

Mining Engineering

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Mining Laboratory Equipment and Scholarships Funded By ALLIANCE COAL and MASSEY ENERGY

Alliance Coal Analytical Laboratory

The Alliance Coal Analytical Laboratory was dedicated on February 9, 2007 as UK alum and Alliance Coal President, CEO and Director Joseph W. Craft III spoke of the importance of coal and mining engineering education in today's economy. Pledging \$300,000 over the next five years, the Alliance Coal gift will enable the department to renovate and purchase much needed new laboratory equipment.

"Alliance is once again leading the industry by establishing the first named laboratory in the Department of Mining Engineering — the Alliance Coal Analytical Laboratory," proclaimed Dean Thomas Lester. "By purchasing this equipment and updating this lab, together we are providing additional opportunities for our students to further their education and improve their preparation for careers in mining."

Along with funding for equipment, the gift will support four undergraduate scholarships per year. The fourth largest coal producer in the eastern United States, Alliance Coal employs a high percentage of University of Kentucky graduates, many of whom are headquartered in the operations support office in Lexington. Joining Mr. Craft and representing Alliance Coal were Bryan Lummus and UK Mining Engineering alums Jeff Brock (BSMNG '91) and Ernie Thacker (BS Geology '94 and BS MNG '01).



Left to right, Rick Sweigard, Chairman, Department of Mining Engineering, Tom Lester, Dean, College of Engineering, and Joe Craft III, President, CEO and Director of Alliance Coal. A plaque bearing the new name is at right in the photo.



Left to right: Rick Sweigard, Chairman, Department of Mining Engineering watched as Chris Adkins, Chief Operating Officer and Senior Vice President of Massey Energy Company, Tom Lester, Dean, College of Engineering, and Drexel Short, former Massey Senior Vice President of Group Operations, cut the ribbon at the new Massey Energy Mine Design Laboratory.

Massey Energy Mine Design Laboratory

Students at the University of Kentucky were particularly pleased with Massey Energy's gift on May 30 when UK alums Chris Adkins (BSMNG '93) and Drexel Short (BSCE '78), pledged \$310,000 to the Mining Engineering Department and dedicated the newly named Massey Energy Mine Design Laboratory.

Emphasizing the many hours students spend in the Mine Design Lab, 2007 graduate and SME Student Chapter President Brian O'Dea quoted poet William Yeats who said, "Education is not filling a bucket, but lighting a fire." The flame in the Massey Energy logo is a reminder of the company's commitment to education, O'Dea said.

Over the next five years, Massey will provide \$25,000 per year for laboratory equipment and computers; \$5,000 per year to the SME UK student chapter for national and international student competitions; and tuition reimbursement of \$8,000 each to four students per year.

Chris Adkins, Massey Energy Chief Operating Officer and Senior Vice President, and Drexel Short, former Senior Vice President of Group Operations, both noted the importance and value of relationships formed during the college years. Chris expressed a special thanks to Ed Thompson, Mining Engineering

Greetings from the Chair

The 2006-2007 academic year, which recently came to a close, was one of the most successful in recent memory. Undergraduate enrollment and the number of graduates continued to rise; private giving has increased and student involvement in professional development activities has grown remarkably. Major gifts from Alliance Coal and Massey Energy are highlighted in this issue along with articles about our new student initiatives. I would like to take this opportunity, however, to emphasize a growing concern that affects all of us associated with the mining industry, particularly, the coal industry in Kentucky.



Richard Sweigard

As most of you know, there are serious technical challenges facing the coal industry in Kentucky. A major factor limiting coal production in eastern Kentucky is depletion of the thicker seams. The Kentucky Geological Survey estimates that approximately 84% of the original reserves are still in the ground but much of this is unminable because of its limited thickness. New regulations that have resulted from last year's mine accidents have created logistical and technical obstacles that must be overcome. Environmental challenges to valley fills and slurry impoundments also represent a threat to the future of coal mining in Kentucky. New technologies are needed for autonomous mining systems that can mine thin seams without requiring humans at the face. We must come up with ways to selectively mine coal to minimize the amount of dilution and we must come up with better ways of handling coal prep plant waste. Finally, to continue to operate, we must develop those technologies that will make mines safer and will enable us to respond more effectively in case of a mine accident.

In this issue there is a report on an important first step in solving the thin-seam mining problem. Just recently, the Department of Mining Engineering has received a seed grant from the Governor's Office of Energy Policy to begin work on this challenge. The project is under the direction of Dr. Joe Sottile but will involve several of the faculty members. The goal of this one-year project is to identify all of the major obstacles to mining thinner seams and to begin the process of developing solutions. It is necessary to understand that this is a complex problem that will not be solved by a one-year seed grant. However, this project is significant in that it brings together a team of investigators that has great potential for future breakthroughs in technology. In addition to researchers at UK, the team includes Joy Mining Machinery, RedZone from Pittsburgh (a firm consisting of robotics specialists from Carnegie Mellon University), Kentucky River Properties, and Engineering Consulting Services.

The thin-seam mining issue, along with the other technical challenges mentioned previously, helps to underscore the need for state-supported mining technology research. Since the demise of the U.S. Bureau of Mines, there has been no federal agency with a broad interest in mining technology research. Some programs do address specific issues, such as miner health and safety, but many of the technical issues facing the coal industry in Kentucky are regional in nature and not likely targets for federal funding. The Commonwealth does invest some money each year for coal conversion and utilization research at the Center for Applied Energy Research, but it has not yet made a commitment to coal extraction research. Thirty years ago, it was assumed that the supply of easy-to-mine Kentucky coal was limitless. All that was needed was more markets for the coal. Those days are gone. Now we need new mining technology to keep up with the demand.

Over the next several months, we in the Department of Mining Engineering, along with coal industry help, will attempt to make the case for a continuous stream of research funding from Coal Severance Tax revenues to address the technical challenges that threaten the coal industry of Kentucky. This approach is not unprecedented. Currently, our neighbor, Illinois, invests approximately \$3 million each year in its Illinois Coal Research Program with a good portion of those funds being used to develop new mining technology that meets their specific needs. We intend to form a Mining Research Advisory Committee made up of leaders from the mining industry, equipment manufacturers, landholding companies, engineering consultants, and academia. Then we will present our case to legislative committees and administration officials.

If we do not address these technical issues, coal production in Kentucky will continue to decline. It is our belief that an investment in coal extraction research will not only preserve the viability of the mining industry but it will also spawn new industries in Kentucky, such as the commercialization of automated mining technologies, and the growth of energy complexes that will house coal-to-liquid facilities in the coalfields. We hope each of you will lend your support, as needed, to this cause and help secure the future of the coal industry in Kentucky.

25th Annual Mining Engineering Awards Dinner

Approximately 100 department faculty, staff, current and former students, friends, and family attended the 25th Annual Mining Awards Dinner at the Hyatt Regency on April 28. Capping off a week of activities beginning with the Distinguished Lecture Series and the Spring Mining Engineering Foundation Board meeting, the awards dinner recognized and honored the graduating class of 2007.

Earning their B.S. degrees were Kyle Adams, Josh Bailey, Ken Huffman, Russell Lamont, Brian O'Dea, and Craig Travis; Kelly Thompson Short and Travis Watts were recognized as December '06 graduates. Also recognized were M.S. degree candidates Kevin Hunt and Vishnu Reddy, along with Ph.D. candidate Anup Tripathi.

After dinner, faculty advisor Braden Lusk presented a lively power point presentation showcasing the student activities throughout the year. Dr. Lusk was also honored as Outstanding Teacher by the SME Student Chapter.

Special graduate recognitions followed, as Russell Lamont was presented the Academic Excellence Award as well as the Careers-In-Coal Lamplighter Award. Josh Bailey was presented the Tau Beta Pi Outstanding Senior Award, and Brian O'Dea received the Catesby Clay Leadership Award. Dr. Stanley Suboleski, who earlier in the week delivered the Mining Engineering Foundation Distinguished Lecture, presented the Old Timers' Club Award to Brian O'Dea.

The night ended as Kentucky Coal Association President Bill Caylor and Rick Sweigard inducted Mr. William B. Sturgill into the Kentucky Mining Hall of Fame.

Join us in 2008 at the Annual Mining Dinner and support next year's graduating class at the University of Kentucky. It's a great way to reconnect with classmates and friends!



Russell Lamont receiving the Careers-In-Coal Lamplighter Award.

Upcoming Events

August 29, 2007
Kentucky Professional Engineers in Mining Seminar
Holiday Inn North – Lexington, KY

September 28, 2007
SME Student Chapter Golf Outing
Raven Rock - Jenkins, KY

October 27, 2007
Homecoming (UK vs. Mississippi State)

November 9, 2007
Mining Engineering Foundation Board Meeting
University of Kentucky Campus

November 17, 2007
College of Engineering Scholarship Luncheon
Embassy Suites – Lexington, KY

December 8, 2007
Recognition Ceremony for December '07 Graduates
Memorial Hall – University of Kentucky Campus



2007 Graduate Brian O'Dea (left) with Dr. Braden Lusk



Upon graduation, students receive a Mining Engineering hard hat

William B. Sturgill Inducted into Kentucky Mining Hall of Fame



William B. Sturgill

William B. Sturgill, one of coal's most influential leaders, was inducted into the Kentucky Mining Hall of Fame on April 28 at the annual Mining Engineering Awards banquet. He joins previously inducted members Dave Zegeer, Catesby Clay, Raymond Bradbury, and Prof. Ted Haley.

Mr. Sturgill graduated from the University of Kentucky in 1946 with a Bachelor of Science degree in Political Science. While an undergraduate, he played for Coach Adolph Rupp and was a senior on the first UK basketball team to win a National Invitation Tournament Championship (at that time the NIT was the venue to decide the national champion).

Mr. Sturgill's 50-plus years in the coal business is impressive. Considered a pioneer of surface mining and reclamation techniques, he built the largest coal auger in the world, and served as president of Kentucky Oak Mining and Golden Oak Mining Companies. He was also an original board member of the merged L&N and C&O Railroad companies, creating the CSX Corporation, and served as director of the merged company for several years.

William Sturgill was one of the organizers and former chairman of the Kentucky Coal Association. "Bill's contributions to the coal industry are significant," noted Mike Musulin, former president of the Kentucky Coal Association. "His many innovations in both mining techniques and employee relations are important building blocks of the industry in our state. He learned the importance of having coal's voice heard in Frankfort in his early years by serving as head of an association of coal producers in Eastern Kentucky. He knew that laws and regulations debated and passed in Frankfort would greatly impact the industry."

Education was a top priority, and Mr. Sturgill served on and strongly supported the Mining Engineering Foundation. He served on the University of Kentucky Board of Trustees for 18 years, 10 of those as chairman. The coal industry in Kentucky has progressed into a better educated and highly technical industry thanks in large part to the efforts and vision of William Sturgill.

Please Let Us Know!

If you prefer to receive this newsletter at a different address, or if your home or company address has changed, please contact Geaunita Caylor at 859-257-2820, fax 859-257-2173, or email gcaylor@engr.uky.edu.

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SME Student Chapter Competes in Intercollegiate Mine Design Contest

The SME Student Chapter competed for the first time in this year's SME Mine Design Competition. Team members Josh Bailey, Monique DeSpain, Troy Gullett, Brian O'Dea, Craig Travis, and Nate Waters worked in two phases beginning in November '06, and ending at the SME National Conference in Denver, Colorado in February. This year's problem was to design an underground quarry given the drillhole data and a property boundary.

Phase I was completed in November over a two to three day period of 16-18 hour days. It was with this phase that the basic design for ground control, ventilation, production timing, and surface facilities was laid out. Senior Craig Travis said "This was a great bonding experience for those who participated, and a great way for all of us to brainstorm and entertain different ideas on how to solve the problem at hand. We appreciated all the meals provided by our faculty advisor, Dr. Braden Lusk, and the SME Student Chapter."

Phase II of the project took place at the SME National Conference in Denver.

After encountering several airline flight delays and arriving late to the design competition, the team worked diligently to complete the project. The focus of the second phase was the design of a preparation plant and economics for the entire mine. After reaching final conclusions, the team presented their full report to the judges. Though the team did not place, they received many compliments and sound advice on next year's competition.

The students who participated plan to compete again next year, and more students have expressed an interest. "It proved to be a great learning experience for all" said Travis, "and was a great asset for the seniors in their senior design projects for the department."



Competition team members (sitting from left) Monique DeSpain, Troy Gullett, and Craig Travis. Standing is Brian O'Dea.

Students Participate in International Intercollegiate Mining Competition



UK Men's Mucking Team members Craig Travis, Amir Pasha, Josh Bailey, Logan Curry, Troy Gullett, and Nate Waters.

Students in the Department of Mining Engineering also competed in their first International Mining Competition (Mucking Contest) held in Tucson, Arizona, on March 24. Dedicated to the men who lost their lives in a horrific mine disaster in the mid 20th Century, the competition keeps early mining techniques alive by testing strength and skills with old-fashioned mining techniques. Events such as jack-leg drilling, hand steel, surveying, hand mucking, track stand, swede saw, and gold panning focus on teamwork, and are timed for speed and accuracy.

UK Mining Department's newest faculty member, Dr. Braden Lusk, competed in this event as a student at the University of Missouri-Rolla. "With his competitive drive and desire to see the University of Kentucky participate, a group of 12 students volunteered to undergo his tutelage to have their Mining Department compete for the first time," said Logan Curry, a UK sophomore team member.

Before the scheduled March competition, the UK Muckers traveled to the campus of the University of Missouri-Rolla (UMR) for a weekend of practice. UMR's team graciously allowed UK's students to join them and use their facilities to practice and gain much needed experience in each of the events.

While practice time was limited due to the busy spring semester, the students also undertook a fundraising campaign to raise \$10,000 for registration fees and travel to the competition in Tucson. After contacting local businesses, friends from industry, and resources within the University, finances were secured and the team from the University of Kentucky was on its way.

UK entered one team in the co-ed division and one team in the men's division. Teams from around the world competed. Australia

Continued on next page

Thin Seam Research

The Department of Mining Engineering was awarded a grant of approximately \$100,000 beginning July 1 by the Governor's Office of Energy Policy to start work on thin-seam coal mining research. With the depletion of thicker seams in the eastern coalfields and the lack of adequate mining technologies suitable for extracting coal from thinner seams, it is critical that new techniques for thin seam mining be researched and developed.

Under the direction of Associate Professor Joe Sottile, the goal of the research program is to identify the major obstacles in extracting coal in thin seams, and to develop preliminary solutions in order to make Kentucky's vast coal resources economical to mine.

Research will identify the specific barriers to economic extraction of thin-seams: extraction, haulage, and support operations, and begin the process of developing new systems and solutions specific to each problem. This is just the first step in what is

hoped will be the long-term solution to a serious problem facing the coal industry in Kentucky.

Along with Drs. Sweigard, Unrug and Lusk, the University is partnering with Joy Mining Machinery, the leading manufacturer specializing in underground mining equipment; RedZone, a firm specializing in robotics with ties to Carnegie Mellon University; Engineering Consulting Services, a multi-disciplinary engineering firm specializing in mining, civil, environmental, and health and safety; and, Kentucky River Properties, a land holding company which owns a significant amount of thin seam reserves in eastern Kentucky.

The Department will draw on expertise in all areas of technical research, practical applications, robotics and automation necessary to ensure that coal continues to be a major source of electricity, not only in Kentucky but throughout the nation, and is recognized for the essential role it plays in meeting today's U.S. energy needs.

Students Participate in International Intercollegiate Mining Competition - *continued from previous page*

and Great Britain were represented, along with the University of Missouri-Rolla, the University of Arizona, the University of Nevada at Reno, the Colorado School of Mines, Montana Tech, and Virginia Tech.

The University of Kentucky placed well in both events, and the co-ed team of Monique DeSpain, Eric Joseph, Mallory Miller, Kyle Perry, and Brian O'Dea tied for second among its division. While success wasn't expected in the Department's inaugural year, competing and gaining knowledge about the competition will no doubt lead to future successes. Logan Curry continued by saying, "This event has raised the aspirations of many to continue to participate and perfect our skills for next year!"



UK Co-Ed Mucking Team members Monique DeSpain (blue hard hat foreground) and Mallory Miller.

ALLIANCE COAL and MASSEY ENERGY - *continued from front page*

Laboratory Supervisor, for his continued friendship and support, and Drexel Short said their company would continue to seek graduates who show dedication and hard work in completing their engineering studies. Massey's Jeff Gillenwater and Eric Salyers also represented Massey Energy at the dedication.



University of Kentucky SME Golf Outing

Raven Rock, Jenkins, Kentucky

September 28, 2007 Shotgun start at 1:00

FOR MORE INFORMATION VISIT OUR WEBSITE

WWW.UKSME.ORG