



Groundbreaking participants included Klaus Thiessen, Mayor Brown, Chancellor Potts, Gerry Groenewold, Governor Hoeven, Senator Conrad, Senator Dorgan, Mayor Stauss, and Hal Gershman.

EERC breaks ground on \$3 million hydrogen facility

Construction will soon be under way on the Energy & Environmental Research Center's (EERC's) National Center for Hydrogen Technology (NCHT) facility. The EERC broke ground on the facility April 17, 2006.

More than 250 people gathered in the EERC's Discovery Hall for the groundbreaking ceremonies, which included North Dakota Governor John Hoeven (R-ND) and Senators Kent Conrad (D-ND) and Byron Dorgan (D-ND), along with Grand Forks Mayor Michael Brown, East Grand Forks Mayor Lynn Stauss, North Dakota University System Chancellor Robert Potts, Grand Forks Regional Economic Development Corporation President and CEO Klaus Thiessen, and Grand Forks City Council President and EERC

Foundation Secretary-Treasurer Hal Gershman.

The 15,000-square-foot facility will allow the EERC to capitalize on the tremendous growth in hydrogen-related projects at the EERC and significantly enhance the research, development, testing, and commercialization of hydrogen and fuel cell technologies. The facility will result in 50 to 100 new, high-paying private sector-equivalent jobs at the EERC and an additional 50 to 100 new private sector jobs in the greater Grand Forks area.

Funding for the facility is being provided by the North Dakota Centers of Excellence Commission, which awarded the EERC \$2.5 million,

and the city of Grand Forks, which provided \$500,000 in matching funds.

As EERC Director Gerald Groenewold put it, "This program today and the facility we are breaking ground for are a model for partnerships, with federal government involvement, the state of North Dakota, and corporate partners. We also have the city involved, and the Grand Forks Regional Economic

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Governor John Hoeven, Senator Kent Conrad, and Senator Byron Dorgan share their vision of North Dakota's role in the future economy and the importance of the National Center for Hydrogen Technology at the EERC.

Development Corporation has been a strong advocate for our hydrogen center of excellence.”

City and state leaders said the facility will help North Dakota lead the way in the creation of a hydrogen economy.

“What we see now with this National Center for Hydrogen Technology facility is another step along the way in the history of this wonderful organization,” said Chancellor Potts. “Gerry, you and your staff have shown tenacity, vision, and astute business sense in reaching this point today.”

“It is important to understand that this is not just a center, it is the center for hydrogen technology,” said Hal Gershman, Grand Forks City Council President and EERC Foundation Secretary-Treasurer. “That designation is important because the federal government recognizes the innovation that is taking place and will take place at this center,” he said.

Senator Dorgan, who inserted language in an appropriations bill in November of 2004 directing the U.S. Department of Energy to designate the EERC as the National Center for Hydrogen

Technology and secured its cornerstone funding, believes the partnership at the EERC is very important for our country's future and said the road to energy independence runs right through Grand Forks and up to the front doors of the EERC.

“When you look at the future of energy in this country, one of the most promising technologies on the horizon is hydrogen,” he said. “The groundbreaking research that will be done right here in North Dakota will allow our grandchildren to drive hydrogen-powered cars, live in



East Grand Forks Mayor Lynn Stauss, North Dakota State Board of Higher Education Chancellor Robert Potts, and other distinguished guests listen to EERC Director Dr. Gerald Groenewold discuss the new National Hydrogen Technology Facility and the EERC's role in bringing hydrogen technology to the marketplace.

hydrogen-powered homes, and end our country's addiction to foreign sources of energy." Dorgan declared, "This is not about building a building; it's about building a future."

Senator Conrad agreed, stating that building the National Center for Hydrogen Technology is history in the making.

Conrad recently introduced legislation to invest over \$40 billion over the next 5 years to increase domestic energy production. The "Breaking Our Long-Term Dependence" (BOLD) Energy Act would increase production of renewable energy and alternative fuels and fund research into new energy technology. The BOLD bill includes \$2.5 billion in additional funding for hydrogen research and authorizes \$17 million in funding to the EERC's National Center for Hydrogen Technology over 4 years.

"It's time to end our nation's addiction to foreign sources of energy," Conrad said. "The National Center for Hydrogen Technology will help put our nation on a path toward greater energy independence," he said.

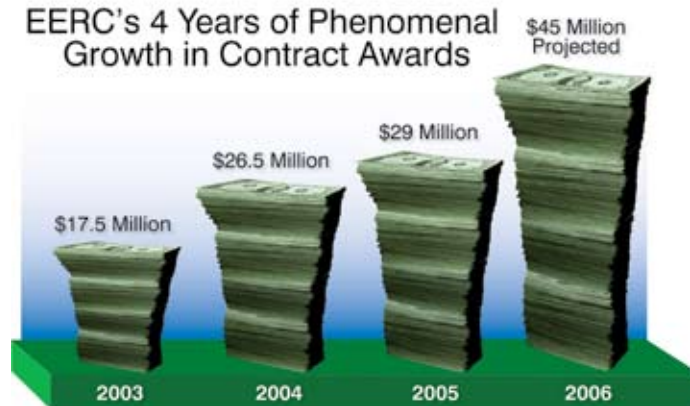
The NCHT facility will include a 30-foot-high demonstration/testing area located inside the building, along with a staging area for vehicle demonstration, a fuel cell-testing area, a high-temperature materials lab, and other individual labs for a variety of hydrogen production technologies. The building is being designed by Schoen & Associates.

Currently, the EERC has more than \$20 million in hydrogen contracts in place. An additional \$25 million of near-term opportunities is in discussion with a variety of sponsors, for a total of \$40 million. The NCHT facility is expected to be completed in spring 2007.

—Angie Haley

EERC contract awards to top \$45 million

EERC's 4 Years of Phenomenal Growth in Contract Awards



The EERC at the University of North Dakota (UND) is on track to achieve another record-setting year. For the fourth consecutive year in a row, EERC contract awards have increased to record levels—FY06 contract award totals are projected to total more than \$45 million.

"The EERC is celebrating the most incredible success we have seen in our 19 years," EERC Director Gerald Groenewold told employees at a staff meeting.

Over the past 4 years, contract activities have shown a dramatic upward trend. In FY03, EERC contract awards totaled \$18 million, and in FY04, contract awards totaled more than \$26 million. In FY05, the EERC had a record 405 active contracts totaling \$29 million, 83% of them with private sector clients.

"Our success is a result of having practical, honorable people working hard and working smart in an entrepreneurial culture—none of this is by chance," said Groenewold. "The EERC has strategically positioned itself over the past two decades to address the world's most critical energy and environmental issues. With overwhelming support from industry and federal partners, the North Dakota congressional delegation, the state of North Dakota, and the city of Grand Forks, the EERC research portfolio now totals more than \$110 million."

In FY05, the EERC generated \$73.3 million in economic impact on the Grand Forks region. Based on the EERC's projected spending rate of over \$40 million within the next 2 years, and applying the U.S. Department of Commerce's

Regional Input-Output Modeling System II formula, the EERC will soon be supporting nearly 1200 direct and indirect jobs in the Grand Forks region.

The EERC employs more than 280 scientists, engineers, and support personnel, including 20 full-time equivalent positions supported elsewhere at UND. Currently, the EERC has 17 new open positions with an average starting salary of more than \$63,000 per year plus benefits.

"We anticipate having approximately 320 employees by the end of 2007, and we expect dramatic growth over the next several years. Our goal is to have over 500 employees within the next 5 years," said Groenewold.

For this to occur, the EERC is planning to construct several new facilities. The first is a 15,000-square-foot facility for hydrogen-related research under the EERC's NCHT. Groundbreaking for the \$3 million building took place April 17, 2006.

"The EERC's unique culture is bringing enormous high-quality job opportunities to the state of North Dakota and providing considerable opportunities for new spin-offs in manufacturing and other high-tech businesses," Groenewold said.

Assistant Secretary for Fossil Energy visits EERC



Assistant Secretary for Fossil Energy Jeffrey Jarrett received a licence plate from North Dakota Governor John Hoeven.

Governor John Hoeven hosted Assistant Secretary for Fossil Energy Jeffrey Jarrett at the EERC on Wednesday, May 24. Jarrett, a native of West Virginia, has a background in coal and the energy industry. In his address to the EERC staff and the media, Jarrett said the government needs to do a better job of understanding what the hurdles are for industry, that government hasn't taken the time to understand what it's really going to take. He said, "What's going on out here is what really matters." He complimented the projects in North Dakota for being right-headed: the right partners are at the table; the projects are home grown, happening because people out here want them to happen; and there is a lot of diversity: renewables, wind, ethanol, and coal to liquid. Jarrett said "that diversity is absolutely critical."

Jarrett went on to say the challenge facing the nation is not just about

energy, not just about environment, and not just about economy. He said it's all part of a three-legged stool. "Right now, it's pick two." He went on to warn that the goal for the United States is to get the three parts working together, even though China and India may be perfectly willing to "pick two."

Jarrett serves as the primary policy advisor to the Secretary of Energy and the department on issues involving federal coal, oil, and natural gas programs. His responsibilities include management of the nation's Strategic Petroleum Reserve, the Home Heating Oil Reserve, coordinating and implementing elements of the National Energy Policy Act of 2005, managing the FutureGen initiative, and overseeing the Fossil Energy organization of about 1000 scientists, engineers, technicians, and administrative staff throughout the nation.

In the news

Erickson presented with UND Proud Award

Tom Erickson, EERC Associate Director for Research, received the UND Proud award at the annual recognition ceremony for UND employees. The Ken and Toby Baker UND Proud Award is presented to a staff employee who, through service and dedication to



Tom Erickson

the University, to fellow workers, and to the community, exemplifies the qualities of commitment, loyalty, and pride in the University. The

award includes \$1000, a plaque, and a traveling plaque for the department.

A man of exceptional integrity and compassion. Tom has been involved with the Women's Center and the IMPACT Personal Safety/Defense Program since 1999. The IMPACT Program teaches women self-defense. Tom gives his time to be an instructor for IMPACT. Besides the instruction, Tom puts on a mugger suit and uses himself as a punching bag to teach the proper techniques to save lives. Tom instructs UND students and staff as well as people from the Grand Forks community. He has also gone to different towns in North Dakota and given classes as well as taught others to be instructors. Tom has been instrumental in securing funding for the IMPACT program and promoting the program.

Tom also put together a program called CARE (Communicate, Act, Respect, Encourage). This program is designed to help men know what to do to stop rape and abuse.

Tom goes the proverbial extra mile for his fellow workers. He is a wealth of knowledge at the EERC, and his passion for his work spills over to all who are in contact with him.

This dedication to the EERC and the UND community is felt by many and will continue to grow. Tom Erickson is the neighbor, friend, and coworker whom everyone would be lucky to have. He is a person who is not about praise or money but who is about supporting and doing the right thing. Congratulations, Tom, on an award well-deserved.

-Sue Bartley

EERC earns RC&D award



Darren Schmidt

The Pembina Trail Resource, Conservation, and Development (RC&D) Council presented EERC Research Manager Darren Schmidt with the Outstanding Organization Award

in appreciation for the leadership and assistance the EERC has provided the RC&D program in biomass fuels.

Biomass fuels from northwest Minnesota, including sunflower hulls, wood waste from manufacturing, switchgrass, and corn stover, are being fired in the EERC's biomass gasifier to generate electricity, Schmidt said. Various businesses, organizations, and farmers have donated the fuels so that they can determine the feasibility of implementing gasification systems in their own facilities.

Office pool



Carolyn Nyberg

EERC Research Manager Carolyn Nyberg and her teammates served up some tough competition in the North Dakota State Team Pool Tournament in Bismarck, North

Dakota. The Rumors Tuff Cuts took first place among 46 teams in the Women's Division, going undefeated in the tournament by winning nine straight matches.

Generous act

Michael Balek, 23-year-old son of EERC Pilot Plant Operator Gene Balek, donated a kidney to his girlfriend's father on April 27. The procedure took place at the Mayo Clinic, and Michael was out of the hospital in 2 days. Both men are doing well.



Gaelen Mibeck at the start of the Newman Center bike ride.



No paperless office for Tobe Larson.

Office decor

When Tobe Larson, Assistant Manager of the Contracts Office, returned from vacationing in Orlando, Florida, at Disney World, he stepped into a fantasyland of another sort. In his absence, Larson's fellow employees took to recycling in a big way, wrapping nearly every square inch of every piece of office furniture, equipment, and accessory in Larson's office with newspaper—even the can of coke on his desk wasn't spared. "I was impressed by their attention to detail," Larson acknowledged.

Father and son complete 40-mile bike ride

EERC Research Scientist Blaise Mibeck and his 10-year-old son, Gaelen, participated in the 21st Annual UND-NDSU Newman Center bike race which took place April 29. In inclement weather, 193 intrepid bikers traveled through Grand Forks, to Highway 81, and to Hillsboro, North Dakota, which is about 40 miles away. Blaise said that it was all uphill after the hypothermia set in. He and his son proudly finished in last place after a little more than 6 hours, partly because they got lost and partly because the old man was slowing the boy down. The annual bike race is the largest fund-raising event for the Newman Centers. Troy Simonsen also rode. Congratulations on an effort well fought, Blaise, Gaelen, and Troy!

They named their baby...

Blaise Allan, son of Chad and Sarah Wocken.

Tanner Gustav, son of Michelle and Lonnie Olderbak.



A family outing under the sea

Deb Haley has adopted a new adage: the family that dives together stays together.

Haley, EERC Associate Director, Marketing Outreach, and Administrative Resources, her husband, Jay, and their three children took the big plunge into scuba diving last year, leading to quality family time in Cozumel, Mexico.

“It was so fun to have the entire family certified and to share that experience with each other,” Deb said. “That was the best part. We’d dive together during the day and then have dinner at night and talk about the things we did and saw. It was so enjoyable.”

When Jay decided to regain his certification, daughter Angie, a UND freshman and EERC Communications Assistant, and son John, a sophomore at Red River High School, were the first to dive in. Deb and son Mike, an art student at UND, soon followed.

“I definitely was not going to pass up a trip to Cozumel,” Angie said.

Certification required 30 hours of classroom and pool instruction, 2 days of open water instruction, and four checkout dives to a depth of 60 feet at Long Lake in Minnesota. A big challenge, Angie said, was handling the scuba equipment, including the air tank and its paraphernalia, the mask and snorkel, and the fins.

“The equipment is heavy and cumbersome on land,” Angie said. But the family swam a lot to get in shape and limber up, and once in the water, “it was real smooth.”

Her mom, however, begged to differ.

“I’m claustrophobic, and I’ve always had those dreams about drowning, so it was a real challenge for me. It took me five or six dives in Cozumel before I could relax enough to enjoy it.”

In Mexico, the Haleys did 12 dives, including wall dives, in which they followed the reefs to their edge and swam past the edge to get a better view of the coral reef wall and the sleeping sharks and colorful fish hiding along its curvatures.

“It can be dangerous if you’re not careful,” Deb said. “The ocean floor is suddenly below you, and the currents can be unpredictable and potentially pull you down fast or push you up,” Deb said.

The Haleys also dived in open-topped caves. One time, Deb turned a corner to find herself eye-to-eye with a 3-foot colorful fish. “As I started swimming out, it escorted me. Then it swam back in and escorted the next person out. One by one, it escorted our entire family out of the cave, which I’m sure was its home.”

Another time, the Haleys surfaced from a night dive only to realize the boat they had come in had deserted them.

“Apparently, the driver went to have a drink with his girlfriend,” Deb said. “We had to wait 20 minutes. We all carried flashlights, but it was kind of eerie because you can’t really see what’s swimming around out there.”

Deb and Jay went on to Key Largo, Florida, this past winter to gain advanced certification and nitrox certification, allowing them to dive up to 110 feet. The couple did a shipwreck dive that required they make their way back to their guide boat, one of 15 buoyed above the wreck.

“It was really confusing. I’m a fair-weather diver—I like calm seas. Because of the 7-foot seas, the visibility was only 25 feet,” Deb said. “You had to remember your buoy and navigate with your compass. If there hadn’t been a certified instructor with us, I’d never have found my way back.” In late May, Angie and John gained their advanced certification as well.

One time, a 7-foot shark swam swiftly past her husband. “You realize then that if he wanted to eat you, that’d be it. There would be nothing you could do,” Deb said.

Sharks or not, the Haleys are planning another family outing in the deep blue this summer near Jamaica.



New employees



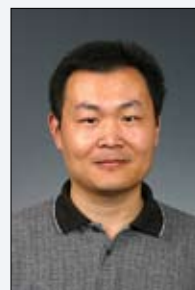
Harry Duchscherer is a Programmer/Analyst at the EERC, where he designs, develops, and maintains PC- and Web-based software and databases for EERC research projects and internal business systems. Duchscherer's principal areas of interest and expertise include database query writing, report design, and stand-alone or Web-based application development. He's especially interested in those applications that serve as a front end to a database, and he'll develop in whatever environment works best for the client. He has experience in programming using C++ , ASP, GIS, Visual Basic, SQLServer, Oracle, PeopleSoft, and Linux. Since he joined the EERC in March of this year, Duchscherer has found "different opportunities to further [his] applications knowledge." He's finding the PCOR Partnership project to be "quite interesting since it is an excellent opportunity to combine [his] knowledge of Earth Science and computer programming," and he's also working on a project for Enrollment Services. He finds the culture at the EERC to be very professional, and he appreciates the "opportunity to team with other professionals dedicated to their work." Originally from Drake, North Dakota, Duchscherer holds a B.S. Ed. in Earth Science from Minot State University and a B.S. and an M.S. in Computer Science from the University of North Dakota. Prior to coming to the EERC, he was a programmer/analyst for ITSS at UND for 4 years, where his work included developing applications and PeopleSoft queries and reports. Duchscherer was a high school math and science instructor for 11 years before he came to work at UND: 5 at McClusky, 1 at Sheyenne, and 5 in Mandan. Duchscherer's wife, Brenda, is from Balfour, North Dakota, and the couple

lived in Devil's Lake for several years. She is a teacher at Viking Elementary and helps students with special needs. The couple has 15-year-old triplets: Katie, Steven, and Sarah, who have just finished their freshman year at Red River High School and are looking forward to summer activities. When asked what it was like to raise triplets, Duchscherer said he and his wife had been "really lucky"; the kids were "well-behaved, good kids" and a lot less work than many people have raising just one. He enjoys watching old science fiction movies and playing video games with his children, tinkering with his numerous computer systems, surfing the Internet for anything and everything, "taking walks when the weather and mosquitoes cooperate," visiting relatives in the area, and fishing on those rare occasions that he gets the chance.



Dr. Junhua Jiang's work as a Research Scientist in Electrochemistry at the EERC involves using electrochemistry to generate alternate fuels and chemical products from renewable resources. One area of Dr. Jiang's work, for example, is converting industrial waste gases such as carbon dioxide and nitric oxide into urea, a product with a wide variety of uses. Dr. Jiang holds a Ph.D. in Electrochemistry and a B.S. degree in Electrochemical Engineering. After he obtained his Ph.D. in the city of Wuhan in China, Dr. Jiang won a very competitive grant from the National Postdoctoral Foundation of China, which allowed him to spend a year at the Chinese Academy of Science using electrochemistry to convert carbon dioxide into useful chemicals like methanol and ethanol. Next, Dr. Jiang worked on fuel cell projects as a Research Associate at Imperial College

in London for 5 years. Prior to coming to the EERC, Dr. Jiang was a Staff Scientist at NuVant Systems Inc. in Chicago, where he worked on a special system to develop a fuel cell catalyst. Dr. Jiang expects that the EERC's larger technological platform and "friendly atmosphere" of "fun and kind help" will allow him to further develop his research interests in providing clean, renewable energy while reducing pollutants and carbon dioxide emissions. His professional interests also include developing energy storage generation devices such as fuel cells, batteries, and supercapacitors. Dr. Jiang and his wife, Wenxia, have two children. When the weather is nice, the family enjoys outside games and barbecuing. A new interest is fishing, and Jiang reports that he has now caught bass, northern pike, and walleye. Five-year-old Rachel caught her first fish just this month with her dad's help, while 8-month-old Riley is developing an interest in soccer.



Dr. Chuanbin Liu, a Research Engineer at the EERC, works with fermentative production of ethanol and organic acids from biomass. Prior to his position at the EERC, Dr. Liu was a Postdoctoral Fellow in the Department of Biological Systems Engineering at Washington State University. Dr. Liu received a Ph.D. in Biochemical Engineering in 1999 and a B.S. in Chemical Engineering in 1994 from Dalian University of Technology in China. He was attracted to the field of biochemical engineering because it allowed him to use the principles of chemical engineering in the development of biological processes and technologies for generating fuels and other products from renewable resources, one of his principal areas

of interest and expertise. While at Washington State University, Dr. Liu noticed a position announcement from the EERC and was drawn to apply because of the biomass utilization program here. Dr. Liu sees a “very bright future” for the EERC. With the high price of fossil fuels, he predicts biofuels will become a huge market and believes he can contribute his expertise toward the EERC’s efforts of using biotechnologies in the production of biofuels from agricultural residues and biomass. Dr. Liu relaxes by bicycling and playing badminton and basketball. His wife plans to pursue an MBA at UND soon, and his 5-year-old son is learning the written Chinese language under his father’s tutelage.



Dr. Christopher Martin is a Research Engineer at the EERC, where he assists with field sampling and data analysis for several current projects in mercury control technologies,

contributes to research proposals, and develops new project areas for the EERC. Dr. Martin reports that one of the most attractive aspects of working at the EERC is the environment. “I like that success can take on many forms at the EERC and that it is largely up to personal ambition to achieve it.” Prior to his position at the EERC, Dr. Martin served as a Research Assistant in the Solar Energy and Energy Conversion Laboratory and as a Teaching Assistant in the Control Systems Laboratory at the University of Florida, where he studied novel thermodynamic cycles that utilize low-grade thermal energy. Between his master’s and doctoral degrees, he worked as a Design Engineer at Manufacturing Laboratories, Inc.,

in Gainesville, Florida, where he designed custom machine tools. He discovered there that he prefers the freedom of research. He also likes the independence of the EERC: “If you find the money to do something, you’re free to go do it. You aren’t tied to a product line that you have to stay within or support.” Dr. Martin holds a Ph.D. and an M.S. in Mechanical Engineering from the University of Florida, Gainesville, and a B.S. in Mechanical Engineering from the University of North Carolina. Dr. Martin’s principal areas of interest and expertise include thermal energy conversion, utilization, and system analysis; absorption-based thermochemical cycles; adsorbent separation processes; solar energy systems; precision machine design; and mechanical vibrations. He is a member of the American Society of Mechanical Engineers and the American Solar Energy Society. Dr. Martin’s wife, Janell, is a public accountant who is originally from Elgin, North Dakota. When the couple isn’t working, they like to hike and camp, and they are taking up vegetable gardening. Dr. Martin also enjoys repairing things at home.



Kirstin Narum is a Research Information Associate at the EERC, where she works in the Front Desk area to provide a variety of office and

product finalization services. Her duties include producing documents, fielding incoming telephone calls, providing initial contact for EERC visitors, serving as a Centerwide contact and reference point, and providing information dissemination services. Although she’s only been at the EERC for 2 months and there’s a lot to learn in order to be able to field questions from callers and

visitors, Narum reports that she already likes the atmosphere of the EERC Front Desk. “I enjoy working with the people, and I really like being busy all day.” A self-confessed “news junkie” with a wide variety of interests, she’s finding herself very “interested in learning about the different programs at the EERC.” That probably won’t take long, as she tends to immerse herself in her work and goes “into it full bore.” A native of Bismarck, Narum graduated from the University of North Dakota with a B.A. in History in 1997. She worked in Michigan after graduation, where she “accessioned,” or inventoried, the house of Dow Chemical founder H.H. Dow in Midland before it was opened to the public. In particular, she remembers the beautiful gardens of the turn-of-the-century home and the large collection of teapots acquired by Mrs. Dow. Homesick for North Dakota, she moved back to Bismarck after a year and worked for FEMA off and on for several years, as well as APT, Inc., which works closely with the North Dakota Attorney General in managing regulatory boards in North Dakota. Narum’s area of operation included administrative work for the licensing of social workers in the state. In 2002, she moved back to Grand Forks. Prior to working at the EERC, Narum worked for UND Aerospace at the airport for 3 years, first in UND Dispatch and then in the publications area. When she’s not working, Narum heads for the family farm near Sheldon, North Dakota, and its four horses. A perfect day is when she can combine her loves of horseback riding and camping, often near the Maple River or in the Sheyenne National Grasslands.



Ginny Sobolik is an Account Technician at the EERC, where she provides accounting support in various areas, mainly through auditing and verifying payments and other

documentation and assisting on special projects as needed. Before she came to the EERC in October 2005, Sobolik was the Accounting/Budget Specialist at UND's Business Office for 4 years. Prior to that, she worked at H&R Block for 27 years as a tax preparer and office supervisor. Sobolik received her B.S. in Business Administration with an emphasis in Office Administration from the University of North Dakota. Sobolik and her husband, an estimator at Lumber Mart, have two children, a married daughter who is a lawyer in Los Angeles and a son who is a shift manager in Minneapolis. They all enjoy traveling. When Sobolik is not working, she enjoys reading fiction, watching movies, and quilting.



Joshua Stanislawski is a Research Engineer at the EERC, where his work involves hydrogen and mercury control projects. He holds a B.S. in Chemical Engineering from

the University of North Dakota. Stanislawski worked at the EERC for 3 years while he was in school. Prior to his current position, Stanislawski served for 5 years as a process engineer for Innovex, Inc., a Minnesota firm that manufactures flexible circuits for hard drives, cell phones, and printers. He reports that "it's good to come home" to Grand Forks, where most of his family resides, noting that

the EERC has grown tremendously since he worked here 5 years ago. Stanislawski's principal areas of interest and expertise include trace element fate through combustion systems and process controls. He has a strong background in statistics, experimental design, and analysis using Minitab. He finds the hydrogen projects especially interesting "because we're working toward energy independence, and someday I'll be able to look back on this and be proud to have played a part in that." When he's not working, Stanislawski plays racquetball and basketball, is an avid Sioux hockey and football fan, and enjoys riding bike with his wife, Teresa, and their 19-month-old daughter, Alyson.



Heidi Vettleson joined the EERC as a Research Information Associate in December of 2005. She assists in the development of proposals and provides

administrative support in the successful production and completion of research projects, including preparing proposals, reports, technical papers, presentation materials, and other documents. Before she came to the EERC, Vettleson worked as an office assistant for Cariveau Consulting Services, the Red River Farm Network, and FedEx. A native of Oklee, Minnesota, near Fosston, Vettleson graduated from the Administrative Assistant Program at Northwest Technical College. "The nature of what the EERC does is fascinating," Vettleson says, and it's "great to be a part of it." In her spare time, she reads, paints, attends music concerts and events, enjoys football and tennis,

and watches Sioux hockey. The EERC seems to be a good fit for her: "The people I work with are fun and amazing."



Dr. Dingyi Ye is a Research Scientist/Microbiologist at the EERC, where his work involves developing new projects for the EERC's research microbiology program as well

as providing technical support to other EERC projects. Dr. Ye particularly likes the "applied nature of scientific research and technology development at the EERC." Prior to coming to the EERC, Dr. Ye served as an Environmental Consultant with BioClean Environmental Consulting in Lockport, New York. He received a Ph.D. in Soil Science (Environmental Microbiology) from Michigan State University in 1994 and an M.S. in Environmental Science (Environmental Microbiology) in 1985 and a B.S. in Biology (Cell Biology) in 1982, both from Nanjing University in China. Dr. Ye's principal areas of interest and expertise include bioremediation of hazardous environmental pollutants, microbial cleanup of wastewater, and anaerobic microbial processes. Dr. Ye married his wife, Jenny, a teacher, in China. Their son, T.J., is a college student majoring in biochemistry. The Ye family likes to travel, play tennis and table tennis, and watch sports on television. Dr. Ye listens to classical music in his spare time.

EERC on the move

Kevin Galbreath and **Jason Laumb** (EERC) presented an “Ash Behavior Short Course” to Dairyland Power Cooperative, La Crosse, Wisconsin, March 7–8, 2006.

Steve Benson and **Mike Jones** (EERC) presented a “Mercury Control Short Course” in Billings, Montana, March 1–2, 2006.

Chris Zygarlicke (EERC) conducted a short seminar entitled “Biobased Power and Products” at the Pacific Northwest National Laboratory in Richland, Washington, March 1, 2006.

Licensing Executives Society 2006 Winter Meeting, Pasadena, California, February 23, 2006

Carsten Heide (EERC) gave a presentation entitled “Does the Energy Bill Guide Us to an Economic and Sustainable Energy Future?”

Steve Benson (EERC) gave a presentation entitled “Ash Impacts on SCR Catalyst Performance” to the North Dakota State Health Department, Bismarck, North Dakota, on February 21, 2006.

Chris Zygarlicke and **Bruce Folkedahl** (EERC) delivered a presentation entitled “EERC Technologies and R&D Opportunities to Siemens Power Generation, Orlando, Florida, February 17, 2006.

Gasification of Lignites to Produce Liquid Fuels, Hydrogen, and Power Kickoff Meeting, Grand Forks, North Dakota, February 15, 2006: **Benson** (EERC) gave a presentation coauthored by **Jones**, **Mike Swanson**, **Laumb**, and **John Kay** (EERC).

2006 CSREES (Cooperative State Research, Education, and Extension Service) National Water Conference, San Antonio, Texas, February 4–9, 2006: **Dan Stepan** (EERC) gave a presentation and poster entitled “The Red River Water Management Consortium.”

Energy Generation Conference, Bismarck, North Dakota, January, 24–26, 2006: **Grant Dunham** (EERC) gave a presentation entitled “Mercury Control Legislation and Technology Options.”

Electric Utilities Environmental Conference, Tucson, Arizona, January 23–25, 2006: **Jay Almlie** (EERC) presented a paper coauthored by **John Pavlish**, **Lucinda Hamre**, **Ye Zhuang** (EERC), **Bob Wiemuth** (TXU Power), and **Sara Pletcher** (U.S. Department of Energy [DOE]) entitled “Development and Testing of Mercury Control Technologies for Power Plants Burning Texas Lignites.” **Katie Hill Brandt** (EERC) presented a paper coauthored by **Mike Holmes**, **Chad Wocken**, **Pavlish** (EERC), **Bob Ericksen** (Basin Electric Power Cooperative), and **Lynn Brickett** (DOE) entitled “Field Testing of Mercury Control for Lignite-Fired Systems with Activated Carbon and Sorbent Enhancement Additives.”

9th Annual Conference on Clean Air, Mercury, Global Warming, and Renewable Energy, Tucson, Arizona, January 22–25, 2006: **Galbreath** (EERC) gave a presentation coauthored by **Benson**, **Jill MacKenzie**, and **Don McCollor** (EERC) entitled “Mercury Control Technologies for Subbituminous Coal-Fired Electric Utilities.” **Jones** (EERC) gave a presentation coauthored by **Charlene Crocker**, **Carolyn Nyberg**, **Douglas Hajicek**, and **Benson** (EERC) entitled “Mercury Speciation and Control During Combustion of U.S. Lignites in a 1-MWth Circulating Fluidized-Bed Combustor.” **Laumb** (EERC) gave a presentation coauthored by **Melanie Jensen**, **Dunham**, **Kay**, and **Kurt Eylands** (EERC) entitled “Large-Scale Testing of Enhanced Mercury Removal for Subbituminous Coals.”

Steadman (EERC) gave a presentation entitled “The Plains CO₂ Reduction Partnership Overview” to EcoSecurities, Rio de Janeiro, Brazil, January 16, 2006.

Dennis Laudal (EERC) presented a “Mercury Measurement in Combustion Flue Gases Short Course” to the Canadian Electric Association in Regina, Saskatchewan, Canada, January 9–11, 2006.

PCOR Partnership Terrestrial Working Group Phase II Kickoff Meeting, Ducks Unlimited, Inc., Bismarck, North Dakota, December 14–15, 2005: **Steadman** (EERC) gave a presentation entitled “The Plains CO₂ Reduction Partnership – Phase II Terrestrial CO₂ Sequestration Activities.”

SWAT Modeling Seminar, Grand Forks, North Dakota, December 13–15, 2005: **Xixi Wang** (EERC) gave a presentation entitled “Calibration and Use of SWAT (Soil and Water Assessment Tool) for Modeling Effects of Distributed Storage on Runoff Management.” **Doug Davidson** (EERC) gave a presentation entitled “SWAT Data Inputs.”

Seafood & Health 2005, Washington, D.C., December 5, 2005: **Nick Ralston** (EERC) presented a paper entitled “The Role of Selenium Sequestration in the Molecular Mechanism of Mercury Toxicity.”

Provider’s Conference, Anchorage, Alaska, November 29, 2005: **Ralston** (EERC) presented a paper entitled “Selenium’s Protective Effect Against Mercury.”

Zygarlicke (EERC) delivered a review of the EERC Center for Biomass Utilization® at the (DOE) Office of Biomass Program Annual Peer Review Meeting November 16, 2005, in Washington, D.C.

Steadman (EERC) gave a presentation entitled “The Plains CO₂ Reduction Partnership – Phase II” to the North Dakota Lignite Research Council, Bismarck, North Dakota, November 17. He gave a similar presentation to the North Dakota Oil and Gas Research Council in Bismarck, North Dakota, November 15, 2005.

Laudal (EERC) gave a presentation entitled “Mercury in Combustion Flue Gases” to the UND Chemical Engineering Department November 15–17, 2005.

Conference on the Environment, Minneapolis, Minnesota, November 10, 2005: **Ralston** (EERC) presented a paper entitled “Importance of Selenium in the Mercury Issue.”

Coal Sequestration Leadership IV Forum, Denver, Colorado, November 9, 2005: **Charles Nelson** (EERC) gave a presentation coauthored by **John Harju** and **Steadman** (EERC) entitled “The Plains CO₂ Reduction Partnership – CO₂ Sequestration (Coal Pilot Project).”

Future Issues and Opportunities for the Hydrogen Economy Workshop, EERC, November 8, 2005: **Wocken** (EERC) gave a presentation with **Holmes, Hill Brandt** (EERC), **Jerome Hinkle** (Senator Dorgan’s Office), and **Bob Miller** (Air Products) on various hydrogen-related topics.

American Water Resources Association Conference, Seattle, Washington, November 7–11, 2005: **Bethany Bolles** (EERC) gave a presentation entitled “Evaluation of Small Scale, Distributed Storage in the Red River Basin.”

Fall 2005 PERF (Petroleum Environmental Research Forum) Total Water Management Sharing Cooperative Meeting, Annapolis, Maryland, November 1–4, 2005: **Stepan** (EERC) gave a presentation entitled “Anaerobic Treatment of Dakota Gasification Company Stripped Gas Liquor.”

Plains CO₂ Reduction (PCOR) Partnership Phase I Wrap-Up/Phase II Kickoff Meeting, Minneapolis, Minnesota, November 1–2, 2005: **Steadman** (EERC) gave a presentation entitled “PCOR Partnership Phase I Wrap-Up/Results.” **Jones** (EERC) gave a presentation entitled “PCOR Partnership Phase II Overview: Carbon Capture, Separation, and Implementation.” **Jim Sorensen**

(EERC) gave a presentation entitled “PCOR Partnership Phase II Overview: Geologic.” **Erin O’Leary** (EERC) gave a presentation entitled “PCOR Partnership Phase II Overview: Regional Characterization and Decision Support System.”

2nd Annual Prepare for the Resurgence of Coal-Fired Generation Conference, Chicago, Illinois, November 1–2, 2005: **Laudal** (EERC) presented a paper entitled “Mercury Emissions and Control Technologies – Solutions to Meet Legislation.”

North Dakota GIS (Geographic Information Systems) Conference, Bismarck, North Dakota, October 25–27, 2005: **Wes Peck**, **Madhavi Marasinghe**, and **Patrick Inman** (EERC) gave a presentation and poster entitled “Decision Support System for CO₂ Sequestration.”

Lignite Energy Council 2005 Annual Meeting, Bismarck, North Dakota, October 25–26, 2005: **Steadman** (EERC) gave a presentation entitled “The Plains CO₂ Reduction Partnership – Developing Opportunities for CO₂ Sequestration in the Central Interior of North America.”

Licensing Executives Society USA & Canada 2005 Conference, Phoenix, Arizona, October 20, 2005: **Heide** (EERC) gave a presentation entitled “So I Just Warranted Validity? Implied Warranties and Obligations in the Global Arena – Germany.”

14th European Biomass Conference & Exhibition: Biomass for Energy, Industry, and Climate Protection, Paris, France, October 17–21, 2005: **Zygarlicke** and **Darren Schmidt** (EERC) presented a paper entitled “Development of an Industrial-Scale Biomass Gasification Power Plant.”

Fish Forum 2005, Baltimore, Maryland, September 19, 2005: **Ralston** (EERC) presented a paper entitled “Physiological and Environmental Importance of Mercury–Selenium Interactions.”

An article authored by **Carla Ralston** (EERC), **J. Lloyd Blackwell III** (UND College of Business and Public Administration), and **Ralston** (EERC) was accepted for publication in *Environmental Bioindicators*. The article is entitled “Effects of Dietary Selenium and Mercury on House Crickets (*Acheta domesticus* L.): Implications of Environmental Co-Exposures.”

Upcoming Events

Ash Behavior and Mercury Control in Coal Combustion Short Course

- Dallas, Texas, June 13–14, 2006
- Denver, Colorado, September 6–7, 2006
- Maui, Hawaii, November 30–December 1, 2006

Regional Biomass Workshop, EERC, Grand Forks, North Dakota, July 18–19, 2006

North Dakota State Fair – Hydrogen Display and Refueling Station Event, Minot, North Dakota, July 21–29, 2006

PCOR Partnership 2006 Annual Meeting, Calgary, Alberta, September 13–15, 2006

Presymposium Workshops, Marriott Denver Tech Center, Denver, Colorado, October 23, 2006

Symposium on Western Fuels: 20th International Conference on Lignite, Brown, and Subbituminous Coals, Denver, Colorado, October 24–26, 2006

For more information:
www.undeerc.org



Tim Berg, Chris Rath, and Joel Walski of the North Dakota Army National Guard test-drove a hydrogen fuel cell-powered forklift at the EERC. The forklift will be deployed at the Grand Forks Army National Guard Base and was developed by EERC partner ePower Synergies in a partnership facilitated by the National Center for Hydrogen Technology.



EERC research manager Jay Almlie uses a working model car to demonstrate to Crookston Highland Elementary School students the concepts of hydrogen power.

EERC EDGE

The EERC Edge is published for employees of the Energy & Environmental Research Center at the University of North Dakota. Send comments and story suggestions to Jane Russell, Editor, (701) 777-5237 or jrussell@undeerc.org.

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