Total funding for this temporary position will be from the Algerian Graduate Program.

First graduates of OU's program in Algeria.

For more information about the OU Graduate Program in Petroleum Engineering in Algeria, contact:

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First Graduates of the OU Master's Program in Petroleum Engineering in Algeria

Mongi Amiar
Djillali Benzamia
Abdelhakim Deghmoum
Adel Dehane
Abdelwafi Draou
Maamar Koceir
Brahim Medjani
Abdelkrim Ouandlous
Ridha Mohamed Ouezzani
Reda Recham
Kamel Zahaf
Rachid Zerarek

OU Discovery

Mewbourne School of Petroleum and Geological Engineering

Mewbourne School of Petroleum and Geological Engineering

■ Consistently ranked among the top five petroleum engineering programs in the country.

■ More than 5,000 graduates since first degree was awarded in 1919.

■ Eight OU graduates have served as president of the Society of Petroleum Engineers.

■ 100 percent job placement over the past 10 years and highest average starting salary on campus.

Average offer in 1999 for bachelor's degree from OU in petroleum engineering in 1999: $56,000

■ First petroleum school to offer master's degree in petroleum engineering taught entirely in another country. The University of Oklahoma is rapidly becoming the primary source of petroleum engineers for SONATRACH, the Algerian national oil company and tenth largest corporation in the world.

■ Founding equity partner of NExT, a ground-breaking new alliance bringing academics and industry together to provide training, support for technology transfer and continuing professional education. The other three NExT partners are Schlumberger, Texas A&M University, and Heriot-Watt University.

■ MPGE's Integrated Core Characterization Center in Tulsa is the industry-leading rock physics lab, available to industry for R&D projects and rock property measurements. The Center also houses MPGE's graduate program in petrophysics and is the NExT Center of Excellence for petrophysics and geophysics.

■ MPGE's Well Construction Technology Center is part of University Research Park and provides the oil and gas industry with innovative technology in the areas of drilling, completions and production operations. It is the NExT Center of Excellence for well engineering and operations.

■ Keith Millheim, Eberly Family Chair and director of the Mewbourne School of Petroleum and Geological Engineering, is a member of the National Academy of Engineering and the only OU faculty member in this prestigious honorary.

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The University of Oklahoma is a doctoral degree-granting research university serving the educational, cultural and economic needs of the state, region and nation. Created by the Oklahoma Territorial Legislature in 1890, the University has 18 colleges offering 134 degree programs, 82 master's degree programs, 51 doctoral degrees, four graduate certificates, and one professional degree. OU enrolls almost 27,000 students on campuses in Norman, Oklahoma City and Tulsa and has approximately 1,830 full-time faculty members. The University's annual operating budget is $797 million.

The College of Engineering has long promoted Oklahoma's economy through research, instruction and public service. The College is the largest engineering program in the state, with 2,200 undergraduate students, 550 graduate students and 100 faculty. The College offers undergraduate degrees in 13 engineering fields. A few years shy of a century old, the College continues to emphasize teaching, mentoring and research, as well as commercialization of technology to benefit the University and the Great State of Oklahoma (October 1999).

OU Discovery

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