News from Holden Hall

Department of Mining and Minerals Engineering
Virginia Polytechnic Institute and State University

Volume 5, Issue 2 **Fall 2013**

The Mill Report —*Dr. Greg Adel, Professor and Department Head*

The holiday season is upon us and another semester is coming to a close. That means it is time for the fall edition of *News from Holden Hall*. We are now into our twelfth issue of this semi-annual newsletter, and we continue to enjoy a great following and wonderful support from all of the alumni. Thanks so much! I would also like to thank all of you who agreed to serve as mentors for our seniors. We actually had more alumni interested in mentoring than we had mentees, so I believe the students have opened up the mentoring program to juniors and sophomores. Certainly, it never hurts to get expert advice from someone who has been there before.

The department continues to experience near-record enrollment levels with 206 undergraduates and 33 graduate students. We are projecting a graduating class of 54 for the Class of 2014, and the Class of 2015 is likely to set a new record somewhere between 60 and 70. Fortunately, the new College of Engineering enrollment caps have kicked in with our current sophomore class. This should bring our numbers back to a much more reasonable level within a few years. While it is nice to be big, it is much more appropriate to be the proper size. We certainly don't want to lose the family atmosphere that has always been a part of this program.

Likewise, our research program continues to operate at a record pace thanks to the hard work of the faculty and research staff. During the past fiscal year, we generated nearly $8 million in research expenditures accounting for over 1/3 of all university-based mining engineering research in the U.S. Of course, space for such a large research enterprise continues to be an issue, and we look forward to gaining new space in Randolph Hall over the summer once Chemical Engineering moves to the new College of Engineering Signature Building.

So how do we continue to maintain this record pace? All of the recent successes in this program stem directly from our outstanding faculty and students. In this issue of *News from Holden Hall*, you will learn how funding from the Alpha Foundation is being used by Dr. Emily Sarver, Dr. Nino Ripepi, Dr. Kray Luxbacher, and Dr. Steve Schafrik to support cutting edge research in mining health and safety. You will also learn how Dr. Luxbacher (recently tenured and promoted to Associate Professor) has taken on a new leadership role as the Associate Director of the Virginia Center for Coal and Energy Research. Likewise, you will learn how Dr. Erik Westman was recently tapped by Dean Benson to take on the role of Interim Associate Dean for Academic Affairs, while our current Associate Dean, Dr. Bev Watford (Class of 1981), takes a two-year leave of absence to join the National Science Foundation. In terms of outstanding students, please take a look at highlights from our spring awards banquet and also take note of the first student member of the ISEE Board of Directors: Kevin Becker, a senior in this department.

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The Mill Report *(continued)*

Finally, it would be virtually impossible for us to continue to thrive and excel without the support we receive from our corporate and individual donors. While we do our best to acknowledge all of our donors in "Thanks to our Donors," I hope all of you will consider the successes of this department as a direct result of your continued generosity and support. Please enjoy this issue of *News from Holden Hall*.

Dr. Greg Adel
Head, Department of Mining and Minerals Engineering
Virginia Tech

2013 Scholarship and Awards Banquet Highlights

More than two hundred students, family members, alumni and industry representatives gathered this past April for the Mining and Minerals Engineering Department's Scholarship and Awards Banquet, held in Blacksburg, Virginia. The department hosts the event each year to recognize and honor students and alumni for their significant achievements and contributions.

During the 2013 program, two new industry scholarships were announced which will begin next year. Tony DiRico, Southeast Division President for Martin Marietta Materials, and Nigel Holley ('07), Superintendent of Development and Outby with BHP New Mexico Coal, were each recognized for adding to the department's growing list of industry supporters.

Sam Sydnor receives the Charles Phillips Memorial Scholarship from Dr. Jerry Luttrell

Lynn Kern presented with the Copper Club Scholarship

The new Charles Phillips Memorial Scholarship was presented to sophomore Sam Sydnor. This endowed scholarship was established as part of the estate of the late Charles Phillips (Class of 1950). The New York City-based Copper Club awarded its highly competitive $10,000-scholarship to senior Lynn Kern.

Among the department's graduate students, Paul S. Barbery (Class '59) presented the Barbery Award, given to a graduate student at the start of his or her studies. This year saw two recipients: Ben Fahrman and Brent Slaker. Both are working with Dr. Erik Westman on instrumentation projects for ground control in underground coal mining.

Brent Slaker (l) and Ben Fahrman (r) receive their Awards from Paul S. Barbery '59.

These are but a few of the many awards conferred during the banquet, and the department congratulates all recipients for their achievements and would like to thank the many donors who have made the program such a success through their generous giving.

Thank You to Our Donors

Peabody Scholarship

Nearly half of the funds we use to operate this department come from annual donations. In other words, it would be virtually impossible to maintain this program without the generosity of the individuals and corporations who help support us. In addition to scholarships, donations are used to fund faculty and staff salaries, student activities, equipment purchases, lab renovations, and the list goes on and on. The large growth in our undergraduate and graduate programs over the past five years has put additional strain on our budget. Thus, the support we receive from individuals and corporations is more important to us now than ever before. We would like to extend a heartfelt "*Thank You*" to the following donors for their support during fiscal year 2013 (July 1, 2012 – June 30, 2013).

Individual Donations

1950's

Akers, Peter (Class of 1950)
Barbery, Paul (Class of 1959)
Bucklen, O.B. (Class of 1959)
Van Meter, Horace (Class of 1959)

1960's

Bucklen, Jerry (Class of 1962)
Daugherty, Roger (Class of 1960)
Goad, Paul (Class of 1968)
Skaggs, Gary (Class of 1968)
Suboleski, Stan (Class of 1967)
Womble, William (Class of 1965)

1970's

Artrip, Patrick (Class of 1979)
Bates, Dan (Class of 1979)
Bolen, Richard (Class of 1970)
Breedlove, John (Class of 1979)
Hatfield, Ben (Class of 1979)
Hibbitts, Charles (Class of 1974)
Lineberry, G.T. (Class of 1977)
Marcum, Ronnie (Class of 1970)
Ross, Timothy (Class of 1977)
Smith, Bryan (Class of 1979)
Snavely, Charles (Class of 1978)
White, David (Class of 1974)

1980's

Bartkoski, Mark (Class of 1981)
Brown, Mike (Class of 1983)
Carter, Roger (Class of 1981)
Compton, Tim (Class of 1983)
Ensminger, Mark (Class of 1981)
Forrest, W.R. (Class of 1983)
Johnsson, Harald B., III (Class of 1985)
Mullins, David (Class of 1983)
Prelaz, David (Class of 1984)
Stover, Gary (Class of 1982)
Whipkey, Kevin (Class of 1983)

1990's

Barksdale, Andrew (Class of 1998)
Bush, Terry (Class of 1996)
Ellis, Jennifer (Class of 1998)
Jablonski, Dianna (Class of 1990)

2000's

Ellis, John (Class of 2005)
Murphy, Crystal (Class of 2006)
Murphy, Tyson (Class of 2004)
Relyea, Caroline (Class of 2009)
Senft, Michael (Class of 2003)
Smith, Joshua (Class of 2006)
Sprick, Paul (Class of 2006)
Sullivan, Jonathan (Class of 2007)
Wozniak, Sam (Class of 2009)
Yarborough, Jay (Class of 2009)

2010's

Greenberg, Marc (Class of 2011)

Other Donors

Boggs, D.L., Mrs.
(Wife of the late D.L. Boggs, Class of 1951)

Guyer, Joseph and Diane
(Parents of Nicole Guyer, Class of 2002)

Lagesse, Melissa Bucklen
(Daughter of the late Ellis P. Bucklen, Class of 1954)

Lucas, Eric (Son of the late
J. Richard Lucas, Former Dept. Head)

MacCormac, Michael
(Father of Brendan MacCormac, MinE Student)

Massey, E. Morgan
Poling, Louis
Quillen, Mike

Stephenson, Bill
(Former Dean, College of Engineering)

Wiler, Marianne
(Mother of Jeff Wiler, Class of 2007)

Corporate Donations

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Rio Tinto
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Vulcan Materials

Alpha Natural Resources Scholarship

If you donated to Virginia Tech during FY 2013 and your name is not listed above, it is possible that your donation did not come to this Department. Please be sure to specify "Mining Engineering" on your check. Donations made to any other entity may go elsewhere. Likewise, donations made directly to the Burkhart Mining Society or one of our other student organizations do not come through the department. Nevertheless, these donations are important and we thank you for helping with student activities. Finally, if you prefer to donate online, we have established a link on our website for giving to the department. Go to *http://www.mining.vt.edu/sponsors/giving.htm* where you can donate via credit card. Please be sure to follow the instructions provided so that your gift goes to the Mining and Minerals Engineering Department.

Dr. Erik Westman Appointed College of Engineering Interim Associate Dean of Academic Affairs

Dr. Erik Westman

Erik Westman, Associate Professor in the Department of Mining and Minerals Engineering, is the newly appointed interim Associate Dean for Academic Affairs for Virginia Tech's College of Engineering. Westman's appointment comes as Bevlee Watford, a 1981 graduate of the Mining and Minerals Engineering Department and Associate Dean since 1997, leaves Virginia Tech for a two-year appointment with the National Science Foundation (NSF).

Dr. Westman has served as the instructor and adviser for the department's Senior Design Project course whose reports are submitted annually to the Carlson Software Senior Design Competition. Virginia Tech's mining and minerals engineering students have won five of the past seven years. He also advises the department's design competition teams that enter an annual mine design competition sponsored by the Society for Mining, Metallurgy and Exploration (SME) and the National Stone, Sand and Gravel Association (NSSGA). In the 10 years that the U.S.-based competition has been held, participation has expanded to include teams from as far away as India. Virginia Tech mining engineering students have won first place three times, second place four times, and third place twice. Furthermore, Virginia Tech is the only school in the history of the competition to have never failed to make the finals.

In addition to the Senior Design Project, Westman has taught the department's Introduction to Mining Engineering and Mine Design courses and has served as the department's undergraduate student advisor. His research has focused on imaging and rock mechanics, and he has advised over twenty masters and PhD students in these areas. His credentials include a National Science Foundation CAREER Award and a stint with the U.S. Bureau of Mines from 1991 until 1996.

"It will be difficult to fill Bev's shoes, but along with the excellent staff in the academic affairs office, I look forward to serving the students in this great College of Engineering," Westman said.

"We greatly appreciate the enthusiasm and incredible success Dr. Watford has brought to our academic affairs in the College of Engineering. She is the key person responsible for our strong admissions pool that has almost doubled since 2005. Applications have risen at 5.5 percent annually in the past eight years. Also, this year's class has a higher percentage of women than the national average. And her role in securing the inVenTs community at Virginia Tech in 2012 made us the envy of engineering colleges across the country," said Richard C. Benson, dean of the College of Engineering.

Watford will serve as the NSF's program manager for broadening participation in the engineering education and centers division. This position supports the development of a diverse and well-prepared workforce of engineering graduates, particularly those with advanced degrees. A central theme of the program's activities is enhancing the ability of early career faculty members, particularly those from underrepresented groups, to succeed in their careers as researchers and educators. Watford will retain her position as director of Virginia Tech's Center for the Enhancement of Engineering Diversity.

"Erik's absence in the classroom and as an advisor in the Department of Mining and Minerals Engineering will definitely be felt over the next two years," said Professor and Department Head, Dr. Greg Adel. "But I know that he will do a great job in his new role, and he will provide excellent service to the College of Engineering in Dean Watford's absence. We are fortunate to have him continue teaching our senior design course during this interim period."

Department Faculty Win New Mine Safety Research Funding

Faculty members from Virginia Tech's Department of Mining and Minerals Engineering have successfully won research grants in the first round of funding from the Alpha Foundation for the Improvement of Mine Safety and Health, Inc. The results of these funded research projects will have far reaching positive impacts on miner health and safety.

Kray Luxbacher

The research projects rely heavily on industry involvement and have enjoyed support from companies such as Anglo American Metallurgical Coal, Arch Coal, Inc., Carroll Technologies, Centennial Coal Company, Ltd., Cliffs Natural Resources, Consol Energy, Inc., James River Coal Company, Lhoist North America, Lockheed-Martin, Peabody Energy, and Prairie State Generating Company.

Kray Luxbacher, department Associate Professor, and Nino Ripepi, department Assistant Professor, are serving as Principle and Co-Principle Investigators, respectively, on a 2-year, $650,000 research project titled "Improved Safety through Application of Risk Management in US Underground Coal Mines: A RISKGATE Approach." The work examines how risk management approaches can be applied in a comprehensive manner to the US underground coal mining industry to improve mine safety. Its goals are to identify factors that could contribute to a step change in the general application of risk management in the US and to develop strategies for implementing new approaches using RISKGATE: an interactive online risk management system sponsored by the Australian Coal Association Research Program. These new strategies will then be applied to three of the highest-risk US underground mine safety areas: fire and explosion prevention, ground control and moving equipment. Results of the work can lead to reduced accidents and fatalities in US underground coal mining, as well as the broader mining sector.

Nino Ripepi

Steven Schafrik

Steven Schafrik, Research Assistant Professor at the Virginia Center for Coal and Energy Research (VCCER), is serving as the Principle Investigator on "Operational Sensitivity of Through-The-Earth Communication," a 2-year project that received over $600,000 in funding from the Alpha Foundation. Through-the-Earth (TTE) communication systems are a burgeoning technology that will play an important role in maximizing worker safety and facilitating rescue operations in emergency situations. The objective of this research is to develop guidelines for using TTE technology, taking an experimental approach assisted by theoretical work. Through a hybrid approach of field-testing, supported by state of the art TTE simulations for 3D geologies, the project addresses the problem of quantifying the effect of geologic and logistical complexity on TTE communications. The guidelines and tools developed as part of this research will allow the system to be optimally deployed during emergencies and to support successful mine rescue operations.

Emily Sarver

Finally, through a collaborative project between the University of Pittsburgh's Graduate School of Public Health and Virginia Tech, Drs. Emily Sarver, (department Assistant Professor) and Nino Ripepi will serve respectively as PI and Co-PI on the project "Connecting Dust Characteristics and Worker Health in Underground Mining." Working with industry sponsor Alpha Natural Resources, researchers will perform a comprehensive study of the characteristics of occupational coal mine dust exposures. Recent observations have found increased incidences of coal workers' pneumoconiosis or other lung disease, particularly amongst young miners in the eastern US, raising questions over both the cause(s) for these trends and potential strategies for combating them. This project will address a critical gap in the understanding of dust exposure related to coal mining and worker lung function and disease.

The Alpha Foundation for the Improvement of Mine Safety and Health, Inc. was established in 2011 with a mission to improve mine health and safety by funding research and development projects among qualified academic institutions and not-for-profit organizations. The Foundation's vision is to enable future miners to be free of work-related injuries or diseases by implementing research results from the projects that it funds.

Dr. Jerry Luttrell Officially Inducted into NAE

Dr. Jerry Luttrell (center) is inducted into the National Academy of Engineering

This summer, Dr. Gerald (Jerry) H. Luttrell was officially inducted into the National Academy of Engineering during a formal ceremony held at the Academy in Washington, D.C. (see *News from Holden Hall, Spring 2013*). Election to the National Academy of Engineering (NAE) is among the highest professional distinctions accorded to an engineer, and Luttrell is the second Virginia Tech Mining and Minerals Engineering professor to receive the honor. University Distinguished Professor Dr. Roe-Hoan Yoon was also previously inducted into the NAE.

Luttrell's induction was based on his advancement of separation technologies for the mineral and coal industries, pioneering new fields of technology in the environmentally clean processing of mined materials. His 18 patents, many of which are in commercial use, address three important industrial problems in mining: fine particle flotation, coarse particle flotation, and fine particle dewatering. Luttrell co-invented the Microcel column flotation technology with Yoon, which is one of the best-selling flotation columns today and is used by a wide range of mining companies including the BHPB-Mitsui Alliance, the largest coal company in Australia, Teck Cominco, BHP Billiton, and Kennecott.

Among Luttrell's recent honors is the 2012 Robert H. Richards award from the Society for Mining, Metallurgy, and Exploration. He holds the American Institute of Mining, Metallurgical, and Petroleum Engineers' Nicholls and Aplan awards, the Pittsburgh Coal Mining Institute of America's Stephen McCann Educational Excellence Award, and he has twice served as a Henry Krumb lecturer. Luttrell is a five-time recipient of the department's Outstanding Faculty Award, a four-time recipient of Virginia Tech's Academy of Teaching Excellence Award, and a recipient of the College of Engineering Dean's Award for Excellence in Public Service.

Kevin Becker Named First ISEE Student Board Director

Kevin Becker, a senior in the Virginia Tech Department of Mining and Minerals Engineering, recently has been elected as the first Student Director to the International Society of Explosives Engineers (ISEE) Board of Directors. This is the first time the Society has appointed a student member to this prestigious position.

The purpose of the ISEE Student Director position is to give effective representation to the needs of young explosives engineers and provide valuable input and guidance to the elected Board of Directors in various decisions that impact the growth and development of the ISEE. This position will also provide an avenue to the society's student chapters for effective involvement on the ISEE Board. Kevin, who hails from Gaithersburg, Maryland, has recently returned from a year in Europe under the European Mining Course program and will be graduating in May 2014.

The ISEE is a professional society dedicated to promoting the safety, security and the controlled use of explosives in mining, quarrying, construction, manufacturing and numerous other industries. With more than 4,000 members from 90 countries, and with 34 Chapters in the US, Canada, and South America, the Society is recognized as a world leader in providing explosives technology, education, and information, as well as promoting public understanding of the benefits of explosives.

Kevin Becker (front row, 3rd from left) stands with members of the ISEE Board of Directors

Kray Luxbacher Appointed to Associate Director of VCCER

Dr. Kray Luxbacher

Kray Luxbacher, Associate Professor of Mining and Minerals Engineering, joins the Virginia Center for Coal and Energy Research (VCCER) as its Associate Director. In this position she will provide leadership under current the director, Michael Karmis, coordinating research activities with the Department of Mining and Minerals Engineering; providing input into VCCER operations, personnel and resource assignments; and interacting with the center's advisory board and industrial affiliates.

In her association with the VCCER, she will continue to utilize her expertise to lead and facilitate multi- and trans-disciplinary research groups to encourage sustainable mining and energy practices, such as technologies for improving mine health and safety, developing effective safety cultures, optimizing resource extraction from unconventional reservoirs, mitigating and preventing negative environmental outcomes, and increasing positive community interaction with the resources industries.

Dr. Luxbacher's primary research interests are in underground mine ventilation, mine health and safety, and unconventional oil and gas reservoir engineering, with involvement in research projects totaling over $4 million. Additionally, she advises eight graduate students and has published over 30 papers. Her research sponsors include the National Institutes for Occupational Safety and Health, members of the mining industry, and the US Environmental Protection Agency. She teaches several graduate and undergraduate courses.

Dr. Luxbacher is an active member of the Society for Mining, Metallurgy and Exploration (SME), serving on several committees. She is also a member of the Society of Petroleum Engineers, the American Society for Engineering Education, and the Society of Mining Professors (Societät der Bergabkunde). She was recognized by the Virginia Tech College of Engineering in 2011 with the Dean's Award for Outstanding New Assistant Professor, and, more recently, by the Society for Mining, Metallurgy and Exploration (SME) as the recipient of its 2012 J.W. Woomer Award for young engineers active in coal and energy.

Dr. Luxbacher received her Ph.D. (2008), M.S. (2005), and B.S. (2002) in Mining Engineering from Virginia Tech. Prior to pursuing her graduate studies, she worked as an industrial engineer and underground production foreman for Consol Energy. She is a registered professional engineer in Virginia and has held certification as an underground coal mine foreman.

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"Blast from the Past"

The Spring 2013 "*Blast from the Past*" was sent to us by Tim Mauzy (Class of 1985). The picture was taken during a mineral processing field trip in the mid 1980's. It appears to feature graduates from the 1985 and 1986 time frame. Thanks to Matt Schiefer (Class of 1985), Johnny Johnson (Class of 1985), Waverly Hale (Class of 1984), and Garland Davis (M.S. Class of 1986) for helping to identify the students in the photo.

Those names with "?" or marked as "unknown" are still uncertain. If you are able to assist us with further identification, please send your responses to:

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As always, if any of you have photos from your days in the Department (particularly group shots) that you would be willing to share, we would be happy to scan them and return them to you. Any photos that are more than twenty years old would be greatly appreciated.