Mines testifies at Congressional hearing on energy

The School of Mines is poised to become one of America’s educational leaders in advanced exploration and production, meeting a growing need of the energy industry, according to university testimony before the House Subcommittee on Energy and Mineral Resources in Washington, D.C.

Centrally located among three of the most important energy producing areas on the North American continent, the SD School of Mines & Technology is leveraging faculty research expertise in petrophysics, water resources and materials development and this fall will launch a new minor in Petroleum Systems, which is part of a broader Energy Resources Initiative.

Provost and Vice President for Academic Affairs Duane Hrncir, Ph.D., testified about the university’s expanding energy efforts before the Congressional subcommittee at a June 24 oversight hearing on “American Energy Jobs: Opportunities for Education.” The School of Mines was among a select group of educational institutions invited to testify. Other representatives were from the Bingham Entrepreneurship & Energy Research Center at Utah State University; the Energy Institute at the University of Pittsburgh at Bradford; Lackawanna College; Texas State Technical College; and Greenfield Community College.

Fourteen of the SD School of Mines & Technology’s baccalaureate programs provide courses that directly relate to the needs of the energy industry, and graduates are hired by numerous companies who actively recruit on campus each year.

The new Petroleum Systems minor, along with a Graduate Certificate in Petroleum Systems for professionals being developed, are among the education components of the Energy Resources Initiative to serve both upstream and downstream energy industries.

The SD School of Mines & Technology is one of four universities in the nation to offer all three core disciplines for mineral industries – mining engineering, metallurgical engineering and economic geology. “Through their programs of study, our students gain an understanding of how these disciplines are entwined from the discovery of new mineral resources to the extraction of the resources, and finally the processing to obtain the strategic materials needed to fuel the nation’s economy,” according to Hrncir’s written testimony.

“With regard to the energy industry, our students are conducting research on reservoir modeling, advanced production techniques, sustainable engineering, advanced material design and microbial transformations of energy feedstocks, to name a few. These students will lead the next generation of engineers and scientists who will continue to develop the country’s energy needs in a sustainable way that protects the natural resources and quality of life valued by all of our citizens,” according to Hrncir.

Equidistant from the Williston Basin in North Dakota, the Powder River Basin in Wyoming and the Denver Basin in Colorado, the Rapid City science and engineering school is “attracting a growing number of industries to partner with the university to ensure that our graduates meet the current and future needs of the energy resource workforce,” according to Hrncir.

In April, the university announced a new Shale Research Initiative in which researchers will investigate the geomechanical and hydrological properties, mineralogy and composition of various shale units to further the scientific and engineering applications of shale and other fine-grained rocks. In partnership with RESPEC Consulting & Services and supported by the Department of Energy and the state, initial work will assess the feasibility of what would be the nation’s first underground shale research laboratory.

According to subcommittee documents, “The American energy boom has created new job opportunities across many sectors that require a skilled and educated workforce. Today’s educational institutions are working to ensure that students and future generations are prepared to fill these jobs. High schools are focusing on teaching skills and exposing high school kids to opportunities in the energy sector, community colleges are filling the gap in partnering to train skilled workers, and colleges are expanding geology and engineering programs and finding joint partnerships with industry to focus on filling workforce needs.”

The exploration and production of conventional energy resources (coal, oil and natural gas) have been an important part of the SD School of Mines & Technology’s educational history and remain a vital component of the curricula today, according to Hrncir’s testimony. The university was founded in 1885 to support the new mining of gold in the Black Hills of South Dakota.
The South Dakota School of Mines & Technology will add a minor in Petroleum Systems as part of its broader Energy Resource Initiative.

“The energy industry is rapidly growing in our region. Many of our graduates are already hired into the industry, and we are well positioned to expand both teaching and research in this field,” said Heather Wilson, president of South Dakota School of Mines & Technology.

Likely to attract students from the mining engineering and management, geology, geological engineering, mechanical engineering, civil engineering and chemical engineering disciplines, the new minor will be available to any student at the South Dakota School of Mines & Technology beginning this fall.

The minor in Petroleum Systems is the education component of a broader Energy Resource Initiative, which will serve both upstream and downstream energy industries and encompass a state-of-the-art laboratory for petrophysics/geomechanics research. Mines anticipates adding a faculty member renowned throughout industry and higher education for expertise in this area to supplement its existing strong faculty in geology, mining, civil and environmental engineering, mechanical engineering and chemical engineering.

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*Mines is an exceptional engineering and science university. We will prepare engineering and science leaders, conduct research and catalyze economic development in the energy industry, which is a priority for economic development in South Dakota,” Wilson said.

Set to begin this fall, the new minor will offer an 18-credit program in a mix of new and existing courses, including core courses in drilling and production engineering, fluid mechanics and a petroleum field course.

Additionally, the SD School of Mines is developing a Graduate Certificate in Petroleum Systems, a 12 credit-hour program of graduate-level course work open to both Mines graduate students and outside professionals.
Alumni gifts top $1 million to honor President Harvey Fraser

The new two-court gymnasium being built at the School of Mines will be named for former President Harvey Fraser. The new gym is under construction and expected to be complete by early 2015.

“Generous gifts from Mines alumni Bill Brodsky and Larry Pearson took us over the top,” said Mines President Heather Wilson. “Over 300 alumni and family and friends of Harvey Fraser have contributed to the effort, and we met our goal.”

Fraser, who passed away on Nov. 10, 2013, served as Mines president from 1966 to 1975. The new gymnasium will be part of the new 24,750-square-foot Stephen D. Newlin Family Student Wellness & Recreation Center being built as an addition to the King Center.

Brodsky, a former quarterback for the Hardrocker football team, is originally from Broadus, Montana. He is a 1968 mechanical engineering graduate, who has spent his career in the railroad industry and is president of the Washington Transportation Group in Missoula, Mont.

“Dr. Harv changed my life and ultimately became a very good friend. One rarely has an opportunity to try to honor one of life’s heroes and I feel this is a great opportunity, with the support of his family, to do just that,” said Brodsky.

After receiving his bachelor’s degree in mechanical engineering from Mines in 1968, Brodsky served in the Army Corps of Engineers until 1970. After returning from Vietnam, he began his career with Milwaukee Railroad. He earned an M.B.A from the University of Chicago in 1987 and had a very successful career in the railroad industry.

Pearson, of Wausa, Neb., received his bachelor’s degree in mechanical engineering from Mines in 1972 and an M.B.A from Creighton University in 1981. Pearson began his career in energy first with Peoples Natural Gas, Northern Natural Gas, and Enron Gas Supply Company. In 1988, Pearson joined Tenaska, Inc., and in 2002, he was named president and CEO of operations at Tenaska.

“Harvey Fraser was a positive influence on the students, like myself, who attended the School of Mines during his tenure as president. Linda and I are glad to help to memorialize his legacy by supporting the Harvey Fraser Gymnasium and scholarships, which will serve School of Mines students for years to come,” Pearson said.

Now retired, Pearson remains an active member of the Mines community, serving on the Foundation Board of Trustees and Mechanical Engineering Industrial Advisory Board.

The alumni, along with their spouses, Judy Brodsky and Linda Pearson, combined with more than 300 contributors ranging from Mines alumni to Fraser friends and family, to complete the gymnasium naming project.

The Harvey Fraser Scholarships

With the support and encouragement of the Brodskys and Pearsons, the School of Mines also announced that it will do more to help students and honor Harvey Fraser.

Brodsky and Pearson will match contributions up to $250,000 for two scholarship funds: the Fraser Academic Scholarship fund and the Fraser Athletic Scholarship fund.

“This generous matching scholarship gift will help us raise funds for more young people to get a great education at the School of Mines,” said Wilson. “It’s a great way to honor President Fraser’s commitment to athletics, scholarship and leadership.”

Donors will have the option of directing gifts to the Fraser Academic Scholarship fund or the Fraser Athletic Scholarship fund. Gifts can be made by visiting the Foundation website at foundation.sdsmt.edu or by contacting project coordinator Larry Simonson at Larry.Simonson@sdsmt.edu or at (605) 394-6661 or (605) 484-4147.
The awards, each valued at $750,000, are made through NASA's astrophysics, aviation and other areas relevant to the agency's missions.

NASA is awarding $11.25 million to 15 colleges and universities across the nation and the region, "said Heather Wilson, president of the South Dakota School of Mines & Technology.

"Mines has a record of success with NASA, and we will use these funds to stimulate research in areas important to the NASA mission for the next Mines Medalist. The impact of his research in biomedical engineering can change lives and is the epitome of what the Mines Medal was created to honor. Collaborative, multidisciplinary research such as that Dr. Saltzman often initiates is something we value very highly at the South Dakota School of Mines & Technology," said President Heather Wilson.

"I am delighted to be receiving this award. I admire the mission of the South Dakota School of Mines & Technology to provide affordable, rigorous education in areas of national need with a focus on the student experience. The school's mission is right on track with the needs of students and the needs of our country," Saltzman said.

He has been a fellow of the American Institute for Medical and Biological Engineering, the Biomedical Engineering Society and the National Academy of Inventors and served as a member of the Connecticut Academy of Science & Engineering. He has delivered over 200 lectures throughout the world, including the Britton Chance Distinguished Lecture in Engineering and Medicine at the University of Pennsylvania.

Saltzman's extensive work has been described in over 250 research papers and patents, and he has authored the textbooks Biomedical Engineering, Tissue Engineering and Drug Delivery.

He will be presented with the award during the Oct. 2, 2014, Mines Medal Dinner and Award Ceremony to be held at the Rushmore Plaza Civic Center.

Previous medalists include Dr. Anna Balazs, 2011 recipient and Distinguished Professor of Chemical Engineering at the University of Pittsburgh; Dr. Diana Wall, 2012 recipient and University Distinguished Professor and director of the School of Global Environmental Sustainability at Colorado State University; Dr. Lee Rybeck Lynd, 2011 recipient and professor of engineering and adjunct professor of biology and earth science at Dartmouth College; Steven Squyres, 2010 recipient and Cornell University astronomer and principal scientist for NASA's Mars Exploration Rover missions; and Dr. Cindy Van Dover, 2009 recipient and chair and professor of Duke University’s Division of Marine Sciences and Conservation and director of the Duke University Marine Laboratory.

School of Mines awarded $750,000 from NASA

The South Dakota School of Mines & Technology is among a select group of universities each awarded $750,000 in NASA experimental research funds.

"Mines has a record of success with NASA, and we will use these funds to stimulate research in areas important to the NASA mission for the nation and the region," said Heather Wilson, president of the South Dakota School of Mines & Technology.

NASA is awarding $11.25 million to 15 colleges and universities across the United States to conduct basic research and technology development in areas including climate change, nanotechnology, astrophysics, aviation and other areas relevant to the agency's missions.

The awards, each valued at $750,000, are made through NASA's Experimental Program to Stimulate Competitive Research (EPSCoR). EPSCoR is managed by NASA's Office of Education. The program helps develop partnerships among NASA research missions and programs, academic institutions and industry. It also helps the awardees establish long-term academic research enterprises that will be self-sustaining and competitive, and contribute to the institution's economic viability and development.

To view an abstract from each of the 2014 EPSCoR education research selectees and to learn more about EPSCoR in general, visit: http://www.nasa.gov/epscor

For more information about NASA's education programs, visit: http://www.nasa.gov/education
Fraternity members journey to Honduras

South Dakota School of Mines & Technology chemical engineering seniors Ty Murphy and Roderick McCrae recently returned from a week-long mission trip to Central America. They joined 14 others from Delta Sigma Phi chapters across the U.S. on the trip, which was coordinated by the Association of Fraternal Leadership & Values and the Hearts to Honduras program.

Murphy, of Johnstown, Colo., and McCrae, of Redfield, worked with their travel companions to build a house for a single father in rural Santa Elena, Honduras. After their first full day in Honduras, the group attended a church service where they were individually recognized for their mission.

“At the end of the mass, I was in awe of the fact that every one of the members of the congregation, adults and children alike, made a point to come to at least one of us, shake our hands, and say ‘Vaya con Dios’ – Go with God. It was a very humbling experience that displayed not only how passionate the culture is regarding religion, but also how loving they are to others,” Murphy said.

During their stay, the group also played soccer, zip lined over a 150-foot waterfall, sampled native foods and planted trees to help purify the local water supply. When construction was completed, the house was dedicated before a large group of local residents. The mission group provided the family with furniture, kitchenware and enough food to last several months.

All supplies were paid by those attending the trip and the Association of Fraternal Leadership & Values.

“Humbled does not even begin to describe my feelings about my experiences during the journey. I know that the lives of the family who received the home are forever changed, and the same is true of the lives of the men who were fortunate enough to, for one week, be a part of the Honduran culture,” Murphy said.
2014 Day of Making
New Civil & Environmental Engineering Ph.D. and Student Innovation Center approved

The Board of Regents approved a number of initiatives for the School of Mines at its June meeting. The board approved the addition of a Ph.D. in Civil & Environmental Engineering, a minor in Petroleum Systems, a certificate program in Geospatial Technology and three Preliminary Facility Statements, including one for a showplace Student Innovation Center for multi-disciplinary project-based learning.

“Mines is growing, and we need to make sure that we continue to provide the exceptional education for which we are well known,” said Heather Wilson, president of the School of Mines. “These new programs meet a need for the state and the region, and the facilities we will be designing will help us prepare engineers and scientists for the complex problems of the twenty-first century.”

Ph.D. in Civil & Environmental Engineering

South Dakota was the only state in the nation that had no university offering a Ph.D. in Civil Engineering and the demand for this expertise continues to grow, said Molly Gribb, Ph.D., professor and head, Department of Civil & Environmental Engineering.

“According to the American Society of Civil Engineers, the U.S. needs to invest $3.6 trillion nationally by 2020 in aging infrastructure. As a result, highly trained civil engineers are needed now more than ever. Furthermore, the Bureau of Labor Statistics projects employment of civil and environmental engineers during the next decade to grow faster than the predicted average growth rate for all occupations,” said Gribb.

Gribb added that the new doctoral program will also provide needed continuing education for local engineers such as those at the United States Geological Survey Water Science Center and RESPEC Consulting & Services.

Currently RESPEC employs more than 225 professionals, 40 percent of whom have achieved a master’s or doctoral degree. “In any given year, RESPEC supports two or three Ph.D. students. Without local options, we are forced to send employees seeking graduate-level education to out-of-state universities,” said RESPEC CEO and President Todd Kenner, P.E. He adds that the School of Mines doctoral program will allow employees to reside locally while pursuing higher education and attract new talent to South Dakota that companies like RESPEC can then retain in the state after degree completion.

Facilities for Excellence

Three Preliminary Facility Statements were approved by the Regents.

• **Student Innovation Center**: The Student Innovation Center will prepare leaders in engineering and science through multidisciplinary, project-based learning experiences in a team-orientated environment. In 1997 the School of Mines built a Center for Advanced Manufacturing & Production to house project-based learning and competitive engineering teams. At that time, there were 40 students and 4 teams. Today, the facility supports 14 competitive engineering teams and 350 students. There are more than 60 design projects annually that involve nearly 500 students in addition to the competitive teams, requiring the construction of a new, flexible space for collaborative work.

• **Mineral Industries Building Renovation**: Mines is one of only five universities nationwide that retains programs and expertise in all of the disciplines important to the mineral industries: geology & geological engineering, mining engineering and metallurgical engineering. The renovation of this facility, built in 1962, will strengthen the rigorous engaged learning and interdisciplinary research that is the hallmark of exceptional engineering education for the problems of the twenty-first century industry.

• **Chemistry & Chemical Engineering Building**: The rapidly growing applied biology degree, started at Mines this year, and continued growth of chemical engineering demand new laboratories for teaching and research. Mines has disused space in this building that has not had any major upgrades since 1957 and intends to fit out labs and faculty offices for this successful program.

These approvals will allow the School of Mines to begin planning, design and fundraising for the improvements.

Minor in Petroleum Systems

Regents also approved a new minor in Petroleum Systems aimed at better serving the growing energy industry needs of the upper Midwest. The minor is one part of a broader energy resources initiative at Mines that includes both research and teaching.

Available in the fall to any Mines student wishing to broaden their career options, the new minor will offer an 18-credit program in a mix of new and existing courses, including core courses in drilling and production engineering, fluid mechanics and a petroleum field course.

“Mines is in the middle of one of the largest energy producing regions of the country. We are equidistant from the Bakken, the Powder River Basin and the Denver Basin,” Wilson said. “The energy industry is important to the economic future of western South Dakota, and we will prepare engineers and scientists for leadership in this industry.”

Certificate Program in Geospatial Technology

This certificate requires 12 credit hours of study. The program is geared to Black Hills area professionals who seek to expand their skill sets or retrain for a career in gathering, storing, processing and delivering geographic information. In western South Dakota and adjacent states, no certificate programs, and few degree programs, currently exist in this specialized field, making this new certificate program highly desirable.
Shelton honored with American Alliance of Museums award

Museum of Geology Associate Director Sally Shelton has been named the 2014 recipient of the national Dudley Wilkinson Award of Distinction.

The award was established in 1988 to recognize museum professionals who have demonstrated commitment to the highest standards of excellence in the registration profession. It was named for Dorothy H. Dudley and Irma Bezold Wilkinson, authors of Museum Registration Methods, and is presented every two years.

At the SD School of Mines, Shelton manages paleontological collections and teaches courses related to museum studies, conservation and paleontological resource management. She currently serves as Society for Preservation of Natural History Collections (SPNHC) Legislative and Regulatory Committee chair, Mammoth Site Collections Committee member, Journey Museum geological exhibits curator and Rapid City Historic Preservation Commission member. She is also a co-organizer and lecturer for the Curation of Natural History Collections course sponsored by the U.S. Department of the Interior Museum Management Program.

“I have been hopelessly in love with museums since my parents took me to the old museum at Texas Tech when I was just barely old enough to form and hold a memory. … I have never worked anywhere but in museums since I took that first step in college. It’s like a magic carpet ride,” Shelton said of her passion for museums.

Shelton earned a bachelor’s degree in wildlife biology with an option in museum science from Texas A&M University, a master’s degree in museum science with a thesis in paleontology from Texas Tech University and a post-graduate diploma in geological conservation from Sedgwick Museum at University of Cambridge. She has served as collections officer at the National Museum of Natural History, Smithsonian Institution; director of collections care and conservation at the San Diego Natural History Museum; and president of SPNHC.

She was part of the first group selected for the Collections Care Pilot Training Project at the Natural History Museum of Los Angeles County. She was the sole American in the post-graduate diploma program in geological conservation at the Geological Conservation Unit, Sedgwick Museum at the University of Cambridge.

More than 400 Mines students named to spring Dean’s List

More than 400 South Dakota School of Mines & Technology students were named to the Dean’s List for the 2014 spring semester. In order to merit a spot on the Dean’s List, students must earn a grade point average of 3.5 or higher for the semester. Full-time students must have earned a minimum of 12 credit hours that term, while part-time students must have earned between three and 11 credit hours that term.

Summer camps highlight careers in mining, robotics and more

The summer camp residential program immersing high school students in topics such as mining and explosives, paleontology and robotics is under way at the South Dakota School of Mines. Students from throughout the country will explore their curiosities with an eye toward translating their passion into college and career options in camps designed and taught by Mines’ expert faculty members.

Upcoming camps are:

- Fossils: The Path of the Paleontologist, July 6-11
- Power Camp: Electronics and Computers in Your Hands, July 6-11
- ASM: Materials, Metallurgy and Forensics Institute, July 13-18
- o the 3rd Dimension and Beyond: Mechanical Engineering in the New World, July 20-25
- Chemical and Biological Engineering Institute, July 20-25
- Robotics Camp, July 27-Aug. 1

“Summer camps are a great way to experience all that our unique engineering fields have to offer. Our programs allow students to live as college freshmen and sophomores for a week, while they explore their prospective career field through hands-on and interactive demonstrations, lectures, experiments and tours,” said Director of Youth Programs Shawna Delaney.

“The faculty members who are teaching the students are passionate about their engineering discipline. Students can have the time of their life exploring for fossils, blowing things up, building robots and so much more,” Delaney said.

Camp offerings have been overhauled in the last two years, providing a high-quality, in-depth and specialized experiential learning environment to high school students. The goal is to enhance an interest in STEM (science, technology, engineering and math) subjects and expose high school students to career possibilities.

Find out more about the eight week-long summer camps at www.sdsmt.edu/learn

About Legacy News

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To submit news or story ideas or to subscribe to the email distribution list, please contact Fran LeFort, communications manager, at 605.394.6082 or at fran.lefort@sdsmt.edu. For more Mines news, visit news.sdsmt.edu

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