

At PPPL  
**THIS WEEK**

WEDNESDAY, DECEMBER 5

**PPPL Colloquium**  
4:15 p.m. ♦ MBG Auditorium  
"Latest Developments in Quantum Computing"  
Dr. Robert Lucas, University of Southern California  
Refreshments at 4 p.m. in the LSB Lobby

THURSDAY - FRIDAY, DECEMBER 5 - 6

**Fusion Power Associates 33rd Annual Meeting & Symposium**  
"Fusion Energy: Progress and Promise"  
Washington D.C.

THROUGH DECEMBER 19

**Princeton University Food Drive Donation Box in LSB Lobby**

**UPCOMING EVENTS**

December 10  
**PPPL Colloquium**  
4:30 p.m. ♦ Andlinger Center Highlight Seminar Series  
"Enhancing Electrochemical Energy Storage on the Macroscale via Architecture Design on the Nanoscale"  
Debra Rolison, U.S. Naval Research Laboratory  
Princeton University, Computer Science 104

December 12 to 13  
**Lehman Review**

**Save the Date:**  
Dec. 21 at noon  
**PPPL Holiday Party!**



**Dec. 22 to Jan. 2 Lab Closed**

\*The next issues of the PPPL Weekly will be on Dec. 10, Dec. 17 and Jan. 7. The deadline for the Dec. 17 issue will be Dec. 12.

**INSIDE ...**

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**Workshop teaches communication is key to strong safety culture**

By Jeanne Jackson DeVoe

U.S. Department of Energy Site Manager Maria Dikeakos and PPPL Deputy Director for Operations Adam Cohen attended a DOE workshop on creating a safety-conscious work environment in Washington, D.C. that emphasized the importance of making sure all employees feel free to discuss their safety concerns with managers.

The one-day workshop in mid-November focused on good communication throughout the workplace as the key to maintaining a safe environment. Cohen and Dikeakos attended the workshop just three weeks after the all-hands safety meeting in October that outlined how PPPL has addressed safety concerns raised by an incident in March in which an employee was injured while operating a skid steer loader. Cohen said PPPL is considering bringing the workshop to PPPL to train managers and employees.

PPPL has long emphasized the importance of employees speaking up about safety issues whenever they see a problem. The workshop stressed the importance of responding positively to such concerns by focusing on the issue and how to solve it. "The idea is if you solve issues, you'll have a safe work environment and the workers will engage more because they will see actions in response to the issues raised," Cohen said.

**Encouraging a free exchange of ideas**

The concept applies not just to creating a safe environment but also a culture that generally encourages a free exchange of ideas, Cohen said. "We have a lot of smart people at this Lab and we want their creativity and we want their suggestions. It's the only way we'll continue to improve," he said.

Dikeakos agreed that the workshop's ideas about improving communications are not limited to safety. "One of the goals is to make



Maria Dikeakos

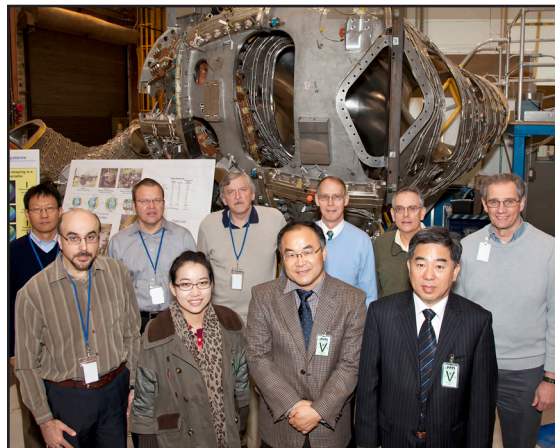
"There's no cookie cutter formula. It just needs continuous attention."



Adam Cohen

"If you solve issues, you'll have a safe work environment."

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**Planning for K-DEMO:** Three members of Korea's National Fusion Research Institute visited PPPL last week to discuss plans for collaboration on the engineering design and analysis of Korea's next-step fusion facility, K-DEMO, which is in the preliminary study stage. The visitors met with Hutch Neilson, director of advanced projects at PPPL, and members of the Laboratory's mechanical engineering division.

Pictured in the front row from left: Ali Zolfaghari, Sulhee Baek, Kihak Im and Keeman Kim, K-DEMO project leader. Rear row from left: Yuhu Zhai, Andrei Khodak, Peter Titus, Tom Brown, Chuck Kessel and Neilson.

# Praise and suggestions for fusion research from a utility industry think tank

By John Greenwald



Interior of the National Spherical Torus Experiment at PPPL

Research to develop fusion energy has shown “significant progress” in many areas, according to a new report from the Electric Power Research Institute (EPRI), a think tank whose members represent some 90 percent of the electricity produced in the United States. At the same time, the report said that a commercial fusion power plant is at least 30 years away, and called for more research on the engineering challenges.

“Our executives think that fusion is a potential contribution to producing energy,” said Albert Machiels, a senior technical executive at EPRI who participated in the study, which was released in October. While Machiels called it “premature” for the electric power industry to become involved in fusion energy programs at present, he noted that the industry wants to be kept informed of future findings and developments.

The report surveyed three main approaches to fusion technology. These ranged from magnetic fusion to inertial fusion energy to fu-

sion-fission hybrids. Magnetic fusion uses magnetic fields to control the hot, charged plasma gas that fuels fusion reactions. Inertial fusion uses lasers to produce fusion energy by imploding fuel capsules. Fusion-fission hybrids combine nuclear fusion and nuclear fission technologies.

PPPL Director Stewart Prager saw encouraging signs in the report. “I think it’s great that they did an assessment of fusion,” said Prager, who participated in a multi-institutional presentation of magnetic fusion to EPRI. “For me, the two take-away messages are that the program should be more aggressive—that’s the only way it could be focused on electricity production—and should be larger—that’s the only way to do the research that they recommend.

“While the report doesn’t come out and say that the program should be more aggressive and larger,” Prager added, “the only way to satisfy what they say is to have a larger program.”

## Key recommendations on fusion

Key recommendations of the 66-page utility industry document:

- Focus more fusion research on the engineering and operational challenges of a power plant.
- Identify the material and technology issues that a fusion test facility should address.
- Engage the power industry in monitoring progress.
- At the appropriate time, create a utility advisory group to focus fusion research on utility needs, and begin to consider regulatory requirements for commercial fusion power plants.

The full EPRI report can be downloaded [here](#). 

## Workshop teaches communication is key to strong safety culture

Continued from page 1

the Department of Energy one of the most desirable places to work,” she said. “You want to feel that you can change the culture so people feel valued and they’re contributing to the environment.”

The workshop used case studies to examine the best way to respond to input from employees. It’s essential that managers fully hear employees’ concerns rather than immediately jumping in to analyze the situation, ask questions, or even offer praise or reassurance.

Instead, the workshop promoted the idea that the best way for managers and employees to communicate effectively is for managers to “listen to understand” employees by being open and non-judgmental, asking what employees need, thanking them and making sure that “timely and transparent actions are taken” in response.

### Top practices in the “ladder of accountability”


One way to think about how an organization approaches difficult issues, according to the workshop, is the concept of the “ladder of accountability.” At the bottom of the ladder are the attitudes that avoid accountability, continue conflict and focus on the past. These include being unaware of problems, blaming others, offering the “I can’t” excuse, or simply “waiting and hoping.” At the top of the ladder are the behaviors that lead to real collaboration: acknowledging reality, “owning” a problem, finding solutions and “trying to make it happen.”

The workshop also discussed the “pinch crunch model” of dealing

with differences at the workplace. The idea is that not all conflict is bad and that differences of opinion can lead to changes and new solutions if they are managed effectively. The best way to approach conflicts is to recognize that there is an issue that the manager and employee should fix together, to address the issue rather than the person and to agree to find a solution and move forward and trust each other to do the right thing.

That can be accomplished by promoting a “common state of mind” at all levels of the organization, focusing on the issues rather than individuals or personalities, resolving differences in a respectful way and allowing individuals to communicate what they need and where they can compromise.

While all DOE laboratories, including PPPL, have online safety and suggestion boxes (SOS) where employees can report concerns anonymously, it’s vital for employees to trust that the system responds effectively, Dikeakos explained. For example, it’s important to get back to employees who come forward with a concern to thank them for speaking up and let them know how the concern was addressed, she said.


Creating a safety culture requires a long-term commitment, Dikeakos emphasized. “There’s no cookie cutter formula, it just needs continuous attention,” she said. “Every organization, even one with a positive safety culture, still needs to work at it.” 

## PPPL'ers urged to contribute to United Way Campaign

The PPPL and Princeton University United Way Campaign kicked off on Nov. 29 with speakers, refreshments and a raffle. Employees can make contributions by cash or check or through payroll deductions through Dec. 14. Princeton University will contribute an additional 15 percent for all gifts through payroll deductions or 10 percent for all gifts by cash or check.

Herbert Klein, the president and CEO of United Way of Greater Mercer County, said that every dollar donated last year contributed to more than \$9 in economic benefits to the Mercer County community. Among the many groups United Way sponsors is the United Youth Mentor Link, which provides mentors to high school students in Trenton. It achieved a 90 percent graduation rate among students who stayed in the program, compared to a 47 percent graduation rate overall.

Eric Williams, an administrative assistant at United Way, told his story of how he has turned his life around with the help of the organization. He is now going to college after dropping out following seventh grade. "If you all contribute you can help change someone else," he said.

Several people won gifts in the raffle, including a chocolate basket, a cheese basket and designated parking spots. (See the list of winners on page 4). 



Herbert Klein speaks to PPPL'ers during the kick-off event in the MBG Auditorium.



Eric Williams tells his story and urges PPPL'ers to contribute.



Arlene White, left, and Andrea Moten put tickets in to win prizes

## PPPL celebrates America Recycles Day

PPPL celebrated America Recycles Day on Nov. 15. The event featured lobby displays on recycling, environmental programs and free giveaways. Many PPPL'ers brought plastic bags and old magic markers and pens to the lobby for recycling or hauled old computers and other electronic items from home to the lower parking lot where recycling bins were set up.



Eighty PPPL'ers signed recycling pledges in the LSB Lobby as PPPL celebrated America Recycles Day on Nov. 15. From left to right, Spencer Holcombe, Arturo Dominguez and Aliya Merali sign recycling pledges collected by Building and Grounds supervisor Marga-ret King, who helped organize the event.



Kyrone Jones lends a hand to Thomas Meighan as he drops off old computers for the Unicor recycling collection in the lower parking lot at PPPL. From left to right: Matthew Lawson, King, Jones and Meighan.

# French landmark decree authorizes ITER construction

By John Greenwald

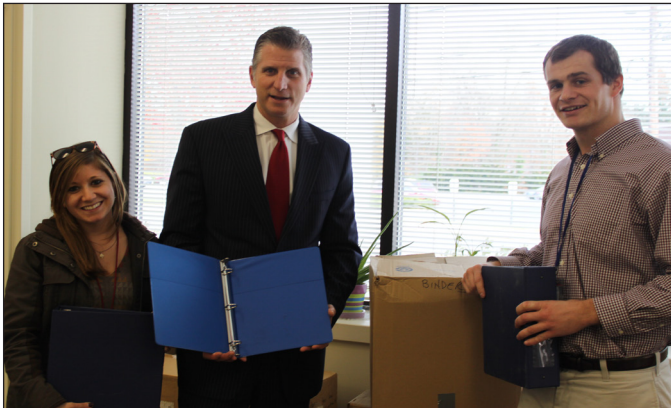
The French government has capped more than two years of review by issuing a license for the construction of ITER, the international fusion project that the European Union, the United States and five other countries are building in Cadarache, France, to demonstrate the feasibility of fusion energy. French Prime Minister Jean-Marc Ayrault signed the decree authorizing the license on Nov. 10, 2012. The move confirms the safety of the ITER project and clears the way for its construction.



“This landmark decree comes as just reward for our rigorous consideration of safety and environmental issues,” said ITER Director General Osamu Motojima. “ITER safety has now been confirmed by a large body of outside, independent experts,” Motojima said. “This is indeed a great day for ITER.”

Plans call for the 10-story tall ITER facility to produce a self-sustained fusion reaction, or burning plasma, by the 2020s. The experiment is designed to create 10 times more energy than will be needed to produce the reaction.

U.S. contributors to the experiment include PPPL, which is conducting research and developing components for the massive facility. The U.S. ITER project is based at the DOE’s Oak Ridge National Laboratory. Members of the ITER Organization include China, India, Japan, Russia and South Korea, in addition to the United States and the European Union. 



PPPL donated 460 pounds of gently used binders to the Ewing Township School District after collecting them over the past year. Several departments, including Environmental Services, Facilities, and Material Control worked together to round up the gently used binders that would have otherwise ended up in the trash.

From left to right: Zoe Shaheen, Superintendent of Schools Michael Nitti, and Mark Hughes. (Photo by Caren Pankiewicz, Secretary to the Superintendent of Schools).

## Congratulations to the United Way Kick-Off Raffle Winners:

**Gourmet Cheese & Crackers**  
Ceil O'Brien

**Ghiradelli Chocolate Drum**  
Chris Minervini

**PPPL Hooded Sweatshirt**  
Jane Feng

**\$8 Gift Cards for Cafeteria**  
Jerry Levine, Chris Stires,  
Andrea Moten & Sue Hill

**Princeton University Hat**  
Virginia Finley

**Upper Parking Lot Parking Spaces:**

**January-June:** Barbara Sarfaty & Gretchen Zimmer

**July-December:** Robert Budny & Natalya Gnyp

**Lower Parking Lot Parking Spaces**

**January-June:** Terry Greenberg & Lena Scimeca

**July-December:** Jennifer Jones & Carl Scimeca

**Back Parking Lot Parking Spaces**

**January-June:** Marie Iseicz, Chitra Venkatraman, Penny Neuman & Stephen Pasquale

**July-December:** Svetlana Drapkin, Arlene White, Maria Huber & Ronald Hatcher



Egemen Kolemen, a staff research physicist at PPPL, and two other members of a team of scientists working on the “snowflake” power divertor accepted the 2012 R&D 100 Award in a ceremony on Nov. 1 in Orlando, Fla.

R&D Magazine recognized the team of researchers for its work on the divertor as one of the 100 most technologically significant products of the year. They developed a new snowflake-shaped configuration of the divertor magnetic field in tokamaks, the vessels used to research magnetic fusion.

From left to right: Basil Duval, of the École Polytechnique Fédérale de Lausanne Center for Research; Ronald Cohen, of Lawrence Livermore National Laboratory (LLNL); and Kolemen. Among those not shown are Vlad Soukhanovskii, (LLNL), who designed and led the experiments and is on long-term assignment at PPPL; Jon Menard, the NSTX program director at PPPL; and Joon-Wook Ahn, of Oak Ridge National Laboratory, who is also on long-term assignment at PPPL.

(Photo by Anne Boersma)

## Food contributions needed for local food bank

More than 25,000 people in Mercer County depend on food provided by the Mercer Street Friends Food Bank, which serves more than 50 pantries, shelters and soup kitchens.

You can help by bringing your donations of canned or packaged food (no glass please!) to the LSB Lobby from now through Dec. 19 as part of the Princeton University Food Drive. The most needed items include canned protein such as tuna fish or chicken, Parmalat, cereals, and peanut butter and jelly. The Food Bank also needs personal care products such as soap, shampoo, deodorizer, feminine products and laundry soap.

Items needed for the Send Hunger Packing Program, which provides food to school-aged children to get them through the weekend, include: single servings of Parmalat, individual servings of cereal and individual servings of microwaveable food, granola bars and pudding cups.



## Registration open for Young Women's Conference in Science, Mathematics, Technology & Engineering

Calling all young female future engineers, mathematicians and scientists! Registration is open for the Young Women's Conference in Science, Mathematics, Technology and Engineering, hosted by PPPL, on March 22 at Princeton University.

The all-day conference for seventh through tenth-graders will include lectures, hands-on activities and tours of Princeton University's laboratories. Scheduled speakers include Cynthia Phillips, of PPPL; Heather Paul, who works on astronaut spacesuit design at NASA, and Jayatri Das, the chief bioscientist at The Franklin Institute.

Registration is open to the daughters of PPPL staff and to school groups on a first-come, first-served basis through Feb. 15. For more information and to register visit the Young Women's Conference website at <http://science-education.pppl.gov/YWC>.



The 2012 Young Women's Conference



# PPPL Café Menu

BREAKFAST..... 7 a.m. • 10 a.m.  
CONTINENTAL BREAKFAST..... 10 a.m. • 11:30 a.m.  
LUNCH ..... 11:30 a.m. • 1:30 p.m.  
SNACK SERVICE ..... until 2:30 p.m.

### MONDAY - DEC. 3

### TUESDAY - DEC. 4

### WEDNESDAY - DEC. 5

### THURSDAY - DEC. 6

### FRIDAY - DEC. 7

#### COMMAND PERFORMANCE CHEF'S FEATURE



Tortellini Alfredo w/ Peas Served w/ a Breadstick



Pecan Chicken w/ Scalloped Potatoes & Vegetable



French Dip Roast Beef & Swiss Torpedo w/ Potato Wedges



Chicken Fajita served w/ Refried Beans & Spanish Rice



English Style Fish & Chips w/ Tartar Sauce

#### Early Riser

Chorizo, Peppers, Onion & Cheese Omelet

Sausage & Cheese Mini Quiche w/ Mushrooms & Peppers

Hash Browns, Egg & Cheese on a Kaiser Roll

Grilled Kielbasa W/ Two Eggs Any Style & Potatoes

Strawberry Pancakes w/ Whipped Cream & Maple Syrup

#### Country Kettle

Cream of Spinach

French Onion Soup

Chicken Noodle

Three Bean Vegetarian Chili 🍅

New England Clam Chowder

#### Grille Special

Kielbasa & Sauerkraut Torpedo Served with French Fries

Double Turkey Cheeseburger w/ Turkey Bacon & Fries

Beef Gyro w/ Tzatziki Sauce & Fries

Chicken Tender Torpedo w/ Ranch Dressing & Fries

Trenton Cheeseburger w/ Pork Roll, Cheese & Fries

#### Deli Special

Roast Beef, Swiss Cheese & Horseradish on Asiago Cheese Roll

Classic Turkey Club

Fresh Mozzarella, Tomato & Basil Pesto on Ciabatta Bread 🍅

Italian Hoagie Wrap

Bruschetta Chicken Cutlet & Provolone Wrap

#### Panini

Chicken Cutlet, Tomato, Fresh Mozzarella & Pesto Ciabatta

Cuban Panini w/ Pulled Pork, Ham, Swiss Cheese & Pickle

Turkey, Turkey Bacon, Tomato & Cranberry Mayo Ciabatta

Vegetarian Mediterranean Panini 🍅

Eggplant Parmesan Ciabatta 🍅

MENU SUBJECT TO CHANGE WITHOUT NOTICE

# WEEKLY

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Photography: **Elle Starkman** ♦ Web: **Chris Cane** ♦ Administrative Support: **Pamela Hampton**

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Comments: [comteam@pppl.gov](mailto:comteam@pppl.gov) ♦ PPPL WEEKLY is archived on the web at: <http://www.pppl.gov/ppplweekly.cfm>